June 7, 1960 C. M. GASSER 2,939,154

PLUMBING SYSTEM PURGER

Filed March 24, 1958

FIG. 1

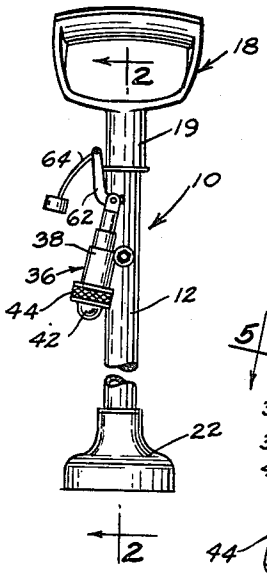


FIG. 3

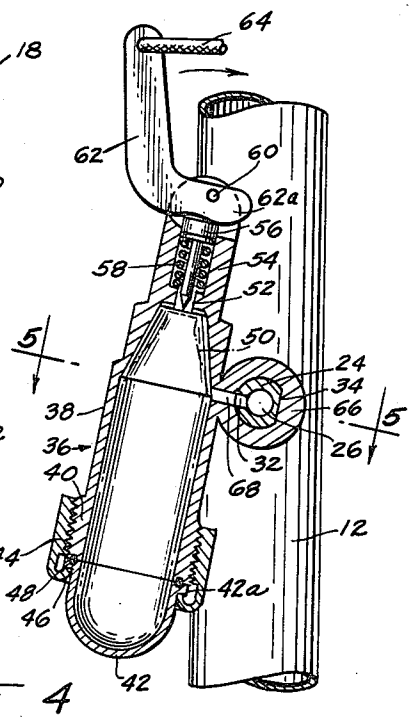


FIG. 2

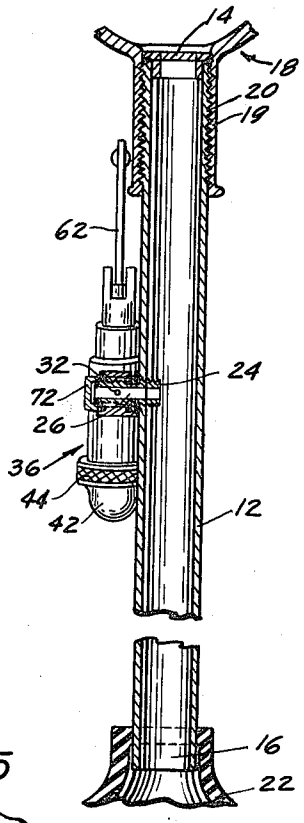


FIG. 4

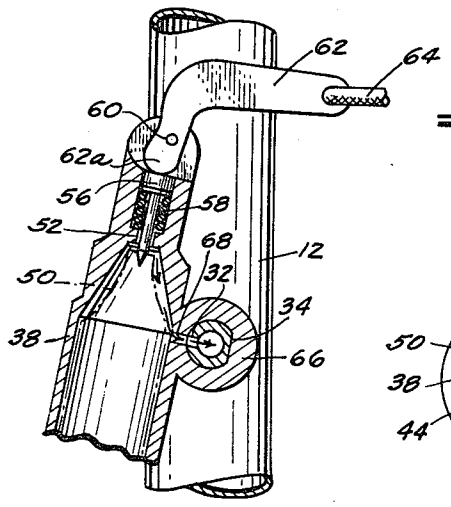
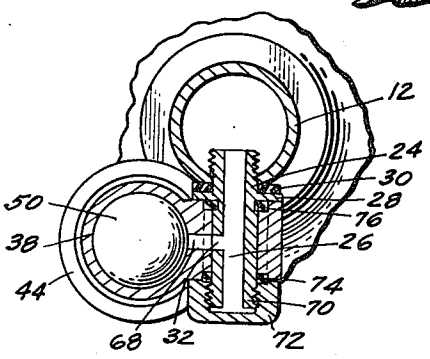


FIG. 5



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United States Patent Office

2,939,154

Patented June 7, 1960

2,939,154

PLUMBING SYSTEM PURGER

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Filed Mar. 24, 1958, Ser. No. 723,399

3 Claims. (Cl. 4—255)

This invention relates to a device for clearing clogged drains and the like, and more particularly relates to a device which utilizes a flow of gas under pressure to effect clearing of the clogged drain.

The use of plungers and the like to build up pressure for clearing clogged drains is notoriously old. Other drain-flushing devices have been proposed using air pumps for building up an accumulation of air under pressure which may be selectively released to provide a sudden flow of gas serving to produce a drain-clearing pressure. The latter devices, while an improvement over the more simple plungers, are considerably more complicated to operate and are relatively expensive.

One object of this invention is to provide a flushing device for clearing clogged drains, which device utilizes a flow of compressed gas, from a throw-away type compressed gas cartridge, to effect a drain-clearing pressure.

Another object of this invention is to provide a compressed-gas type drain-clearing device which is very simple to operate and which is characterized by its reliability in operation and inexpensiveness of construction.

A further object of this invention is to provide a compressed-gas type drain-clearing device which may also be used, alternatively, as an ordinary plunger-type drain-clearing means.

Further objects and advantages of this invention will become apparent as the following description proceeds and the features of novelty which characterize this invention will be pointed out with particularity in the claims annexed to and forming part of this specification.

A preferred embodiment of the invention is shown in the accompanying drawings, in which:

Figure 1 is a broken elevation view showing a device embodying the invention;

Figure 2 is an enlarged fragmentary cross-section view taken substantially on line 2—2 of Figure 1;

Figure 3 is a greatly enlarged cross-section view illustrating the details of the compressed gas cartridge means and casing therefor, and shows the piercing pin in its retracted position;

Figure 4 is a fragmentary view similar to Figure 3 showing the piercing pin in its projected, piercing position; and

Figure 5 is a cross-section view taken substantially on line 5—5 of Figure 3.

Referring now to the drawings, there is shown in Figure 1, a flushing device generally indicated at **10**, which includes a tubular body **12** closed at its upper end at **14** and open at its lower end at **16**, as best seen in Figure 2. Handle means **18** are detachably connected to the closed end of said body, by providing a tubular portion **19** which is connected by screw-thread means **20** to the upper end of tubular body **12**. The lower end of tubular body **12** has a flexible rubber cup member **22** appropriately secured thereon in sealing relation thereto. The flexible cup member **22** differs from the ordinary bell-shaped flexible plunger in that the member **22** is apertured axially so that the cup member **22** serves as the lowermost extension

of the passageway defined through the tubular body **12**. The length of tubular body **12** may be any desired amount, although in the preferred form the length is about three feet, as it has been found that such length provides for ease in manipulation in accomplishing the job which the device is intended to perform.

There is mounted on the tubular body **12**, relatively adjacent the upper handle end thereof, a tubular stud **24** which is screw-threaded through the wall of body **12**, so that the central bore **26** of tubular stud **24** communicates with the interior of tubular body **12**. The stud **24** carries an abutment in the form of an annular flange **28** located outwardly adjacent the tubular body **12**, and a gasket means **30** is clamped between flange **28** and tubular body **12** to seal the point of connection of the stud **24** to the tubular body.

The tubular stud **24** is transversely bored at **32**, said transverse bore **32** communicating with the central bore **26** of the stud. At a point diametric of the transverse bore **32**, the outer periphery of tubular stud **24** is provided with a non-circular contour **34**. In the specific embodiment shown the outer periphery of stud **24** is provided with a flat **34** of substantial width, so that the tubular stud may be considered as having a non-circular outer periphery.

Mounted on said tubular stud **24** are means including a compressed gas cartridge and discharge means therefor, which provides for selectively discharging the contents of the compressed gas cartridge suddenly through the open end **16** of the tubular body **12** to provide a pressurized flow of gas for flushing a clogged drain pipe. The apparatus for mounting the gas cartridge and for effecting the sudden discharge of compressed gas through the tubular body **12** includes a segmented hollow casing means, generally indicated at **36**.. The casing means **36** includes an open-ended main body portion **38**, provided with male threads **40**, a cap portion **42** for closing said open end of the casing portion **38**, and a nut type member **44** adapted for threaded connection to male threads **40** and having an inwardly extending flange **46** for clamping the outwardly extending flange **42***a* of cap **42** against the terminal edge of casing **38**. Appropriate gasket means **48** may be provided between cap **42** and casing member **38** to effect a seal at the joint therebetween. The separable casing means **36** provides for easily inserting a fresh gas cartridge therein after one has been exhausted as hereinafter described.

When assembled as shown, the casing **38** and cap **42** define an elongated hollow casing which is adapted to receive therein a compressed CO_2 gas cartridge shown in dot-dash lines at **50**. The upper casing portion **38** also carries thereon a piercing mechanism which is adapted to be selectively activated to effect piercing of the normally sealed gas cartridge **50**. As shown, the casing **38** defines a pin guiding bore **52** at the upper end of the cartridge receiving chamber, and an annular boss **54** extending axially outwardly of bore **52** and arranged for having headed piercing pin **56** carried therein. The piercing pin **56** is normally biased to a retracted position by means of a coil spring **58**, one end of which engages the underside of the pin **56**, and the other end of which engages the walls defining the pin guiding bore **52**. The uppermost end of casing **38** is bifurcated, and carries a pivot pin **60** upon which is pivotally mounted a bell-crank type actuating lever **62**. One arm of bell crank **62** is connected to a pull cord **64**, and the other arm of bell crank **62** is so mounted on pivot pin **60** that the bell crank's extended end **62***a* serves as a cam means for depressing the piercing pin **56**, as the bell crank **62** is pivoted from the position shown in Figure 3 to the position shown in Figure 4.

The spring **58** normally biases the headed piercing

pin 56 against one edge of the bell crank 62 as shown in Figure 3. When pulling on the pull cord 64, the tendency is for the bell crank to move to the position shown in Figure 4 wherein the cam edge 62*a* depresses the piercing pin sufficiently so that the sharpened end of the piercing pin opens the sealed gas cartridge 50 to permit rapid discharge of the contents of gas cartridge 50.

The casing means also carries thereon a mounting ring 66 which is preferably formed integral with main body portion 38, and which is shaped to define a non-circular inner periphery arranged for complementary co-operation with the non-circular periphery of the tubular stud 24, so that the mounting ring 66 may be removably positioned on tubular stud 24 at a single predetermined attitude. A gas passageway 68 is provided communicating the chamber enclosed by the hollow casing means 36, within which chamber the gas cartridge 50 is positioned, through the wall of casing portion 38 and through mounting ring 66, and in communication with the transverse bore 32 in the tubular stud 24. Thus, when the compressed gas is released from the cartridge 50, the compressed gas will flow through passageways 68, 32 and 26 into the tubular body 12 and will discharge relatively suddenly through the open end 16 of the tubular body 12 to provide the discharged pressurized flow of gas for flushing a clogged drain pipe.

The outermost end of tubular stud 24 is threaded at 70 to receive a closure cap 72 thereon. The closure cap operates not only to close off the open end of bore 26 in stud 24, but also to clamp the mounting ring 66 between itself and the annular flange 28 on the tubular stud. Appropriate sealing means 74 are provided between cap 72 and mounting ring 66, and appropriate sealing means 76 are provided between mounting ring 66 and annular flange 28 of the tubular stud 24.

It will be seen that not only may the device herein be used to provide a pressurized flow of gas to effect flushing of a clogged drain pipe, but the device herein may also be used as an ordinary manually operable plunger to effect the clearing of the drain pipe.

The location of the mounting stud, and compressed gas cartridge and discharge means thereon, near the upper handle end of the device provides that an individual may easily hold the flushing device with one hand grasping handle 18 while permitting of ready manipulation of pull cord 64 with the other hand to effect the discharge of the compressed gas.

While there has been shown and described a particular embodiment of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention and, therefore, it is intended in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. A device for clearing clogged drain pipes comprising, in combination, an elongated tubular body closed at one end and open at the other end, a handle connected to the closed end of said body, a flexible cup member sealing carried on said tubular body adjacent the open end thereof, a tubular stud carried on said tubular body adjacent the handle end thereof and communicating therererethrough with the interior of said tubular body, a compressed gas cartridge and discharge means therefor removably mounted on said tubular stud, said discharge means including an enclosed compressed-gas-cartridge chamber for removably receiving a sealed gas cartridge therein and a manually actuatable piercing pin for selectively opening a sealed gas cartridge to provide means for selectively discharging the contents of said compressed gas cartridge, in the said chamber of said discharge means, relatively suddenly through the open end of said tubular body to provide a pressurized flow of gas for flushing a clogged drain pipe, and gas-confining-and-communicating means including said enclosed cartridge chamber communicating with said tubular stud and from said tubular stud to said tubular body for confining the gas released from said compressed gas cartridge and for directing the released gas through the open end of said tubular body.

2. A device for clearing clogged drain pipes comprising, in combination, an elongated tubular body closed at one end and open at the other end, a handle connected to the closed end of said body, a flexible cup member sealing carried on said tubular body adjacent the open end thereof, a tubular stud carried on said tubular body adjacent the handle end thereof and communicating therethrough with the interior of said tubular body, said tubular stud being transversely bored and having a non-circular outer periphery, hollow casing means defining an enclosed compressed-gas-cartridge chamber and gas passageway means communicating with said chamber and adapted for communication with the transverse bore in said tubular stud, said casing carrying a mounting ring of non-circular inner periphery arranged for removable mounting on said tubular stud at a predetermined attitude, said casing means carrying a piercing pin arranged for entrance into said cartridge chamber to open a compressed gas cartridge therein, and manually operable cam means for selectively actuating said piercing pin, so as to discharge the contents of said compressed gas cartridge relatively suddenly through the open end of said tubular body to provide a pressurized flow of gas for flushing a clogged drain pipe.

3. A device for clearing clogged drain pipes comprising, in combination, an elongated tubular body closed at one end and open at the other end, a handle connected to the closed end of said body, a flexible cup member sealing carried on said tubular body adjacent the open end thereof, a tubular stud carried on said tubular body adjacent the handle end thereof and communicating therethrough with the interior of said tubular body, said tubular stud being transversely bored and having a non-circular outer periphery, hollow casing means defining an enclosed compressed-gas-cartridge chamber and gas passageway means communicating with said chamber and adapted for communication with the transverse bore in said tubular stud, said casing carrying a mounting ring of non-circular inner periphery arranged for removable mounting on said tubular stud at a predetermined attitude, said casing means carrying a piercing pin arranged for entrance into said cartridge chamber to open a compressed gas cartridge therein, manually operable cam means for selectively actuating said piercing pin, so as to discharge the contents of said compressed gas cartridge relatively suddenly through the open end of said tubular body to provide a pressurized flow of gas for flushing a clogged drain pipe, and cap means removably mounted on the outer end of said tubular stud for sealing said end of the stud and engaging said mounting ring of the casing means, to sealingly clamp said mounting ring between said cap means and an abutment carried on said tubular stud.

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