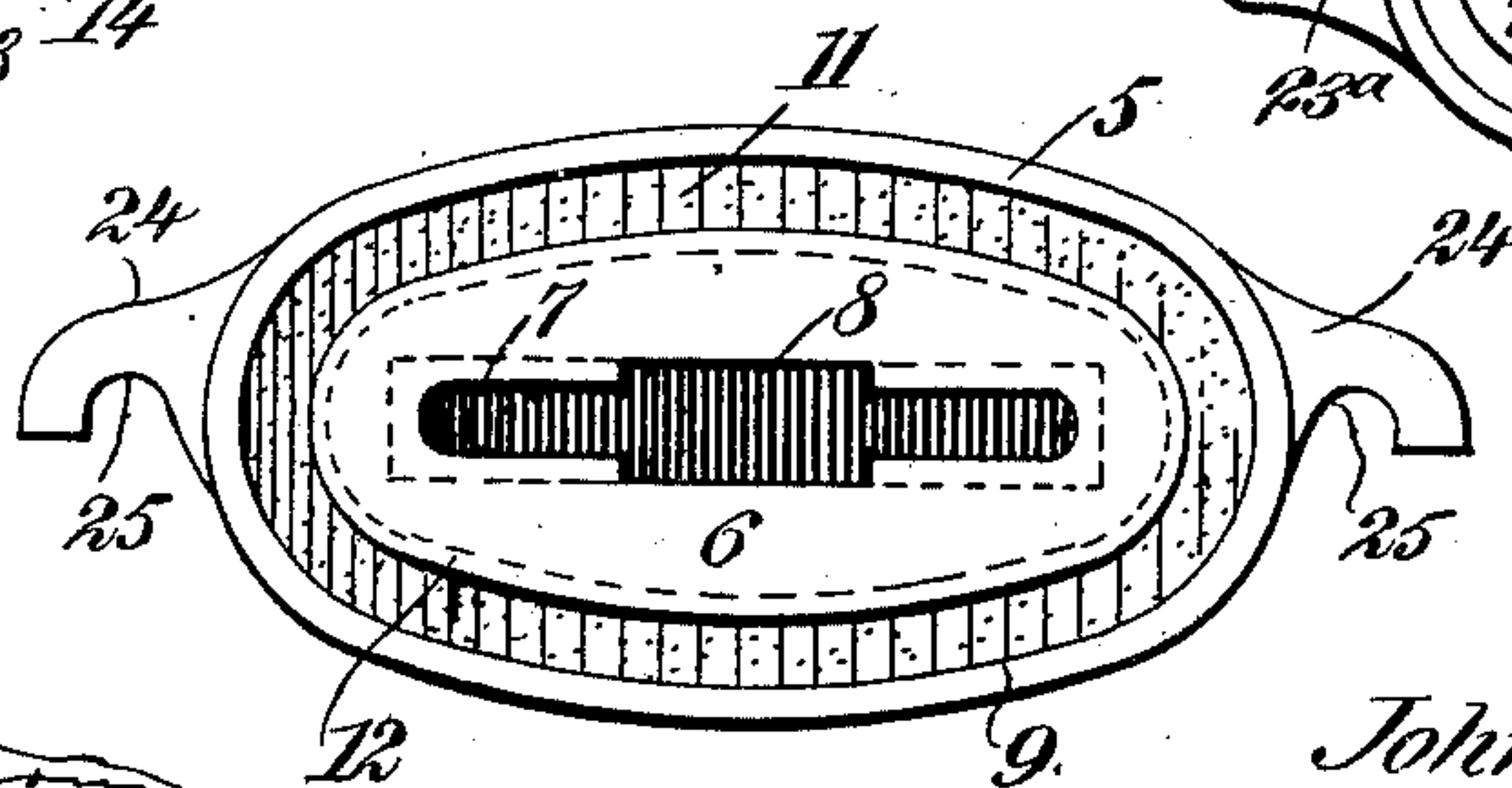
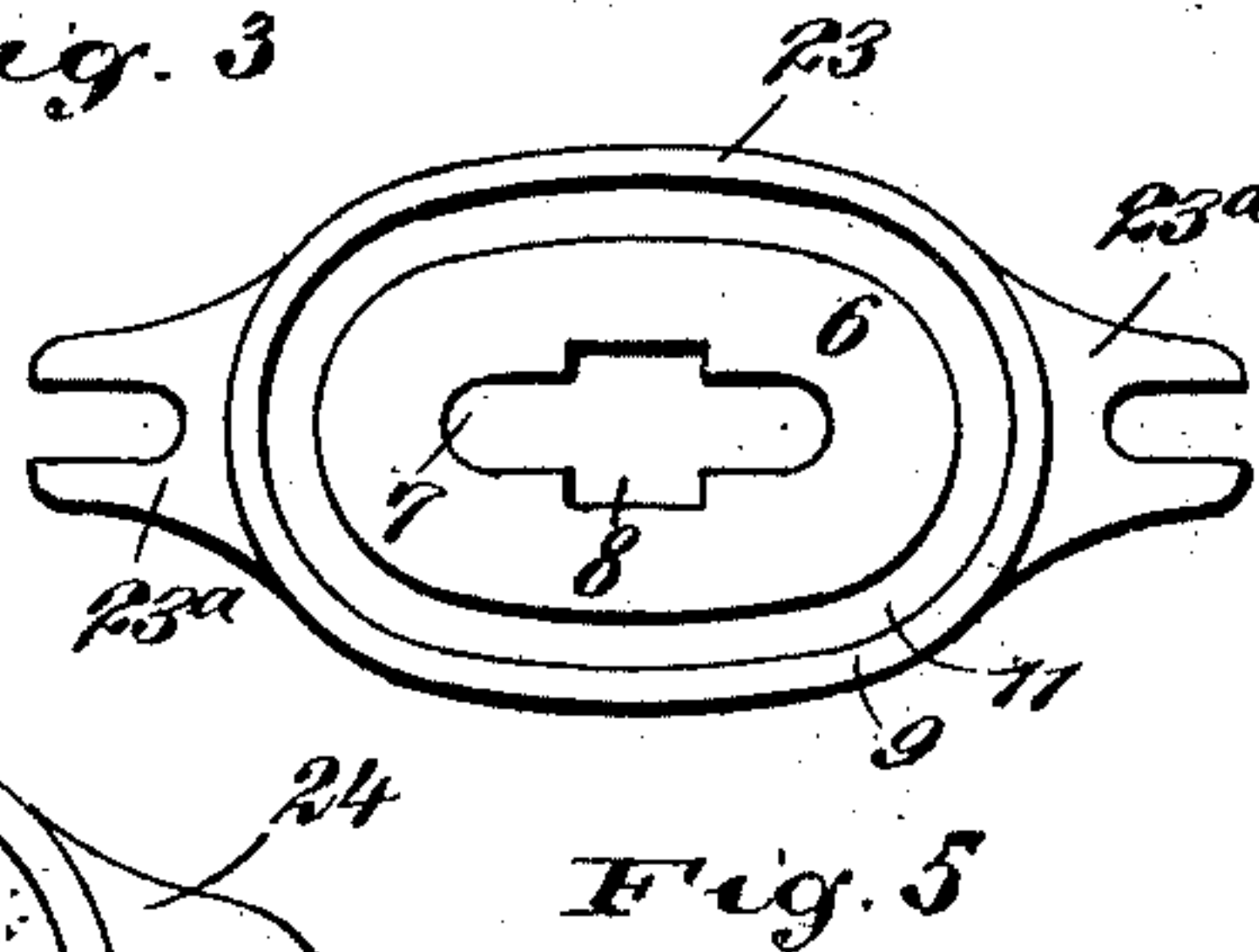
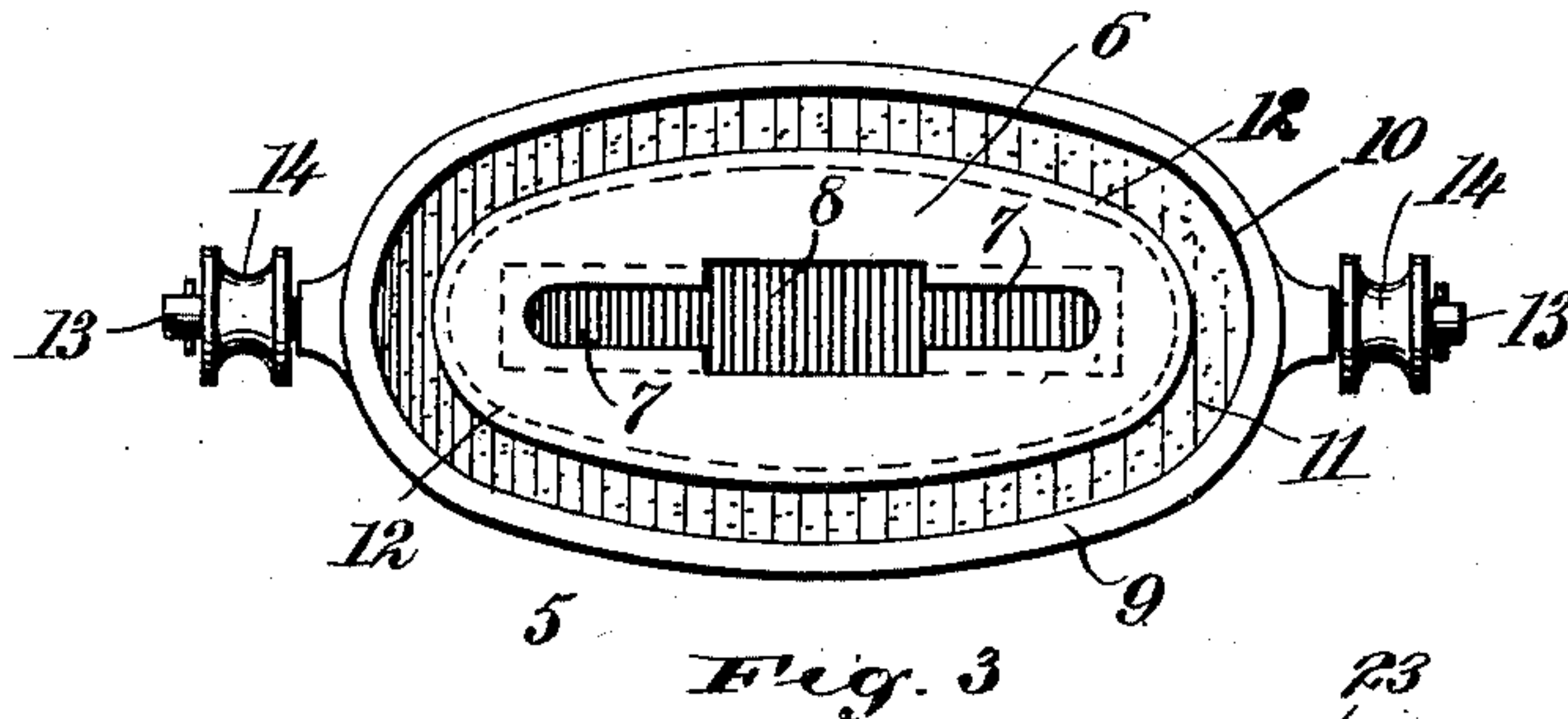
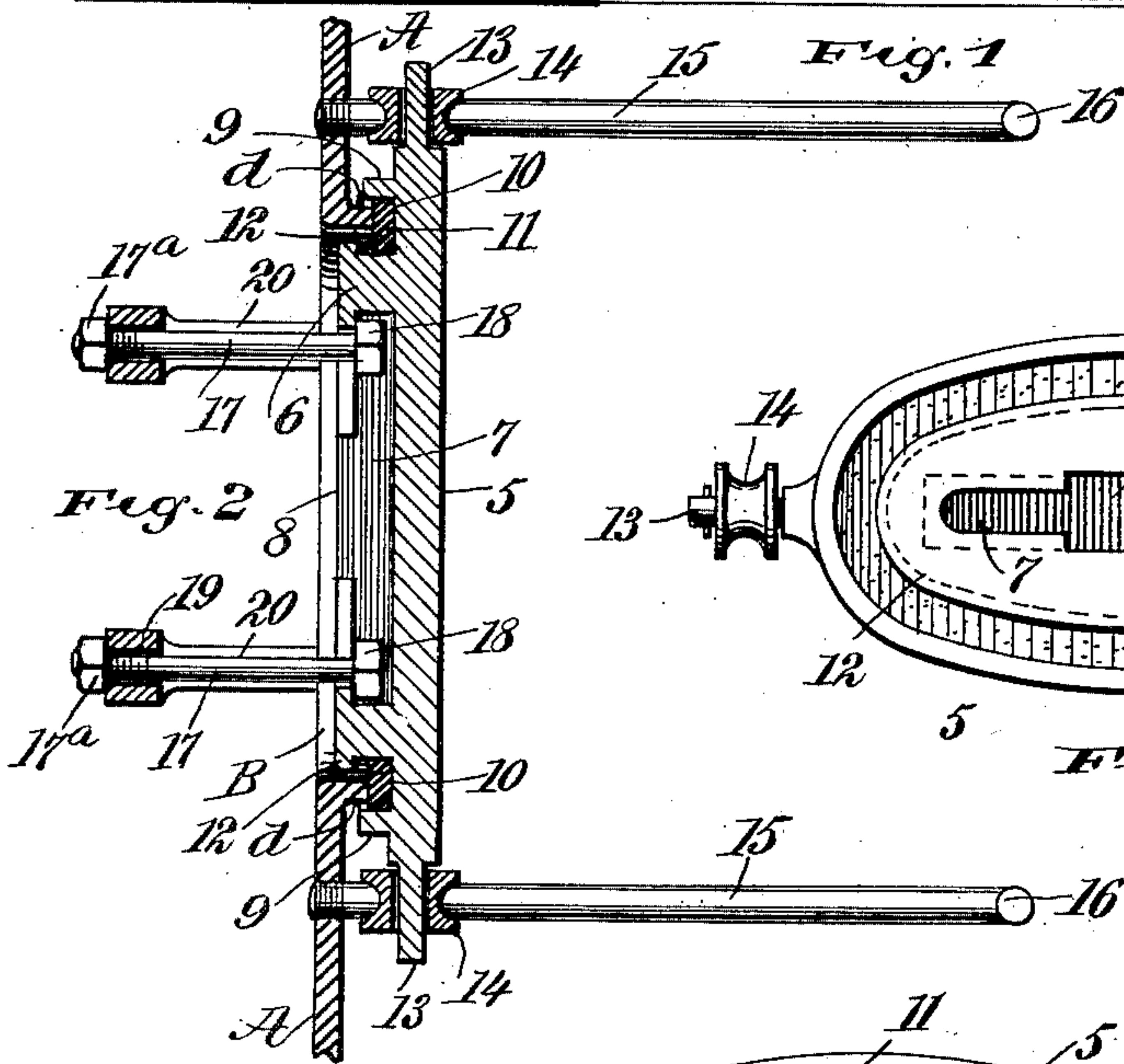
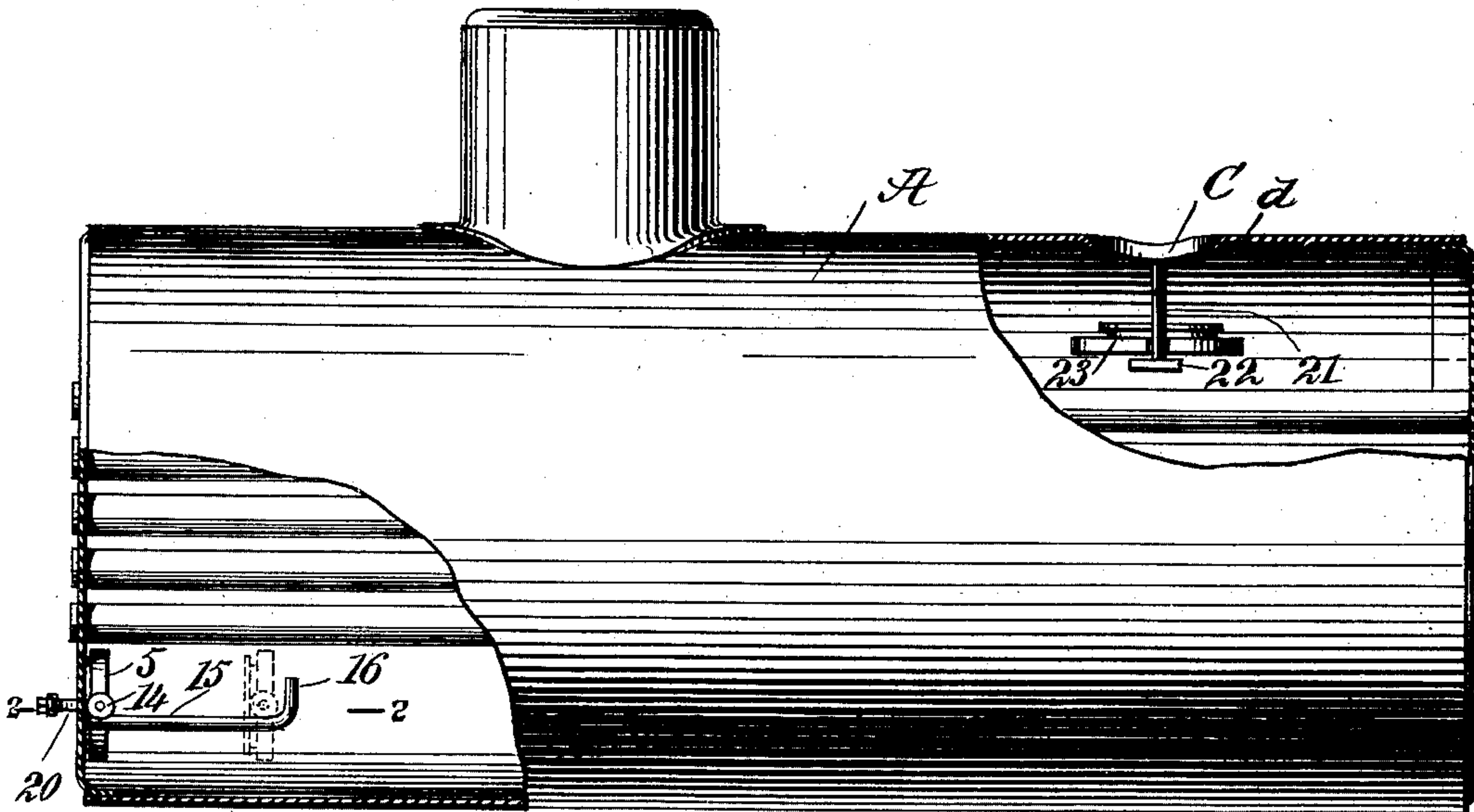


No. 737,934.

PATENTED SEPT. 1, 1903.

J. J. IRVINE.
MANHOLE COVER.
APPLICATION FILED DEC. 20, 1902.

NO MODEL.



WITNESSES:
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TO CHARLES BOXTER, OF PITTSBURG, PENNSYLVANIA.

MANHOLE-COVER.

SPECIFICATION forming part of Letters Patent No. 737,934, dated September 1, 1903.

Application filed December 20, 1902. Serial No. 135,995. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. IRVINE, a citizen of the United States, and a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Manhead for Steam-Boilers, of which the following is a full, clear, and exact description.

My invention relates to improvements in manhole-covers for any kind of steam-boilers, either marine or stationary boilers, and one object that I have in view is the provision of means for supporting the manhead within the boiler in an open position when it is desired to clean or wash out the interior thereof, such holding means enabling the manhead to be easily and accurately returned to its seat against the boiler in a manner to secure a tight joint between the parts and overcome any tendency to leak when the boiler is again used.

A further object of the invention is to provide an improved construction which can be easily removed when it is necessary for the engineer or fireman to enter the boiler for the purpose of repairs, the manhead being replaced and secured without much trouble.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the novelty will be defined by the annexed claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation of an ordinary type of steam-boiler equipped with manhole-closures embodying my invention. Fig. 2 is a sectional plan view on an enlarged scale, the plane of the section being indicated by the dotted line 2 2 in Fig. 1. Fig. 3 is a detail view, in front elevation, of one style of manhole-closure contemplated by this invention. Fig. 4 is a similar view of another form of manhole-closure which I may also employ, and Fig. 5 is a detail view in plan of the manhead to close the top manhole in the boiler.

A designates an ordinary steam-boiler, which may be of the class known as a "stationary boiler" or a "marine boiler." The boiler is provided with the usual manhole B in one end thereof and with a manhole C in

the top thereof, each manhole being bounded by an inwardly-turned flange *d*. I do not consider it necessary to more particularly describe the parts of the boiler, because my invention relates to a closure for each manhole B or C.

I will first proceed to describe the construction shown at the lower front part of Fig. 1 and on an enlarged scale by Figs. 2 and 3. The manhole-closure 5 is disposed within the boiler, and this closure conforms, substantially, to the shape of the manhole B. Said closure is preferably cast in a single piece of metal with an offset portion 6, and the closure, with its offset portion, may have the oval shape shown by Fig. 3, although the particular shape of the parts is not material. This offset portion is provided with a longitudinal slot 7, which is enlarged or widened at its middle portion, (indicated at 8,) and the closure 5 is provided with a marginal or boundary flange 9, arranged parallel to the edge of the offset portion 6, thereby providing a continuous channel or groove 10 between the flanged edge of the closure and the edge of the offset portion 6. This continuous channel 10 conforms in shape to the closure, and said channel is adapted to receive a gasket or packing 11. One of the improvements which I have made consists in providing an outwardly-extending lip 12 on the offset portion 6, as clearly shown by Fig. 2 and by dotted lines in Fig. 3. This lip is arranged to overhang the gasket 11, and it serves to confine said gasket within the channel against accidental displacement on the head or closure. The closure 5 is provided at opposite ends with short axles or trunnions 13, which project outwardly therefrom and are disposed in the plane of the longitudinal axis through said head. These axles or trunnions loosely receive the rollers or wheels 14, which are free to turn on the axles. These rollers or wheels are fitted to the track-rails 15, the latter being disposed in horizontal positions within the boiler. The rails, the rollers, and the closure may be made of metal which will not corrode under the influence of the heat or the water in the boiler; but the particular material which I employ in the construction of these parts is not essential. The track-rails 15 are fastened to the front boiler-head

on opposite sides of the manhole B and a little below the horizontal axis thereof, and said rails are fastened to the boiler-head in a way to secure steam-tight joints. In the device shown by Fig. 2 the front ends of the rails 15 are screw-threaded into the front boiler-head, and their ends are upset or riveted against the outer face of said head. These rails lie in the same horizontal plane and extend backwardly a suitable distance from the boiler-head, and the inner ends of the rails are provided with upstanding arms 16, the same being adapted to serve as stops in limiting the sliding movement of the closure in a rearward direction. As shown by Figs. 2 and 3, the rollers or wheels 14 are provided with peripheral grooves, and the rails 15 are of circular cross-section in order that the grooved rollers may fit snugly to the rails and overcome the possibility of displacement of the closure from the track. I do not, however, desire to confine myself to this particular construction of the rails and of the rollers, because I am aware that angular tracks may be provided and that flat tread-wheels may be mounted on the axles. The track-rails serve to hold the closure in proper position within the boiler when it is shoved back away from the manhole B, and these rails assist the operator in adjusting the closure accurately to the flanged manhole B. The closure 5 is drawn tightly against the boiler-head, so that the gasket 11 will engage with the flange *d*, and this end is accomplished by any suitable form of fastening device. As shown by Fig. 2, I employ bolts 17, having their heads 18 arranged to fit in the slot 7, which is arranged in the offset portion 6. The threaded ends of the bolts 17 pass through openings 19, which are provided in the yokes or stirrups 20, the latter resting against the boiler-head and spanning the manhole B. The threaded ends of the bolts receive the nuts 17^a, adapted to bear against the yokes, and this construction enables the bolts to draw the closure against the flanged opening B in a way to compress the gasket 11, and thereby secure a tight joint between the closure and the boiler-head. If it is desired to wash or flush the boiler, the bolts 17 are removed and the closure 5 is slidably adjusted on the track-rails 15 away from the boiler-head. It is not necessary to remove the closure when the boiler is to be washed, because the track-rails will support the closure within the boiler and at a suitable distance away from the manhole B. The grooved rollers and the stops 16 prevent the closure from accidentally leaving the track. The employment of the track prevents any mistakes from being made in putting the closure in its proper place, and this is quite advantageous, because in ordinary closures considerable trouble and time is incurred in adjusting the manhole accurately to the boiler. If it is desired to enter the boiler, the manhead can be loosened and

lifted off the track, after which it can be drawn out of the boiler.

In Fig. 1 I have shown the track-rails and the manhead arranged below the group of boiler-flues; but it is evident that the track and the manhead may be arranged above the flues and that the rails of the track may be turned so that the stops 16 will point downwardly, whereby the rollers of the closure are adapted to travel rearwardly and downwardly off the track, so that the closure may rest upon the top flues.

In connection with the manhole C, I employ the vertical rods 21, which are secured to the top of the boiler on opposite sides of the manhole C, said rods being the equivalent of the track-rails 15. The lower ends of the rods terminate in the enlargements 22, which are the equivalents of the stops 16, and on these rods is loosely fitted a closure 23, the latter being similar in shape and construction to the closure 5. The manhead 23 is shown in detail by Fig. 5, but in lieu of the rollers and axles at the end portions of the closure it is provided with slotted ears 23^a, which fit slidably on the depending rods 21. This closure 23 is adapted to be drawn tightly against the flange *d* of the manhole C, and it may be fastened in place by bolts and yokes similar to the parts 17 20. When the closure 23 is lowered, it slides on the rods 21, and it is suspended in its lowest position by the stops 22. If desired, the stops 22 may be omitted, so that the closure 23 may rest upon the boiler-flues.

I do not desire to strictly limit myself to the employment of the axles and rollers shown by Figs. 2 and 3, because I am aware that other means may be provided on the closure 5 to slidably support it on the rails or guides 15. In Fig. 4 I have shown the closure 5 as having the integral arms 24 arranged to extend from opposite ends thereof and to lie practically in line with the longitudinal axis of said closure. These arms are provided with grooves 25, which serve to give a hook shape to them, and said hook-shaped arms are adapted to fit on the tracks or guides 15, so as to slidably support the closure in place. This closure is provided with the slotted offset, the continuous channel serving as a seat for the gasket and the slot extending longitudinally of the offset.

The particular form of rails or guides is not material, and instead of providing special rails or rods to support the closure 5 I may use the ordinary stay-rods which extend longitudinally of the boiler as the means for supporting the closure, the closure being adapted to fit slidably on said rods.

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

1. In a device of the class described, a manhole-cover provided with arms extending from opposite sides thereof, combined with fixed

guides on which the arms of the cover are fitted to travel.

2. In a device of the class described, an elongated manhole-cover provided with oppositely-extending arms disposed in the plane of the longitudinal axis of said cover, combined with fixed guides on which the arms of the cover are fitted to travel.

3. In combination with a shell having a manhole therein, of fixed guides disposed on opposite sides of said manhole, and a cover having oppositely-extending arms which are fitted to said guides to travel thereon.

4. The combination with a steam-boiler having a manhole, of guides fixed to the boiler on opposite sides of the manhole, a closure slidably fitted to said guides and sustained thereby in alinement with the manhole and at a distance therefrom, and suitable clamping means for said closure.

5. The combination with a steam-boiler having a manhole, of fixed guides within said

boiler and on opposite sides of the manhole therein, a closure provided with oppositely-extending axles, rollers mounted on said axles and adapted to travel on said guides, and means for clamping said closure in place.

6. The combination with a boiler having a manhole, of guide rods or rails fixed in said boiler on opposite sides of the manhole, and provided at their inner ends with stops, a closure having means for slidably supporting it on said guides or rails and provided with a slotted offset, a yoke arranged to sustain the closure, and a bolt fitted in said yoke and having a headed end fitted in the slotted offset of said closure.

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

JOHN J. IRVINE.

Witnesses:

A. E. WATZEK,
WM. O'CONNELL.