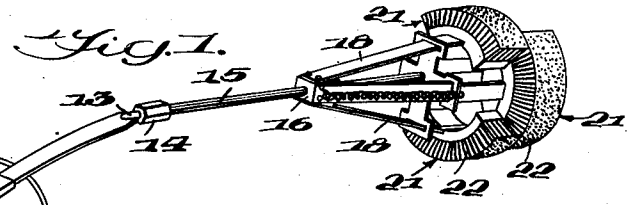
Oct. 29, 1940. M. G. BURWELL 2,219,555

CONDUIT CLEANING MECHANISM

Filed April 4, 1939

Fig. 1.



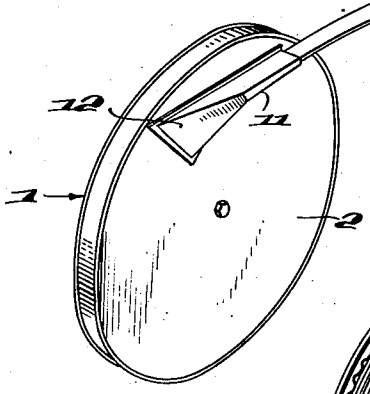


Fig. 2.

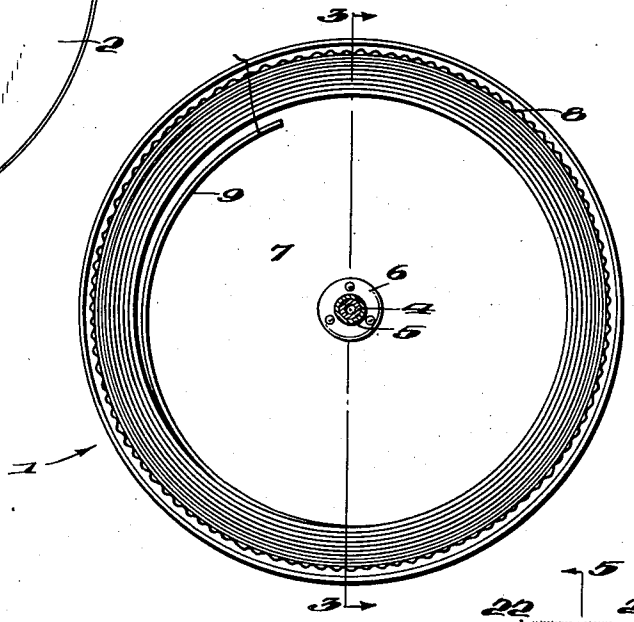


Fig. 3.

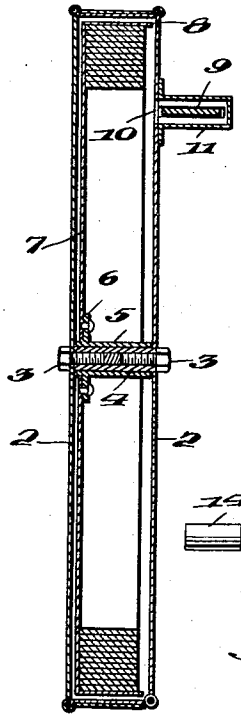


Fig. 4.

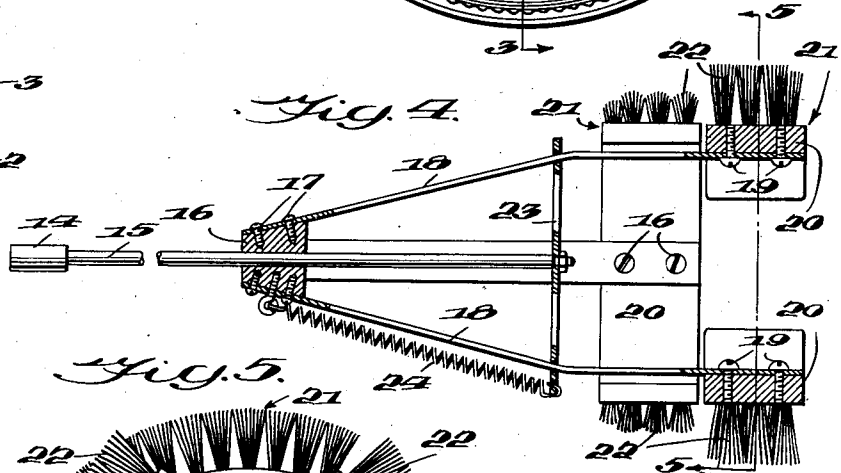
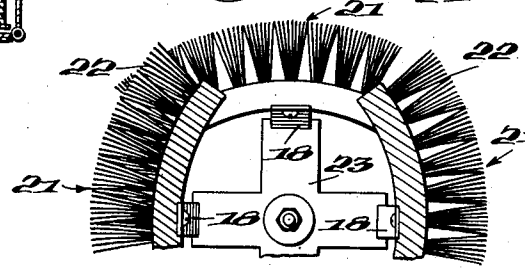


Fig. 5.



Inventor
Maurel G. Burwell,

W. S. McDowell
Attorney

Patented Oct. 29, 1940

2,219,555

UNITED STATES PATENT OFFICE

2,219,555

CONDUIT CLEANING MECHANISM

Maurel G. Burwell, Columbus, Ohio

Application April 4, 1939, Serial No. 266,018

7 Claims. (Cl. 242—77)

This invention relates to mechanism for cleaning elongated conduits of the type employed in air conditioning systems. The primary object resides in the provision of a cleaning device having a collapsible brush head at one end of an elongated flexible handle and further providing a container in which this handle portion may be placed when the device is not in use.

Another object resides in the provision of a drum-like container having a reel rotatably mounted therein and coiling an elongated flexible strip in said reel, the strip being provided at one end with a collapsible brush head to be inserted in a heat conducting pipe to remove dirt or other foreign matter therefrom.

It is also an object to provide a novel brush head having a plurality of arcuate sections and means for supporting the sections for adjustment relative to one another in order that the head may be collapsed prior to the insertion in a conduit to be cleaned and then expanded prior to withdrawal from the conduit.

Other objects will be apparent from the following description and the accompanying drawing in which:

Fig. 1 is a perspective view of a cleaning device formed in accordance with the present invention;

Fig. 2 is a plan view partly in section showing the container for the elongated handle of the cleaning mechanism.

Fig. 3 is a vertical transverse sectional view taken on the plane indicated by the line III—III of Fig. 2;

Fig. 4 is a vertical longitudinal sectional view taken through the collapsible brush head;

Fig. 5 is a detail sectional view taken on the plane indicated by the line V—V of Fig. 4.

Referring more particularly to the drawing, the numeral 1 designates the casing of the improved conduit cleaning device. This casing is formed from a pair of telescoping pan-like sections 2 which, when assembled, form a drum-like housing having closed ends. The sections 2 are held in their assembled relation by screws 3 passing through the end walls of the sections into a short hollow shaft 4. Rotatably carried by the shaft is a sleeve 5 having a flange 6 formed at one end thereof. Secured to the flange 6 is a circular plate 7 provided at its periphery with a laterally bent corrugated extension 8 as illustrated in Fig. 2. The plate 7, together with the extension and the sleeve 5 form a reel in which an elongated flexible steel strip 9 may be coiled as shown in Fig. 2.

To provide for the insertion of the strip in the container, one end wall is formed with an opening 10 over which a guide 11 is fastened. The outer end of the guide has a narrow slot conforming substantially to the cross section of the strip 9 and through which the strip may pass when being inserted into or withdrawn from the housing 1. The opposite end of the guide flares as at 12 to accommodate the strip either when one coil or many coils are placed in the reel. The outer end of the strip has a threaded bolt 13 carried thereby for connecting the strip to a coupling member 14 formed with the end of a rod 15. A rectangular block 16 is slidably positioned on the rod 15 and has angularly disposed side faces in which are formed threaded openings for the reception of screws employed in securing spring strips 18 thereto. By reason of the angularity of the side faces of the block 16, the spring strips will diverge from the longitudinal axis of the bar 15.

In the form of the invention illustrated, four strips 18 are provided, alternate strips being of different lengths, the length of the opposite strips being identical. Adjacent the end portions of the strips, there is a slight bend which positions the end portions in parallel relation to the longitudinal axis of the brush head. This parallel portion of each strip is provided with openings through which screws 19 extend, the threaded portions of the screws being received within the bodies 20 of brush sections 21. The bodies 20 are slightly arcuate as illustrated in Fig. 5 and have bristle elements 22 projecting from the outer surfaces thereof. The outer ends of the bristles are also cut to cause them to terminate in a curved brushing surface. By reason of the difference in length between adjacent strips 18, the brush sections will be disposed in longitudinally spaced order as shown in Fig. 4. The end of the rod 15 adjacent the brush elements has a spreading plate 23 secured thereto. This plate is formed with slots through which the strips 18 extend and move when the plate is adjusted relative to the body 16 by moving the rod therethrough.

By reason of the inclination of the strips 18, movement of the plate 23 toward the block 16 will cause the outer ends of the strips to separate and increase the outside dimension of the brush head. This operation will be reversed when the plate is moved from the block. A coil spring 24 extends between the plate 23 and the block 16 to facilitate the movement of the plate in the brush expanding operation.

In use, the brush head is collapsed and inserted in a conduit to be cleaned. When the head

has been inserted to the extent desired, a sharp pull on the handle 9 will cause the plate 23 to move toward the block 16 and expand the head at which time the brush or bristle elements will engage the inner surfaces of the conduit. Outward movement of the handle and the brush head will withdraw all dirt and foreign matter from the conduit. After the cleaning operation has been completed, the flexible handle may be stored in the container by inserting it through the guide 11. To facilitate the storage of the device, the brush head may be detached from the end of the handle.

While the preferred embodiment only has been illustrated, it is obvious that many minor changes may be made in the construction and relation of parts without departing from the spirit and scope of the invention as set forth in the following claims.

I claim:

1. In a conduit cleaning device of the type having an elongated flexible strip-like handle provided at one end with a brush head, means for receiving said handle comprising a drum-like container, a shaft extending axially through said container, a disk rotatably supported by said shaft, said disk having a peripheral flange, one end wall of said container having an opening extending from a point in registration with said flange inwardly toward the center of said end wall, and a guide member secured to said end wall over said opening, one end of said guide wall having a slot of a size substantially equal to the cross-sectional dimensions of said handle, the other end of said guide being closed and inclined to guide said handle through the opening in said end wall.

2. In a conduit cleaning device of the type having an elongated flexible strip-like handle provided at one end with a brush head, means for receiving said handle comprising a drum-like container, a shaft extending axially through said container, a disk rotatably supported by said shaft, said disk having a peripheral flange provided with transversely extending corrugations, one end wall of said container having an opening extending from a point in registration with said flange inwardly toward the center of said end wall, and a guide member secured to said end wall over said opening, one end of said guide wall having a slot of a size substantially equal to the cross-sectional dimensions of said handle, the other end of said guide being closed and inclined to guide said handle through the opening in said end wall.

3. In a conduit cleaning device of the type having an elongated flexible strip-like handle provided at one end with a brush head, means for receiving said handle comprising a drum-like container having a pair of telescoping pan-like sections, one of said sections having an opening formed therein, a shaft member supported between said sections, a pan-like reel rotatably supported within said container on said shaft, guide means secured over the opening in said section, said guide means being open at one end and one side, the end opening conforming substantially in size to the cross-sectional dimensions of said handle.

4. In a conduit cleaning device of the type having an elongated flexible strip-like handle provided at one end with a brush head, means for receiving said handle comprising a drum-like container, a shaft extending axially through said container, a disk rotatably supported by said shaft, said disk having a peripheral flange provided with transversely extending corrugations, one end wall of said container having an opening extending from a point in registration with said flange inwardly toward the center of said end wall, and a guide member secured to said end wall over said opening.

5. In a conduit cleaning device of the type having an elongated flexible strip-like handle and a brush head at one end thereof, a receiver for said handle comprising a drum-like container having an opening in one end wall, and a pan-like reel rotatably supported in said container with the open end disposed toward the opening in the end wall of said container, the annular wall of said pan-like reel having transversely extending corrugations.

6. In a conduit cleaning device of the type having an elongated flexible strip-like handle and a brush head at one end thereof, a receiver for said handle comprising a drum-like container having an opening in one end wall, a pan-like reel rotatably supported in said container with the open end disposed toward the opening in the end wall of said container, and guide means secured on the exterior of said container adjacent the opening in said end wall.

7. In a conduit cleaning device of the type having an elongated flexible strip-like handle and a brush head at one end thereof, a receiver for said handle comprising a drum-like container having an opening in one end wall, a pan-like reel rotatably supported in said container with the open end disposed toward the opening in the end wall of said container, and guide means secured on the exterior of said container adjacent the opening in said end wall, the longitudinal axis of said guide means being disposed in a plane substantially parallel to the end walls of said container.

MAUREL G. BURWELL.