

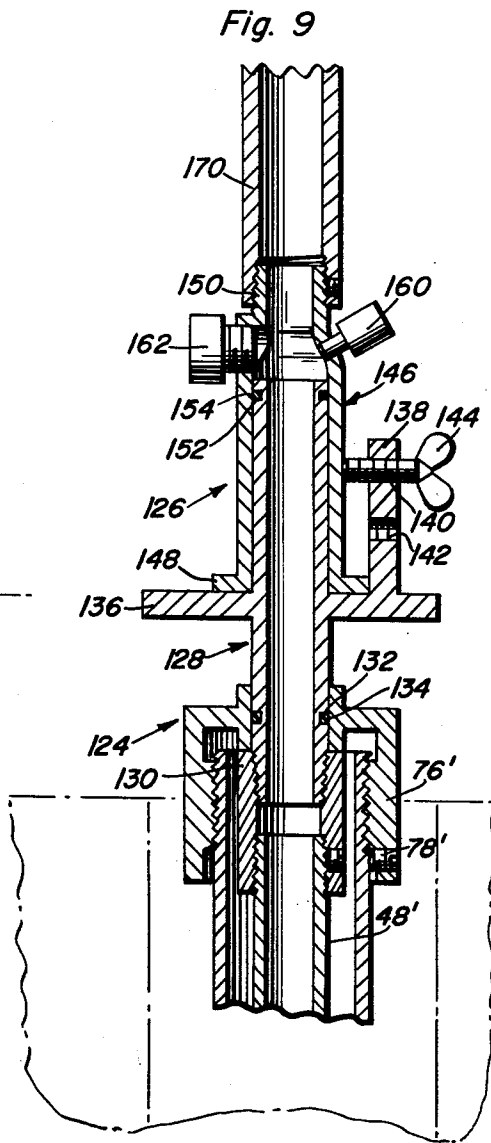
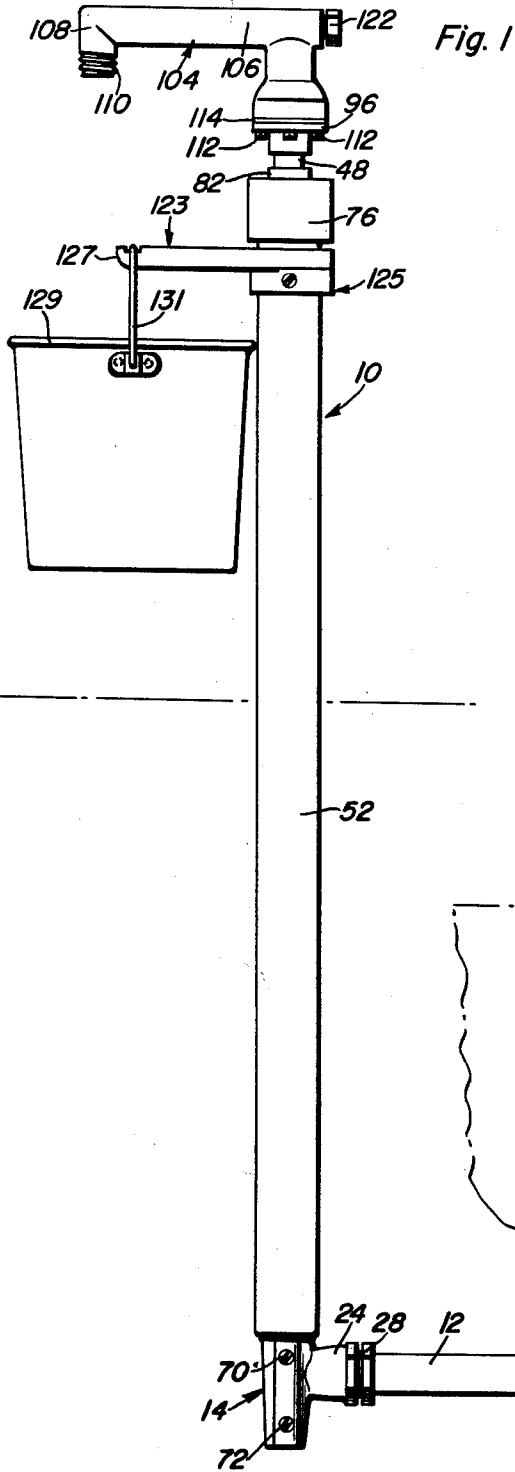
May 5, 1964

L. I. DELANEY  
WATER HYDRANT

3,131,711

Filed Feb. 1, 1961

3 Sheets-Sheet 1



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Fig. 2

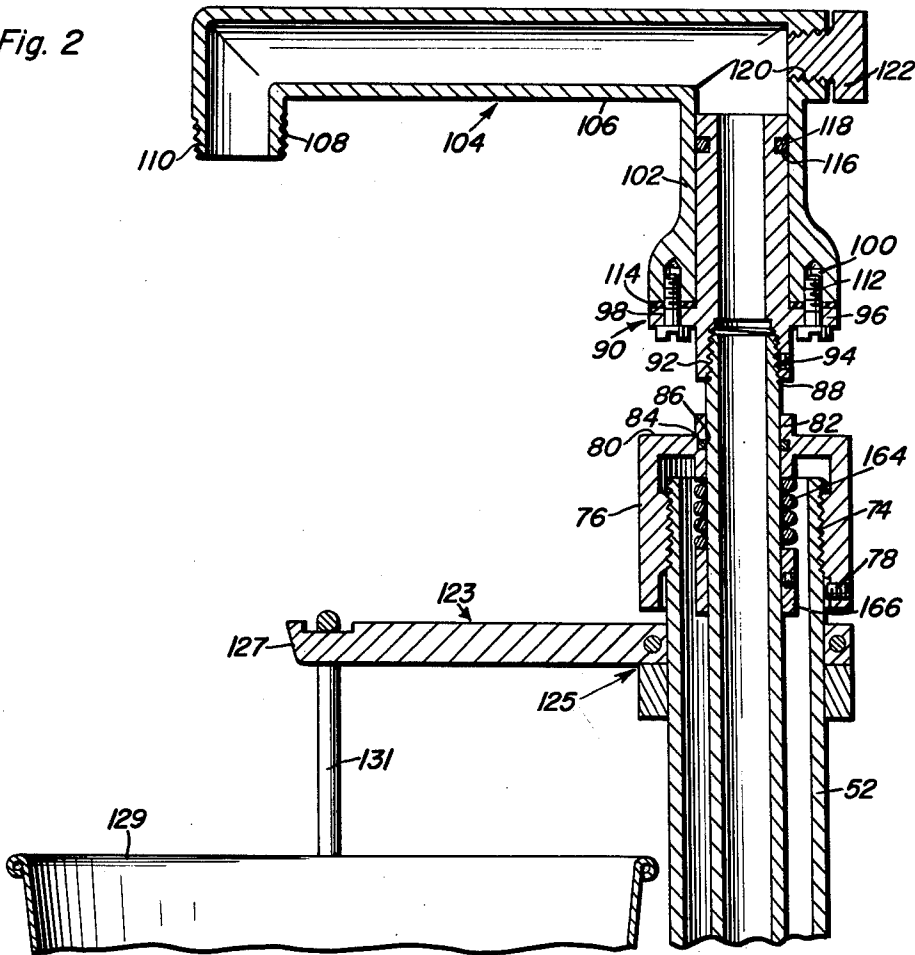


Fig. 3

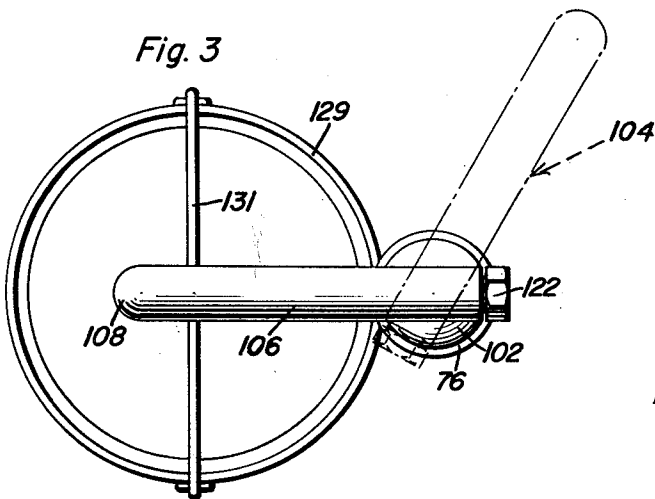
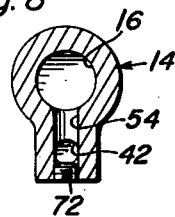


Fig. 8



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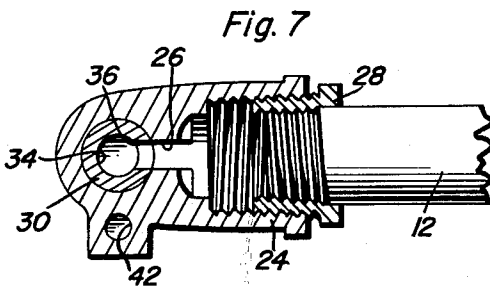
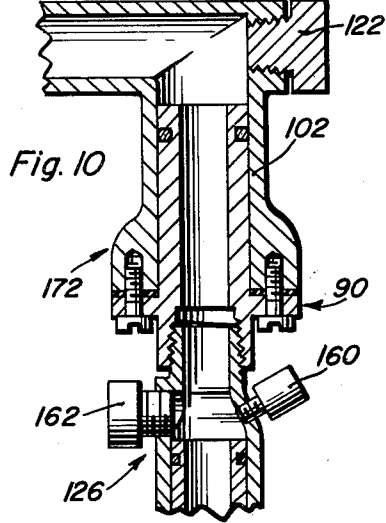
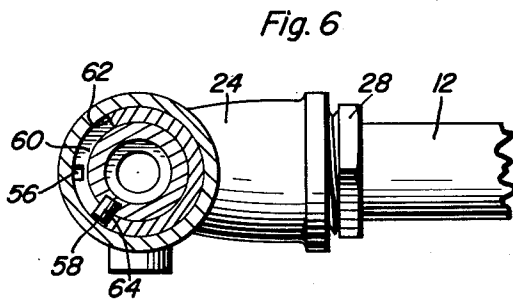
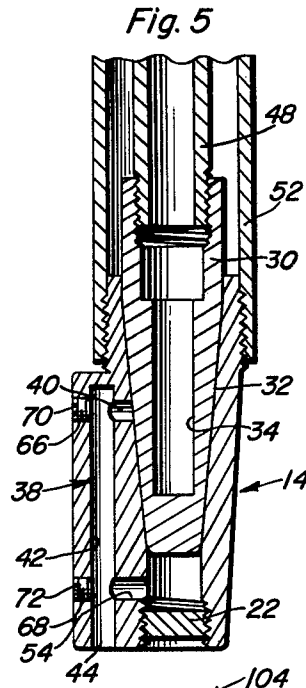
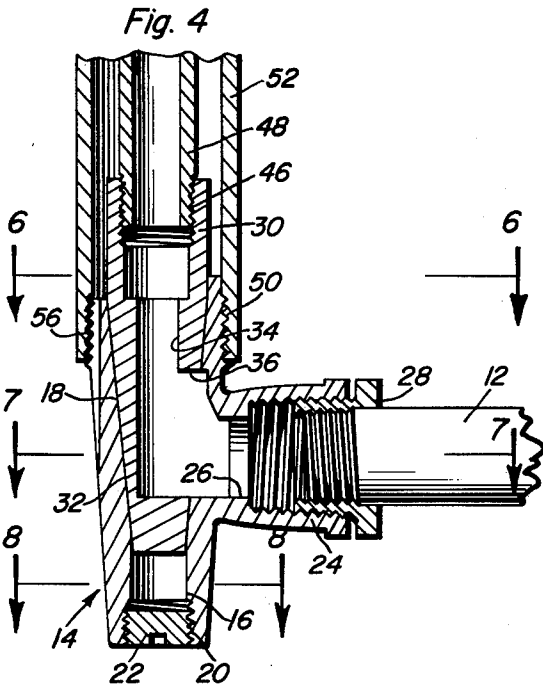
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3 Sheets-Sheet 3



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3,131,711

WATER HYDRANT

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3 Claims. (Cl. 137-286)

This invention relates to a novel and useful water hydrant, and more particularly to a water hydrant specifically adapted to render efficient operation over an extended period of time with a minimum amount of maintenance.

Water hydrants of the type having their lower ends disposed below the frost line are used in regions where freezing weather might cause the water supply for the hydrant to freeze if allowed to stand in the hydrant above the frost line. These types of water hydrants are provided with valve means for controlling the flow of water therethrough which are disposed below the frost line and the hydrant is also provided with drainage means whereby the water standing in the upright portion of the hydrant after each delivery of water therefrom may be drained to a level below the frost line thereby precluding any possibility of water standing in any portion of the hydrant freezing and causing damage to the hydrant.

The main object of this invention is to provide a water hydrant having a minimum number of parts which will be capable of performing all of the desired functions of a water hydrant and still be provided with means for draining standing water in the hydrant above the frost line after each delivery of water from the hydrant.

A further object of this invention, in accordance with the immediately preceding object, is to provide a water hydrant which in effect has only one moving part.

Still another object of this invention is to provide a water hydrant which will provide a full direct flow of water from the water supply, the hydrant being devoid of restrictions tending to retard the flow of water there-through.

A still further object of this invention is to provide a water hydrant having an angulated neck portion for discharging the water from the hydrant, which neck portion may itself be rotated about the longitudinal axis of the hydrant to operate the valve for controlling the flow of water through the hydrant.

Still another object of this invention is to provide a valve assembly for the water hydrant which will be simple in construction, adaptable to compensate for wear between the moving parts thereof and readily dismantable to afford access to the moving parts of the valve assembly thereof so that the moving parts of the valve may readily be repaired.

A final object of this invention to be specifically enumerated herein is to provide a water hydrant which will conform to conventional forms of manufacture, be of simple construction and easy to operate so as to provide a device that will be economically feasible, long lasting and relatively trouble free in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a side elevational view of the water hydrant shown in an operative position, the ground level being shown in phantom lines;

FIGURE 2 is a longitudinal vertical sectional view of the upper portion of the water hydrant illustrated in FIGURE 1 of the drawings on somewhat of an enlarged scale;

FIGURE 3 is a top plan view of the hydrant illustrated in FIGURE 1 of the drawings on somewhat of an

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enlarged scale and showing an alternate position of the angulated portion thereof in phantom lines;

FIGURE 4 is a fragmentary vertical sectional view of the lower end of the water hydrant illustrated in FIGURE 1 of the drawings on somewhat of an enlarged scale and showing the details of the valve mechanism of the water hydrant;

FIGURE 5 is a vertical transverse sectional view of the portion of the hydrant illustrated in FIGURE 4 as seen from the right side of FIGURE 4;

FIGURE 6 is a horizontal sectional view taken substantially upon the plane indicated by the section line 6-6 of FIGURE 4;

FIGURE 7 is a horizontal sectional view taken substantially upon the plane indicated by the section line 7-7 of FIGURE 4;

FIGURE 8 is a horizontal sectional view taken substantially upon the plane indicated by the section line 8-8 of FIGURE 4;

FIGURE 9 is a fragmentary vertical sectional view similar to that of FIGURE 2 but showing a modified form of water hydrant adapted for connection to a stationary stock waterer; and

FIGURE 10 is a fragmentary side elevational view of the top portion of a further modified form of the invention illustrating the manner in which the swivel neck of FIGURE 2 may be connected to the upper portion of the hydrant illustrated in FIGURE 9 in lieu of the inlet pipe of a stock waterer.

Referring now more specifically to the drawings, the numeral 10 generally designates the water hydrant comprising the present invention which is shown connected at its lower end to a suitable water supply conduit 12.

Referring now more specifically to FIGURE 4 of the drawings, it will be noted that a valve body generally designated by the reference numeral 14 is carried by the lower end of the hydrant 10. The valve body is provided with an upstanding longitudinal bore 16 whose upper end is upwardly and outwardly tapered as at 18 and whose lower end is internally threaded as at 20. A closure plug 22 is threadedly engaged in the threaded lower end of the valve body 14. The valve body 14 is also provided with a laterally projecting female coupling member which is internally threaded and is aligned with and in communication with a transverse bore 26 whose inner end communicates with the tapered portion 18 of the bore 16. A non-metallic fitting 28 constructed of nylon or other suitable material is threadedly engaged in the internally threaded female coupling member 24 for securing the conduit 12 to the female coupling member 24 in fluid tight sealing engagement therewith and while maintaining the conduit 12 and female coupling member of the valve body 14 free of direct engagement with each other.

A generally cylindrical valve member 30 is provided with a conical lower end 32 and is rotatably and seatingly received within the outwardly and upwardly tapering portion 18 of the longitudinal bore 16. The valve member 30 is provided with a generally L-shaped passage having a longitudinal leg 34 opening outwardly through the outlet end of the body 14 and a transverse leg 36 selectively registrable with the transverse bore 26 upon rotation of the valve member 30 in the longitudinal bore 16. It will be noted that the transverse bore 26 immediately adjacent the valve member 30 is elongated in vertical height and that the transverse leg 36 of the L-shaped passage is also elongated in vertical height.

The valve body 14 also includes a drain passage generally designated by the reference numeral 38 including a transverse portion 40 and a vertical portion 42 opening through the lower end of the valve body 14 as at 44. It is to be noted that the transverse leg 36 of the L-

shaped passage is registrable with the transverse portion 40 of the drain passage 38 thus communicating the interior of the valve body 30 with the exterior surfaces of the lower end of the valve body 14.

The upper end of the valve body 30 is internally threaded as at 46 and has the lower end of a delivery pipe 48 threadedly engaged therein. Additionally, the upper end of the valve body 14 through which the valve member 30 projects is externally threaded as at 59 and a stand-up pipe casing 52 is threadedly engaged with the external threaded surfaces of the valve body 14.

It will be noted that the longitudinal bore 16 projects below the lower end of the valve member 30 defining a space between the valve member 30 and the closure plug 22. The drain passage 38 also includes a second transverse portion 54 communicating at one end with the lower end of the longitudinal bore 16 disposed below the valve member 30 and the upstanding portion 42 of the drain passage 38 whereby the lower end of the longitudinal bore 16 is also communicated with the external surfaces of the lower end of the valve body 14.

Should any water seep past the confronting surfaces of the upwardly and outwardly tapered portion 18 of the longitudinal bore 16 and the valve member 30 and become disposed between the casing 52 and the upper end of the valve member 30, a longitudinal slot 56 is provided in the exterior surfaces of the valve body 14 communicating that area defined between the casing 52 and the valve member 30 with the external surfaces of the valve body 14 so that water may not become entrapped between the casing 52 and the valve body 30 and the delivery pipe 48.

On order to provide a limit for the rotation of the valve member 30 relative to the valve body 14, the valve member 30 is provided with a radially extending stop lug 58 (see FIGURE 6). The upper end of the valve body 14 is provided with an arcuate stepped surface 69 terminating at opposite ends in upstanding stop wall portions 62 and 64 whereby the rotation of the valve member 30 will be limited to the defined between the two stop surfaces 62 and 64.

It will be noted from FIGURES 5 and 8 of the drawings that the transverse portions 40 and 54 of the drain passage 38 also extend outwardly through the side of the valve body 14 past the upstanding portion 42 of the drain passage 38. The outer ends of the transverse passages 40 and 54 are internally threaded as at 66 and 68 and have closure plugs 70 and 72 threadedly secured therein.

Referring now more specifically to FIGURES 2 and 3 of the drawings it will be noted that the upper end of the casing 52 is externally threaded as at 74 and has a cap threadedly engaged therewith provided with a set screw 78 for engagement with the casing 52 in order to prevent rotation of the cap 76 relative to the casing 52. The end wall 80 of the cap 76 is provided with a longitudinally extending journal boss 82 which slidably and rotatably receives the upper end of the delivery pipe 48. The cylindrical journal boss 82 is provided with an annular recess 84 in which there is disposed an annular O-ring 86 for sealing engagement with the upper end of the pipe 48 thereby sealing the casing 52 with respect to the outer surfaces of the delivery pipe 48 in fluid tight sealing engagement therewith. The delivery pipe 48 projects upwardly through the end wall 80 and terminates in an externally threaded end portion 88 which has the lower end of a mounting sleeve generally designated by the reference numeral 90 threadedly engaged therewith as at 92. A setscrew 94 is provided in the mounting sleeve 90 for preventing rotation of the latter relative to the upper terminal end portion of the delivery pipe 48. The mounting sleeve 90 is provided with an annular radially extending mounting flange 96 which is suitably apertured as at 98 at points spaced circumferentially thereabout for alignment with the internally threaded bores 100 carried by the upstanding base portion 102 of the angulated discharge neck generally designated by the reference numeral 104 which also includes an intermediate horizontal portion 106 and a

downturned terminal end portion 108 which is externally threaded as at 110. Suitable fasteners 112 and a gasket 114 are used in an obvious manner to secure the angulated neck 104 to the mounting sleeve 90. The upper end of the mounting sleeve 90 is provided with an annular recess 116 in which there is disposed a resilient O-ring 118 for sealing the outer surfaces of the mounting sleeve 90 in fluid tight sealing engagement with the internal surfaces of the upstanding base portion 102 of the angulated neck 104. The neck 104 is also provided with an internally threaded outlet opening 120 in the rear end thereof in which there is threadedly engaged a plug 122. It is to be noted that the opening 120 may be used as an alternate outlet for the neck 104 in lieu of the downturned portion 108 which may be provided with a suitable cap member if desired.

A receptacle hook assembly generally referred to by the reference numeral 123 is mounted on the casing 52 by means of a clamp assembly generally referred to by the reference numeral 125. The hook assembly 123 projects laterally from the casing 52 and terminates in a hook portion 127 adapted to support a receptacle 129 by its handle 131 immediately beneath and in alignment with the downturned discharge portion 108 of the neck 104 for receiving water delivered therefrom. It is to be noted that the neck 104 is rigidly secured to the valve member 30 and that the valve member 30 may be moved between open and closed positions by rotating the neck 104 about its upstanding base portion 102 as can be clearly observed in FIGURE 3 of the drawings.

With attention now directed more specifically to FIGURE 9 of the drawings it will be noted that there is generally designated by the reference numeral 124 a modified form of hydrant. The lower end of the hydrant 124 is substantially identical with the lower end of the hydrant 10 and has therefore not been illustrated. However, it will be noted that the delivery pipe 48' of the hydrant 124 terminates a spaced distance below the cap 76' thereof and that the delivery pipe 48' is operatively connected to stationary outlet pipe 170 by means of a telescopic connecting assembly generally designated by the reference numeral 126. The telescopic connecting assembly 126 includes an operating sleeve generally referred to by the reference numeral 128 whose lower end is externally threaded and connected to the externally threaded upper end portion of the delivery pipe 48' by means of a connecting collar 130. The operating sleeve 128 is provided with an annular recess 132 in which there is disposed a resilient O-ring 134 similar to the resilient O-ring 86. The operating sleeve 128 is also provided with a transverse handle portion 136 including an upstanding mounting lug 138 spaced laterally from and generally paralleling the sleeve 128. The mounting lug 138 is apertured as at 140 and 142 and has a thumb screw stop member 144 threadedly engaged in the aperture 140, which thumb screw 144 may alternately be threadedly engaged in the aperture 142.

The telescopic connecting assembly 126 includes an outer sleeve generally referred to by the reference numeral 146 having a radially extending annular base portion 148 adapted to abut the transverse handle 136. The base portion 148 is also engageable with the thumb screw stop member. The outer sleeve 146 has a diametrically reduced portion 150 at its upper end which is externally threaded and threadedly engaged with the stationary pipe 170 in the same manner in which the upper end of the delivery pipe 48 is threadedly engaged with the mounting sleeve 90. The operating sleeve 128 includes an annular recess 152 in which there is disposed a resilient O-ring 154 and it will be noted that the upper end of the operating sleeve 128 is telescopically and rotatably received in the lower end of the outer sleeve 146. The O-ring 154 seals the inner surfaces of the outer sleeve 146 relative to the outer surfaces of the operating sleeve 128 in fluid tight sealing engagement therewith. Thus, it will be noted that the outer sleeve 146 may be elevated with respect to the upper end of the delivery pipe 48'

and that the thumb screw stop member 144 constitutes a limit for upward movement of the outer sleeve 146.

In the vent it is desired to drain the water standing in the delivery pipe 48' and parts of the water hydrant 124 disposed thereabove the outer sleeve 146 is provided with an air check valve assembly 160 for admitting air into the interior of the hydrant 124 in the event the outlet thereof is still connected to a receptacle or tank in fluid tight sealing engagement therewith. The check valve assembly, of course, will enable the entrance of air into the upper end of the delivery pipe 48' and the water disposed therein to drain through the drain passage 38.

The outer sleeve 146 is also provided with a coupling assembly 162 by which the hydrant 124 may be connected to an additional point of use by means of a hose or similar conduit.

It will be noted that the hydrant 124 is operated upon movement of the operating sleeve 128 about its longitudinal axis and that the pipe 170 secured thereto may be maintained stationary while the hydrant 124 is turned on and off.

While it is to be understood that the weight of the component parts of the hydrants 10 and 124 disposed above and connected to the corresponding valve members thereof will be sufficient to maintain the valve members in tight seated engagement with the corresponding valve bodies, a compression spring 164, see FIGURE 2, is disposed between the journal 82 and a stop collar 166 carried by the delivery pipe 148 in order to exert axial thrust on the delivery pipe 48. It will be noted that the stop collar 166 may be adjusted to increase or decrease the axial thrust effected by the compression spring 164 and also that the axial thrust may be adjusted by rotation of the cap 76 relative to the casing 52. The axial thrust applied to the valve member of the hydrant 124 may be adjusted by means of the cap 76'.

In addition to the alternate engagement of the thumb screw 144 in the apertures 140 and 142, a set screw (not shown) may be engaged in the aperture 142 and the thumb screw 144 in the aperture 140 for securing the outer sleeve 146 in adjusted positions on the operating sleeve 128. Still further, the hydrant 124 may have a spring (not shown) equivalent to spring 164 disposed between the cap 76' and the collar 130.

Further, it will be noted that neck 104 may readily be secured to the hydrant 124 by removing the pipe 170 and installing the mounting sleeve 90 in its place as shown in FIGURE 10. In this manner the hydrant 124 may be converted to hydrant 172 which is similar to hydrant 10.

The foregoing is considered as illustrative only to the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A water hydrant comprising a standpipe, a valve body having an upstanding longitudinal bore formed therethrough whose upper end portion is flared and opens upwardly through the upper end of said body and defines an outlet opening therefor, said body having a transverse bore formed therein opening at one end through the side of said body to define an inlet opening and communicating at the other end with said upper end portion of said longitudinal bore, an upstanding valve member including a tapered lower end portion rotatably and sealingly received in said upper end portion of said longitudinal bore and registered with said transverse bore, a closure plug removably and sealingly secured in the lower end portion of said longitudinal bore and disposed a spaced distance below the lower end of

said valve member, said valve member having a generally L-shaped passage formed therein including a longitudinal leg opening outwardly through the upper end of said valve member and a transverse leg selectively registerable with said transverse bore upon rotation of said valve member, an upstanding delivery pipe threadedly secured in the upper end of the longitudinal leg of said L-shaped passage in sealed relation therewith and for rotation with said valve member, said standpipe comprising a casing having an inner diameter greater than the outer diameter of said delivery pipe and the major diameter end of said valve member and disposed about and threadedly secured to the outlet end of said body in sealed relation therewith defining an air space between said casing and said delivery pipe, a casing cap threadedly secured to the upper end of said casing in sealed relation therewith and having an opening formed therethrough rotatably receiving the upper end of said delivery pipe, means carried by said cap forming a fluid tight seal with the exterior of said delivery pipe, said valve body including upstanding passage means communicated at its upper end with the lower portion of said air space and at its lower end with the exterior of said valve body below said casing and second upstanding passage means formed in said body and including an upper portion opening inwardly of said upper portion of said longitudinal bore and registerable with the outer end of said transverse leg when the latter is out of registry with said transverse bore and a lower portion opening inwardly of the interior of said longitudinal bore between the lower end of said valve member and said plug, the lower end of said second passage means also opening outwardly of said body through the lower end thereof, said casing cap and said delivery pipe including coacting abutment means comprising the sole means preventing upward axial shifting of said delivery pipe and valve member relative to said valve body and said casing whereby when said casing cap is removed from said casing, said delivery pipe and valve member may be readily withdrawn from within said casing and valve body and means interposed between said coacting abutment means resiliently applying downward axial thrust on said delivery pipe relative to said casing.

2. The combination of claim 1 wherein one of said abutment means is vertically adjustable.

3. The combination of claim 1 including an angulated neck outlet portion secured to the upper end of said delivery pipe having a downwardly directed outlet opening, a laterally projecting hook carried by said casing adjacent the upper end thereof adapted to support a bracket immediately beneath and in alignment with said outlet opening of said angulated neck portion when the latter is pivoted with said delivery pipe to position said transverse leg in communication with said transverse bore, means for adjustably positioning said hook about said casing and means for adjustably positioning said angulated neck portion about the longitudinal axis of said delivery pipe.

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