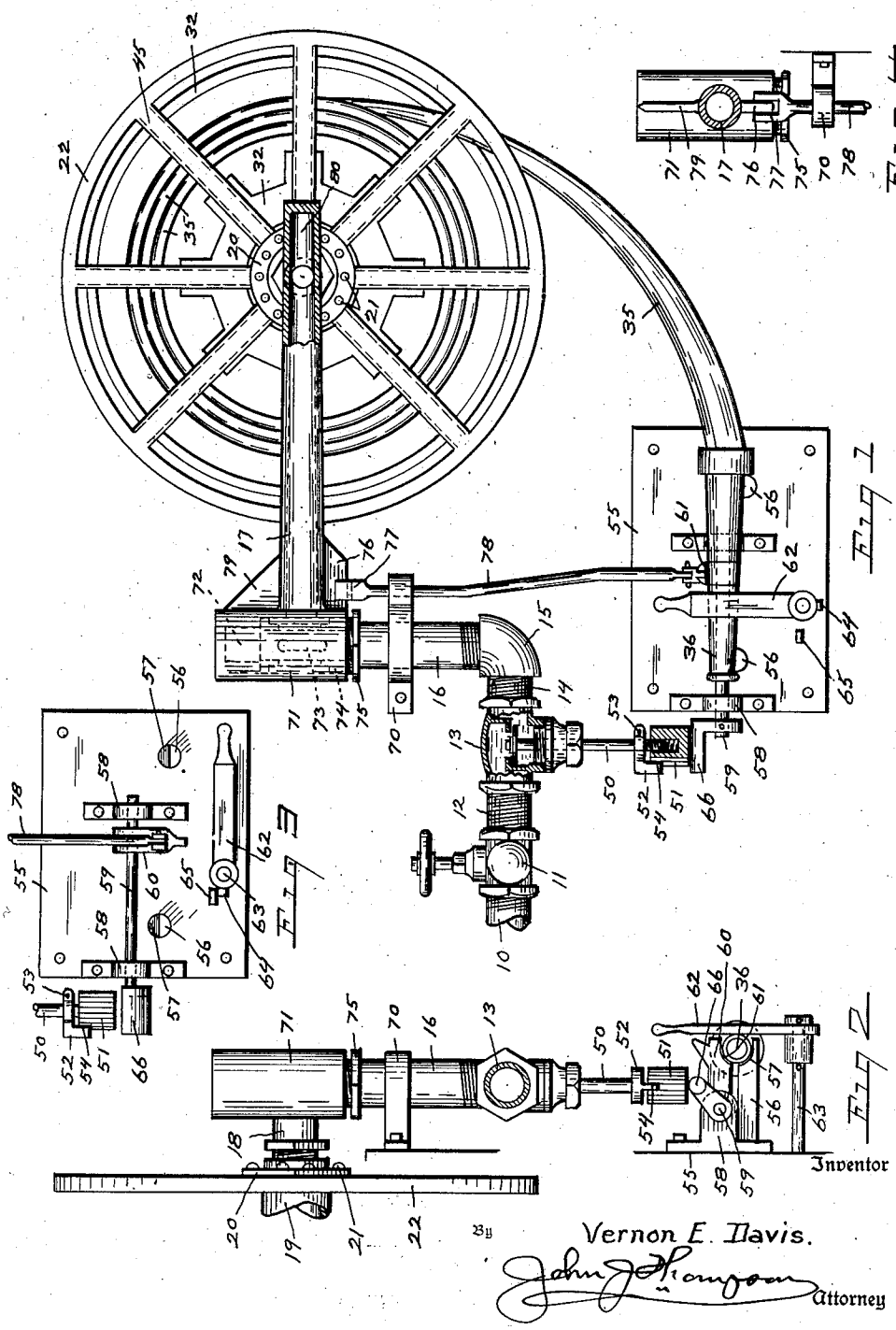
Sept. 8, 1936. V. E. DAVIS 2,053,654

AUTOMATIC FIRE HOSE REEL

Filed May 31, 1935 2 Sheets-Sheet 1



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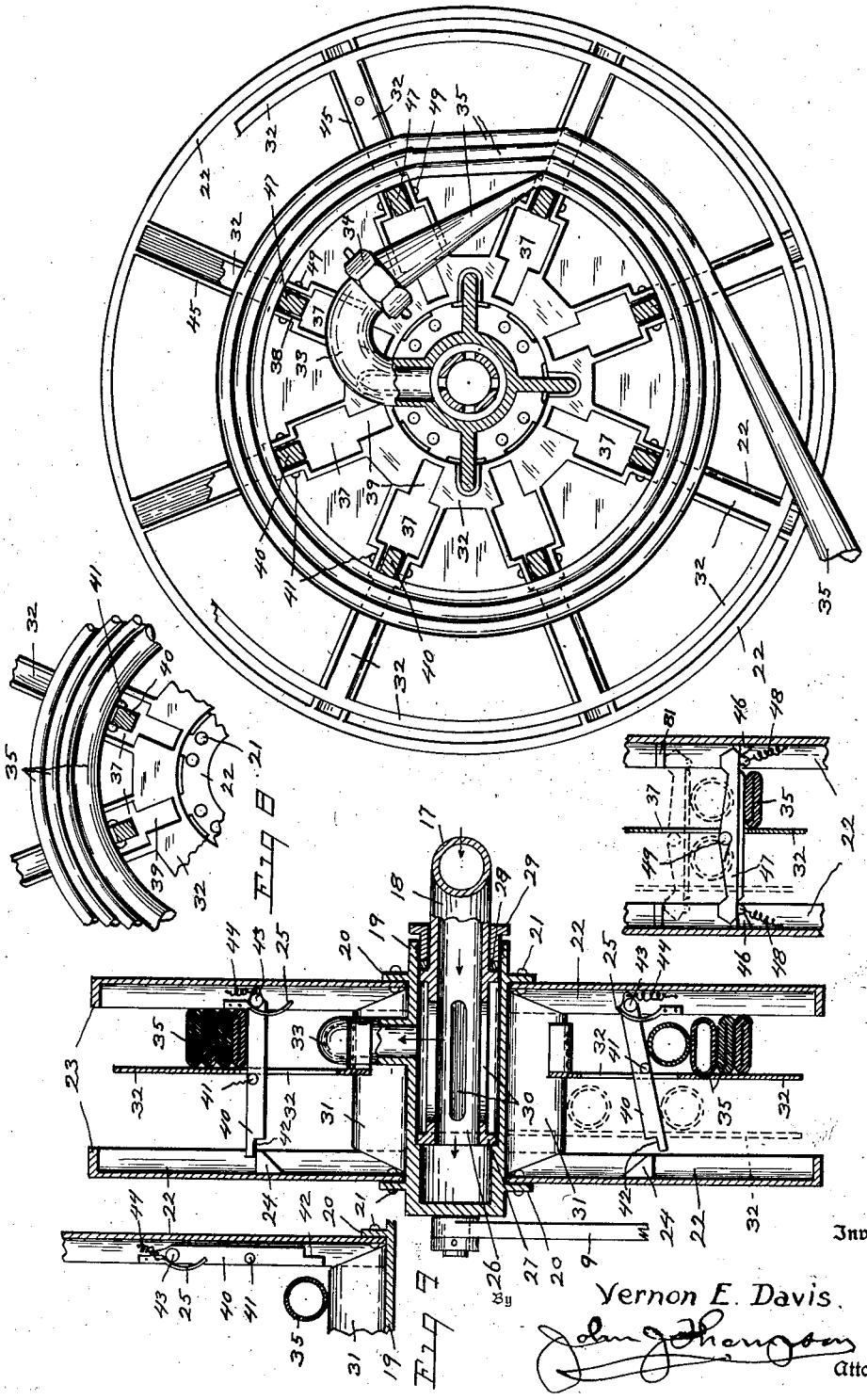


Fig 5

Fig 8

Fig 7

Fig 6

Fig 4

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Patented Sept. 8, 1936 2,053,654

UNITED STATES PATENT OFFICE

2,053,654

AUTOMATIC FIRE HOSE REEL

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Application May 31, 1935, Serial No. 24,259

8 Claims. (Cl. 299—79)

This invention relates to an automatic fire hose reel of that class which is intended for use in public buildings, factories, schools, vessels and other places where fire protection is installed, and it relates more particularly to a reel on which a fire hose is coiled when not in use, but which may be brought into instant use in an automatic manner and without the removal of the hose therefrom.

While devices of this kind have been made and used before, they are intended for the storage of the hose and require that after the hose is removed from the reel that the water be admitted to the hose in the usual manner by the manipulation of a hand valve located in the water supply line, or that the water be first admitted to the coiled hose and the hose then run off of the reel.

In the latter case, means have to be provided to compensate for the rounding out or expansion of the hose as the water is passed therethrough, as the empty hose is coiled on the reel in a spiral formation; that is each successive convolution wrapped upon the other in such a manner that when the water is admitted to the inner end of the hose the inner wrap or coil will have to expand against the pressure of the outer coils and as this is not possible, means have to be provided to allow the inner coils to expand inwardly or toward the hub of the reel and also sidewise to allow the water to quickly and freely travel through the hose without danger of the hose being fouled or twisted.

The object of my invention is to provide an automatic fire hose reel in which the water enters through the hub; the hose is coiled in a spiral thereon and means is provided for allowing the hose to expand instantly as the water passes therethrough.

Another object of the invention is to provide a device of this kind having means for supporting the hose in a sure and compact manner when not in use, but allowing it to instantly expand due to the pressure of the water passing therethrough.

Another object of the invention is to provide means whereby by the act of removing the nozzle of the hose from its holder, the water will be automatically admitted to the hose and the pressure of the water will operate the means for releasing the coils and allowing of their instant expansion.

Another object of the invention is to provide a device of this kind in which the reel sides are stationary in relation to each other and do not either expand or contract thus providing a rugged support for the hose.

Another object of the invention is to provide in addition to the regular water cut-off valve, an automatic water valve which is a part of the device and which is operated in an automatic manner by the removal of the hose nozzle and in such a way that all of the subsequent operations of the device are operated by the water pressure.

Another object of the invention is to provide means whereby the hose can expand upon the reel to allow the water to pass therethrough without removing any of the hose from the reel if so desired.

A further object of the invention is to provide an automatic fire hose reel which shall be simple in operation, positive in action and "fool" proof.

With these and other objects in view, my invention consists in certain novel construction and combination of parts as will hereinafter be fully described and claimed, and further illustrated in the accompanying drawings, in which like figures of reference refer to corresponding parts in all of the views, and it is understood that slight changes may be made without departing from the spirit of the invention.

In the drawings:

Figure 1 is a side elevation of the reel and valve mechanism, partly in section, showing the automatic valve closed and the hose nozzle locked in its socket or bracket.

Figure 2 is a partial edge view of the same.

Figure 3 is a partial view of the nozzle bracket with the nozzle removed therefrom to open the valve.

Figure 4 is a partial detail sectional view of the swivel pipe connection, showing the lock for preventing the swivel movement of the hose reel arm.

Figure 5 is a side elevation of the hose reel and hose retaining plate partly in section with the hose coiled thereon.

Figure 6 is a transverse sectional view of the hose reel and retaining plate and showing the receded position of the plate after the supporting arms have been released by the expansion of the hose.

Figure 7 is a partial sectional view, showing the form of supporting arm used adjacent to the goose-neck.

Figure 8 is a partial view of one side of the reel and retaining plate with the supporting arms in released position.

Figure 9 is a partial sectional view of one side

of the reel, showing the supporting arms folded against the side.

Referring to the drawings:

The device may be suitably supported to a wall, post or the like, or directly to a water main stand pipe, and as herewith shown comprises in addition to the regular water main 10 and cut-off valve 11, a pipe nipple 12 to which is connected a valve 13 which will be explained in detail later, and to the other end of which is attached by the nipple 14 an elbow 15 to which is attached the vertical pipe 16 to the upper end of which is swiveled the reel supporting tubular arm 17, having a swivel connection 18 to the hub 19 of the reel.

Taking first, the construction of the hose reel and referring to Figures 5, 6, 7, 8 and 9; a tubular hub 19 closed on one end and threaded at the other end is provided with the two annular flanges 20 adjacent the ends thereof and to which are secured in some suitable manner, such as the rivets 21, the two spoked sides of the reel 22 which are formed with the annular peripheral flanges 23; while one of said sides 22 is provided with a series of spaced stops 24 and the opposite side with a series of hooked-guides 25.

Within the hub 19 is rotatably mounted the inner end of the tubular swivel member 26, which is of smaller diameter than the bore of the hub 19 and spaced therefrom by annular rings 27 formed thereon and is retained in place by a gland 28 and packing nut 29, and has formed in the sides thereof and within the hub 19, the ports 30; while the outer end of this swivel member 26 is connected at right angles to the reel supporting tubular arm 17 adjacent the outer end thereof.

The hub 19 is also formed with the four radial flanges or fins 31 upon which the hose retaining plate 32 slides; and this hub 19 is also formed with the tubular goose-neck 33 having a threaded end for a standard hose coupling 34 to which is attached one end of the length of hose 35; while to the other end is attached the nozzle 36.

For supporting the hose 35 when empty in a vertical coil as shown and adjacent to one side 22 of the reel, a retaining plate 32 is provided and formed with a series of spaced openings 37 and communicating slots 38 and 39, and normally located within the slots 38 and at right angles to both the sides 22 and plate 32 are the hose supporting arms 40, which are provided with the transverse pins 41 for engagement with the sides of the slots 38 to retain the plate 32 in contact with the empty coiled hose 35.

One end of the arm 40 being notched at 42 to engage the stop 24 and the other end having a round hub 43 adapted to contact with and be guided by the hooked guide 25 and retained in place by a spring 44 having one end secured to the arm 40 and the other end to the reel side 22.

As the hose 35 is expanded by the water entering the same, the inner coils will press upon the arms 40, forcing them in toward the hub 19 against the action of the springs 44 and at the same time the arms 40 will move toward the side 22 by the action of the guide 25 pulling the notched end 42 off of the stop 24 and swinging the arm 40 to allow the pin 41 to pass through the opening 37 in the plate so that said plate 32 can move over towards the other reel side 22, allowing the hose 35 to expand into this added space as shown by the dotted lines; while the arms 40 assume the position shown in Figure 9.

On account of the spokes 45 of the sides 22 being in close proximity to the goose-neck hose connection 33, it would be impossible to operate the supporting arms 40 in these two spokes, and I have therefore constructed these two spokes 45 of channel shape in cross-section and have formed therein the stops 46 upon which rests the ends of a cross supporting arm 47, which is normally retained in contact with said stops by the springs 48 attached to the ends thereof and to the channels 45.

These arms 47 are provided with transverse pins 49 similar to the pins 41 but with a beveled side; the object of these pins being to normally retain the plate 32 in contact with the deflated hose 35, while the expansion of the hose 35 will force the arms 47 toward the hub 19 against the action of the springs 48 and allowing the pins 49 to pass through the opening 37 in the plate 32 in the same manner as the plate 32 passes over the pins 41 of the arms 40.

Referring to Figures 1, 2, 3 and 4, the piping comprises the water supply pipe 10, a standard cut-off valve 11, and the nipple 12 to which is connected the automatic valve 13, which comprises as here shown an inverted globe valve having a smooth valve stem 50, to the lower end of which is threaded an adjustable knurled shoe 51 which is retained in an adjusted position by a lock 52 secured upon the valve stem by the screw 53 and having a depending knife-edge arm 54 engaging with the knurling on the face of the shoe 51.

For operating this valve 13 in an automatic manner, I have provided a clamp or support for the hose nozzle 36, and which comprises a plate 55 which may be mounted in some suitable manner and which is provided with the two stationary supporting arms 56 formed with notched ends 57, and the two bearings 58 within which is rotatably mounted a shaft 59, upon which between the bearings 58 is secured in a rigid manner an arm 60 corresponding to the arms 56 and also having a notched end 61; these notches 57 and 61 embracing the hose nozzle 36, which is retained therein by a swinging arm 62 pivoted upon a stud 63 also secured to the plate 55; this clamping arm 62 having a stop 64 adapted to contact with a stop 65 on the plate 55 to limit its swing.

Secured on one end of the shaft 59 is an arm 66, which when the nozzle 36 is in place in the clamp, will contact with the lower surface of the shoe 51 forcing the valve stem 50 upward and closing the valve 13, and by means of the adjustment provided by the shoe 51 being threaded upon the stem 50, the length between the lower face of the shoe 51 and the valve seat can be varied so that the valve will be tightly closed until the nozzle 36 is removed from the clamp, when the arm 60 will drop turning the shaft 59 and swinging the arm 66 down to allow the valve stem 50 to move downward opening the valve seat by the pressure of the water against said valve or disk 67 on the stem 50; the valve 11 having been manually opened before.

The outlet end of the valve 13 is connected by a nipple 14 and elbow 15 to the vertical pipe 16 which is retained by a bracket 70 to some suitable object such as the wall or post, and upon the upper end of the pipe 16 is mounted the head 71 of the tubular supporting arm 17 for the reel.

This head 71 is formed with a chamber 72 at right angles to the tubular arm 17, and the end of the pipe 16 is spaced from the closed end of this chamber 72 to form an air pocket or cushion; the upper end of the pipe 16 having formed in the sides thereof the ports 73 through which the water passes from the pipe 16 to the tubular arm 17; the arm 17 being adapted to

swivel upon the pipe 16 and a tight joint being provided by the packing 74 and nut 75.

The head 71 where it joins the tubular arm 17 is also provided with the upper rib 79 and the lower rib 76, and to prevent the arm 17 from swiveling upon the pipe 16 when not in use, there is provided a lock, comprising a yoke 77 embracing the rib 76 and secured upon the upper end of a rod 78 which is slidably mounted in the bracket 70 and has its lower end hinged to the arm 60, so that when the arm 60 drops down the rod 78 will be carried with it and free the yoke 77 from the rib 76 allowing the arm 17 to freely swing upon the pipe 16, so that the hose 35 may be pulled off of the reel at right angles thereto.

The outer end of the tubular arm 17 is secured at right angles to the inner member 18 of the hub 19, and is extended beyond this junction and closed on the end to form a cushion or air chamber 80.

In the operation of the device, the hose 35 having been connected to the goose-neck 33 and coiled upon the arms 40 and 47 of the reel and between one side 22 and the retaining plate 32 in the form of a spiral, the hose being in its collapsed state or folded flat.

The hose nozzle 36 is retained within the clamp and the automatic valve 13 is closed, and the hand operated valve 11, is open.

In case of fire, first pull down to one side upon the locking arm 62; grasp the nozzle 36 and free it from the clamp. The arm 66 will at once drop owing to the water in the pipe 10 exerting pressure upon the valve disk, the stem 50 of which has been released by the arm 66 on the shaft 59.

The water pressure now passes through the valve 13, pipe 16, head 71 and tubular arm 17 and pipe 18 to the hub 19 and through the goose-neck 33 to the hose 35 expanding the same as it flows therethrough, and as the inner coils of the hose 35 are first expanded, they exert pressure upon the arms 40 and 47 depressing them towards the hub 19 so that the plate 32 can pass over the pins 41 and 49 sliding over upon the ribs 31 and allowing the expanding hose 35 to expand both towards the hub 19 and the other side 22 of the reel as shown by the dotted sectional views of the hose.

Before the hose is returned to the reel, the water may be shut off in either of two ways; that is by the hand operated valve 11 or by raising upward on the arm 66, which will by the action of the arm 66 raise the valve stem 50 and close the valve 13.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In an automatic hose reel, comprising a reel formed with permanently spaced apart sides, of a hollow hub for said reel and means for connecting the same to the water main, radial guide fins formed on said hub between said sides, a slidable hose retaining plate mounted on said flanges, means for supporting said hose and holding said plate in contact with the coiled and deflated hose, and actuated by the water entering said hose for releasing said plate to slide from the expanding hose for increasing the capacity of the reel.

2. In an automatic hose reel, comprising a hollow hub having a hose connection, and a pair of permanently spaced apart sides, hose supporting arms mounted between said sides and adapted to support a deflated hose coiled upon itself and connected to said hub, a hose retaining plate slidably mounted upon said hub and retained by said arms, said arms being actuated by the water pressure entering the hose for releasing the plate from the arms and moving said arms to permit of the expansion of the hose upon the reel.

3. In an automatic hose reel, comprising a rotatable reel having permanently spaced apart sides and a tubular hub, and means for connecting said hub both to the water supply main and the hose, a hose retaining plate slidably mounted on said hub for retaining the deflated hose, means for temporarily retaining said plate in contact with a coiled and deflated hose having a nozzle rendered inoperative to retain said plate on inflation of the hose, a water control valve mounted on said supply main, a clamp for normally retaining the hose nozzle, and means actuated by the removal of the nozzle from the clamp for admitting water pressure to expand the hose and, through the expansion of the hose operating the retaining means to release the plate and provide additional space for the inflated hose.

4. In an automatic hose reel, the combination with a hose having a nozzle, of a reel having permanently spaced apart sides and a hollow hub connected to the water main, a deflated hose retaining plate slidably mounted on said hub, and locking means for said plate rendered inoperative to retain said plate on inflation of the hose, a clamp for normally retaining the hose nozzle, a control valve mounted in the water supply main, and means actuated by the removal of the nozzle from the clamp for opening said valve and admitting water to the hose, whereby the same is expanded operating the locking means and releasing the plate.

5. In an automatic hose reel, the combination with a hose of a reel having permanently spaced apart sides and a tubular hub connected to the water main, a retaining plate slidably mounted on said hub between the spaced sides of the reel for retaining the deflated hose, a hose connection on said hub for retaining the inner end of the hose within the coils of the hose, means for normally radially supporting the coils of deflated hose and locking the plate, and adapted to be actuated by the pressure of the water entering the hose to release said plate and supporting means to allow of the expansion of the hose upon the reel.

6. In an automatic hose reel, the combination with a hose having a nozzle, of a reel comprising two permanently spaced apart sides formed with channel shaped spokes and a rim, a tubular hub attached to said sides, a deflated hose retaining plate slidably mounted on said hub between the sides, arms mounted to and between said sides for supporting the deflated hose and retaining the plate and adapted to be released by the inflation of the hose, a clamp for normally retaining the nozzle of the hose, means for connecting the tubular hub to a water main, an automatic control valve located in the water main and means for operating said control valve to admit water to the hose by the removal of the hose nozzle from the clamp.

7. In an automatic hose reel, comprising a pair of permanently spaced sides, a tubular hub secured to and between said sides and connected both to the water main supply and the inner end of the hose, fins formed on said hub in axial relation thereto, a series of deflated hose supporting arms normally secured to said sides in parallel

relation with each other and the hub, a hose retaining plate slidably mounted on said fins and formed with openings for said arms, pins secured in said arms adapted to engage with the sides of said openings to retain said plate in position to retain the coiled deflated hose and adapted to release both the arms and the plate by the expansion of the hose under water pressure to provide additional space upon the reel of the expanded hose.

8. In an automatic hose reel comprising a tubular hub connected both to the water supply main and the hose, a pair of permanently spaced sides attached to said hub, a plate movably mounted on said hub, releasable means for retaining said plate and supporting a coiled deflated hose adjacent to one side of the reel, means for retaining said supporting means rendered inoperative to retain said supporting means on inflation of the hose, both the supporting means and the retaining means being automatically released and moved by the water entering the hose to provide additional space upon the reel for the expanded hose.

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