

No. 721,344.

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HEAD FOR STEAM BOILERS.  
APPLICATION FILED FEB. 1, 1902.

NO MODEL.

Fig. 1.

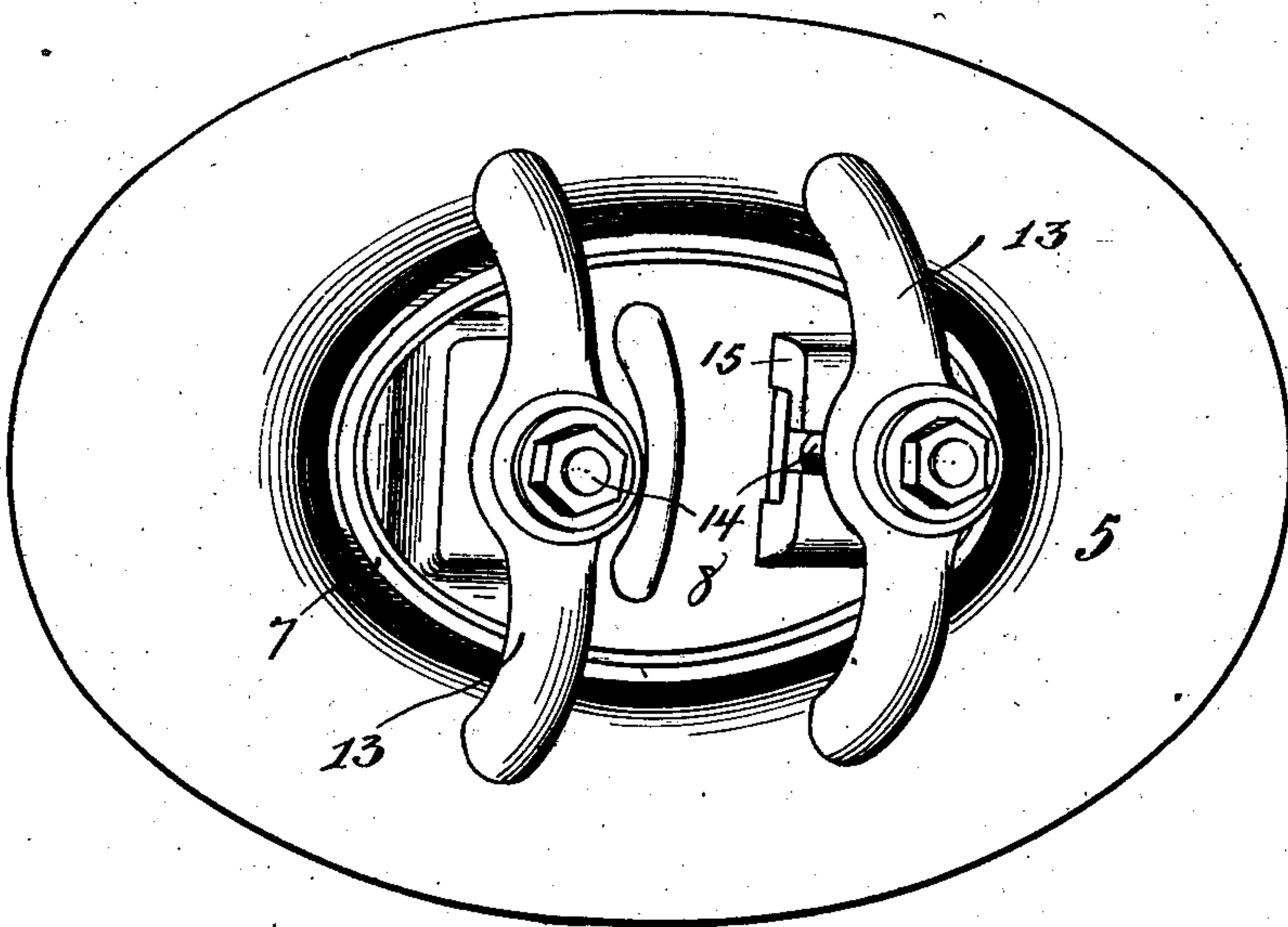


Fig. 2.

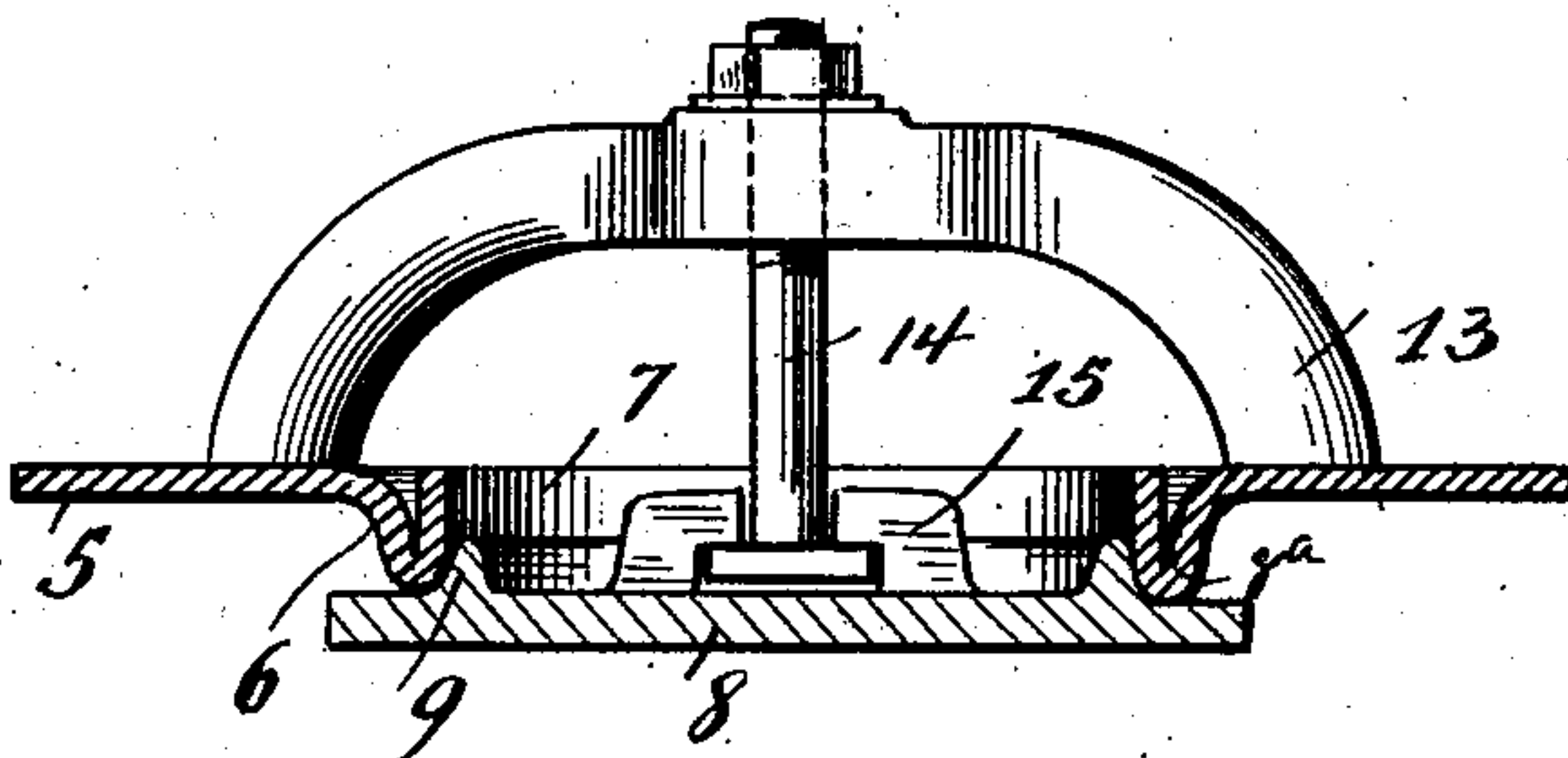
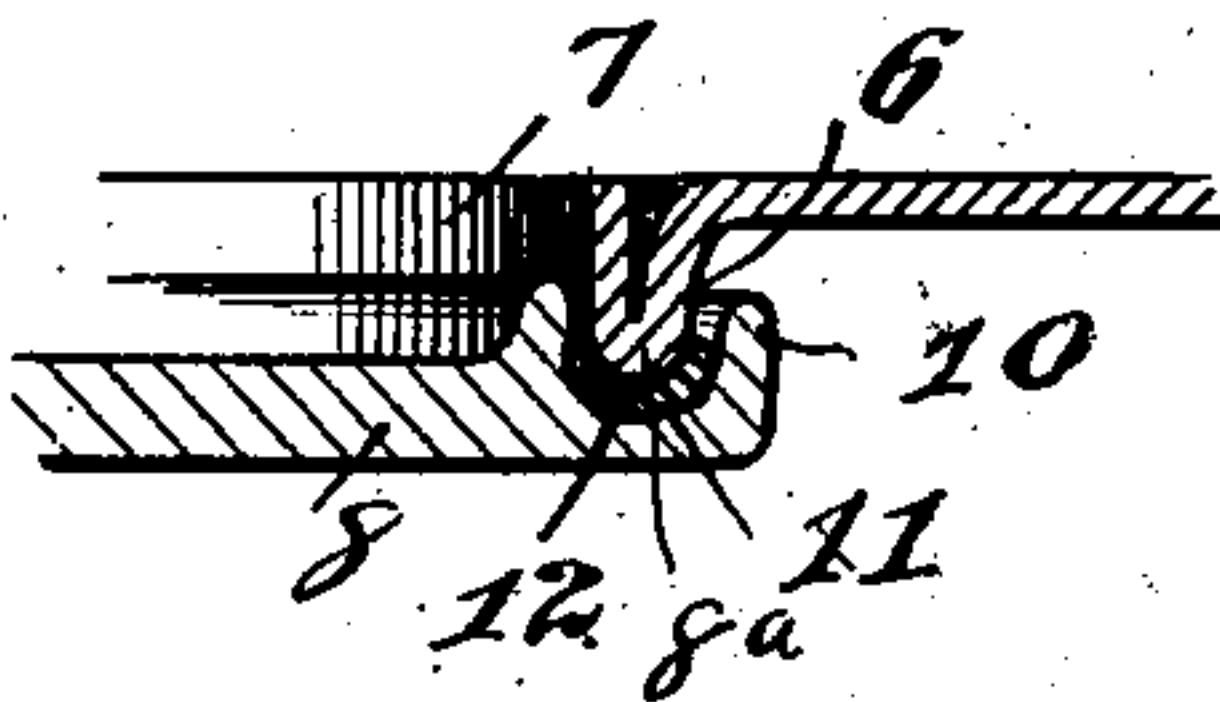


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## HEAD FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 721,344, dated February 24, 1903.

Application filed February 1, 1902. Serial No. 92,096. (No model.)

*To all whom it may concern:*

Be it known that I, HORTON VAIL, of Kewanee, Illinois, have invented certain new and useful Improvements in Heads for Steam-Boilers, of which the following is a specification.

This invention relates to heads for steam-boilers and the like, the object of the invention being to provide a construction of boiler-head having a manhole formed by removing a section of the usual oval or any desired contour from the plate and then doubling the metal around the edge of the opening upon itself by bending it first inwardly and then outwardly to produce a rounded seat for the cover and a flange of great strength formed by the doubling of the metal upon itself.

The invention is shown in the accompanying drawings, in which—

Figure 1 is a perspective view showing the front of the boiler-head, the edge of the flange, and the outer surface of the manhole-cover, with the saddle and spider-arms. Fig. 2 is a sectional view through the boiler-head plate, taken across the cover and showing the manhole-cover, one of the spider-arms, and the suspending-bolt in elevation. Fig. 3 is a broken sectional view in detail, showing a slightly-modified construction of the cover.

In the drawings, 5 represents the manhole-plate, having the manhole formed therein by removing a portion of the metal of oval or other contour. The metal surrounding this manhole is then bent down and up to form the double flange 6 7, the latter being preferably flush with the outer surface of the boiler-head. This results in producing a transversely-rounded or convex annular seat 8<sup>a</sup> for the cover. The flanging of the plate will be performed by the use of suitable dies and in such manner, preferably, as to bring the flanges 6 7 into close or abutting face-contact, without, however, rupturing the metal at the bends, and with due care this can be accomplished. The manhole-cover 8 may be of cast metal and of any desired form. As shown in Fig. 2, the upper surface of the cover is provided with a rib 9 of the same contour as the inner surface of the flange 7 and affording an abutment therefor. The surface of the cover externally of this annular rib 9 may be

flat, as shown in Fig. 2, or the margin of the plate may be upturned, as shown at 10, Fig. 3, for the purpose of affording a seat in the form of the groove 11, in which a suitable packing, as 12, is placed. Such packing may be a gasket of copper, lead, or other metal, or a soft packing of rubber, hemp, asbestos, or the like.

It will be observed that the double flange of the manhole-plate affords not only a very strong construction capable of withstanding extreme strains, but that it also affords a rounded bearing or seat for the manhole-cover which does not require to be planed off. The flange can be turned with sufficient accuracy to produce a seat which does not require finishing. The flanges 6 7 cooperate to produce an exceedingly strong construction, since each reinforces and strengthens the other, thereby producing a boiler-head having more than double the strength of the older construction in which a single flange is used, and a better seat is also provided than can be made by planing or dressing the edge of a single inwardly-directed flange.

As shown in Fig. 2, the flanges are not pressed tightly together, and, indeed, this is not essential; but I prefer to bend them so they will be in abutting contact, as shown in Fig. 2, taking due care not to rupture the metal in bending it. Practical tests have demonstrated that a boiler-head of this construction is at least one hundred and fifty per cent. stronger than the boiler-heads in common use, and this additional strength is secured without the addition of any metal, since the double flange is formed from the metal which would otherwise be removed in making the opening.

The particular construction of the manhole-cover shown forms no part of my invention and may be varied at pleasure. As shown, it is supported by the spider-arms 13, having bolts 14, engaging apertures in the saddles 15.

I claim—

1. The herein-described boiler-head, comprising a substantially flat plate with a manhole therein, and the metal constituting the margin of the said manhole being doubled upon itself by being bent inwardly and then outwardly substantially at right angles to the

plate, thereby producing an annular flange of double thickness which provides a convex annular seat for the cover at the base of the doubled portion, substantially as described.

- 5 2. The herein-described boiler-head comprising a substantially flat plate with a manhole therein and the metal constituting the margin of said manhole being bent inwardly of the hole and then outwardly thereof to  
10 produce substantially parallel contacting annular flanges disposed the one within the other and both at right angles to the plate and integrally united at their lower margins to form a convex seat for the cover, substan-  
15 tially as described.

3. The herein-described boiler-head comprising a substantially flat plate with a man-

hole therein and the metal constituting the margin of said manhole being bent inwardly of the hole and then outwardly thereof to 20 produce substantially parallel contacting annular flanges disposed the one within the other and both at right angles to the plate and integrally united at their lower margins to form a convex seat for the cover, in com- 25 bination with a cover adapted to fit said convex annular seat, and means for securing said cover in place thereon, substantially as described.

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Witnesses:

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