

W. D. RANDALL.
 DEVICE FOR CLEANING BOILER CROWN SHEETS.
 APPLICATION FILED JULY 11, 1910.

973,069.

Patented Oct. 18, 1910.

Fig. 1.

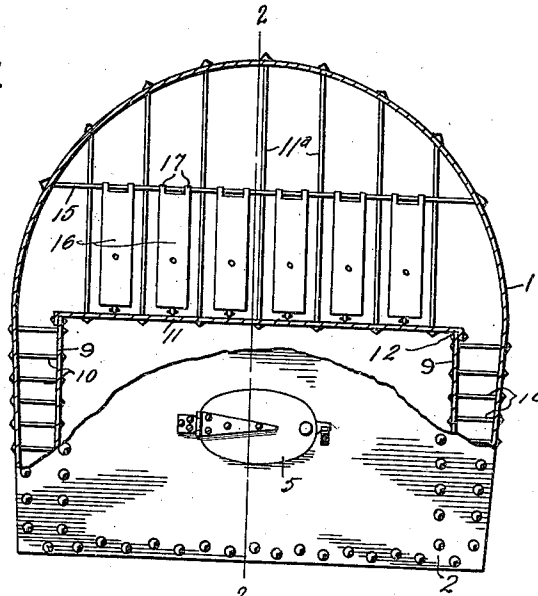


Fig. 2.

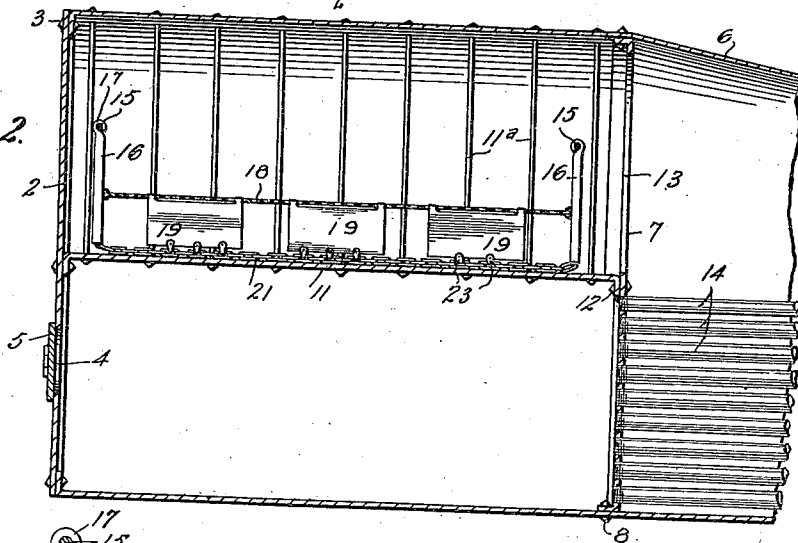


Fig. 3.

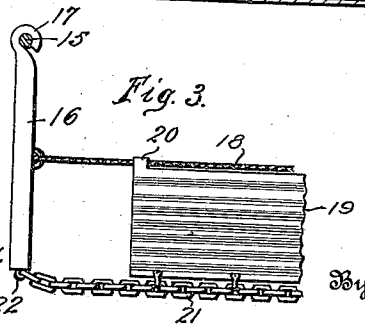
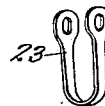


Fig. 4.



Witnesses
 J. S. Freeman.
 By *[Signature]*

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UNITED STATES PATENT OFFICE.

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DEVICE FOR CLEANING BOILER CROWN-SHEETS.

973,069.

Specification of Letters Patent.

Patented Oct. 18, 1910.

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To all whom it may concern:

Be it known that I, WILLIAM D. RANDALL, a citizen of the United States, residing at Monett, in the county of Barry and State of Missouri, have invented certain new and useful Improvements in Devices for Cleaning Boiler Crown-Sheets, of which the following is a specification.

My invention relates to means for removing the deposits or sediment from the crown-sheet of a steam boiler.

An important object of this invention is to provide a device of the above character, which is automatic in its operation and simple in construction.

Other objects and advantages of my invention will be apparent hereinafter.

In the accompanying drawing forming a part of this specification, and in which like numerals are employed to designate like parts throughout the same, Figure 1 is a rear end view of a steam boiler, parts thereof being broken away for showing the cleaning device, Fig. 2 is a longitudinal vertical section taken on line 2—2 of Fig. 1, Fig. 3 is an enlarged detail view of one end of the cleaning device, and Fig. 4 is a perspective view of a bracket employed to connect parts of the cleaning device.

In the drawings, wherein is illustrated a preferred embodiment of my invention, the numeral 1 designates the outer casing of the boiler, which is formed of sheet metal as is customary. The rear end of the outer casing is closed by a head or sheet 2, which is bolted to the outer casing 1, as shown at 3. The sheet 2 is provided with an opening 4, which is normally closed by means of a swinging door 5, as shown. The outer casing 1 tapers forwardly, as shown at 6. A tube-sheet 7 is disposed within the casing 1 adjacent its tapering portion, and said tube-sheet is bolted to the inner surface of the casing, as shown at 8. Disposed within the rear portion of the casing 1, are side sheets 9, spaced from the walls of said casing and connected therewith by means of stay-bolts 10. The sheets 9 are further suitably connected with the bottom of the outer casing 1 and the sheet 2. The side sheets 9 have a crown-sheet 11 bolted thereto, as shown at 12, and also bolted to the sheet 2 and the tube-sheet 7. This crown-sheet is connected with the casing 1 by means of stay-bolts 11^a. The side sheets 9, together with the crown-sheet 11, form a fire box, which is supplied

with fuel through the opening 4. The tube-sheet 7 has its upper portion provided with an opening 13 formed therethrough, for allowing the flow of water from the rear portion of the boiler casing to the forward portion thereof. The tube sheet 7 is provided in its lower portion, with tubes or flues 14, which have communication with the fire box. As no claim is made to the structure of the steam boiler, *per se*, no further description of the same will be given.

In providing means for removing deposits or sediment from the upper side of the crown-sheet 11, spaced horizontal rods 15 are employed, which are connected with the outer casing 1, as shown. The rods 15 are arranged above and spaced from the crown-sheet 11, and form supports for said removing means.

The means or apparatus for removing the sediments or deposits from the crown-sheet, comprises a plurality of swinging weights 16, each of which is provided at its upper end, with hook members 17, having pivotal connections with the rod 15. There are two transverse rows of these swinging weights, and each weight in one row is connected with a corresponding weight in the other row, by means of a longitudinally disposed flexible member or chain 18. Each of the chains 18 has a plurality of laterally swinging plates 19, pivotally connected therewith, as shown at 20. The plates 19 may preferably be formed of corrugated cast iron, as shown in Fig. 3. A relatively heavy chain 21 is suitably connected with the lower ends of the weights 16, as shown at 22. This chain is sufficiently slack to drag upon or engage the upper wall of the crown sheet 11. The chain 21 is connected with the lower edge of each of the plates 19, by means of U-shaped brackets 23, which are suitably connected with the plate. It is to be understood that there are a corresponding number of chains 21, and longitudinal pairs of swinging weights 16.

In the operation of the device, the weights 16 are oscillated by the currents of water in the boiler, whereby the chains 21 are moved longitudinally in slidable engagement with the crown-sheet 11. The lateral movement of the water in the boiler, causes the plates 19 to swing upon their pivot points, whereby the chains 21 are moved transversely of the crown-sheet. It is thus seen that the movements of the chains 21 are automatic and

in two directions, namely longitudinal and transverse.

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

5 1. In apparatus for removing deposits from a crown sheet of a steam boiler, supports attachable to the boiler shell, members pivotally connected with said supports to
10 swing above said crown sheet, and a flexible member connecting said members and engaging said crown sheet.

15 2. In apparatus for removing deposits from a crown sheet of a steam boiler, supports attachable to the boiler shell, members pivotally connected with said supports to swing longitudinally of said crown sheet, a flexible member connecting said first named
20 members and engaging said crown sheet, and transversely swinging plates having connection with said flexible member.

3. In apparatus for removing deposits from a crown sheet of a steam boiler, supports attachable to the boiler shell, weights

pivotally connected with said supports to 25 swing above said crown sheet, a flexible member connecting said weights and engaging the crown sheet, a second flexible member connecting said weights, and transversely movable plates connected with the first and 30 second named flexible members.

4. In apparatus for removing deposits from a crown sheet, of a steam boiler, supports attachable to the boiler shell, weights pivotally connected with said supports to 35 swing above the crown sheet, a chain connecting said weights, and engaging the crown sheet, a flexible member connecting said weights, and plates pivotally connected with the flexible member and chain, to effect 40 a transverse movement of the latter.

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

WILLIAM D. RANDALL.

Witnesses:

E. P. RANDALL,
ROBERT JOHNSTON.