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G. H. PEARSON.

APPARATUS FOR FACILITATING THE REMOVAL OF DEPOSIT IN LOCOMOTIVE BOILERS.

APPLICATION FILED SEPT. 24, 1906.

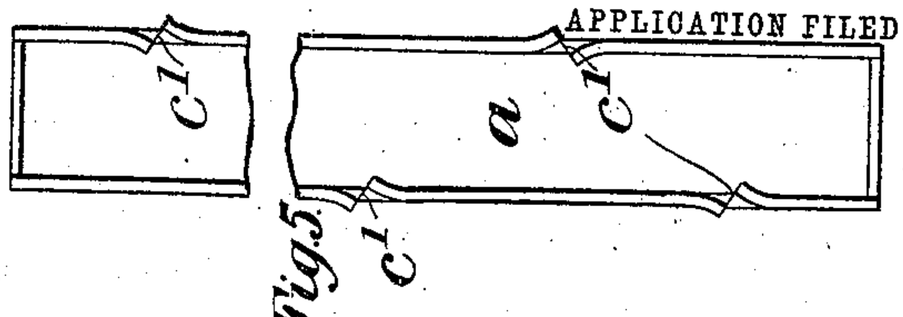

Fig. 5.

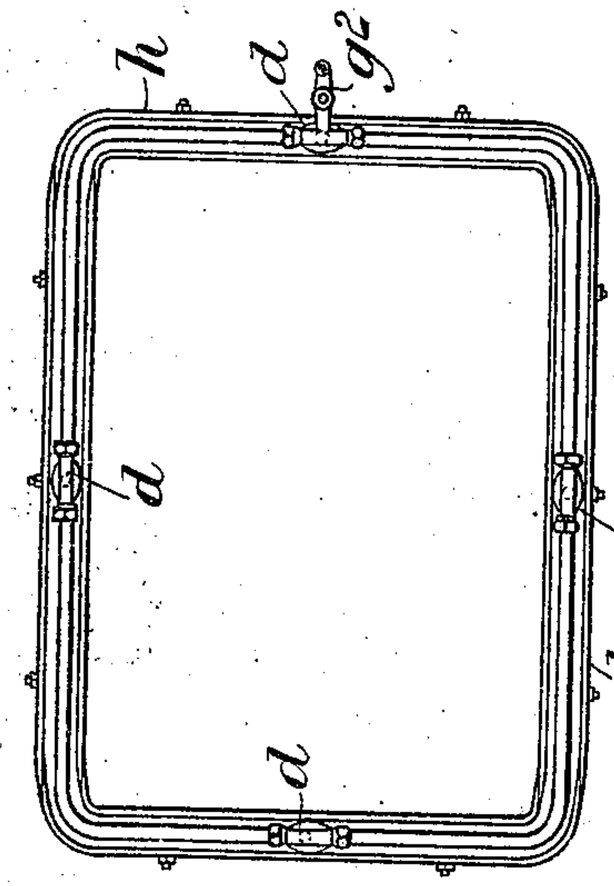

Fig. 3.

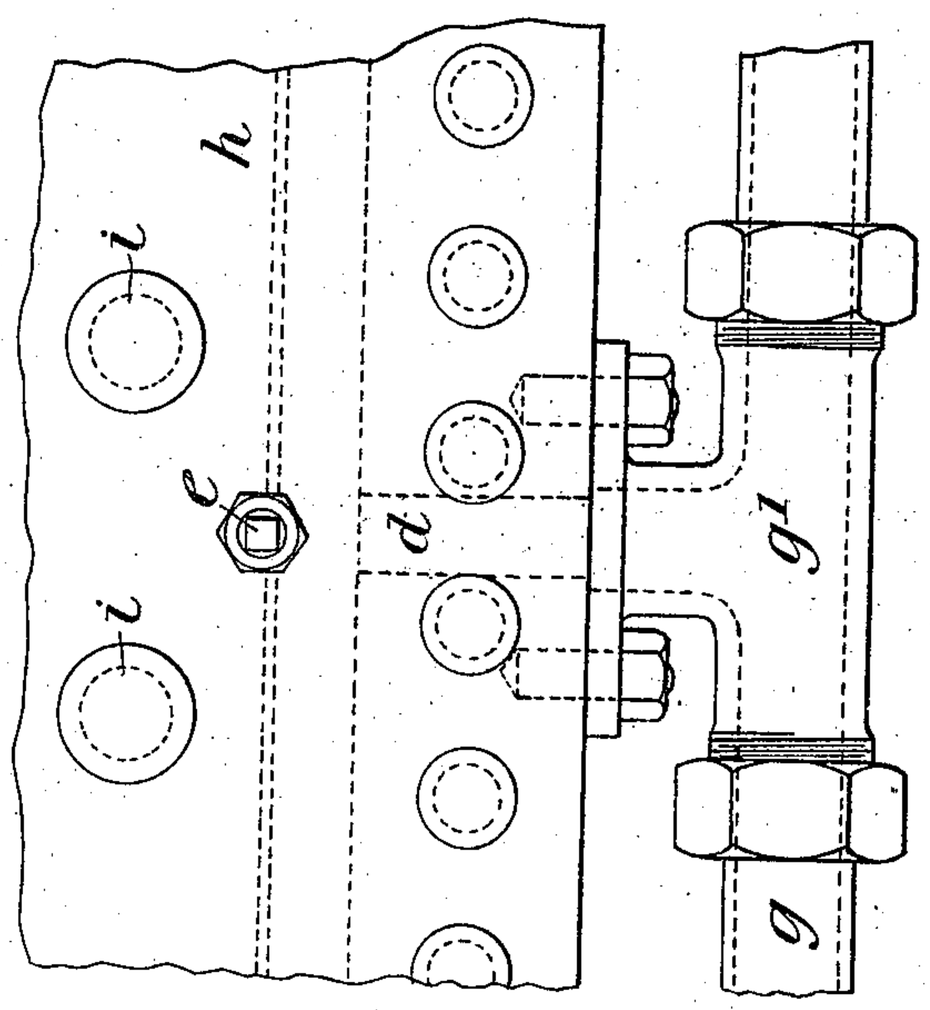

Fig. 4.

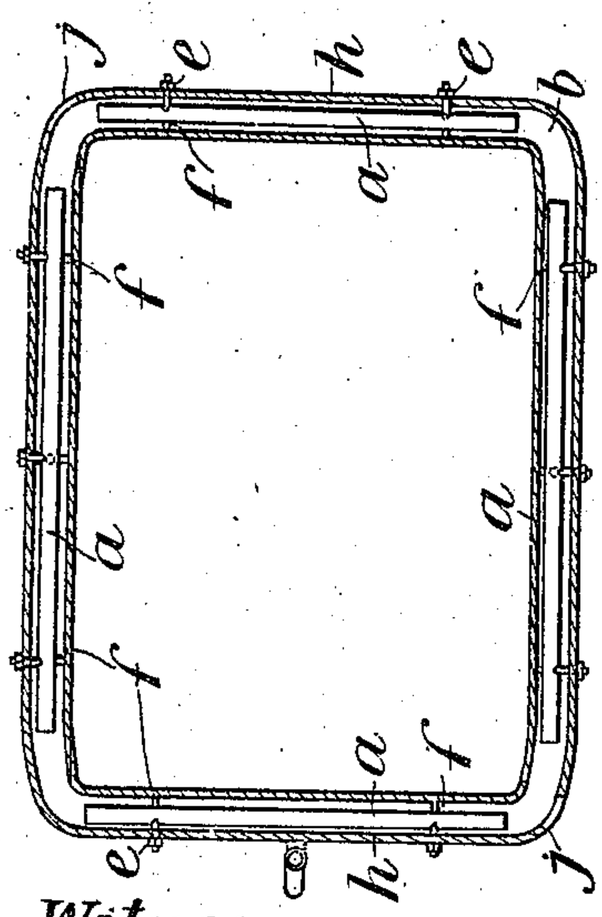

Fig. 1.

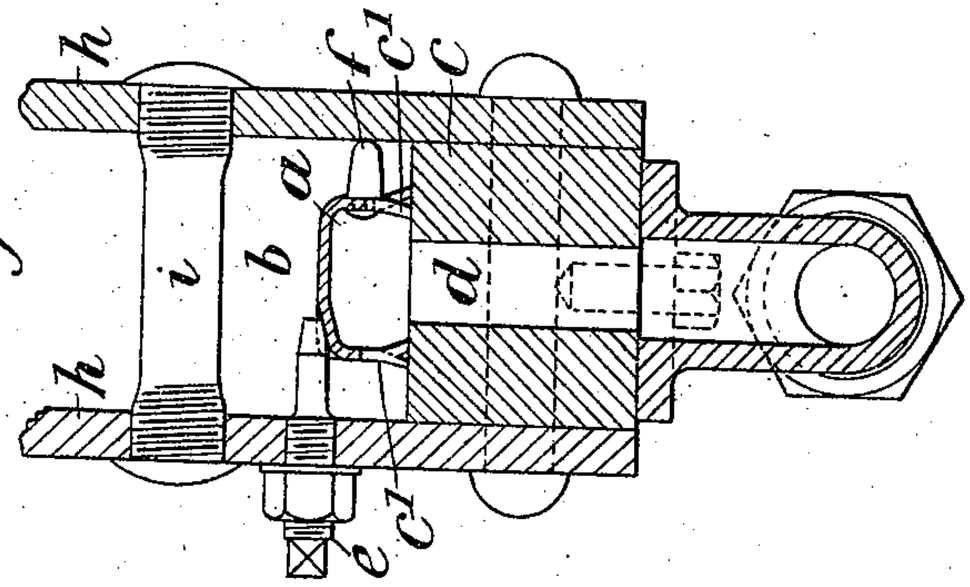

Fig. 2.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR FACILITATING THE REMOVAL OF DEPOSIT IN LOCOMOTIVE-BOILERS.

No. 847,435. Specification of Letters Patent. Patented March 19, 1907.

Application filed September 24, 1906. Serial No. 336,055.

To all whom it may concern:

Be it known that I, GEOFFREY HOPE PEARSON, a subject of the King of Great Britain, residing at 3 Groundwell road, Swindon, Wiltshire, England, have invented new and useful Improvements in Apparatus for Facilitating the Removal of Deposit in Locomotive-Boilers, of which the following is a specification.

This invention relates to apparatus to be inserted in the water-spaces of the fire-box of a locomotive-type boiler for removing sediment from the same without having recourse to the necessity of frequent washing out.

As is well known, sediment from the water in locomotive-type boilers is deposited in the locality of the foundation-ring of the water-space of the fire-box.

I am aware that it is not new to fit an apparatus in the water-space of the fire-box of a locomotive-type boiler for the purpose of blowing off the sediment therein, such as perforated pipes, which substantially surround the fire-box and are secured in the water-space at a suitable distance from the mud-ring; but in such apparatus the fire-boxes of existing boilers have to be modified to a certain extent or the stays or foundation-ring removed in order that the same may be put into position.

The object of my invention is the construction of an apparatus which can be inserted in the water-spaces of locomotive-type boilers, especially existing ones, without removing any of the stays or the necessity of making any alteration beyond increasing the size of the mud-hole doors situated at the corners of the fire-box and providing a hole or holes in the foundation-ring, to which means are secured for blowing off.

To attain the object of my invention, I place a trough-shaped vessel, having closed ends, in the water-space, the open portion of the same resting on the foundation-ring of the fire-box. Apertures are formed in each of the side walls of the trough, so that when the sediment is being blown out through the aperture in the foundation-ring at a point near the center of the trough sediment will also be attracted from the farther portions of the water-space. The blow-off aperture is preferably situated in the center of the foundation-ring on each side of the water-spaces. The mud-hole-door apertures at the outside corners of the fire-box are enlarged sufficiently to allow of the apparatus being readily slid endwise into the water-space.

The accompanying drawings illustrate means suitable for carrying out my invention, Figure 1, a sectional plan of the fire-box of a locomotive-type boiler, showing the arrangements of the inverted-trough-shaped receptacles in the water-spaces; Fig. 2, section through the foundation-ring of fire-box and inverted-trough-shaped receptacle; Fig. 3, inverted plan of fire-box, showing the connections to each aperture in the foundation-ring in each of the side water-spaces; Fig. 4, elevation of a portion of the fire-box, showing the connection to the aperture in the foundation-ring; Fig. 5, plan of open portion of trough-shaped receptacle, shown with a portion broken off.

In this construction of my invention I place a trough-shaped vessel *a*, having closed ends, in the water-space *b*, the walls of the open portion of the same resting on the foundation-ring *c* of the water-space of the fire-box. The apparatus should be nearly the length of the water-space, the sides, resting on the foundation-ring, being cut vertically at *c'* or thereabout for a short distance, so as to admit of apertures being formed by turning one portion of the wall outward and one portion inward. A number of these apertures are formed in the side walls of the trough *a*, so as to admit of the sediment being withdrawn from the farther points of the water-space.

I may in some instances increase the area of the apertures as they recede from the draw-off aperture, the increased area being formed by increasing the length of the vertical cut in the wall of the apparatus, so admitting of easily bending the side wall to a further extent.

The total area of the apertures *c'* should be slightly less than the area of the blow-off hole *d* in the foundation-ring *c*, so as to insure as far as possible that the whole of the sediment in the space covered by the inverted trough *a* shall be blown out. This would then enable the sediment on the foundation-ring *c*, surrounding the exterior of the inverted trough *a*, being attracted through the aperture thereon and blown out.

The apertures c' in the walls of the apparatus on each side of the blow-off point d are formed in such a manner as to point toward the same.

The cross-section of the apparatus can be of any section, but preferably spread out at the base.

The apparatus is preferably constructed so that when placed in the water-space it can be retained in the proper position by set-bolts e, screwed in from the side of the fire-box h and bearing near the top side of the apparatus. The side portions of the walls of the trough are provided with means, such as a rivet f, which abuts against the side of the fire-box.

The blow-off pipe g passes around under the foundation-ring and is provided with T-pieces g', by which connection is made to the aperture d in each side of the fire-box foundation-ring. The pipe g is provided with a valve g^2 for blowing-off purposes.

By this method of construction I am enabled to keep the bottom row of stays i close to the foundation-ring and still be able to readily remove the trough apparatus for removing hard scale.

The mud-hole-door apertures j at the outside corners are enlarged sufficiently to allow of the inverted-trough-shaped receptacle being readily slid endwise into the water-space. It will be seen that the mud-hole-door apertures are arranged at cross-corners, which, it will be obvious, is sufficient to allow two of the inverted troughs being slid into their position in the water-space.

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. A device of the kind described comprising an inverted-trough-shaped receptacle having its ends closed and having its side walls provided with apertures, substantially as described.

2. A device of the kind described comprising an inverted-trough-shaped receptacle having its side walls provided with series of vertical slits, said walls being bent adjacent to said slits to form apertures therein, substantially as described.

3. A device of the kind described comprising an inverted-trough-shaped receptacle having its side walls provided with series of vertical slits, said walls being bent adjacent to said slits to form inlet-ports all of said ports being directed toward a point midway between the ends of said trough-shaped receptacle, substantially as described.

4. The combination with a fire-box having a water-space provided with a foundation-ring, of inverted-trough-shaped receptacles resting upon said foundation-ring, and provided with apertures in the sides thereof, projecting portions on one side of said trough-shaped receptacle bearing against one wall of said water-space, set-screws in the other wall of said water-space for retaining said trough-shaped receptacle in position and means connected with said foundation-ring for blowing off sediment, substantially as described.

5. The combination with a fire-box having water-spaces provided with a foundation-ring, of inverted-trough-shaped receptacles resting directly on said foundation-ring, said receptacles having their ends closed and having their side walls provided with series of apertures, and blow-off means having ports directly under and midway between the ends of said receptacles, substantially as described.

6. The combination with a fire-box, having water-spaces provided with a foundation-ring, of inverted-trough-shaped receptacles resting on said foundation-ring, a blow-off port directly under each of said inverted receptacles, each of said receptacles having slits in the walls thereof and having its walls adjacent to said slits bent to form a series of inlet-ports, all of said ports being directed toward the blow-off port, substantially as described.

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