No. 643,712. Patented Feb. 20, 1900.

E. CLIFF.

HOSE REEL.

(Application filed May 24, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 4.

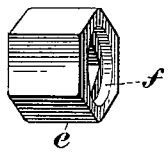


Fig. 1.

Fig. 2.

Fig. 3.

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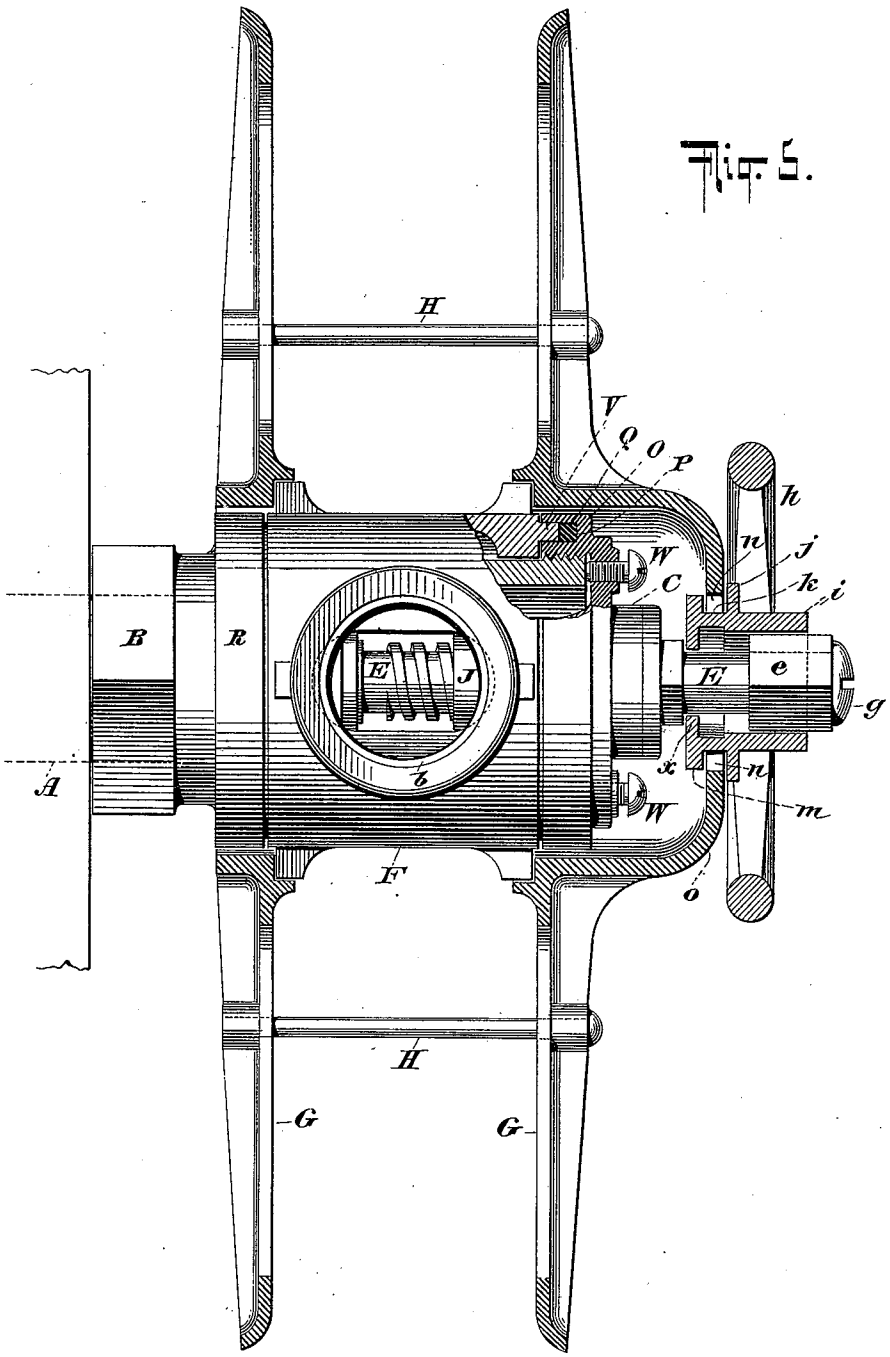
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(No Model.) 3 Sheets—Sheet 2.

Fig. 5.



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(Application filed May 24, 1899.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 6.

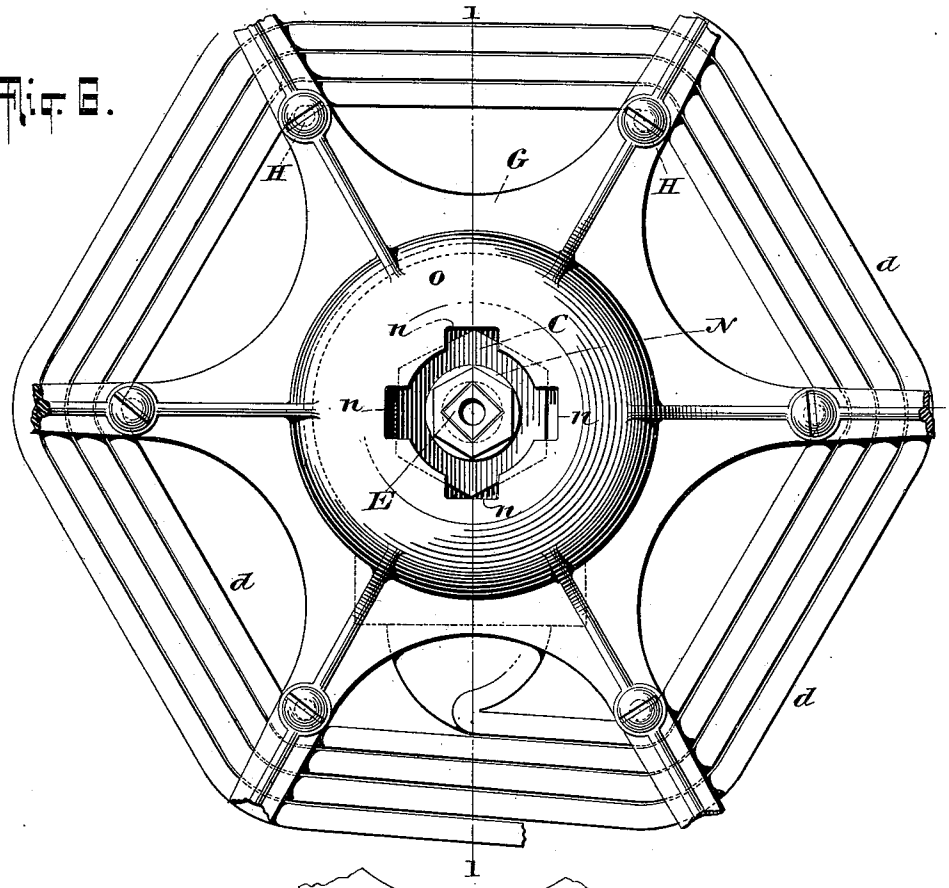
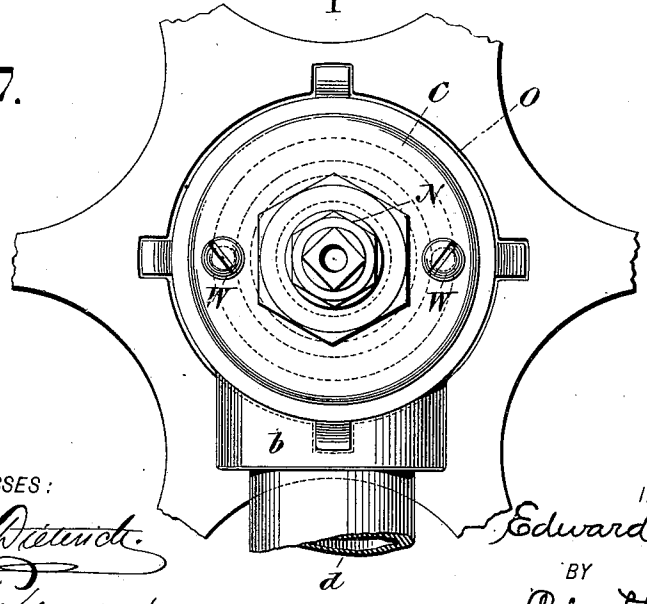


Fig. 7.



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UNITED STATES PATENT OFFICE.

EDWARD CLIFF, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE CLIFF & GUIBERT COMPANY, OF NEW YORK, N. Y.

HOSE-REEL.

SPECIFICATION forming part of Letters Patent No. 643,712, dated February 20, 1900.

Application filed May 24, 1899. Serial No. 718,025. (No model.)

To all whom it may concern:

Be it known that I, EDWARD CLIFF, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Hose-Reels, of which the following is a specification.

The invention relates to improvements in hose-reels, and particularly to improvements in hose-reels of the character employed in buildings having a fixed water-supply apparatus to which the hose-reel may be permanently applied.

In the embodiment of my invention herein presented the reel proper is mounted upon a hollow valve-casing which is connected with the water-supply pipe and upon which the reel may be freely revolved. The hollow valve-casing is inclosed throughout its main portion by the hollow hub of the reel, and this hub intermediate the disks of the reel is provided with a hose-attaching nozzle, to which one end of the hose is removably connected and which communicates with the interior of the hollow valve-casing. The hollow valve-casing is at its inner end provided with a valve-seat, and within the casing is provided a reciprocating valve to engage said seat and cut off the water-supply from the hose or to be moved from said seat and permit the water to flow freely to the hose. The reciprocating valve within the valve-casing is connected with a threaded valve-stem, which engages the thread in the bonnet of the valve-casing, and the outer end of the said valve-stem is of polygonal form in cross-section and carries a hand-wheel, by which when the same is turned the valve-stem and the valve connected therewith are caused to have a horizontal motion toward or from the valve-seat.

In the present embodiment of my invention I provide means for detachably connecting the aforesaid hand-wheel with the hose-reel in order that during the unwinding of the hose from the reel the motion of the latter may be imparted through said hand-wheel to the valve-stem and the valve thereby caused to automatically recede from its seat and permit the water to pass directly to the hose. After a fire has been extinguished and before it is desired to rewind the hose upon the reel the hand-wheel without being removed from the valve-stem may be detached from the hose-reel and used for the purpose of closing the valve without revolving the reel.

In the embodiment of my invention as herein presented the valve after having been automatically opened to the desired extent will cease to have any further movement, even though the reel continues to revolve, and, when desired, the unwinding of the hose may be accomplished without automatically opening the valve controlling the supply of water, these two alternative methods of use being governed simply by shifting the hand-wheel upon the valve-stem. When it is desired that the unwinding of the hose shall not result in the automatic opening of the water-supply valve, it will be necessary after the hose has been unwound to manually open the water-supply valve by means of the hand-wheel.

The present invention relates more especially to improvements upon the hose-reel described and claimed in Letters Patent of the United States No. 618,494, granted January 31, 1899, to me, and consists in certain novel features hereinafter fully described, and particularly pointed out in the claims, pertaining to the valve-casing, the hub of the reel turning upon said casing, the valve-stem, and the hand-wheel mounted upon said stem and adapted either for the manual operation of said stem or the automatic operation of said stem by the movement of the reel.

The object of my invention is to simplify and render more efficient the hose-reel described and claimed in said Patent No. 618,494, and particularly to afford a valve-casing, with its connected parts, which will be durable and not leak.

In accordance with the present invention the hub of the reel may freely rotate around the valve-casing, while being so constructed, secured, and arranged with respect to the valve-casing that it properly incloses and forms, in fact, a part of the latter without danger of leakage occurring at the ends of the said hub.

The invention also embraces various details of form and construction; and said invention and suitable means for carrying the same

into effect will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a central vertical section of the hose-reel and connected parts constructed in accordance with and embodying the invention, the section being on the dotted line 1 1 of Fig. 6. Fig. 2 is a detached side elevation of the central portion of the hand-wheel looking at the inner side of the latter, and said wheel in its hub portion containing the nut normally engaging the valve-stem and said wheel and serving to key said wheel and said valve-stem together. Fig. 3 is a detached edge view of the same. Fig. 4 is a detached perspective view of the nut removed from the end of the valve-stem. Fig. 5 is a central vertical section through a portion of the reel, the hub of the latter being partly broken away and turned so that the nozzle to which the hose is applied is pointing horizontally outward. Fig. 6 is a side elevation, partly broken away, of the reel embodying my invention, the hand-wheel in this figure being omitted from the valve-stem. Fig. 7 is a side elevation of a portion of the reel, the outer disk and the hand-wheel being entirely omitted, so as to illustrate more fully the outer end of the valve-casing.

In the drawings, A designates the usual water-supply pipe; B, the valve-casing applied to the end of the said pipe; C, the bonnet closing the outer end of said valve-casing; D, the valve within said casing; E, the valve-stem; F, the hub of the reel, mounted upon said valve-casing, and G G the disks of the reel, which are keyed upon said hub F and connected together by the series of bolts H, upon which the hose may be wound, as illustrated in Fig. 6.

The valve-casing B is hollow and provided with the valve-seat I to receive the valve D, and the said valve-casing B at its outer end receives the threaded flange of the bonnet C, centrally through which the threaded valve-stem E is adapted to have its movement. The valve-stem E when revolved is adapted to have a reciprocating motion in line with the longitudinal center of the valve-casing B and to move the valve D toward or from the seat I. The inner end of the valve-stem E is connected with the valve D in a well-known manner to prevent said valve from having any material motion imparted to it by the valve-stem E, it being the purpose to have the valve D move directly toward or from the valve-seat I without having any unnecessary turning action.

The bonnet C has the inwardly-extending sleeve J, which at its inner portions is threaded to engage the male thread of the valve-stem E. The sleeve J extends inward a substantial distance into the interior of the valve-casing B, as illustrated in Fig. 1, and outward beyond its threaded portion said sleeve J is formed with the recess K, into which the thread of the valve-stem E may pass during the outward motion of the said stem to open the valve D. The bonnet C is also provided with a recess L to receive the packing M and nut N, the said recess, packing, and nut forming a gland at the outer end of the bonnet C to prevent leakage around the valve-stem E.

Outward beyond the walls of the hollow valve-casing B the bonnet C is provided within the flange O with the annular groove P to receive within its inner portions the elastic packing Q, and the inner end of the valve-casing B is provided with the annular flange R, containing the annular groove S to receive in its inner portion the elastic packing T. It will be observed upon reference to Fig. 1 that the grooves P S correspond with one another both in construction and position and that these grooves receive the annular flanges V, formed at the ends of the hub F, said flanges V being concentric with said grooves P S and adapted to rotate or turn therein during the revoluble action of the reel proper, as during the winding or unwinding of the hose. I regard the employment of the grooves P S to receive the elastic packing Q T and the flanges V of the hub F as important in that with such construction no leakage will occur at the ends of the hub F during the employment of the reel. The hub F is firmly held in place between the flange O of the bonnet C and the flange R of the valve-casing B, and the flanges V of the hub F are firmly impinged against the elastic packing Q and T by screwing the bonnet C firmly upon the outer end of the valve-casing B. I recommend that the packing Q T be made of the best quality of rubber and that upon the outer surfaces of said packing graphite be placed, so that the hub F may freely revolve without disarranging or wearing upon the said packing. In putting the parts of the valve-casing and hub F together I firmly screw the bonnet C, so that the packing Q T will firmly press against the flanges V of said hub T, and I thereafter turn the screws W W (shown in Figs. 5 and 7) inward, so that the points of said screws will press against the outer edges of the valve-casing B and thereby, in effect, pull the bonnet C outward to such an extent as may be permitted by the free fitting of the interengaging threads of said valve-casing B and bonnet C, this slight outward motion of the bonnet C under the action of the screws W W being just sufficient to so relieve any undue pressure of the packing Q and T against the flanges V of the hub F as to permit the latter to turn freely without incurring danger of leakage at the ends of the hub F.

The valve-casing B is substantially inclosed by the hub F of the reel, and intermediate the main body portions of said valve-casing and said hub is formed the chamber X, which freely communicates with the interior of the said valve-casing by means of the openings *a*,

formed in said valve-casing. The chamber X extends entirely around the valve-casing B. The hub F is provided with the internally-threaded nozzle *b*, to which the hose *d* may be applied at will in any suitable or well-known manner. The nozzle *b* forms a part of the hub F and hence with said hub revolves around the valve-casing B. The nozzle *b* receives the water from the valve-casing B and the chamber X, surrounding said casing, in the manner fully described in the aforesaid patent, No. 618,494.

The outer end of the valve-stem E is polygonal in cross-section, and upon this polygonal portion of said valve-stem is placed the polygonal nut *e*, whose interior bore throughout the greater part of its length conforms to said polygonal end of the valve-stem E in order that it may not be capable of turning thereon. The inner portion of the bore of the nut *e* is circular, as shown at *f* in Fig. 4, in order that the inner edges of the nut *e* may pass upon the circular part of the stem E and form a shoulder to prevent the nut *e* from sliding inward from off the polygonal end of said valve-stem E. The nut *e* is held upon the end of the valve-stem E by means of a securing-screw *g*, whose head is somewhat greater in diameter than the diameter of the end of said valve-stem and laps upon the outer edges of said nut *e*, as illustrated in Figs. 1 and 5. Upon the outer portion of the valve-stem E is placed the hand-wheel *h*, the bore of whose hub *i* is polygonal and conforms with the outline of the nut *e*, as probably more clearly indicated by the dotted lines in Fig. 2, in which the nut *e* is shown in position within said hub *i*. The purpose of conforming the interior bore of the hub *i* with the exterior surfaces of the nut *e* is to insure the simultaneous rotation of said hub and nut when the said parts are in engagement one with the other. At its inner portion the hub *i* is formed with the abutting flange *j* and with the inwardly-extending cylindrical portion *k*, (see Fig. 3,) having upon its periphery the series of angular flanges *m*, adapted to be passed through the recesses *n* (see Fig. 6) of the bonnet *o* formed at the central portion of the outer disk G and inclosing the outer end of the bonnet C of the valve-casing B. The hand-wheel *h* is slidable upon the nut *e*, and when the angular flanges *m* of the wheel *h* are in line with the recesses *n* of the bonnet *o* the said wheel *h* may be pushed inward, so that said flanges *m* will pass through the said recesses *n*, and thereupon a slight turn of the wheel *h* will cause said flanges *m* to engage the edges of the bonnet *o* in the manner of a bayonet-catch and serve two purposes, one being to, under such condition, prevent any direct outward movement of the hand-wheel *h*, and the other being to so lock said hand-wheel *h* with the outer disk G that the rotation of the said disk, as during the unwinding of the hose, will result in the simultaneous rotation of said hand-wheel *h*. When the hand-wheel *h* is pressed toward the bonnet *o* for the purpose of causing the flanges *m* of said hand-wheel to enter the recesses *n* of said bonnet, the abutting flange *j* will contact with the outer edges of the bonnet *o* and prevent any unnecessary inward movement of said hand-wheel.

In Fig. 1 the parts of the reel and valve are illustrated in a normal condition with the valve closed. In the event of the happening of a fire the attendant will grasp the usual nozzle (not shown) at the end of the hose and run with the same toward the fire, this act resulting in the drawing of the hose from the reel and the rotating of the latter. The rotary motion of the reel is communicated to the hand-wheel *h* and by the latter to the nut *e* and valve-stem E, and thus during the unwinding of the hose the valve-stem E will be revolved and the valve D withdrawn from the valve-seat I in order to permit the water from the pipe A to pass into the hose. The rotation of the valve-stem E during the unwinding of the hose will continue until the nut *e* at the outer end of said stem passes outward beyond the hub *i* of the hand-wheel *h*, and thereby unkeys said valve-stem from said hand-wheel, and thereupon the valve-stem E and valve D will cease their movement, although the reel and the hand-wheel *h* may continue to revolve until all of the hose has been unwound from the reel. After the hose has been unwound from the reel it will be found to be ready for immediate use, and after the fire has been extinguished the attendant will drop the hose and return to the reel and by means of the hand-wheel *h* will close the valve D against its seat I, this being accomplished by moving the hand-wheel *h* outward until its hub *i* passes over the nut *e*, and thereby becomes again keyed to the valve-stem E and then manually by means of said hand-wheel turning said valve-stem until the valve D becomes seated. The hose may then be rewound upon the reel, or it may be detached from the nozzle *b* and dried before being returned to the reel. When it is desired to rewind the hose upon the reel, the hand-wheel *h* will remain upon the nut *e*, but free of the bonnet *o* of the outer disk G, so as to be entirely disconnected from the reel and not subject to rotation by said reel when the hose is being wound upon the latter. It will be observed that within the hub *i* of the wheel *h* there is a chamber of sufficient length to permit of the wheel *h* being upon the nut *e*, while at the same time it is detached from the disk G and the valve D is closed. After the hose has been rewound upon the reel the hand-wheel *h* may, if desired, be at once moved inward into engagement with the reel while remaining in engagement with the nut *e*, so that in the event of another emergency the unwinding of the hose may result in the automatic opening of the valve D.

If it is desired to avoid any of the dangers which might result from curious persons idly pulling on the hose after it has been wound

upon the reel, the hand-wheel *h* may be left in its outer position (shown by dotted lines in Fig. 1) or moved to said outer position free of the reel, since when it is in this position any idle person pulling upon the hose would simply unwind it from the reel without opening the valve D. The construction is such, therefore, that the reel may be left in condition for the valve D to be automatically opened by the unwinding of the hose from the reel without requiring the attendant to do more than simply pull upon the discharge-nozzle of the hose, or that the hose may be unwound from the reel without opening the valve D, or that the attendant upon reaching the apparatus may first connect the hand-wheel *h* with the reel before pulling off the hose in order to have the automatic opening of the valve D, or that when desired the wheel *h* may be left entirely free of the reel during the pulling off of the hose, in which latter event, however, if there be but one attendant it will be necessary for him to return to the reel after the hose has been unwound in order to manually open the valve D. After the fire has been extinguished the attendant will return to the reel and disengage the wheel *h* therefrom and after sliding said wheel *h* outward upon the nut *e* manually close the valve D by turning said wheel *h*, nut *e*, and valve-stem E.

One advantageous feature of the construction above described is that the unwinding of the hose results in the turning of the valve-stem E to automatically open the valve D and that when the valve has reached its open position it will cease its movement while the male thread on said stem continues in engagement with the female thread at the inner end of the sleeve J of the valve-casing. Thus when the valve has ceased its movement the reel may continue to revolve under the action of pulling off the hose, and the said threads will hold the said valve in a condition to resist the water-pressure and also in a condition to permit of the convenient and rapid closing of the valve by hand.

Another advantageous feature of the construction above described is that the reel and its hub F, while being permitted to have a free rotary motion, are so mounted upon and connected with the valve-casing that no leakage occurs at the ends of said hub, and a further advantageous feature of the construction above described is that a limited length of thread on the valve-stem E only is required, since in said construction the said thread never enters the hub of the hand-wheel, as in the aforesaid patent, No. 618,494. The hand-wheel *h* is prevented from slipping outward off of the nut *e* by reason of the fact that the web *x* of said hub is in position to contact with the inner end of said nut when said hand-wheel is moved outward free of the reel.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The water-supply apparatus, and the valve-casing connected therewith, combined with the reel to receive the hose, the valve within said casing for regulating the supply of water, the valve-stem connected with said valve and having the polygonal nut *e* at its outer end, the hand-wheel having its hub upon said nut and conforming therewith, and means for connecting said hand-wheel with said reel, said hand-wheel being capable of disengagement from the reel while remaining in engagement with said nut, and said nut being capable during the opening of said valve, to slide from within said hub while said wheel remains in engagement with said reel; substantially as set forth.

2. The water-supply apparatus, and the valve-casing connected therewith, combined with the reel to receive the hose, the valve within said casing for regulating the supply of water, the threaded valve-stem connected with said valve and having the polygonal nut *e* at its outer end, the hand-wheel having the hub *i* conforming with said nut and engaging the same, and means for connecting said hand-wheel with said reel, said hand-wheel being capable of disengagement from the reel so that the valve may be closed by hand, and the hub of said reel forming a chamber of sufficient length with respect to said nut that said hub may be moved outward upon said nut and free of the reel; substantially as set forth.

3. The water-supply apparatus, and the valve-casing connected therewith, combined with the reel to receive the hose, the valve within said casing for regulating the supply of water, the threaded valve-stem connected with said valve and having the nut *e* on its outer end, the hand-wheel upon said nut and stem and having the inwardly-extending section *k* formed on its periphery with the right-angular flanges *m*, and the bonnet *o* forming a part of the outer disk of the reel and having the recesses *n* to receive said flanges *m* and permit of the locking of said hand-wheel and said reel together, and also when desired, the disengagement of said hand-wheel from said reel; substantially as set forth.

4. The water-supply apparatus, and the valve-casing connected therewith and having the ports or openings *a* in its sides, combined with the reel having the hub F mounted upon said valve-casing and forming between itself and said valve-casing the water-chamber, the hose-attaching nozzle connected with said hub, the valve within said casing, means for operating said valve, the threaded bonnet C screwed upon the outer end or body of said valve-casing, the screws W, W, passing through said bonnet and engaging the edge of said body, the flange O formed on said bonnet and having the annular groove P and packing Q, and the flange R formed at the inner end of the valve-casing and having the annular groove S and packing T, the said hub F being formed with the flanges V to enter

and turn within said grooves P, S; substantially as set forth.

5. The water-supply apparatus, the valve-casing B connected therewith and having the valve-seat I and bonnet C, the latter having the threaded flange to engage the outer edges of said valve-casing and formed with the inwardly-extending threaded sleeve J, the recess L and flange O, and the packing M and nut N received by said bonnet, combined with the valve and its stem, the reel having the hub F mounted upon said valve-casing and provided at its opposite ends with the annular flanges V, the hose-attaching nozzle connected with said hub, the flange R formed at the inner end of said valve-casing and provided with the groove S and packing T, the groove P and packing Q formed in the said flange O, the valve within said casing, and means for operating said valve, the said hub having its annular flanges V mounted within said grooves P, S; substantially as set forth.

6. The water-supply apparatus, and the valve-casing B connected therewith and having the valve-seat I and bonnet C, the latter having the gland and the inwardly-projecting threaded sleeve J, combined with the valve D, the threaded valve-stem E extending through said sleeve and gland, the reel mounted on said valve-casing, and means for detachably connecting said reel and valve-stem; substantially as and for the purposes set forth.

7. The water-supply apparatus, and the valve-casing B connected therewith and having the valve-seat I and bonnet C, the latter having the gland and the inwardly-projecting threaded sleeve J, combined with the valve D, the threaded valve-stem E extending through said sleeve and gland and having the polygonal outer end, the reel mounted on said valve-casing, the hand-wheel on the polygonal outer end of said valve-stem and adapted for engagement with said reel, and means for preventing said hand-wheel from slipping off from the said valve-stem while permitting the polygonal portion of said valve-stem to slide through the hub of said wheel; substantially as and for the purposes set forth.

Signed at New York, in the county of New York and State of New York, this 22d day of May, A. D. 1899.

EDWARD CLIFF.

Witnesses:
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E. JOS. BELKNAP.