

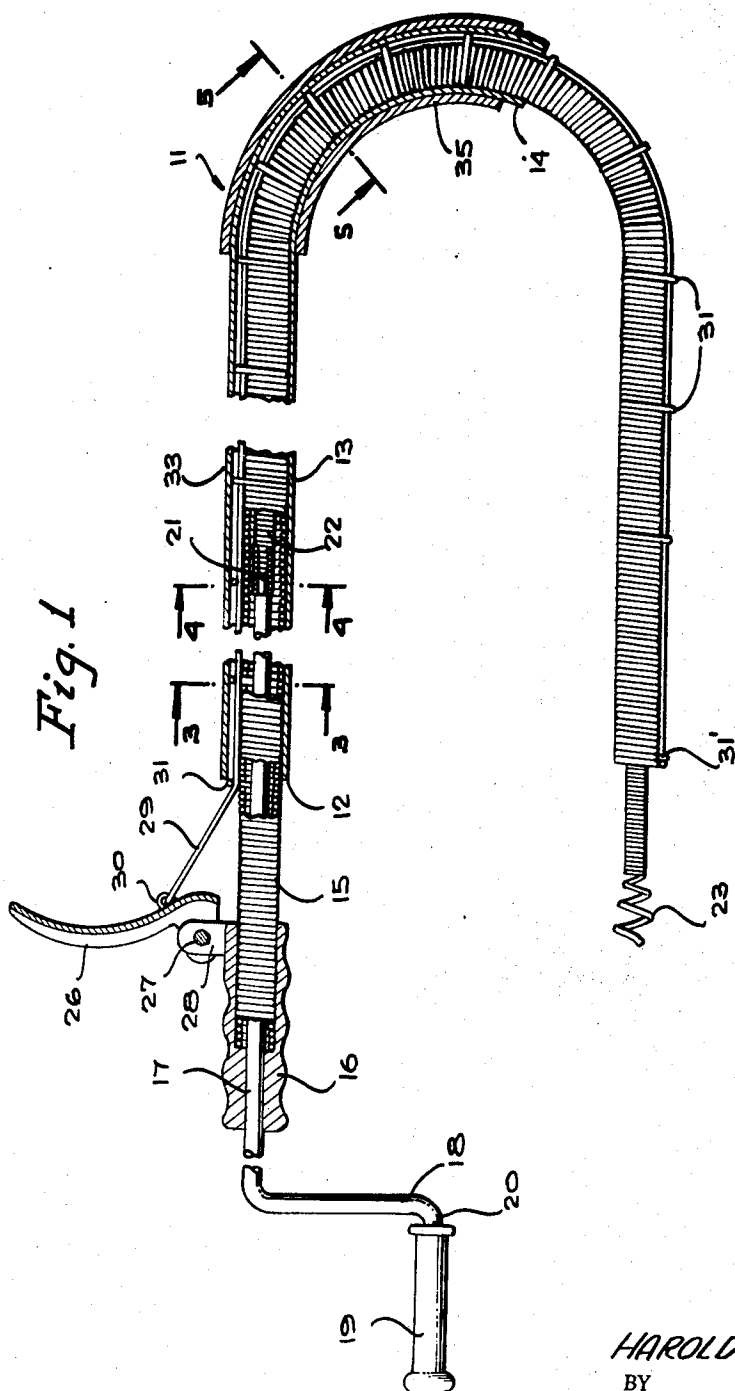
Nov. 29, 1960

H. S. STICKNEY
CONDUIT CLEANING DEVICE

2,961,675

Filed Dec. 5, 1958

3 Sheets-Sheet 1



INVENTOR.
HAROLD S. STICKNEY
BY

McMorrow, Berman & Davidson
ATTORNEYS

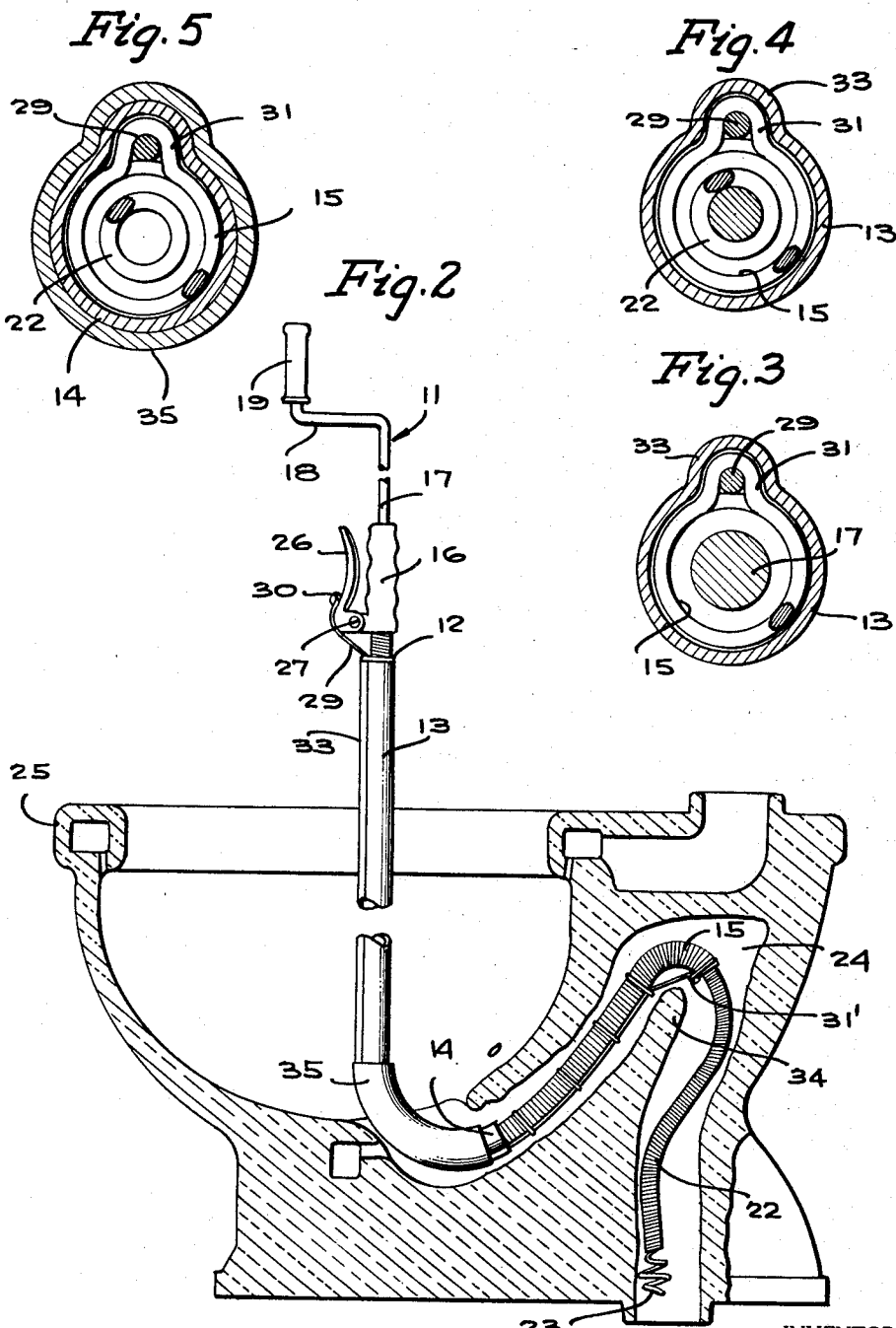
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HAROLD S. STICKNEY
BY

McMorrow, Bertram & Davidson
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3 Sheets-Sheet 3

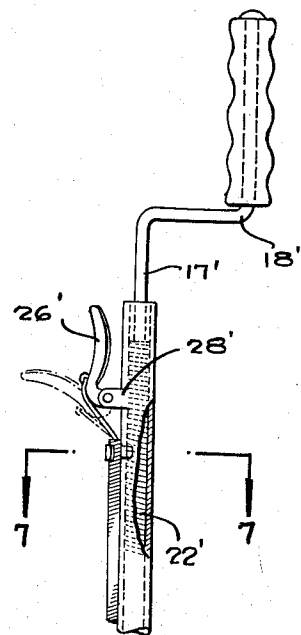


Fig. 6

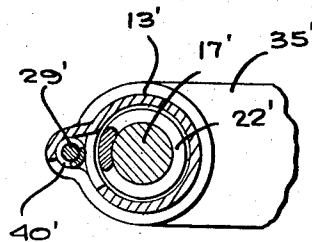


Fig. 7

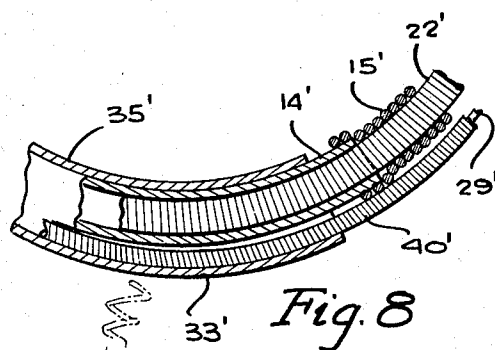
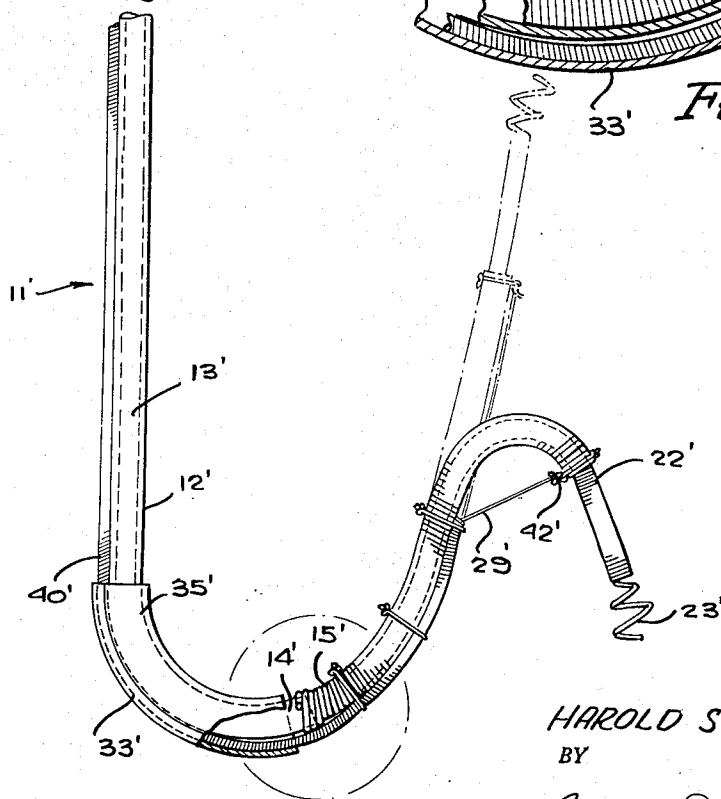


Fig. 8



INVENTOR.
HAROLD S. STICKNEY
BY

McMorrow, Perman & Davidson
ATTORNEYS

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2,961,675

CONDUIT CLEANING DEVICE

Harold S. Stickney, Box 414, Claflin, Kans.

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7 Claims. (Cl. 15—104.3)

This invention relates to apparatus for cleaning out conduits, and more particularly to an auger device for cleaning out the conduits associated with a toilet stool.

A main object of the invention is to provide a novel and improved conduit cleaning device which is simple in construction, which is easy to operate, and which is adapted to guide the head of a flexible stool auger over the top of the trap in a conventional toilet stool.

A further object of the invention is to provide an improved conduit cleaning device for use in cleaning out traps and similar conduits having reverse bends, for example, the trap in a conventional toilet stool, the device being inexpensive to fabricate, being durable in construction, and being provided with means for properly guiding and directing the auger head of the device so as to reverse the direction thereof over the top of the trap in a toilet stool or similar location.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is a fragmentary vertical longitudinal cross sectional view taken through an improved conduit cleaning device according to the present invention;

Figure 2 is a vertical cross sectional view taken through a conventional toilet stool showing the manner in which a conduit cleaning device according to the present invention is employed to clean out the trap in the stool;

Figure 3 is an enlarged transverse vertical cross sectional view taken on the line 3—3 of Figure 1;

Figure 4 is an enlarged transverse vertical cross sectional view taken on the line 4—4 of Figure 1;

Figure 5 is an enlarged transverse vertical cross sectional view taken on the line 5—5 of Figure 1.

Figure 6 is a fragmentary side elevational view, partly in cross-section, of a modified conduit cleaning device according to the present invention;

Figure 7 is an enlarged cross-sectional view taken on line 7—7 of Figure 6; and

Figure 8 is an enlarged fragmentary longitudinal cross-sectional view taken through a lower portion of the device of Figure 7.

Referring to the drawings, 11 generally designates an improved conduit cleaning device according to this invention. The device 11 comprises a rigid main conduit 12 having a straight main portion 13 and an arcuately curved end portion 14. Designated at 15 is a resilient tubular auger guide which is slidably engaged through the main conduit 12 and which is provided at the end thereof adjacent the straight portion 13 with a handle 16 rigidly secured thereon. Extending axially through the handle 16 and rotatable therein is a shaft member 17 formed at its outer end with a crank portion 18 and provided with a further handle 19 which is employed to rotate the shank 17, the handle 19 being rotatable on the end portion of the crank member 18, said end portion being shown at 20.

As shown in Figure 1, the shaft member 17 extends through the flexible auger guide 15 for a substantial dis-

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tance and is secured at its reduced inner end 21 in the end of a resilient auger member 22 which extends rotatably through the flexible tubular auger guide 15 and which projects therefrom at the end thereof opposite the handle 16, being formed at said opposite end with the helically coiled hook-like portion 23.

As will be readily apparent, the flexible auger guide 15 is slidable through the rigid main conduit 12, whereby said auger guide and the projecting portion 23 of the resilient auger member may be advanced through a conduit being cleaned while the operator holds the handle 16 with one hand and rotates the crank 18 with the other hand, thus rotating the hook-like portion 23 in the conduit.

In the conduit cleaning devices of the prior art, it is usually not possible to reverse the direction of the free end portion of the flexible auger guide when passing over the top of the trap 24 of a conventional toilet stool 25. In accordance with the present invention, means are provided for reversing the direction of the auger guide at this point. Thus, a lever 26 is pivoted at 27 on a lug 28 formed on the lower portion of handle 16, namely the end portion of the handle adjacent the end of the rigid conduit member 12. A flexible cable member 29 is connected at one end to an eye loop 30 provided on the handle 26. The cable 29 extends through spaced loops 31 formed on the flexible auger guide 15, for example, by enlarging the turns of said auger guide at spaced points therealong to define such loops.

Figures 3, 4 and 5 illustrate the manner in which the enlarged spaced turns of the resilient tubular auger guide 15 are formed to define the guide loops 31 which slidably receive cable 29. The guide loops 31 are formed on the outer side of the flexible guides 15, namely, the side presenting an outwardly convex contour when passing through the arcuate portion 14 of the rigid main conduit 12. Said rigid main conduit is formed on its outer side with an auxiliary guide channel 33 in which the loops 31 and the cable 29 are receivable, said loops being slidable in said auxiliary guide channel 33.

The end of the cable 29 is secured to the end portion of the tubular guide 15 at the final guide loop thereof, shown at 31'.

As will be clearly apparent from Figure 1, the lever 26 may be rotated in a counterclockwise direction, exerting tension on the flexible cable 29, which is transmitted through the end retaining loop 31', whereby to exert a bending force on the end portion of the resilient tubular auger guide 15. Thus, as shown in Figure 2, the device may be inserted in the toilet bowl 25 with the arcuate portion 14 of the rigid main conduit 12 engaged in the outlet passage of the toilet bowl and directed toward the trap 24. The auger guide 15 containing the resilient auger member 22 may then be forced through the trap 24 until the end portion 23 of the resilient auger member 22 extends well over the top of the trap, namely extends over the intervening wall portion 34, shown in Figure 2. The end portion of the auger guide 15 likewise must extend over the top of the wall portion 34. At this point, the lever 26 may be rotated from the position thereof shown in Figure 1 to the position thereof shown in Figure 2, namely to a position wherein the lever is adjacent to the handle 16, whereby the tension developed in the cable 29 causes the free end portion of the tubular auger guide 15 to be bent arcuately over the top of the trap wall element 34, as shown in Figure 2. The resilient auger member 22 may then be pushed through the trap, being guided by the reverse bend defined at the free end portion of the tubular auger guide 15, as shown in Figure 2, and may be thus moved past the trap 24 into the remaining portion of the conduit to be cleaned.

As will be readily understood, the shank member 17 is of substantial length and is slidable as well as rotatable in the handle 17, whereby the resilient auger member 22 may be advanced as well as rotated relative to the resilient tubular auger guide 15.

A suitable arcuate tubular protective casing 35 is provided on the arcuate portion 14 of the rigid main conduit 12, the protective casing 35 having a smooth outer surface so as to prevent damage to the surfaces of the toilet bowl engaged therewith during the use of the conduit cleaning device. The resilient tubular auger guide 15 and the flexible auger member 22 are formed in the conventional manner of helically coiled wire, or the like.

Thus, the resilient tubular auger guide 15 normally tends to return to a straight condition, whereby the cable 29 biases the lever 26 to the outwardly projecting position thereof shown in Figure 1.

Referring now to Figures 6, 7 and 8, a modified form of conduit cleaning device is designated generally at 11'. The device 11' comprises the rigid main conduit 12' having a straight main portion 13' and an arcuately curved end portion 14'. Designated at 15' is a resilient tubular guide member which is rigidly secured at one end on the end of the arcuate conduit member 14'.

A resilient auger member 22' extends rotatably and slidably through the rigid conduit 12' and projects from the resilient guide member 15', terminating in the helical hook element 23'. A shaft 17' provided with a handle 18' extends into the straight rigid conduit portion 13' and is secured to the end of the auger member 22'.

An arcuate outer guard sleeve 35' is secured in the arcuate portion 14' and is formed at its outer side with the guide channel 33'. A flexible cable guide conduit 40' is secured to the outer side of rigid conduit 12' and to the resilient guide member 15', extending through the channel 33' and terminating a substantial distance short of the free end of guide member 15'. A flexible cable 29' extends slidably through the guide sleeve 40'. The upper end of cable 29' is secured to a lever 26' pivoted to a lug 28' projecting outwardly from the upper end portion of rigid conduit 12' adjacent the top end of guide sleeve 40'. The lower end of cable 29' is secured to the free end of guide member 15' at 42', as shown in Figure 6, whereby clockwise rotation of lever 26', as viewed in Figure 6, causes guide member 15' to be bent arcuately downwardly from its normal straight configuration, causing the hooked end of auger member 22' to be directed downwardly.

As in the previously described form of the invention, the hooked end portion of the auger member 23' may be rotated by rotating handle 18' and may be advanced by pushing shaft member 17' downwardly into the straight portion of the rigid conduit member 12'.

While certain specific embodiments of an improved conduit cleaning device has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. A conduit cleaning device of the character described comprising a rigid main conduit having an arcuate end portion, a resilient tubular auger guide slidably engaged through said main conduit, a resilient auger member rotatably and slidably engaged through said auger guide, a flexible cable member extending adjacent said auger guide and fastened at one end to an end portion of said guide, spaced retaining means on the guide slidably receiving said cable member and retaining said cable member adjacent the guide, a guide channel on the convex side of said rigid main conduit slidably receiving said retaining means, and a lever pivoted to the other end portion of the cable guide, the other end of said cable member being secured to said lever.

2. A conduit cleaning device of the character described comprising a rigid main conduit having a straight main portion and an arcuate end portion, a resilient tubular auger guide slidably engaged through said main conduit, a resilient auger member rotatably and slidably engaged through said auger guide, a flexible cable member extending adjacent said auger guide and fastened at the end thereof adjacent said arcuate end portion of the main conduit through the adjacent end portion of said guide, spaced retaining loops on the guide slidably receiving said cable member and retaining said cable member adjacent the guide, a guide channel on the convex side of said rigid main conduit slidably receiving said retaining loops, and a lever pivoted to the other end portion of the cable guide, the other end of said cable member being secured to said lever.

3. A conduit cleaning device of the character described, comprising a rigid main conduit having a straight main portion and an arcuate end portion, a resilient tubular auger guide slidably engaged through said main conduit, a resilient auger member rotatably and slidably engaged through said auger guide, a flexible cable member extending adjacent said auger guide and fastened at the end thereof adjacent said arcuate end portion of the main conduit through the adjacent end portion of said guide, spaced retaining loop means on the guide slidably receiving said cable member and retaining said cable member adjacent the guide, a guide channel on the convex side of said rigid main conduit slidably receiving said retaining loop means, a tubular handle secured on the other end portion of the guide, and a lever pivoted to said handle, the other end of said cable member being secured to said lever.

4. A conduit cleaning device of the character described comprising a rigid main conduit having a straight main portion and an arcuate end portion, a resilient tubular auger guide slidably engaged through said main conduit, said main conduit being formed with an auxiliary guide channel along its length and extending along the convex side of said arcuate end portion, a resilient auger member slidably and rotatably engaged through said auger guide, a flexible cable member extending adjacent said auger guide and through said auxiliary guide channel and fastened at the end thereof adjacent said arcuate end portion of the main conduit to the adjacent end portion of said guide, spaced retaining loops on the guide slidably receiving said cable member and retaining said cable member adjacent to the guide, said retaining loops being slidably received in said auxiliary guide channel, a tubular handle secured on the other end portion of the guide, and a lever pivoted to said handle, the other end of said cable member being secured to said lever.

5. A conduit cleaning device of the character described comprising a rigid main conduit having a straight main portion and an arcuate end portion, a resilient tubular auger guide carried by said main conduit and projecting from said arcuate end portion, a resilient auger member rotatably and slidably mounted in said main conduit and extending rotatably and slidably through said auger guide, cable guide means on the convex side of the rigid main conduit and terminating short of the free end of said auger guide, a flexible cable member extending through said cable guide means and secured at one end to the free end of said auger guide, a lever, means pivotally supporting the lever adjacent said straight portion of the main conduit, and means connecting the other end of the cable member to said lever.

6. A conduit cleaning device of the character described comprising a rigid main conduit having a straight main portion and an arcuate end portion, a resilient tubular auger guide, means supporting said auger guide in a position wherein said auger guide projects from the end of said arcuate end portion of the main conduit, a resilient auger member rotatably and slidably mounted in said main conduit and extending rotatably and slidably through said auger guide, cable guide means on the convex side of

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the rigid main conduit and terminating short of the free end of said auger guide, a flexible cable member extending through said cable guide means and secured at one end to the free end of said auger guide, a lever, means pivotally supporting the lever adjacent said straight portion of the main conduit, and means connecting the other end of the cable member to said lever.

7. A conduit cleaning device of the character described comprising a rigid main conduit having a straight main portion and an arcuate end portion, a resilient tubular auger guide rigidly connected to and projecting from the end of said arcuate end portion of the main conduit, a resilient auger member rotatably and slidably mounted in said main conduit and extending rotatably and slidably through said auger guide, cable guide means on the

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convex side of the rigid main conduit and terminating short of the free end of said auger guide, a flexible cable member extending through said cable guide means and secured at one end to the free end of said auger guide, a lever, means pivotally supporting the lever adjacent said straight portion of the main conduit, and means connecting the other end of the cable member to said lever.

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