DRAIN CLOG REMOVER

Inventors: Terra J. Morgan, Hales Corners, WI (US); Douglas A. Soller, Racine, WI (US); Anthony R. Kevek, Pleasant Prairie, WI (US); Brad P. Baranowski, Racine, WI (US); Christopher R. Sheridan, Racine, WI (US); John C. Taylor, Kenosha, WI (US); Marc B. Frosch, Racine, WI (US); Evan A. Sparks, Madison, WI (US)

Correspondence Address:
S.C. JOHNSON & SON, INC.
1525 HOWE STREET
RACINE, WI 53403-2236 (US)

ABSTRACT

A drain clog remover includes a container adapted to hold a drain cleaning composition and a shaft defining a delivery passage fluidly communicating with the container. In certain embodiments, the shaft includes projections for mechanically engaging and removing clog-forming material from the drain pipe. In other embodiments, the shaft is slidably coupled to the container for moving between a retracted position for storage and an extended position for use.

Publication Classification

Int. Cl.
E03D 9/00

U.S. Cl. ................................................... 425/455.04
DRAIN CLOG REMOVER

FIELD OF THE DISCLOSURE

[0001] The present disclosure generally relates to plumbing maintenance, and more particularly to apparatus and chemical compositions for removing clogs from drain pipes.

BACKGROUND OF THE DISCLOSURE

[0002] Various types of apparatus and chemical compositions are known for removing clogs formed in drain pipes. In some of these, a mechanical apparatus is provided for engaging and removing the clog-forming material from the drain pipe. In one example, the device includes an elongate, flexible strip sized for insertion into the drain pipe. The strip has a length sufficient so that a distal end will contact the clog. The user may then apply pushing, pulling, twisting, or other force to the strip in an attempt to engage and/or dislodge all or part of the clog. The strip may include barbs or other projections extending from an exterior surface to improve the ability to snag or otherwise engage fibrous material that may be stuck in the drain pipe. Once the clog material is engaged, the device is withdrawn from the drain pipe, bringing the clog-forming material with it.

[0003] Other types of devices attempt to dislodge the clog by providing a fluid jet that is directed toward the clog. These devices may be connected to a source of pressurized fluid such as water or air, and may include an elongate member having a channel extending therethrough to direct pressurized fluid toward the location of the clog.

[0004] Alternatively, various chemical compositions are known which are adapted to disintegrate or dissolve clogs formed in drain pipes. The chemical compositions are typically provided in containers, and the user simply pours the chemical composition from the container into an inlet of the drain. U.S. Pat. No. 4,969,491 to Kiplinger discloses a more complex arrangement, which includes a rubber mat that is held in place between a coupling and a container so that the mat protects the plumbing fixture adjacent the drain inlet to protect the plumbing fixture from the corrosive properties of the chemical composition. The coupling includes a tube 24 that is inserted into the drain pipe, wherein the tube 24 is formed of a material that is rigid yet flexible enough to be bent into an arcuate shape. The tube 24 has a sharp tip for piercing through a clog. With the tube so positioned, the container of acid is attached to the coupling and opened so that the acid flows through the tube 24 and is discharged adjacent the clog. The tube 24 may include openings 70 along its length to discharge acid along the entire length of the clog. In the disclosed embodiment, Kiplinger shows the clog located in an upwardly flowing leg of a U-trap section of pipe, so that gravity pulls acid discharged from the tube 24 into the clog.

[0005] While the above-noted mechanical and chemical approaches have met with some success, there is still a need for devices which more quickly and efficiently eliminate clogs from drain pipes.

SUMMARY OF THE DISCLOSURE

[0006] According to certain aspects of the present disclosure, a drain clog remover for removing a clog from a drain pipe includes a container having an outlet and defining a reservoir adapted to receive a drain cleaning composition. An elongate shaft is coupled to the container and has a proximal end and a distal tip, the shaft having an exterior surface sized for insertion into the drain pipe. A delivery passage extends through the shaft and has an inlet formed at the shaft proximal end in fluid communication with the container outlet. Projections extend outwardly from the shaft exterior surface and are configured to grip fibrous material.

[0007] According to additional aspects of the disclosure, a drain clog removing kit is provided for use with a drain pipe. The kit includes a container having an outlet and defining a reservoir adapted to receive a drain cleaning composition. An elongate shaft has a proximal end, a distal tip, an exterior surface sized for insertion into the drain pipe, and projections extending outwardly from the shaft exterior surface configured to grip fibrous material.

[0008] According to further aspects of this disclosure, a method of removing a clog from a drain pipe is provided that includes applying a mechanical action by inserting an elongate shaft into the drain pipe until a distal tip of the shaft engages the clog, the shaft having a proximal end and a delivery passage with an inlet formed at the shaft proximal end. The method also includes applying a chemical action by dispensing a drain cleaning composition from an outlet of a container and into the shaft inlet.

[0009] According to still further aspects, a drain clog remover for removing a clog from a drain pipe includes a container having an outlet and being adapted to receive a drain cleaning composition. A plug is coupled to the container outlet and defines an aperture. An elongate, flexible shaft has an exterior surface sized to slidably engage the plug through the aperture and is movable between a retracted position, in which a majority of the shaft is disposed inside the container, and an extended position, in which a majority of the shaft is disposed outside of the container. The shaft has a proximal end and a distal tip, and at least a portion of the shaft exterior surface is further sized for insertion into the drain pipe. A delivery passage is formed in the shaft and extends from the shaft proximal end to the shaft distal tip, a proximal end of the fluid delivery shaft fluidly communicating with the container outlet.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] For a more complete understanding of the disclosed methods and apparatuses, reference should be made to the embodiment illustrated in greater detail on the accompanying drawings, wherein:

[0011] FIG. 1 is perspective view of an assembled drain clog remover, constructed according to the present disclosure;

[0012] FIG. 2 is an enlarged side elevation view of a portion of a container used in the drain clog remover of FIG. 1;

[0013] FIG. 3 is an enlarged side elevation view of the proximal end of a shaft used in the drain clog remover of FIG. 1;

[0014] FIG. 4 is a perspective view of the assembled drain clog remover in an actuated position, with a distal end of the shaft inserted into a drain pipe;

[0015] FIG. 5 is a side elevation view, in cross-section, of an alternative embodiment of a drain clog remover constructed according to the present disclosure;

[0016] FIG. 6 is an enlarged perspective view of a collar and tube sub-assembly used in the drain clog remover of FIG. 5;

[0017] FIG. 7 is an enlarged side elevation view, in cross-section, of a portion of the collar and tube sub-assembly of FIG. 6.
FIG. 8 is a perspective view of the drain clog remover of FIG. 4 with the tube in the extended position and inserted into a drain pipe;

FIG. 9 is a perspective view of an alternative embodiment of a drain clog remover constructed according to the present disclosure;

FIGS. 10A and 10B are side elevation views, in cross-section, of the drain clog remover of FIG. 9;

FIG. 11 is a perspective view of a further alternative embodiment of a drain clog remover constructed according to the present disclosure;

FIG. 12 is a perspective view of a drain clog remover kit including a container holding a chemical composition and a tool attachable to the container;

FIG. 13A is a perspective view of a syringe-style drain clog remover constructed according to the present disclosure;

FIG. 13B is a side elevation view of the drain clog remover of FIG. 13A shown prior to assembly of a container and a shaft;

FIG. 14 is a perspective view of a bellows style drain clog remover constructed according to the present disclosure;

FIGS. 15A and 15B are perspective views of the drain clog remover of FIG. 14 showing a rigid outer cover in attached and removed positions, respectively.

It should be understood that the drawings are not necessarily to scale and that the disclosed embodiments are sometimes illustrated diagrammatically and in partial views. In certain instances, details which are not necessary for an understanding of the disclosed methods and apparatuses or which render other details difficult to perceive may have been omitted. It should be understood, of course, that this disclosure is not limited to the particular embodiments illustrated herein.

**DETAILED DESCRIPTION**

Drain clog removers are disclosed herein for removing clog-forming material from drain pipes. In one embodiment, the drain clog remover includes a container holding a drain cleaning composition and a flexible shaft attached to an outlet of the container. The shaft may include projections, such as barbs, particularly suited for engaging the clog-forming material. The shaft also includes a delivery passage that fluidly communicates with the container outlet for directing the chemical composition toward the clog inside the drain pipe. Accordingly, this embodiment cleans clogs from drain pipes using both mechanical and chemical actions.

Also disclosed is a drain clog removing kit including a container holding a drain cleaning composition and a shaft for mechanically engaging the drain clog. The shaft and container may be adapted for releasable coupling and may be provided for sale in a common package.

A method of removing a clog from a drain is disclosed that includes applying a mechanical action by inserting an elongate shaft into the drain pipe until a distal tip of the shaft engages the clog. The shaft may include projections extending from an exterior surface that are configured to engage fibrous material. The shaft has a delivery passage with an inlet formed at a proximal end of the shaft. The method also includes applying a chemical action by dispensing a drain cleaning composition from an outlet of a container and into the shaft inlet. The drain cleaning composition may be dispensed using a propellant, pressurized air, mechanical force, or any other suitable means for discharging a chemical composition from a container. The delivery passage may extend to the shaft distal tip, in which case the composition is dispensed from the shaft distal tip.

In an alternative embodiment, a container holding a drain cleaning composition includes a retractable tube for directing a composition into a drain pipe. A plug is coupled to an outlet of the container and includes an aperture size to fractionally engage an external surface of the tube. The tube may slide between a retracted position, in which a majority of the tube is disposed inside the container, and an extended position, in which a majority of the tube is disposed outside the container. The plug may define a receptacle sized to receive a distal tip of the tube when it is in the retracted position. The plug aperture may further be formed to scrape the drain cleaning composition from the exterior surface of the tube as it is moved from the retracted position into the extended position. Accordingly, this embodiment allows a user to more accurately dispense the chemical composition near the clog by placing the tube in the extended position, while allowing the tube to be moved to the retracted position for more compact storage.

Referring to FIG. 1, a drain clog remover 10 is shown having a shaft 12 coupled to a container 14 holding a drain cleaning composition 15. As best shown in FIG. 2, the container 14 includes a discharge stem 16 defining an outlet 18 for dispensing the composition 15. An exterior of the discharge stem 16 is formed with external threads 20 that are complimentary to internal threads 22 formed in the shaft 12 (FIG. 3) for releasably coupling the shaft 12 to the container 14. It will be appreciated, however, that any known form of coupling the shaft 12 to the container 14, whether permanent or removable, may be used without departing from the scope of this disclosure.

As used herein, the term "drain cleaning composition" encompasses any liquid, gel, or solid material, other than water or water from a plumbing supply (e.g. softened water, hard water), or combination thereof, which is used or marketed for use to remove drain clogs and/or to protect against drain clogs. Exemplary drain cleaning compositions include, but are not limited to, caustic materials such as sodium hydroxide, mixtures of sodium hydroxide, metal (e.g. aluminum) chips, and sodium nitrate, or alkaline sodium hypochlorite solutions (e.g. U.S. Pat. No. 4,080,305), as well as other cleaners such as laundry bleach or those with additives such as surfactants, proteolytic enzymes, and disulfide reducing agents. See e.g. U.S. Pat. Nos. 4,540,506, 4,619,710 and 3,503,800.

The container 14 may include a valve for selectively controlling the flow of chemical composition 15 through the discharge stem 16. In the illustrated embodiment, the container 14 includes a tilt valve assembly 24. When the discharge stem 16 is in a normal, undeflected position as shown in FIG. 1, the tilt valve assembly 24 is closed to prevent flow through the outlet 18. The discharge stem 16 may be deflected in a lateral direction to an actuated position in which the discharge stem 16 is tilted with respect to the container 14, as shown in FIG. 4. In the actuated position, the tilt valve assembly 24 is open to allow the chemical composition 15 to flow from the container and through the outlet 18. The container 14 may also include a propellant that pressurizes the interior of the container 14, thereby to assist with the discharge of the composition 15 when the tilt valve assembly 24 is open. The propellant may be provided inside or otherwise dissolved.
within the composition, or may reside within the container 14 separately from or otherwise unmixed with the drain cleaning composition.

[0035] While the container 14 has been described herein as a pressurized aerosol can having a tilt valve, it will be appreciated that a variety of other types of containers or reservoirs may be used. The container may be formed of metal, plastic, or any other material suitable for holding the drain cleaning composition. Regardless of the material used, the walls of the container may be rigid or flexible. Other types of valves may be substituted for the tilt valve assembly 24, or the valve may be omitted from the container 14 altogether.

[0036] The container may include a propellant as described above, may be provided with mechanical means for increasing the interior pressure of the container 14 (such as a piston or plunger), or may omit any pressurization of the container interior and instead rely on gravity, manual force, or other means to dispense the composition. For example, one possible alternative to the illustrated container 14 may be a flexible plastic pouch having a frangible seal across the outlet 18. Upon application of manual pressure to an exterior of the flexible pouch, the seal may break to allow the composition to flow through the outlet. In this alternative example, the manual pressure not only opens the seal but also pressurizes the interior of the pouch to discharge the composition with additional force.

[0037] As understood from the foregoing examples, the container 14 may be designed for repeated use or may be intended to be disposable after a single use. Furthermore, any container 14 may hold any chemical composition that is known to dissolve, break-up, or otherwise remove clog-forming material in drain pipes.

[0038] The shaft 12 allows a user to manually remove drain-clogging material while providing a conduit for more precisely directing the composition 15 to the desired location within the drain pipe. As best shown in FIGS. 1 and 3, the shaft 12 includes a proximal end 30 having internal threads 22 for engaging the external threads 20 formed on the discharge stem 16. Opposite the proximal end 30 is a distal tip 34 which may be angled to form a point 36. In the illustrated embodiment, a delivery passage 38 extends through an interior of the shaft 12 from the proximal end 30 to an outlet formed at the distal tip 34. Alternatively, the delivery passage 38 may terminate at an intermediate point short of the distal tip to communicate with one or more outlets formed through a side of the shaft 12. Additionally, the shaft may include multiple outlets formed along its length, with or without the distal outlet formed at the distal tip 34. The delivery passage 38 is sized at the proximal end 30 to receive the discharge stem 16, thereby placing the outlet 18 in fluid communication with the delivery passage 38. The shaft 12 preferably extends past any plug or stopper member associated with the drain pipe. As such the shaft 12 may be 6", 12", 18" or other length. While the shaft 12 is illustrated as being threadably, and therefore releasably, attached to the container 14, it will be appreciated that the shaft 12 and container 14 may be coupled by friction fit or other releasable coupling, or may be permanently attached.

[0039] The shaft 12 includes projections that are adapted to grip clog-forming material located within the drain pipe. As used herein, the phrase “adapted to grip” includes structures that engage, snag, or otherwise securely hold typical materials that form clogs in drain pipes. As shown in FIGS. 1, 3, and 4, the projections extend from an exterior surface 40 of the shaft 12. In the illustrated example, the projections are formed as barbs 42 that extend at an acute angle with respect to an axis of the shaft 12. The barbs 42 are particularly suited for gripping fibrous materials such as hair that may be lodged in the drain pipe, which may then be subsequently removed upon withdrawal of the shaft 12 from the drain. Alternatively, other fibrous-snagging structures may be used such as hooks, bristles, or the hook side of a hook-and-loop fastener. The distal tip 34 may also be used to engage and dislodge drain-clogging material. Each projection may further include a projection port in fluid communication with the delivery passage 38 through which fluid may pass in a direction substantially perpendicular to an axis of the shaft.

[0040] The shaft 12 may be formed of a flexible material which allows it to be bent into an arcurate shape so that it can traverse a tortuous path, such as those commonly presented by typical P-trap and U-trap drain pipes. Accordingly, the shaft 12 may be formed of any flexible or semi-flexible metal, plastic, or other material, such as polypropylene, polyethylene, polyethylene terephtalate, high density polyethylene, low density polyethylene, or similar material.

[0041] The shaft 12 may further include an activation device, such as a button assembly 50, to facilitate actuation of the tilt valve assembly 20. As best shown in FIGS. 3 and 4, the button assembly 50 includes an arm 52 coupled to the shaft 12, such as by support block 54. The arm 52 includes a finger pad 56 shaped to receive a finger of the user. When the finger pad 56 is depressed as shown in FIG. 4, the shaft 12 and attached discharge stem 16 are tilted to open the valve assembly 20, thereby releasing the drain cleaning composition 15 from the container 14. Alternatively, the activation device may comprise a trigger, pull, or other structure for actuating any type of valve provided in the container.

[0042] In operation, the drain clog remover 10 provides mechanical and chemical actions to remove a clog 62 formed in a drain 60. While holding the container 14, the user may insert the shaft 12 into the drain until the shaft distal tip 34 engages the clog. When the shaft 12 is formed of a flexible material, it may traverse a tortuous path before it engages the clog. The shaft 12 may be manipulated within the drain to contact and dislodge all or a portion of the clog by moving the container 14. With the shaft 12 still positioned inside the drain and the distal tip 34 adjacent the clog, the user may then actuate the valve assembly 24 to discharge the drain cleaning composition 15 from the outlet 18. The composition 15 travels through the delivery passage 38 and is discharged from the distal tip 34 of the shaft 12. As a result, the composition 15 is more accurately dispensed in the immediate vicinity of the clog. After waiting a specified time to allow the composition 15 to sufficiently dissolve or break-up the clog, the user may then flush out the drain with a flow of water. It will be appreciated, therefore, that both mechanical and chemical actions are used to remove the clog from the drain.

[0043] An alternative embodiment of a drain clog remover 200 that uses a mechanical actuator to dispense the chemical composition is illustrated in FIGS. 9, 10A, and 10B. The drain clog remover 200 includes a container 202 having a proximal end 204 and a distal end 206. A container outlet 208 is provided at the distal end 206 and may be surrounded by a splash guard 210 configured to engage a surface of the plumbing fixture surrounding the drain. The container 202 is filled with a chemical composition and a shaft 212 is coupled to the outlet 208.
The mechanical actuator is provided as a spring loaded piston 214 that dispenses the chemical composition into the drain pipe. The piston 214 is disposed inside the container 202 and is coupled to a spring 216 positioned between the piston 214 and the container proximal end 204. The spring 216 has a first, or retracted, position illustrated in FIG. 10A and a second, or extended, position illustrated in FIG. 10B. The spring 216 is initially held in the retracted position by a user-releasable latch 218. When the latch 218 is actuated, it releases the spring to expand to the extended position, thereby driving the piston 214 toward the container distal end 206. Movement of the piston 214 in the distal direction pushes chemical composition through the outlet 208 and shaft conduit to discharge into the drain pipe. In this embodiment, therefore, a mechanical spring force is used to dispense the chemical composition.

Yet another embodiment of a drain clog remover 250 is illustrated in FIG. 11. The drain clog remover 250 includes a container 252 holding a chemical composition. The container 252 has a proximal end 254 and a distal end 256 defining an outlet. A splash guard 260 is coupled to the container distal end 256. A chamber 262 of pressurized gas, such as air, fluidly communicates with an interior of the container 252 through an internal passage (not shown) that is initially closed by a frangible seal (also not shown). The chamber 262 is movable to disrupt the seal, thereby communicating the pressurized gas to the container interior. The elevated pressure in the container 252 forces chemical composition out of the outlet 258 and through a shaft coupled thereto to ultimately discharge into the drain pipe.

A syringe style embodiment of a drain clog remover 400 that uses manual force to discharge the chemical composition is illustrated in FIGS. 13A and 13B. The drain clog remover 400 includes a container 402 defining an internal chamber for holding the chemical composition. A window 403 may extend along a length of the container 402 to provide a visual indication of how much chemical composition remains in the container 402. The container 402 has an open proximal end 404 and a distal end 406 defining an outlet 408. A splash guard 410 extends radially outwardly from the container distal end 406. A plunger 412 has a proximal end defining a handle 414 and a distal end disposed inside the container chamber and defining a piston 416. The piston 416 is sized to slide along an interior surface of the container from an initial, proximal position to an actuated, distal position, thereby to force chemical composition through the outlet 408. A shaft 418 having a delivery passage 420 is coupled to the container outlet 408, such as by mating threads. As shown in FIG. 13B, the container 402 and shaft 418 may be provided unassembled, and the container 402 may include an outlet cap 422 to prevent inadvertent discharge of the chemical composition and a plunger cap 424 to prevent inadvertent actuation of the plunger 412.

In operation, the user may remove the outlet cap 422 and couple the shaft 418 to the container outlet 408. The shaft 418 is inserted into the drain, the plunger cap 424 is removed, and the plunger 412 is actuated from the initial position to the actuated position by application of manual force. As the plunger piston 416 moves distally, chemical composition is forced out the outlet 408 and through the shaft delivery passage to discharge into the drain.

A bellows style embodiment of a drain clog remover 500 is illustrated in FIGS. 14, 15A, and 15B. As shown in FIG. 14, the drain clog remover 500 includes a container 502 that is collapsible from an expanded state as shown to a contracted state under manual force. In the illustrated embodiment, the container 502 is formed with bellows 504 that allow the container 502 to be collapsed. The container 502 defines an internal chamber for holding a drain cleaning chemical composition, and has a proximal end 506 and a distal end 508 defining an outlet 510. A splash guard 512 extends radially outwardly from the container distal end 508. A shaft 514 having a delivery passage 516 is coupled to the container outlet 510. In operation, the user applies manual force on the container to compress it from the expanded state to the contracted state, thereby forcing chemical composition through the outlet 510 and shaft delivery passage 516. To prevent inadvertent discharge of the chemical composition, a rigid outer cover 520 is releasably coupled to the drain clog remover 500 which is sized to telescope over the collapsible container 502. When assembled as shown in FIG. 15A, the rigid outer cover 520 prevents applied forces from compressing the container 502. Prior to use, the cover 520 may be removed from the container 502 to provide access to the collapsible container 502.

A drain clog remover kit 300 is illustrated in FIG. 12. The kit 300 includes the shaft 12 and the container 14 holding a drain cleaning composition. The shaft 12 is configured to couple with the container 14. For example, the shaft 12 may be releasably coupled to the container 14 by complementary threads, as described above. Alternatively, any other known releasable or permanent coupling may be formed therebetween. The container 14 is filled with a chemical composition for removing drain clogs. In use, the chemical composition is dispensed from the outlet 18 of the container 14 and through the delivery passage 38 of the shaft 12 for discharge into the drain pipe. The shaft 12 and container are mounted on a unitary package 302. While the package is illustrated as a blister package, any know packaging may be used without departing from the scope of this disclosure.

Yet another alternative drain clog remover 110 is illustrated in FIGS. 5-8. The drain clog remover 110 includes a shaft 112 slidably coupled to a container 114. The container 114 defines an outlet 118 and may be formed of a flexible material such as plastic. A plug 120 is releasably coupled to the container outlet 118 and includes an orifice 122 sized to slidably receive the shaft 112.

As best shown in FIG. 6, the plug 120 includes a flange 124 adapted to engage an upper edge of the container 114 that forms the outlet 118. The plug 120 further includes a tapered collar portion 126 that defines an exterior receptacle 128. A plug base 130 extends inwardly from a bottom end of the collar portion 126 and defines the orifice 122.

The shaft 112 is slidably received in the orifice 122 and includes a proximal end 132 and a distal end 134. A delivery passage 136 extends through the shaft 112 from the proximal end 132 to the distal end 134. The shaft 112 has a retracted position as illustrated in FIG. 5, in which a majority of the shaft 112 is disposed within the container 114. The shaft may be moved to an extended position illustrated in FIG. 8, in which a majority of the shaft 112 is disposed outside of the container 114.

The orifice 122 is preferably sized to seamlessly yet slidingly engage an exterior surface of the shaft 112, thereby to prevent the contents of the container 114 from exiting through the orifice 122. The orifice 122 may be formed with a taper 140 defining an annular edge 142 for removing product from the exterior surface of the shaft 112 as it is moved.
from the retracted to the extended position. In addition, the shaft proximal end 132 may include an outward flare 144 having a profile that is complimentary to the orifice taper 140, thereby to more reliably form a seal between the shaft 112 and the plug base 130 when the shaft 112 is in the extended position. The flare 144 also serves to retain the shaft proximal end 132 within the container 114.

The shaft distal end 134 may include a valve or seal for controlling the flow of chemical composition through the shaft 112. In the illustrated embodiment, the shaft distal end 134 is formed with a grip 150 that may be twisted to open the shaft 112. The grip 150 also allows a user to more reliably grasp the shaft distal end 134, thereby facilitating actuation of the shaft 112 between the retracted and extended positions. The receptacle 128 formed by the plug collar portion 126 is preferably sufficiently deep to receive the entire external portion of the shaft 112 when in the retracted position, as illustrated in FIG. 5.

The drain clog remover 110 is intended to be stored with the shaft 112 in the retracted position. To prepare the drain clog remover 110 for use, the shaft distal end 134 may be pulled to move the shaft 112 from the retracted position to the extended position as shown in FIG. 8. The user may then insert the shaft distal end 134 into the drain 170 until it is adjacent the clog 172. The container 114 may then be pressurized mechanically or otherwise, to discharge chemical composition from the container and through the shaft 112. In so doing, the product is more precisely directed to the location of the clog within the drain.

While certain embodiments have been set forth, alternatives and modifications will be apparent from the above description to those skilled in the art. These and other alternatives are considered equivalents and within the spirit and scope of this disclosure and the appended claims.

INDUSTRIAL APPLICABILITY

The apparatus and methods disclosed herein may be used to remove clogs from drain pipes.

What is claimed is:

1. A drain clog remover for removing a clog from a drain pipe, the apparatus comprising:
   - a container having an outlet and defining a reservoir adapted to receive a drain cleaning composition;
   - an elongate shaft coupled to the container and having a proximal end and a distal tip, the shaft having an exterior surface sized for insertion into the drain pipe;
   - a delivery passage extending through the shaft and having an inlet formed at the shaft proximal end in fluid communication with the container outlet; and
   - projections extending outwardly from the shaft exterior surface configured to grip fibrous material.
2. The drain clog remover of claim 1, in which the projections comprise barbs.
3. The drain clog remover of claim 1, in which the container is formed of a material sufficiently flexible to compress under manual pressure.
4. The drain clog remover of claim 1, in which the container includes an outlet valve for controlling flow of the drain cleaning composition through the container outlet.
5. The drain clog remover of claim 4, in which the shaft further comprises an activation device to facilitate actuation of the outlet valve.
6. The drain clog remover of claim 1, in which the shaft is sufficiently flexible to be bent into an arcuate shape.
7. The drain clog remover of claim 1, in which the container reservoir is further adapted to receive a propellant to facilitate discharge of the drain cleaning composition out of the container outlet.
8. The drain clog remover of claim 1, in which the container reservoir further comprises a mechanical actuator for dispensing the chemical composition from the container.
9. The drain clog remover of claim 8, in which the mechanical actuator comprises a spring-loaded piston.
10. The drain clog remover of claim 1, in which the delivery passage extends to the shaft distal tip.
11. A drain clog removing kit for use with a drain pipe, the kit comprising:
   - a container having an outlet and defining a reservoir adapted to receive a drain cleaning composition; and
   - an elongate shaft having a proximal end, a distal tip, an exterior surface sized for insertion into the drain pipe, and projections extending outwardly from the shaft exterior surface configured to grip fibrous material.
12. The kit of claim 11, in which a delivery passage extends through the shaft and has an inlet formed at the shaft proximal end in fluid communication with the container outlet.
13. The kit of claim 11, in which the shaft proximal end is adapted for coupling to the container outlet.
14. The kit of claim 13, in which the shaft proximal end and container outlet comprise complementary threads.
15. The kit claim 11, in which the container includes a valve for controlling flow of the drain cleaning composition through the container outlet.
16. The kit of claim 11, in which the shaft is sufficiently flexible to be bent into an arcuate shape.
17. A method of removing a clog from a drain pipe, comprising:
   - applying a mechanical action by inserting an elongate shaft into the drain pipe until a distal tip of the shaft engages the clog, the shaft having a proximal end and a delivery passage with an inlet formed at the shaft proximal end; and
   - applying a chemical action by dispensing a drain cleaning composition from an outlet of a container and into the shaft inlet.
18. The method of claim 17, in which the shaft further comprises projections extending outwardly from an exterior surface of the shaft and configured to grip fibrous material, and in which the application of mechanical action further comprises placing the projections into engagement with the clog.
19. The method of claim 17, in which the container further comprises an outlet valve and a propellant is disposed inside the container, and in which the dispensing comprises actuating the outlet valve.
20. The method of claim 17, in which the container further comprises a mechanical actuator for dispensing the chemical composition from the container, and in which the dispensing comprises actuating the mechanical actuator.
21. The method of claim 17, in which the shaft delivery passage extends to the shaft distal tip, and in which the dispensing comprises dispensing the drain cleaning composition from the shaft distal tip.
22. A drain clog remover for removing a clog from a drain pipe, the apparatus comprising:
   - a container having an outlet and being adapted to receive a drain cleaning composition;
a plug coupled to the container outlet and defining an aperture;
an elongate shaft having an exterior surface sized to slidably engage the plug through the aperture and movable between a retracted position, in which a majority of the shaft is disposed inside the container, and an extended position, in which a majority of the shaft is disposed outside of the container, the shaft having a proximal end, and a distal tip, and wherein at least a portion of the shaft exterior surface is further sized for insertion into the drain pipe, and

a delivery passage in the shaft and extending from the shaft proximal end to the shaft distal tip, a proximal end of the fluid delivery shaft fluidly communicating with the container outlet.

23. The drain clog remover of claim 22, in which the plug aperture is tapered to form a scraper edge sized to engage an exterior surface of the shaft.

24. The drain clog remover of claim 22, in which the plug defines a receptacle sized to receive the shaft distal tip when the shaft is in the retracted position.

* * * * *