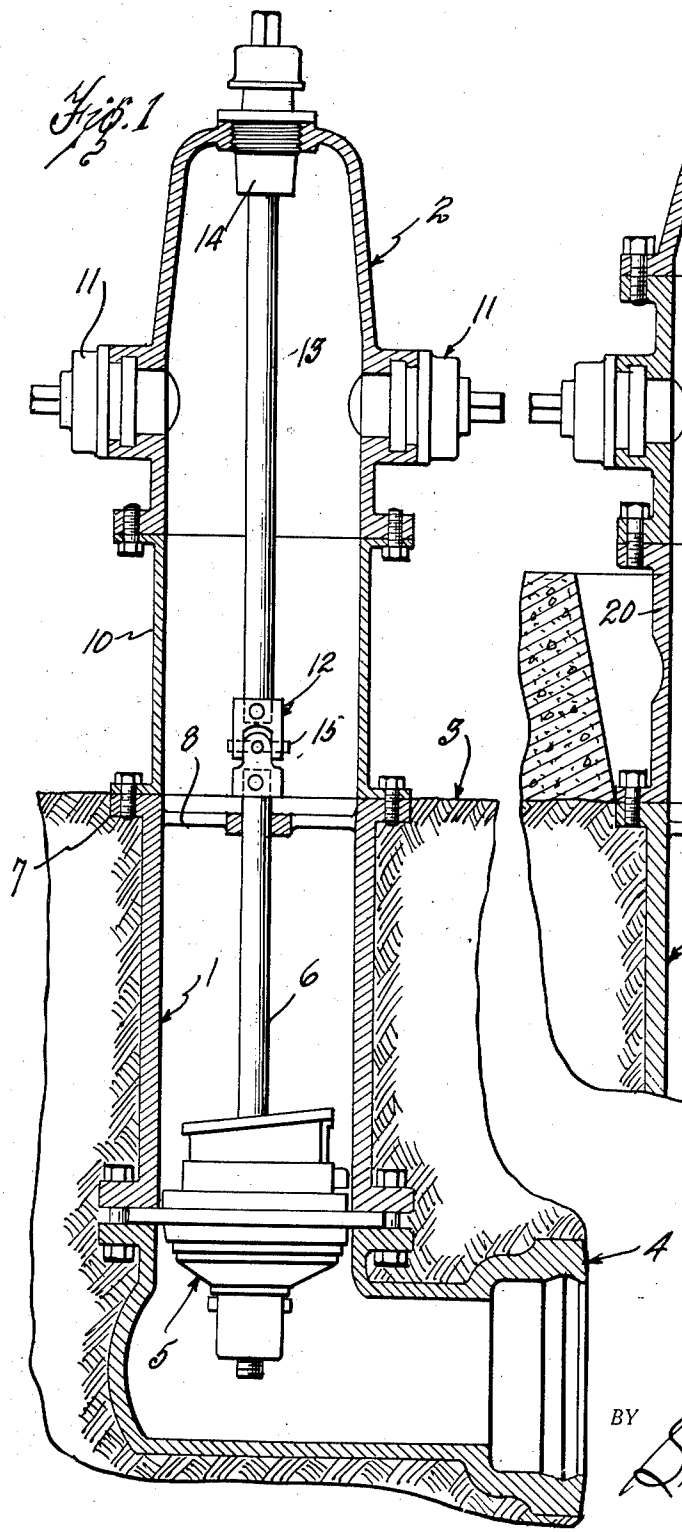
April 7, 1931. D. EMERSON 1,800,010

FIRE HYDRANT

Filed April 4, 1927

Fig. 1



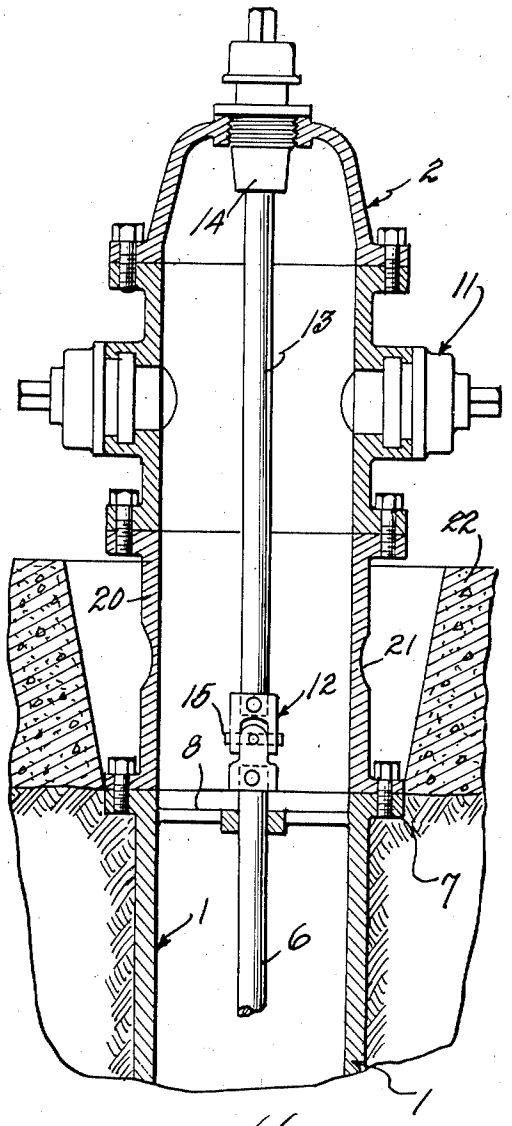


Fig. 2

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UNITED STATES PATENT OFFICE

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FIRE HYDRANT

Application filed April 4, 1927. Serial No. 180,631.

This invention relates to fire hydrants, and has to do particularly with the provision of novel fire hydrant construction and arrangement thereof, whereby to preserve a portion of the hydrant intact in case of damage or collision and to fix the point of breakage in the event of the collision of any object with the upper part of the hydrant.

Fire hydrants of standard construction consist of a stand pipe member which stands in the ground and is adapted to be connected with a suitable valve casing or shoe which connects with the water supply pipe. It has been the practice to extend this stand pipe a suitable distance above the ground, and in some cases the stand pipe has been formed to provide suitable water plugs or nozzles integral therewith, and in other constructions the stand pipe has been connected by means of suitable extensions whereby to vary the height of the nozzles above the ground level in accordance with varying conditions. During the last few years an increasingly large number of fire hydrant housings have been subjected to material damage due to being struck by various vehicles, the collision usually resulting in the necessity of digging up and replacing the entire stand pipe, and also replacing the valve stem. Efforts have been made to provide fire hydrants which will withstand the effects of collisions, to a certain extent, and some of such structures have included fire plug housings adapted to tilt as a unit. Other structures have included the provision of valve stems separated at a point other than the natural breaking point of the hydrant. Such fire hydrants of the past have not been practical for various reasons.

It is the object of the present invention to provide a fire hydrant, part of which standard construction is so designed as to confine the point of breakage to definite limits whereby if the top part the fire plug should be struck with sufficient force to break the same, the point of breakage will preferably be limited to a portion which is relatively inexpensive and very easily replaced.

More specifically, I preferably provide an extension casting adapted to be positioned between the main stand pipe and the bonnet or nozzle portion of the fire hydrant, this extension casting being of such a height as to correctly position the water nozzle, but the material design or positioning of such extension being such as to positively insure breakage of the hydrant within the limits defined by such extension.

Another object of this invention has to do with the provision of a universal joint as a connection in the valve operating stem, such universal joint being positioned approximately at the ground level or point of breakage whereby when the hydrant is broken or toppled over that the top part of the valve stem may swing about such universal joint, the connecting pins of said universal joint being of such size that any undue vertical strain placed upon the top valve stem will cause separation of the universal joint at the connecting pins.

In the drawings:

Fig. 1 is a vertical longitudinal section taken through a fire hydrant constructed in accordance with the preferred embodiment of my invention, and showing the manner of inserting an extension between the main stand pipe and the top bonnet of the fire hydrant, and the comparative thickness of the walls of said extension relative to the stand pipe and the top bonnet, and also showing the preferred positioning of the universal joint approximately at the ground level.

Fig. 2 is a view similar to Fig. 1 but showing a modified form of my invention wherein walls of the extension member may be approximately of the same thickness as the other parts of the fire hydrant.

A standard fire hydrant, to which the present invention is particularly adapted, is well illustrated in Fig. 1 wherein the main stand pipe may be generally designated 1, and the nozzle housing or bonnet generally designated 2. In the preferred embodiment of my invention the stand pipe 1 extends from the ground level 3 to the proper depth corresponding to the depth of the water mains. The base of the stand pipe 1 and shoe 4 serve as connecting means for a suitable valve and valve seat which may be generally designated

5, and which is of standard construction. The valve 5 is provided with a suitable stem 6 which extends to a position approximately in line with the ground line.

The top of the stand pipe 1 is flanged, as shown at 7, and this flange carries a suitable spider 8 which is apertured at its center to serve as a bearing for aligning the upper end of the stem 6. The nozzle housing or bonnet 2 may, of course, be directly clamped to the flange 7 of the stand pipe and the lower part of the same reduced in cross section or grooved, whereby to locate the point of breakage. However, such an integral housing would not adapt itself to universal conditions and furthermore, would require replacing of the entire housing unit which would be somewhat expensive. To offset this condition and to provide a much simpler and universally adaptable fire hydrant I have provided an intermediate casting or extension member 10. This member 10 is flanged at its top and bottom to register with the flanged stand pipe 1 and housing 2. Such extension member may be of any height desired in accordance with the required height of the nozzle, which may be here designated 11. The extension member 10 being relatively inexpensive it will be obvious that such members may be kept in stock whereby to position the nozzle housing at any height in accordance with the particular topography at the fire hydrant location.

The extension member 10 is made up of walls of a thickness to withstand the pressure within the hydrant at all times, but are relatively thin compared to the thickness of the walls of the main stand pipe 1 and preferably also of the nozzle housing 2. It will therefore be obvious, that the relatively thin member 10 having a thin flange and being clamped to the members 1 and 2, that if the top part of the hydrant be struck by any moving object with considerable force that the breakage will take place within the length of the extension member 10 and probably adjacent the flange 7. No damage will be done to the main stand pipe 1 which extends beneath the ground, making it therefore unnecessary to dig out such stand pipe, and in normal cases it will be only necessary to replace the member 10 with a new extension member to place the fire hydrant in normal operating condition.

In addition to the readily breakable member 10 I have provided a universal joint 12 which serves as a connecting member between the lower stem 6 and an upper stem 13, said upper stem being connected to the usual operating collar 14. This universal joint is positioned at or just above the normal ground line, or the flange 7 at the upper end of the stand pipe 1 which would be the normal point of breakage regardless of the ground line. It will thus be obvious that if the upper part of the fire hydrant is jolted and broken that in most cases the upper stem 13 will merely pivot about the universal joint 12 whereby such stem 13 may then be swung back into place in assembling the new parts of the fire hydrant. The universal joint 12 may be of any standard construction and is preferably provided with suitable pins 15, which pins are of a size that will shear off in case a relatively strong upper vertical pressure is placed upon the upper stem 13 in which case the upper stem 13 will merely shear the pin or pins and be pulled away from the lower half of the universal joint. The universal joint will ordinarily take care of all breakage and tilting cases, but in unusual cases, the pins 15 will prevent any serious damage being done to the stand pipe or lower stem 6.

I show a slightly modified embodiment of my invention in Fig. 2 wherein the nozzle housing is shown as being formed in two parts. It will be understood, however, that any embodiment of my invention will be applicable to fire hydrants whether the nozzle housing is formed in either one or a plurality of parts. In this particular embodiment I have shown an extension member 20 which may be of the same thickness as the upper and lower portions of the fire hydrant. Such housing 20 may be provided with suitable grooves or indentations 21 to fix the breaking point, but such grooves are not necessary. In this particular adaptation the ground line is preferably at the upper end of the stand pipe 1, but above this general ground line I have illustrated a crete walk or other surrounding construction 22. The fire hydrant may be positioned within an aperture formed in this concrete material, or such concrete or other material may be formed around the fire hydrant. In either case the concrete or other material is adapted to embrace or contact with the lower portion of the extension member 20 or the flange 7 thus serving as a sort of a fulcrum for the lower portion of said extension member regardless of the direction of any blow upon the fire hydrant. The concrete member 20 or other material thus serves as an anchor or fulcrum whereby to insure breakage of some part of the hydrant at a point above the ground line, or just above the flange 7 of the stand pipe.

The upper and lower valve stems 6 and 13 may be joined to a suitable universal joint, such as shown in Fig. 1, but it will be obvious that regardless of the groove 21, that with the positive anchoring of the lower portion of the extension 20, any blow struck the upper part of the hydrant will normally cause breakage adjacent the point of fulcrum.

What I claim is:

1. A fire hydrant comprising an upper member, a lower member, and an intermedi-

ate member serving as a direct connecting member between said upper and lower members, said intermediate member having relatively thin walls and being relatively frangible compared to said upper and lower members, whereby any breakage of the fire hydrant due to an external blow will occur within the limits of said intermediate member, and a valve operating stem extending longitudinally through said members, said stem being separated and joined by a universal joint within the limits of said relatively frangible intermediate member, whereby the stem above said joint will pivot about said universal joint in case of breakage of said intermediate member.

2. A fire hydrant comprising an upper member, a lower member and a relatively frangible intermediate member clamped together in longitudinal alignment, a valve stem formed of upper and lower parts extending through said members, and a universal joint for connecting the upper and lower parts of said valve stems and positioned approximately at the level of the joint between said lower member and intermediate member whereby the upper part of said valve stem will pivot about said universal joint, upon breakage of the intermediate member, without disturbing the lower valve stem.

3. A fire hydrant comprising a stand pipe adapted to extend below the ground and terminating at the upper end at approximately the ground level, a nozzle housing, and an inexpensive, easily replaceable, intermediate extension member for connecting the said stand pipe and nozzle housing, said intermediate member being relatively frangible whereby any breakage of the fire hydrant due to an external blow will occur within the said intermediate member, a valve stem extending the length of said fire hydrant formed in two parts, said parts being secured together by a universal joint approximately at said ground level, whereby the upper part of said valve stem will pivot about said universal joint upon breakage of the intermediate member, the connecting pins of said universal joint being of a size to give way upon any excessive strain being placed on the upper part of said valve stem.

In testimony whereof I affix my signature.

DEAN EMERSON.