Aug. 11, 1942. W. F. TERRELL ET AL 2,292,674

HYDRANT

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Fig. 1

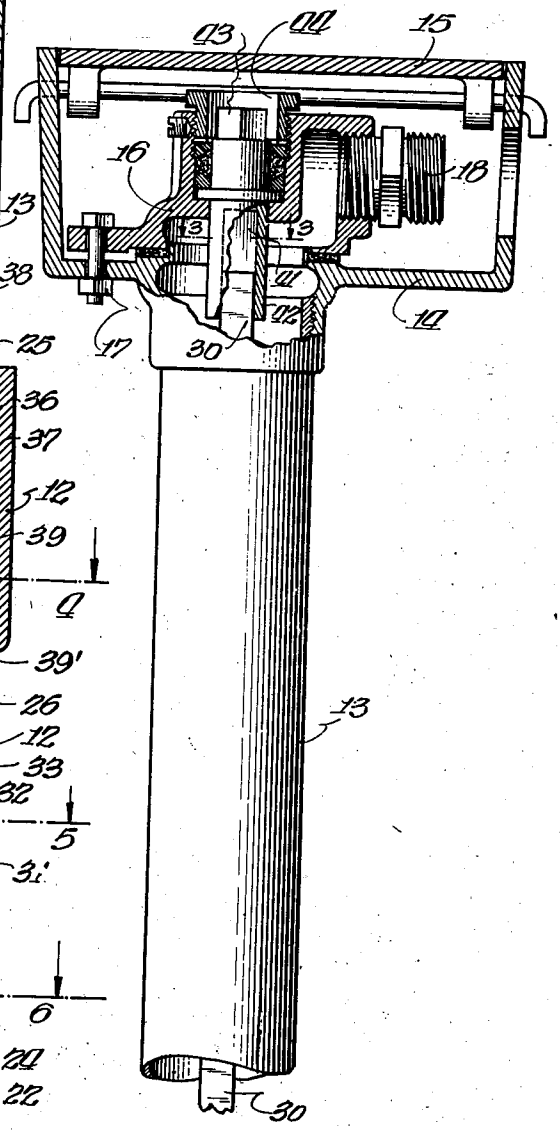
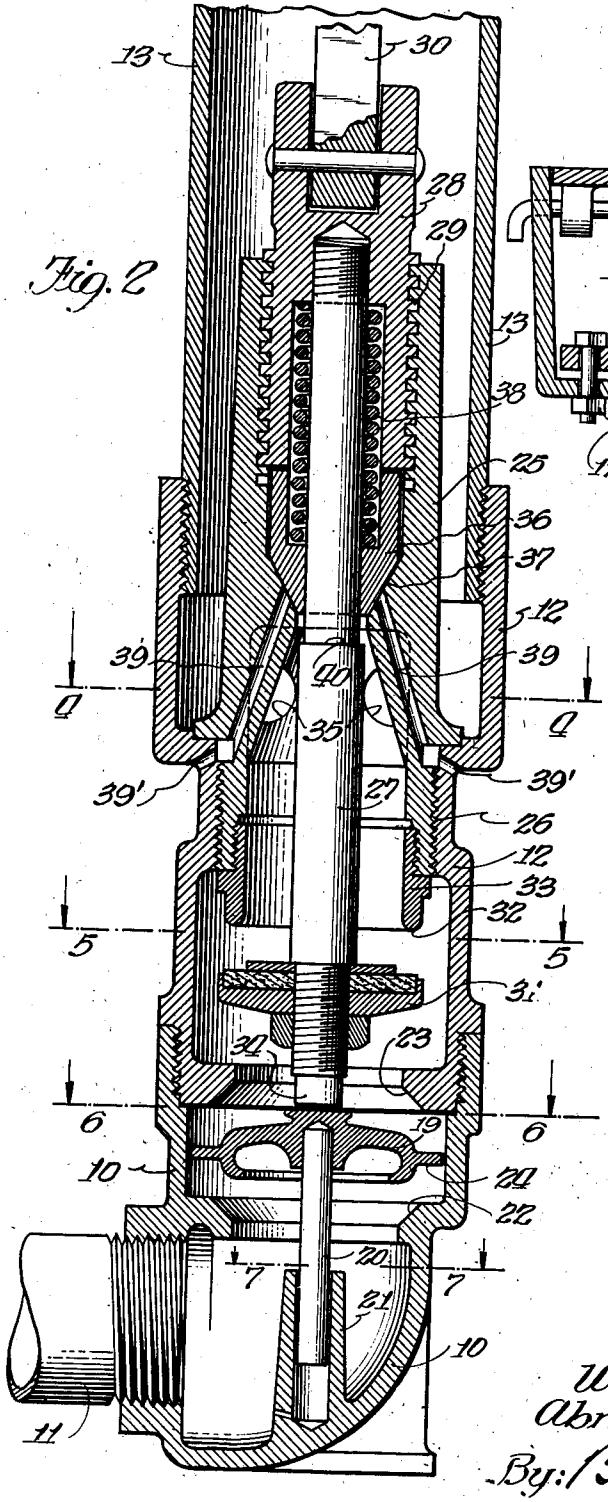


Fig. 2



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Fig. 3

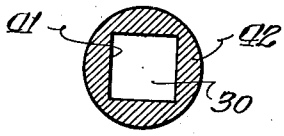


Fig. 6

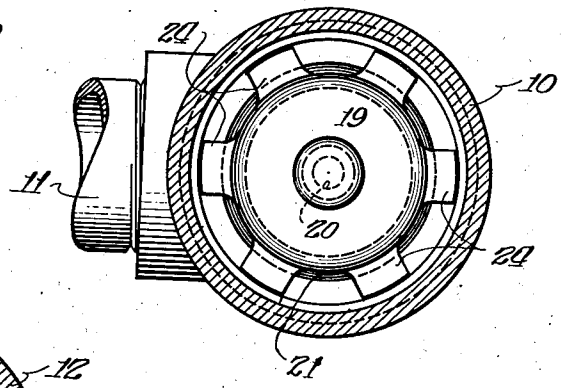


Fig. 4

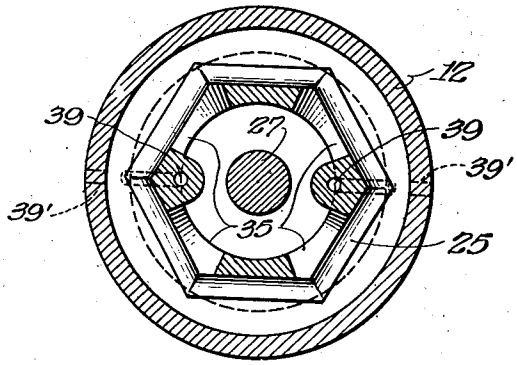


Fig. 7

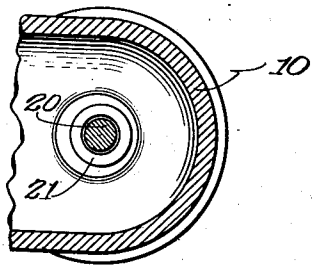
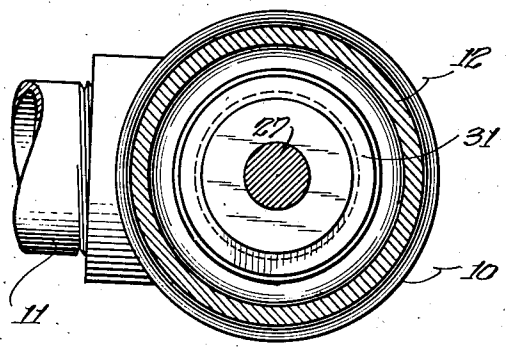


Fig. 5



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UNITED STATES PATENT OFFICE

2,292,674

HYDRANT

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Chicago, Ill.

Application July 2, 1941, Serial No. 400,784

4 Claims. (Cl. 137—13)

The invention relates to improvements in hydrants, and has for its primary object the provision of an improved hydrant construction which is simple and efficient in use.

Other objects will appear hereinafter.

The invention consists of the combinations and arrangements of parts hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings forming a part of this specification, in which—

Figure 1 is a side view, shown partially in section, of the upper portion of a hydrant construction embodying the invention;

Fig. 2, an enlarged vertical section taken through the lower portion of said construction;

Fig. 3, an enlarged section taken substantially on line 3—3 of Fig. 1;

Fig. 4, a section taken substantially on line 4—4 of Fig. 2;

Fig. 5, a section taken substantially on line 5—5 of Fig. 2;

Fig. 6, a section taken substantially on line 6—6 of Fig. 2; and

Fig. 7, a section taken substantially on line 7—7 of Fig. 2.

The embodiment of the invention illustrated in the drawings comprises a suitable fitting 10 in elbow form adapted and arranged to be placed underground and connected by a pipe 11 with a water main, as is usual in hydrant construction. The upper portion of the fitting 10 has a threaded connection with another fitting 12, which in turn has threaded connection with the lower end of a discharge pipe 13 extending to the surface and there attached to a hydrant box 14 having an upwardly swinging cover 15, as indicated. The box 14 is equipped with the usual head 16 removably attached thereto by bolts 17, and having a lateral discharge coupling 18 for connection in the usual way with a supply pipe or other fitting for utilizing the water flowing through the discharge pipe 13 from the water main, as will be readily understood.

A check valve 19 is arranged, as indicated, at the bottom of Fig. 2 to reciprocate freely in fitting 10, being carried by a valve stem 20 operating freely in a guide 21, and whereby said valve 19 is mounted for free vertical and rotative movements. Valve 19 is double-acting, and for this purpose is arranged to seat either upon a lower valve seat 22 or upon an upper valve seat 23, being guided in said movements by radial guide lugs 24 contacting loosely with the walls of the casing 10, as will be readily understood. As shown, the valve 19 is in umbrella form so as to be more readily lifted and thus closed by water flowing upwardly through the fitting 10, as will be readily understood. By this arrangement a double-acting check valve is provided which will be automatically closed by up-flowing water under relatively low pressure; or, when said pressure is withdrawn, will automatically drop to its lower seat and thus seal the fitting against entry of soil seepage when the pressure in the water main is discontinued for any reason.

A valve head 25 has its lower end threaded at 26 in the central portion of the fitting 12, and the upper portion of said valve head is made hexagonal in cross section so that the same may be readily removed through the discharge pipe without disconnecting said pipe from said water main. A valve stem 27 has threaded connection at its upper end with an operating head 28 which in turn has threaded connection 29 with the valve head 25, as shown, and a square valve rod 30 is connected, as shown, with the upper end of the head 28. At its lower end the valve stem 27 carries a control valve 31 adapted and arranged to seat on the valve seat 32 at the lower end of a valve nipple 3 which is threaded in the lower end of the valve head 25, as indicated. The valve stem 27 is provided at its lower end with an extension 34 projecting into co-operative contact with the valve 19, and suitable ports 35 are provided in the sides of the valve head 25 to permit of escape of water into the pipe 13 when the control valve 31 is open, as indicated in Fig. 2. By this arrangement, by turning the valve rod 30, the control valve 31 may be opened or closed as desired. When opened, the extension 34 will contact with the top of the valve 19, also opening with the valve to permit of the escape of water into pipe 13, as will be readily understood. When the valve head 25 is removed from the discharge pipe, the valve 19 will be released by removal of the extension 34 and will automatically seat against the seat 23, thus sealing the discharge pipe against escape of water. In this way the control valve and its seat may be readily removed from the hydrant for repairs without disconnecting the discharge pipe from the main. If at any time the water is turned off in the main, the valve 19 will automatically drop to the seat 22, thus sealing the fitting 10 against the entry of soil seepage and consequent contamination of the water supply.

A conical valve 36 is loosely mounted on the stem 27 to seat upon a valve seat 37 in the valve head 25, being yieldingly pressed

to its seat by a spring 38. Drain ports 39 leading from the seat 37 as shown communicate with additional drain ports 39' in the fitting 12. A shoulder 40 is provided upon the valve stem 27 in position to lift the valve 36 from its seat when the valve 31 is closed, thereby permitting drainage of the discharge pipe whenever the control valve 31 is closed and thus preventing freezing of the hydrant in winter weather.

At its upper end, the valve rod 30 engages a square socket 41 in the rotatable nipple 42 at the bottom of a wrench head 43, mounted in a socket 44 in the fitting 18, and whereby operative connection is afforded with the valve 31 as and when desired.

It will be noted that there is a space between the upper end of the valve rod 30 and the bottom of the socket 41 whereby pounding or blows upon the wrench head 43 will not be communicated to the valve mechanism below and thus preventing consequent damage thereto.

By this arrangement a hydrant construction is provided in which the entire valve unit may be readily removed from the discharge pipe without disconnecting the same from the water main; contamination of the water supply is prevented when the supply in the main is turned off; injury to the valve parts by pounding or blows at the top of the valve rod is prevented; a check valve is provided which will operate under low pressure; and a freely rotative check valve is provided which will automatically clean itself during operation. The specific form and arrangement of parts is a simple and effective one for the purpose.

While we have illustrated and described the preferred form of construction for carrying our invention into effect, this is capable of variation and modification without departing from the spirit of the invention. We therefore do not wish to be limited to the precise details disclosed, but desire to cover the variations and modifications included in the appended claims.

We claim:

1. A hydrant comprising a discharge pipe; means connecting the entry end of said pipe with the water main; spaced opposed valve seats in said pipe; a reciprocating check valve arranged between said valve seats to seat against one seat automatically upon outward movement induced by outward flow of water through said pipe, and to seat against the other seat automatically upon inward movement when said flow ceases; a control valve for said pipe; means for automatically opening said check valve when said control valve is open; and means for manipulating said control valve from the discharge end of said pipe.

2. The construction specified in claim 1 in which the control valve manipulating means has free longitudinal movement relatively thereto.

3. The construction specified in claim 1 in which the control valve manipulating means is in the form of a socket wrench having free longitudinal movement relatively thereto.

4. The construction specified in claim 1 in which the discharge pipe is vertically arranged; the check valve reciprocates vertically therein; and the control valve is located above the upper check valve seat and carries an extension arranged to open the check valve when the control valve is opened.

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