Oct. 5, 1948. C. J. PERRY 2,450,486

PLUMBER'S SNAKE AND FEEDING DEVICE THEREFOR

Filed Oct. 8, 1945 2 Sheets-Sheet 1

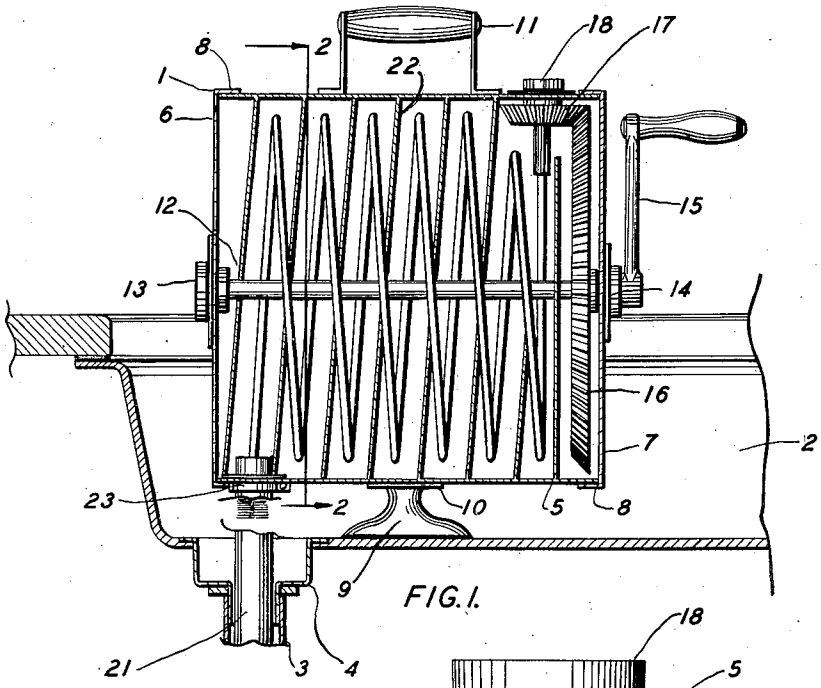


FIG. 1.

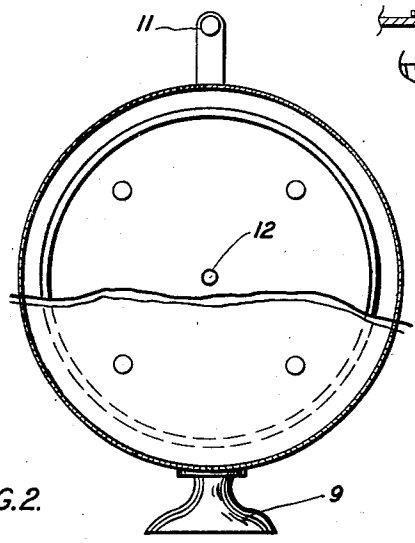


FIG. 2.

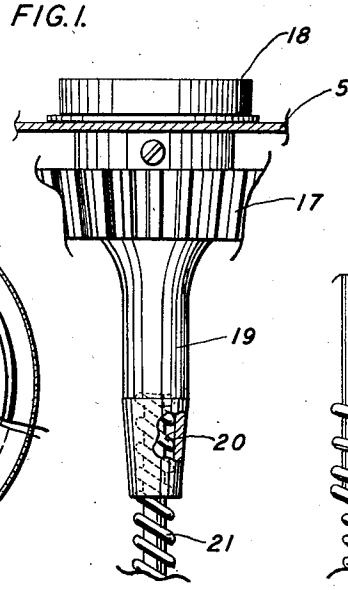


FIG. 3.

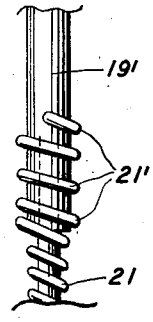


FIG. 4.

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PLUMBER'S SNAKE AND FEEDING DEVICE THEREFOR

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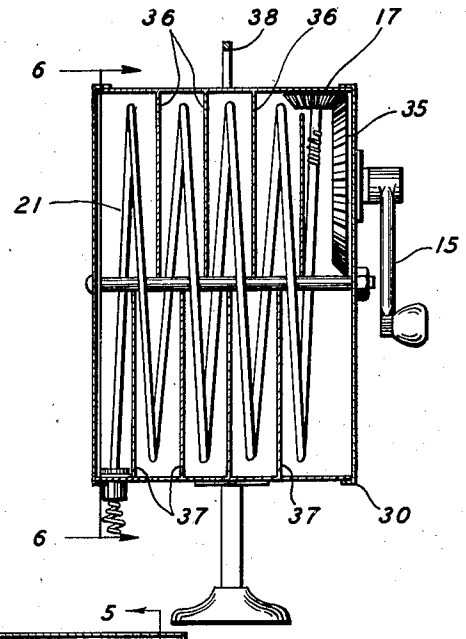


FIG. 5.

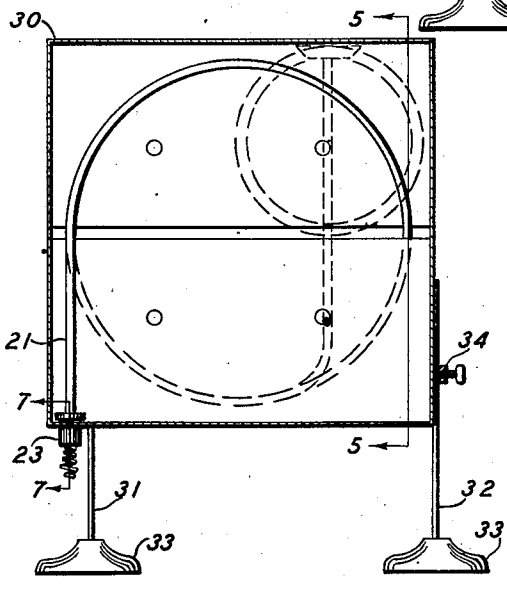


FIG. 6.

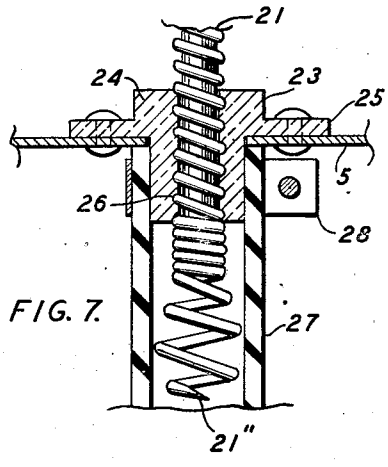


FIG. 7.

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PLUMBER'S SNAKE AND FEEDING DEVICE THEREFOR

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5 Claims. (Cl. 15—104.30)

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This invention relates to plumbers' snakes and the like, that is, those flexible shafts, wires, ribbons, bands, etc., that are employed by plumbers or laymen for clearing their kitchen and bath room drains. However, this same device may be used for drilling, tapping, boring, etc., by providing the proper tools at the end of the flexible shaft. The device of this invention is so arranged and constructed that inexperienced persons can easily and quickly clear drains and the like of obstructions by merely working a crank handle. The job can be done without soiling the clothes in that no part of the snake need come into contact with the person using same in that a housing is provided for the snake wherein it is kept in perfect order and ready at all times to be wiggled through any drain pipe or the like. By providing a wiper device where the flexible shaft enters the device, the shaft wire or cable can be kept clean so as not to carry dirt and odors into its housing.

One of the principal objects of this invention is to present a new and novel pipe opening and/or cleaning device that is easy to operate and dependable to do the job, a device that is small of size, simple and sturdy in construction, and which is economical to make and manufacture.

Another object is to provide a plumber's snake operating device that is safe to use, that is positive in its operation, and which can be kept in a reasonable sanitary condition without any difficulty whatever.

Still another object is to provide a boring device that can be either hand or machine operable and which rotates a flexible or semi-flexible shaft, tape or wire means, or a series of linked elongated members, which efficiently and positively can easily work its way through any type or kind of tubing, casings, pipes, or bores.

And still another object is to present a housed plumber's snake element that is provided with a lead brush and/or scraper, but which element when employed alone is effective in scraping the inner surfaces of bores and the like as it is rotated and forced therethrough.

Other objects, advantages and features of my invention will appear from the accompanying drawings, the subjoined detailed description, the preamble of these specifications and the appended claims.

Applicant is about to illustrate and describe one of the forms of his invention in order to teach one how to make and use the same, but it is to be understood that the drawings and description thereof are not to limit the invention in any

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sense whatsoever, except as limited by the appended claims.

In the drawings:

Fig. 1 is a sectional view, but with parts being shown in elevational view, showing a device of the invention as applied to the drain of a typical sink,

Fig. 2 is a transverse sectional view of the device shown in Fig. 1, and taken substantially along line 2—2 thereof,

Fig. 3 is an enlarged elevational view of a portion of the device shown in Fig. 1,

Fig. 4 is an enlarged elevational view also, but showing a slight modified form of the invention which may be employed instead of the portion shown in Fig. 3,

Fig. 5 is another device of the invention, a modified form which may be preferred under certain conditions, it is a vertical sectional view with parts thereof being shown in elevational view, and taken substantially along line 5—5 of Fig. 6,

Fig. 6 is a sectional view of the device shown in Fig. 5, and taken substantially along line 6—6 thereof,

Fig. 7 is an enlarged detailed part, partly in elevational view and partly in sectional view, which is employed in both forms of the invention.

The first illustrated form of the invention, shows a plumber's snake feeding device 1 in a kitchen sink 2 which has a drain pipe 3 and entry box 4 thereto. The device comprises an annular housing wall 5 with an end covering or disc-like wall 6 at one side and a similar wall 7 at the other side; these end walls consisting of sheet metal having inwardly turned flanges 8 which may be screwed or soldered to the annular wall 5 which they overlap. At the bottom of the housing, there is a pedestal-like supporting member 9 that may be fastened in any suitable manner to the annular wall as by soldering or welding the flange 10 thereof to the bottom of the annular wall. The member 9 is preferably a suction cup, that is, an inverted rubber cup that can be made removably tight to the outer top surface of the sink when desired. At the top of the housing, there is a handle 11 having its legs soldered or welded to the top of the annuuar wall 5 so that the device can be easily carried and also held when the crank of the device is being worked.

Concentric with the device is a shaft 12 which has its ends journalled in the wall bearings 13 and 14, and keyed to one end of the shaft is a crank handle 15, and near this end of the shaft, but within the housing, there is keyed thereto a large bevelled gear 16, as shown. The gear 16 is

in mesh with a bevelled pinion gear 17 which is journalled in the wall bearing 18, but this pinion gear has a stem or coupling element 19 extending therefrom which is integral therewith and which is provided with a chamber or bore 20 at the distal end thereof to receive one end of a flexible snake, shaft or rod 21. This snake end may be sweated into the chamber with solder, or one or more small set screws may be employed in an obvious manner.

The stem 19 of the pinion gear may alternatively be fixed to the snake as shown in Fig. 4 of the drawings. In this figure, the stem of the pinion gear is indicated by the numeral 19' and the expanded convolutes of the snake are indicated by the numeral 21'. When the snake end is fixed to the stem as shown in this figure, the convolutes 21' may be soldered or welded to the stem 19'. In any event, the snake must be firmly fixed to the pinion-gear-stem so that when the gear is rotated, the snake 21 is rotated and thus the snake can easily work or worm its way through bores of most any kind and of most any length.

Within the chamber of the housing 1, there is a spirally arranged sheet of metal 22 which is positioned around the shaft 12, but the inner edges of the sheet 22 need not be close to the shaft but may be materially spaced therefrom so as to not interfere with the shafts rotation and also to provide air circulating spaces which are in direct communication with perforations in the sides of the housing for the purpose of allowing the snake to readily dry after being used in a wet drain pipe. The outer edges of the spiral sheet may be soldered or fixed to the inner surfaces of the housing annular wall in any suitable manner. By this construction, a continuous chamber is provided to receive the convolutes of the snake when the snake is not in use, or the portions of the snake which are not in immediate use when the device is employed for cleaning or opening drains.

The snake is worked through an egress-ingress socket or feeding unit 23, which unit is shown in detail in Fig. 7 of the drawings. The unit has a block 24 provided with an extending flange 25 which is welded to the housing wall 5, or riveted thereto as shown. The block has a bore 26 which is rifled to conform with the outer surfaces of the snake, which snake in this particular case consists of a large number of convolutes of rounded metal juxtaposed to one another to form a uniform flexible snake which has spring stiffness and which is continuous from end to end thereof. The working end of the snake may have its convolutes expanded and the very end of which may be sharpened, as at 21'', to provide a good working point to aid the snake making its way through a bore and also for aiding the snake end to cut into obstructions within the bore. It should now be very obvious, that as the pinion gear rotates the snake, the snake is fed, in a positive manner, forward or vice versa, through the feeder element 24 where the snake is forced to rotate with positive strength by the thread-like inner formation of the block at 26. A lower end of the block 24 is protruded and sized to snugly receive the top end of a flexible duct or pipe 27, which pipe may be a short length of common garden hose. The hose may be held to the protrusion by any suitable clamping means, such as, for instance, the garden hose type of metal clamp indicated at 28. The purpose of this hose is to guide the snake from the outlet or block 24 to the top of the drain opening which leads to the clogged pipe or duct.

The form of the invention shown in Figs. 5 and 6 is very much like the first one just explained. This form has a rectangular-box-like housing 30 which is supported by the two legs 31 and 32, each of which is provided with suction-cup-like feet 33. The leg 32 is provided with a leg guide and a finger adjustable screw 34 so that this leg can be shortened or lengthened and thus allow the housing to be tilted for a special use when necessary.

The form shown in Figs. 5 and 6 is otherwise the same as the first form, that is, it has the same crank handle means 15 which works directly upon gear 35 (somewhat smaller than gear 16) which is in mesh with the pinion gear 17. The pinion gear in turn works the snake 21 which is connected thereto, the distal end of the snake working out of the housing via the feeder block 23. Instead of this form having the spirally arranged single plate within the housing for maintaining the snake in good order, a series of staggered plates 36 and 37 are employed, the top plates being centered in the spaces between the lower plates 37 and illustrated clearly in Fig. 5. A handle 38 is fixed to the top of the housing for carrying the device from place to place and also for steadying the device when in use. Obviously, any suitable tool or brush element may be fixed to the distal end of the snake for use in performing the work to clear the drain, or to bore and chip in most any tube, pipe, or other inaccessible place.

It is, of course, understood that various changes and modifications may be made in the details of form, style, design and construction of the whole or any part of the specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the limitations clearly expressed in the following claims.

Having thus described my invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a portable machine for working a flexible tool shaft, a housing having a chamber with a helically shaped partition therein presenting a helical passage, a flexible shaft in the passage, a rotating means at one end of the passage and fixed to an end of the shaft, and an outlet element at the other end of the passage having means to feed the shaft from the housing.

2. In a device for opening drains and the like, a housing having an annular wall with disc-like sides, a helical partition in the housing forming a helically shaped chamber, a hand operable means having a gear fixed thereto, a pinion gear at one end of the chamber in mesh with the first mentioned gear, and an outlet at another end of the chamber having a bore, an elongated flexible shaft in the helical chamber having one end thereof fixed to the pinion gear and the other end passing through the bore of the outlet.

3. In a plumber's snake device for opening drains etc., a housing having a compact elongated helical chamber therein formed by partition means, a bar passing through the housing forming an axis for the chamber, a pinion gear journalled to the housing at one end of the chamber and an outlet means fixed to the housing at the other end of the chamber, an elongated flexible shaft positioned within the chamber and extending the entire length thereof and free to shift in radial directions, one end of the shaft having

means fixing it to the pinion gear and the other end of the shaft passing through the outlet, a relatively large diametered gear journalled to the housing and in mesh with the pinion gear, and means fixed to the large gear for rotating it.

4. The device set forth in claim 3 wherein the housing is a hollow cylinder, said partition means comprising an elongated strip of material wound edgewise about the bar and inclined at an angle to allow easy operation of the shaft therethrough.

5. In a plumber's snake device for opening drains etc., the device comprising a housing having a plurality of fixed cross partitions forming a continuous chamber of radially arranged passages to accommodate an elongated flexible shaft, a pinion gear journalled to the housing at one end of the chamber and an outlet means for a flexible shaft fixed to the housing at the other end of the chamber, an elongated flexible shaft positioned within the chamber and extending substantially the length thereof, means fixing one end of the shaft to the pinion gear, a relatively large diametered gear journalled to the housing and in mesh with the pinion gear, and means connected with

the large gear for the purpose of rotating it and the shaft for its egress through the outlet means.

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