July 18, 1939. J. S. KIESEL 2,166,412

BREAKABLE CONNECTION FOR HYDRANTS

Filed March 11, 1938

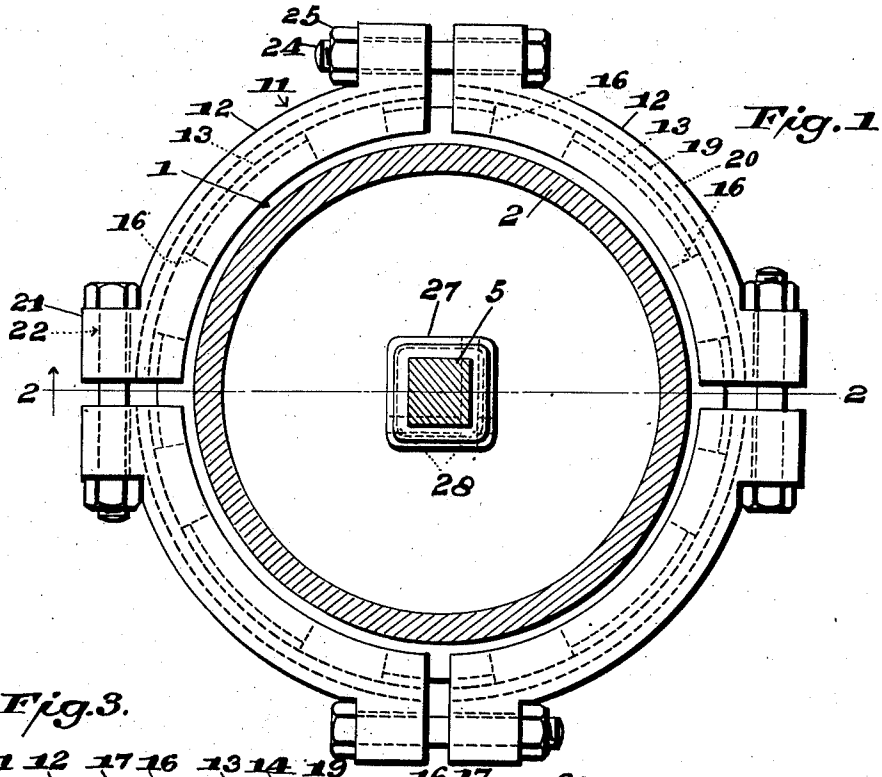


Fig. 1.

Fig. 3.

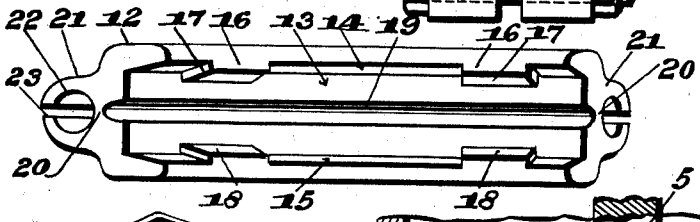
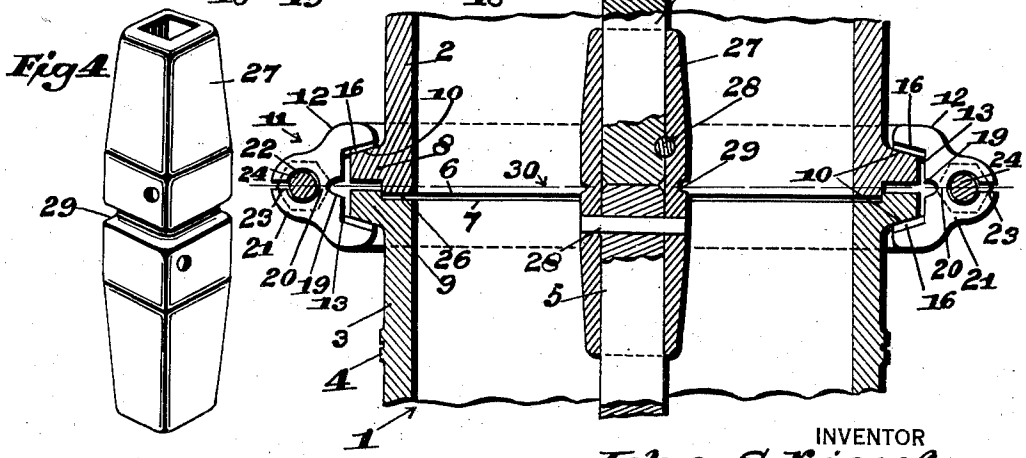


Fig. 2.

Fig 4



INVENTOR
John S. Kiesel.
BY
Munn, Andrews & Liddy
ATTORNEY

Patented July 18, 1939 2,166,412

UNITED STATES PATENT OFFICE

2,166,412

BREAKABLE CONNECTION FOR HYDRANTS

John S. Kiesel, Williamsport, Pa., assignor to Darling Valve and Manufacturing Company, Williamsport, Pa.

Application March 11, 1938, Serial No. 195,388

7 Claims. (Cl. 285—140)

This invention relates to improvements in fire and similar hydrants. Of necessity fire hydrants are often located in places wherein they are likely to be collided with by vehicles of various sorts.

It is probably the universal custom for fire hydrants to be situated along the curbing of city streets. Inasmuch as they project upward from the ground line or pavement surface several feet, it becomes an easy matter for a driver to back or run into them, not always through carelessness, but more often by reason of not being able to see the obstruction from his position on the driver's seat.

Remedies have been offered and are in use for lessening the damage which is caused by such a collision. The attempts made toward the latter end seek to localize the fracture, in other words, to make the fracture occur at a place where it will cause the least trouble and expense to effect the necessary repairs and replacements. But even though these improvements are valuable, it is a fact that their use involves machine work and parts, the cost of which is no inconsiderable item in hydrant manufacture and installation. With this situation in mind the objects of the invention are as follows:

First, to provide a breakable connection which is structurally reduced to virtually the utmost in simplicity, said term "connection" being collectively applied to both the means which joins the hydrant barrel and which joins the operating rod.

Second, to construct this connection, comprising the means for both joining the barrel and operating rod, from cast iron, each of the means being medially weakened so as to augment the frangible nature of the cast iron, and insuring the localization of the break in the event of a collision with the hydrant.

Third, to make the hydrant barrel connecting means in the form of a segmental clamp ring, the tightening of the segments setting up a wedge action which draws the two components of the hydrant into tight engagement because of certain mutual wedge formations and interactions.

Fourth, to provide a clamp ring which is composed of medially frangible sections, said sections being capable of assemblage into ring form and being clamped in position upon the hydrant after the lower and upper sections have been brought together in abutting relationship.

Other objects and advantages will appear in the following specification, reference being had to the accompanying drawing, in which:

Figure 1 is a plan view of the improved breakable connection, illustrating it in place upon the hydrant barrel and the operating rod.

Figure 2 is a vertical section taken substantially on the line 2—2 of Fig. 1.

Figure 3 is an inside elevation of one of the clamp ring segments.

Figure 4 is a perspective view of the connecting means of the operating rod.

Attention is directed to the drawing. The particular adaption of the invention brought out herein is to a fire hydrant which is generally designated 1. This is not necessarily a fire hydrant because it might be a hydrant for some other purpose. It is also readily conceivable that the principle of the invention can be embodied in the connection of any tubular members which are subject to fracture because of necessarily being located in exposed positions. But reverting to the fire hydrant the barrel of the latter comprises upper and lower sections 2, 3.

The latter has some kind of a distinguishing mark which designates the ground line, this because of the fact that the section 3 is largely sunk into the ground. This designation may comprise an annularly embossed ring 4, and in practice will have the words Ground line cast thereon. The operating rod 5 comprises the two sections shown, the obvious purpose of the operating rod being to open and close the main valve (not shown) at the bottom when a wrench is applied to it at the top.

As already generally indicated, it is the purpose of the invention to join the sections of the hydrant barrel and operating rod with a breakable connection. The collective term "connection" relates to the connecting means of both the hydrant and operating rod sections, inasmuch as a hydrant is never functionally complete without its operating rod, and inasmuch as both the hydrant barrel and operating rod must be simultaneously protected if the advantages of the invention are to be had at all.

The confronting ends 6, 7 of the barrel sections 2, 3, have annular flanges 8, 9, which are characterized by being beveled at 10 on their remote surfaces, the bevels being so pitched that they would meet on the approximate dividing plane between the barrel sections if continued far enough out. This arrangement of the flanges constitutes one element of a wedge construction. A ring 11 is fitted around the barrel at this place (Fig. 1). This is a segmental ring as shown. Each of the segments is designated 12 (Fig. 3) and inasmuch as each of the segments is iden-

tical with the next, the description of one will suffice for all.

As well shown in Fig. 3 the segment 12 has a deep groove 13. The confronting top and bottom walls 14, 15 of this groove are pitched to match the bevels 10. In order to insure the fitting of the segment 12 upon the flanges 8, 9, in other words, to avoid any difficulty that might be set up by a more or less lack of trueness of the walls 14, 15, the latter are supplemented with bosses 16, the confronting surfaces 17, 18 of which make the actual contacts with the bevels 10. Said surfaces are pitched correspondingly to the walls 14, 15, and to the bevels 10 and thus constitute the second element of the wedge construction.

The segment 12 is medially scored at 19. This scoring is deep enough to leave only a comparatively thin web 20 of connecting metal. But this web is thick enough for all ordinary purposes, and will not break when the collected segments are clamped together in ring form. There is a lug 21 on the outside of the segment 12 at each end. These lugs have bolt holes 22, and they are slitted at 23 in a longitudinal position matching the score 19.

Now consider the segments 12 in assembled form (Fig. 1). The various lugs 21 are so stationed that adjoining holes 22 will line up for the reception of the bolts 24. When the nuts 25 are screwed home on the threaded ends of the bolts, the segments of the ring 11 will be drawn together, and a clamping action will be set up because of the previously described wedge construction. The wedge action draws the confronting ends 6 and 7 of the barrel sections 2, 3, together tightly compressing the gasket 26 which is conventionally interposed. Should the upper section 2 be struck with a blow that is heavy enough to break the hydrant, the fracture will occur at the web 20. The slits 23 in the bolt lugs permit this fracture. The various broken pieces and the bolts will simply fall away as the upper section 2 of the hydrant topples over.

It is equal important that the connected sections of the operating rod 5 be enabled to give when the foregoing break occurs. To begin with, these sections are made cross-sectionally noncircular (Fig. 1). A square rod is preferred. This cross-sectional formation insures a continuity of the turning moment when the inner ends of the operating rod are socketed in the connecting cast iron sleeve 27 (Fig. 4). Pins 28 thrust through holes which are located at perforated places key the sleeve and rod ends together.

It is important to note that these holes are so situated that as far as the bore of the sleeve is concerned, they cut half into the sleeve and half into the operating rod ends (Fig. 2). When the pins 28 are driven in they perform a true key function, the advantage of this arrangement being that the rod ends are not weakened as in instances wherein securing pins are driven directly through the center.

Said sleeve is medially creased or grooved at 29 on the common dividing plane conveniently designated 30. It will be noted that the slits 23, web 20, crease 29, and the adjoining ends of the rod sections are either directly upon this plane or very nearly so.

Now it is readily seen that when the upper section of the hydrant is knocked over as already described, the upper section of the operating rod 5 is bound to go with it. The sleeve 27 will be broken at the crease 29, and no harm will result to any of the mechanism below the plane 30. Since no injury will befall the annular flanges 8, 9 there will be no occasion for replacing the particular hydrant section 2 in the majority of instances. The only replacements necessary will be a new sleeve 27 and one or two new segments 12, both being cheap cast iron constructions.

An outstanding advantage of the segmental clamp ring 11 comes from the ability to bury the lower hydrant section 3 in the desired location and then to superimpose the upper section 2 with the flanges 8, 9 in their ultimate abutting relationship, without having to be concerned in the least about the application of said clamp ring. The sections of the latter are last assembled around the abutting flanges 8, 9 and when the various nuts on the various bolts are screwed home, the resulting wedge action will clamp the parts together into a pressure-tight joint.

Before this is done it is desirable, if not necessary, to fit the sleeve 27 upon the confronting operating rod ends. These, as has been brought out before, are cross-sectionally square, the advantage of this being that the failure to insert the top cross pin 28 (Fig. 2) will not interfere with the operation of said rod because the square configurations of the upper rod and of the passage in the sleeve will fulfill the requirement of a driving connection.

I claim:

1. A hydrant comprising base and upper sections having confronting annular flanges, a clamp ring composed of segments which are grooved to peripherally fit upon said flanges, said segments being medially scored at the bottoms of the grooves in line with the dividing plane between the flanges so as to provide a thin frangible web, spaced bosses on the confronting upper and lower walls of the grooves for direct metal-to-metal contact with said flanges, and means with which to draw the segments together so as to tighten the clamp ring upon the flanges, the spacing of said bosses compensating for any inequality in the surfaces of the flanges and causing the application of a uniform clamping pressure.

2. A hydrant comprising base and upper sections having confronting flanges, the remote surfaces of said flanges being beveled in opposite directions, a clamp ring composed of grooved segments assembled upon the flanges, the confronting top and bottom walls of each groove being pitched to match the bevels, and the base of each groove being scored to produce a thin frangible web, means with which to draw the segments together, and matching lugs on the ends of the segments, said lugs having holes partly containing the latter means and being slitted substantially in line with the respective frangible web.

3. A hydrant comprising base and upper sections having confronting flanges, the remote surfaces of said flanges being oppositely beveled, a clamp ring composed of grooved segments assembled upon the flanges, the top and bottom confronting walls of each groove having bosses to contact the flanges and which are pitched to match their bevels, the bottoms of the grooves being scored to produce a thin frangible web, bolts and nuts with which to draw the segments together upon the flanges, and lugs on the ends of the segments confronting each other in the assemblage and having holes containing the bolts, said lugs being slitted so as to enable the ring segments to fall apart when said web is broken.

4. A ring segment for breakable connections,

said segment being grooved and being provided on its confronting top and bottom walls with contact bosses to localize the pressure upon a connected element, the bottom of the groove being longitudinally scored to produce a thin frangible web, the ends of the segment having lugs with bolt holes and being slitted in substantial alinement with said score for a complete fracture.

5. A breakable connection comprising a clamp ring composed of plural segments adapted to encompass contiguous, gasketed flanges, plural bosses on each segment, being regularly spaced and bearing on the flanges from above and below to provide plural and symmetrically distanced pressure points, and means both connecting the segments and securing the ring on the flanges, causing the bosses to force the flanges toward each other and compress the gasket in pressure-tight engagement at uniformly spaced points.

6. A hydrant comprising interconnected and gasketed base and upper sections having confronting annular flanges, the remote surfaces of said flanges being oppositely beveled, a clamp ring composed of plural segments encompassing said flanges, regularly spaced plural bosses on each segment, bearing on the flanges from above and below and being pitched to match said bevels, and tightening means for the segments causing the bosses to exert a cam action on the flanges to compress the gasket into pressure-tight engagement at uniformly spaced points.

7. A breakable connection comprising a clamp ring composed of grooved segments adapted to be assembled upon the contiguous flanges of a pair of cylindrical members, contact means on the confronting upper and lower walls of each groove to engage said flanges with a spaced-point contact, and means with which to draw the segments together thus to advance the contact means inwardly upon said flanges, the base of each groove being scored longitudinally of the respective ring segment and between said contact means to produce a thin frangible web.

JOHN S. KIESEL.