O. E. DUEY & T. J. WELLS.

HYDRANT.

APPLICATION FILED MAR. 10, 1914.

1,164,077.

Patented Dec. 14, 1915.

3 SHEETS—SHEET 1.

Fig. 1.

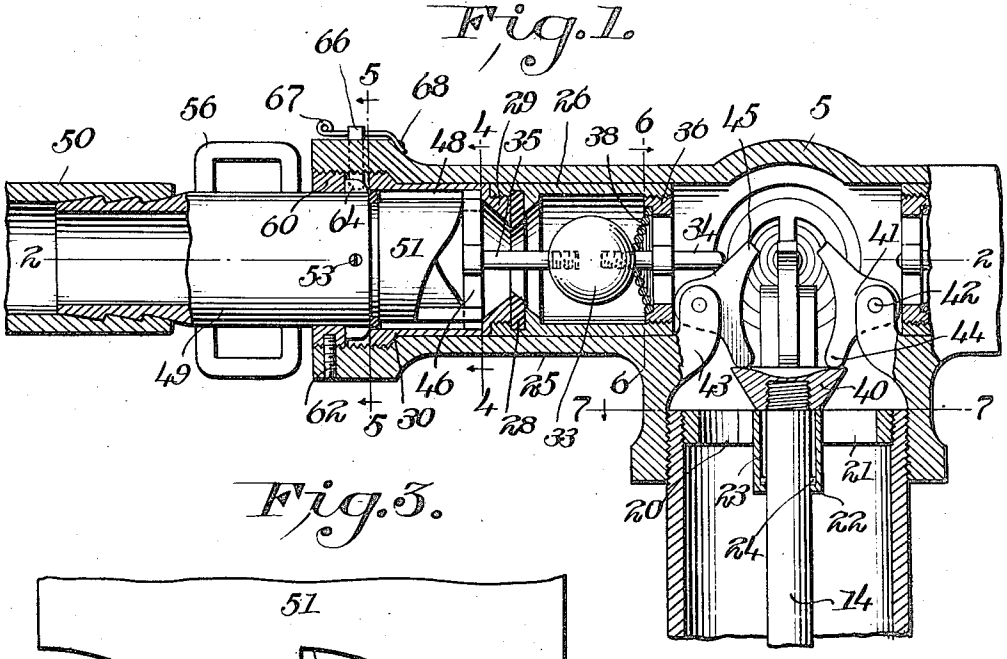


Fig. 3.

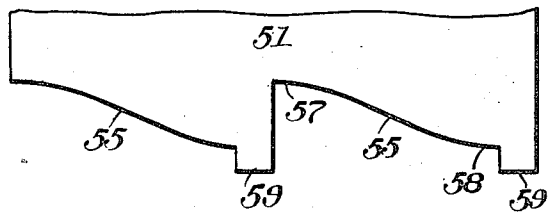
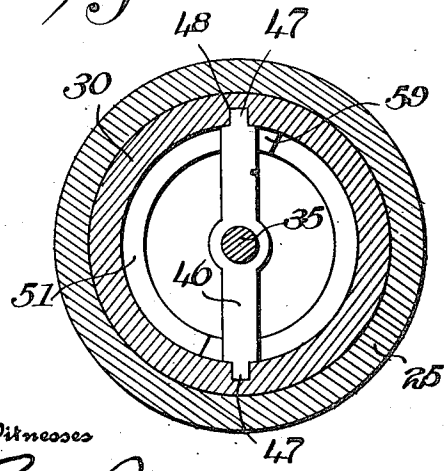
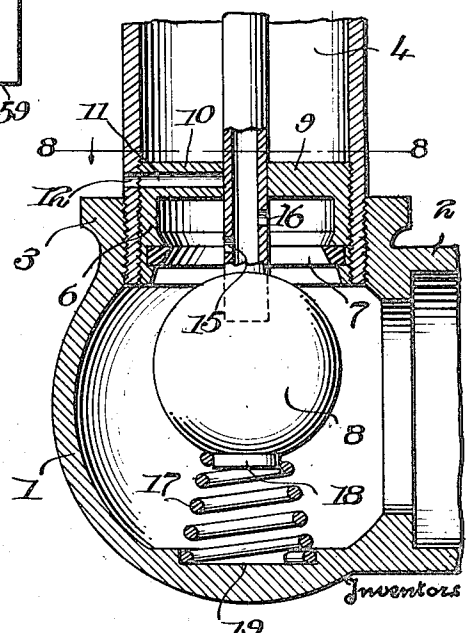


Fig. 4.





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3 SHEETS—SHEET 2.

Fig. 2.

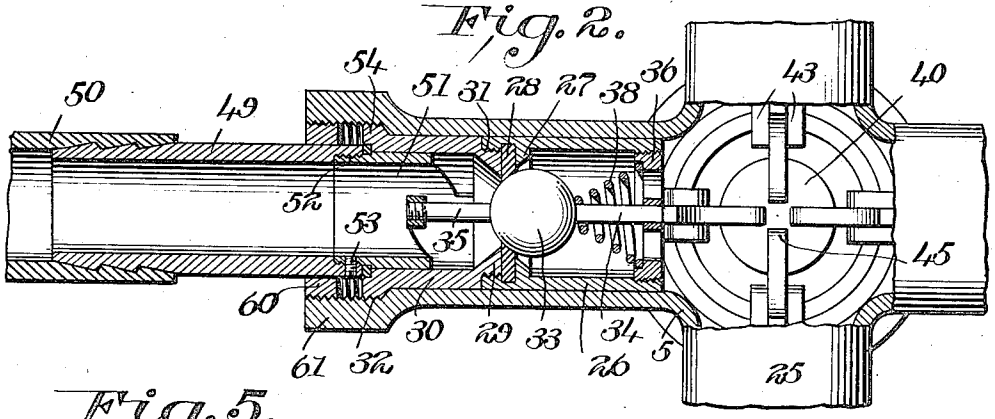


Fig. 5.

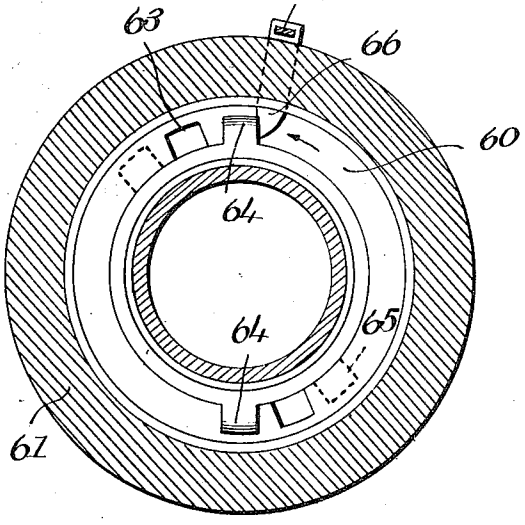


Fig. 6.

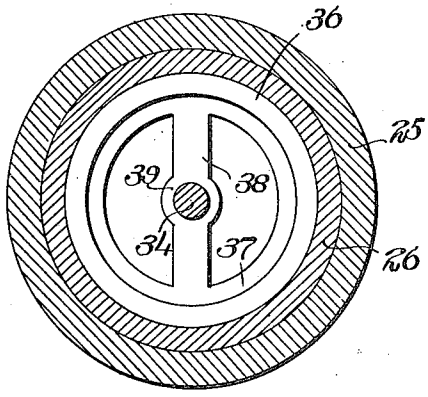


Fig. 7.

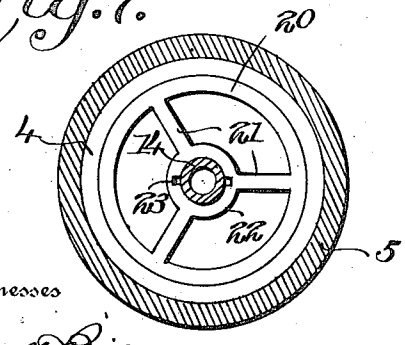
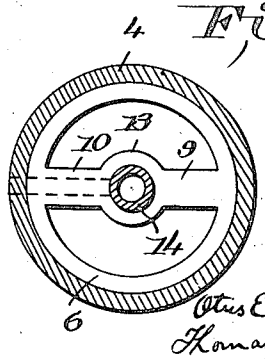


Fig. 8.



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3 SHEETS—SHEET 3.

Fig. 9.

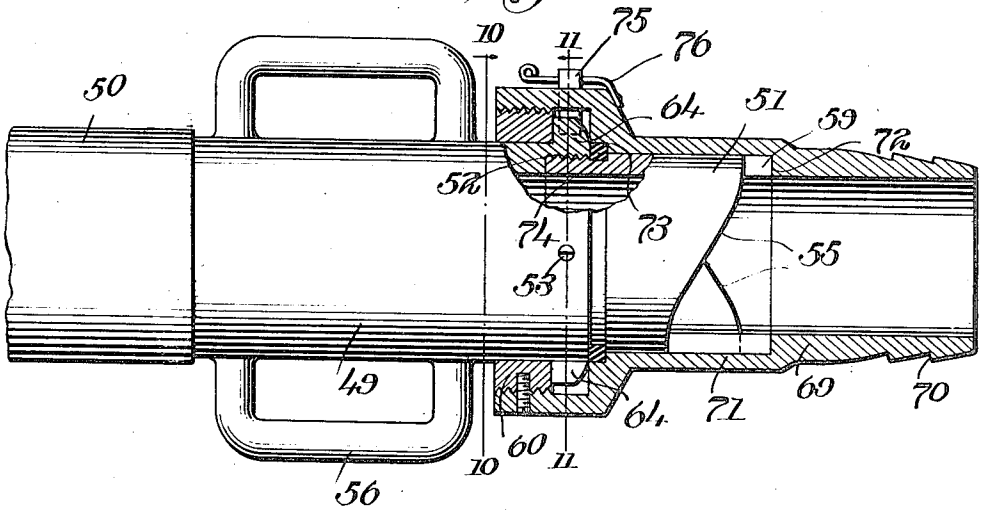


Fig. 10.

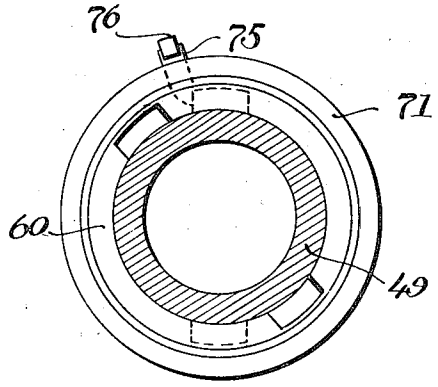
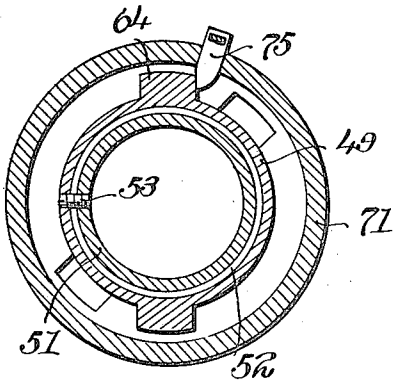


Fig. 11.



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UNITED STATES PATENT OFFICE.

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HYDRANT.

1,164,077. Specification of Letters Patent. Patented Dec. 14, 1915.

Application filed March 10, 1914. Serial No. 823,830.

To all whom it may concern:

Be it known that we, OTUS E. DUEY and THOMAS J. WELLS, citizens of the United States, residing at Millsap, in the county of Parker and State of Texas, have invented certain new and useful Improvements in Hydrants, of which the following is a specification.

One of the objects of this invention is to provide a hydrant with a plurality of hose-coupling heads for supplying a plurality of lines of hose simultaneously.

A further object is to provide a hydrant head with an improved coupling means whereby attachment of the hose thereto will open the head for egress of water therethrough, and whereby detachment of the hose therefrom will close the head against egress of water therethrough.

A further object is to provide a hydrant with a plurality of hose-coupling heads and wherein one of the heads is arranged so that when a line of hose is coupled thereto it will open the hydrant to egress of water from the main up through the hydrant to any of the heads to which lines of hose may be attached.

A still further object of the invention is to provide a valve structure in the hydrant near the bottom or that portion adjacent its connection with a main whereby the water in the upper portion of the hydrant will be drained off when the hydrant is closed.

Further objects of the invention will be more fully described in connection with the accompanying drawings and will be more particularly pointed out and ascertained in and by the appended claims.

In the drawings: Figure 1 is a vertical sectional view of an improved hydrant embodying one form of our invention. Fig. 2 is a sectional view on line 2—2 of Fig. 1. Fig. 3 is a developed side view of the cammed end of one of the hose-coupling members. Fig. 4 is a sectional view on line 4—4 of Fig. 1. Fig. 5 is a sectional view on line 5—5 of Fig. 1. Fig. 6 is a sectional view on line 6—6 of Fig. 1. Fig. 7 is a sectional view on line 7—7 of Fig. 1. Fig. 8 is a sectional view on line 8—8 of Fig. 1. Fig. 9 is a view partly in section and partly in elevation showing the manner in which the device of our invention can be applied in coupling lines of hose, the one to the other. Fig. 10 is a sectional view on line 10—10 of Fig. 9. Fig. 11 is a sectional view on line 11—11 of Fig. 9,

Like characters of reference designate similar parts throughout the different figures of the drawings. As illustrated, the improved hydrant includes a valve section 1, having a portion 2 adapted for connection with a main. The valve section 1 is provided with a threaded portion 3 for connection with a tubular hydrant section 4 which extends upwardly through the earth to where it is connected with a head structure indicated as a whole at 5.

A skeleton valve seat 6 is threaded in the hydrant section 4 and is provided with a valve seat ring 7 against which a spherical closure 8 is adapted to seat. The skeleton valve seat has its annular portion connected by spider arms 9 and 10 and the spider arm 10 is bored to form a radially disposed drain passage 11 which is adapted to register with an opening 12 in the hydrant section 4 to drain the latter at a point above the valve when the latter is closed. Said arms 9 and 10 are bossed, as indicated at 13 to provide a bearing in which a tubular stem 14 slides and is held to a predetermined line of movement. The stem 14 is connected with the valve closure 8 and as the closure 8 is the main controlling element for passage through the hydrant we will term the closure 8 the main valve closure and the stem 14 the main valve stem. The main valve stem 14 is tubular and we provide the same with openings 15 and 16. Both of the openings 15 and 16 lie below the drain passage 11 when the valve closure 8 is in an open position, but when the valve closure 8 is in a closed or seated position, then the opening 15 registers with drain passage 11 and the opening 16 affords communication above the valve seat ring 7, and incidentally above the spider arm 9, so that water above the seated valve closure 8 can be drained through opening 16 to the main valve stem and out through the opening 15 and passage 11 and opening 12. The main valve closure 8 is urged toward a closed position by a spring 17 which is of spiral form and which at its upper end embraces a stud 18 on the closure 8, the lower end of the spring being suitably seated in a recess 19 in the valve section 1.

In order to insure registry of the opening 15 with the passage 11 when the valve closure 8 is in a seated position, we provide guiding means for holding the stem 14 against rotative movement. As illustrated, such means may comprise a spider

ring 20, which is threaded in the hydrant section 4 and which is provided with arms 21 terminating in a boss 22. The boss 22 is longitudinally grooved, as indicated at 23, and we provide the stem 14 with pins 24 which project into and slide in said grooves to permit of longitudinal but to prevent rotative movement of the main stem 14. The parts 20 and 6 form endwise disposed guiding means for the main stem 14.

The head structure 5 is shown provided with a plurality of hose-coupling heads 25, all of which are of the same construction and only one of which need be described in detail, reference being made particularly to Figs. 1 and 2.

The heads 25 are tubular and are shown extending horizontally from the head structure 5. A valve seat sleeve 26 is disposed in the head 25 and is provided with a shoulder or flange 27 on one side of which a valve seat ring 28 is engaged. The valve seat ring 28 is held in position on the shoulder 27 by the terminal end 29 of a guiding sleeve 30 which has threaded connection with the valve seat sleeve 26 as indicated at 31. The guiding sleeve 30 is threaded into the outer end of the head 25, as indicated at 32, so that both of the sleeves 26 and 30 will be non-rotatably and longitudinally locked in the head 25. A valve closure 33, preferably spherical in form, is adapted to seat against the ring 28 and is provided with oppositely extending guiding stems 34 and 35 which have oppositely threaded connection with the closure 33, as indicated in dotted lines in Fig. 1, for adjustment to insure seating engagement of the closure 33 with the ring 28 when the closure is moved to a closing position. The stem 34 is, more properly speaking, a guiding stem, as regards the closure 33, and the stem 35 is an operating stem. However, in one movement of the closure 33, which in the present construction is an opening, the stem 34 functions also as an operating stem for opening the main closure 8, as will presently appear.

A spider ring 36 is threaded into the valve seat sleeve 26 and is recessed at 37 to form a seat for a spring 38, which latter is interposed therebetween and the closure 33 to normally urge the closure 33 toward a closing position. The guiding spider ring 36 is provided with arms 38 which terminate in a boss 39 through which the stem 34 is guided, and by reference to Fig. 1, it will be seen that the stem 34 projects into the head structure 5 when the closure 33 is in an open position.

We will now describe how opening movement of any one of the coupling head closures 33 will operate to open the main closure 8.

The main valve stem 14 is provided with a head 40 which is shown threaded thereon and which lies in the path of the stem operated dogs 41 of all of the coupling heads for actuation by any one of said dogs. Said dogs 41 are pivoted at 42 on lugs 43, which are shown formed integral with the head structure 5. Each dog 41 is provided with a head terminal 44 adapted for sliding engagement with, and to actuate the head 40 to depress the main stem 14. Likewise each dog 41 is provided with a stem actuating portion 45, one of which lies in the path of the stem 34 of each coupling head 25. It will now be clear that upon opening movement of any one of the head closures 33, its stem 34 will actuate its respective dog to engage the head 40 and depress the stem 45 so as to unseat main closure 8, and open the hydrant to egress through the coupling head whose valve has been opened.

On the stem 35 we non-rotatively fix a T guiding bar 46 which is provided with reduced ends 47 adapted to slidably engage longitudinally disposed guiding grooves 48 in the guiding sleeve 30. This structure constitutes means for limiting movement of the stem 35 to a linear path under the action of rotative means which will now be described.

A hose coupling member is provided for attachment to each head 25 and to a line of hose, and as shown, each coupling member functions as a valve opening member and comprises a hose end 49, adapted for connection with a hose 50, and an actuating end 51 which is shown in threaded engagement with the hose end 49, as at 52. In order to non-rotatably connect the hose end 49 and the actuating end 51 of the hose coupling member we may insert a screw 53 therein, as indicated in Fig. 2. A packing 54 is seated in the guiding sleeve 30 and we enlarge the exterior of the hose end 49 with respect to the actuating end 51 so as to provide shoulders between which is fitted packing 54. The purpose of the packing 54 is to afford a water-tight joint for passage of water through the sleeves 26 and 30 and through the hose coupling member, interiorly of the latter, so as to avoid leakage about the exterior of the latter.

The actuating end 51, or in other words the inner terminal of the hose coupling member is provided with cammed margins 55, as shown in the developed side view of Fig. 3. These cammed margins are adapted for engagement with the bar 46, near the ends thereof, so that upon rotation of the hose coupling member, by means such as the handles 56 thereof, the cammed portions will traverse the bar 46 from their starting points 57 to their stopping points 58 and further movement will be arrested by stop terminals 59 which engage the non-rotatably but slidably mounted bar 46, as indicated in Fig. 4, when the closure 33 is in an open po-

sition. The cammed portions 55 are arranged to act upon said bar 46 to shift the closure 33 into an opening position upon clockwise rotation of the handles 56 throughout substantially one-hundred and eighty degrees. The stops 59 limit rotation of the coupling in a clockwise direction when the closure 33 has been shifted to an open position.

We will next describe means for preventing rotation of the coupling member in a contra-clockwise direction, which would tend to permit the closure 33 to seat, and also the means for holding the coupling member against longitudinal movement during its valve-opening rotative adjustment.

A retaining ring 60 is threaded into the internally threaded end 61 of coupling head 25 and may be secured against rotation therein by means of a threaded pin 62. The retaining ring 60 is provided with openings 63 for projection therethrough of retaining lugs 64 which are formed integral with the hose end 49 of the hose-coupling member. The openings 63 and the lugs 64 are so disposed with respect to the head bar 46 of the stem 35 that when the lugs 64 are registered with the opening 63 and the coupling is inserted into the position shown in Fig. 2, the lugs 64 will engage the inner face of the retaining ring 60 and will hold the shouldered end 49 against the packing 54 to form a water-tight fit. It will thus be seen that the lugs 64 and the retaining ring 60 serve to retain the coupling member in water-tight fit for free rotating movement in the head 25, and that said parts hold the coupling member against longitudinal movement therein, in coaction with the guiding sleeve 30.

When the lugs are registered with openings 63 then the starting portions 57 of the cams 55 will lie abreast of the stem head rod 46 but there will be no immediate actuation of the bar 46 upon mere insertion of the coupling member into place. However, when the coupling member is inserted into place and turned in a clockwise direction, the lugs 64 would first assume the position shown by dotted lines 65, in Fig. 5. Thereafter, further rotative movement of the coupling member in a clockwise direction would bring one of the lugs 64 abreast of a spring-controlled dog 66 which is slidably mounted for radial movement in the enlarged extension 61. A spring 67, extending through the dog 66 and secured at 68 to the coupling head 25, normally acts to move the dog 66 into the position shown. Movement of the lugs 64 into engagement with the dog 66 in the direction of arrow shown in Fig. 5, will serve to force the dog 66 outwardly so as to permit the lug 64 to pass it. When the lug 64 has reached the opposite side of the dog as shown in Fig. 5, then the stop 59 will have engaged the head bar 46 so as to prevent further movement of the coupling member in a clockwise direction and the dog 66 prevents retractive movement of the coupling member in a contra-clockwise direction thereby locking the coupling member against rotation, and holding the valve closure 33 locked in an open position. In order to uncouple the parts, the dog 66 would be retracted, manually, and the coupling member will be rotated in a direction contrary to the direction indicated by the arrow shown in Fig. 5 until the lug 64 registers with opening 63 whereupon the spring 38 in closing the valve 33 will instantly force the lugs outwardly through the opening 63.

It will thus be seen that the operation of uniting the coupling member attached to the end of the hose, with the coupling head 25, merely consists in inserting the coupling member into the head and giving the coupling member a partial rotation whereupon a water-tight fit is not only effected and the head valve closure 33 is not only opened but likewise, the main closure 8.

The utility of our invention is not restricted to connection of a hose end with a hydrant, as we may employ the device of our invention in connecting one line of hose with another, as illustrated more particularly in Figs. 9 to 11, both inclusive. In this utility of the invention the coupling member consisting of the hose end 49 and the actuating end 51, will be precisely the same as in the form shown in Figs. 1 and 2, and likewise the retaining ring 60.

We provide a hose union, designated as a whole at 69 which is provided with a serrated exterior 70 for attachment with a line of hose. Said union 69 is recessed as indicated at 71 to take the actuating end of the hose-coupling member so that the stop 59 will abut against a shoulder 72. In this utility of the invention the stop 59 and the cam portion 55 do not function to perform any service and we have illustrated them in this form to show how the coupling member could either be connected with a hydrant head or with another hose union. A packing shoulder 73 serves as a seat for a packing ring 74 which is shown clamped between the actuating member 51 and the hose end 49 and which is preferably the same diameter as the internal diameter of the ring 60 so that it can be projected therethrough.

A locking dog 75 which is actuated by a spring 76, functions the same as in the preferred form.

It is believed that the utility and advantages of our invention will be fully understood from the foregoing description, and while we have herein shown and described specific forms of our invention, we do not wish to be limited thereto except for such limitations as the claims may import.

We claim:

1. In a hydrant, a section for connection with a main provided with a drainage passage, a valve seat provided with a port registering with said passage, a valve closure for said seat, a tubular stem for said valve extending through said valve seat and provided with one opening arranged to register with the port in said seat when the valve closure is in a closed position and another opening communicating with said section for drainage of the section through said stem, from a point above said valve, and means to hold said stem in a relation that in one of the extreme positions of movement of said stem the port thereof registers with the drainage passage to permit draining of the section connected with the main.

2. In a hydrant, a tubular section for connection with a main; a valve for said section, a hose head structure on said section provided with a plurality of hose heads, a hose coupling for connection with one of said heads, and means actuated upon connection of a hose coupling with one of said heads for opening said valve for supply to such head and to the remaining heads.

3. In a hydrant, a tubular section for connection with a main; a valve for said section, a hose-head structure on said section provided with a plurality of hose heads, hose couplings for connection with said heads, means actuated upon connection of any one of the couplings with one of said heads for opening said valve for supply to all of the heads, and individual means for each head actuated by connection of a hose coupling with said hydrant for admitting flow thereto.

4. In a hydrant, a tubular section for connection with a main; a valve in said section, means for opening said valve, a hose head structure provided with a plurality of hose heads, hose couplings for connection with said hose heads, each coupling having a cam-actuating portion thereon, a valve structure for each hose head, and means for connecting the hose couplings with said hose heads for actuating said valves and said first-named means to admit supply to said hose coupling.

5. In a hydrant, a tubular section for connection with a main; a valve for said section, means for opening said valve, a hose-head structure provided with a plurality of hose heads, valve casing for said hose heads, valves in said casings and means for rotatably connecting the couplings with said hose heads for manual rotation of said couplings to open the valves for admission of supply to said couplings.

6. In a hydrant, a tubular section for connection with a main, a valve in said section, a hose head provided to be connected with the upper end of said tubular section, a stem for said valve extended into said hose head, a second valve in the hose head to control the outlet therefrom, a stem for said second valve connected with actuating means and connected to operate said first valve upon movement of the actuating means, a hose coupling provided with a reduced portion to be received within the hose head and to be manually placed to the full extent thereinto, and cammed-actuating portions formed on said hose coupling to engage with the actuating means when the coupling is inserted to its full extent into the hose head and upon turning movement of said coupling in this relation to open each of said valves.

7. In a hydrant, a hose head, a lineally movable valve therein for closing egress therethrough, a hose coupling provided with means for actuating said valve on rotation of said coupling and having a retaining lug thereon, and a retaining ring on said head provided with an opening for passage of said lugs into retaining engagement with said coupling upon rotation of the latter to hold said coupling against longitudinal movement during its operative rotation to actuate said valve.

8. In a hydrant, a hollow hose head, a lineally movable valve therein for closing egress therethrough, a hose coupling provided with means for actuating said valve upon rotation of the coupling in one direction, means for retaining said coupling against longitudinal movement for valve-actuating rotation of the coupling, and automatic means preventing return movement of the coupling from a valve-actuating position.

In testimony whereof we affix our signatures in presence of two witnesses.

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THOMAS J. WELLS.

Witnesses:
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E. F. NUTTALL.