(No Model.)

E. P. ROBINSON.

HAND HOLE PLATE FOR BOILERS.

No. 455,358. Patented July 7, 1891.

Fig. 1,

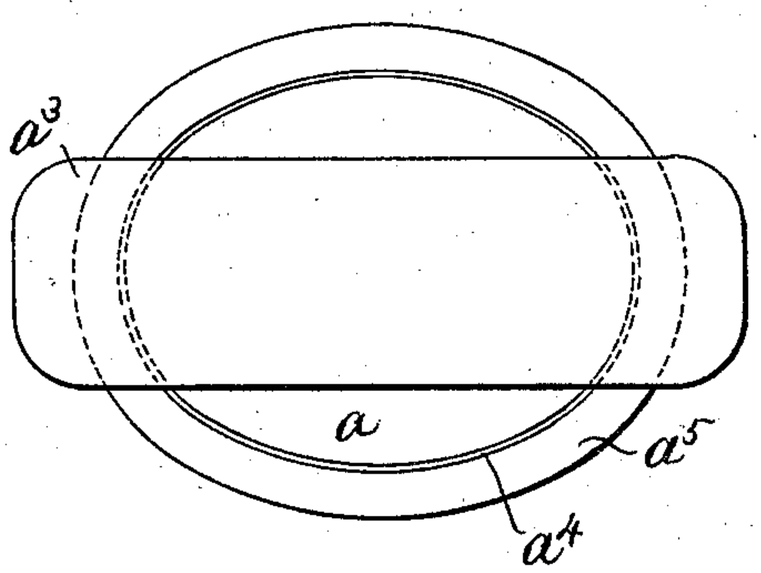


Fig. 2,

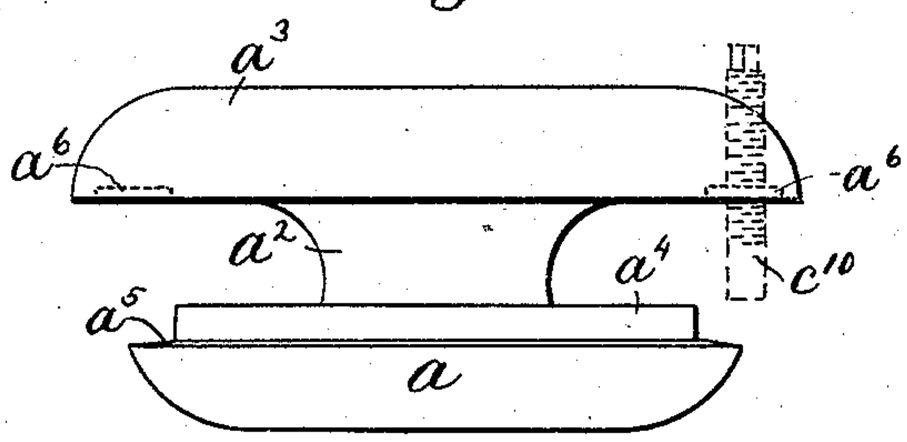


Fig. 3,

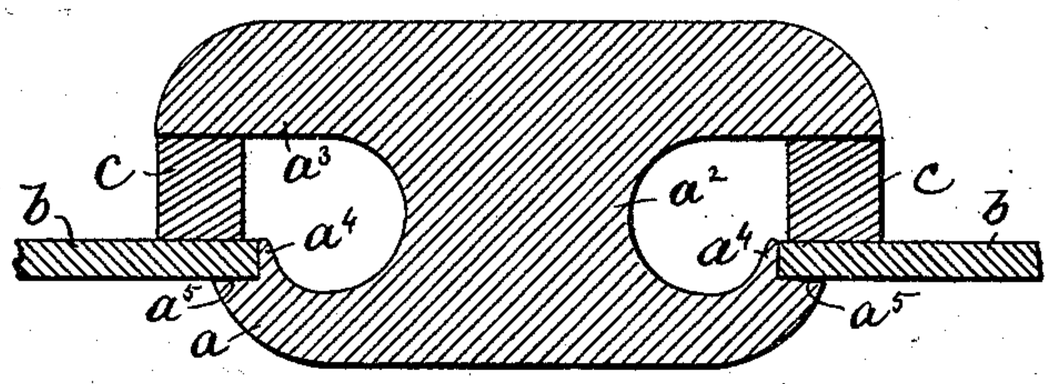
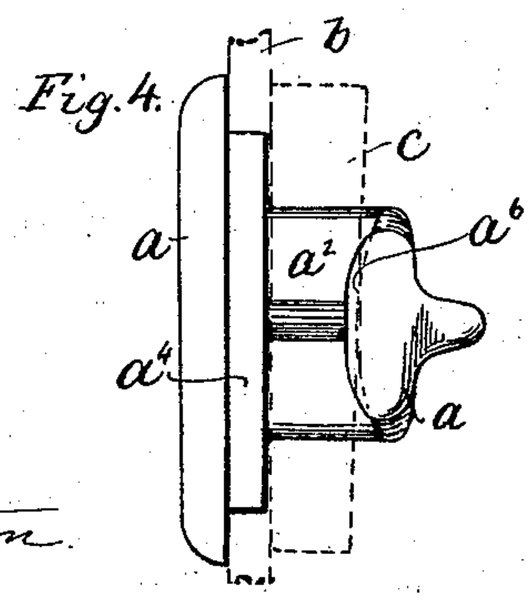


Fig. 4.



Witnesses,
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UNITED STATES PATENT OFFICE.

EDWARD P. ROBINSON, OF SOMERVILLE, MASSACHUSETTS.

HAND-HOLE PLATE FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 455,358, dated July 7, 1891.

Application filed August 23, 1889. Serial No. 321,798. (No model.)

To all whom it may concern:

Be it known that I, EDWARD P. ROBINSON, of Somerville, county of Middlesex, State of Massachusetts, have invented an Improvement in Hand-Hole Plates for Boilers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relates to a hand-hole plate or cap, such as used on steam-boilers, the object of the invention being to produce a more convenient and durable means for fastening the plate than those heretofore used, and also to reduce the cost.

While the invention is described as embodied in a plate or cover for a hand-hole, it is obvious that the same construction might be applied to a man-hole, or in any case where a removable cover for a hole or opening in a boiler or similar appliance is required.

Prior to this invention the plate or cover used in connection with a hand-hole is arranged to overlap and bear upon the metal around the edges of the opening at the inside of the boiler, and has been provided with a shank either made integral or otherwise connected with said plate, which extends out through the opening in the boiler and also through a yoke, spider, or leg-plate, which bears upon the outside of the boiler, the said shank being secured to said yoke by a nut or key, and said yoke bearing directly against the boiler-plate and being necessarily independent of and detachable from the hand-hole plate proper.

In accordance with the present invention the plate or cover has made integral or securely connected with it a cross-piece that stands outside the boiler when the plate is in position in the hole at the inside of the boiler, said cross-piece and plate being connected by a shank that passes through the hole, and the entire device being made, if desired, in a single piece either by casting or forging. The ends of the cross-bar overhang the boiler-plate around the edges of the hole and are at some distance from the outer face of the boiler, and the whole device is securely retained in position by means of keys or wedges driven between the outer surface of the boiler and the overhanging ends of the cross-piece to the hand-hole plate.

Figure 1 is a plan view of a hand-hole plate embodying this invention; Fig. 2, a side elevation thereof; Fig. 3, a longitudinal section showing the plate fastened in position in the boiler-plate; and Fig. 4 an end elevation of the hand-hole plate and its fastening-key, showing a slight modification in the shape of the forging or casting.

The hand-hole plate forming the subject of this invention comprises the plate, cap, or cover proper a, which is of the usual oval shape to fit within the opening in the boiler-plate b, (see Fig. 3,) said plate a having made integral or otherwise connected with it a shank a^2 and cross-piece a^3, which is preferably somewhat longer and also somewhat narrower than the hand-hole plate a, as clearly shown in Figs. 1 and 2. The shank a^2 is long enough and narrow enough to admit of the plate a being passed through the opening in the boiler b by turning the said plate a so that its shorter axis passes through the longer axis of the hole and then turning the said plate into substantial coincidence with the hole, the plate having the usual flange a^4, that fits within the hole while the portion a^5 around the flange a^4 seats against the inner face of the boiler-plate around the edge of the opening or against a suitable gasket or washer interposed between it and the boiler-plate in the usual manner.

In order to admit of the insertion of the plate a into the hole, as just described, the shank a^2 is of such length that the cross-piece a^3 stands at some distance from the outer surface of the boiler-plate b, when the hand-hole plate is properly seated in the opening, and the said plate is drawn tightly to its seat and the entire device securely fastened by means of keys or wedges c, driven between the boiler-plate and the overhanging ends of the cross-piece a^3. This affords a very convenient and at the same time secure means for fastening the plate, and the entire device is simple, compact, and inexpensive, and may be used anywhere that a removable cover of this nature is required. It is especially useful for the hand-hole plates that are made in or near the fire-box of a boiler for the

reason that the entire plate and its cross-bar may be in an integral piece and being exposed to the water inside the boiler is kept comparatively cool by the conduction of the heat, and the wedges *c*, also lying directly against the boiler-plates are also kept comparatively cool, so that the entire device is well protected from injury by heat or burning, while with the ordinary mode of using an independent yoke or cross-piece with a fastening nut or wedge at the inside of the latter the fastening parts soon become burned as they are directly exposed to the heat of the fire and are at some distance from the water-cooled surface.

If desired, the ends of the cross-piece a^3 may be recessed to form seats, as indicated in dotted lines at a^6 in Fig. 2, and as shown in Fig. 4, which represents substantially the same device, but of somewhat lighter construction, the cross-bar and connecting-shank being shaped to give increase of strength with less amount of material than in the construction shown in the other figures.

It is not essential that the cross-piece, shank, and plate should be made in a single integral piece, although such construction is generally the best, the essential feature being that these parts are permanently connected together instead of being connected in the act of attaching the plate to the boiler, and the fastening devices act between the cross-bar and the boiler instead of between the cross-bar and the shank connected with the hand-hole plate, as is usually the case. It also is not essential that wedges should be used as the fastening device. In some cases, especially where the fastening of the plate is not exposed to the fire, other forms of fastening device may be preferred, as for example, the screws represented in dotted lines at c^{10}, Fig. 2.

I claim—

1. A hand-hole plate or similar cover having a cross-bar connected with it by a shank, whereby the said cross-bar stands at the outside of the boiler-plate, while the hand-hole plate, combined with fastenings interposed between the end portions of said cross-bar and the boiler-plate, is seated in said boiler-plate, substantially as described.

2. A hand-hole plate or similar cover and cross-bar connected with it by a shank longer than the thickness of the boiler-plate, the said cross-bar being longer than the plate below it, and thus overhanging the boiler-plate, combined with fastening-wedges interposed between the overhanging ends of said cross-bar and the boiler-plate, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD P. ROBINSON.

Witnesses:
JOS. P. LIVERMORE,
JAS. J. MALONEY.