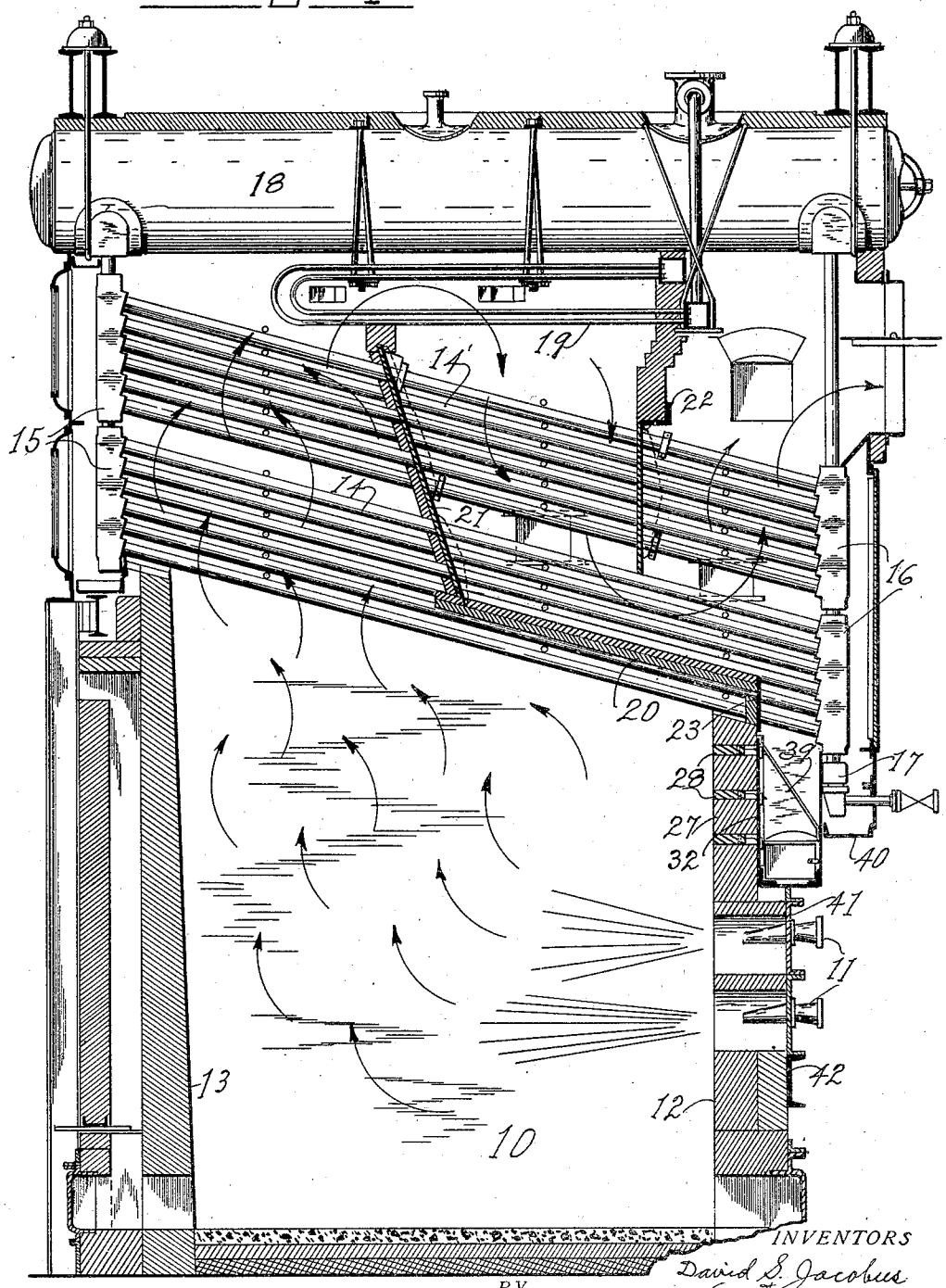
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SOOT POCKET FOR BOILERS

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Fig 1



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Fig 2

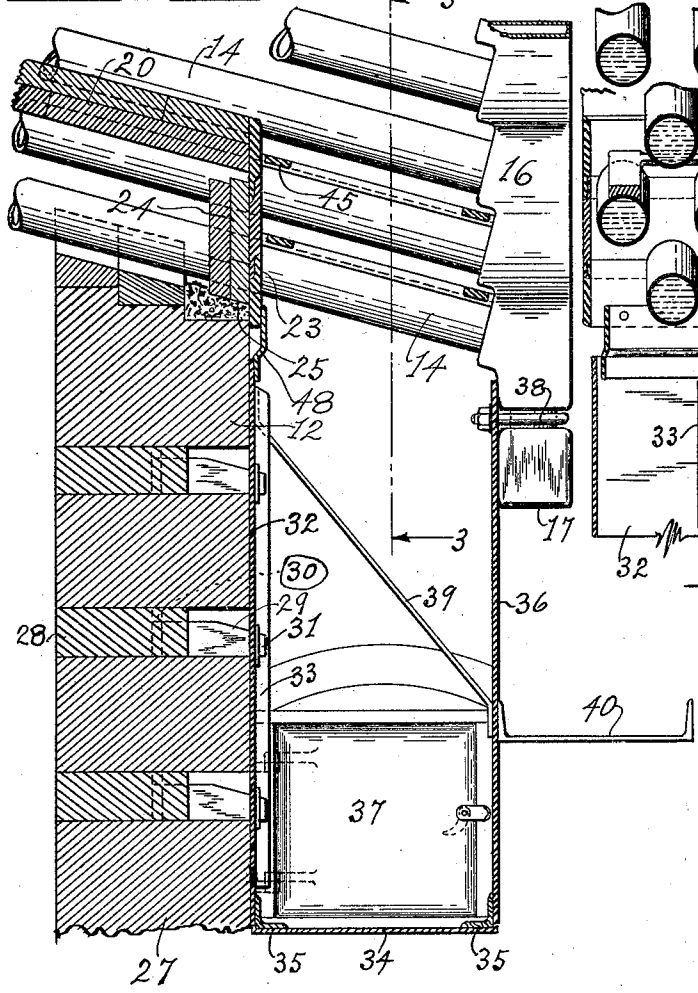


Fig 3

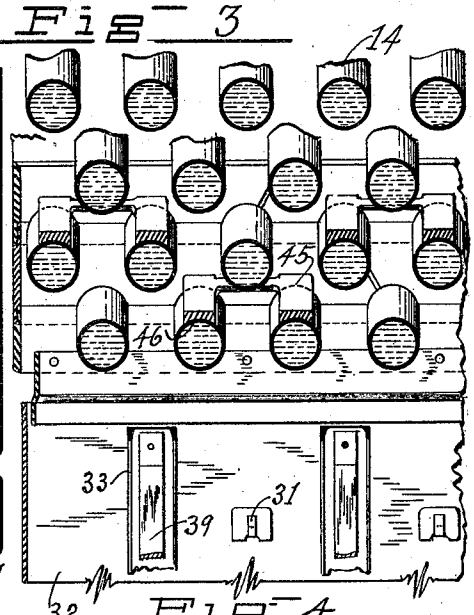


Fig 4

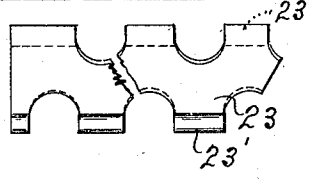
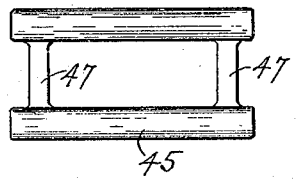


Fig 5



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UNITED STATES PATENT OFFICE

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SOOT POCKET FOR BOILERS

Application filed October 12, 1925, Serial No. 62,063. Renewed November 22, 1930.

This invention relates to a soot pocket installed to catch soot and dust that are separated from the gases in flowing through the settings in water tube boilers, and will be understood from the description in connection with the accompanying drawings, in which Fig. 1 is a longitudinal section through a Babcock & Wilcox type of boiler showing where the soot pocket is placed; Fig. 2 is a vertical section of an enlarged detail; Fig. 3 is a section along the line 3—3 of Fig. 2, and Figs. 4 and 5 are plan views of details.

In the drawings, reference character 10 indicates a furnace or fire box, in the front wall 12 of which are located burners 11 for powdered fuel or the like, the rear wall of the furnace being shown at 13. Banks of inclined tubes 14 and 14′ are located above the furnace and terminate in vertical headers 15 and 16, the header 16 being connected to a mud drum 17 at its lower side, and the headers 15 and 16 being connected to a steam and water drum 18 in the usual manner. A superheater 19 is shown located between the upper bank 14′ of tubes and the steam and water drum 18.

A longitudinal baffle 20 rests upon a row of tubes in the bank 14, and a transverse baffle 21 extends from near the upper end of the baffle 20 across the banks of tubes 14 and 14′. A transverse baffle 22 also extends across the bank of tubes 14′, and is located between the baffle 21 and the header 16. A vertical baffle formed of tile 23 and flame plates 24 (Fig. 2) faced with tile, extends from the upper edge of the wall 12 to the lower end of the baffle 20. This baffle rests upon luting material 25 on the upper edge of the wall 12, this luting material being compressible and serving to fill the space to avoid the collection of soot and dust between the top of the wall and the bottom of the baffle.

The upper part 27 of the wall 12 is recessed to provide a space for a soot box or pocket, and this portion of the wall is provided with bonding tile 28, to which are connected metallic holding members 29, these metallic members being connected to the tile by having ribs thereon which fit into grooves 30 in the tile in the well-known manner. The members 29 are provided with hooks 31 which project through slits in the metal plate 32 which serves to keep the part 27 of the wall in alignment. The plate 32 forms one side of the soot pocket or box and is reinforced with vertically extending channels 33. The bottom 34 of the soot box may be connected by angle irons 35 to the sides 32 and 36 of the box, and the box is provided on one side near its lower end with the door 37. The side 36 of the soot box may be connected by means of U-bolts 38 to the nipples which connect the header 16 to the mud drum 17, there being a sliding joint between the side 36 and the mud drum 17 to allow for expansion. Angle braces 39 are placed in the soot box to hold the plate 32 in vertical alignment, the entire construction being also braced by means of the channel iron 40.

The burners 11 are mounted in a metal plate 41 (Fig. 1), upon the upper edge of which the soot box rests, and a channel iron 42 may be used for supporting the plate 41.

A spacer 45 (Fig. 5) is used to prevent the baffle 23 from sliding along the tubes 14, as most clearly shown in Fig. 2. The long portions of the spacer 45 are provided with rounded sides to rest upon the tubes 14, and these long portions are joined by cross pieces 47.

In order to permit expansion and contraction of the tubes 14 relative to the wall 12 and to permit the boiler to expand downward and the wall 12 to expand upward, a small space is left between the upper edge of the wall 12 and the bottom row of tubes 14, the space being made gas-tight by the flame plates 24, and luting material 25. The baffle between the upper edge of wall 12 and the lower end of baffle 20 comprises tile 23, as shown in Fig. 4 with rabbeted edges as shown at 23′ and 23″, so that these edges will fit together when the tile are assembled in a straight wall. The lower edge of the lowest tile 23 forms a sliding joint with the offset portion 48 of the plate 32, thus permitting relative movement in a vertical plane. The side 36 of the soot box may be provided with holes elongated in a vertical direction, through which the U-

bolts 38 pass, thus permitting the header 16 to move vertically in relation to the wall 36, due to expansion and contraction.

We claim:

1. In combination, a water tube boiler having inclined tubes connected to a header at one end, a furnace having a wall spaced inwardly from said header, whereby a length of tubes is situated between the wall and the header, means providing gas passes across said tubes with the lower end of one pass including said length of tubes, a soot box disposed beneath said length, and a gas tight expansion joint between the parts of the boundary wall of said socket.

2. In a water tube boiler, inclined tubes connected to headers, a mud drum beneath one of said headers, means providing gas passes across said tubes, and a soot pocket located beneath the lower ends of said tubes in proximity to said mud drum and having a sliding connection therewith.

3. In a water tube boiler, inclined tubes connected to headers, means providing gas passes across said tubes, a metallic soot pocket located beneath the lower ends of said tubes, said soot pocket being substantially air-tight, and a sliding joint between said soot pocket and boiler parts.

4. In a water tube boiler, inclined tubes connected to headers, means providing gas passes across said tubes, a soot pocket located beneath the lower ends of said tubes, and sliding means to permit relative movement between each side of said soot pocket and boiler parts.

5. In a water tube boiler, inclined tubes connected to headers, means providing gas passes across said tubes, a soot pocket located beneath the lower ends of said tubes, and means comprising a substantially air-tight sliding joint to permit relative movement between said soot pocket and boiler.

6. In a water tube boiler, inclined tubes connected to headers, a mud drum beneath one of said headers, means providing gas passes across said tubes, and a soot pocket located beneath the lower ends of said tubes in promixity to said mud drum and having a sliding connection with said drum.

7. In a water tube boiler, inclined tubes having a header connected thereto at one end, a furnace wall spaced inwardly from said header whereby a length of tubes is situated between the wall and the header, a soot box disposed beneath said length of tubes and a gas-tight expansion joint between the upper portion of said wall and boiler parts.

8. In a water tube boiler, inclined tubes connected to headers, a mud drum beneath one of said headers, means providing gas passes across said tubes, and a soot pocket located beneath the lower ends of said tubes in proximity to said mud drum with its outer wall substantially in alignment with the inner wall of said mud drum and having a sliding connection therewith.

9. In a water tube boiler, inclined tubes each having one end thereof connected to a header, a wall below said tubes near the lower ends thereof, a soot pocket below said tubes at the rear of said wall, a baffle extending across some of said tubes, a sliding joint between one side of said soot pocket and said baffle, and a sliding joint between the other side of said soot pocket and said header.

10. In a water tube boiler, inclined tubes connected to headers, a wall below said tubes near the lower ends thereof, a soot pocket below said tubes at the rear of said wall, a baffle extending across some of said tubes, near one side of said pocket, and means between said baffle and headers to prevent said baffle from sliding downwardly along said tubes.

11. In a water tube boiler, inclined tubes, each having one end thereof connected to a header, a wall below said tubes near the lower ends thereof, a soot pocket below said tubes at the rear of said wall, a baffle extending across some of said tubes, and a sliding joint between one side of said soot pocket and said baffle.

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