

A. HEWENS.
MANHOLE CLOSURE.

No. 588,063.

Patented Aug. 10, 1897.

Fig. 1.

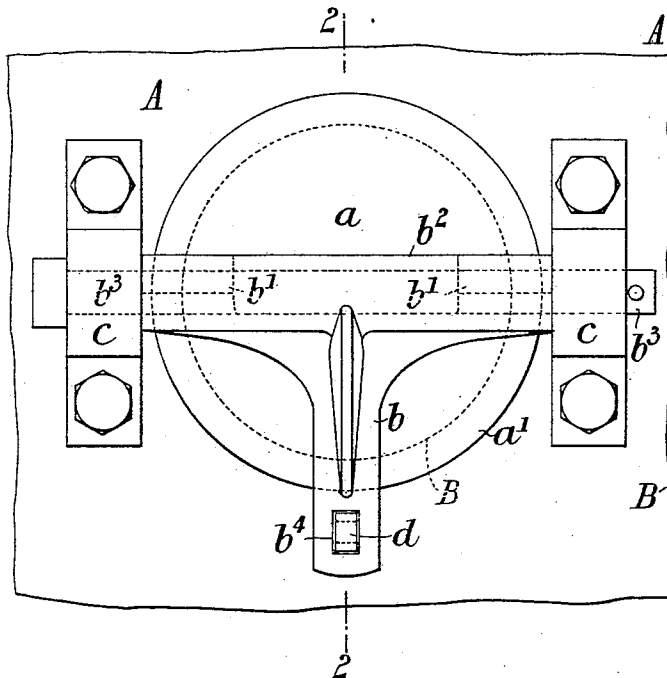
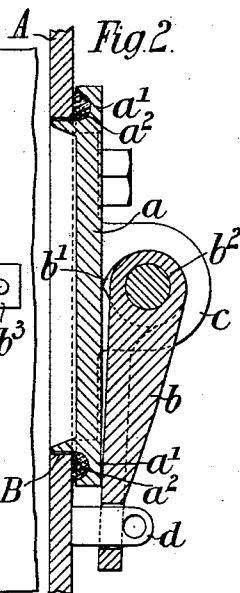


Fig. 3.

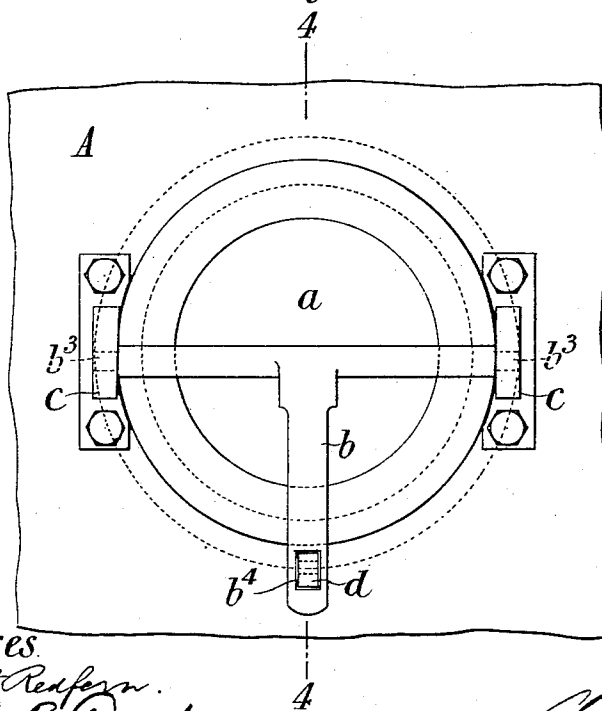
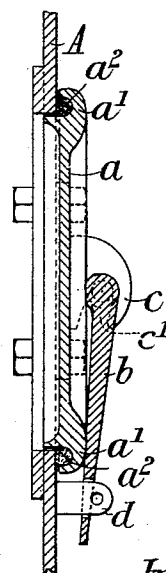


Fig. 4.



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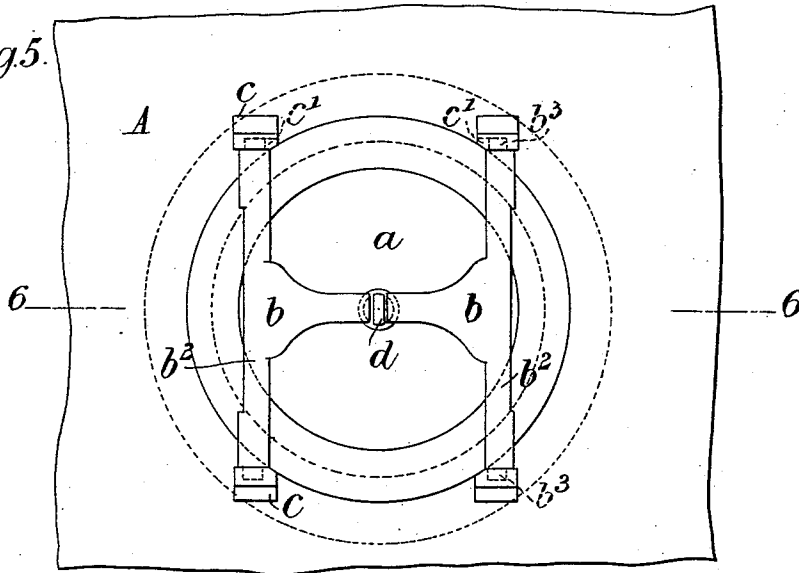
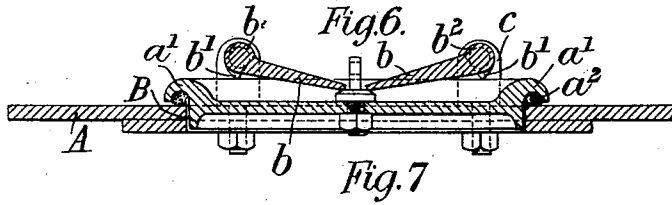
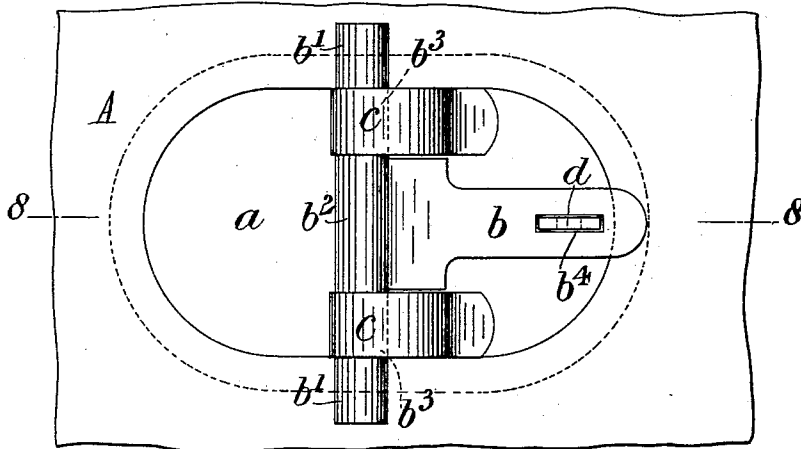
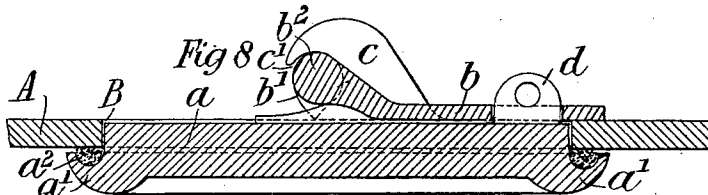
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Fig. 5.



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(No Model.)

4 Sheets—Sheet 3

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Fig 9

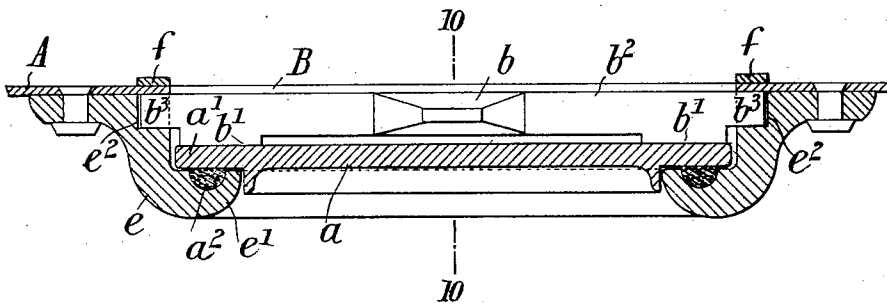


Fig 10.

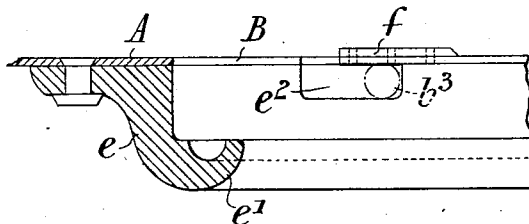
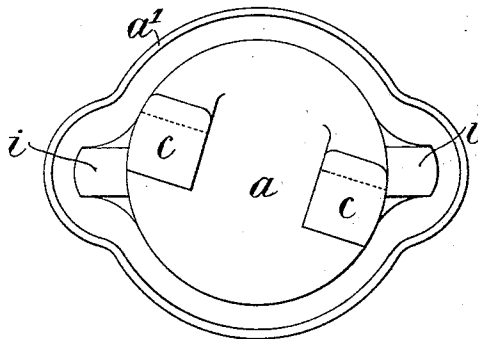


Fig. 14.



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Fig. 11

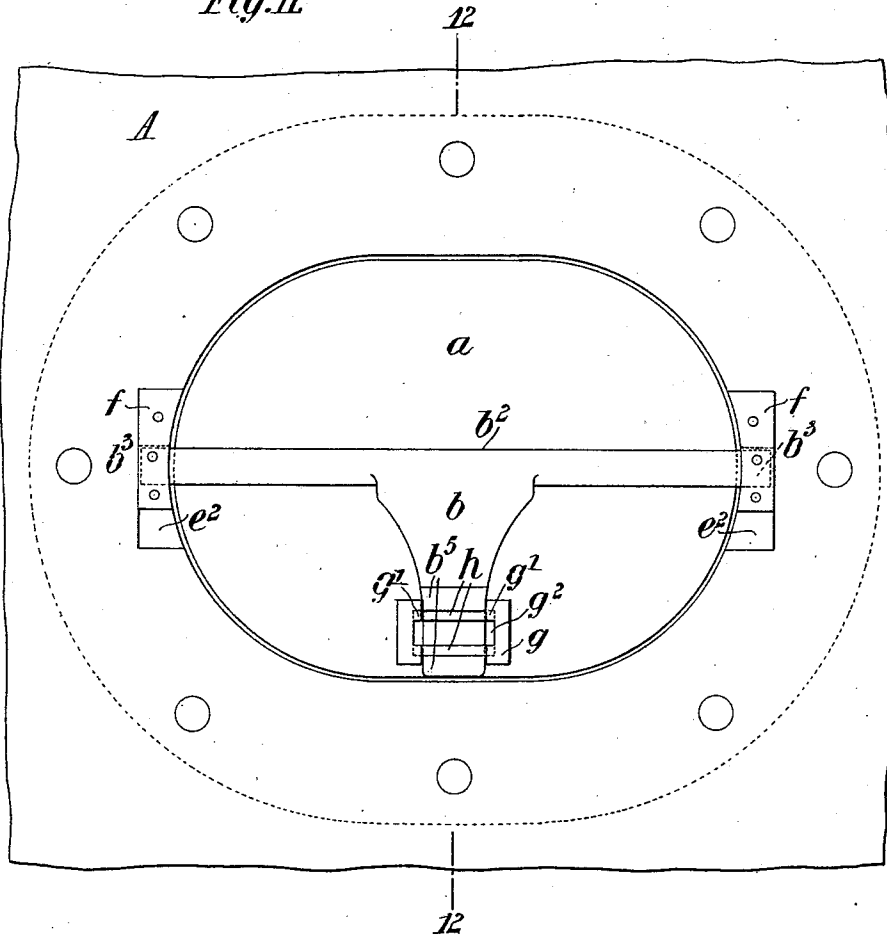


Fig. 12.

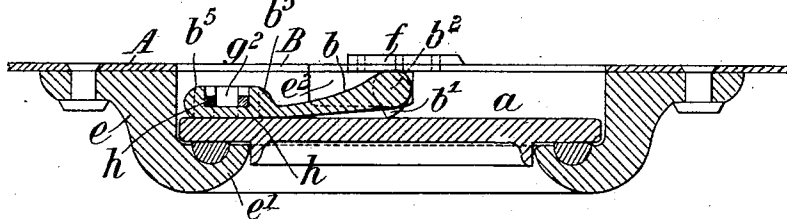
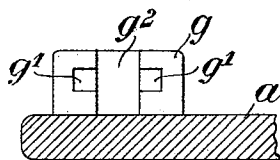


Fig. 13.



Witnesses

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UNITED STATES PATENT OFFICE.

ALFRED HEWENS, OF LONDON, ENGLAND.

MANHOLE-CLOSURE.

SPECIFICATION forming part of Letters Patent No. 588,063, dated August 10, 1897.

Application filed April 5, 1897. Serial No. 630,836. (No model.)

To all whom it may concern:

Be it known that I, ALFRED HEWENS, a subject of the Queen of Great Britain, residing at Hayes, London, in the county of Middlesex, England, have invented new and useful Improvements in Closing Manholes and Like Openings in Boilers, Tanks, and other Vessels, of which the following is a specification.

This invention relates to improvements in manhole and like covers and in means for fixing the same whereby a tight joint is obtained in a simple and expeditious manner without the necessity of employing screws and nuts.

In carrying out my invention I form the cover of the shape of the opening to be closed and so that it will fit therein. I provide my cover with a flange or rim advantageously of a channel shape, the said channel projecting beyond the sides of the opening and serving to receive the packing, which may be of any suitable material. In order to fix my cover, I provide one or more T-shaped straps with cam-shaped or eccentric projections on the inner or transverse portion thereof and rotatably mounted over the cover. The outer end of the strap is advantageously slotted to allow of its passing over a stud on one side of the manhole.

In the accompanying drawings, Figure 1 is a plan of a manhole-cover constructed according to my invention and shown in its closed position. Fig. 2 is a section on the line 2 2, Fig. 1. Fig. 3 is a view similar to Fig. 1 of a slightly-modified form of my manhole-cover. Fig. 4 is a section on the line 4 4, Fig. 3. Fig. 5 is a plan of a further modified form of my manhole-cover. Fig. 6 is a section on the line 6 6, Fig. 5. Fig. 7 is a plan similar to Fig. 1 of another form of my manhole-cover. Fig. 8 is a section on the line 8 8, Fig. 7. Fig. 9 is a section showing my invention as applied to the closing of manholes or openings in tanks; and Fig. 10 is a section on the line 10 10, Fig. 9, but showing the cover and strap removed. Fig. 11 is a plan of a manhole-cover similar to that shown in Figs. 9 and 10, but showing a modified arrangement for securing the strap. Fig. 12 is a section on the line 12 12, Fig. 11; and Fig. 13 is a view of a detail drawn to a larger scale. Fig. 14 is a plan

of a circular manhole-cover made according to my invention.

Similar letters of reference refer to the same or corresponding parts in the several figures. 55

A is a boiler or other plate, and B is a manhole or opening therein.

a is my manhole-cover, formed, as shown, to fit into the manhole or opening B.

a' is the channeled or grooved flange formed around the cover a so as to project beyond the sides of the manhole or opening B, and a² is the india-rubber or other suitable packing provided in the said channeled flange a'. 60

b is the T-shaped strap, (in the modification shown in Figs. 5 and 6 two of these straps b are shown,) and b' b' the cam-shaped or eccentric projections on the inner or transverse portion b² of the same. b³ b³ are the pins or bolts on the ends of the said transverse portion b² of the strap b, and c c are the supports or bearings for the pins b³, the said supports or bearings being bolted or otherwise secured to the boiler or other plate A at opposite sides of the manhole or other opening or to the cover a and being so formed that the pins or bolts b³ can be easily and expeditiously inserted and removed. 65 70 75

d is the stud on one side of the manhole or of the cover, which stud passes through the hole b⁴ in the outer end of the strap b when the latter is pushed down for fastening the manhole-cover a securely in position. This stud d is formed with a hole for the reception of a pin to retain the strap in the closed position. 80 85

Referring now to Figs. 1 and 2, the two supports or brackets c c are bolted to the plate A and are placed at such a distance apart that the transverse portion b² of the strap b just fits between them. The said part b³ of the strap is formed with a longitudinal hole through it, and a pin which is longer than the part b² is passed through the said longitudinal hole and through holes in the brackets c c, the ends of the pin projecting from the part b², forming the pins b³ b³, which are supported in the brackets c c. To remove the strap, it is only necessary to pull out the pin, which may be secured in position by a split pin through one of its projecting ends or by other suitable means. 90 95 100

In the arrangement shown in Figs. 3 and 4 the brackets *c c* are formed with slots *c' c'* to receive the pins *b³ b³*.

In Figs. 5 and 6 I have shown the manhole-cover designed to be secured in position by means of two straps *b b*, the construction and operation of which are similar to those of the strap described with reference to Figs. 1 to 4. In this case the supports *c c* for the pins *b³ b³* of the straps *b b* are not placed diametrically with respect to the opening B, and the stud *d*, instead of being secured to the boiler or other plate A, is fixed to the center of the manhole-cover *a*, so that the outer ends of the straps when securing the manhole-cover in position lie on either side of the said stud *d*, as shown, so that they may be secured in this position by a pin or other suitable fastening.

In the modification of my invention shown in Figs. 7 and 8 the cover *a* is arranged to close against the inside of the boiler or other plate A. In this case the slotted supports or brackets *c c* for the pins *b³* are rigidly secured to the top side of the cover *a* or are formed integral with it and project through the opening B, while the cam-surfaces *b' b'* upon the strap *b* are formed upon the outer extremities of the part *b²* and tighten the cover *a* in position by their contact with the edges of the opening B. The stud *d* is in this case also fixed upon the cover *a*.

Figs. 9 and 10 show my invention adapted for use in connection with ships' and other tanks and vessels in which it is necessary that the manhole-cover be flush with the outside of the vessel. In this arrangement the cover *a* instead of being applied to the opening B in the tank-plate A is fitted into a ring *e*, riveted to the said tank-plate A. The flange *a'* of the manhole-cover *a* is not channeled or grooved, as in the above-described arrangements, the requisite tightness of joint being obtained in this case by inserting the india-rubber or other packing *a²* in a channel or groove in the flange *e'* of the ring *e*. The pins *b³* of the strap *b* are supported in recesses or notches *e³* in the ring *e* and are held in position by the inner edge of the tank-plate A, which projects over the said recesses, the tank-plate A being strengthened at the bearing-points by strips of metal *f f*, riveted or otherwise secured thereto.

In the case of ships' tanks it is necessary that the manhole-cover be so secured that it cannot be fraudulently removed. To insure against such tampering, I advantageously employ the arrangement shown in Figs. 11 and 12. The free end of the strap *b* is provided with two shoulders *b⁵ b⁵* and is arranged to drop between two lugs *g g* on the manhole-cover *a*. The lugs *g g* are formed with slots or channels *g', g'*, and *g²*, (shown clearly in Fig. 13,) and when the strap *b* is pushed home into the position shown in the figures, so as to tightly close the manhole or opening B, square wire or other pins *h h* are pushed under the slots *g' g'* in the opposite lugs *g g*, so

as to hold the strap *b* in position. A quantity of a suitable fused metal or alloy, such as lead, is then poured into the space inclosed between the lugs *g g* and the shoulders *b⁵ b⁵*, so as to fill up the whole space and inclose the pins *h h* and the end of the strap, as shown in Fig. 12. The face of the metal can when the metal has set be stamped with any desired device or inscription. The shape of the space filled with the lead renders it impossible for the latter to be removed except by the application of heat, which, owing to the low melting-point of the metal employed, will not injure the contents of the tank or the packing of the manhole-cover.

Fig. 14 is an elevation of a cover similar to that illustrated in Figs. 7 and 8 applied to the closing of a circular manhole or opening. In this arrangement the opening B (not shown in the figure) is formed with two notches diametrically placed with respect to the circular opening, and the cover *a* is formed with corresponding lugs *i i*. With this construction it is possible to pass the cover *a* through the opening B from the outside, as in the arrangement shown in Figs. 7 and 8.

To secure my improved manhole-cover *a* in position, it is placed in the hole or opening B in the plate A, (or into the opening in the ring *e* in the arrangement shown in Figs. 9 and 10,) the flange *a'* extending beyond the sides of the said hole. The strap *b* is now placed in position, and being turned on its pivots *b³ b³* through half a revolution the cam-shaped projection or projections *b'* will force the cover *a* tightly against the plate A, (or against the flange *e'* of the ring *e*,) the packing *a²* forming a perfect joint and the strap being secured in its operative position by a pin or the like in the stud *d* or by the fused metal, as hereinbefore described.

By employing channeled or grooved seatings for the packing-rings it will be obvious that the said packing-rings are held firmly in their seatings and are prevented from bulging outward from the effects of pressure.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination with a manhole-cover, of a securing device therefor, including a T-shaped bar provided with a cam projection, bearings for said bar, a stud provided with an aperture and a pin adapted to engage said aperture in the stud and to engage said T-shaped bar to hold it in locked position, substantially as described.

2. The combination with a plate provided with a manhole, and a manhole-cover, of a securing device for said cover including a T-shaped bar provided with cam projections to engage portions of said plate, bearings for said bar secured to said cover, a perforated locking-lug for the handle portion of said bar, and a locking-pin adapted to be inserted in the perforation of said lug, to engage said

handle portion of said bar, substantially as described.

3. The combination with a plate provided with the manhole-cover, of a T-shaped securing-bar provided with cam projections, bearings for said bar, a pair of perforated locking-lugs adapted to receive the handle portion of said bar between them, said handle portion being provided with a sealing-recess and a locking-pin adapted to pass through said lugs and the sealing-recess, substantially as described.

4. The combination with a plate provided with a manhole, having a cover-engaging recess and lateral bearings on the inner side of said plate, of a manhole-cover, a T-shaped securing-bar adapted to lie within said recess having portions engaging said bearings,

and an eccentric portion for engaging said manhole-cover, whereby said cover and securing-bar do not project beyond the outer surface of the plate, substantially as described.

5. The combination with a manhole-cover, of a securing device therefor, including a pair of T-shaped bars provided with cam projections, bearings for each of said bars, a single perforated locking-stud for the handle portions of both of said bars and a locking-pin for engaging the perforation of said stud, and adapted to engage both of said handle portions, substantially as described.

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Witnesses:

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