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2,302,196

PIPE CLEANING MACHINE

Filed Feb. 24, 1941

2 Sheets-Sheet 1

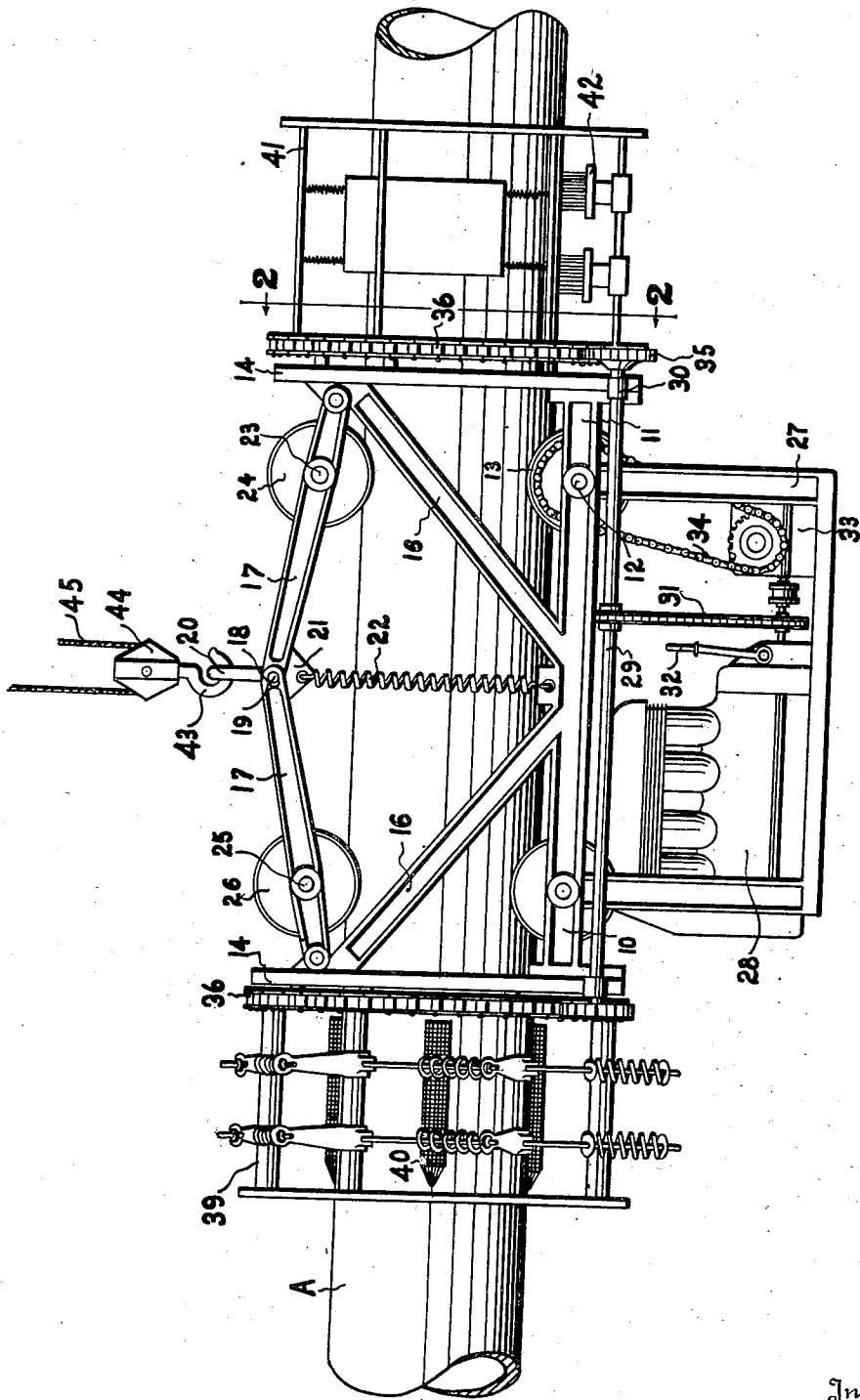


Fig. 1

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2 Sheets-Sheet 2

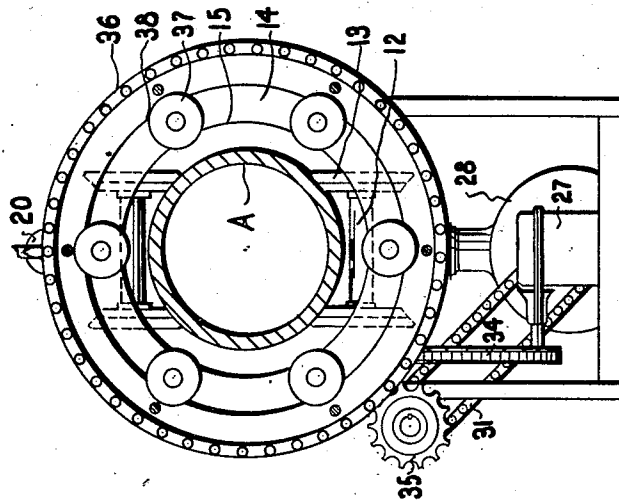


Fig. 3

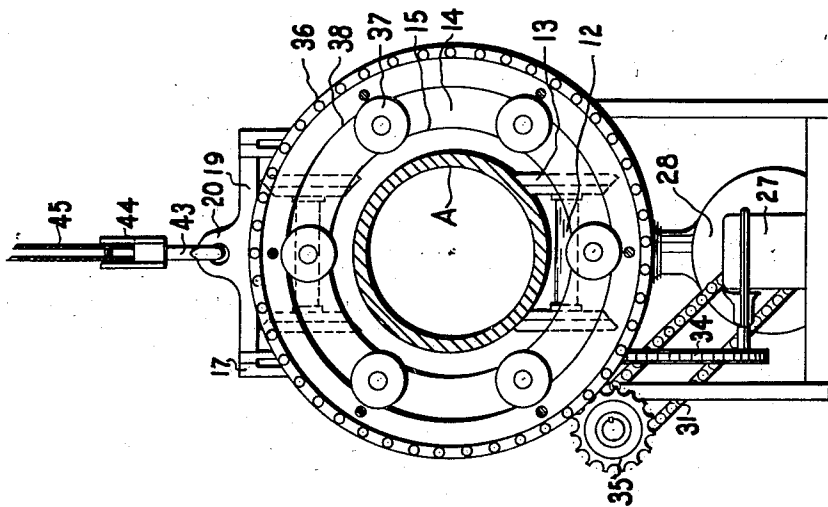


Fig. 2

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# UNITED STATES PATENT OFFICE

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## PIPE CLEANING MACHINE

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3 Claims. (Cl. 15—104.04)

This invention relates to new and useful improvements in pipe cleaning machines.

One object of this invention is to provide an improved pipe cleaning machine which may be utilized so as to support the pipe while it is being cleaned, rather than having the pipe support the machine.

A further object of the invention is to provide an improved pipe cleaning machine which is capable of traveling along the pipe under its own motive power, whereby pipe extending across gullies or small streams may be cleaned by the machine as it travels under its own power.

Still another object of the invention is to provide an improved pipe cleaning machine which may be utilized to carry out various operations such as scraping the pipe, brushing the pipe, and painting and wrapping the pipe.

The machine is adapted to be used for carrying out the operations given hereinabove wherever such operations are desirable, and particularly when pipe lines are being laid. The machine is used to clean and coat the pipe as it is laid in the ground, or may be used to recondition pipe which is being dug up and relaid.

A construction designed to carry out the invention will be hereinafter described, together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings, in which an example of the invention is shown, and wherein:

Figure 1 is a view in elevation of a pipe cleaning machine, constructed in accordance with the invention, showing a scraping attachment affixed to one end of the machine and a brushing attachment affixed to the other end of the machine,

Figure 2 is a vertical sectional view taken on the line 2—2 of Figure 1, showing the supporting wheels out of engagement with the pipe, and

Figure 3 is a view similar to Figure 2, and showing the supporting wheels in engagement with the pipe.

In the drawings, the numeral 10 designates a supporting frame having a pair of longitudinally disposed side members 11. The side members 11 are disposed in parallel relation to one another and are connected by a pair of axles 12 near either end of said members. A pair of wheels 13 are mounted upon each of the axles 12 so as to engage the under side of the pipe being cleaned, which is designated in the drawings by the letter A. As will be noted in Figures

2 and 3, of the drawings, the peripheries of the wheels 13 are beveled inwardly so as to more closely conform to the contours of the pipe A.

A flat circular disk 14 is secured to each end of the side members 11 so as to extend upwardly therefrom in a vertical plane. Each of the disks 14 is provided with an axial opening 15 through which the pipe A passes. Diagonal bracing members 16 extend from each of the disks 14 to a point near the center of each of the side members 11, and are secured to the disks and the side members. Thus, as is shown in Figure 1, each of the side members has a diagonal bracing member 16 extending to each of the disks 14. An arm 17 is pivotally connected to the upper end of each of the bracing members 16 so as to swing in a longitudinal axis of the machine. The free end of each of the arms 17 is provided with a longitudinal slot 18, and a bar 19 extends transversely of the machine through each of the slots 18. In this manner, there is provided a pair of arms on each side of the frame 10, and each pair of arms has its free ends loosely connected to each other and to the free ends of the other pair of arms by the bar 19. An eye 20 extends upwardly from the bar 19, and an ear 21 projects downwardly from the free end of one of the arms 17 upon each side of the frame. A spring 22 is secured to each of the ears 21 and extends downwardly therefrom. The lower ends of the springs 22 are secured to the side members 11. Thus, the springs 22 tend to urge the arms 17 constantly to swing downwardly toward the side members 11.

The pair of arms 17, which are pivotally mounted upon the bracing members 16, which in turn are attached to the right-hand disk 14, are connected together near their pivot point by a transverse axle 23. A pair of wheels 24, similar to the wheels 13, are mounted upon the axle 23 so as to engage the upper side of the pipe A. The other pair of arms, which are attached to the left-hand disk 14, are similarly connected by a transverse axle 25, which carries a pair of wheels 26 similar to the wheels 13. Manifestly, by exerting a lifting force through the eye 20, the bar 19 and the arms 17 will be lifted or raised so that the springs 22 are forced to yield, and the wheels 24 and 26 are withdrawn from engagement with the pipe A. It will be noted that the bar 19 will undergo a limited movement within the slots 18 as this operation takes place. As the bar reaches the ends of the slots, the arms will be raised no farther and the entire frame 10 will be lifted so that the pipe A rests upon the wheels

13. Similarly, when the lifting force is removed from the eye 20, the springs 22 will cause the arms 17 to swing downwardly so that the wheels 24 and 26 are forced into engagement with the upper side of the pipe A. In this position, which is shown in Figure 3, the pipe will be clamped between the wheels 24 and 26 and the wheels 13 by the action of the spring 22.

A supporting framework 27 depends from the side members 11, and carries a motor 28. The motor 28 is shown in the drawings as being a gasoline engine, however, any type of motive power may be utilized. A shaft 29 extends longitudinally of the frame 10 at one side thereof, and is rotatably supported by bearing blocks 30 which are secured to the disks 14. A suitable chain drive 31 extends from the motor 28 to the shaft 29, whereby rotation of the motor will cause the shaft to rotate. Suitable clutch means 32 are disposed between the motor and the chain drive 31, whereby the motor may be disconnected from the latter.

A gear box 33 is also connected to the motor through the clutch means 32, and is connected by means of a chain drive 34 to one of the wheels 13. Thus, rotation of the motor, when the clutch 32 is engaged, will cause one of the wheels 13 to be rotated, whereby the machine is moved along the pipe in a longitudinal direction.

The ends of the shaft 29 project beyond the disks 14, and carry cog wheels 35. Large cog wheels 36 are supported upon the disks 14 by means of grooved bearing wheels 37 which are disposed about the disks. The cog wheels 36 are provided with an axial opening 38, and the inner periphery of said cog wheels engages in the grooves of the bearing wheels 37. In this manner, the cog wheels are securely mounted and held in position upon the machine.

Any suitable type of pipe handling equipment may be secured to the cog wheels 36. This invention is not limited to any particular type of such equipment, but is constructed so as to handle any of the various types now being used. All of this equipment, or a large percentage of it, is adapted to be rotated about the pipe as it operates. In Figure 1, a pipe-scraping attachment 39 is shown as secured to the left-hand cog wheel 36. This attachment is provided with spring-pressed scraper members 40 which scrape the outside of the pipe to remove rust or corrosion, and other foreign matter. As the cog wheel is rotated, the pipe-scraping attachment 39 is rotated, whereby the pipe is cleaned.

A brushing attachment 41 is shown as secured to the right-hand cog wheel 36 in Figure 1 of the drawings. This attachment carries spring-pressed brushes 42 which engage the surface of the pipe A, and brush the pipe as the attachment 41 is rotated about the pipe by the cog wheel. This machine is adapted to travel to the left as viewed in Figure 1, so that the brushing operation follows the scraping operation.

If desired, the scraping attachment 39 may be replaced by a painting attachment (not shown) which coats the pipe with a suitable corrosion-resisting paint; and the brushing attachment 41 may be replaced by a pipe-wrapping attachment (not shown) which wraps the pipe with a heavy protective wrapping. Various combinations of pipe handling and treating attachments may be mounted upon and operated by this machine.

In the operation of the machine, a tractor (not shown) or some similar vehicle having a boom is utilized. A hook 43 depending from a block

44 is engaged within the eye 20. A hoisting line 45 is passed through the block 44 to the boom and the tractor. In this manner, the machine may be raised or lowered by the boom as desired. The tractor travels along the pipe A with the machine.

Under ordinary conditions, the eye 20 will be raised so that the arms 17 are swung upwardly, and the wheels 24 and 26 disengaged from the pipe. The machine is set in operation and carried along by the tractor. The supporting wheel 13, which is driven by the motor 28, will have a steadying effect upon the movement of the machine along the pipe. Instead of moving along in jerks and jumps, the machine will travel at a steady pace so that the pipe is efficiently and uniformly cleaned. If the driving connection to the wheel 13 were omitted, the machine would still function, but it would tend to jerk along the pipe as it is moved by the tractor.

At any time when it is desired to do so, the eye 20 may be lowered so that the wheels 24 and 26 engage the pipe. The hook 43 is removed from the eye so that the machine moves along the pipe by means of the driving wheel 13 alone. The machine now moves under its own power, and may travel along stretches or portions of pipe which extend across gullies or small streams. With other machines, it would be difficult to clean these portions of pipe. However, with this machine the problem is greatly simplified.

Various changes, alterations and modifications may be made in the size, shape and arrangement of the herein described elements, within the scope of the appended claims.

What we claim and desire to secure by Letters Patent is:

1. A pipe treating machine including, a frame adapted to receive a pipe, rotatable supporting members carried by the frame and adapted to engage the lower portion of the pipe, additional rotatable members secured to the frame and adapted to engage the upper portion of the pipe, said latter members being mounted upon levers pivoted upon the frame, the free ends of said levers being connected to each other and to a supporting element whereby as said element is engaged and raised the levers will be swung to raise the latter named members from engagement with the pipe, resilient means connected to the levers so as to urge the same downwardly and bring the last named members into engagement with the pipe so as to support the frame upon said pipe and to clamp the pipe between the first named rotatable members and the last named rotatable members, and a pipe treating attachment secured to at least one end of the frame.

2. A pipe treating machine including, a frame adapted to receive a pipe, rotatable supporting members carried by the frame and adapted to engage the underside of the pipe, arms pivoted to the frame, rotatable members mounted upon the arms and adapted to be swung into engagement with the upper portion of the pipe, said arms having their free ends linked to a common supporting element whereby said element may be engaged and raised to swing the arms upwardly and disengage the latter named rotatable elements so as to disengage the same from the pipe, resilient means connected from the frame to the free ends of the arms for urging the same downwardly and swinging the last named rotatable members into engagement with the pipe and clamping the pipe between the first named and the last named rotatable members at such times

as the machine is being lifted by the supporting element, and pipe treating attachments secured to at least one end of the frame.

3. A pipe treating machine including, a frame adapted to receive a pipe, upper supporting roller means connected to the frame and mounted to swing a predetermined distance away from the pipe, resilient means to normally urge the upper

5 rollers into supporting engagement with the pipe, and external supporting means operably connected with the upper roller means to lift the same out of contact with the pipe and thus remove the weight of the device from the pipe.

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