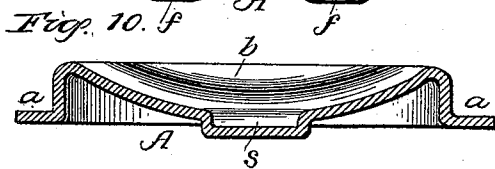
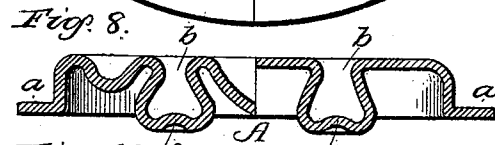
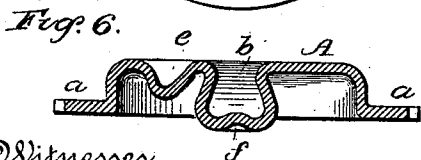
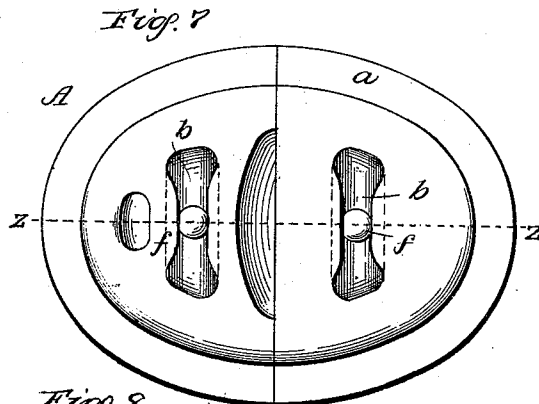
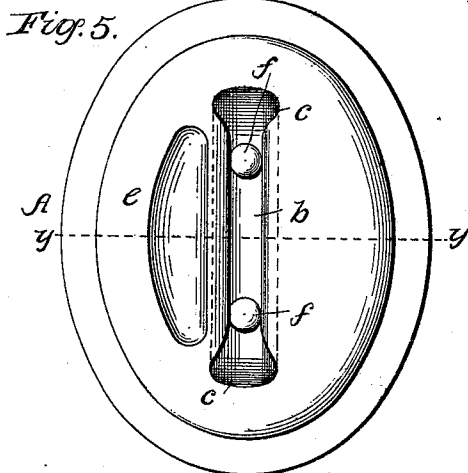
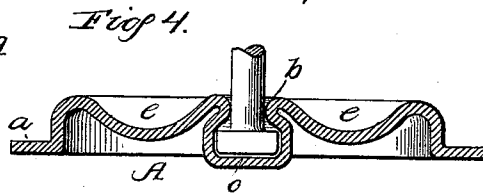
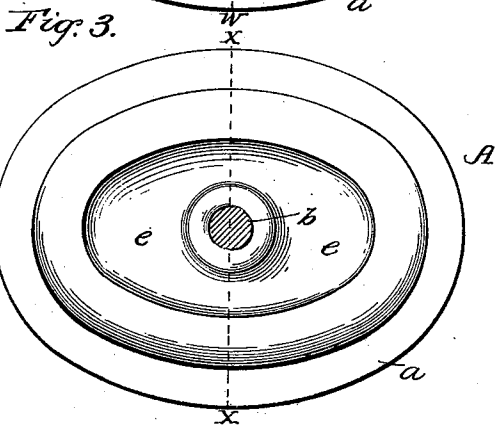
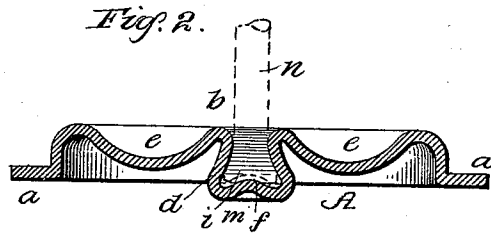
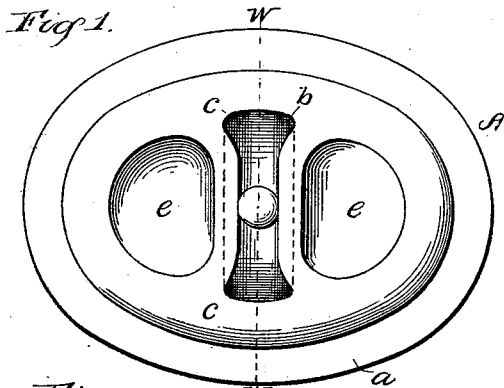


(No Model.)

J. P. ROE.
MANHOLE COVER.

No. 521,733.

Patented June 19, 1894.



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UNITED STATES PATENT OFFICE.

JAMES P. ROE, OF POTTSTOWN, PENNSYLVANIA.

MANHOLE-COVER.

SPECIFICATION forming part of Letters Patent No. 521,733, dated June 19, 1894.

Application filed April 11, 1894. Serial No. 507,171. (No model.)

To all whom it may concern:

Be it known that I, JAMES P. ROE, a subject of the Queen of Great Britain, residing at Pottstown, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Covers or Plates for Manholes, Hand-Holes, and Sludge-Holes of Steam-Boilers and Tanks and other Purposes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates, generally, to plates or covers for the man-holes, hand-holes, and sludge-holes of steam boilers, tanks, and the like, and, particularly, to wrought iron or steel plates or covers for such holes made of a single piece of such metal pressed or stamped the desired shape and formed with means for securing the retaining bolts thereto without penetration of the metal of the plate or cover, and it has for its object to provide such a plate or cover at the least possible cost of manufacture, to reduce its weight without reducing its strength, and otherwise to produce such a plate or cover of simple construction, and great durability, and which will do away with all possibility of leakage at the points where the bolts are secured to the plate or cover, and it consists of the parts and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings forming a part of this specification, Figure 1 is a plan view of one form of my improved plate; Fig. 2 a vertical section on the line $w-w$, Fig. 1; Fig. 3 a plan view of a modified form of plate; Fig. 4 a vertical section on the line $x-x$, Fig. 3; Fig. 5 a plan view of another form of plate adapted for one or more bolts; Fig. 6 a vertical section on the line $y-y$, Fig. 5; Fig. 7 a plan view of another form of plate adapted for two bolts; Fig. 8 a vertical section on the line $z-z$, Fig. 7; Fig. 9 a sectional view of a modified form of securing the bolt to the plate; and Fig. 10 a modified form of bottom for recess shown in section.

Similar letters refer to similar parts throughout the several views.

As is well known the covers or plates for man-holes, hand-holes, sludge-holes and the

like for steam boilers, tanks, and other purposes, have usually been made of cast iron or cast steel having perforations formed therein either when cast, or afterward, by drilling, to receive the bolt or bolts by which they are secured in position, thus weakening the plates and rendering them liable to leak about the bolt holes. To obviate the annoyance occasioned by the leakage in such plates or covers cast iron plates have been cast solid and with recessed lugs projecting therefrom to receive the heads of the bolts therein which lugs add to the weight and consequent cost without increasing the strength of the plate and as the entire strain of supporting the plates, which are made very heavy in order to stand the pressure to which they are subjected when in use, falls on the lugs there is liability of their breaking at most inopportune times. In order to obviate these objectionable features in plates or covers for the purposes named I form them of wrought iron or steel, pressing or stamping them into the desired shape and with means for securing the bolt or bolts firmly, but removably, in place without adding materially to the weight of the plates or covers, and without weakening the same by perforations, thereby materially reducing the cost of manufacturing the plates and increasing their durability, and lessening the labor involved in fitting them in position and in removing them therefrom.

Referring to the drawings A represents a plate or cover for man-holes, hand-holes and the like purposes, which is, as is usual, of an oblong or elliptical shape having a peripheral flange, a , formed thereon whereby it may be seated on the shell of the boiler or tank at the man-hole therein with any suitable packing interposed as is customary. The plate or cover is made of a single piece of wrought iron or steel pressed or stamped into shape and in all the views is represented with the flange a , which may extend horizontally, as shown, or may incline to conform to the shape of the boiler shell or the tank or other vessel on which it may be used, the construction of the plates or covers in the different figures of the drawings varying only as to the shape or form given the central or body portions thereof as will now be described.

Referring to Figs. 1 and 2, it will be seen

that a recess *b* is stamped or pressed in the center and in line with the conjugate axis of the plate, said recess forming a groove the ends of which are widened or flared, as at *c*, 5 and the remaining or central portion of which is of dovetail form in cross section, as at *d*, Fig. 2. As shown in the figures the plate is formed with a depression or cavity *e* at each side of the recess *b* of somewhat dished shape 10 the adjacent edges of which form the edges of the mouth of the recess *b*. At the ends of the recess *b* the bottom thereof inclines to the surface of the plate or cover and at the center of the recess a rounded projection *f* is 15 formed or struck up in the bottom for a purpose to be described. With this form of plate but one bolt is used.

In Figs. 3 and 4 I show a plate having an elliptical shaped depression, *e* extending 20 around the central portion of the plate and a circular recess *b* formed central therein the mouth of said recess being formed by the inner edge of depression, *e*, and of less diameter than its bottom portion which, as clearly 25 shown in Fig. 4, flares outwardly at all sides. In this form of recess the projection *f* is not required.

While I have shown but one bolt in the plates illustrated in Figs. 3 and 4 just described, it is evident two or more recesses 30 may be formed therein if desired to receive two or more bolts in which event a corresponding number of depressions *e* may be formed in the plate—one for each recess—of 35 the shape shown but of less diameter, but it will be understood that the recess or recesses may be formed in the plate without the depressions which, while convenient, are not absolutely necessary to the result I attain.

In Figs. 5 and 6 is shown a plate formed to receive two or more bolts, the recess *b* in this instance being substantially of the same shape as that in Figs. 1 and 2 but of a greater 40 length and is arranged on the transverse axis of the plate and with two or more projections *f* formed on its bottom according to the number of bolts to be used, instead of one as in said figures. The plate, in this instance, 45 is formed with but one depression *e* which is elongated, but two such depressions may be made in the plate or it may be formed, as shown to the right hand in said Figs. 5 and 6, 50 without depressions.

In Figs. 7 and 8 are shown, two forms of 55 plates adapted to receive two bolts, in which figures two recesses *b* are shown as stamped or pressed in the plate parallel to its conjugate axis, the space intervening between said recesses being either dished or depressed as 60 shown to the left hand in said figures, or left undisturbed and in the same plane as the upper surface of the plate, as shown to the right hand in said figures, as found most convenient or desirable.

65 All the different forms and arrangements of the recesses described have the same object in view, namely, to provide a simple and

secure means for attaching the bolts *n* to the plates or covers without forming perforations in said plates, and this is accomplished in the 70 form of recesses shown in Figs. 1, 2, 5, 6, 7 and 8 by forming the bolt *B* with a tapered head *i*, which may be four sided, adapted to tightly or snugly fit within the recess, said head being inserted from either end of the 75 recess and forcibly driven under the edges thereof, the elasticity of the metal of the plate permitting this to be done without fear of damage thereto. The heads of the bolts for the recesses in the plates shown in the 80 figures named are formed with a concavity *m* adapted to fit over the projections *f* in the bottoms of the recesses when driven into said recesses and thus prevent lateral movement 85 of the bolts.

In Figs. 3 and 4 the recess *b* is formed to receive a round headed bolt *o* into which said bolt is forcibly driven, the metal yielding 90 as in the other forms to permit of the entrance of the head of the bolt and springing back over the same after it has been driven fully into the recess. As the bolt is supported at all sides by the walls of the recess in this form of construction the projection *f* 95 used in the other forms described for the purpose of preventing lateral movement is not necessary.

In Fig. 9 I show in detail a method of securing a bolt having a tapering or conical head *p* in a recess *b* of a similar form but 100 large enough to permit of the ready insertion of the bolt head without the use of force, said head being secured firmly in place by Babbitt or other metal *r* filling the space in the recess surrounding the head. 105

In Fig. 10 I show a modified form of making the bottom of the recess *b* so as to obviate 110 the use of the projection *f* in the recesses and the concavity in the head of the bolts shown in Figs. 1, 2, 5, 6, 7 and 8, in which view a depression *s* is formed in the bottom of the recess to receive the head of the bolt and prevent its lateral movement.

Having thus described my invention, what I claim as new, and desire to secure by Letters 115 Patent, is—

1. A plate or cover for the man holes, hand holes, or sludge holes, of steam boilers, tanks, and for other purposes, consisting of a wrought iron or steel sheet or plate pressed or 120 stamped to shape and formed with a recess in its outer face adapted to receive and hold a bolt rigidly in a plane at right angles to said plate or cover, substantially as described.

2. In a plate or cover for the man-holes, 125 hand-holes, and sludge-holes of steam boilers, tanks, and the like, formed of wrought iron or steel pressed or stamped the desired shape and having a dove-tailed recess stamped or pressed therein, and a bolt having a tapering head adapted to fit within said recess, substantially as described. 130

3. In a plate or cover for the man-holes, hand-holes and sludge-holes of steam boilers,

tanks, and the like, formed of wrought iron or steel pressed or stamped into shape and having a recess stamped or pressed therein, a bolt having a head adapted to fit within said recess, and means for preventing lateral movement of said bolt in said recess, substantially as described.

4. In a plate or cover for the man-holes, hand-holes and sludge-holes of steam boilers, tanks, and the like, formed of wrought iron or steel pressed or stamped the desired shape, and formed with a projection in its bottom, and a bolt having a head adapted to fit within said recess and formed with a concavity to fit over said projection, substantially as described.

5. In a plate or cover for the man-holes, hand-holes, and sludge-holes of steam boilers, tanks, and other similar vessels or receptacles, of wrought iron or steel pressed or stamped in the desired shape and having a recess stamped or pressed in said plate, a bolt having a head adapted to enter said recess, and means for securing said bolt rigidly in said recess in a plane at right angles to the plate, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES P. ROE.

Witnesses:

WILLIAM F. LACHMAN,
J. H. MAXWELL.