March 29, 1932. H. B. BOWEN 1,851,544

MUD RING

Filed April 30, 1930 3 Sheets-Sheet 1

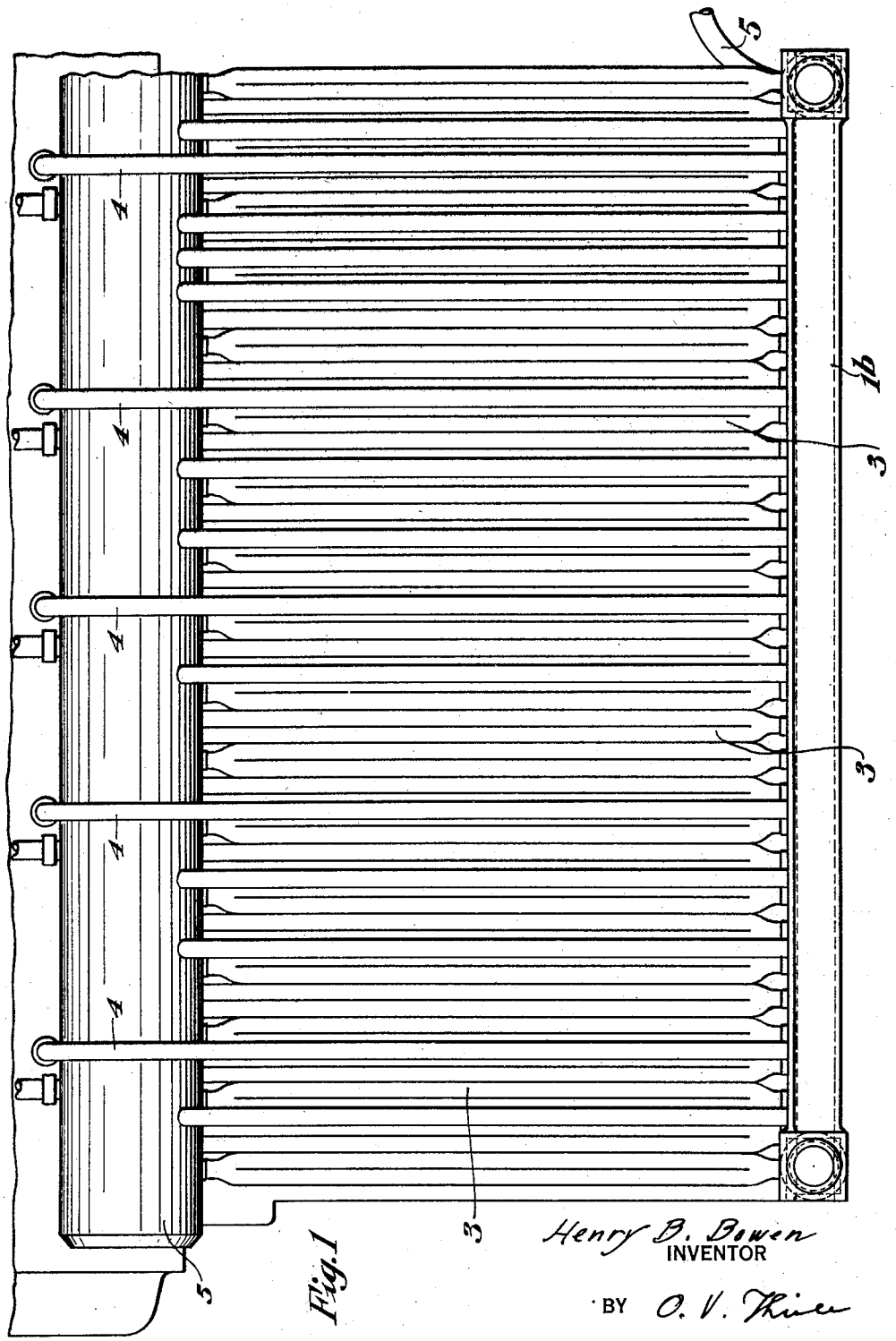

Fig. 1

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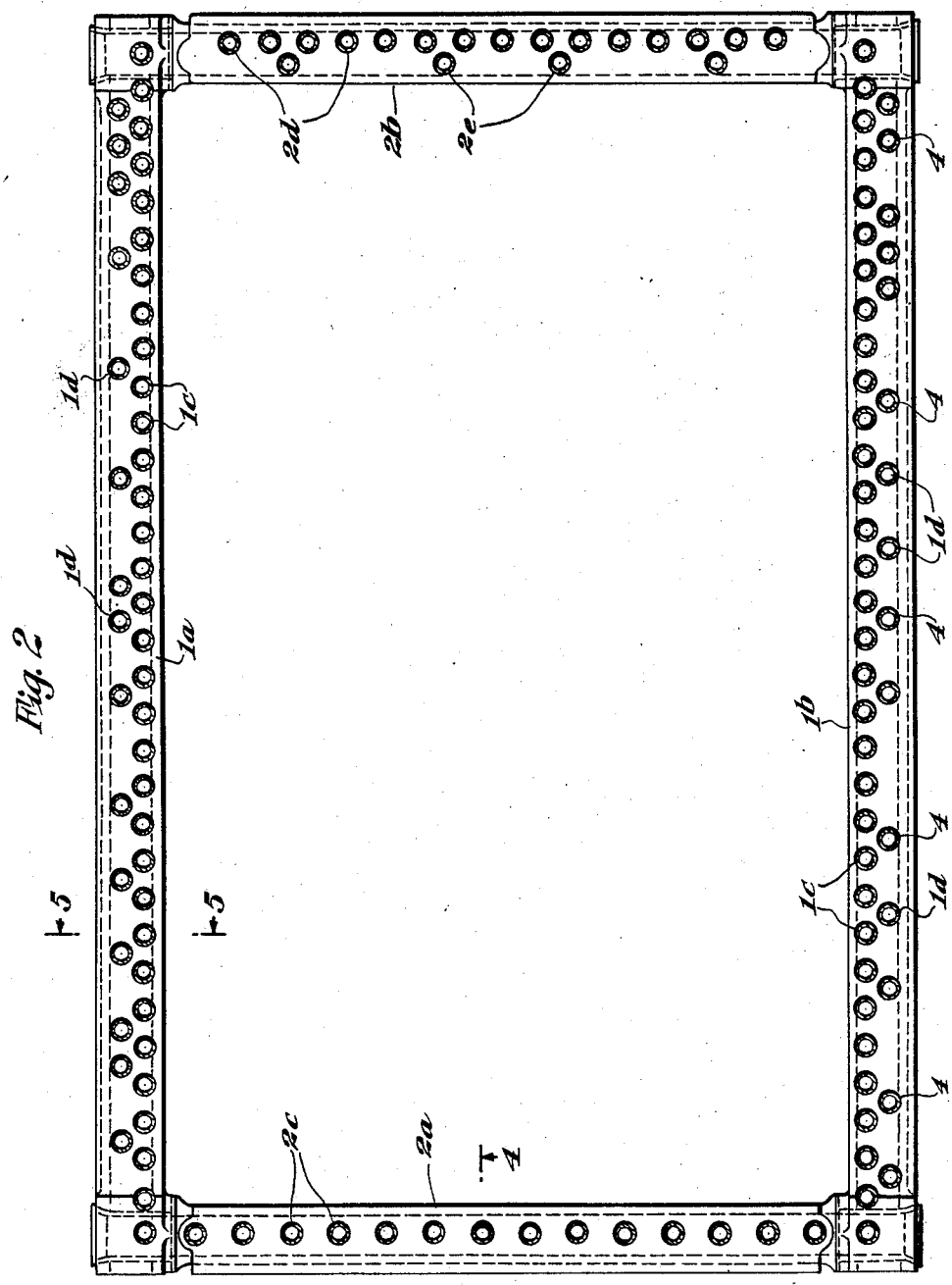

Fig. 2

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Fig. 3

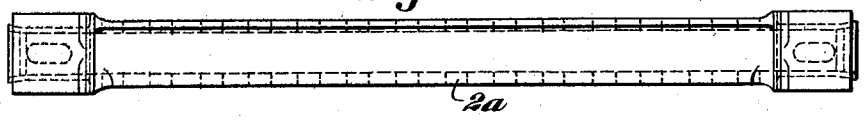


Fig. 4

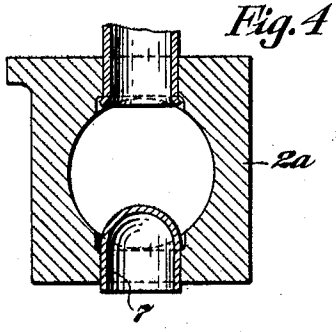


Fig. 5

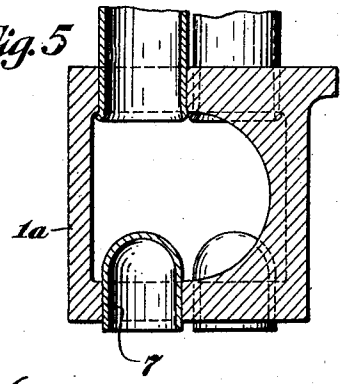


Fig. 6

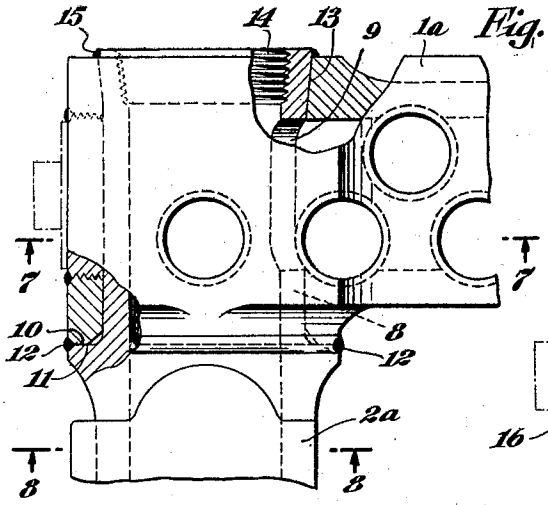
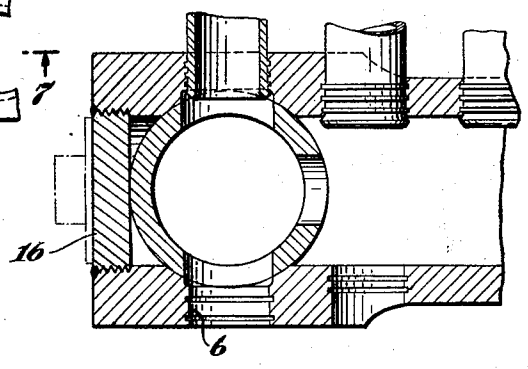


Fig. 7



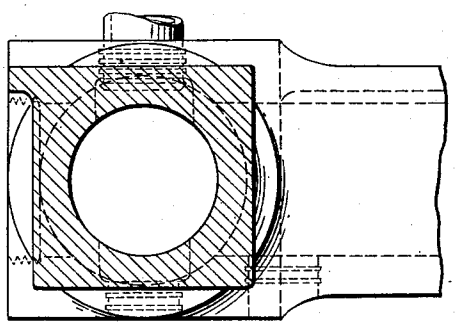


Fig. 8

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Patented Mar. 29, 1932 1,851,544

UNITED STATES PATENT OFFICE

HENRY B. BOWEN, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR TO THE SUPERHEATER COMPANY, OF NEW YORK, N. Y.

MUD RING

Application filed April 30, 1930. Serial No. 448,585.

The present invention relates to locomotive mud rings and more particularly to structures of this kind intended for use in connection with locomotive fire boxes comprising walls built up of vertical water tubes.

The object of the invention is to provide a mud ring of this type of an improved construction.

The invention is illustrated in the drawings accompanying this specification. In the drawings, Fig. 1 is a lateral elevation of the rear end of the locomotive boiler having a mud ring in accordance with my invention, portions being broken away; Fig. 2 is a plan view of my improved mud ring, no tubes being shown in place; Fig. 3 is an end elevation of the mud ring; Fig. 4 is a section on line 4—4 of Fig. 2; Fig. 5 is a section on line 5—5 of Fig. 2; Fig. 6 is a plan view of a corner of the mud ring showing some details, portions being broken out to illustrate others behind them; Fig. 7 is a sectional view on line 7—7 of Fig. 6, and Fig. 8 is a sectional view on line 8—8 of Fig. 6. Figs. 4 to 8 are on an enlarged scale as compared with the first three figures.

The mud ring, as will be seen clearly from an inspection of Fig. 2, is made up of four separate members. Two of these, 1*a* and 1*b*, run parallel to the longitudinal axis of the locomotive boiler, the other two, 2*a* and 2*b*, being disposed at right-angles to the former. The four members are rectangular in external outline and have extending through them a cylindrical cavity. This cavity in each case extends through the member from end to end. The upper surface of the members is provided with holes to receive the lower ends of the vertical water tubes. In the rear header 2*a*, for example, there is a line of holes 2*c*. Into these are expanded the lower ends of vertical tubes which form the back wall of the furnace. The lateral members 1*a* and 1*b* each have an inner row of openings 1*c* and a series of outer openings 1*d*. Into the openings 1*c* are expanded the lower ends of bifurcated tubular elements 3—3. These elements are in contact with each other and form a substantially continuous lateral wall on each side of the furnace. The openings 1*d*—1*d* receive the lower ends of the downcomer tubes 4—4. The upper ends of the bifurcated elements 3 open into two upper drums 5 (only one of which is shown, the other lying directly behind it). Water to the mud ring is supplied through the downcomers 4—4. The forward mud ring member 2*b* has a series of openings 2*d*—2*d* into which are expanded the lower ends of forwardly extending tubes 5 which form the bottom of a combustion chamber through which the gases pass after leaving the fire-box. The holes 2*e* in the member 2*b* are for the connection of arch tubes extending through the fire-box.

Access to the tubes which are expanded into the various openings referred to is provided by corresponding openings 6 in the opposite wall of the members 1*a*, 1*b*, 2*a* and 2*b*. These openings 6 are closed by the thimbles 7, expanded or rolled into them.

My invention relates, as indicated above, to the construction of the mud ring and this construction will now be described in more detail. Each of the members 2*a* and 2*b* has both of its ends turned down to a cylindrical shape as shown more clearly in Fig. 6. This figure, as well as the associated Figs. 7 and 8, shows one of the corners of the mud ring, the other corners being constructed in exactly corresponding fashion. The cylindrical portion is shown at 8 and it extends through a correspondingly shaped opening through the member 1*a*. The cylindrical portion 8 has formed through one of its sides an opening 9 putting the interior of the member 2*a* into communication with the interior of the member 1*a*. The member 1*a* has a plane surface 10 against which a shoulder 11 of the member 2*a* seats, the seat extending around the opening in member 1*a*. Along the line 12 forming the outer circumference of the seat the two members are welded together to make a tight joint. The outer end of the opening through member 1*a* is outwardly flared as at 13. The end 14 of the opening through the member 2*a* is interiorly threaded to receive a correspondingly threaded plug. This plug when pulled in with the proper amount of force expands the end of the member 2*a* against the sides of the cir-

cular opening in the member 1*a*. At 15 there is a circumferential weld of the circular end of member 2*a* to member 1*a* to make a tight joint. At 16 (Fig. 7) is shown the plug inserted into the end of the opening which extends into member 1*a*. Both the plug that closes the opening 14 and the plug 16 are welded in to insure tightness.

Each of the four corners is constructed like the one described and the resulting structure is a rigid and rugged mud ring. Access to its interior for various purposes can readily be had through the removal of the plugs or of the thimbles 7.

It will be obvious that certain modifications could be introduced in practicing the invention without departing from the spirit of this disclosure.

I claim:

A locomotive mud ring comprising four elongated members each having a longitudinal cavity extending from end to end, said members being arranged to form a rectangle and being joined to each other at the corners, one of the members meeting at each corner having a cylindrical perforation near its end intersecting its cavity the perforation being slightly flared at its outer side, the other member having its end correspondingly shaped and fitted snugly into said perforation and having a plug screwed into its end forcing the wall against the flared sides of the perforation, said second member having a square shoulder bearing against the correspondingly flattened side of the first member, the cylindrical end of the second member having a lateral opening placing the cavities of the two members into communication, the end of the first member being closed by a plug.

HENRY B. BOWEN.