Aug. 9, 1927. 1,638,766

F. E. GROSVOLD

FLEXIBLE WASTE PIPE CLEANER

Filed June 4, 1926

Fig. 1,

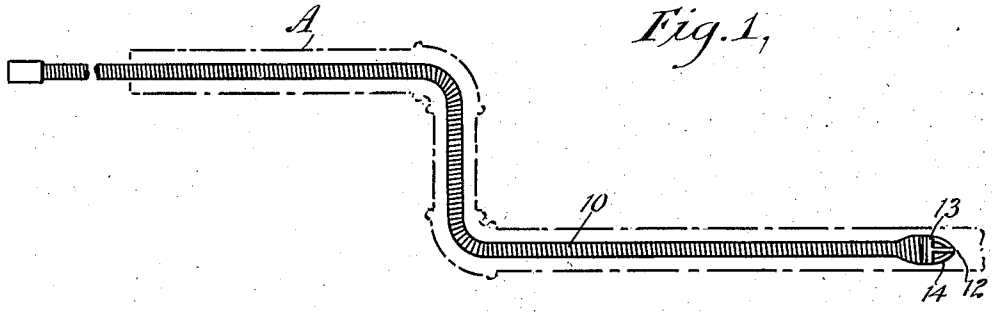


Fig. 2,

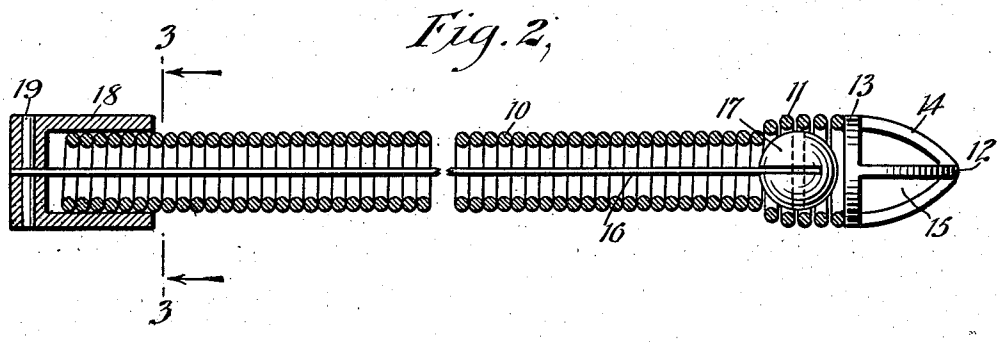


Fig. 3,

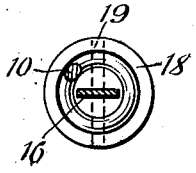


Fig. 4,

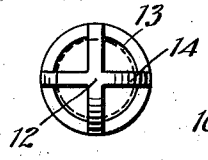
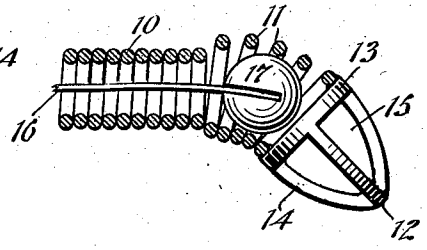


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRED E. GROSVOLD, OF EAU CLAIRE, WISCONSIN.

FLEXIBLE WASTE-PIPE CLEANER.

Application filed June 4, 1926. Serial No. 113,769.

My invention relates to a waste-pipe cleaner of the type having a head mounted on a shank formed of wire coil.

The general object of my invention is to provide a pipe cleaner of the indicated type improved in various particulars including a novel head calculated to effectively clear the pipe when forced forwardly therethrough and to provide a stiffener for the flexible shank of such form and such relation to the wire coil as to prevent the coil from unduly spreading and to prevent the convolutions thereof from kinking.

The nature of my invention and its distinguishing features and advantages will clearly appear as the description proceeds.

Reference is to be had to the accompanying drawings forming a part of this specification, it being understood that the drawings are merely illustrative of one example of the invention.

Figure 1 is a side elevation of a flexible waste-pipe cleaner formed in accordance with my invention indicating the adaptability of the same to be passed through a pipe having right-angular bends;

Figure 2 is an enlarged longitudinal sectional view with part broken out;

Figure 3 is a cross section on the line 3—3, Figure 2;

Figure 4 is a front end view;

Figure 5 is a longitudinal section of the forward portion of the pipe cleaner with the head deflected laterally as when passing through a bend in a pipe.

In carrying out my invention in accordance with the illustrated example, the shank of the tool is formed of a coiled wire 10, the convolutions of which are in close relation. At the front end the coils are enlarged as at 11 and the forward convolution of said enlarged portion 11 abuts against the base 13 of a head 12, said head being formed with bars 14 at right angles to each other and leaving the openings 15 between the bars. The bars 14 converge from the base 13 to the pointed front end of said head 12.

Extending longitudinally within the hollow and coiled shank 10 is a flat spring 16. On said spring 16 at the front end is a ball 17 disposed within the enlarged coils 11 of shank 10. It is to be observed that the ball 17 is free from the head 12 so that the head and ball may have independent relative movement when the tool is passed through bends of a pipe, said pipe being indicated by dot-and-dash lines at A in Figure 1.

The rear end of the shank 10 has a cap 18 which constitutes a rigid handle end for manipulating the tool. The cap 18 embraces the rear coils of the shank 10 and the rear end of spring 16 passes through said cap and is secured to the cap by a transverse pin 19.

It will be noted from the left of Figure 2 that there is a space between the closed end of the cap 18 and the adjacent convolution of the spring shank 10. The space indicated approximately measures the total extent to which the convolutions of the coil may separate and therefore the kinking or deformation of the convolutions is prevented. This is so because the ball 17 while it permits free movement of the enlarged coil 11 transversely as indicated in Figure 5, for example, in the lateral deflection of the pilot head 12, limits the longitudinal movement of the ball 17 and spring 16 except as the space at the rear end of the shank 10 between the same and the end of cap 18 permits. The flat spring 16 is effective in restoring the normalcy of the shank 10 after a lateral bending or after the limited distension permitted the shank. The ball 17 takes the thrust of the head 12 at the base 13 in forcing the tool through the pipe. Any suitable means or method may be employed to unite the front one of the enlarged convolutions 11 to the base 13 to sustain said head in position and to cause the head to be restored to its normal position with the reaction of the coils after subjecting the same to any lateral or bending stresses.

The assemblage including the ball 17 and enlarged coil 11 as well as the independence of the head 12 permits the head to take even a right angular bend with regard to the normal axis of the shank and the shank 10 partakes of the right angular bending or deflection of the head 12 in being forced through a pipe.

The form of the pilot head 12 with its convergent separated bars and base provides the necessary strength and gives the head a form for effective penetration of the collected matter in a pipe because the bars when the shank is turned, and the pilot head turned with it, will cause loosening up

of the matter collected in the pipe, said matter having free entrance in the openings presented between the bars 14.

I would state furthermore that while the illustrated example constitutes a practical embodiment of my invention, I do not limit myself strictly to the exact details herein illustrated, since, manifestly, the same can be considerably varied without departure from the spirit of the invention as defined in the claims.

Having thus described my invention, I claim:

1. A waste-pipe cleaning device including a shank formed of a spring coil, the convolutions of which at the front end of the shank are enlarged, a pilot head held to the shank at the terminal convolution of the shank, a cap disposed about the rear end of the shank and having its end separated from the adjacent end of the shank by an intervening space, an elongated spring extending longitudinally through the shank from said cap to said enlarged convolutions of the shank, and a ball on said elongated spring and disposed within the said enlarged convolutions of the coil.

2. A cleaning device including a shank formed of a spring coil, pilot means on said shank at the front end, an element fitting the rear end of the shank and having its end separated from the adjacent end of the shank by an intervening space, a plate spring secured to said element on the rear end of the shank and extending to near the front end of the shank, and a ball on said spring within the front end of the shank.

FRED E. GROSVOLD.