(No Model.)

F. W. HORNISH.

BOILER CLEANER SKIMMER.

No. 539,272. Patented May 14, 1895.

FIG. 1.

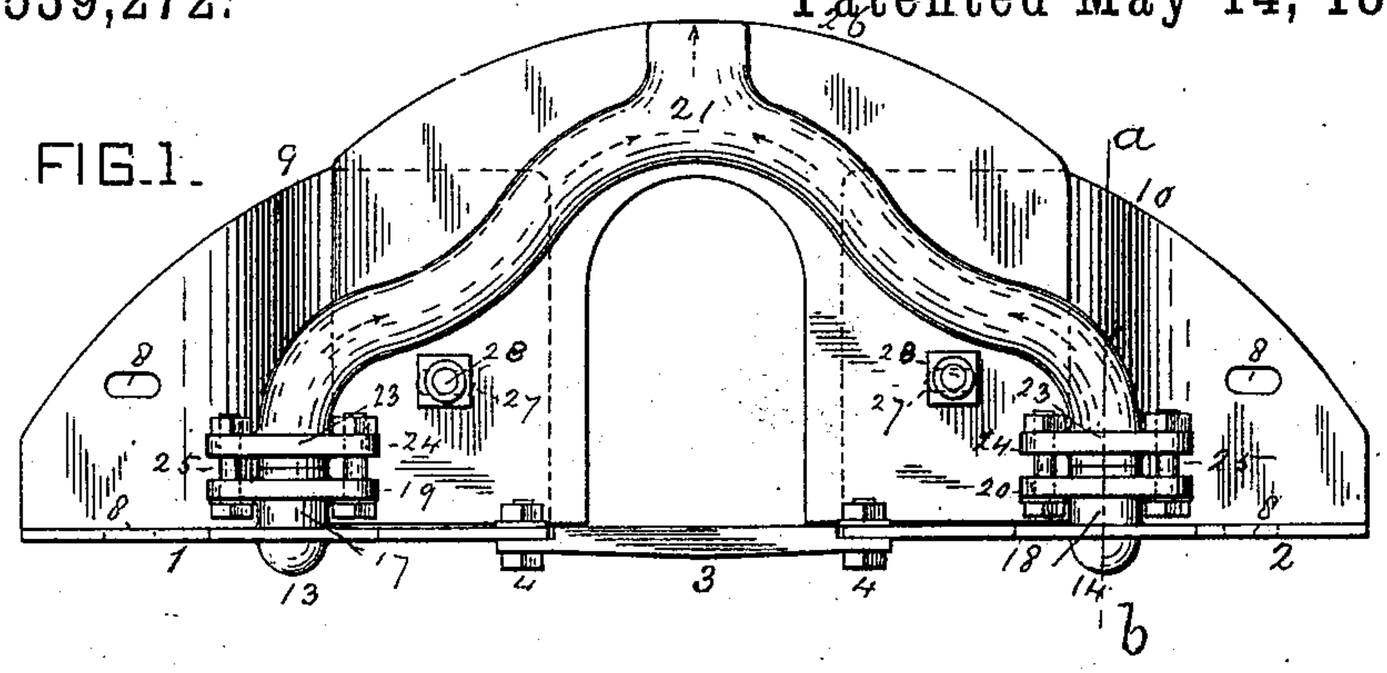


FIG. 2.

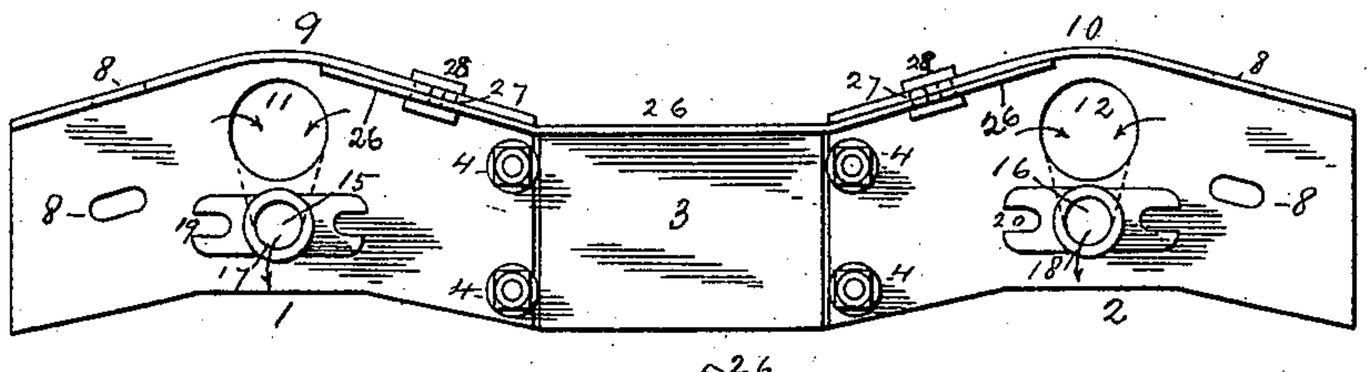


FIG. 3.

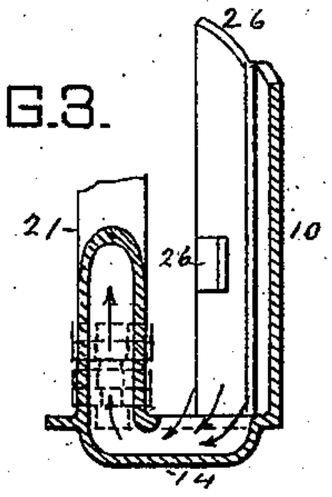
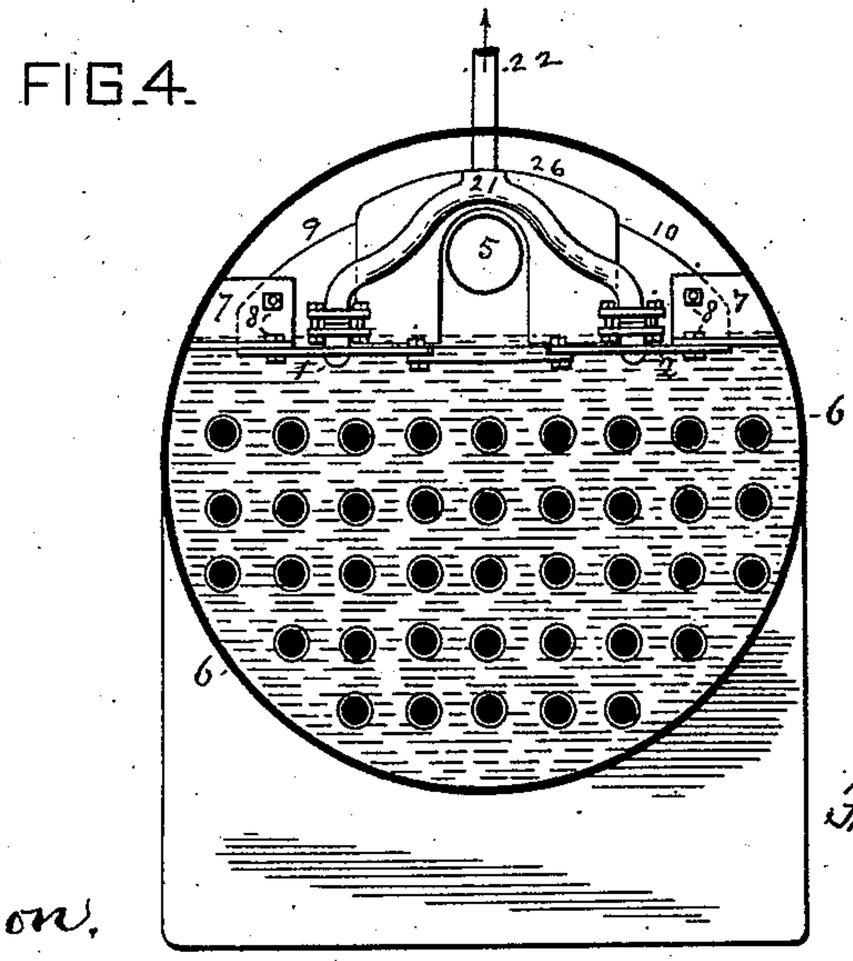


FIG. 4.



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UNITED STATES PATENT OFFICE.

FRANK W. HORNISH, OF MATTOON, ILLINOIS, ASSIGNOR TO THE MECHANICAL BOILER CLEANER AND MANUFACTURING COMPANY, OF SAME PLACE.

BOILER-CLEANER SKIMMER.

SPECIFICATION forming part of Letters Patent No. 539,272, dated May 14, 1895.

Application filed July 21, 1890. Serial No. 359,449. (No model.)

To all whom it may concern:

Be it known that I, FRANK W. HORNISH, a citizen of the United States, residing at Mattoon, in the county of Coles and State of Illinois, have invented certain new and useful Improvements in Boiler-Cleaner Skimmers; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

Figure 1 is a front elevation of my improved boiler-skimmer. Fig. 2 represents a plan view thereof. Fig. 3 is a vertical section taken through the line *a b*, Fig. 1. Fig. 4 represents a transverse vertical section through a locomotive-boiler, showing my improved skimmer in place.

The object of my improvements is to provide an effective surface skimmer for steam boilers, provided with a longitudinal dry pipe or superheater. It may be said to apply, more particularly, to locomotive boilers, as that type of boiler has, almost universally, such a dry pipe. The practical problem in providing boilers of such class with a surface skimmer, is to present a skimmer and draw-off which shall extend transversely across the boiler from shell to shell, circumvent the dry pipe, and yet preserve a substantially unbroken draw-off the entire distance, except where it is obstructed by the dry pipe.

With these objects in view my invention consists of a double skimmer having double converging back walls, double scum-plates, an intermediate removable scum plate, double draw-offs and a yoke uniting them in a common draw-off pipe, together with other minor details of construction hereinafter referred to.

The construction of these parts will first be fully described in detail, and the construction and combination believed to be novel then set forth in the claims.

1 and 2 represent the double scum plate.

3 is the intermediate removable scum plate, making the plates 1, 2 and 3 practically one continuous plate.

4 are bolts which secure plate 3 to plates 1 and 2, whereby it may be unbolted to allow the skimmer to be placed upon the dry-pipe 5.

6 represents the steam boiler.

7 are the adjustable wings or extensions upon the skimmer which enables it to set out closely against the shell of the boiler.

8 are the bolt holes and bolts by means of which the wings 7 are adjusted and secured.

9 and 10 are the converging or V-shaped back walls which may be cast in one piece with the skimmer plates 1 and 2. These back walls or deflecting plates may be cast integrally with a yoke or saddle, (the dry pipe being received into the skimmer through the removable scum plate 3) or the saddle may be made removable as shown in connection with the double back walls, as desired.

11 and 12 are the eduction or draw-off openings in the skimmer plates flush with the surface thereof.

13 and 14 are castings formed on the under side of the scum plates 1 and 2 which contain return bend passages leading from the openings 11 and 12, near the deflecting back wall down below the plate, and thence forwardly or across the plate, and upwardly, where they register with the openings 15 and 16 with which the yoke pipe connects.

17 and 18 are bosses cast on the upper sides of the scum plates 1 and 2, from which oppositely disposed slotted flanges 19 and 20 extend. These bosses and flanges are integral with the skimmer, and project a sufficient distance above the plate, to enable bolt-heads to be slipped in the slots under the flanges.

21 is the yoke pipe or Y-connection formed as clearly shown, which straddles or spans the dry pipe, where it connects with a single eduction pipe 22, and then branches to either side.

23 are bosses on the ends of the yoke 21 corresponding to those on the skimmer plate, and 24, are flanges similar to those carried also by the skimmer.

25 are the bolts which take into the flanges of the skimmer and yoke, and, by means of intervening gaskets or other packing, make a tight joint.

22 is the eduction pipe leading from the yoke out through the boiler shell.

I do not wish it understood that I confine the use of this skimmer to any particular

class of boiler cleaner connections, or any particular settling drum, blow-off, or other devices usually employed with steam boilers.

While I design the skimmer for use upon locomotive boilers, particularly, it may, wherever found applicable, be applied to both stationary and marine boilers.

The draw-off action through the eduction pipe causes all water and sediment upon the skimmer plate to be drawn down through the return bend opening and out through the pipe to any settling drum which may be employed.

The action of the skimmer is as efficient when there is but a film of water on the skimmer plate, as when there are several inches. No matter how much water is upon the plate the device will take off the surface scum, for the reason that a vortex or whirlpool action is formed just above the eduction openings, which, with gradually and surely increasing momentum, draws all sediment thereto down through the vortex and out through the eduction pipe.

26 is the removable yoke or saddle piece arranged to straddle the dry pipe or superheater, and preferably overlaps upon the back-walls 9 and 10, and is adjustably bolted thereon by means of bolts 28 and slots 27. This removable feature of the saddle enables the skimmer to be set within the boiler (where the space to work in is very limited) with more facility and dispatch.

This invention is an improvement upon Patents Nos. 370,060 and 426,019, heretofore granted to me.

What I claim, and desire to secure by Letters Patent, is—

1. A double skimmer plate having double draw-offs provided with an intermediate removable skimmer plate.

2. A boiler cleaner consisting of a double skimmer plate, a double converging deflecting back wall a removable back wall section uniting said double back wall, having an opening for the dry pipe, and an eduction opening flush with the skimmer-plate at the apex of each back wall, and opening downwardly.

3. A boiler cleaner having a double skimmer plate, a double converging back wall, a saddle forming a continuation of the back wall, and a removable intermediate skimmer plate.

4. The combination of a double skimmer plate, an intermediate section forming a continuation thereof, a return bend channel on each side of the cleaner flush with the plate and opening downwardly and then upwardly through the plate, and a yoke or Y-pipe connecting the return bend channels.

5. The combination of a double skimmer plate, a double converging back wall, a saddle forming a continuation of the back wall, an intermediate removable section of the skimmer plate, a return bend channel on each side of the cleaner flush with the plate, opening downwardly and then upwardly through the plate, and a yoke or Y-pipe connecting the return bend channels.

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

FRANK W. HORNISH.

Witnesses:

WILLIAM B. DUNLAP,

RUSSELL S. CLARK.