This invention relates to new and useful improvements in steam boiler construction, having more pertinent reference to a hand-hole plate therefor and to the particular construction thereof.

In steam boilers it is necessary from time to time to clean the inside of the boiler of scale and foreign matter which accumulates therein, hence the hand-hole provided for this purpose. In the ordinary hand-hole plate there is provided, however, only one gasket which seats between the boiler and plate and consequently when the gasket becomes worn and leaky it is necessary to shut off steam and drain the boiler before replacing the gasket.

It is the object of the present invention to obviate this by providing an additional gasket so that the steam pressure need not be lowered or the operation delayed in replacing a leaky gasket.

With the above and other minor yet important objects in view, the invention will be clearly understood from a perusal of the following detailed description in connection with the accompanying drawings, and wherein—

Figure 1 is a fragmentary view of a boiler illustrating an embodiment of the invention.

Figure 2 is a similar view, in vertical section.

Figure 3 is a bottom view on an enlarged scale of the improved boiler plate retaining shell showing the outside gasket, and

Figure 4 is an elevational view of a centralizing and stabilizing element employed in and forming one of the parts of the invention.

Proceeding in accordance with the drawings wherein numerals are employed to designate the various parts, the numeral 1 designates a portion of a steam boiler of stationary type, and in Figure 2 the numeral 2 designates the hand-hole plate of ordinary and well-known construction between which plate and the interior of the boiler is interposed the regular gasket 3. This gasket forming no part of the invention, but illustrated for the sake of clearness in the explanation. The plate 2 with the inner gasket 3 is held in place by the familiar crow-foot construction on the outside of the boiler similar to the shell 4. The shell 4, however, in the present invention is of different construction and provides a means in connection with the other parts thereof for effectually enabling the gasket to be replaced without interfering with the steam pressure in the boiler.

In practice, several of these hand-holes with gasket and plates are located at lower portions and other parts of the boiler. In addition to the inner gasket 3 there is provided an outside gasket 5 which is seated in an annular groove 6 in the rim of the shell 4. For convenience in properly placing and arranging the outer gasket 5 over the opening in the boiler there is cast on the boiler an annular rim or seat 7 in which the gasket is enclosed. This arrangement of the rim or seat is optional and may be used or not used as desired.

The interior of the shell 4 is hollow and the shell has a substantial cone-shape both inside and outside. In the upper end of the shell is an opening 8 likewise of cone-shape formation to complementally receive the plug 9, threaded engaged with a stem or threaded bolt 10. The opening 8 has a ground and smoothed engaging surface for the tapered end 11 of the plug 9 so as to provide a snug and tight fit. This tight closure of the upper end of the shell prevents steam form escaping in case of leakage of the inside gasket and will have a tendency also to prevent cold air from touching the outside of gasket 5 and which will aid in preventing leakage. The upper part of the plug 9 is hexagonal for engagement with a wrench.

It will be seen that the stem or bolt 10 traverses the plug 9 and plate 2 and also a centralizing and stabilizing element 12, which has an opening 13 therefor. This element 12 is a cross-bar extending across the handle of its ends abutting the outer side of the boiler shell and with the stem 10 extending through the opening 13 therefor. A nut 14 is threaded on the stem and bearing on the cross-bar clamps the main closure plate 2 in place.

In practice, should the gasket 3 become leaky, or the gasket 5 need replacing, the plug 9 is loosened and the outer gasket may be replaced by a new one. This may be done, as is obvious, without permitting steam to escape, since the inner gasket is held in place by the steam pressure and the stem 10.

I claim—

In combination with a boiler shell having a hand-hole and a main closure plate
seated in the hand-hole on the inner side of the boiler shell, of an auxiliary closure for the hand-hole comprising a conical element seated on the outer side of the boiler shell around the hand-hole, said element having a conical bearing in its apex, a cross-bar extending across the hand-hole within the conical element with its ends abutting the outer side of the boiler shell, a threaded stem engaging the main closure plate and extending through the cross-bar and the conical bearing of the conical element, a nut on the stem to bear on the cross-bar to hold the main closure plate seated in the hand-hole, and a plug threaded on the stem and provided at its inner end with a conical bearing to be seated in the conical bearing of the conical element to hold said element in place.

In testimony whereof I affix my signature.

EDGAR A. SMITH.