

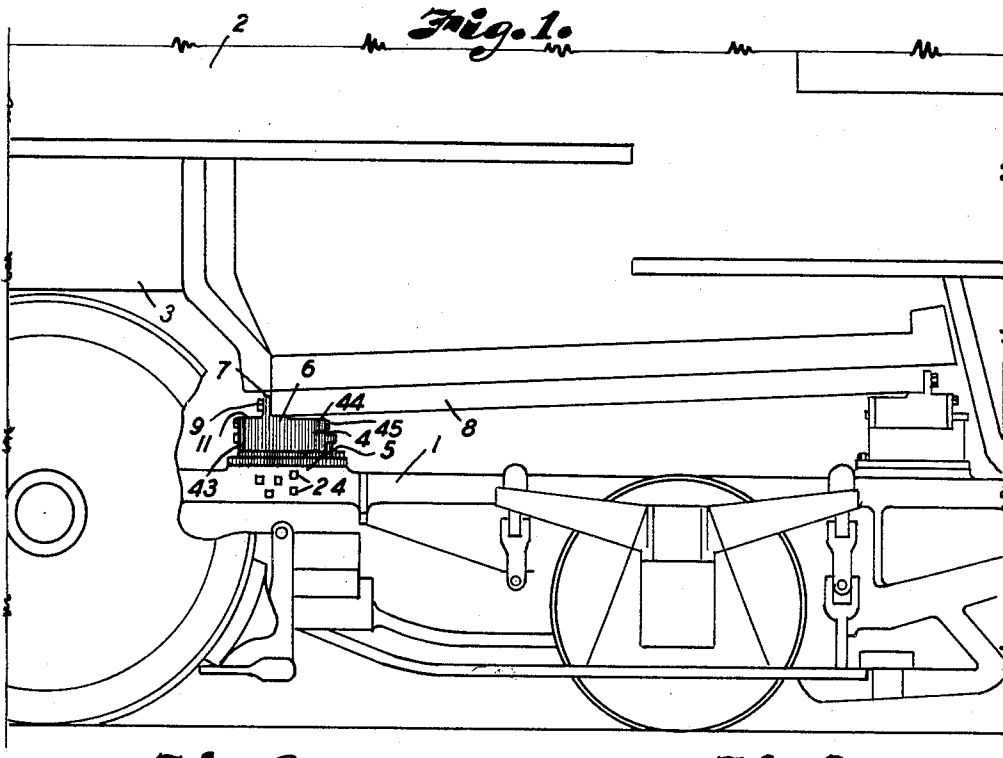
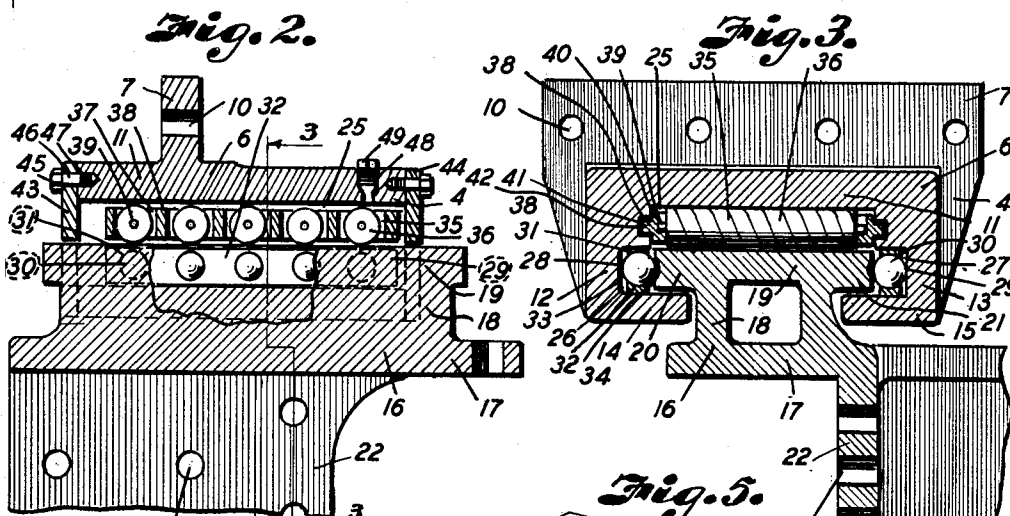
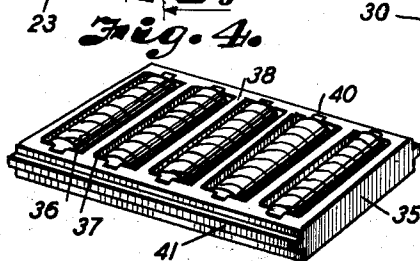
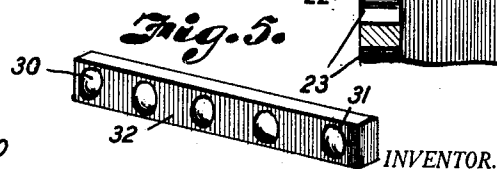
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H. V. STEVENS

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FURNACE BEARER

Filed May 5, 1930



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FURNACE BEARER

Application filed May 5, 1930. Serial No. 450,001.

This invention relates to furnace bearers, and more particularly to furnace bearers for locomotive boilers, the principal object of the invention being to provide a bearer which permits free expansion and contraction of the boiler on its supporting frame.

In the present construction of locomotive furnace bearers, channel-shaped castings are usually bolted to the four corners of the mud ring of the boiler and the castings have sliding support on T-shaped rail members supported on the locomotive frame, the channel castings having flanges engaging under the head flanges of the rail members to retain the boiler on the frame. It often happens that the furnace bearers on one side of the boiler, due to their sliding support and to inadequate lubrication or corrosion, do not permit free movement of that side of the boiler, while the furnace bearers on the other side, being well lubricated and free of corrosion, allow free movement, and expansion of the boiler distorts the fire box producing enormous strains on the boiler plates often resulting in disruption of the boiler stays and braces, and fracturing of the plates.

It also happens that in case all of the furnace bearers refuse to function, the expansion of the boiler continues until sufficient force is stored up to overcome the resistance of the furnace bearers, whereupon the boiler will move with sudden jerks producing enormous strains on the plates and tubes, and to prevent injury to the boiler it is the purpose of this invention to provide for free and easy rolling action of the furnace bearers.

In accomplishing this and other objects of the invention, I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawing, wherein:

Fig. 1 is a side elevational view of a locomotive equipped with furnace bearers constructed in accordance with my invention.

Fig. 2 is a longitudinal, sectional view through one of the furnace bearers, a part of the rail member being broken away to illustrate one of the side bearing sets.

Fig. 3 is a cross sectional view on the line 3-3, Fig. 2.

Fig. 4 is a perspective view of the horizontal bearing set.

Fig. 5 is a perspective view of one of the side bearing sets.

Referring more in detail to the drawing:

1 designates the frame of a locomotive on which is supported the locomotive boiler 2 including a fire box 3, the boiler having sliding support with relation to the frame for accommodating expansion and contraction incidental to operation of the boiler.

In the usual locomotive construction the fire box is supported at its corners on furnace bearers 4 as shown in Fig. 1, the bearers being supported on pads 5 formed on the frame 1.

The furnace bearers 4 embody my invention and comprise the usual channel-shaped upper castings 6 having vertically extending flanges 7 for securing the castings to the mud ring 8 of the boiler by bolts 9 extending through the openings 10 in the flanges and through aligning openings in the mud ring.

The channel-shaped castings 6 also include a horizontally positioned body plate 11 on which the fire box rests, and side flanges 12 and 13 terminating in inwardly projecting flanges 14 and 15 for engaging rail members 16 of the furnace bearers.

The rail members 16 include a base flange 17 for seating on the pads 5 and formed on the base flange is a web portion 18 carrying a horizontal plate 19 having projecting side edges 20 and 21 under which the flanges 14 and 15 engage.

Formed integrally with and extending downwardly from the base flange 17 is a plate 22 having openings 23 for receiving bolts 24 by which the rail members are secured to the frame 1.

In my improved bearers the side flanges 12 and 13 of the upper member 6 are of sufficient depth to provide a bearing receiving space 25 between the horizontal plates 11 and 19 of the members 6 and 16, respectively. The side flanges 12 and 13 are provided with longitudinal recesses 26 and 27 adjacent the side edges 20 and 21 of the horizontal plate 19 to receive side bearing sets 28 and 29 as best illustrated in Fig. 3.

The bearing sets 28 and 29 preferably com-

prise a plurality of ball bearings 30 retained in openings 31 formed in longitudinal bearing retaining bars 32 which have floating movement in the longitudinal recesses 26 and 27 to retain the ball bearings in spaced relation and in contact with the side walls 33 of the recesses and in longitudinal grooves 34 formed in the side faces of the horizontal plate 19.

Received in the bearing spaces 25 are bearing sets 35 for supporting the weight of the boiler, and each bearing set comprises a series of rollers 36 rotatably mounted in slots 37 formed in a horizontal bearing retaining plate 38, the roller bearings being provided with pintles 39 received in pockets 40 formed in the plate at the ends of the slots 37. The plate 39 is slidably received in the bearing space 25 and is supported in spaced relation with the plates 11 and 19 by longitudinal ribs 41 projecting from the retainer plate and received in grooves 42 formed in the channel member 6 as illustrated in Fig. 3.

The ends of the bearing space 25 and recesses 26 and 27 are closed by plates 43 and 44 secured to the ends of the member 6 by cap screws 45 extending through openings 46 in the plate and into threaded sockets 47 formed in the ends of the channel member as illustrated in Fig. 2.

The bearing sets 28, 29 and 35 are substantially shorter than the length of the channel members 5 to allow free movement of the rollers on the rail members 16, since the bearing sets roll on the rail members substantially half the distance that the channel members 6 move during expansion of the boiler.

In order to lubricate the bearing sets I provide the channel member 6 with an oil inlet port 48 through which oil or grease may be admitted to the bearings, the port being closed by a plug or other fitting designated 49.

In assembling the furnace bearers constructed as described, the rail members 16 are secured to the locomotive frame by the bolts 24, and the channel members 6 are secured to the mud ring 8 of the boiler by the bolts 9, the boiler of course being supported to space the members 5 and 16 for receiving the horizontal bearing sets 35 which are slid into the ends of the recesses 25. The side bearing sets 28 and 29 are then slid into the side grooves 26 and 27, after which the end plates 43 and 44 are applied to the channel member 6 for retaining the bearing sets and providing a substantially grease-tight joint between the channel member 6 and its rail member 16. The plug 49 is then removed and the bearings filled with a suitable lubricant.

From the foregoing it is apparent that a furnace bearer constructed in accordance with my invention will furnish free rolling support of the boiler on its frame so that the boiler is free to accommodate itself upon ex-

pansion and contraction, thereby eliminating the usual boiler hazards due to sticking furnace bearers.

What I claim and desire to secure by Letters Patent is:

1. In combination with a locomotive boiler and its supporting frame, a bearer for the boiler comprising a rail member fixed to the frame and having laterally extending side edges, a bracket member fixed to the boiler and having side flanges engaging under the side edges of the rail member to retain the boiler on the frame, a movable plate having tongue and groove engagement with the flanges on the bracket member, roller bearings carried by the plate and having rolling engagement with said members, a pair of movable plates received between said flanges and the rail member, and rolling members supported by said last named plates contacting said members to provide free movement of the boiler on its supporting frame.

2. In combination with a locomotive boiler and its supporting frame, a bearer for the boiler comprising a rail member fixed to the frame and having laterally extending side edges, a bracket member fixed to the boiler and having side flanges engaging under the side edges of the rail member to retain the boiler on the frame, a movable plate having tongue and groove engagement with the flanges of the bracket member, and roller bearings carried by the plate and having rolling engagement with said members.

3. In combination with a locomotive boiler and its supporting frame, a bearer for the boiler comprising a rail member and a bracket member, one of said members being fixed to the frame and the other to the boiler, means for slidably interlocking said members relatively to each other, a plate having tongue and groove engagement with one of the members, and roller bearings carried by the plate having rolling engagement with said members to provide free rolling movement of the boiler during expansion and contraction movements relative to the frame.

4. In combination with a locomotive boiler and its supporting frame, a bearer for the boiler comprising a rail member having flanges projecting laterally from its opposite side edges, a bearing set supported on the rail member, a bracket member straddling the rail member and having spaced flanges extending along its opposite sides for engaging the sides of the rail member and provided with inwardly extending portions for engaging under the flanges on the rail member to retain the bearing set on said rail member, and means securing one of said members to the boiler and the other member to the frame.

5. In combination with a locomotive boiler and its supporting frame, a bearer for the boiler comprising a rail member having

flanges projecting laterally from its opposite side edges, a bearing set supported on the rail member, a bracket member straddling the rail member and having spaced flanges extending along its opposite sides for engaging the sides of the rail member and provided with inwardly extending portions for engaging under the flanges on the rail member to retain the bearing set on said rail member, bearing sets between the respective flanges of said members, and means securing one of said members to the boiler and the other member to the frame.

In testimony whereof I affix my signature.

HENRY V. STEVENS.