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CHECK VALVE FOR FIRE HYDRANTS

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Fig. 1.

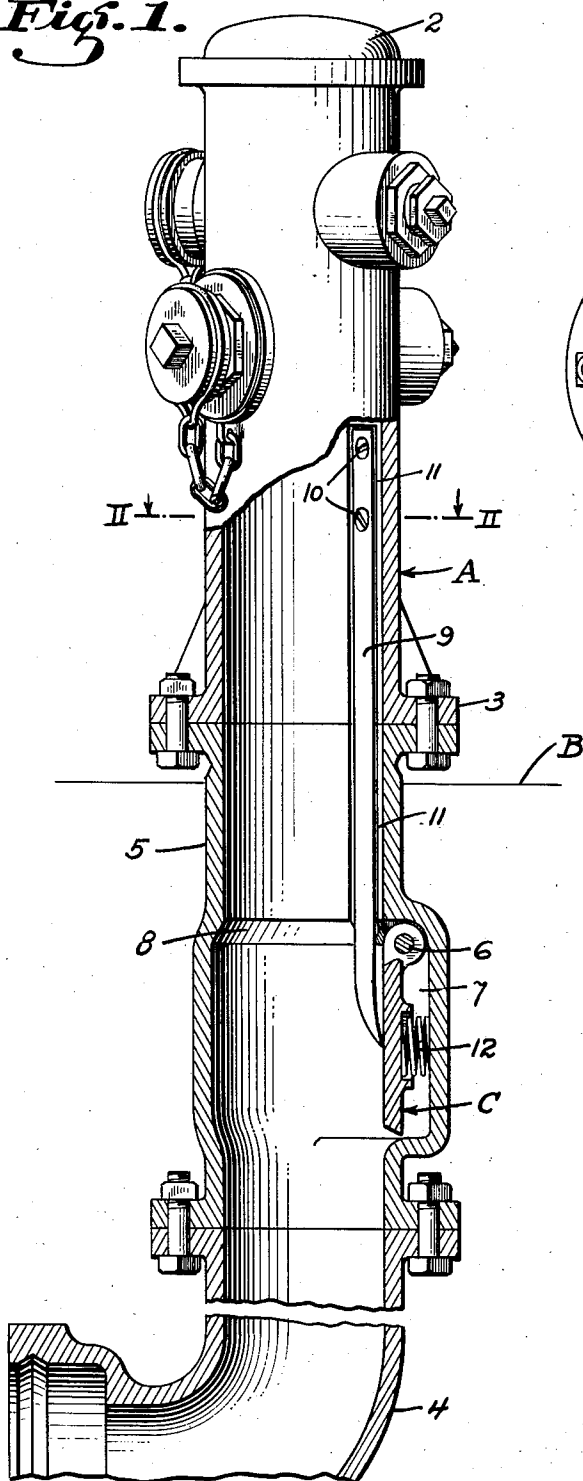
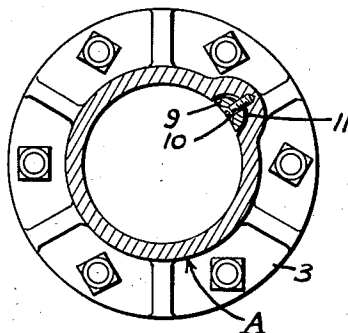


Fig. 2.



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CHECK VALVE FOR FIRE HYDRANTS

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6 Claims. (Cl. 137-13)

This invention relates to a check valve for fire hydrants.

Fire hydrants are, in general, divided into two types, those in which the shut-off valve is located below ground level, and those in which the valve, or valves, is located above.

The first type of hydrant is used in the colder climates where frost or cold winters are encountered, and the second type in climates which are not subjected to frost. Fire hydrants are usually placed adjacent the street curb. They project two or more feet above ground level and, as such, are subject to accidental breakage due to impact action by vehicles, etc. Breakage of a fire hydrant in which the valve is located below ground level is not serious as far as water loss is encountered, as the break will almost always take place above the valve. But where the valve is located above ground level, the break will in practically all cases take place below the valve, or valves, thus causing a water spout and loss of great quantities of water before the water can be shut off and the hydrant repaired; this being quite serious where the only supply is a tank, a reservoir, or the like.

The present invention relates to fire hydrants in which the valve, or valves, is located above ground level; the object of the invention being generally to improve and simplify the construction and operation of fire hydrants of the character described, and particularly, to provide a check valve located below the ground level and which is normally held in open position but which is automatically closed if the hydrant breaks, thereby avoiding loss of water when accidental breakage occurs.

The hydrant and the automatically actuated check valve placed therein are shown by way of illustration in the accompanying drawing, in which—

Fig. 1 is a side elevation of the fire hydrant partially in section.

Fig. 2 is a cross section taken on line II—II of Fig. 1.

Referring to the drawing in detail, and particularly Fig. 1, A indicates the main body portion of the hydrant. The body portion is cylindrical in cross section and usually extends two feet, or more, above the ground level indicated at B. The upper end of the body is closed as shown at 2 and the lower end is provided with an annular flange 3 whereby it is bolted directly to an elbow 4 or an intermediate riser generally indicated at 5. The hydrant shown in the present instance is that type in which the shut-

off valve, or valves, is located in the upper portion of the body at a point considerably above ground level. Where the valves are so located, it is obvious that the total water pressure reaches the body of the hydrant and that it is completely filled with water, hence in case of accidental breakage of the body above ground level it is obvious that a water spout will form and that large quantities of water are liable to escape before the water can be shut off and the hydrant repaired.

To avoid such loss check valve C is provided. The check valve is pivoted at 6 and an enlargement or extension is formed on one side of the riser. A valve seat is formed at 8 with which the valve engages when it is closed but this seat is of a diameter larger than the interior of the body portion A of the hydrant so as to avoid any restriction or resistance to the free flow or escape of water when the hydrant is in use. Similarly due to the enlargement or extension 7, the valve is completely housed therein when in open position and restriction of the water flow by the valve itself is therefore also avoided.

In actual operation it is obvious that means must be employed for holding the valve C in open position as a free flow of water to supply the body of the hydrant must be permitted at all times. The only time it is desired to close the check valve is in case of accident when the hydrant breaks. The mechanism for maintaining the check valve in closed position is clearly shown in Figs. 1 and 2. It consists of a rod 9 secured in the body portion by screws 10, or the like. A groove 11 is formed in the inner face of the body portion and also in the inner face of the riser to receive and hold a rod and to avoid any restriction to the flow of water. The lower end of the rod, however, projects below the valve seat 8 and assumes a position directly in front of the check valve and engages the same, thus holding the valve in full open position and accordingly permitting a free unobstructed flow of water. The rod is preferably made of hard cast iron, or a similar brittle material, hence if the body of the hydrant is broken the rod 9 will break and the check valve C will immediately close as it is urged toward closed position by a spring 12. The moment the spring swings the valve out of the recess 7 it is immediately swung into engagement with the seat 8 by the force and pressure of the water and it will remain in this closed position until the water is closed off on the main supply line or until the proper repairs can be made.

The manner in which fire hydrants are broken is well known. Heavy trucks are liable to back into them or passenger automobiles are liable to jump the curb in order to avoid striking other vehicles or pedestrians, or they may be deflected when struck by other vehicles and so on. In any event the impact action of a vehicle of this character, whether it be a truck, passenger automobile, or the like, is often sufficient to break the hydrant and, if the valves are located above ground level as here illustrated, it is obvious that the water loss may be considerable before the water can be shut off; particularly if the break should occur at night. Such loss is positively prevented in the present instance by the application of the automatically closing check valve here illustrated.

The riser in the body of the hydrant is usually made of cast iron and it might be thought that rusting, corrosion, and so on, would have a tendency to stick the check valve sufficiently to prevent it from operating in case of breakage of the hydrant, but this is avoided in the present instance by constructing the valve and the pivot pin 6 of bronze, or a similar material, hence leaving it free to operate whenever accidental breakage occurs.

While certain features of the present invention are more or less specifically described, I wish it understood that various changes may be resorted to within the scope of the appended claims. Similarly, that the materials and finish of the several parts employed may be such as the manufacturer may decide, or varying conditions or uses may demand.

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

1. The combination with a fire hydrant, of a check valve adapted to be positioned below ground level, and a breakable rod secured to the hydrant above ground level and normally holding the check valve open, said rod being broken to permit closing of the check valve in the event the hydrant is broken.

2. The combination with a fire hydrant, of a riser adapted to be positioned between an underground supply and the hydrant, the major portion of said riser being positioned below ground level, a valve seat in said riser, a pivotally mounted check valve in the riser, a rod secured to the hydrant above ground level and projecting downwardly into the riser and into engagement with

the pivoted check valve to hold it in open position, said rod being breakable and permitting closing of the check valve in the event the hydrant is broken.

3. The combination with a fire hydrant, of a riser adapted to be interposed between an underground supply and the hydrant, the major portion of said riser being positioned below ground level, a valve seat in said riser, a pivotally mounted check valve in the riser, a rod secured to the hydrant above ground level and projecting downwardly into the riser and into engagement with the pivoted check valve to hold it in open position, said rod being breakable and permitting closing of the check valve in the event the hydrant is broken, and a spring interposed between the riser and the pivoted check valve to assist in closing the valve after breakage of the rod.

4. In a hydrant having a portion adapted to extend above ground level, a check valve hinged to one side thereof at a point below ground level and normally tending to interrupt flow through the hydrant, and a breakable rod secured to the hydrant above ground level and having an end extending to a position overlying said check valve to prevent its closing except in case of breakage of the hydrant.

5. In a hydrant which comprises a substantially vertical housing adapted to extend above and below ground level, a hinged check valve positioned within said housing below ground level, said housing being recessed to receive said check valve in an open position, a spring interposed between the housing and the valve to impart closing movement to the valve, and a breakable member secured to the housing above ground level and extending downwardly to overlie said valve in an open position normally to prevent closing thereof, said housing being recessed to receive said breakable member.

6. The combination with a fire hydrant, of a riser adapted to be positioned between an underground supply and the hydrant, a valve seat in said riser, a pivotally mounted check valve in the riser, a rod secured to the hydrant above ground level and projecting downwardly into the riser and into engagement with the check valve to hold it in open position, said rod releasing and permitting closing of the check valve in the event of breakage or removal of the hydrant.

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