

# Flexible

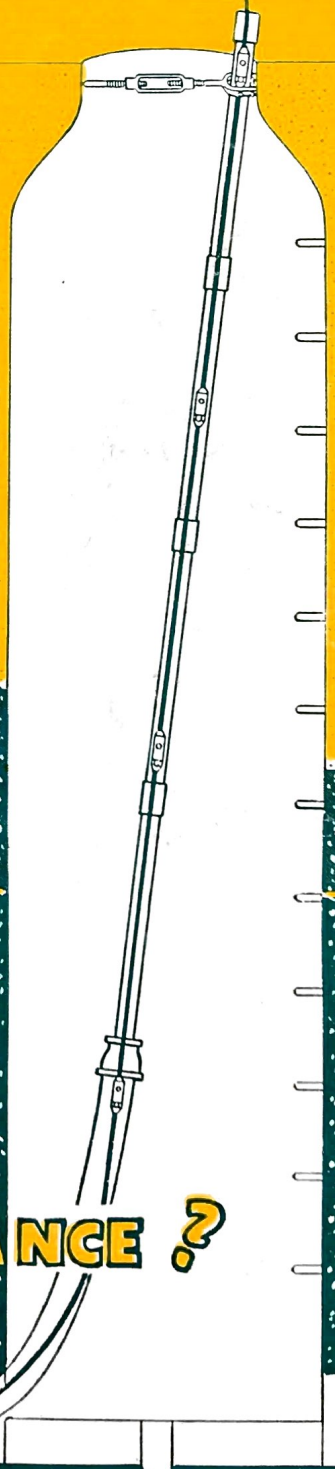
INC.



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**Why**

**PREVENTATIVE MAINTENANCE ?**

# PREVENTATIVE MAINTENANCE GUARANTEES SEWER PERFORMANCE

THE FOLLOWING PAGES ARE ARRANGED IN SEQUENCE, DESCRIBING TOOLS AND METHODS TO MEET ALL SEWER MAINTENANCE AND EMERGENCY PROBLEMS. USING "FLEXIBLES" YOUR CITY CAN HAVE BETTER SANITARY SEWERS WITH . . .

## ECONOMY



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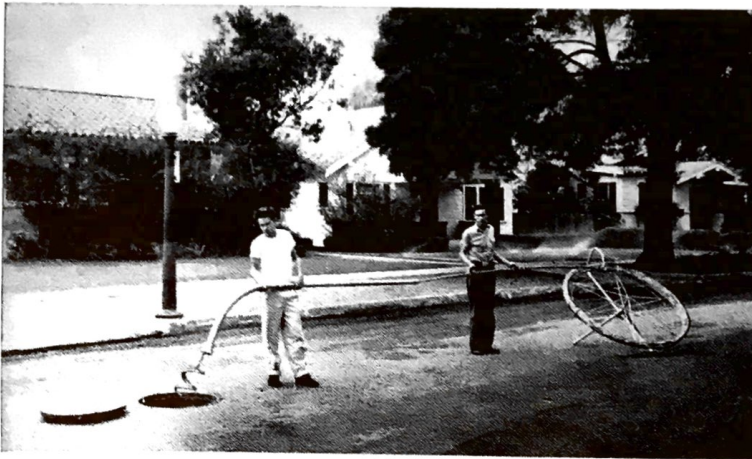
### WORKING INSTRUCTIONS

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# OPERATING "FLEXIBLE" HAND RODDING EQUIPMENT

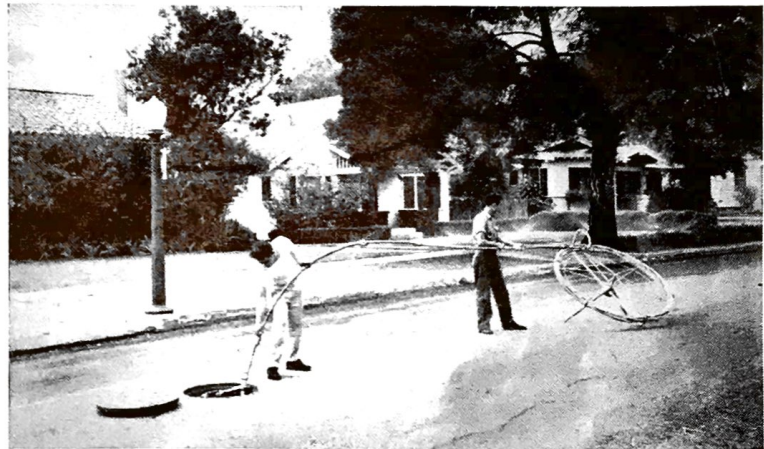
## OPERATION NO. 1

Determine the depth of manhole by connecting lengths of 1½-inch pipe to the Rod Guide, page 11, so that the bell of the Rod Guide rests in the down flow pipe, and the 1½-inch guide pipe extends two or three inches above the manhole rim in a slanted position. When proper depth is determined, remove and insert rods from the EZY Rod Reel, 17, (set reel about twenty feet behind the working position at the manhole). Attach a 2 or 4-inch Corkscrew, page 8, lower the Guide with the Corkscrew attached to rods so that the bell part of Guide will enter the down-stream pipe. When in this position, push the rod down with one hand, holding the guide pipe with the other. After the tool has been pushed a few feet into the pipe, shake the guide into a firm position and lock the Rod Guide Jack, page 11, against the manhole rim in a firm position. Should it not be secure, the bell of the Guide has not entered sewer pipe far enough.



## OPERATION NO. 2

One man stands at the manhole pushing the rods while the other pulls the rods from the EZY Rod Reel. If the line is clean, two men will have no difficulty pushing the rods the entire average distance to the lower manhole. When pushing becomes too hard, turning is necessary. Any solid stoppage such as roots, will require immediate turning. Small quantities of sand in the lines can cause enough friction to require turning at 200 feet.



## OPERATION NO. 3

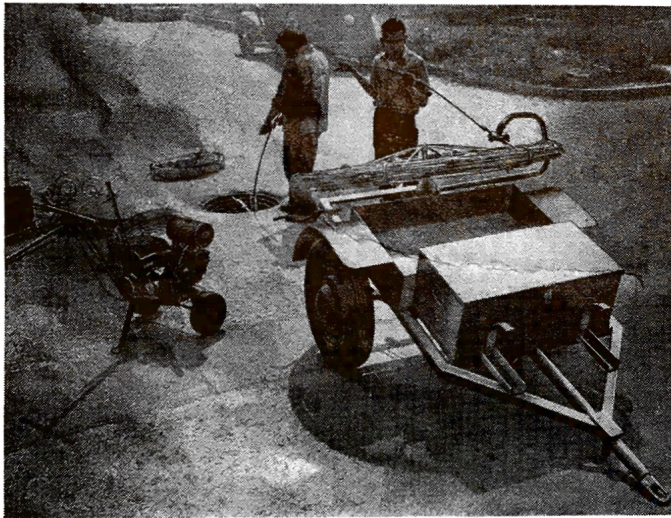
When the obstruction is reached, uncouple the rods at the reel. Engage two Ratchet Turning Handles, being sure that the pin and spring of the handles is toward the manhole. The two rear men, as illustrated, rotate the rods by taking alternate strokes with the handles. The front man controls the speed with which the rods feed into the line, one section at a time, by engaging the Pull-out Tool behind a coupling and pushing. If the obstruction is roots, build up a reasonable amount of tension by turning into the stoppage. Pull back by reversing the Pull-out Tool on the coupling. When the stoppage is broken, water will start to drop in the manhole. Pull out rods and attach Corkscrew or other tool the size of the pipe for a final cleaning run. For Sand jobs see pages 12 and 13 for Water Power Cleaning methods or Power Bucket Machines described on pages 23 through 28.



# OPERATING "FLEXIBLES"

## POWER RODDING WITH "FLEXIBLE" INSTANT REVERSE POWER DRIVE

The Power Drive replaces the Ratchet Turning Handles for rotating rods and tools, but operations 1 and 2, page 3, are the same as for hand rodding. The man at the manhole pushes or pulls the rods with a Pull Out Tool. The Power Drive operator applies or releases turning power from the rods by movement of the single Safety Lever, and at the same time walks slowly forward. Additional rods are added to the working string until the line is cleaned to the far manhole. If the tool gets lodged in a hard stoppage, just shift the Safety Lever to instantly reverse tool rotation and corkscrew out.



## "FLEXIBLE" CARRY-ALL TRAILER

See page 20 for definite details.

One compact unit for carrying all equipment needed on job.

1. Power Drive mounts on front.
2. EZY Rod Reel holds rods on rear.
3. Open Tool Box for large tools.
4. Large waterproof tool box with lock hasp.
5. Guide Pipe carrier rack underneath trailer.

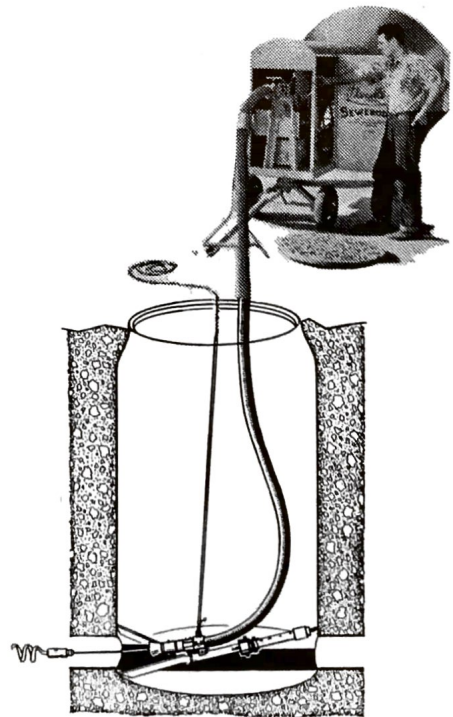
Saves tying up a truck and you always have proper tools for job. One man can easily push the trailer from manhole to manhole.

## THE "FLEXIBLE" SEWERODER

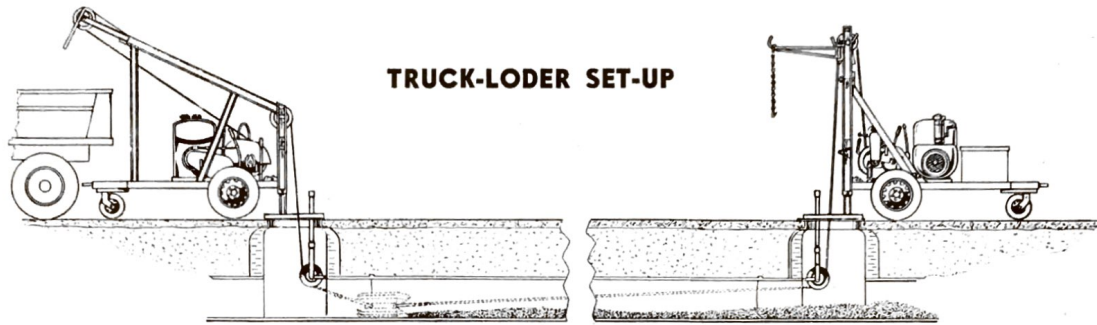
Operators say that running the SeweRodeR is the easiest job they ever had, and cities report cleaning costs of less than .03 cents a foot.

Self-contained rods are pushed, pulled and rotated in the sewer mechanically. Set-up time is measured in minutes. Just tow the trailer model to the job or drive the truck model. On arrival run the rods through the guide, attach a cleaning tool, set the stand and lower guide into the pipe with a rope. You are ready to start cleaning.

Wherever labor shortages are a problem, sewer cleaning capacity can be greatly increased, often with a reduction in personnel. Where Preventative Maintenance programs are in effect, you can schedule cleaning of thousands of feet of pipe annually without needing to increase the size of the sewer crew.

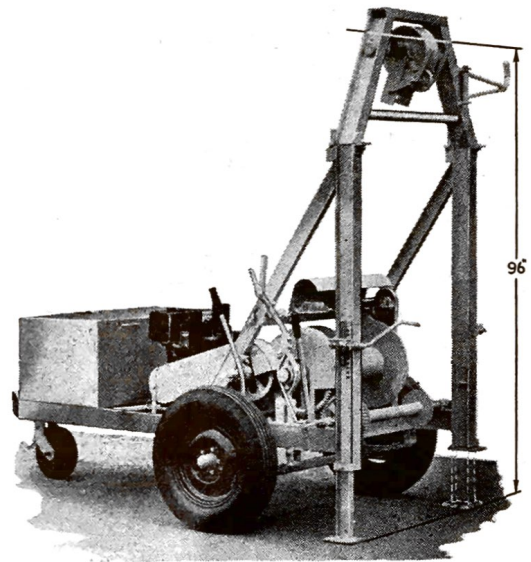


# "FLEXIBLE" POWER BUCKET MACHINES



**TRUCK-LODER SET-UP**

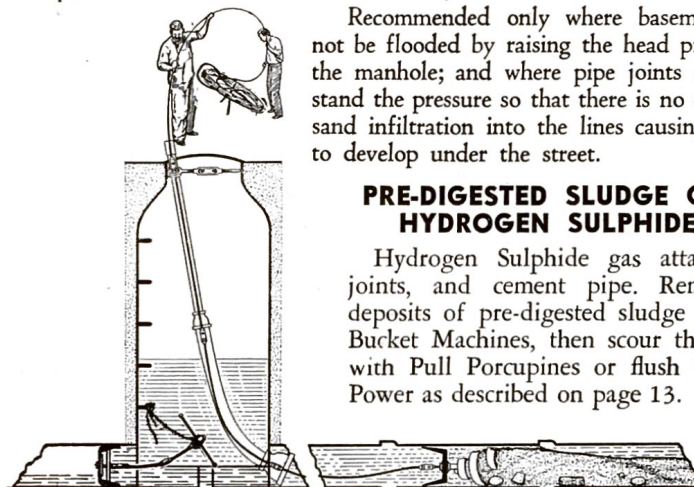
Flexible Power Bucket Machines will remove from 8 to 25 cubic yards of debris a day as against from 1 to 2 cubic yards by the very best water power or hand methods. The buckets bring the deposits to the surface for dumping, either on the street or directly into a truck (Truck-Loder). Patented "Surface Hung" Manhole Rollers greatly reduce set-up time and eliminate the necessity of going down into manhole to make installations. A set of "Flexibles" will give your city lower maintenance costs, better working conditions, and sanitary sewers. While there is no authority that unsanitary sewers are a direct cause of epidemics such as Polio, a city with clean sewers is above suspicion.



## WATER POWER SEWER PIPE CLEANING For Removal of Sand, Silt, Gravel, Grease and Pre-Digested Sludge.

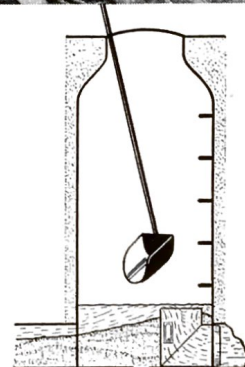
Set up as described on page 13. A head of pressure in the manhole moves the deposits to the lower manhole where they must be bucketed out manually.

Recommended only where basements will not be flooded by raising the head pressure in the manhole; and where pipe joints can withstand the pressure so that there is no danger of sand infiltration into the lines causing pockets to develop under the street.

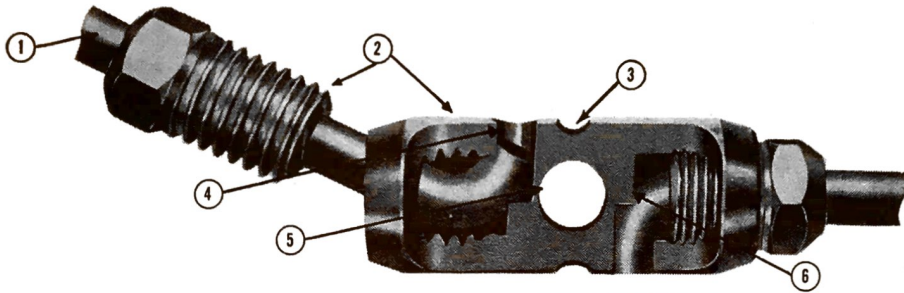


### PRE-DIGESTED SLUDGE CREATES HYDROGEN SULPHIDE GAS

Hydrogen Sulphide gas attacks cement joints, and cement pipe. Remove heavy deposits of pre-digested sludge with Power Bucket Machines, then scour the pipe wall with Pull Porcupines or flush with Water Power as described on page 13.



# FLEXICROME RODS AND COUPLINGS



Pat. No.  
2,471,060

## FEATURES

1. Rodding steel is tougher, stronger, longer lasting, treated for acid resistance,
2. Coupling and Nuts are case hardened.
3. GROOVE makes it easy to insert Turning Lock Pins. It is NOT A FLEXICROME COUPLING without the GROOVE.
4. Wall support; rod ends cannot get in center hole.
5. Solid center partition between Lock Pin and Rod End Holes.
6. Heel support for rod ends eliminates wear.

**FOR HAND and POWER TURNING  
FLEXICROME RODS & COUPLINGS  
5/16" diam. X 36" NO. RC-1**

**FOR SeweRodeR ONLY  
FLEXICROME RODS & COUPLINGS  
5/16" diam. X 39" NO. RC-2**



Steel rods, when used for sewer cleaning, are subjected to stresses and strains that differ greatly from those found in normal applications. Commercial grades of spring steel have a tendency to be either too soft or too hard. To obtain specifications for an ideal rodding steel, years of trial and error experiment were necessary. Progressively better rodding steel was required as Power Drives and SeweRodeRs were developed. Metallurgical skill has translated specifications into FLEXICROME rodding steel, and the user is assured that he will obtain maximum life from his FLEXICROME RODS under all conditions.

## SPECIFICATIONS

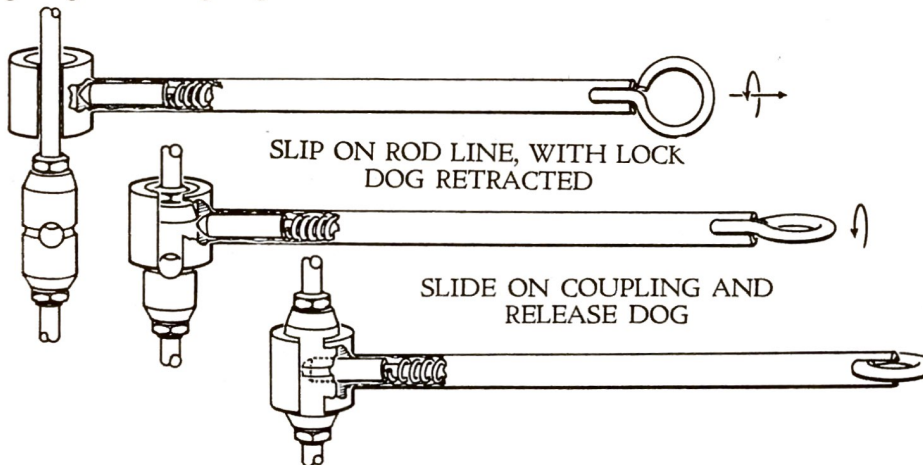
To be sure you get Flexicrome Rods and not a substitute specify as follows:

Rods must be Flexicrome Steel, 5/16" diam. x 36" in length, with heat fused coating for acid resistance. Couplings must have a partition between hooked rod ends for heel and side support, and to prevent mis-assembly into turn pin center hole. A centrally located guide groove shall be provided around the Lock Pin Hole.

## ASSEMBLY-TURNING HANDLE



THE NEW ASSEMBLY-TURNING HANDLE (See page 10 for complete description) is made exclusively for GROOVED Flexicrome Couplings. The drawings below illustrate how the GROOVED COUPLING saves time by guiding the Locking Dog into the Lock Pin Hole.



### TO RETRACT DOG

Pull loop out of slot and twist so it rests on end of handle.

### TO RELEASE DOG

Simply reverse process—turning loop so it drops into handle slot.

### LOCKING DOG

Finds the Lock-Pin Groove, with a CLICK. A slight turn right or left and it CLICKS into LOCK PIN HOLE and cannot possibly slip.

Only Patented Flexicrome Couplings have the GROOVE around the Lock Pin Hole. This exclusive feature saves you time and trouble every time you lock the rods to a turning device.

# CARE OF FLEXICROME SEWER RODS

Twenty years ago the motive power for Flexible Rods was only hand turning at 20 R.P.M., — it was a rarity if you broke a rod.

In 1938, the Power Drive was introduced, and motive power increased to 2 H.P. at 90-120 R.P.M. Result: users began to have rod breakage and the natural reaction was, — we were accused of lowering the quality of the rods. Metallurgical and Laboratory tests proved differently. The major cause of breakage was found to be from \*premature crystallization, caused from allowing the rods to rotate in one spot too long. This sets up molecular friction which produces terrific heat, particularly where the rods must curve into the manhole at the top and bottom. This terrific heat causes the crystallization. After our users were so informed and cautioned about this action, and their operators learned to keep the rods moving in or out at all times when the rods were rotating, and learned the feel of the Power Drive, so as to be able to control the torque on hard root stoppages, *rod breakage dropped tremendously.*

Ever since the first set of Flexibles was delivered, our constant aim has been to develop a better quality rod that would give better service under the severe use it was subjected to. Flexicrome steel is the present result of our efforts.

To further protect the rods, all Flexicrome rods are processed with a heat applied pore sealing acid resistant. When better steels are available, Flexible will be the first to use them.

\* We say premature crystallization, because any steel that is under constant mechanical action will eventually fatigue and crystallize from normal use. Since sewer rodding steel must be flexible, any care that will postpone fatiguing prolongs the life of the rods.

**RULE 1. NEVER** rotate rods unless they are being moved laterally in the line at the same time. Rotating the rods without lateral movement produces molecular friction resulting in terrific heat and eventual crystallization of the steel.

**MAKE THIS SIMPLE TEST:** Allow rods to rotate in one spot for a minute. Cautiously place your hand on the rods at the point, where they bend in the Rod Guide Pipe. Note how much heat is generated in this short period of time.

**RULE 2.** All Cutting tools are designed to bore into obstructions like a drill or corkscrew. Extreme forcing twists and strains the rods, but does not hasten the drilling action; it only hastens crystallization.

**RULE 3.** Periodically straighten bent rods in a vise, to decrease working friction .

**RULE 4.** Wherever possible avoid dragging rods along the street. This abrasive action will cause couplings to wear flat on one side.

**RULE 5.** Avoid using rods in lines that contain acids, wherever possible. Even weak acid solutions will eat into rods causing crystallization. If such lines must be worked, flush heavily during the cleaning process.

## FLEXICROME ROD GUARANTEE

Flexicrome Rods are spot tested for uniformity of hardness on a Rockwell Hardness Tester. Occasionally a defective rod will get through our inspection and such rods will be replaced without question. Inspection of rod returns over a period of many years shows that 97% of all claims result from improper care and use on the part of the operator; and we reserve the right to adjust claims on a fair and equitable basis.

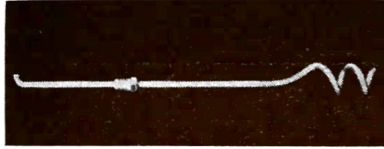
## RECONDITIONING SERVICE

New Flexicrome Rods can be installed with old Couplings and Nuts at about one-half the cost of a complete new rod. Often the rods will break or become crystallized while the couplings and nuts are still in good condition. For states west of the Mississippi River return Couplings and Nuts to the Los Angeles, California factory. For states east of the Mississippi River return to the factory at Lima, Ohio. Shipments should be made by express or freight, whichever is the cheaper carrier, taking into consideration the fact that the 100 lb. rate is the minimum freight charge.

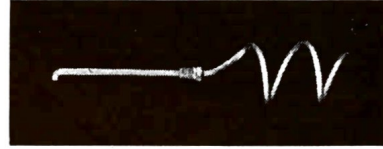
# "FLEXIBLE" WORKING TOOLS

The following pages, 8 through 22, illustrate and provide a working manual for tools and equipment to be used with Flexicrome Rods. For suggested sets of equipment, see pages 18 and 19.

## 5/16 in. ROUND STOCK CORK SCREWS



1 1/2"	O.D.	NO.	CS-1
2"	O.D.	NO.	CS-2
2 1/2"	O.D.	NO.	CS-3
3"	O.D.	NO.	CS-4
3 1/2"	O.D.	NO.	CS-5



These smaller sizes are invaluable in many places. For instance, in storm drains where mud cannot be moved, if a small hole can be bored through and the water begins to run through even a small hole, it will soon "Soup Up," and then, by flooding and working through the next size, and then the next, the drain can be entirely opened. Many drains stopped for years that refused to be worked by wood rods; nozzles, pressure bags, etc., have been opened up, saving, in many cases, the price of a set of rods to a city.

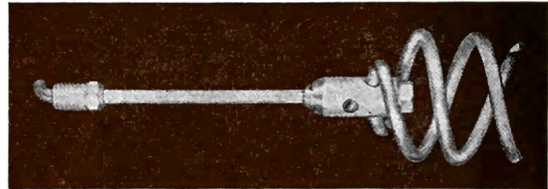
## SPEAR HEAD



SIZE: 1 7/8" O.D. NO. SP-1

The first tool to use in breaking up bottles, punching holes in cans. For small pipes with hard deposits, etc.

## DOUBLE CORK SCREW



SIZES: 3" O.D. NO. CS-7  
4" O.D. NO. CS-8  
5" O.D. NO. CS-9

For picking up and pulling out roots, rags, cans and other obstructions. This tool has much greater prong pulling strength than the Round Stock Corkscrew.

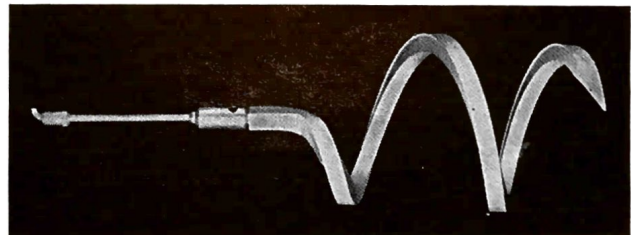
## SAND CORKSCREW



SIZE: 3" O.D. NO. CS-6

The best tool for fast boring through large sanded lines. The double construction causes the tool to ride to the top of the sand.

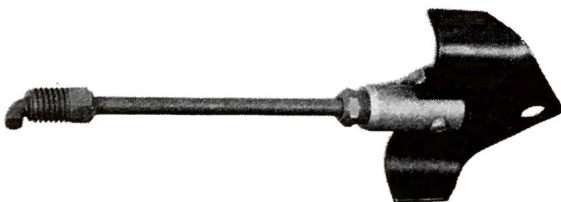
## CORK SCREWS SQUARE BAR STOCK



FOR PIPE  
SIZES: 6" No. CS-13  
3" No. CS-10 8" No. CS-14  
4" No. CS-11 10" No. CS-15  
5" No. CS-12 12" No. CS-16

Many cities, with only roots, hard grease and paper clogs to contend with, will need only Cork Screw Tools for 6-inch and 8-inch pipe. We consider these our best all-service tools. The use of this tool is described on page 3, Operation No. 3. These tools are made from Special Alloy High Carbon Tool Steel, too heavy and too tough to break. On the back top edge, concealed from harm, is a keen slanted cutting edge that cuts when the tool is pulled back. We feel that all sets should have 1 1/2" O.D. and 3 1/2" O.D. Round Stock Corkscrews to be used in full manholes; Operation No. 1, page 3.

## SAND LEADER



SIZE 3" O.D. NO. SL-1

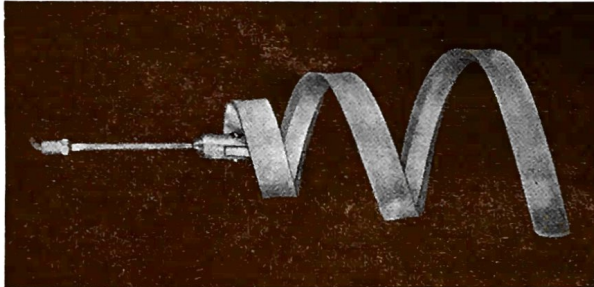
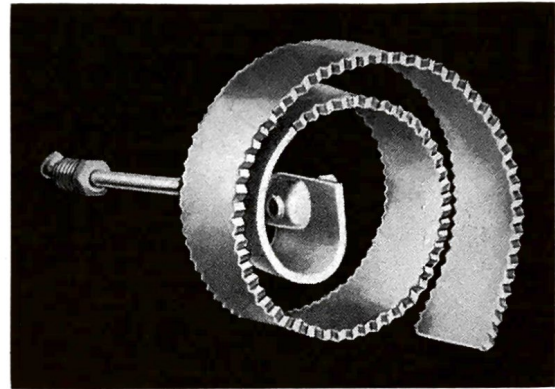
Special blade design keeps tool and string of rods on top of sand for easier rodding. When rodding a sand line to bring back Bucket Machine Cable, this tool is especially recommended. Note the hole near the point of the blade to which cable may easily be attached.



## ROOT SAWS

This new tool, with coarse saw teeth on front and back edges of the blade, seems to be the answer to many stubborn root problems. Work it against the flow and it cuts roots to the consistency of shredded kraut. The Root Saw is not intended to EVER BE TURNED LEFT. Anything it will saw into, it will saw out of on a pull back. The Root Saw is designed for use ONLY WITH THE POWER DRIVE OR SEWERODER.

FOR PIPE SIZES:	3"	NO. RT-01	8"	NO. RT-2
	4"	NO. RT-0	10"	NO. RT-3
	6"	NO. RT-1	12"	NO. RT-4

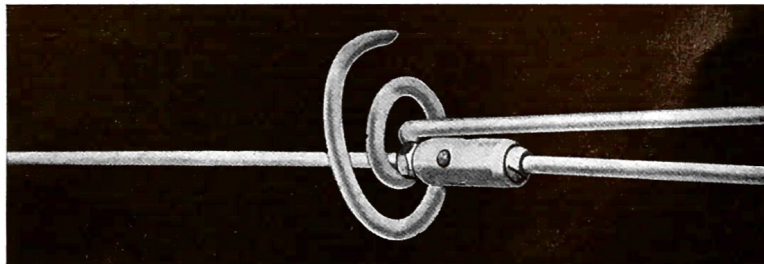


## AUGERS

FOR PIPE SIZES:	5"	NO. A-3
	6"	NO. A-4
	8"	NO. A-5
	10"	NO. A-6

We have found the Augers to be most satisfactory in removing sand with aid of the Sand Cup, as shown on page 12. When rotating, the Auger has the same effect as a spade turning dirt over. This tool is also used where long stringy roots are encountered, because it has a cutting edge on the front and back, and while the auger is rotating, it cuts its way into the root. We have also found this tool to be very practical in removing grease from a line. All our operations for the removal of roots and sand are worked with the flow of the water; but with grease; we have found it better to work from the lower manhole against the flow, allowing the grease to flow downstream.

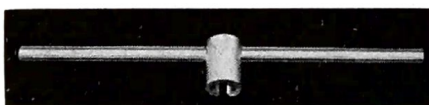
## PICK-UP TOOL (AS USED)



NO. PU-1 Patent No. 2,249,254

Used to retrieve a string of rods that might become lost in the line. The wide hook, as shown, will always contact the rods. A few turns will wind the rod to the center of the tool, where the diameter is smaller than the coupling. A pull hooks the tool against the coupling.

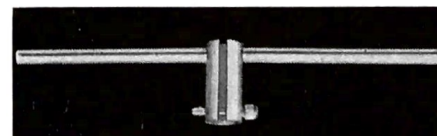
## PULL-OUT TOOL



NO. PT-1

This tool is used for pushing the rod into the line. By reversing the handle, the operator can use it for pulling out.

## PULL-OUT AND TURNING HANDLE

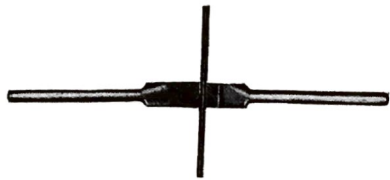


NO. PT-2

Where regular Ratchets are not needed and when working in close quarters, this tool allows the operator to turn, push or pull. The coupling is locked with a pin.

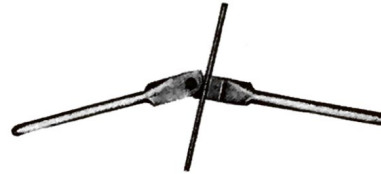
# ROUND ROD PULLER

CLOSED



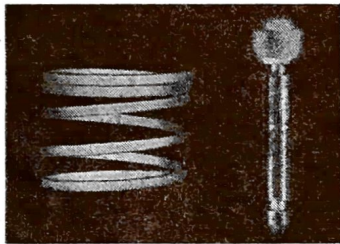
No. PT-3

OPEN



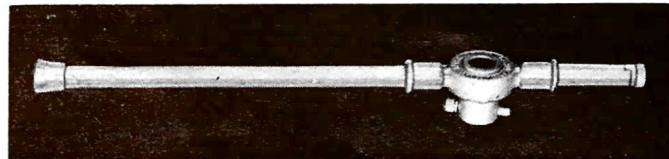
This tool grips the rods at any place in the line and does not depend on the coupling as a pull stop. It is better for short bites in hard pulling when roots are heavy or when in heavily sanded lines. It cannot be used as a pusher or puller when rods are being turned.

## PIN AND SPRING (For Ratchet Handle)



PIN No. RAP-1  
SPRING No. RAP-2

## RATCHET TURNING HANDLE



No. R-1

Where the sewer crew consists of three men, Ratchet Turning Handles are recommended. One man is stationed at the manhole to push the rods into the line with the Pull Out Tool. The other two men turn the rods by means of alternate strokes of the Ratchet Turning Handles. A set of two Handles is essential.

## ASSEMBLY TOOL



No. AT-1

This tool is for making up and knocking down couplings. Slip the tool over the rod onto hexagon nut of the coupling. Insert the male end of the Bar Turning Handle into the hole in the coupling, before trying to engage the elbow of the rod into the coupling. With the elbow free in the small hole in the coupling the nut can be started with the fingers, and tightened with the Assembly Tool. However, the rod and coupling must be in line, the same as in making up a meter coupling, to start the thread.

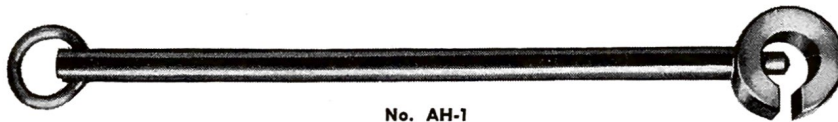
## BAR TURNING HANDLE

A good auxiliary turning handle for light turning, such as relieving a tool caught slightly on a rough coupling and making up or knocking down couplings.



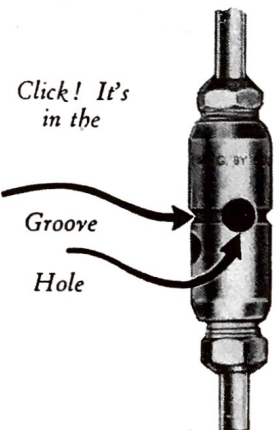
No. BH-1

## ASSEMBLY - TURNING HANDLE



No. AH-1

This new tool replaces the Bar Turning Handle to hold the coupling while tightening the nut with the Assembly Tool . . . and also for safely turning the rod line to dislodge a "stuck" cleaning tool. Designed for use with the Flexicrome Grooved Coupling, it greatly speeds coupling and uncoupling time. To use tool, retract Dog by pulling loop out of slot and twisting, so it rests on end of handle; slip on rod line and release Dog by turning loop so that it drops into handle slot. Locking Dog finds the Lock-Pin Groove with a Click. A slight turn right or left and it clicks into Lock-Pin Hole. The ASSEMBLY-TURNING HANDLE CANNOT BE USED UNTIL IT IS POSITIVELY LOCKED TO THE RODS. Another "Flexible first" to make sewer cleaning easier and safer.





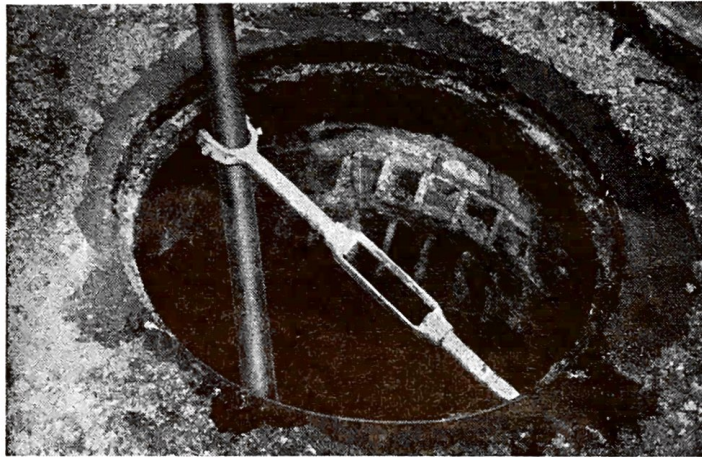
## ONE MAN RATCHET



CAT. No. R-2

Recommended for small cities where only two men constitute the entire crew. The One Man Ratchet is a combination of two ratchets, one for building up pressure, by the operator, and the other acting as a stop to, "hold bite." Forward progress, however, is only one half the speed of two regular Ratchet Turning Handles.

## ROD GUIDE AND ROD GUIDE JACK



We suggest that as the average city's manhole is no more than 30 feet deep that the purchaser furnish to the set three 4-foot, four 3-foot, one 1-foot and one 6-inch length of 1 1/2-in. iron pipe, with one coupling to each length.

The short "nipples" are used to finish the Guide a few inches above the cover rim.

The "Tie-bolt" in the illustration of the jack is very seldom used. The "yoke-end" is of cast steel with tempered points, much harder than a cast-iron manhole rim. The other end has the same kind of steel point.

When engaging the yoke around the iron pipe, be sure that the jack makes a three-point contact before being tightened. In this manner three steel points cut into the cast iron. When tight adjust the three set-screws, and the pipe will be tight in the hole, making the work much easier.



For rigidity, easy adjustment and for small and large manholes. Operator sees roots before they jam in rod guide. Tools may be changed without removing guide. Less rod bend for longer rod life.

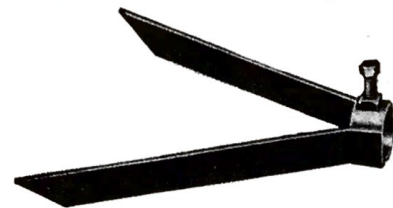


NO. RG-1



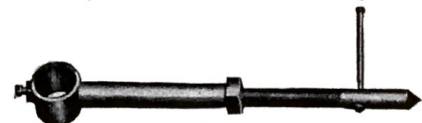
NO. GJ-1

## ADJUSTABLE FOOT JACK



NO. FJ-1

## ADJUSTABLE BACK JACK



NO. BJ-1

# WATER POWER CLEANING

A head of pressure, built up behind the Sand Cup and released in powerful jets, or in a flood, by collapsing the Cup, moves the deposits to the lower manhole.

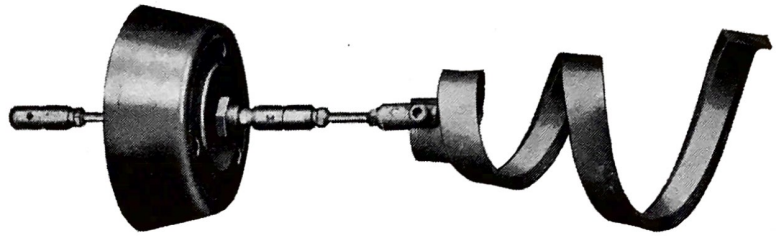
## USE THE SAND CUP AND AUGER IN COMBINATION

The Sand Cup is attached to a string of rods just behind the Auger. The Auger spades over the deposits making it easier for the Sand Cup to wash them down the line. (For complete description of Augers, see page 9).

### SAND CUP

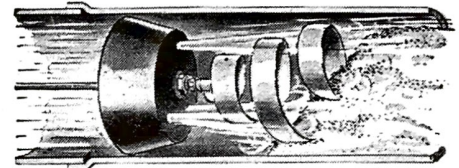
#### FOR PIPE SIZES:

4"	NO. SC-1
6"	NO. SC-2
8"	NO. SC-3
10"	NO. SC-4
12"	NO. SC-5
14"	NO. SC-6
15"	NO. SC-7
16"	NO. SC-8
18"	NO. SC-9



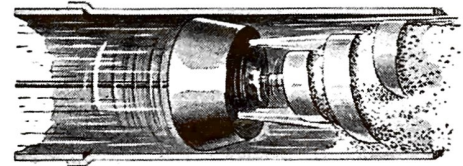
**SAND CUP**

**ACTION NO. 1**



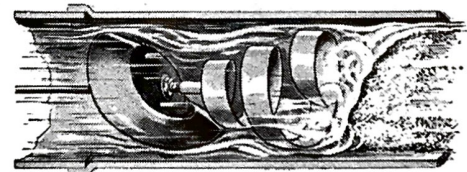
**WATER JETS WASH AWAY SAND.** The head pressure of water in the manhole, causes the water to jet through the holes in the Rubber Cup. This water levels off and washes away loose sand during the whole cleaning operation.

**ACTION NO. 2**

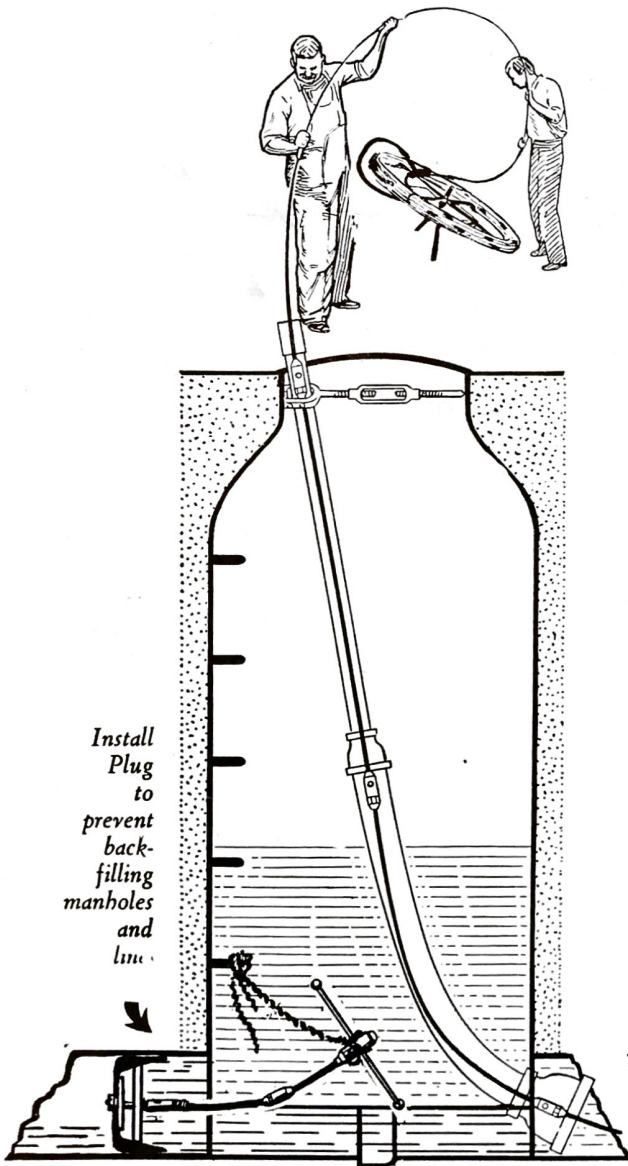


**LIKE A CORKSCREW, IT BORES IN.** Powered by Flexicrome Rods, the Auger bores in, loosening the sand or cutting roots while the water continues to spurt through holes in the cup. The line being cleaned must be partially free flowing because this method depends entirely upon the head pressure to force loose materials down the line.

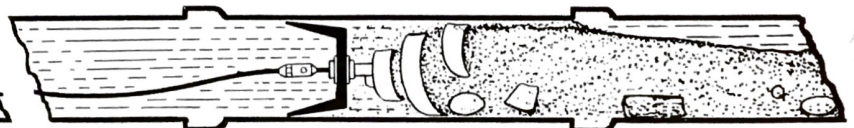
**ACTION NO. 3**



**RELEASING THE WATER PRESSURE.** A pull back collapses the cup and releases a greater volume of water, when the water level in the manhole rises too fast. This also serves to wash the sand or obstruction away faster.



*Install Plug to prevent back-filling manholes and line.*



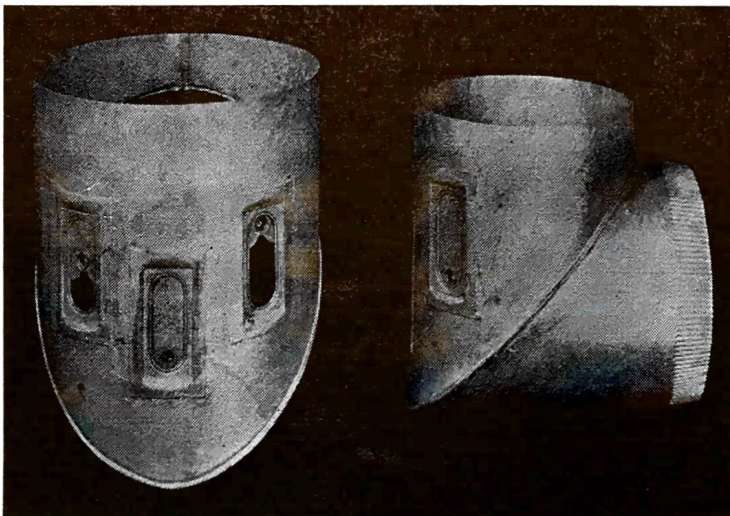
# SAND. GRAVEL. MUD AND ROCKS

To clear lines of above items, be sure that the manhole immediately below the stoppage will carry away water from a 2½-inch fire hose with approximately 60 pounds of pressure. If it will not do so, go farther down the line until you find one that will, and it will be the first section to be cleaned, as it is absolutely necessary that the line below must be free, for this method depends on the head pressure in the upper manhole to force the loose matter down the line. For a complete stoppage, drill through the line with a Sand Cork Screw until you have a good flow of water. Pull back, remove Cork Screw, and attach Rubber Cup, as shown at left, with Auger for size of pipe or two inches smaller. The Cup has jet holes which carry a powerful jet directly to the load with the head pressure in the manhole. Do not crowd the Cup. Start turning when some distance in the line, when the heavier sand begins to pile up in front of the Cup. When the water starts rising fast in the manhole, pull back a few feet, which collapses the rubber cup, allowing the load ahead to level off, and gradually progress is made. When the rods are about 75 to 100 feet from the lower hole, the sand may be level with the top of the Sand Trap and this would block further progress. Remove the sand and continue until job is through. Always remember that a higher head in the upper manhole moves the load much faster. When house connections are low, either plug off or regulate the head of water in the manhole.

**CAUTION:** Should the line become completely plugged, with no water draining at the lower manhole, rod in from the lower manhole with a 2-inch Corkscrew. The rotation of the rods ahead of the Sand Cup will cause the load to travel again. Where the pipe is badly clogged it may be necessary to constantly rotate and withdraw the rods slowly so that the Corkscrew is kept just ahead of the Sand Cup and Auger until the entire line is cleaned. Large gravel, rock, brick, broken clay pipe, and cement fragments, tend to wedge in the pipe regardless of the HEAD PRESSURE WATER POWER METHOD used; nothing but rods will dislodge them.

**SAFETY FACTOR:** No other Water Power Method, to our knowledge, has the collapsible feature of Sand Cups. The ability to collapse the Sand Cup at will, to relieve head pressure, is essential where basements are low and there is danger of flooding. **NO WATER POWER METHOD** should ever be used where infiltration could be a "CAVED IN" street hazard. Under such circumstances, "Flexible" Bucket Machines are a must.

Study instructions and remember that **SAND CAN NOT BE FORCED.** The Sand Cup takes patience, but after a few lines have been cleaned, it will demonstrate its real worth. It will easily remove more sand per day than any other **SAFE METHOD** except Bucket Machines. Recommended for all types of soft deposits in 4, 6, 8, 10, 12, 14, 15, 16, and 18-inch lines. Where a faster cleaning method is desired, or where the lines contain heavy deposits, "Flexible" Power Bucket Machines are recommended, see page (23).

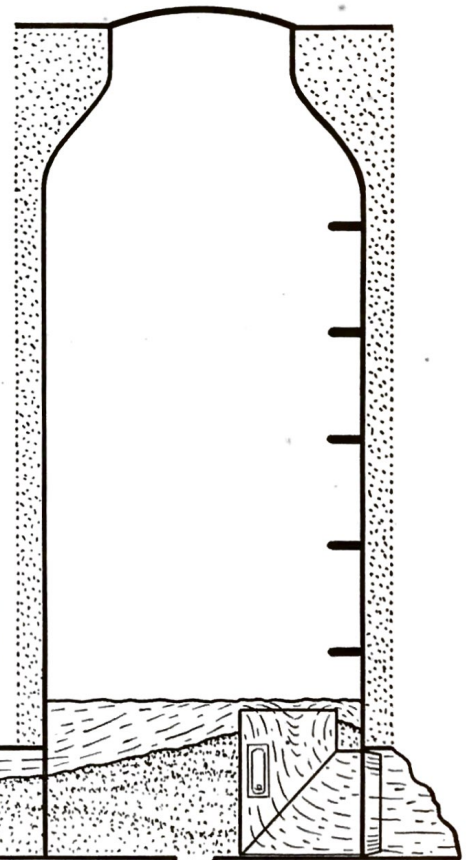


**SAND TRAPS**

When cleaning a line, always use a Sand Trap, placing same as shown below. When working roots, open the gates; and close them for sand. When sand builds up to level with the top of the Sand Trap, stop operations and remove sand from manhole.

**FOR PIPE SIZES:**

6"	No.	ST-1
8"	No.	ST-2
10"	No.	ST-3
12"	No.	ST-4
14"	No.	ST-5
15"	No.	ST-6
16"	No.	ST-7
18"	No.	ST-8



# NEW INSTANT REVERSE POWER DRIVE

## A Shift of the Safety Lever Reverses Rotation of Rods!

Speeds cleaning as a quick reverse will corkscrew the tool out of a tough stoppage quickly. Also, an occasional quick reverse tends to keep the rods on top of sand.

### Mechanical Features:

1. SAFETY LEVER CONTROL—One handy lever controls starting, stopping, and direction of rod rotation.
2. HANDY OPEN TOOL BOX.
3. EASY TO PUSH AND MANEUVER.
4. HOLLOW ROD SHAFT—A string of rods can extend through the machine.

### Engine Features:

1. Briggs & Stratton 4 cycle, 3 h.p. air cooled engine.
2. Built in 6 to 1 reduction.
3. Automatic governor.
4. Oil Bath Cleaner.
5. Rope Hand Starter.

PATENTS  
2,505,277  
2,884,796



**Five Times  
Faster Than  
Hand Turning**

PD-50-RL  
**3 H. P.**

**POWER DRIVE**

PD-50

**2½ H. P.  
POWER  
DRIVE**



## REGULAR POWER DRIVE

Same general features as PD-50-RL except there is no quick reverse feature and the engine is 2½ h.p. instead of 3 h.p.

### HOW TO USE POWER DRIVES

After setting up stand 20 to 30 feet behind manhole and installing Rod Guide as described on page 11, push rods into sewer until obstruction is reached. Disconnect rods from reel and connect last coupling to Speedi-Chuck, as described below. If your Power Drive is equipped with pin and spring, insert coupling pin making sure spring engages locking slots on pin. As illustrated, the man at manhole pushes rods into the line while the Power Drive operator controls rotation, advancing slowly. While the rods are rotating, keep them moving in or out of the line using a Pull-Out Tool. Never grasp them with either bare or gloved hands.



## NEW SPEEDI-CHUCK

SPC-1

OPTIONAL EQUIPMENT ON ALL POWER DRIVES. It can be installed on any Power Drive now in use, for 5/16" rods.

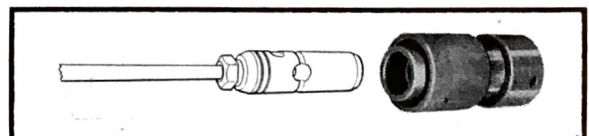
A speedy connection for engaging a string of rods to the Power Drive.

To use: 1. Pull Back Collar. 2. Insert Couplings. 3. Grooved Coupling makes instant positive connection. 4. To disengage, pull back Collar.

No more searching for Lock Pins and Springs.

Shown installed on PD-50-RL above

PATENT PENDING



# COILED ROD CLEANING

"Flexible" Coiled Rods Must Be Used To Clean Sharp Bends And "P" Traps Found In 6-Inch Diameter Lines, And Under

MPF-7 25'



CR-1 3'

CR-2 6'

CR-3 25'



## Coiled Rods for Flex-Speed Drive

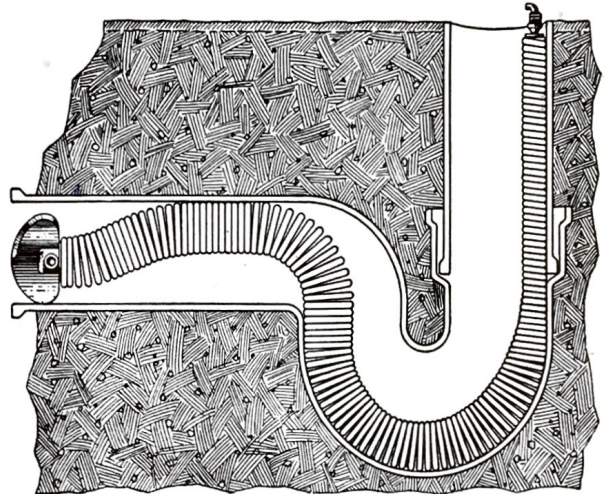
Except for very short runs, Coiled Rods should be rotated at greater speeds than are possible with the regular Power Drives. Therefore, where a city maintains House Laterals 150' of MPF-7 Coiled Rod rotated by Flex-Speed Drive is recommended.

## CAUTION:

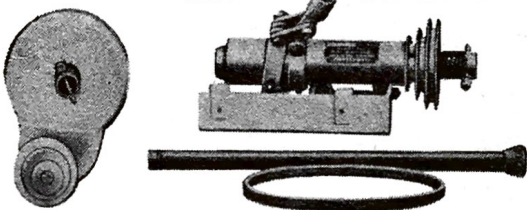
Not recommended for lines over 6" in dia. or cleaning runs over 150 feet. Small diameter pipe (6" and under) acts as a guide for coiled rods so that when tool gets lodged in a tough stoppage, the tendency to kink is restrained by pipe. In lines over 6" it is possible for the rod to double up, marcel, and kink. While coiled rods are a must for sharp bends, they are far heavier than Flexicrome Rods. For instance, 150' of Coiled Rod weighs 240 lbs., whereas the same length of Flexicrome Rod weighs 55 lbs. For distances over 150' the inconvenience of handling, and strain on machine, outweigh any advantages.

## Coiled Rods for Connection to Flexicrome Rods

Where a city has only a small amount of this work, Coiled Rods in short sections can be connected to the City Flexicrome Rods and turned by a regular Power Drive.



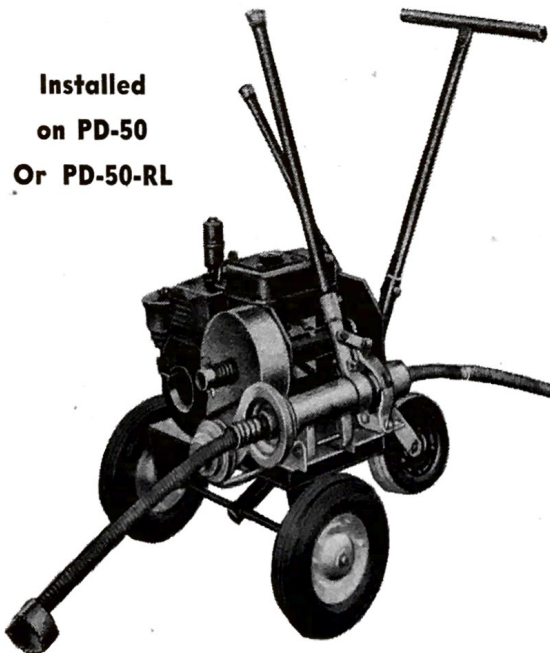
PDX-5 PAT. PENDING



## FLEX-SPEED DRIVE ATTACHMENT

Converts Either PD-50-RL or PD-50 Power Drive Into Dual Purpose Machine

Installed  
on PD-50  
Or PD-50-RL

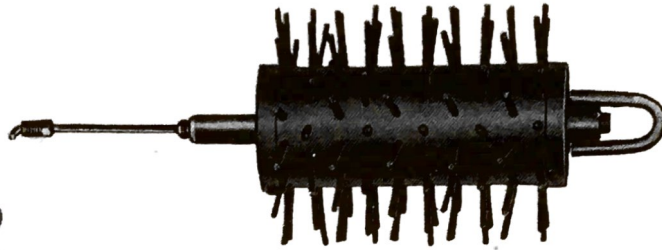
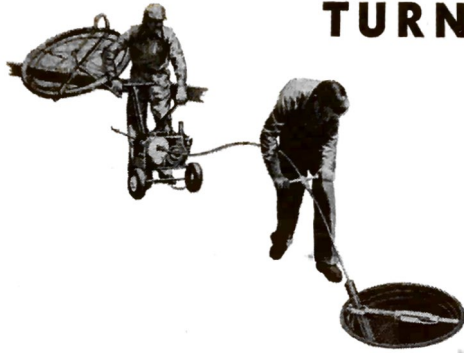


The ability to rotate Flexicrome Straight Rods remains unaltered. The attachment rotates coiled rods at three speeds up to 500 p.r.m. A fast gripping chuck permits rapid advancement of the rods into sewer, and when installed on a Quick Reverse Power Drive, they can be rotated either right or left. The Handle shown on the Attachment controls the opening and closing of chuck as well as the turning of Coiled Rods.

## TO ORDER FLEX-SPEED DRIVE

Attached on an Instant Reverse Power Drive, use Cat. No. PDX-50-RL  
To order attached to Regular Power Drive, specify PDX-50.  
Flex-Speed Drive Attachment only Cat. No. PDX-5.

# TURN TYPE PORCUPINE



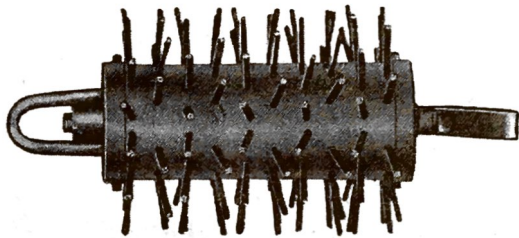
FOR PIPE  
SIZES:  
6" No. TP-1  
8" No. TP-2  
10" No. TP-3  
12" No. TP-4

## For Light Cleaning Jobs—

Turning the Porcupine on a string of rods can often restore the Normal Flow quickly and simply. It is a good tool when deposits are light. (For medium or heavy deposits use Bucket Machines.) To remove sand or silt, use water from a fire hose and work with the flow. Bristles churn deposits and jetting water washes them down the line. Grease and small roots can also be removed with the Porcupine.

## As A Finishing Tool—

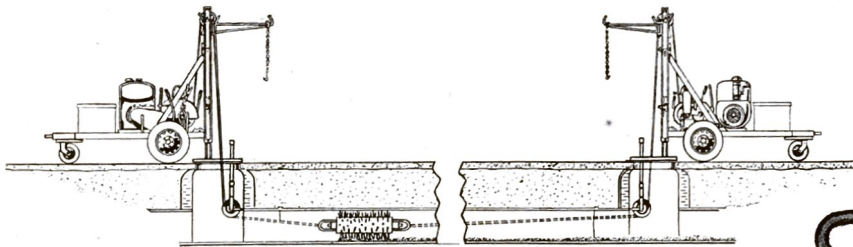
The Porcupine is made to the exact i.d. so that it will clean the pipe to original capacity. Other cleaning tools such as Corkscrews and Buckets are undersized so that by using them for the heavy work and following with a Porcupine, you do a thorough cleaning job.



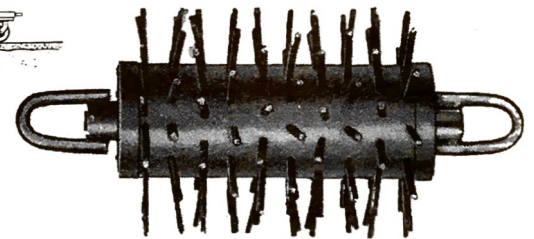
## Can Also Be Used As A PULL TYPE

A shackle comes with the Turn Type Porcupine to replace the adaptor rod used for turning. (See illustration at left.)

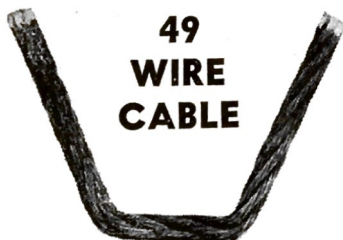
# PULL TYPE PORCUPINES



## For Use With Bucket Machines



FOR PIPE  
SIZE: 12" No. PO-4  
6" No. PO-1 15" No. PO-5  
8" No. PO-2 16" No. PO-6  
10" No. PO-3 18" No. PO-7



49  
WIRE  
CABLE

## TOUGH LONG LASTING BRISTLES—Not A Mere Swab!

Bristles have plenty of scouring action. The 49 wire cable will not flatten out after a few passes through the sewer, as is the case with single wire bristles. When they are worn, the bristles can be replaced individually, or bristle plates can be changed.





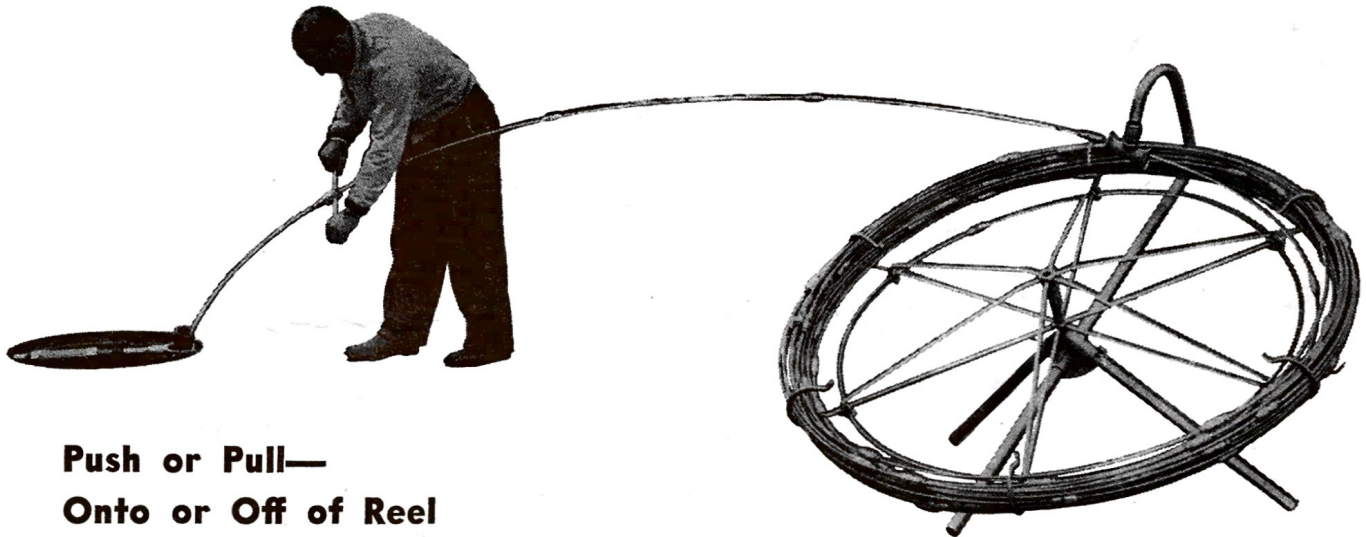
# EZY ROD REEL & STAND

## A TIME AND BACK SAVER

- Stand holds reel at angle eliminating stooping. The rods automatically unhook as you pull them off the reel, and re-hook when they are re-wound. Push the rods into the sewer until they reach the stoppage (often several hundred feet), before disconnecting at the reel for turning.
- TRAILER MOUNTING: The Reel Stand has a Mounting Plate matching the Mounting Base provided on the "Flexible" Carry-All Trailer.
- TRUCK MOUNTING: Simply by drilling holes for the Reel Stand Mounting Plate, truck mounting can be accomplished. Location depends on type of truck and individual preference. They have been mounted on top, under the truck bed, or on the side panel.



EZY ROD REEL.....No. EZ-1  
EZY ROD STAND.....No. EZ-2



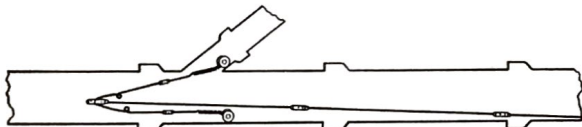
**Push or Pull—  
Onto or Off of Reel**

## LATERAL LOCATOR

**Quickly Locates Lost  
Manholes or Laterals**



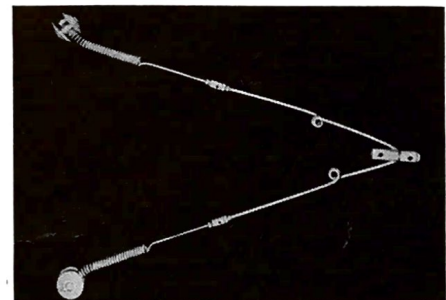
Prongs should be in a forward position for locating upstream.



Prongs should be in rear position for locating downstream.

No. LL-1

### TO USE:



Attach Locator to string of rods with prongs in forward or rear position, as indicated at left, after the main line has been cleaned. Once the Locator has "found" the "lost" manhole or "lateral," just count the number of rods in the line to determine distance. When feeding the tool into line, unwanted locations can easily be by-passed by rotating the tool one-quarter turn.

# STANDARD CITY SET

Quan.	Cat. No.	Description	Cat. Page	Quan.	Cat. No.	Description	Cat. Page
107 ea.	RC-1	Flexicrome Rods 5/16" diam. x 3'.....	6	1 ea.	CS-11	Sq. Bar Corkscrew 4" pipe size .....	8
2 ea.	R -1	Ratchet Turning Handles .....	10	1 ea.	CS-13	Sq. Bar Corkscrew 6" pipe size .....	8
1 ea.	PT-1	Pull-out Tool .....	9	1 ea.	CS-14	Sq. Bar Corkscrew 8" pipe size .....	8
1 ea.	AH-1	Assembly-Turning Handle .....	10	1 ea.	RG-1	Rod Guide .....	11
1 ea.	AT-1	Assembly Tool .....	10	1 ea.	GJ-1	Rod Guide Jack .....	11
1 ea.	BH-1	Bar Turning Handle .....	10	1 ea.	FJ-1	Adjustable Foot Jack .....	11
1 ea.	PU-1	Pick-up Tool .....	9	1 ea.	EZ-1	EZY Rod Reel .....	17
1 ea.	CS-2	Rd. Stock Corkscrew 2" O.D. ....	8	1 ea.	EZ-2	EZY Rod Reel Stand .....	17

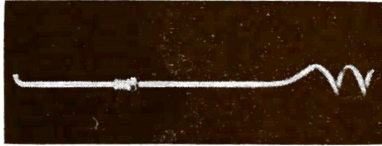
The only thing left to complete the set is a few lengths of 1 1/2-inch iron pipe for the Rod Guide.

## FLEXICROME RODS 5/16" DIAM. x 3'

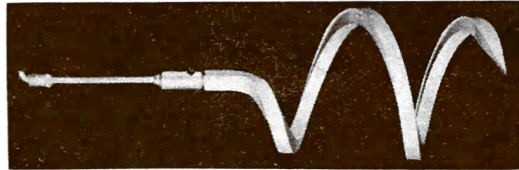


## EZY ROD REEL EZY ROD REEL STAND

### RD. STOCK CORKSCREW 2-IN. O.D.



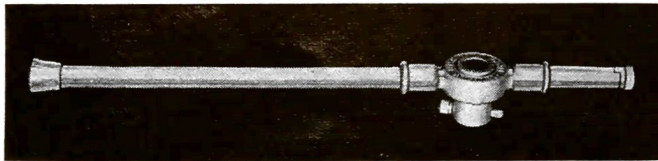
### SQ. BAR CORKSCREW



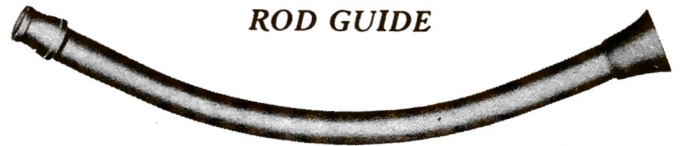
### PICK-UP TOOL



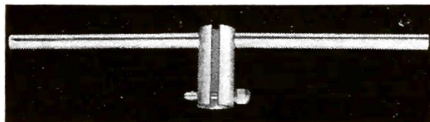
### RATCHET TURNING HANDLES



### ROD GUIDE



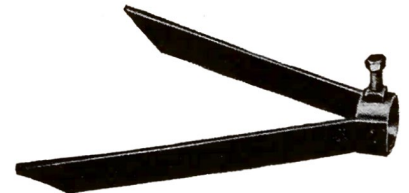
### PULL-OUT TOOL



### ROD GUIDE JACK



### ADJUSTABLE FOOT JACK



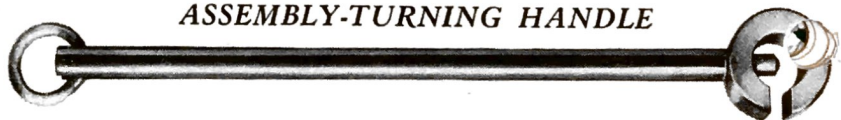
### ASSEMBLY TOOL



### BAR TURNING HANDLE



### ASSEMBLY-TURNING HANDLE



# POWER RODDING SET



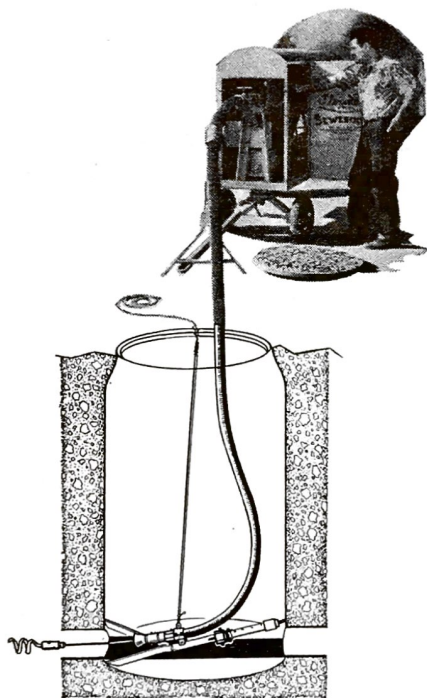
**3 H.P. POWER DRIVE**

NO. PD-50-RL

Quantity	Cat. No.	Description	Cat. Page
1 ea.	PD-50-RL	Instant Reverse Power Drive .....	14
107 ea.	RC-1	Flexicrome Rods 5/16" x 3-ft. ....	6
1 ea.	CS-2	2" Round Stock Corkscrew .....	8
1 ea.	CS-11	4" Sq. Bar Corkscrew .....	8
1 ea.	CS-13	6" Sq. Bar Corkscrew .....	8
1 ea.	CS-14	8" Sq. Bar Corkscrew .....	8
1 ea.	PU-1	Pick-up Tool .....	9
2 ea.	R-1	Ratchet Turning Handles .....	10
1 ea.	PT-1	Pull-out Tool .....	9
1 ea.	BH-1	Bar Turning Handle .....	10
1 ea.	AH-1	Assembly-Turning Handle .....	10
1 ea.	AT-1	Assembly Tool .....	10
1 ea.	EZ-1	EZY Rod Reel .....	17
1 ea.	EZ-2	EZY Rod Reel Stand .....	17
1 ea.	RG-1	Rod Guide .....	11
1 ea.	GJ-1	Rod Guide Jack .....	11
1 ea.	FJ-1	Adjustable Foot Jack .....	11

The only thing left to complete the set is a few lengths of 1½" iron pipe.

# Seweroder SET



**TRAILER MODEL**

**Seweroder**

No. SR-1

Quantity	Cat. No.	Description	Cat. Page
1 ea.	SR-1	Seweroder, Trailer Model .....	30
185 ea.	RC-2	Flexicrome 5/16" diam. x 39" .....	6
1 ea.	SG-1	18-ft. Seweroder Rod Guide .....	33
1 ea.	SG-2	7-ft. Seweroder Rod Guide Extension .....	33
1 ea.	RS-1	Seweroder Rod Stand .....	33
1 ea.	GB-1	Seweroder Rod Guide Bell .....	33
1 ea.	SB-1	Seweroder Guide Brace .....	33
1 ea.	PU-1	Pick-up Tool .....	9
1 ea.	BH-1	Bar Turning Handle .....	10
1 ea.	AH-1	Assembly-Turning Handle .....	10
1 ea.	AT-1	Assembly Tool .....	10
1 ea.	CS-2	2" Round Stock Corkscrew .....	8
1 ea.	CS-11	4" Sq. Bar Corkscrew .....	8
1 ea.	CS-13	6" Sq. Bar Corkscrew .....	8
1 ea.	CS-14	8" Sq. Bar Corkscrew .....	8
1 ea.	RT-0	4" Root Saw .....	9
1 ea.	RT-1	6" Root Saw .....	9
1 ea.	RT-2	8" Root Saw .....	9
1 ea.	RT-3	10" Root Saw .....	9

## CLEANING TOOLS

Unless we know your particular cleaning problem it is difficult to make specific recommendations. Corkscrews are basic cleaning tools and should be included in every Set. There is a "Flexible" tool for every type of cleaning problem. A study of the uses of the various tools will enable you to pick out those best suited for your specific needs.

# CARRY-ALL TRAILER

## CARRIES COMPLETE EQUIPMENT FOR RODDING SEWERS



ALL STEEL — LIGHT WEIGHT

### ADVANTAGES

1. Truck is freed for other jobs!
2. Fully loaded it can easily be pushed into place, on the job, by hand!
3. Light in weight so that it tows easily, at legal speeds, behind any car or truck!
4. Designed to carry a complete "Flexible" unit, including Power Drive, plus ample space for auxiliary

equipment such as: Hose, Picks, Shovels, Buckets, Barricades, etc.

5. Eliminates returns to the yard for forgotten tools, that mysteriously disappear. These savings alone, plus Lost Tools will more than pay for the Trailer in one year.

CAT. No.—TR-1



### SPECIFICATIONS

1. Angle steel frame heavily reinforced.
2. Mounted on two 600 x 16 pneumatic tires.
3. Swivel front rubber wheel for easy positioning.
4. Heavy Springs for fast easy trailing.
5. Adjustable towing tongue.

6. Solid Mounting Brackets for EZY Rod Reel and Stand.
7. Easy loading platform for Power Drive.
8. Large waterproof Tool Box with lock hasp.
9. Open tool box for bulky equipment.
10. Pipe carrier underneath for Guide Pipes.

# "FLEXIBLE "EZY-TITE" PIPE PLUGS

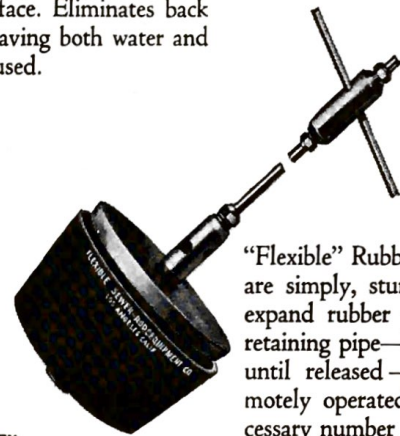
Can be installed into either up or downstream pipes from street surface. Eliminates back filling of lines when Water Power Cleaning Methods are used . . . saving both water and time. CAUTION: Do not install downstream unless Guide is used.

## USED FOR:

- TESTING SEWERS
- EMERGENCY BREAKS
- DIVERTING FLOW
- RELINING MANHOLES
- REPAIRING BROKEN PIPES
- PLUGGING DROP MANHOLES

Simply inserted, quickly, easily used, "FLEXIBLE" Rubber Pipe Plugs are invaluable sewer line maintenance repair tools. A few turns on the "FLEXIBLE" Steel Rod and the Pipe Plug seals securely for plugging-off line breaks, or diverting flow.

May be actuated from top of manhole or inside manhole, as illustrated, for stopping-off main lines, branch lines or side inlets. The Plugs are exceptionally useful in open trench work, perfect for keeping sand and rocks out of steel or clay pipe lines during repair or renewal operations. Diverting side inlet flow in manholes makes it possible for men to work lower lines. Used in fast, temporary repairs, the Plugs eliminate unnecessary trench pumping.

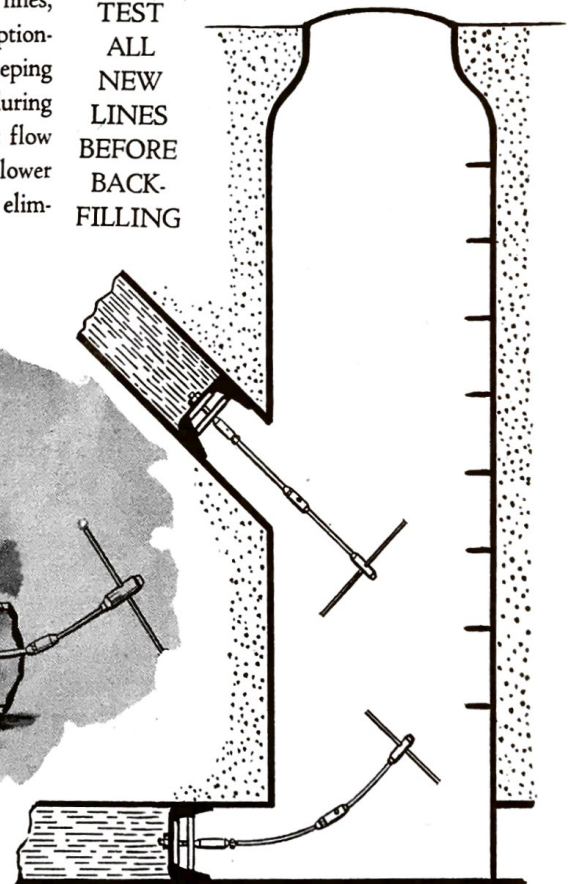
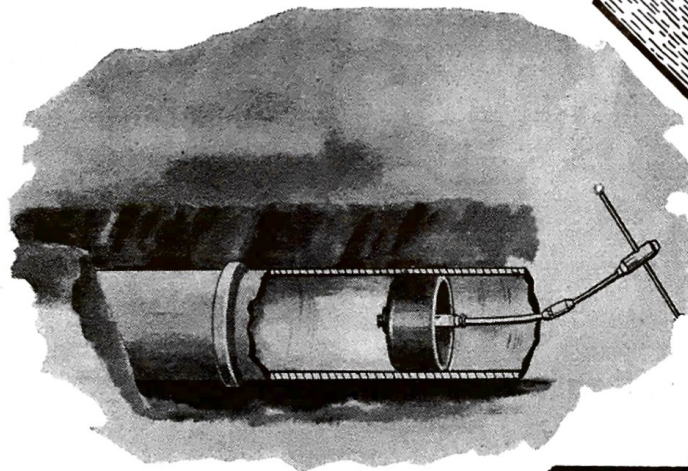


"Flexible" Rubber Pipe Plugs are simply, sturdily made—expand rubber walls against retaining pipe—hold securely until released—may be remotely operated by any necessary number of "Flexible" Steel Rods (see illustrations)—will give years of service.

## ORDER BY NUMBER

FOR PIPE SIZES:			
4"	No. ET-0	12"	No. ET-4
6"	No. ET-1	14"	No. ET-5
8"	No. ET-2	15"	No. ET-6
10"	No. ET-3	16"	No. ET-7
		18"	No. ET-8

TEST ALL NEW LINES BEFORE BACK-FILLING

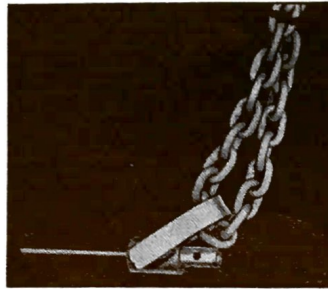


ALL EZY-TITE PIPE PLUGS now have a thrust ball bearing between friction points for easier, quicker, and tighter installing.

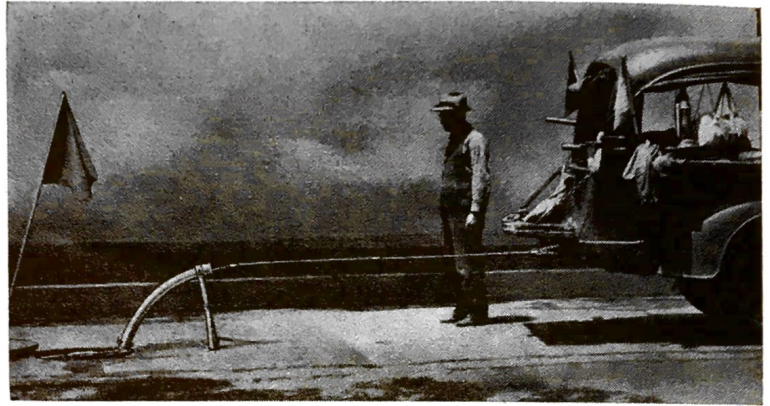
# "FLEXIBLE" ROD LINE PULLER AND ROD PULLER HITCH

## ROD PULLER HITCH

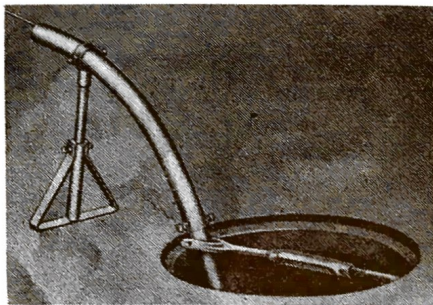
No. RP-2



## For Removing A String Of Rods From The Sewer Quickly, After The Line Has Been Cleaned



## ROD LINE PULLER



No. RP-1

Particularly on long cleaning runs, pulling a string of rods out of the sewer by hand can be hard, slow work. By using the Rod Puller Hitch and the Rod Line Puller, the rods can be attached to a car or truck and pulled out of the line in minutes.

## TO USE:

Set up the curved guide tube over the end of the Rod Guide Pipe then support with the Triangle Brace. Attach the last Rod to the truck by slipping the coupling in the Rod Puller Hitch as shown. The Rod Line Puller prevents any possibility of kinking the rods on the manhole rim. Where possible, it is advisable to remove the cleaning tool from the string of rods at the lower manhole before pulling out, to reduce the possibility of getting stuck. If you do get stuck, increase the pull gradually and evenly. Jerking is a rod abuse that reduces rod life and could cause breakage in the line.

## LOOP TOOL



CAT. NO. LT-1

Attaches on the end of Flexicrome Rods for pulling cable through the sewer line. Particularly needed when stringing cable for Bucket Machine or Sewer Winch cleaning.

## SWIVEL LOOP TOOL



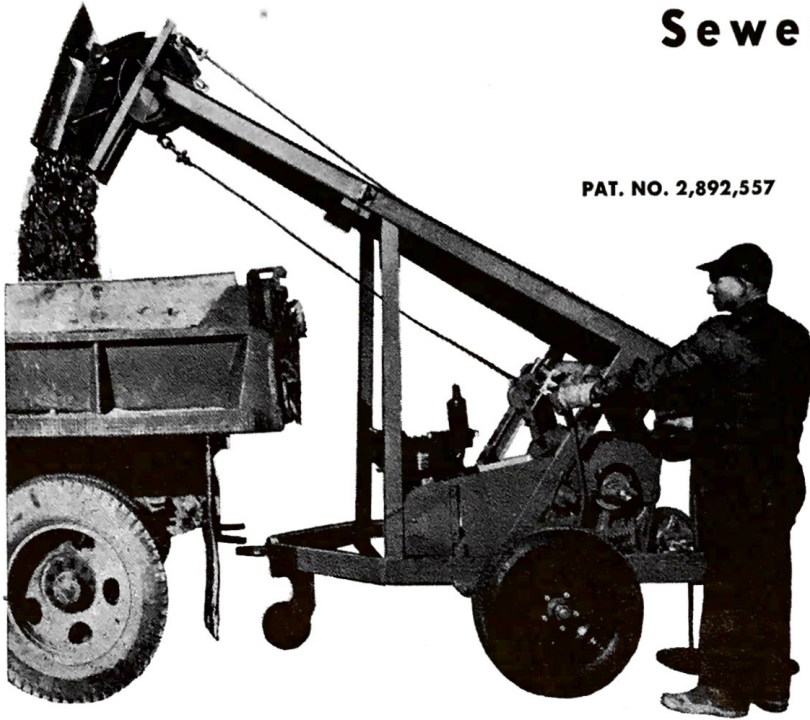
CAT. NO. LTS-1

Used for same purpose as regular Loop Tool, but swivel relieves the cable twist which often occurs in pulling wire rope through the sewer.

# NEW "Flexible" TRUCK-LODER BUCKET MACHINE

Sewer to truck in  
.....  
60 seconds

PAT. NO. 2,892,557



- No More Street Dumping
- No More Unsanitary Sewer Deposits or Drippings on Street.
- Make Bucket Machine Cleaning a 2 Man Operation.

Has All Mechanical Features of Regular Bucket Machine

**PLUS DIRECT TRUCK LOADING**

Available in 9, 16 and 25 h.p. Models

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## INSTANT DUAL SPEED TRANSMISSION

Instant choice of speed and power to fit any sewer condition.

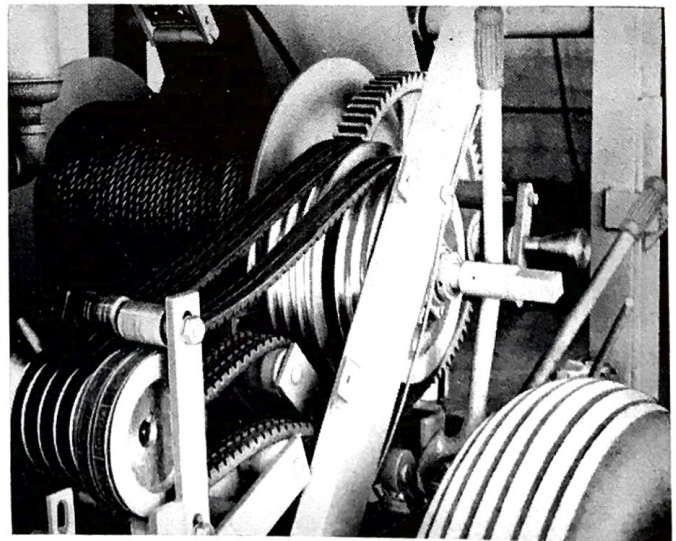
**SINGLE LEVER CONTROL.** Push forward for hi-speed, pull back for lo-speed; release handle and it returns to neutral automatically. Change from one speed to another instantly under full power.

**SPEED RATIOS:** Hi-Speed 2.75 to 1. Lo-Speed 1.80 to 1.

Complete safety for operator, machine, and sewer is assured. Power transmission is supplied by belts that slip on overload. No gears to clash or maintain. A novel invention, incorporating patented Safety Booster Clutch features.

Available at extra cost on all models.

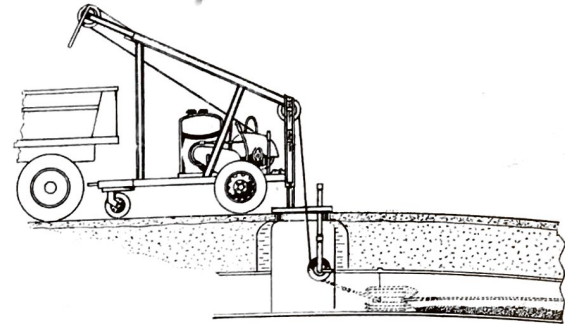
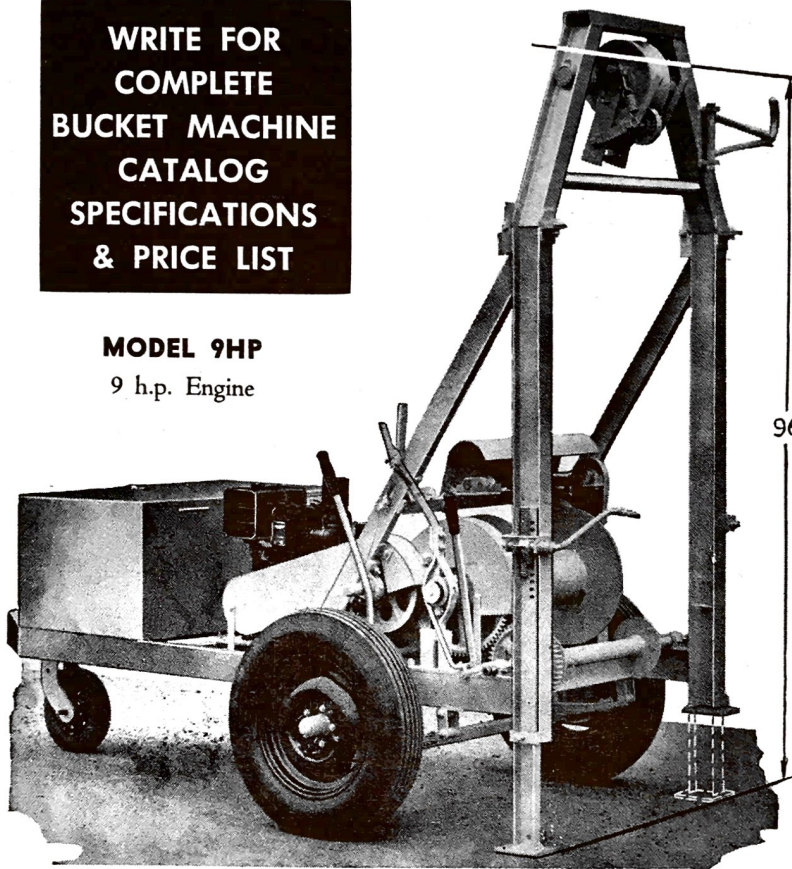
**PAT. PEND.**  
On Dual Speed Transmission



# "FLEXIBLE" POWER

**WRITE FOR  
COMPLETE  
BUCKET MACHINE  
CATALOG  
SPECIFICATIONS  
& PRICE LIST**

**MODEL 9HP**  
9 h.p. Engine

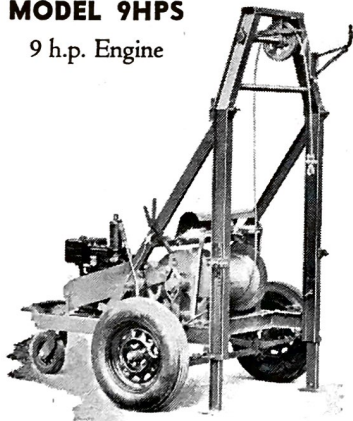


## **A Few Exclusive Features**

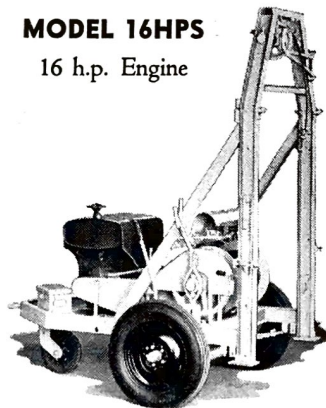
1. Safety Booster Clutch
2. Instant Leg Adjustment
3. Back Lash Mechanism
4. Low Folding Boom
5. "I" Beam Uprights
6. Fool Proof Level Wind

*All Models Have Frame Width of 42 Inches with Balanced Center Weight on Two Wheels.*

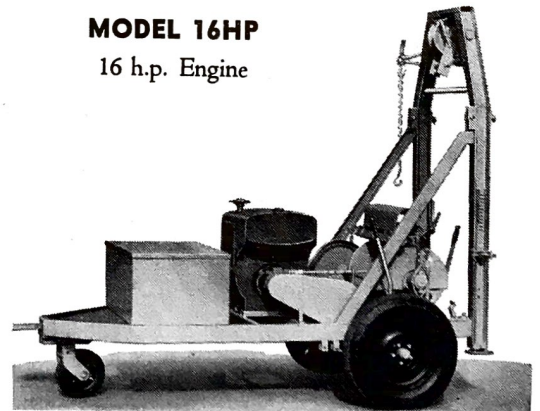
**MODEL 9HPS**  
9 h.p. Engine



**MODEL 16HPS**  
16 h.p. Engine



**MODEL 16HP**  
16 h.p. Engine



*Transmission Models Below, Not Shown*

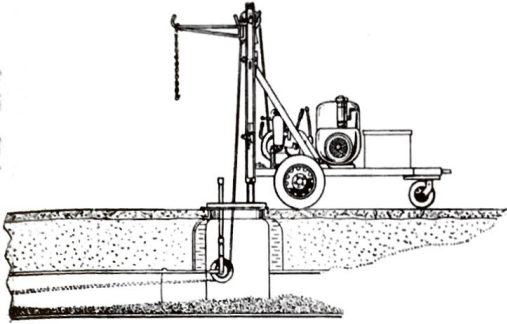
**MODEL 16HPT**  
16 h.p. Engine

**MODEL 16HPST**  
16 h.p. Engine

**MODEL 25HPT**  
25 h.p. Engine



# BUCKET MACHINES



**WRITE FOR  
COMPLETE  
BUCKET MACHINE  
CATALOG  
SPECIFICATIONS  
& PRICE LIST**

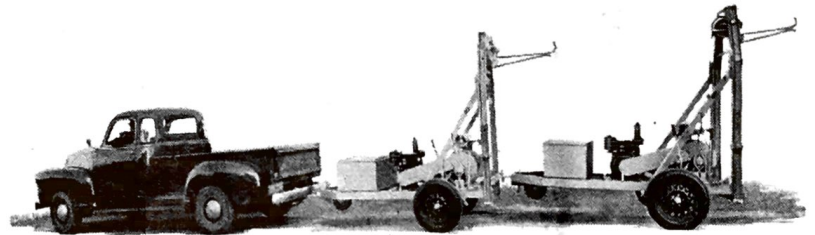


*Perfect Balance*



**We Build Special Models To Order**

*Tandem Towing*



## SAFETY BOOSTER CLUTCH

### AND SURE-LOCK CLUTCH

**NOW STANDARD EQUIPMENT  
ON ALL MODELS**

**PAT. NOS. 2,505,277 — 2,632,335**

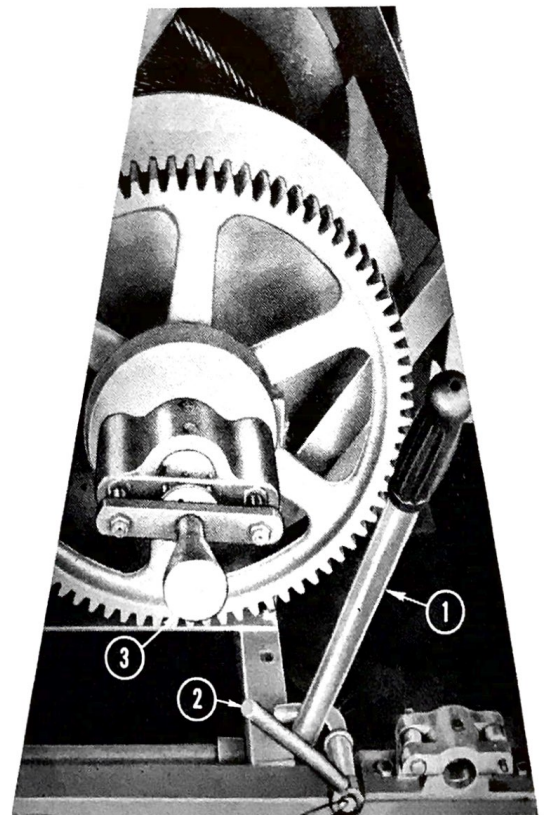
#### **SAFETY BOOSTER CLUTCH**

#1, the Safety Operating Lever, controls bucket travel. #2 holds tension on the Operating Lever at a pre-determined speed of bucket travel. The tension is adjustable and under overload conditions belts will slip thus protecting pipe and machine. Belts are guaranteed for two years.

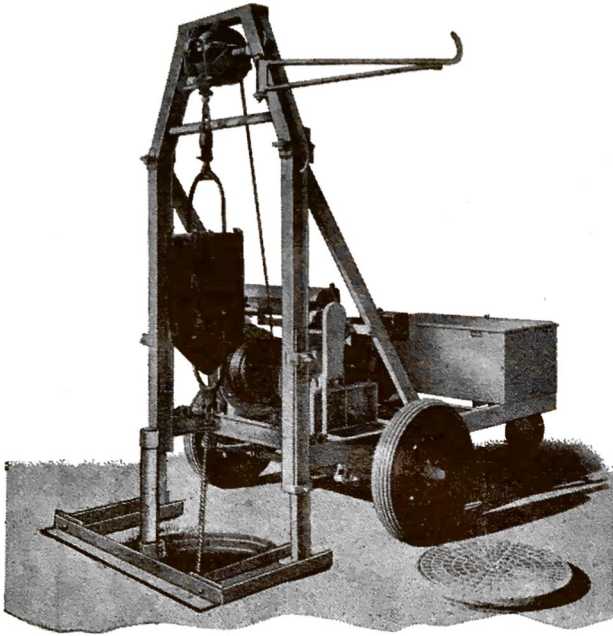
#### **SURE LOCK CLUTCH**

**Positive engagement . . . cannot slip under load  
Eliminates worn dog-jaw problems**

Positive engagement of the Bull Gear Drive to the Cable Drum is accomplished by means of two heavy hardened pins which lock into two sleeved, hardened holes in the Bull Gear. A slight pull and twist on knob #3 disengages the gear; a reverse twist re-engages.



# "SURFACE HUNG" MANHOLE ROLLER



## INSTALLED FROM STREET LEVEL:

Properly installed the lower "V" of the Roller should be just at the top of the sewer pipe so that the cable does not snub as it comes out of the sewer, yet low enough to permit free bucket passage. By means of a measuring rod, this distance can be determined from street surface. Add sufficient extension pipe to the Roller Yoke to drop Roller into proper position. Place Platform firmly under legs of Bucket Machine. Lower Assembly and fasten extension pipe in Chain Vise Pipe Holder.

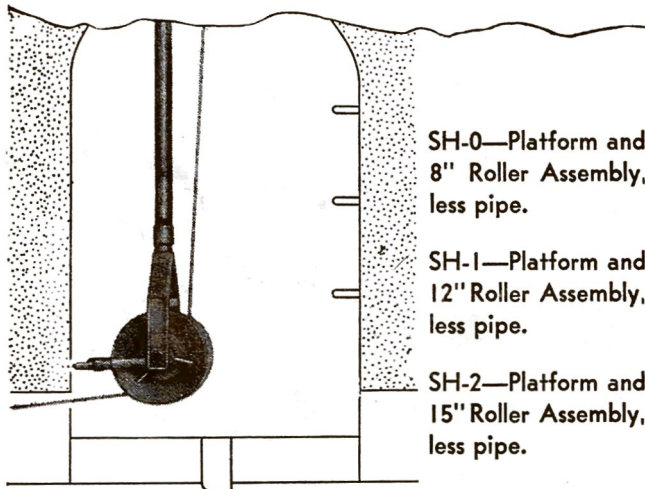
**LOOSE BRICKS** are no handicap if a board is placed in front of the adjustable prongs on the Roller Yoke while working. Rebuild manhole at your convenience.

**FITS ANY MANHOLE:** Because the Roller is supported from the street, manholes or catch basins of all shapes, sizes, and depths can be worked easily.

**WATER IN THE MANHOLE** is no obstacle to installation so long as cable can be drawn through the line.

## PATENT NO. 2,689,705

The Surface Hung Manhole Roller construction is patented. After the platform is positioned under the legs of the Bucket Machine, the pipe supporting the roller can be rotated to any desired degree of a circle without again moving or adjusting the platform. This is an exclusive "Flexible" feature.



SH-0—Platform and 8" Roller Assembly, less pipe.

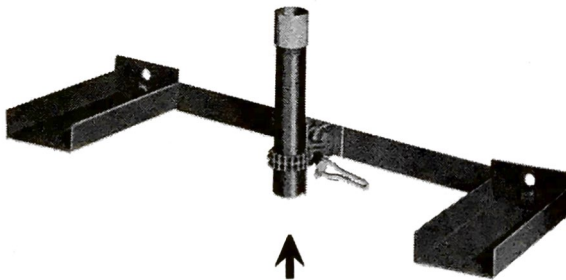
SH-1—Platform and 12" Roller Assembly, less pipe.

SH-2—Platform and 15" Roller Assembly, less pipe.

## USER FURNISHES:

Necessary 2-inch pipe for 8, 12, and 15-inch Roller.

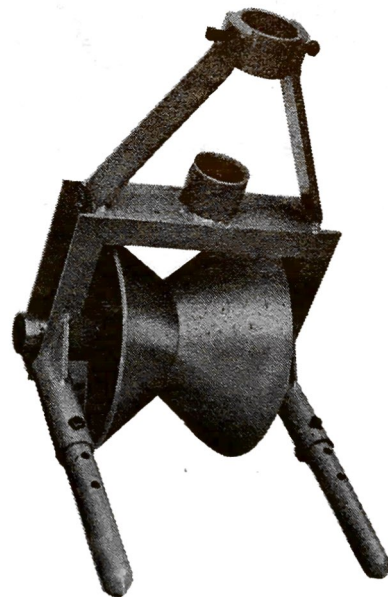
## PLATFORM



## Note Chain Vise Pipe Holder:

Easily adjustable to pipe sizes or to grip pipe couplings.

## MANHOLE ROLLER



## Can Be Used With Any Make Bucket Machine:

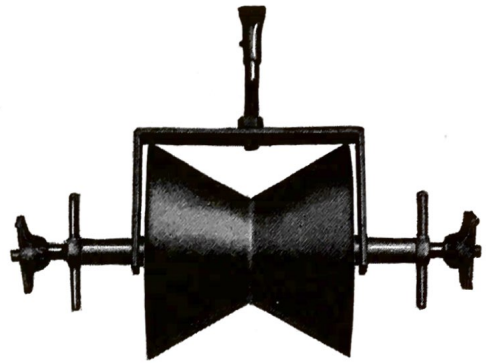
When ordering for other than a "Flexible" Bucket Machine, specify the dimensions of leg spread.

# ROLLER MANHOLE JACKS

**Cat. No. MR-0** — 8" Roller—For undersize manholes, and buckets up to 12-inch diameter.

**Cat. No. MR-1** — 12" Roller — For standard manholes up to 18-inch pipe. Will handle up to 22-inch pipe, but larger size roller jack recommended.

**Cat. No. MR-2** — 15" Roller — For any size bucket and for large manholes. Being larger it is not so easily adjusted as the REGULAR.



Large and Regular are furnished with 28x2x1-7/16 SHELBY TUBING SHAFTS. Shorter or longer shafts may be purchased in exact lengths desired from your steel supply houses for very small or extra large man holes.

## SURFACE-HUNG MANHOLE ROLLER

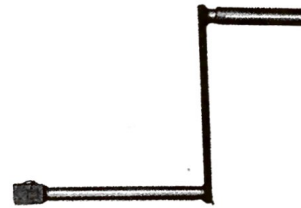
The "SURFACE-HUNG" MANHOLE ROLLER has been specified on practically all orders since it was introduced. The Roller Manhole Jacks illustrated above will probably be dropped from future catalogs because the only justification for buying them is the slightly lower cost.



### C. I. SLANT MANHOLE JACK

NO. SJ-1

### EMERGENCY HANDLE



NO. CT-1

Each Bucket Machine has a stud on the spur gear shaft to engage the Emergency Handle for manual turning. Needed in lowering and adjusting the Roller Jacks.

### HAND HOOKS

NO. HH-1



NO. HH-2

These Oil tempered steel Hand Hooks are light in weight but strong enough to handle the heaviest bucket.

Channel Iron Slant Manhole Jack Designed to be used to pull the bucket into the load. Install at more than 45° and bottom end will never pull up in operation.

## CABLE SWIVELS

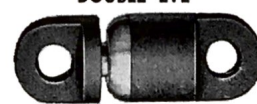
EYE AND SHACKLE



NO. CZ-1



DOUBLE EYE



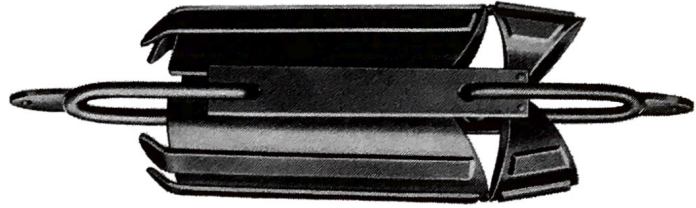
NO. CZ-2

Cable Swivels should always be used when pulling cable under tension. The swivel relieves the natural twist and prevents kinking. All Cast Steel: waterproof, with greased packed TIMKEN ROLLER BEARINGS. "Flexible" Cable Swivels will swivel under any Bucket machine pull, whereas friction types will not.

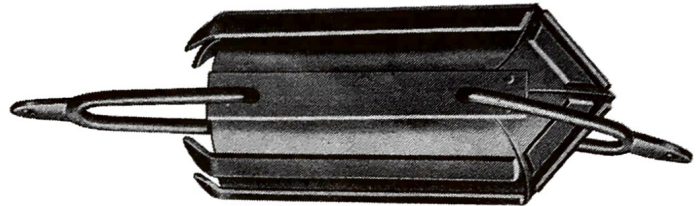
# POWER MACHINE BUCKETS

**10% Larger, Opened**

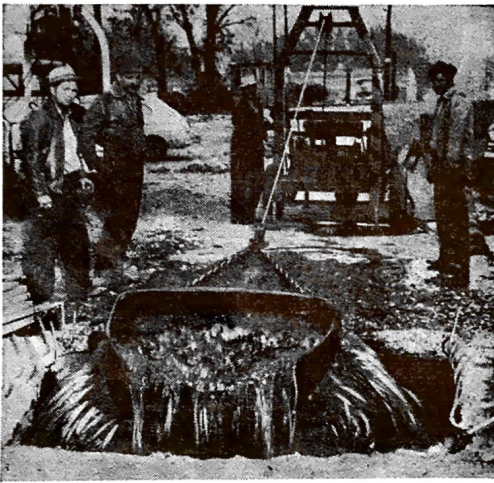
When Flexible Buckets enter the sewer line they are 10% larger than when closed. This reduced size is important as it will automatically pull out of a smaller pipe space than it was pulled into. This expansion feature also allows the loaded bucket larger area when opened for dumping the load. We stress the importance of three runners on each Bucket Body and three reinforcing braces on each lip of the clam mouth. As we make every part of our buckets in our own shop and because we have made more than any other manufacturer we feel we have the "know how" and past customer's experience to give better value.



OPEN



CLOSED



A SPECIAL BUCKET used by the City of Salt Lake to clean several miles of storm drains completely.

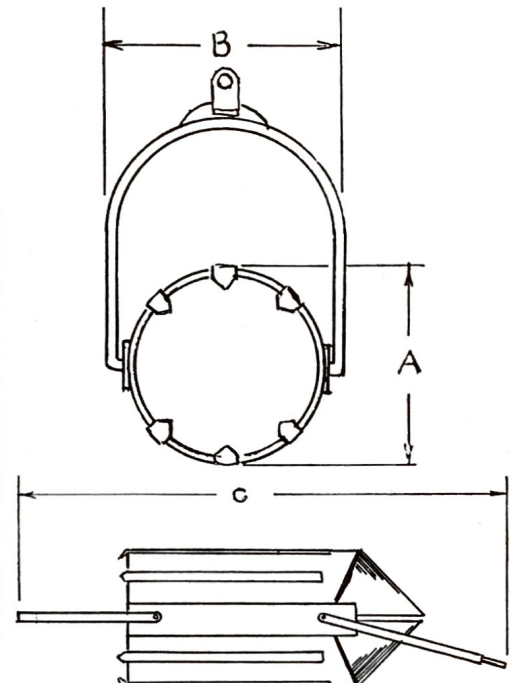
## CLEAN YOUR SEWERS EVERY YEAR ?

We do not mean to convey the idea that every sewer should be cleaned every year by Bucket Machines. Yearly rodding however determines the need for Bucket Machines. Sluggish sewers eventually result in **EMERGENCY STOPPAGES**; promoting the growth of Algae and the pre-digestion of sludge.

## SPECIFICATIONS

FLEXIBLE (CLAM TYPE) BUCKETS

No.	Bucket Sizes	"A" Bucket Diameter	"B" Bale Spread	"C" Overall Length	Capacity Cu. Ft.	Approx. Weight
B-1	6" Pipe	4-1/8"	5-5/8"	27-1/4"	.1283	17 1/2
B-2	8" Pipe	5-5/8"	7-5/8"	28-1/2"	.2549	24 1/2
B-3	10" Pipe	7-1/4"	9-3/4"	34-1/2"	.4538	36
B-4	12" Pipe	8-5/8"	11-1/2"	34-1/2"	.6372	42
B-5	15" Pipe	10-1/2"	13"	38-3/4"	.9711	60
B-6	18" Pipe	12-5/8"	15"	43-3/4"	1.5886	78
B-7	22" Pipe	15"	17"	47-3/4"	2.3142	92 1/2
B-8	24" Pipe	18"	21-3/4"	51"	3.8439	135
B-9	30" Pipe	21"	25"	57"	5.4000	190
B-10	36" Pipe	24"	30"	64"	8.5000	297



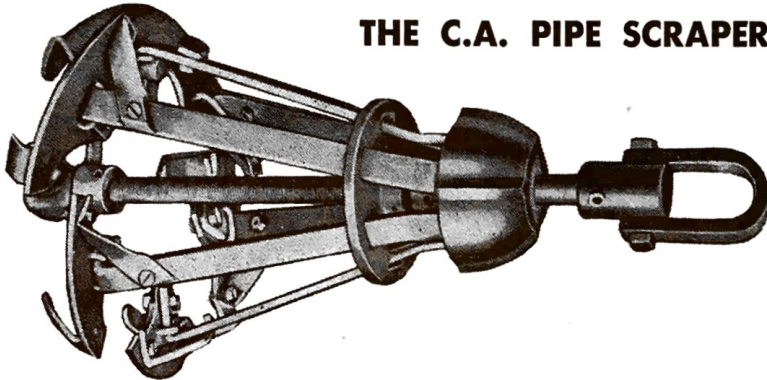
LARGER BUCKETS MADE TO ANY SIZE OR SHAPE

# RECOMMENDED BUCKET MACHINE ACCESSORIES:

1 each	HH-1	Short Hand Hook	1 each	B-1 to B-7 Buckets (6" to 22" sizes)
1 each	HH-2	4 ft. Hand Hook	1 each	CT-1 Crank Handle
1 each	SJ-1	C.I. Slant Manhole Jack	*1500'	PSC-1 1/2" Plow Steel Cable
1 each	SH-1	12" Surface Hung Manhole Jack	*750'	PSC-2 1/4" Plow Steel Cable
1 each	SH-2	15" Surface Hung Manhole Jack	1 each	CZ-1 Cable Swivel

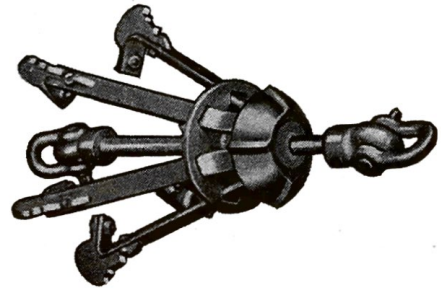
Use Catalog Numbers when ordering. \* 1/2" and 1/4" Plow Steel Cable may be ordered in any length desired.

**BUCKETS ALONE ARE NOT CURE ALLS**, special jobs need special tools. Illustrated and briefly described below are "Flexible" tools designed for use with Bucket Machines to meet special problems. For complete details see the page of the catalog where the tools are described in detail.



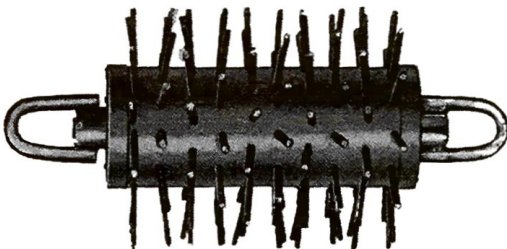
## THE C.A. PIPE SCRAPER

The C.A. PIPE SCRAPER (Collapsible-adjustable) is made in three sizes, 8" to 16", 10" to 22," and 22" to 36." An excellent tool for roots and hard deposits. (See page 40)



**GOUGER BLADES** are also furnished for cutting and ripping up large diameter roots or scarifying heavily incrustated pipe. Strongly constructed for difficult dragging work. (See page 41)

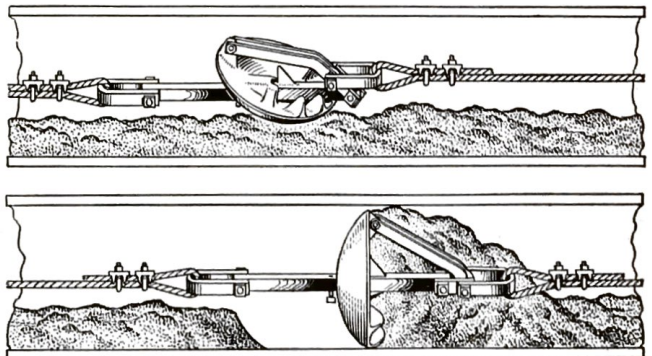
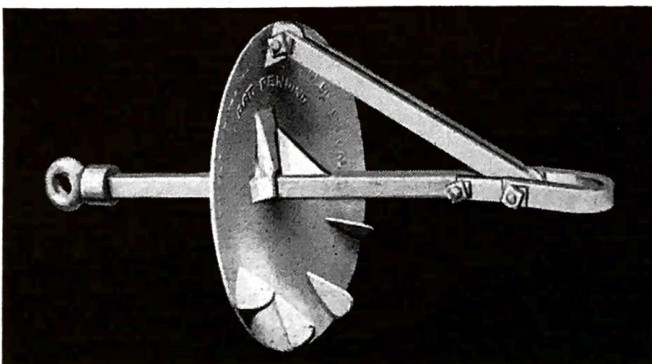
## THE PORCUPINE



Strictly a finishing tool. To be used to scarify grease lines after being worked by Power Bucket Machines or "Flexible" Steel Rods. Also to remove the lacy overhanging roots not removed by cutting tools. Bristles are replaceable.

Garbage grindings such as egg shells aided by grease and detergents tend to solidify on the pipe wall. Porcupines are particularly suitable for removing this type of deposit. (See page 16)

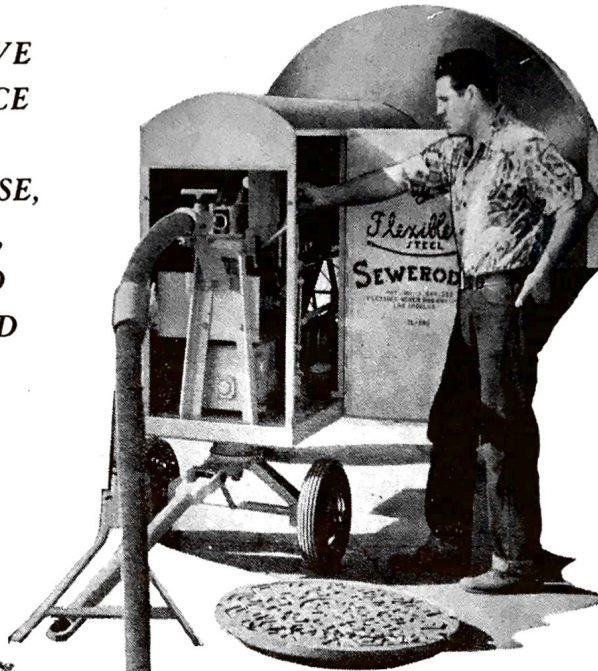
## THE HI-WAY CULVERT SCRAPER



To be used particularly on storm drains, to remove rock and boulders too large for buckets to handle; and when dry, such things as slime or rubber refuse of a sticky nature, that by scraping will flow when loosened. The best tool for open end culverts. (See page 38)

# THE "FLEXIBLE" SeweRodeR

PREVENTATIVE  
MAINTENANCE  
FOR  
ROOTS, GREASE,  
SILT, SAND,  
ALGAE AND  
PREDIGESTED  
SLUDGE



1. *IT PUSHES —  
IT PULLS —  
IT ROTATES.*
2. *WORK AT THE  
STREET LEVEL*  
Rarely necessary to enter  
the manhole.
3. *EASY, QUICK SET-UP*
4. *PREVENTATIVE  
MAINTENANCE*  
Eliminates night, holiday and  
bad weather work.

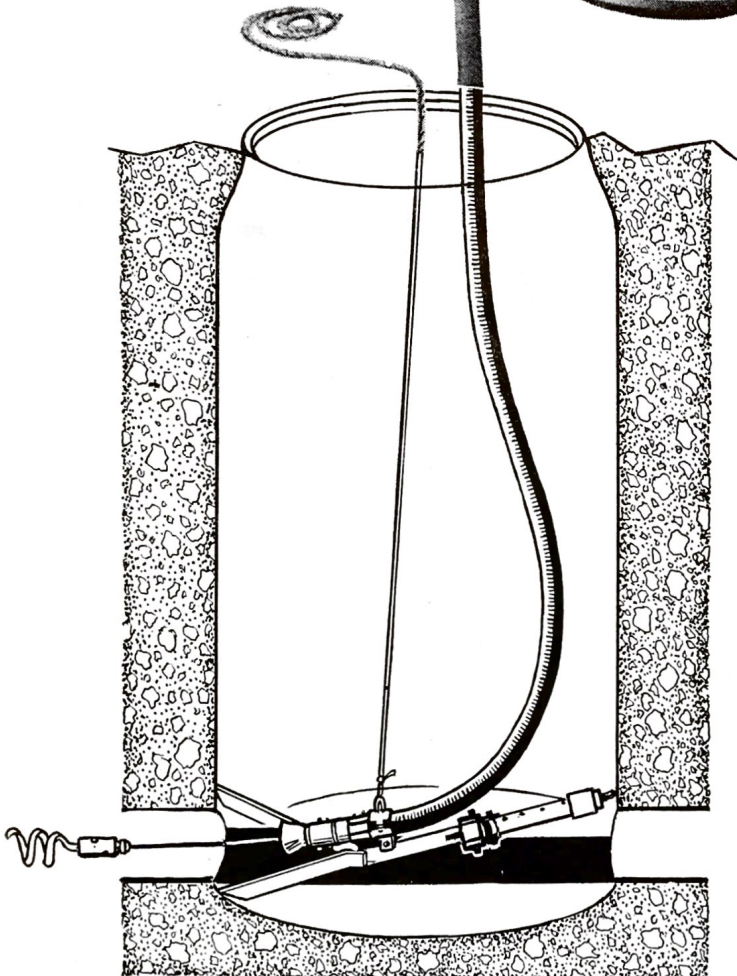
## WHY THE SeweRodeR?

Many cities report cleaning 3,000 feet of pipe per day. Cleaning at this rate is equal to cleaning at about .03 cent a foot! Often the cost of the SeweRodeR can be saved in the first six months because of the reduction in sewer maintenance costs. The increased cleaning capacity of the SeweRodeR permits preventative maintenance work to be carried on with a minimum of labor and eliminates costly emergency work. Furthermore, when torrential rains and floods come, you have reserve cleaning capacity.

All the cleaning tools used with Hand Turning or Power Drive equipment can be used with the SeweRodeR. Ideal for use in congested areas because it requires an overall working space of only 18 feet behind the manhole, and there are no exposed rods laying on the street.

## HOW THE SeweRodeR REDUCES CLEANING TIME!

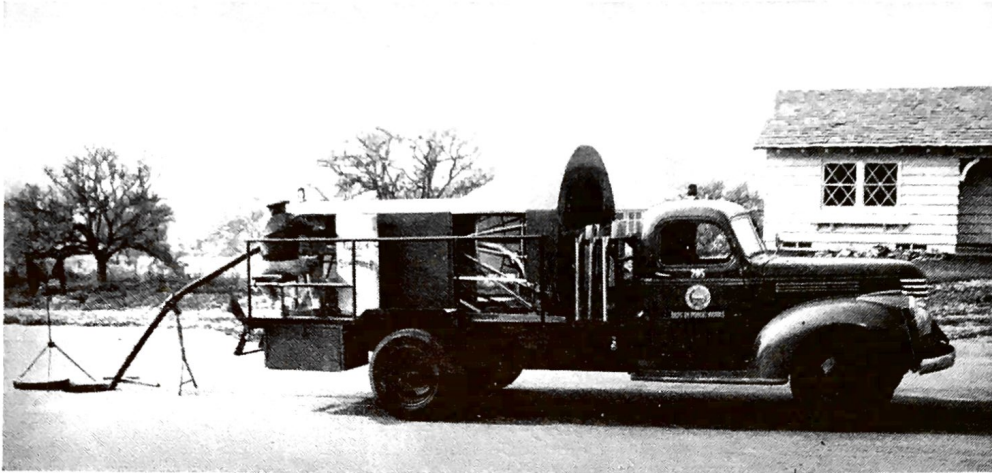
1. **900 Feet of Rods Self-Contained in SeweRodeR:**  
Up to 900 feet of Flexicrome 39" Rods are self-contained on the Rod Reel, ready for instant use. They are never touched by the operator during the entire cleaning process.
2. **Rod Motion Control:** Mechanically controls lateral movement of the rods. The Footage Meter tells the operator how far the cutting tool is in the line at all times.
3. **Rod Rotation:** Imparts boring action to the cutting tools, and is accomplished by rotating the Rod Reel. The Reel Clutch and the Rod Reel Brake allow the operator to control the speed of rotation at all times.
4. **Special Rod Guiding Accessories:** (page 33) make the SeweRodeR the best machine for EMERGENCY STOPPAGES because they enable you to start working FASTER than any other method. It just takes a few minutes to connect the Rod Guide to the machine, run the rods through the Guide, and attach the proper cutting tool. The Guide is easily lowered into the manhole and directed into the pipe with a rope.



**Cat. No. SR-1 TRAILER MODEL:** Mounted on four rubber tired wheels for easy towing. Most users prefer this model because its maneuverability, makes close places such as sidewalks, easements, and narrow alleys easily accessible. It also saves tying up a truck while working.

**Cat. No. SRS-1** Identical machine with added convenience of 6-volt Self Starter, Generator and Battery.

# THE "FLEXIBLE" SeweRodeR



## TRUCK MOUNT MODEL

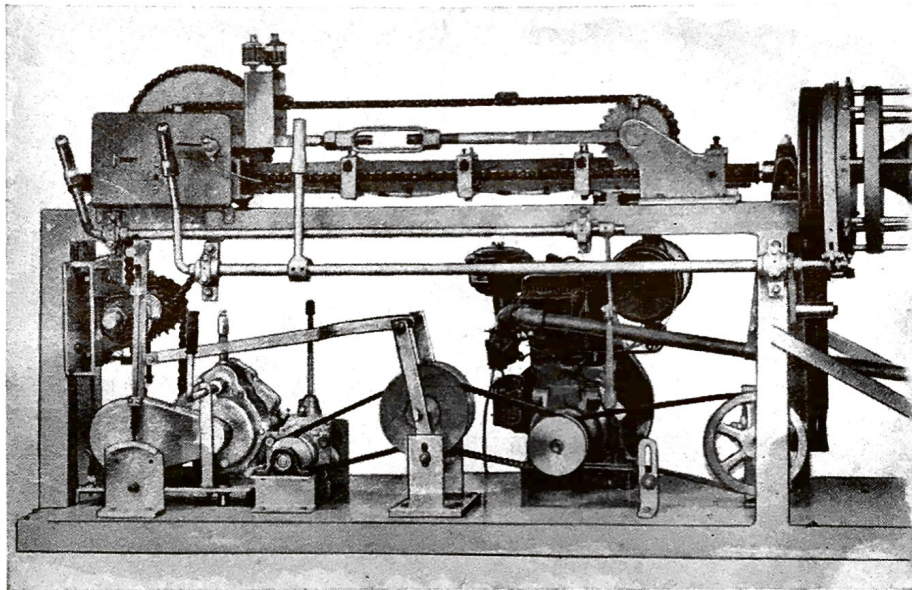
### Cat. No. SR-2

Less wheels and axles, for mounting on a truck having a bed length of at least 120 inches.

### Cat. No. SRS-2

Identical machine with added convenience of 6-volt Self Starter, Generator and Battery.

## POWER TRANSMISSION



## SPECIAL FEATURES

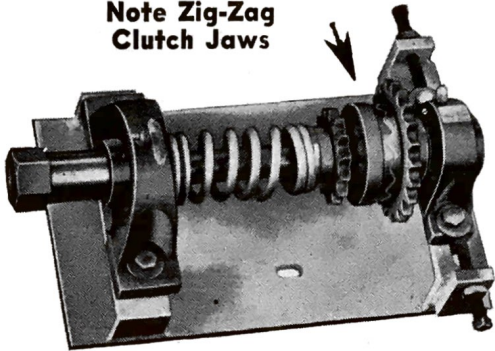
- |   |                            |                                     |
|---|----------------------------|-------------------------------------|
| 1. 9 H.P. Wisconsin Motor               | 2. Variable Speed          | 3. 3 Speed Borg-Warner Transmission |
| 4. Snow-Nabstedt Reversing Transmission | 5. Safety Over Load Clutch | 6. Dual Chain Drive                 |

### SPECIFICATIONS — SEWERODER

A four wheel trailer or truck mounted sewer rodding machine; capable of carrying 900' of 5/16" x 39" sectional Flexicrome Rods in a self-contained reel; having the capability of rodding sewers at speeds up to 50' per minute. Controls shall be provided for mechanically pushing, pulling, or rotating the rods. Positive rod drive shall be accomplished by means of rod-drive dogs which drive the rods through a feed channel, with a maximum pull back of 4,000 lbs. To prevent possible damage to machine or rods, a safety clutch shall be provided with an adjustable tension spring, so that it will release on a pre-determined overload. It shall be equipped with essential accessories.

# SAFETY OVERLOAD CLUTCH

Note Zig-Zag  
Clutch Jaws



## HOW TO PROLONG ROD LIFE

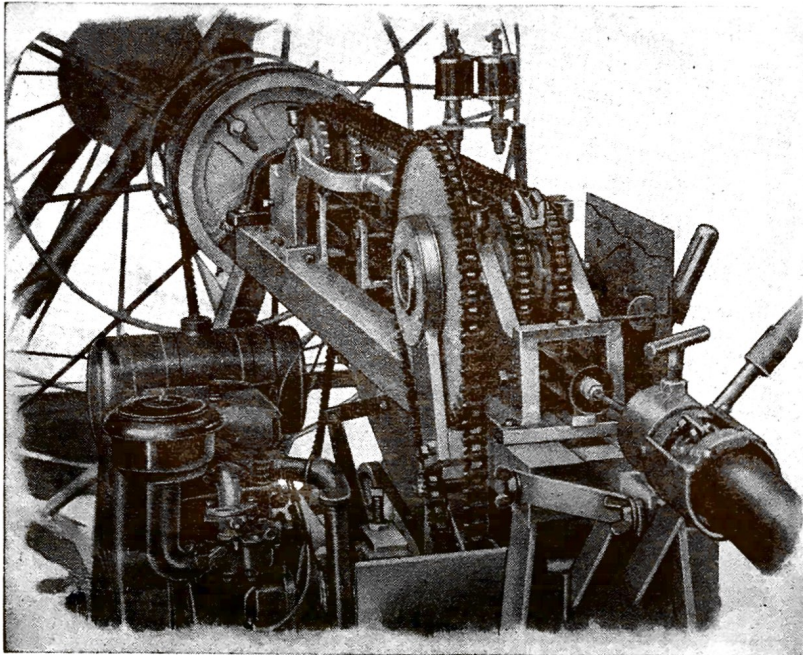
While rods will eventually fatigue, crystallize, and break, proper adjustment and attention to the safety overload clutch will prevent premature breakage, plus speed up, and do a more efficient cleaning job.

The safety overload clutch should be set as loose as possible, but tight enough so the clutch will not click off when first starting. As the tool progresses and encounters the obstruction, the safety clutch will then begin to click off. Do not be alarmed, let it click, you are giving the tool a chance to do its work on the stoppage. In a few seconds the rods will move forward. If the clicking continues for more than thirty seconds, pull back the rods about three

to six feet and start in again. The clicking or slippage of the safety clutch gives the cutting tool the same action as an impact nut tightener.

After the line is cleaned, on the pull back, the safety clutch may have to be tightened a little, but when starting a new line, the clutch should be loosened again.

The manganese jaws of the safety clutch are guaranteed for the life of the Seweroder and will be replaced, No Charge, should they ever break.

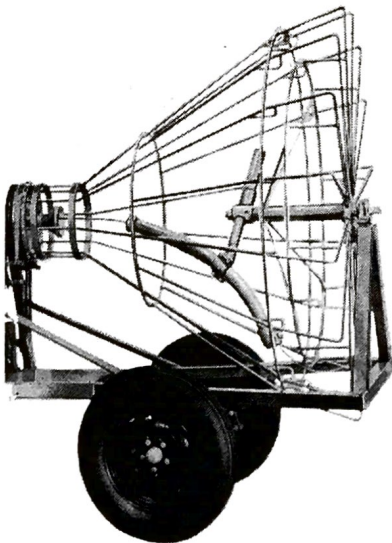


## DUAL CHAIN DRIVE

### Drive Dogs Are Dual Chain Driven

This recent improvement has doubled the Pushing and Pulling Power by eliminating Off center Push. Note how the Rod Coupling centers in the Dual Chain Drive, eliminating excessive wear on the bottom of the Feed Channel.

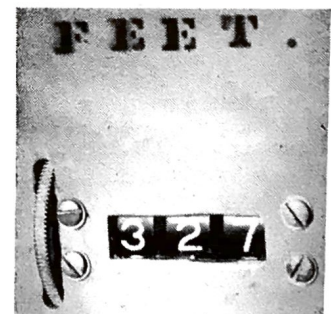
Drive Dogs are now made of Chrome Vanadium tool steel. Five Dogs are used on the entire circuit and engage on push or pull every other complete turn. These two improvements have quadrupled the life of the Chain Dogs.



## REEL ROD GUIDE AND COUNTERBALANCE

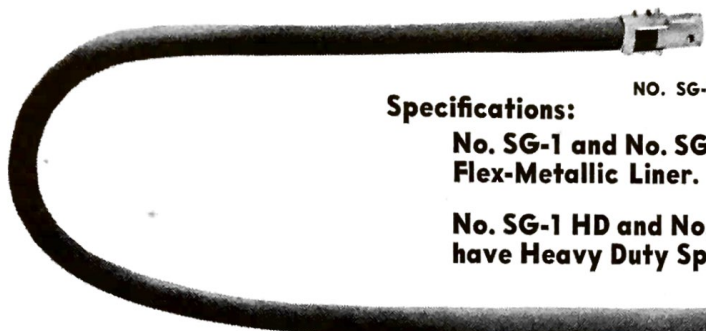
This Guide controls and guides the lay of the rods as they are being wound on or removed from the reel. The ROD REEL holds up to 900 feet of 5/16 inch diameter by 39 inch FLEXICROME RODS.

## FOOTAGE INDICATOR



Measures exact distance the rods are in the line at all times.





## 18-FT. SeweRodeR ROD GUIDE

NO. SG-1 or SG-2 HD

### Specifications:

**No. SG-1 and No. SG-2 have Flex-Metallic Liner.**

**No. SG-1 HD and No. SG-2 HD have Heavy Duty Spring Liner.**



NO. GB-1

### ROD GUIDE BELL

Must be used on end of SeweRodeR Rod Guide to prevent rod couplings from catching.

## 7-ft SeweRodeR Rod Guide Extension

NO. SG-2  
OR  
NO. SG-2 HD



The Rod Guide is constructed with male and female couplings. Install male coupling on front end of SeweRodeR. The female coupling holds the Rod Guide Bell or Extension. Tie a length of rope to Guide, just behind the Rod Guide Bell, and lower into manhole, forcing the cleaning tool into the sewer pipe. The 7-ft. Extension is provided for extra deep manholes.

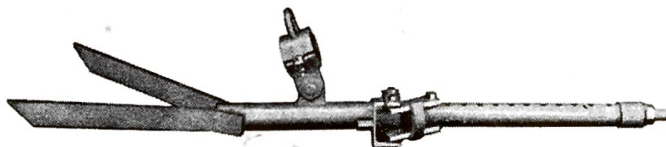


**SeweRodeR  
ROD STAND**  
NO. RS-1

Clamps over SeweRodeR Rod Guide in a jiffy. Stand should be positioned so that curve into manhole is of as wide radius as possible, to minimize rod friction when rotating.

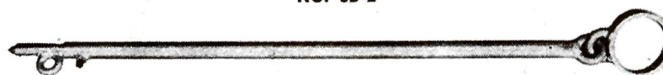
## GUIDE BRACES

NO. SB-1



Rigid type for extremely hard turning.

NO. SB-2



New type, for ordinary all around use. Easily installed with rope from street level.

## CARE AND USE OF SeweRodeR

The SeweRodeR is not a "Genie" and cannot work magic. It is not intended to be a "cureall" for all sewer cleaning problems. Where conditions require Bucket Machines, the SeweRodeR may give temporary relief and aid in stringing the cable through the line, but it cannot be expected or intended to substitute for a Bucket Machine.

You will receive years of satisfactory, cost saving service on your sewer cleaning problems, in return for a minimum amount of care and maintenance.

We recommend that one man in your Department, with a certain amount of mechanical ability, should be put in charge of the SeweRodeR, and be made responsible for the operation, maintenance and adjustments. Prior to going out on the first job, he should study the complete instructions furnished with each machine, acquaint himself with all the levers and adjustments, then run the machine in the yard for a few hours to get the feel of the machine.

Being a new machine, everyone is anxious to run the SeweRodeR. Just like you wouldn't let everybody run a power shovel, do likewise with the SeweRodeR. While it is not a complicated mechanism, pulling the wrong lever at the wrong time could damage the machine.

These basic operating procedures will assure good results:

1. Start with Safety Clutch at proper looseness.
2. Start forward motion of Rods, slowly increasing speed when conditions warrant.
3. Never push Rods forward without Rods turning.
4. The Rod Turning Reel should coast eighty percent of actual cleaning time. Use the Reel Clutch intermittently only to bring Reel up to speed, then release and allow Reel to coast.
5. Never allow Rods to rotate in one position longer than one minute, pull the rods back three to six feet and start in again.
6. Watch lubrication points.
7. Keep rod nuts tight: left on fine thread, right on coarse thread.

# "Flexible" COILRODER

## 4 MODELS

### UP TO 500 FEET CAPACITY

#### COILRODER

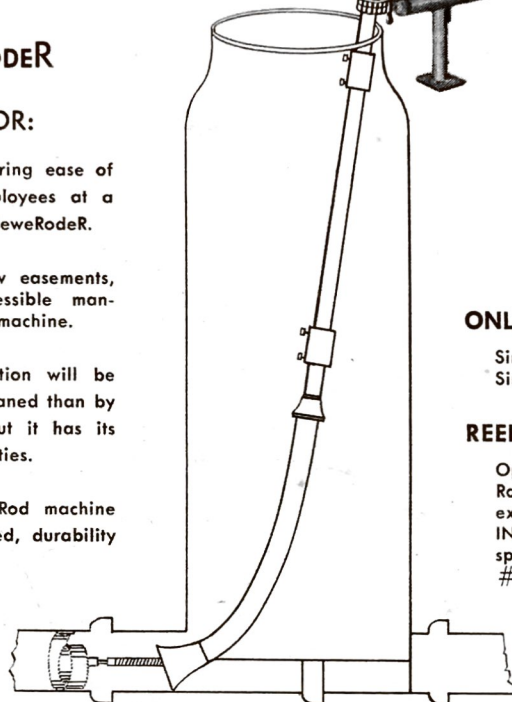
##### USES FOR:

Smaller Cities desiring ease of operation for employees at a lesser price than SeweRodeR.

Cities with narrow easements, alleys and inaccessible man-holes for a larger machine.

It's cost of operation will be higher per foot cleaned than by the SeweRodeR, but it has its place with many cities.

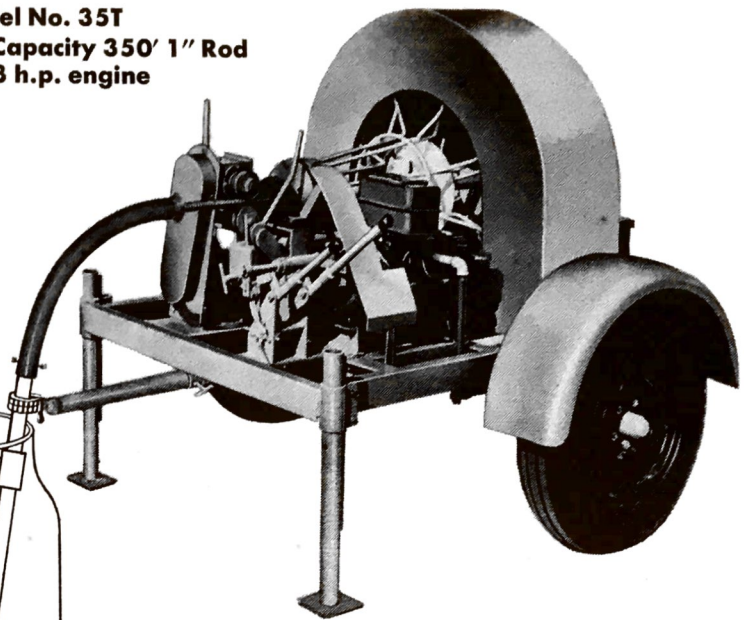
No other Coiled Rod machine will equal its speed, durability or economy.



#### MODEL NO. 35-ST (Not Shown)

Model #35-ST has 12 Volt Starter Generator. Has 350 foot reel capacity; longer chassis and 5 HP. engine, but otherwise same as Model #35-T.

Model No. 35T  
Capacity 350' 1" Rod  
3 h.p. engine



#### EXCLUSIVE FEATURES

##### ONLY TWO OPERATING LEVERS:

Single lever for INSTANT PUSH-PULL.  
Single lever for REEL CONTROL and BRAKING.

##### REEL ROTATION:

Operates independent of Rod Control; permits High Speed Tool Rotation, with 3 changeable Ratios of Rod Travel. "A Flexible exclusive." The Instant Push-Pull Control (without gear clashing) INCHES THE TOOL slowly into the obstruction at positive controlled speeds. (Patented.) 3 speed transmission not furnished on Model #25.

##### SELF ALIGNING BALL BEARINGS: (Furnished on all models)

##### SAFETY CLUTCH:

Easily set for predetermined load; permitting relief when overloaded; protecting Rods and Pipe. The Instant Lever Release of Drive Gear is without loss of Preset Tension. (Patent pending.)

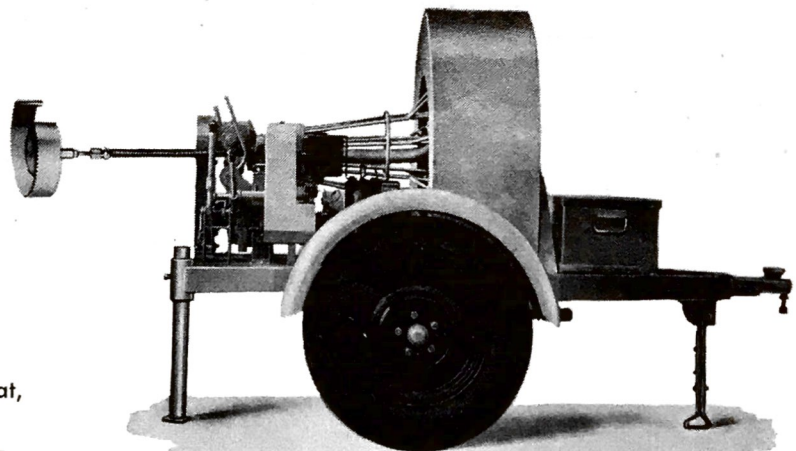
##### "FEED-THRU" COUPLINGS: (Patent pending)

Automatically feed through gear without dangerous hand feeding.

#### Model No. 25

Capacity 250' 1" Rod  
2 3/4 h.p. engine

ENGINE: 2 3/4 HP.  
250 Feet 1" CoilRodeR Rod.  
Transmission not furnished.  
Rod Guide—Air or Electric Motor, optional at extra cost  
Designed for such industries as Meat, Soap, Cemeteries, Golf Courses, Poultry Farms, Air-Fields, Chemicals, Municipal Park Depts., etc



# COILRODER

**MODEL NO. 50ST**

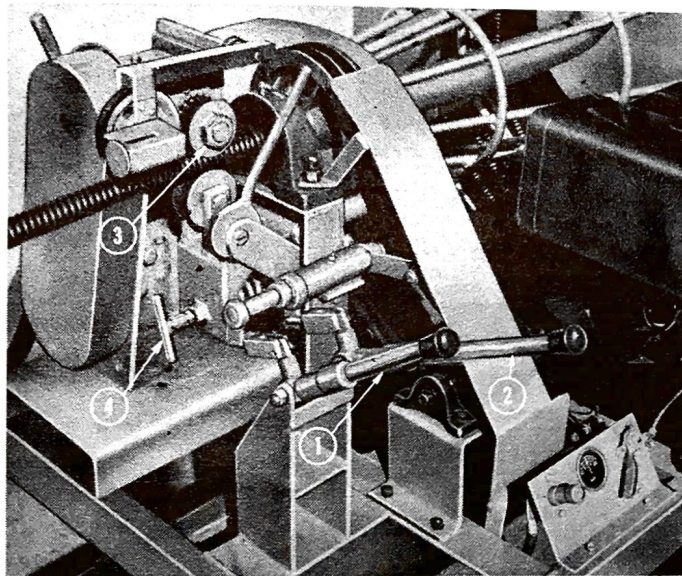
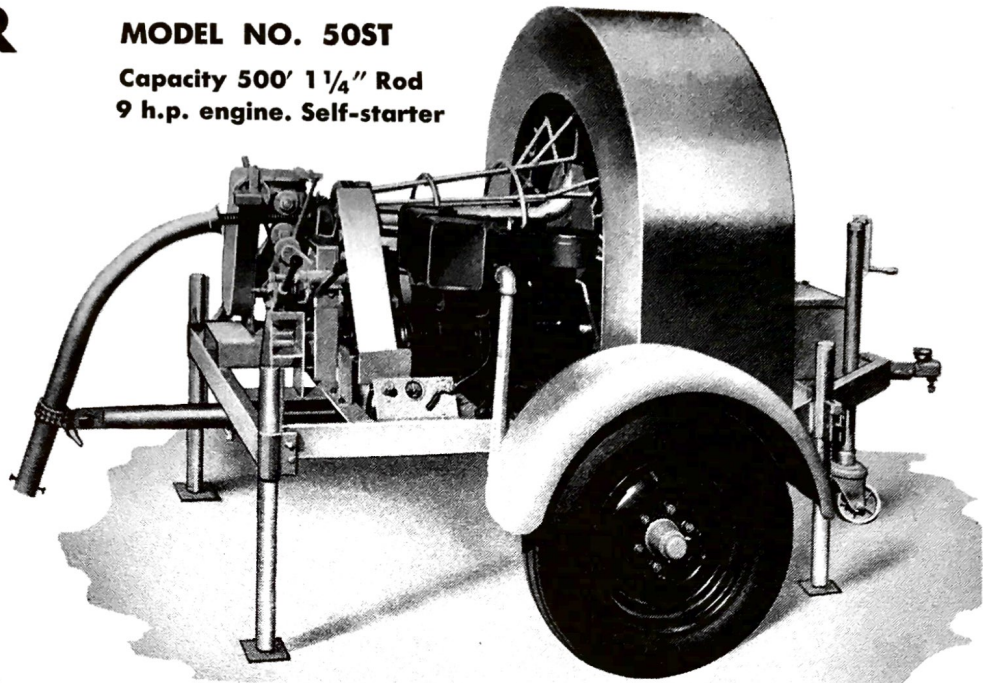
**Capacity 500' 1 1/4" Rod  
9 h.p. engine. Self-starter**

**ENGINE 9 HP**  
with 12 Volt  
Generator and  
Self Starter.

**CAPACITY**  
500 feet of  
CoilRodeR rod.

**FOUR LEGS**  
Legs equipped  
with racks and  
pawls. Operated  
with crank handle.  
Each leg has a  
set screw for  
operational rigid-  
ity, eliminating  
vibration.

Also available  
less starter,  
(price upon application).



- #1 Lever—PUSH-PULL-NEUTRAL
- #2 Lever—Reel Rotation and Brake
- #3 Safety Clutch
- #4 Transmission Shift
- #5 CoilRodeR Rod
- #6 Drive Gear
- #7 Roller
- #8—Footage Meter—(optional—extra cost)
- #9 Spring Load Control

## HOW IT OPERATES

Visualize the set-up: opposite Page 34 using Extension Sleeves Page 36 for the Rod Guide. The sleeves fit 1 1/2" Iron Pipe snugly and are a great time saver for the set up, with no threads to loosen or cause breaks at the threaded joints while working. Set machine so that the Top Guide Page 36 is quite close to machine. There is 5 1/2" adjustment (vertically) in Top Guide. The bell of the Lower Guide Page 36 should be the position in pipe as shown. Jack up machine to level and tighten Chain Vise.

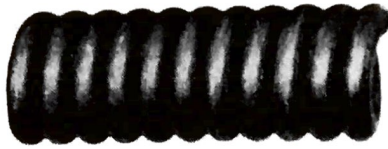
Start Engine and lift Lever #2 (illustration to left) to start Reel Rotation. When desired rotation is attained push Lever #2 forward to locked position, which maintains Reel at constant speed.

Then—Raise Lever #1 and the rod will enter the sewer line. A slight release of Lever #1 (if not in locked position) will automatically put the rod travel in Neutral. A down pressure on Lever #1 instantly starts pulling the rods back into the reel. A down pressure on Lever #2 is the Reel Brake.

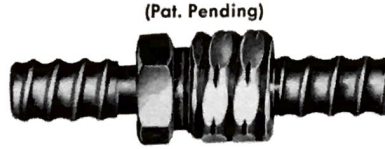
To obtain a safe tension on the Driving Gear #3 set Spring Load Control #4 just tight enough so that it does not click on a long pull from the line. This setting will insure warning to prevent rods breaking or kinking.

The above instructions are fundamental: Results depend on the alertness, care and proper maintenance by the operator.

## CoilRoder FEED-THRU RODS & COUPLINGS



1" — 25 ft. lgths. CRX-1 | 1 1/4" — 25 ft. lgths. CRX-4  
 1" — 50 ft. lgths. CRX-2 | 1 1/4" — 50 ft. lgths. CRX-5  
 1" — 100 ft. lgths. CRX-3 | 1 1/4" — 100 ft. lgths. CRX-6



(Pat. Pending)

1" Coupling Complete CRF-1 | 1 1/4" Coupling Complete CRF-4  
 1" Male End CRF-2 | 1 1/4" Male End CRF-5  
 1" Female End CRF-3 | 1 1/4" Female End CRF-6

Non-stop feeding of the Rods and Couplings through the Drive Gear is a "Flexible" exclusive. Feed-Thru Couplings eliminate dangerous handling of the rotating rod, and stopping of cleaning operations, to pull ordinary couplings past the Drive Gear.

## COIL ROD SPLICERS

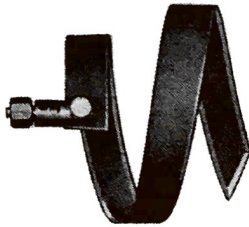


For 1" Coil CRB-1  
 For 1 1/4" Coil CRB-2

When coiled rods break, they can be joined for further use by means of this, simple to use, splicer. Badly kinked sections can be cut out and good sections joined together.

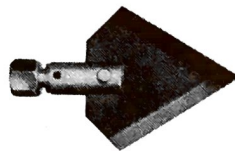
# COILRODER TOOLS

### L.W. AUGERS



For 1" Coil For 1 1/4" Coil  
 For Pipe Size  
 2"-CRL-2 2"-CRLD-2  
 4"-CRL-4 4"-CRLD-4  
 6"-CRL-6 6"-CRLD-6  
 8"-CRL-8 8"-CRLD-8  
 10"-CRLD-10

### SPEARHEADS



For 1" Coil For 1 1/4" Coil  
 For Pipe Size  
 2"-CRS-2 2"-CRSD-2  
 4"-CRS-4 4"-CRSD-4

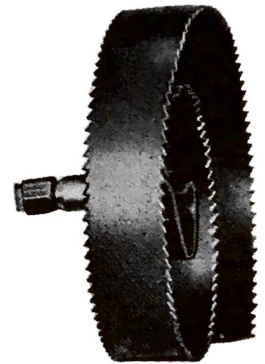
### ASSEMBLY WRENCH



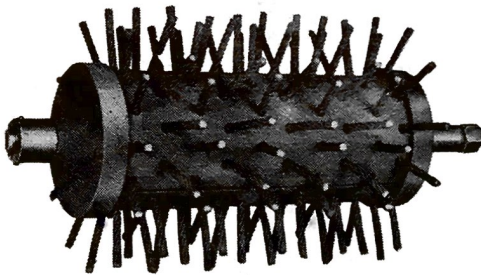
For 1" Coil CRA-1  
 For 1 1/4" Coil CRA-2

### ROOT SAWS

For 1" Coil For 1 1/4" Coil  
 For Pipe Size  
 3"-CRR-3 3"-CRRD-3  
 4"-CRR-4 4"-CRRD-4  
 5"-CRR-5 5"-CRRD-5  
 6"-CRR-6 6"-CRRD-6  
 8"-CRR-8 8"-CRRD-8  
 10"-CRRD-10  
 12"-CRRD-12



### COIL PORCUPINE



For 1" Coil For 1 1/4" Coil  
 For Pipe Size  
 6"-CRP-6 6"-CRPD-6  
 8"-CRP-8 8"-CRPD-8

### "U" CUTTERS



For 1" Coil For 1 1/4" Coil  
 For Pipe Size  
 2"-CRU-2 2"-CRUD-2  
 3"-CRU-3 3"-CRUD-3  
 4"-CRU-4 4"-CRUD-4

### SAW CUTTERS



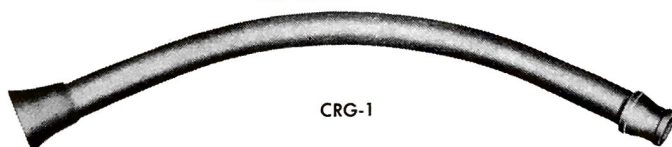
For 1" Coil For 1 1/4" Coil  
 For Pipe Size  
 4"-CRZ-4 4"-CRZD-4  
 6"-CRZ-6 6"-CRZD-6  
 8"-CRZD-8

### LOOP SWIVEL



For 1" Coil CRT-1  
 For 1 1/4" Coil CRT-2

### LOWER GUIDE



CRG-1

### TOP GUIDE

(For Rigid Assembly)



CRG-3

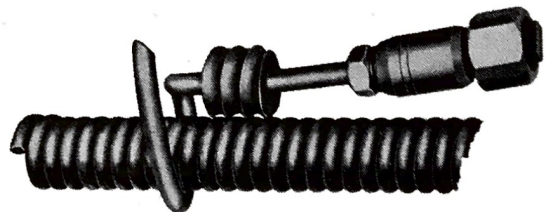
### EXTENSION SLEEVE



CRG-2

### COIL PICK-UP TOOL

(Pat. Pending)



For 1" Coil CRPU-1  
 For 1 1/4" Coil CRPU-2

CoilRoder's Model Nos. 25, 35T, and 35ST use 1" Coiled Rods and Tools. CoilRoder Model No. 50ST uses 1 1/4" Coiled Rods and Tools

# "FLEXIBLE" ALL STEEL WINCH

## WEIGHT

The Winch weighs (less the legs) only 198 lbs., but it has more tensile pulling strength than a cast-iron winch weighing 720 lbs. It can be easily loaded on to your city truck or trailer by two men.

## CAPACITY

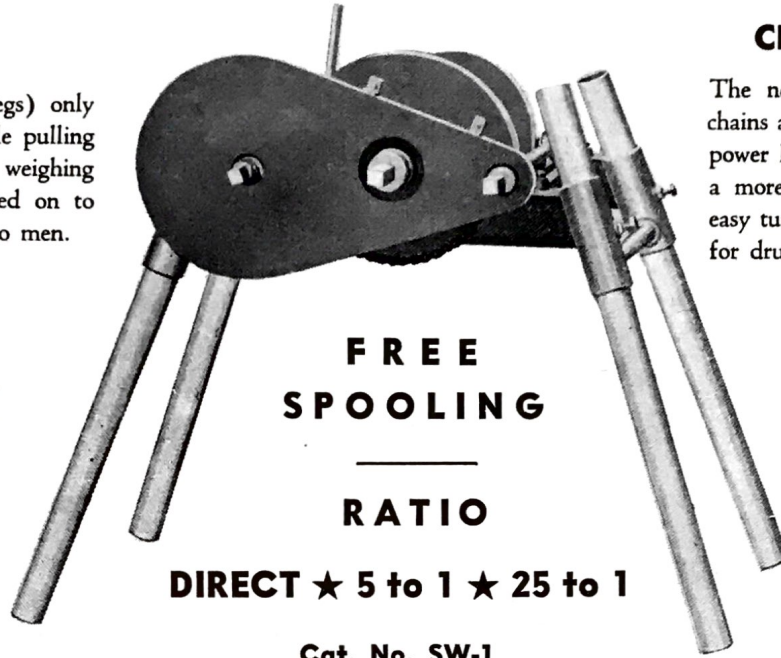
The cast steel drum holds 750 feet of 3/8" cable, which is long enough for all sewer purposes.

## HAND BRAKE

To be used when free spooling, for holding tension, lowering equipment into manhole, etc.

## LEGS

The legs are two-inch standard pipe size and are not furnished with the winch; you can get these cut by your Water Department to exactly thirty inches or buy the same from your local pipe dealer.



**FREE  
SPOOLING**

**RATIO**

**DIRECT ★ 5 to 1 ★ 25 to 1**

**Cat. No. SW-1**

**5 TON CAPACITY  
HEIGHT ADJUSTMENT  
RIGID FRAME**

## CHAIN SPROCKETS

The new All Steel Winch uses roller chains and sprockets, instead of gears for power linkage. This construction permits a more compact unit, giving maximum easy turning power. Fast throw-out collar for drum **FREE SPOOLING**.

## THE FRAME

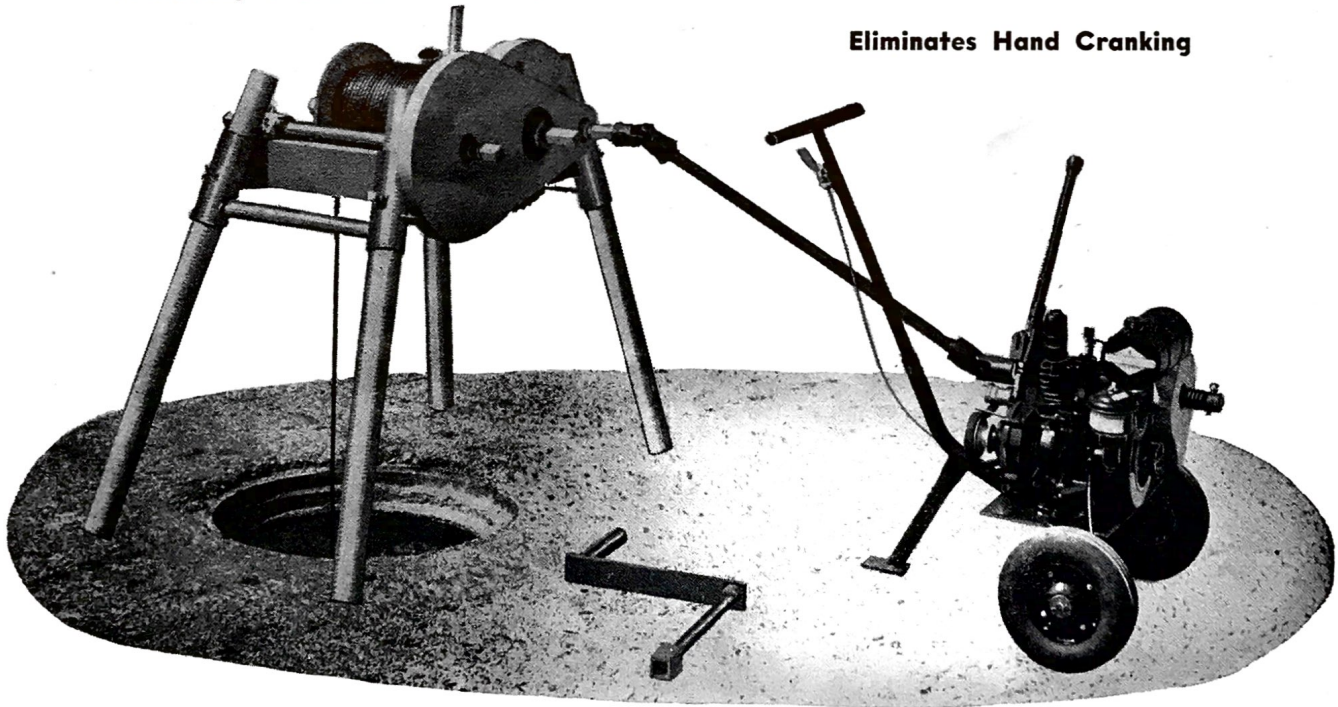
Steel welded construction, heavy 4" channel base rigidly cross ribbed to prevent distortion and bind under heaviest loads. Babitted split type **LINK BELT** Pillow Blocks are used throughout. Chains and sprockets guarded to conform to all safety requirements. Convenient hand holds for easy handling at each end of frame.

## THE HANDLE

Swivel handles make hand turning easy to prevent calloused hands. One man using 25 to 1 ratio can develop 8,000 lb., test pull.

## WINCH, POWER - DRIVE, AND UNIVERSAL POWER TAKE - OFF

**Eliminates Hand Cranking**



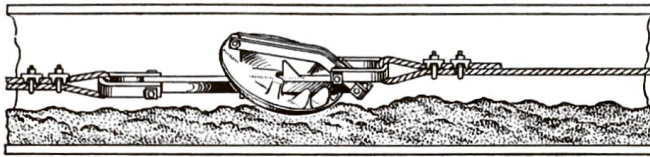
One end of the Power Take-off keys to the Power Drive Turning Shaft and the other end engages the Handle Stud of the Winch. With the Power in lo-speed, turning on the 25 to 1 Ratio, 10,000 lbs. pull can be developed.

**UNIVERSAL POWER TAKE-OFF  
NO. UP-1**

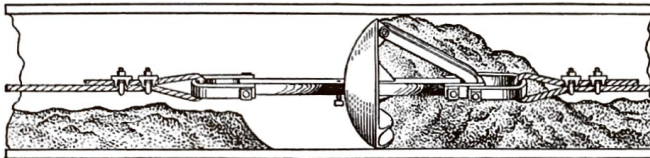


# "FLEXIBLE" HI-WAY CULVERT SCRAPER

PATENT No. 2,402,314

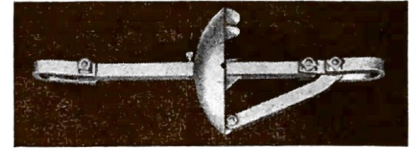
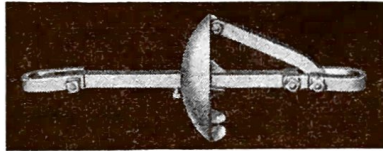
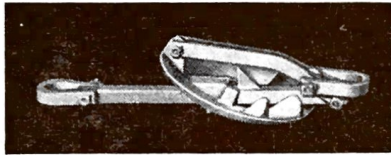


**Picking up  
the Load**

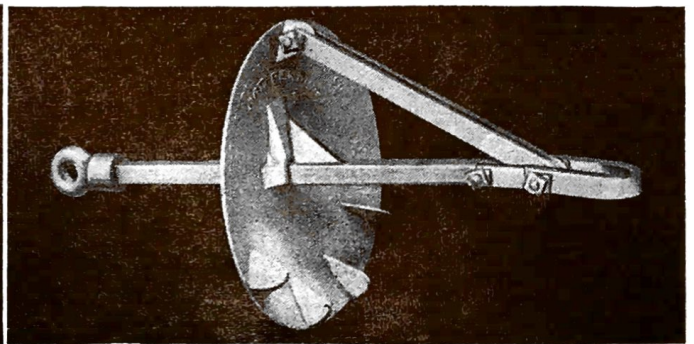
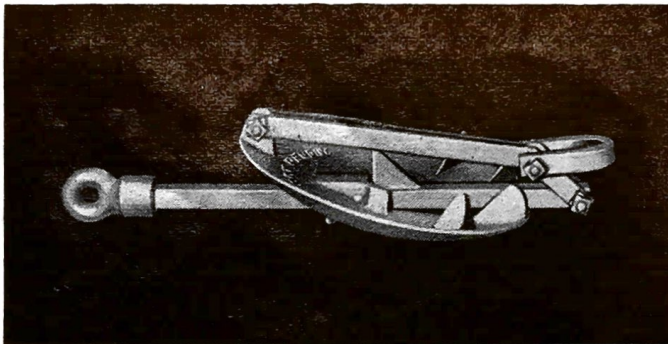


**Pulling out  
the Load**

This scraper is newly designed especially for storm drains and culverts where water is scant or not obtainable for flushing, but equally good on badly obstructed sewers where most of the deposit is of a sand or gravel nature.

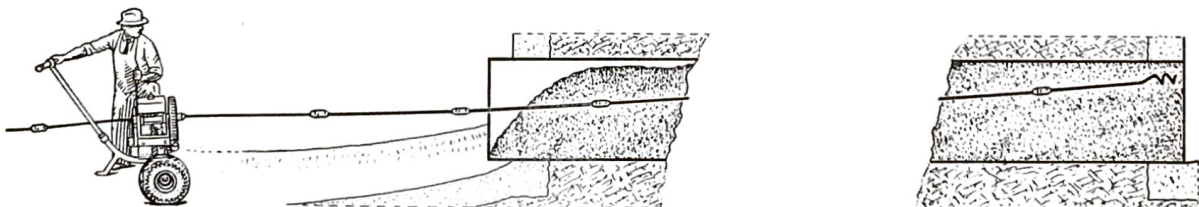


**FOOL PROOF:** The scraper will always pull into the load in a collapsed manner. However, the twist of the cable might tend to turn the scraper bottom side up on the pull out, but on account of the compound leverage action, which opens the scraper in any position, the pull-out will make no difference in the removal of the load. Cable Swivel, page 27, is recommended.

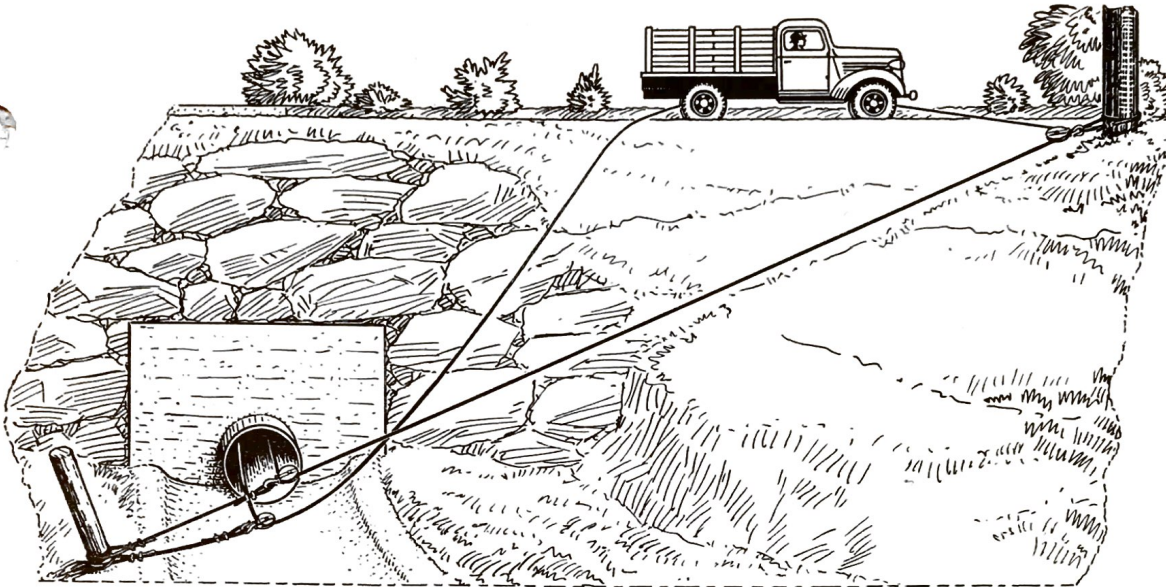


FOR PIPE SIZES:	8"	NO. HS-1	20"	NO. HS-5
	10"	NO. HS-2	24"	NO. HS-6
	12"	NO. HS-3	30"	NO. HS-7
	16"	NO. HS-4	36"	NO. HS-8

**DON'T TRY TO PULL TOO LARGE A LOAD** — The nature of the deposit will determine how much can be removed at one pull. More rock and gravel can be pulled than a finely packed sand. Measure your pull in by tying a string or wire around the cable for your distance mark. If you stick, pull back and forth a very short distance, but do not pick up more load until it is free to pull out.

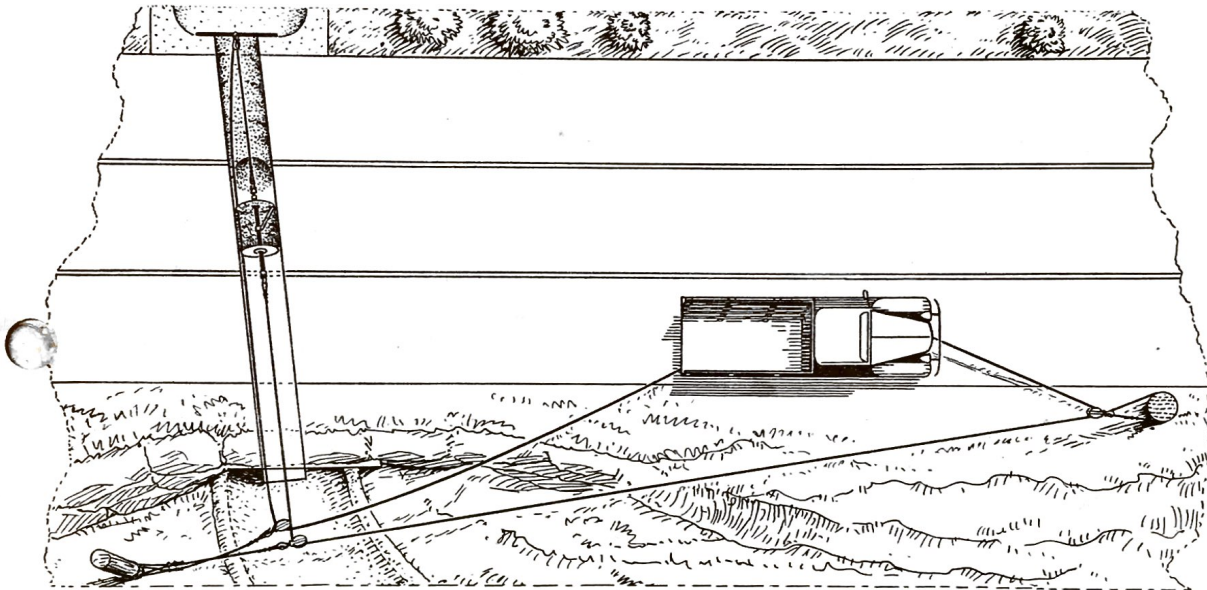


"FLEXIBLES" BORING THROUGH SO THAT THE CABLE CAN BE PULLED



## All Set Ready to Start

This simple but effective hook-up is made after "Flexible" Rods have pulled double cable through to the far side of the highway. A simple, heavy bar or timber is placed across the end of the pipe and a pulley placed in the middle of the bar.



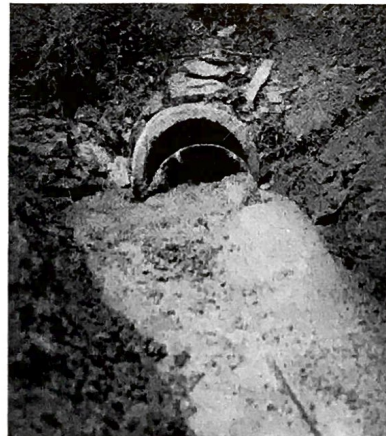
## View from Above Showing Unobstructed Traffic Lanes

The pullback cable being slack on the pull-out, does not in any way interfere with the operation. A few extra cable slings in various lengths to reach trees, telephone poles, or a "dead man" are all that are necessary besides the pulling cable and pulleys. We can furnish cable and pulleys.

**GOING !**



**GOING !!**



**GONE !!!**

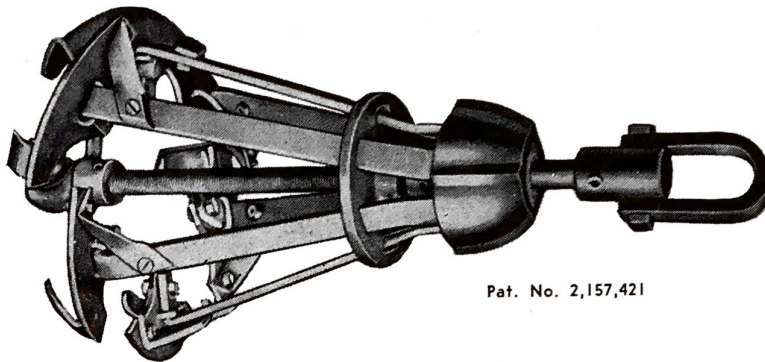


**For Winch Set-Up See Page 37**

# C. A. PIPE SCRAPERS

## A HEAVY DUTY TOOL FOR HARD DEPOSITS

Designed to break up deposits such as boiler scale, saline deposits, refining clays that have hardened, roots, or any deposit that must be broken from the pipe wall before it can be removed from the line.



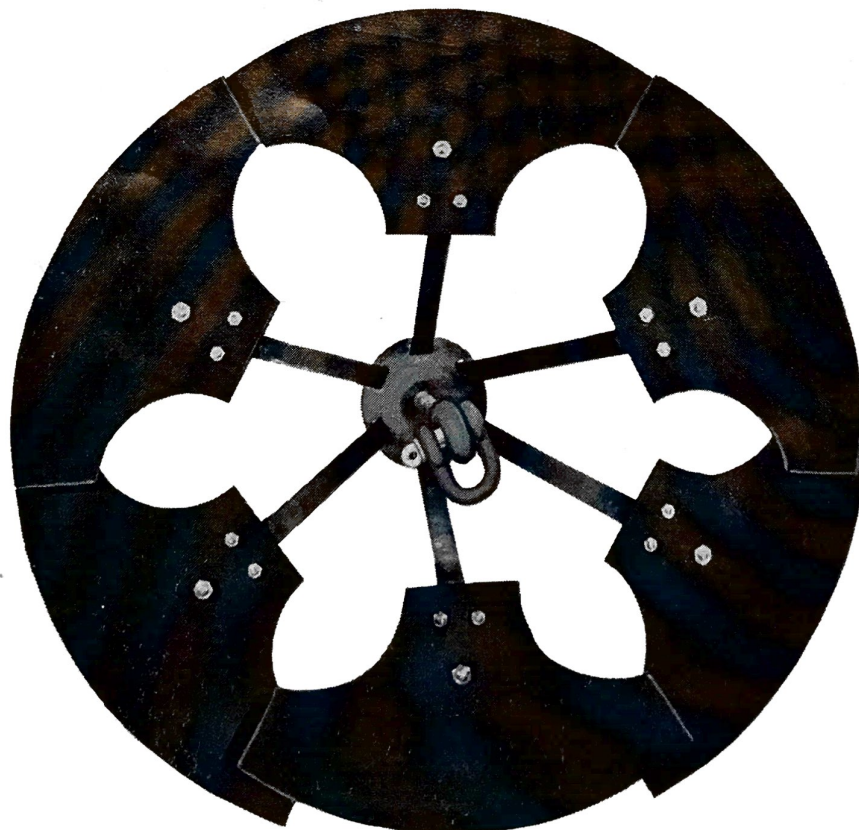
Pat. No. 2,157,421

### EFFECTIVE FOR HARD DEPOSITS BECAUSE:

1. Independent blade mounting on arms of spring steel cause blade oscillation which greatly increases cutting action.
2. It is almost impossible to stick or catch on rough joints in the pipe because of the pitch of the blades and the independent spring action. The tool collapses on reverse pull so that if it does become stuck, it can be easily freed for another try.
3. Independent blade mounting permits the tool to work irregular shapes of pipe.

### USING C.A. PIPE SCRAPER WITH ALL STEEL WINCHES OR FLEXIBLE POWER BUCKET MACHINES

For heavy deposits set Sand Trap, page 13, in lower manhole. For the first pull adjust the blades one to three inches smaller in diameter than the pipe. CAUTION: Never adjust to where there is no collapse, as it is the collapse feature that makes the tool always retrievable. The second pull is then made with blades set a little over the actual I.D. of the pipe. Should there be a considerable amount of cuttings still remaining in the pipe, use the Sand Disc for the finishing operation. Operation is the same as the Sand Cup Water Power Cleaning Method, see page 13. The Sand Trap will hold back the deposits, but they must be hand bucketed.



### HOW TO ADJUST DIAMETER

Loosen Set-Screw on Blade Holder Disc and Hexagon Nut. Set Blade Holder Disc approximately in center of the Draw Bar and tighten Set-screw. For size adjustment, screw the Hexagon Nut toward the Blade Holder for larger diameter and away from the Blade Holder Disc for smaller diameter; then tighten Hexagon Nut Set-screw. CAUTION: Never adjust Scraper to smallest diameter. After adjusting make sure the Scraper will collapse; a precaution to insure that it will always withdraw easily.

### LARGE C. A. SCRAPER

This big brute is for lines from 22-inch to 36-inch inclusive. It has two sets of cutting blades. In the photograph from which this tool was taken the tool rested on the bottom blade. This illustrates the spring action. All C.A.'s now have slant scraper blades, as they cut slightly easier.



# C. A. PIPE SCRAPER AND BLADE SIZES

## SMALL C.A. PIPE SCRAPER

**No. CA-1** For 8" to 16" pipe, inclusive, with two sets of blades.

## MEDIUM C.A. PIPE SCRAPER

**No. CA-2** For 10" to 22" pipe, inclusive, with three sets of blades.

## LARGE C.A. PIPE SCRAPER

**No. CA-3** For 22" to 36" pipe, inclusive, with two sets of blades.

## REPLACEMENT BLADE SETS FOR SMALL SCRAPER

**No. ASB-1** 8" to 12" pipe

**No. ASB-2** 12" to 16" pipe

## REPLACEMENT BLADE SETS FOR MEDIUM SCRAPER

**No. BSB-3** 10" to 14" pipe

**No. BSB-4** 12" to 16" pipe

**No. BSB-5** 16" to 22" pipe

## REPLACEMENT BLADE SETS FOR LARGE SCRAPER

**No. CSB-6** 22" to 30" pipe (Standard)

**No. CSB-7** 30" to 36" pipe (Standard)

**No. CSB-8** 15" to 22" pipe (Special, optional at extra cost)

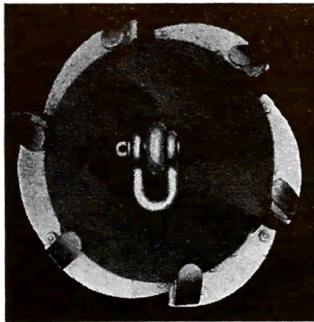
This tool has been thoroughly tried out in oil-refinery work, where pipes from 10 to 36 inches have been worked that were almost solidly clogged with boiler scale, clays that had been used in refining, hardened when mixed with chemicals and acids, saline deposits from water-softeners, coke and many other similar deposits.

The greatest feature of the tools for working sewers is the fact that it cannot catch and stick in rough spots. The six cutting segments are so bolted, independently of each other, to a spring that they will relieve when a harder pull is applied. Should the pull become too hard, it collapses on a back pull (a feature no other pipe scraper has) and can be reduced in diameter and another try made.

The fact that the scraper collapses is equally important and novel as the springs that hold the scraper blades. Most tools that stick on a forward pull cannot be retrieved and a "dig up" is necessary.

In pulling lines that have rock and gravel, pull very slowly with the winch, or bucket machine; flushing heavily while pulling. This allows the load to wash along ahead of the tool and "level off." If the manhole fills too rapidly, pull back, collapsing the tool and allowing the water to go down. Should this not suffice, reduce the diameter, use a smaller tool, or pull the cable back and forth to start the water. Roots are only play for this tool.

EXPANDED

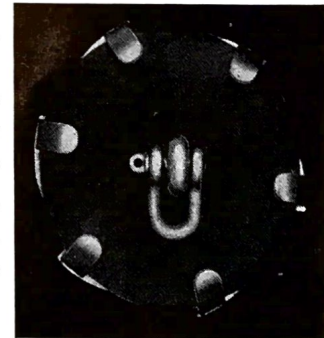


## SAND DISCS

Constructed of canvas and rubber. Light, resilient, and tough, for many years of service.

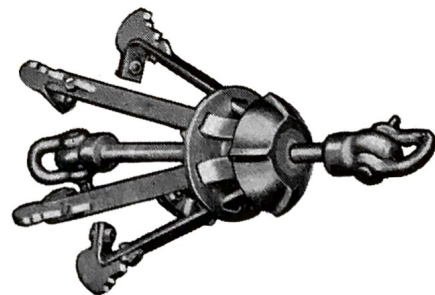
For sand remove the rear shackle hitch and place one Disc between blades and hitch. They are made in any size desired. When the cutter is pulled slowly the water will flush around the blades driving the sand ahead. Pull very slowly. Sand cannot be forced. A good tool to remove every particle of sand after buckets have been used.

COLLAPSED



## GOUGER BLADES

When pipes become so badly clogged with hard deposits, that they are considered past saving, Gouger Blades, which can be readily installed on the C.A. Scraper in place of regular blades, will save these lines. On such lines, use the tool first with Gouger Blades to rip and cut; then follow with regular blades to remove balance of deposit.



## SIZES OF GOUGER BLADES

### FOR SMALL SCRAPER

**No. GSB-1** 8" to 12" pipe

**No. GSB-2** 12" to 16" pipe

### FOR MEDIUM SCRAPER

**No. GSB-3** 10" to 16" pipe

**No. GSB-4** 16" to 22" pipe

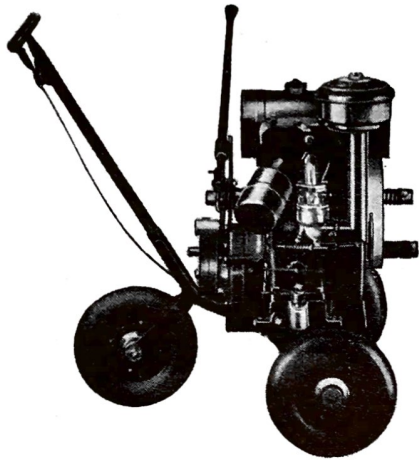
### FOR LARGE SCRAPER

**No. GSB-5** 22" to 30" pipe

**No. GSB-6** 30" to 36" pipe

# WATER MAIN AND INDUSTRIAL PIPE CLEANING

WATER MAIN AND INDUSTRIAL PIPE CLEANING RESTORES PIPE  
TO 95% OF ORIGINAL CARRYING CAPACITY



## 3 AND 5 H.P. HEAVY DUTY POWER DRIVES

(3 H.P. HEAVY DUTY) NO. PD 51  
(5 H.P. HEAVY DUTY) NO. PD 52  
(5 H.P. HEAVY DUTY) With  
Hi-Speed Shaft only NO. PD 52-H

**RECOMMENDED** for use on 4" to 12" lines in relatively short sections. The choice between a 3 or 5 h.p. unit depends upon the amount of obstruction in the pipe, the diameter of the pipe, and the length of the cleaning runs, taking into consideration the preceding factors.

Chipping or cracking is the easiest method of removing hard scale or tuberculation from pipe walls. This action is provided by the knockers on Chain Head Augers, which are thrown against the pipe wall by centrifugal force. The following Power Drives, on Hi-Speed Take-off Shaft, rotate rods at speeds up to 600 R.P.M., providing ample centrifugal force for this type of cleaning work.

Equipped with Briggs and Stratton Engines. Provided with a Hi-Speed Turning Shaft, used exclusively for Water Line and Industrial work; and a Lo-Speed Shaft which can be used to rotate sewer rods.

**CAUTION:** If Power Drives are used to drive sewer cleaning and water main cleaning rods, always sterilize the Rods and Turning Shaft before water line cleaning operations.

Hard scale or tuberculation of varying types, is the chief obstruction in pipe of this kind. To remove such deposits, different methods and tools are required, than those used for sewer cleaning.

## HI-SPEED POWER DRIVE CLEANING

**Rods, cleaning tools and Power Drive turning is recommended under the following conditions:**

1. For the majority of 4" and 6" pipe.
2. Where deposit is too hard for Pressure Line Scraper. (especially industrials)
3. Where pipe sizes change in a relatively short distance as in many Grid Systems. (Where crosses have two or more sizes of pipe.)
4. Where hydraulic pressure is not great enough to operate Pressure Line Scrapers.

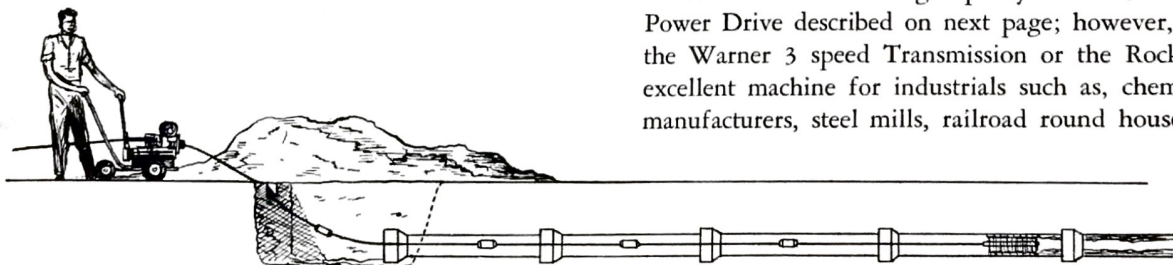
## 9 H.P. MANUALLY PROPELLED POWER DRIVE

NO. PD 53



## MANUALLY PROPELLED 9 H.P. Power Drive

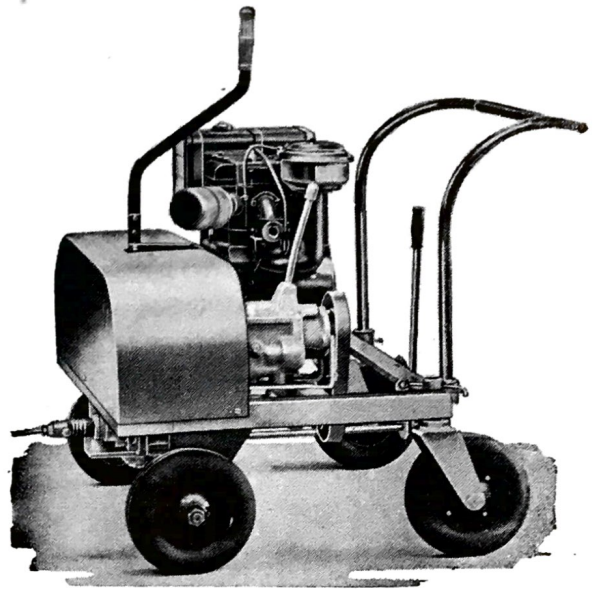
Has same general construction as 3 and 5 h.p. Power Drives, with almost the same cleaning capacity as the 9 h.p. Self-Propelled Power Drive described on next page; however, it does not have the Warner 3 speed Transmission or the Rockford Clutch. An excellent machine for industrials such as, chemical plants, glass manufacturers, steel mills, railroad round houses, etc.



# WATER MAIN AND INDUSTRIAL PIPE CLEANING TOOLS

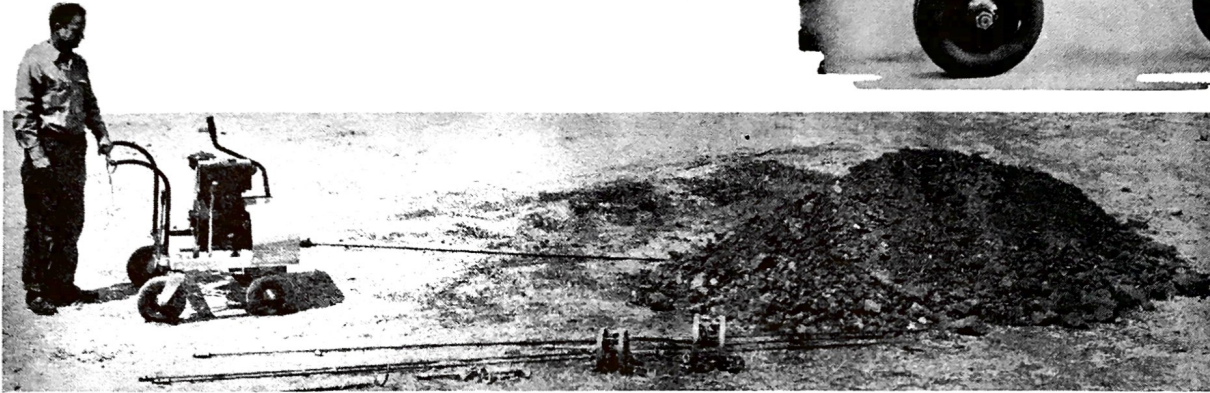
## 9 H.P. SELF-PROPELLED POWER DRIVE NO. PD-54

Eliminates manual pushing of rods. It works forward at varying speeds from a snail-crawl, for difficult cleaning; to a man's walk, for light incrustation. The 9 H.P. Briggs & Stratton Engine, Rockford Clutch, and Warner 3 speed Transmission, combine to provide a wide range of power and speed for varying types of cleaning work. The Variable Speed Pulley enables smooth, gradual, increase or decrease of forward speed.



### HERE'S WHAT IT WILL DO—

Working both ways from a single cut in the pipe:  
Clean 1,200 ft. of 4 or 6-inch pipe; 1,000 ft. of 8-inch pipe; 800 ft. of 12-inch pipe; 700 ft. of 16-inch pipe.



## WATER MAIN CLEANING TOOLS

### HIGH-SPEED RODS



No. RC-3 5/16" diam. x 6-ft. Flexicrome Rods & Couplings.  
No. RC-4 3/8" diam. x 6-ft. Flexicrome Rods & Couplings.

No. RC-5 3/8" diam. x 12-ft. Flexicrome Rods & Couplings.  
No. RC-6 7/16" diam. x 12-ft. Flexicrome Rods & Couplings.

### SCALE DRILL

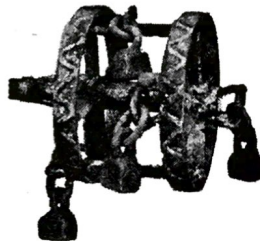


For removing hard scale and lead from joints.

### FOR PIPE SIZES

- 3" NO. SD-0
- 4" NO. SD-1
- 6" NO. SD-2
- 8" NO. SD-3

### PROPELLER TOOL



Operates on same principle as the Chain Head Auger but designed to provide greater chipping and cracking action in large pipe, at slower turning speeds.

### FOR PIPE SIZES:

- 10" NO. PR-1
- 12" NO. PR-2
- 14" NO. PR-3
- 16" NO. PR-4
- 18" NO. PR-5
- 20" NO. PR-6

### CHAIN HEAD AUGER

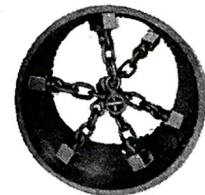


FOR PIPE SIZES:  
4" NO. CH-1

6" NO. CH-2  
8" NO. CH-3

10" NO. CH-4  
12" NO. CH-5

### CHAIN HEAD (ROTATING)



Cleans right down to the metal. Has never been known to break a pipe or damage a Corporation Cock. Centrifugal force does the job at from 250 to 500 R.P.M.

Scale Drills, Chain Head Augers and Propeller Tools have hard facing on the cutting edges. Any welder of average experience can re-hard face these tools when they become dull.

### ASSEMBLY TOOL



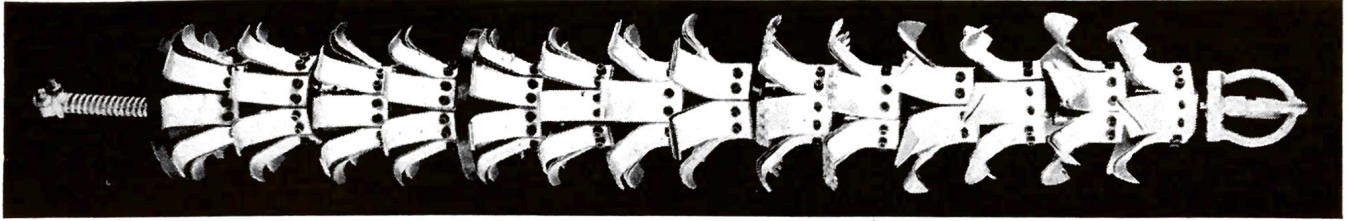
FOR 5/16" DIAM. ROD NO. AT-1  
FOR 3/8" DIAM. ROD NO. AT-2  
FOR 7/16" DIAM. ROD NO. AT-3

### BAR TURNING HANDLE (See Page 10)



OTHER ROD WORKING TOOLS (See Pages 9 and 10)

# "FLEXIBLE" PRESSURE LINE SCRAPER



Hundreds of spring steel blades scrape the pipe wall clean and smooth. Will not damage corporation cocks. Makes 90° elbow bends. Hydraulic pressure provides the motive power for this tool. Just insert it in the line, provide a riser at the exit end, and turn on the water. The scraper does the rest. A complete instruction manual is provided with each tool.

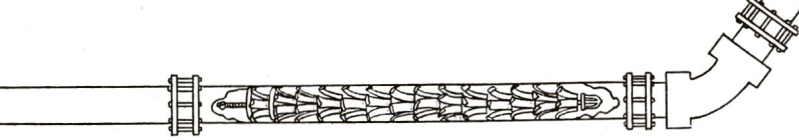
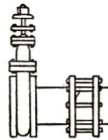
Pressure Line Scrapers are recommended for cleaning relatively long sections of pipe where the encrustations are not too hard. Iron Oxide, (tuberculation), is considered a soft deposit and can readily be removed by this tool. On the other hand Calcium Chlorate and Calcium Carbonate deposits are often too hard to be removed by Pressure Line Scrapers. In such cases use rodding equipment as described on pages 42 and 43.

**FOR PIPE SIZES:**

- 4" NO. FS-4
- 6" NO. FS-5
- 8" NO. FS-6
- 10" NO. FS-7
- 12" NO. FS-8
- 14" NO. FS-9
- 16" NO. FS-10
- 18" NO. FS-11
- 20" NO. FS-12
- 24" NO. FS-13
- 30" NO. FS-14
- 36" NO. FS-15

Since the first Pressure Line Scraper was developed in 1938, millions of feet of pipe have been successfully cleaned in hundreds of cities, industries, and foreign countries.

**CLEANS LINES AS FAST AS A MAN CAN WALK!**



**The equipment illustrated beginning on page 42 is completely described in Catalog 55-B.**

The proper cleaning methods and procedures are all explained in our Pipe Cleaning Manual—available free on request and included with each order.

**WRITE FOR CATALOG 55-B AND  
THE PIPE CLEANING MANUAL, TODAY!**



## CAN WE CLEAN OUR PIPE WITH INEXPERIENCED WORKMEN ?

Many prospective customers have asked this question. Our best answer is that many thousands of dollars worth of pipe cleaning tools have been shipped abroad and successfully used **WITHOUT A SINGLE VISIT OR PERSONAL INSTRUCTION**. By following instruction in the Pipe Cleaning Manual, the job can be easily and effectively done **WITHOUT PRIOR EXPERIENCE**.

# ROOTS REMOVED BY "FLEXIBLES"



CALIFORNIA 1933

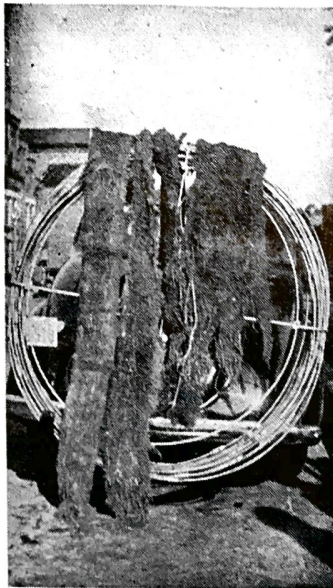


NEW YORK 1937

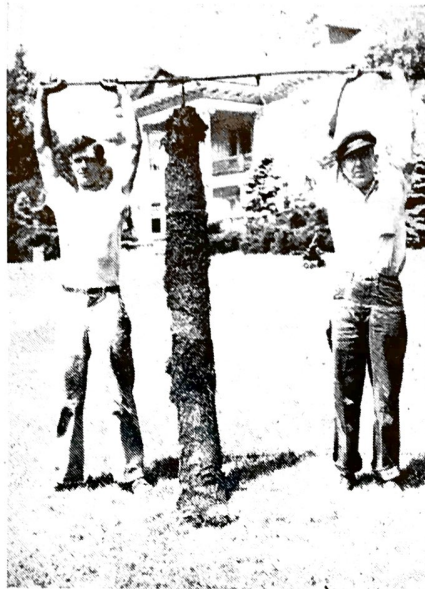
Entire Root 22 inches in diameter. Over 2,000 pounds in total weight.



CALIFORNIA 1936—Diameter 8 inches



ILLINOIS 1938



INDIANA 1945



OHIO 1950



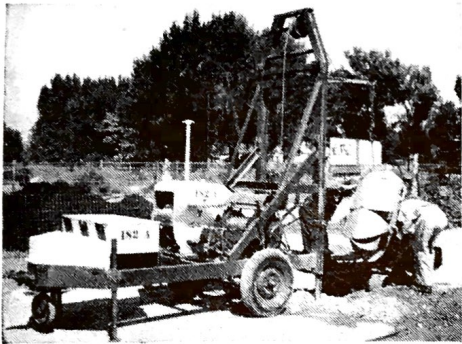
SOUTH CAROLINA 1953



SINGAPORE 1952

# "FLEXIBLE" POWER BUCKET MACHINES ON THE JOB

Wherever the removal of sand, silt, mud, gravel or roots is a problem, "FLEXIBLES" are on the job. Most large cities and hundreds of small cities in the United States use Power Bucket Machines and they are working ON EVERY CONTINENT ON THE GLOBE.



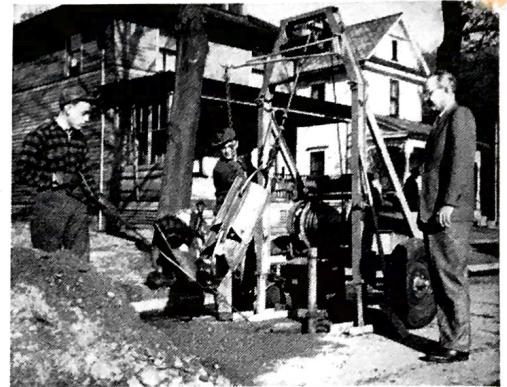
**SALT LAKE CITY, UTAH**  
*A Special Model*

Extension boom, longer and heavier boom.  
We will build to your specifications.



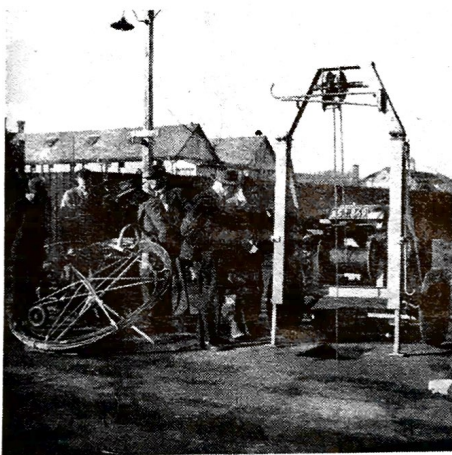
**SANFORD, MAINE**

Note the boulders removed. We doubt any other machine could do this job.



**FRANKLIN, PENNSYLVANIA**

Many large and small cities in Pennsylvania use Flexible Power Bucket Machines.

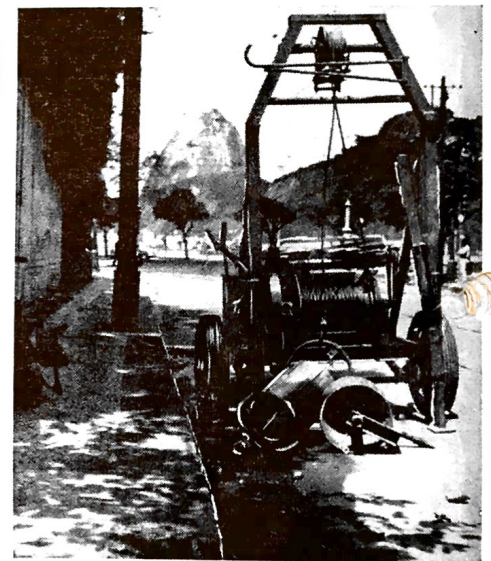


**DUNEDIN, NEW ZEALAND**  
Many cities in Australia and New Zealand are fully "Flexible" Equipped.



**LEBANON, OREGON**

Many cities in the "Great Northwest" have their root troubles.



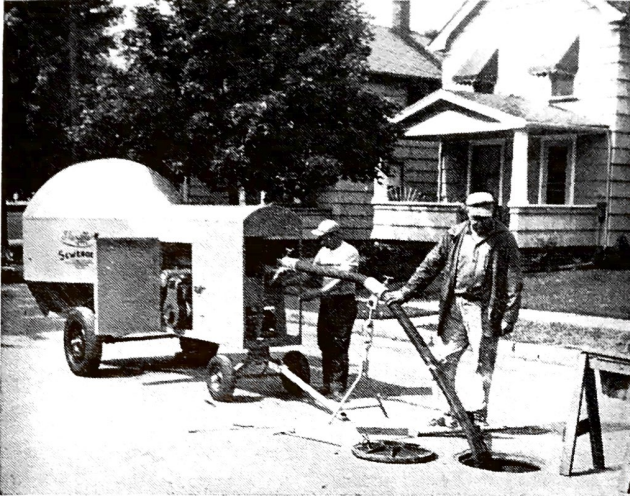
**RIO DE JANEIRO, BRAZIL**  
Many South American cities use Power Bucket Machines



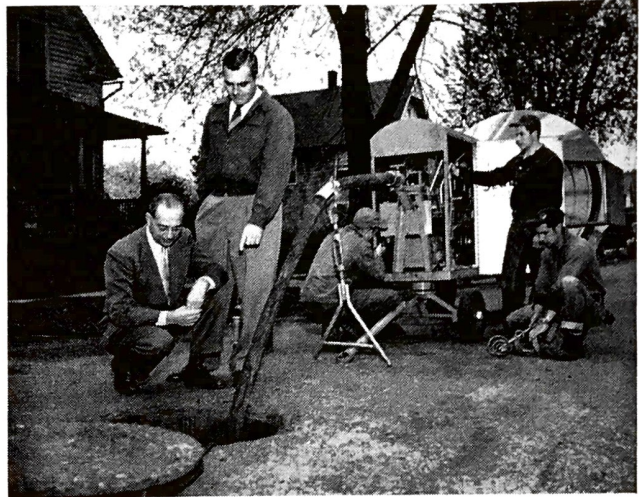
**MEXICO CITY**  
uses 200 Power Bucket Machines.



# THE "FLEXIBLE" SeweRodeR



CONNEAUT, OHIO



WILLIAMSPORT, PENNSYLVANIA



AURORA, ILLINOIS



BOSTON, MASSACHUSETTS



ELYRIA, OHIO



PAINESVILLE, OHIO

# Guarantee

All "Flexible" products are guaranteed against material or mechanical defects. Guarantee does not apply to breakage resulting from accidents, alterations, misuse, or abuse. Our liability is expressly limited to repair, replacement, or an adjustment based upon length of service, at our option. Engines carry an original manufacturers' guarantee. Contact the manufacturer or their local service organization regarding repairs.

**WRITE US BEFORE MAKING RETURNS OF ANY KIND.** Try to give as complete information as possible regarding the complaint. Unauthorized returns cause unnecessary expense and delay. Direct all correspondence to:

**FLEXIBLE INC., 3786 Durango Avenue, Los Angeles 34, California**

We reserve the right to make design changes on any of the items described in this catalog, as long as the function and performance are not adversely affected, in accordance with the printed suggested specifications.

## ORDER FROM YOUR DISTRIBUTOR LISTED BELOW

**MASSACHUSETTS - NEW HAMPSHIRE - VERMONT - MAINE**  
**J. F. McDermott Co.**  
29 Cerdan Ave.  
Roslindale 31, Mass.

**NEW YORK**  
Excepting the Met. area and Westchester, Putnam Counties  
**FLEXIBLE PIPE TOOL CO.**  
3001 James St.  
Syracuse, New York

**CONNECTICUT - RHODE ISLAND - AND NEW YORK -**  
Portion, Westchester, Putnam Co.  
**Raymond F. Bahr**  
41 Greenway Street  
Hamden, Connecticut

**NEW YORK**  
Met. area and Long Island only  
**NEW JERSEY**  
North of Monmouth and Burlington Counties  
**PENNSYLVANIA**  
East of Susquehanna River, north of Lehigh Schuylkill and Northumberland Counties  
**FLEXIBLE PIPE TOOL COMPANY**  
489 - 5th Avenue  
New York 17, New York

**DELAWARE - MARYLAND - PENNSYLVANIA**, east of Susquehanna River, south of North Hampton, Carbon, Luzerne, Columbia & Montour Counties. **NEW JERSEY**, south of Middlesex and Mercer Counties.  
**Flexible Pipe Tool Co.**  
1123 Western Savings Fund Bldg.  
Philadelphia, Pennsylvania

**FLORIDA - GEORGIA - VIRGINIA S. CAROLINA - N. CAROLINA**  
**Southern Pipe Tool Co.**  
P. O. Box 304  
Ft. Pierce, Florida

**WEST VIRGINIA AND PENNSYLVANIA**  
West of Susquehanna River  
**FLEXIBLE PIPE TOOL CO.**  
101 Investment Building  
239 Fourth Avenue  
Pittsburgh 22, Pennsylvania

**ALABAMA - MISSISSIPPI**  
**Flexible Pipe Tool Co.**  
P. O. Box 2293  
Birmingham, Alabama

**ILLINOIS - INDIANA - OHIO - MICHIGAN**  
**Trojan Tool Equipment Co.**  
604 Davis St.  
Evanston, Illinois

**TENNESSEE - ARKANSAS - MISSOURI - KENTUCKY - LOUISIANA**  
**Delta Tool & Supply Co.**  
P. O. Box 465  
Memphis, Tennessee

**NEBRASKA - TEXAS - KANSAS - OKLAHOMA**  
**Flexrod Pipe Tool Co.**  
415 S. Zangs Blvd.  
Dallas, Texas

**MINNESOTA - WISCONSIN - IOWA - N. DAKOTA - S. DAKOTA**  
**Municipal Equipment Co.**  
801 E. Excelsior Blvd.  
Hopkins, Minnesota

**OREGON - IDAHO - WASHINGTON WYOMING - MONTANA**  
**Flexible Pipe Tool Co.**  
4455 S.E. 24th Ave.  
Portland, Oregon  
5323 E. Union Ave.  
Spokane 6, Washington

**CALIFORNIA - ARIZONA - UTAH - NEVADA - NEW MEXICO - COLORADO -**  
**Southwest Sewer Tool Co.**  
3782 Durango Ave.  
Los Angeles 34, California

**CANADA -**  
**Francis Hankin & Co., Ltd.**  
P. O. Box 40 Snowdon  
Montreal 29, Quebec, Canada

**AUSTRALIA -**  
**H. W. J. Anderson Pty. Ltd.**  
35 William Street  
Melbourne C.1, Australia

# Flexible INC.

3786 Durango Ave., Los Angeles 34, Calif.  
1005 Spencerville Road, Lima, Ohio  
415 S. Zangs Blvd., Dallas, Texas

CABLE ADDRESS: Flexcor