May 24, 1932. F. PRINCE 1,859,464

FIXTURE FOR REBABBITTING LOCOMOTIVE CROSSHEADS

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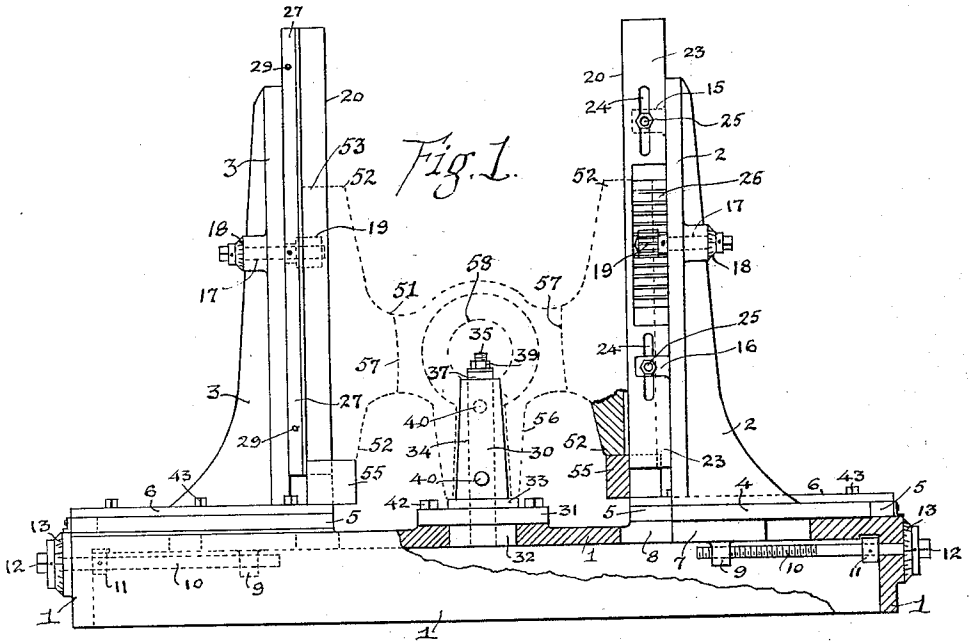


Fig. 1.

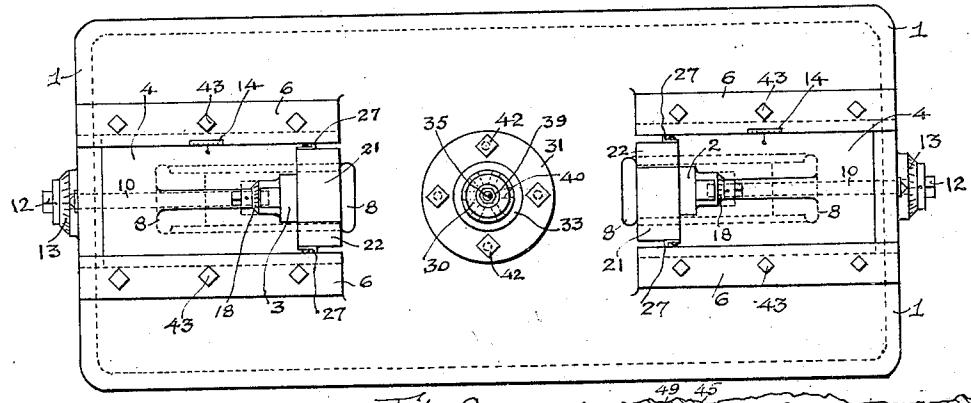


Fig. 2.

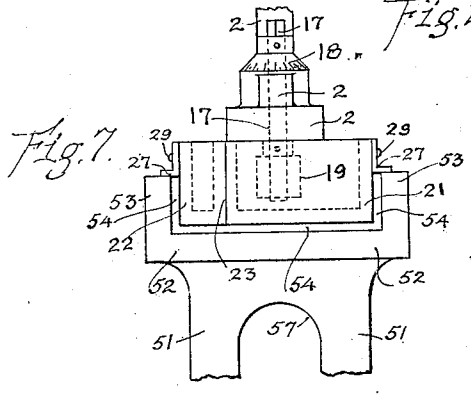


Fig. 7.

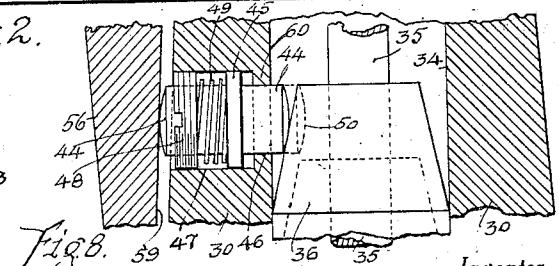


Fig. 8.

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May 24, 1932. F. PRINCE 1,859,464

FIXTURE FOR REBABBITTING LOCOMOTIVE CROSSHEADS

Filed Dec. 7, 1929 2 Sheets-Sheet 2

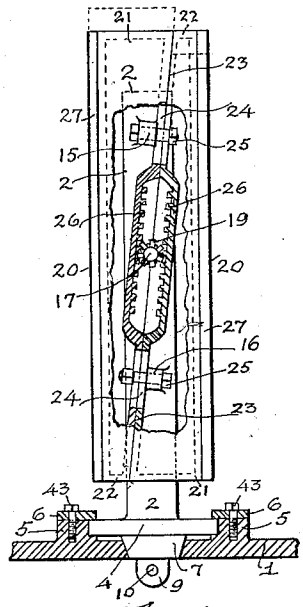


Fig. 3.

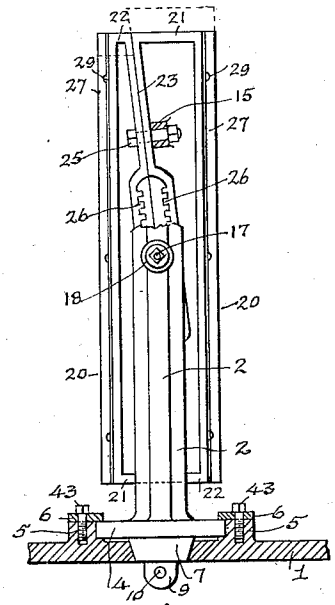


Fig. 4.

Fig. 5.

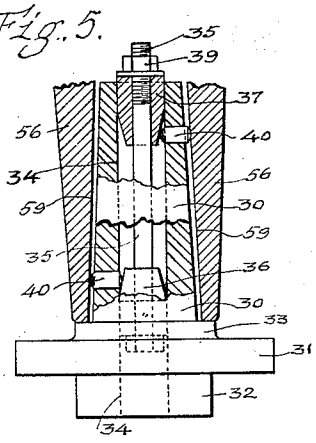
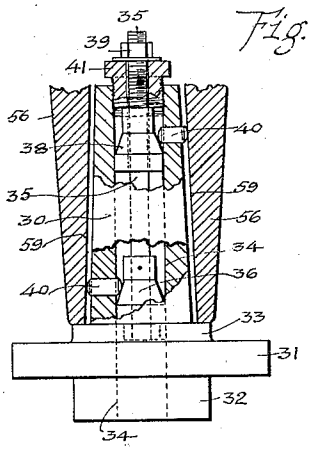


Fig. 6.



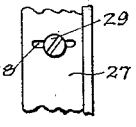


Fig. 9.

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UNITED STATES PATENT OFFICE

FRANK PRINCE, OF EAST GARY, INDIANA

FIXTURE FOR REBABBITTING LOCOMOTIVE CROSSHEADS

Application filed December 7, 1929. Serial No. 412,415.

My invention relates to improvements in fixture for rebabbitting locomotive cross-heads and it more especially consists of the features pointed out in the claims.

The purpose of the invention is to provide a self-contained fixture or jig for accurately and expeditiously rebabbitting worn cross-heads; that insures an absolute alignment of the babbitting with the center line of the piston rod of the locomotive; that is adjustable to varying width of cross-head shoes and varying distances the cross-head shoes are removed from the center line of the piston rod; that is adjustable to varying diameters, tapers, and lengths of piston rod openings in the cross-head; that insures by means of micrometers an accurate positioning of the cooperating parts in respect of the different sizes and shapes of cross-heads requiring babbitting; and that by means of a single adjustment meets the varying width of cross-head shoes always being lined up central with the piston rod center.

With these and other ends in view, I illustrate in the accompanying drawings such instances of adaption as will disclose the broad underlying features of the invention without limiting myself to the specific details shown thereon and described herein.

Figure 1 is a side elevation partly in section of my rebabbitting jig. A cross-head is shown in dotted lines.

Fig. 2 is a top plan view of Fig. 1.

Fig. 3 is a front elevation of one of the shoe positioning standards, partly in section with parts broken away.

Fig. 4 is a rear elevation of Fig. 3, partly in section, and the top portion of the standard broken away.

Fig. 5 is an elevation partly in section of the cross-head centering support.

Fig. 6 is an elevation similar to Fig. 5, showing a modified form of means for centering the piston rod opening of the cross-head on the jig.

Fig. 7 is an enlarged top plan view of a cross-head shoe in its relation to the adjustable means or limiting the flow of the babbitt.

Fig. 8 is an enlarged elevation in section of a modified centering pin.

Fig. 9 is a detached elevation of the fastening of the angle plates for limiting the flow of babbitt adjacent the side projections of the cross-head shoes.

In using my device for rebabbitting cross-heads, I may use whatever alternatives or equivalents of construction that the exigencies of varying conditions may demand without departing from the broad spirit of the invention.

My fixture or jig may comprise any desired form of base that may be cast hollow, as shown in Fig. 1. Raised bosses may be formed at three places on the upper face of the base to reduce the cost of machining. The two outside bosses and adjacent guideways, Fig. 5, define the position of the right hand standard 2 and the duplicate left-hand standard 3. These standards have extended feet 4 which are slidable between the guideways 5. They are held in position against vertical displacement by plates 6 which are secured to the guideways 5 by cap screws 43. On the under side of feet 4, the beveled projection 7 is formed. This engages a beveled opening 8 and it serves to hold the standards in alignment sidewise in respect of the piston rod opening of the cross-head. A boss 9 depends from the under side of the beveled portion 7.

The boss 9 is threaded and it receives the adjusting screw 10. A collar 11 pinned to the screw 10 on the inside of the base, as shown in Fig. 1, in connection with a micrometer dial 13 secured to the rod 10 on the outside of the base holds the rod against endwise movement. The rod 10 may have its outer end 12 squared, as shown, by means of which it can be turned. In addition to the micrometer a coarse scale 14 may be formed on one of the plates 6 as shown in Fig. 2. Any desired form of pointers may be used in connection with the scales 14 and micrometer discs 13 and 18. The scales 14 may indicate the distance away from the center cross-head support 30, that is, the standards 2 or 3 may be moved toward or from each other to whatever dimensions the cross-head which is to be rebabbitted may require—the same amount on each side of the center or a different amount for each one of the standards.

The babbitt is confined to the predetermined dimensions by means of smooth faced adjustable mold members 20 which are supported on the standards 2 and 3. These parts are made duplicates of each other having diagonal meeting walls 23, as shown in Figs. 3 and 4. They are held on the standards 2 and 3 by means of lugs 15 which are positioned on the vertical center of the standards 2 and 3. Slots 24 are found in the walls 23 and bolts 25 pass through the lugs 15 and the slots 24. They hold the parts 20 in engagement with each other and at the same time permit the parts to slide against each other in an endwise direction.

The lugs 15 are placed near the upper end of the standards and similar lugs 16 are placed near the lower end of the standards. The parts 20 may be moved uniformly to the same extent, one upward and one downward to vary their over all width while adjustment is made to the required width of the shoes of the cross-head that is to be rebabbitted. This is accomplished by separating the walls 23 as shown in Fig. 3, and forming teeth 26 on these walls facing each other. Adjusting pins 17 have bearing in the brackets 2 and 3. At the outer end they may be squared for the reception of an actuating key (not shown). At the other end of the pins 17, a toothed pinion 19 is secured. The teeth of this pinion mesh with the racks 26. Micrometer dials 18 secured to the pins 17, will indicate the over all width of the parts 20. It will be seen from Figs. 3 and 4 that the parts 20 are formed with a wide end 21, and a narrow end 22. These parts are positioned adjacent the cross-head shoes, as shown in Fig. 7.

In order that the babbitt may be confined to the open space 54, angles 27 may be secured on the outer faces of the parts 20. These angles may have slots 28 formed therein through which screws 29 pass, thus permitting adjustment edgewise of the angles to accommodate different dimensions of the side walls 53 of the cross-head shoes 52, as shown in Fig. 7. The babbitt is prevented from running out at the bottom of the shoes in any desired manner, as for instance, by notched blocks 55, or otherwise.

A cross-head 51 is supported on the conical pedestal 30, as shown in dotted lines in Fig. 1. This support has a flange 31 which rests on a central raised boss approximately midway between standards 2 and 3. It has a projection 32 which enters a hole in base 1. Cap screws 42 hold it in place. An annular raised shoulder 33 formed around the conical projection 30 constitutes a seat on which the boss 56 of the cross-head for the piston rod rests. The conical projection 30 has a hole 34 extending throughout its length, and through the flange 31 and projection 32. Radial pins 40, shown in Figs. 1 and 5, serve to automatically center the conical hole of the crosshead by moving all the pins radially until the difference in diameter between the conical hole of the cross-head and the conical projection 30 is spanned. There may be three or four of these pins in an upper and in a lower group.

All the pins of each group are simultaneously actuated by means of cones 36, 37, or 38. In Fig. 5, one form of adjustment is shown and in Fig. 6 a modified form. Referring to Fig. 5, the adjusting bolt 35 is secured by a pin or otherwise to a bottom cone 36 and is moved endwise by a nut 39 which is threaded on the bolt at its upper end. The lower end of the cross-head will be centered as soon as the lower group of pins 40 have come into engagement with the inner surface of the conical hole 59 of the cross-head boss 56 through the movement of the cone 36 in an upward direction. In the meantime the upper cone 37 will have engaged the upper group of pins 40 which in turn abut the inner face of the conical hole 59, thus quickly and accurately centering the entire cross-head in relation to the standards 2 and 3 and their adjustable parts 20.

The modified construction shown in Fig. 6 utilizes a lower cone similar to the one shown in Fig. 5. The upper cone 38 is made a part of a threaded portion 41. It may be moved endwise by reason of its threads independently of the bolt. The difference of the two forms of adjustment shown in Figs. 5 and 6 is that the cones in Fig. 5 oppose each other and in Fig. 6, they are made conical in the same direction.

Fig. 8 shows a modified form of cross-head centering means. In this, two diameter holes 46 and 47 are formed for each pin leaving an abutting wall 60. The outer end of the outer hole 47 is threaded to receive a ring nut 48. The centering pin 44 may be the same diameter at both ends and have an enlargement 45 which slides in the hole 47. A spring 49 is placed around the pin 44 between the enlargement 45 and the ring nut 48. This serves to always hold the pins 44 with the shoulder 45 in engagement with the wall 60 so as to leave the outer surface of the conical projection 30 free to receive the conical hole 59 of the cross-head excepting when the pins 44 are moved outward by a cone on the bolt 35. The position of the inner end of the pin 44 is shown by dotted lines 50. The bolt 35 is adjusted through the opening 58 provided for the connecting rod pin. The open space 57 within the cross-head affords clearance for this end of the connecting rod.

The operation of my device, as already stated, is exceedingly simple and accurately definite in all of its functions. The rebabbitting of cross-heads as previously done is an expensive procedure which does not secure any definite alignment of the parts. It

is usually done by having bars of different width and laying a bar of the required width on end supports so that it rests within the open space of the shoe allowing a clearance under it and on each side for the babbitt to flow.

Such a primitive expedient cannot secure the proper crosswise and lengthwise alignment of the babbitt in relation to the center line of the piston rod, which means that in most cases after both shoes of the cross-head have been similarly treated the entire cross-head must be mounted on a planer so as to have each one of the shoes machined to its required dimension. With my device all of these difficulties are overcome and I am enabled to rebabbitt cross-heads accurately without subsequent machining of any kind.

What I claim is:

1. In cross-head rebabbitting fixtures, a hollow flanged base, a removable center pedestal supported on the base and adapted to receive the piston rod opening of the cross-head, projecting standards movable towards and from each other on the base in alignment with the center of the pedestal, a pair of co-engaging wedge shaped members on each standard, means for adjusting the wedges of each pair simultaneously to varying widths as required by the width of the cross-head shoes, and means for holding the parts in position after adjustment to avoid accidental displacement.

2. In cross-head rebabbitting fixtures, a suitable hollow flanged base, a pedestal projecting upward from the base adapted to hold a cross-head in centered relation, space limiting means operable from within the hollow base and movable toward the shoes of the cross-head so as to leave a babbitt receiving space between such means and the inner faces of the cross-head shoes such spaces serving to receive and hold melted babbitt metal, a pair of co-engaging wedge shaped members on the space limiting means, means enclosed between each pair of members for simultaneously moving them in opposite directions and means for holding the parts in assembled relation.

3. A cross-head rebabbitting fixture, comprising a suitable hollow flanged base, a projection therefrom adapted to hold a cross-head in centered relation, adjustable means held adjacent the shoes of the cross-head such means being adapted to confine the babbitt on the cross-head to the desired dimensions, said means including a pair of co-engaging wedge shaped members positioned adjacent each cross-head shoe, and means for simultaneously moving the wedges in opposite directions while in engagement with each other.

4. Means for rebabbitting cross-head shoes, comprising an adjustable support for the cross-head entering the opening for the piston rod, a hollow flanged base, separate means independently adjustable on the base toward the cross-head shoes, a pair of co-engaging adjustable wedge shaped members on the latter means adapted to conform to the width of the shoes of the cross-head that is to be rebabbitted, and means for aligning all of the parts into actual working relation in respect of the center piston rod opening.

5. In a device of the character described a standard, a cross-head support positioned adjacent the standard, a pair of coacting wedges supported by the standard teeth formed on each wedge in spaced apart relation, a toothed gear for engaging the teeth, and means for holding the wedges in continuous engagement with each other within the sides of the shoe of the cross-head resting on said support, said wedges being adapted to limit the thickness and extent of the rebabbitting of the cross-head shoe.

In testimony whereof I affix my signature.

FRANK PRINCE.