Dec. 5, 1933. E. W. CARROLL 1,937,810

BEARING BUSHING PRESS

Filed July 21, 1930

Fig. 1.

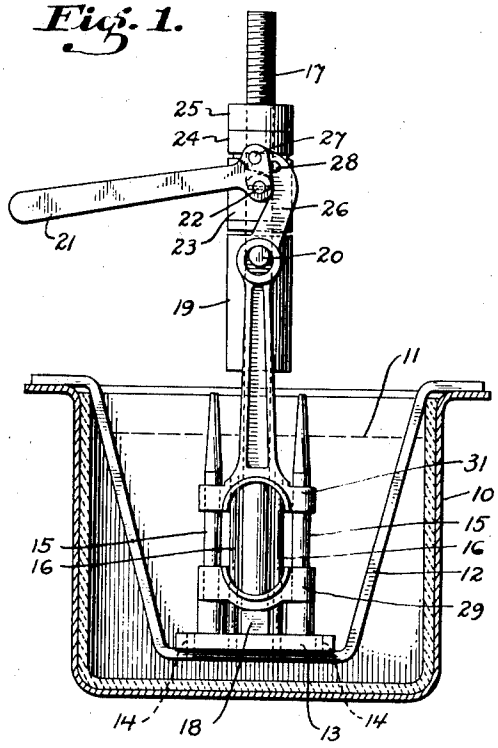


Fig. 2.

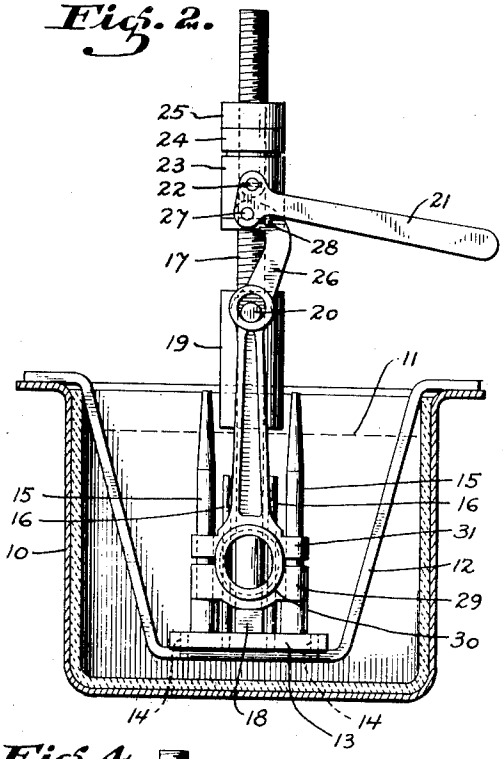


Fig. 3.

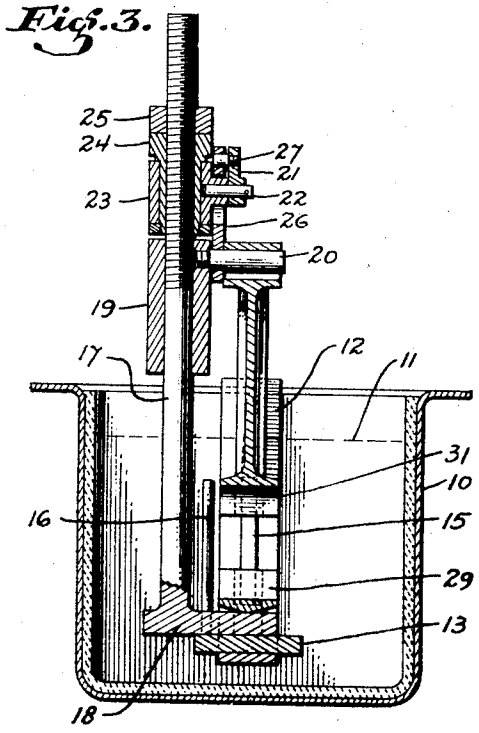
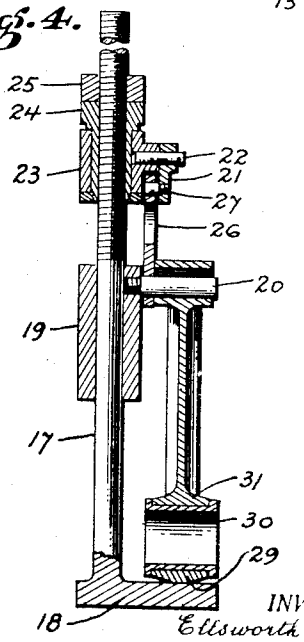


Fig. 4.



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BEARING BUSHING PRESS

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Application July 21, 1930. Serial No. 469,485

6 Claims. (Cl. 113—99)

This invention pertains to a bearing bushing press, and more particularly to a machine for pressing a pre-formed bearing liner into intimate contact with the two halves of a split bearing to which it is to be soldered, or pressed, in the manner set forth in co-pending application entitled Method of uniting or soldering, filed June 17, 1930, Serial No. 461,710.

It is the object of the present invention to provide a machine in which the two halves of a bearing may be accurately aligned with a preformed bushing positioned between them and then forced under high pressure toward each other, whereby close contact between the bushing and the bearing halves will be obtained.

A further object is the provision of such a machine that may be suitably operated and handled with the bushing and the parts of the bearing contacting it submerged in a bath of molten brazing, or soldering metal, and which is so constructed that the parts may be maintained in a compressed position while they are removed from the bath and submerged in another bath, or subjected to other handling necessary to the finishing of the product.

A better understanding of the invention may be had from the accompanying drawing and following specifications in which a preferred embodiment thereof is shown for the purpose of illustration, but not of limitation.

In this drawing:

Fig. 1 is a sectional view of a tin pot showing a bearing bushing press and a connecting rod bearing suspended therein, the press being in an open position,

Fig. 2 is a similar view with the press shown in a closed position and with the bearing embracing a bushing,

Fig. 3 is a sectional view of Fig. 1, and

Fig. 4 is a similar section of the removable portion of the machine showing how the bearing may be removed from its bath of molten metal while held in a compressed position.

Referring more particularly to the accompanying drawing, 10 indicates a tin pot adapted to contain a molten bath of soldering or brazing metal, not shown. The line 11 indicates the normal top surface of the bath when the pot is in use. A cradle such as shown at 12 is suitably secured to the edges of the tin pot 10 and extends downwardly into the same to a position below the surface of the molten bath. An adaptor plate 13 is maintained in position upon this cradle by means of a pair of pins 14 extending upwardly from the cradle through suitable holes formed in the adaptor plate. This plate 13 is provided with a pair of vertically extending guide posts 15 and a similar, but smaller, pair of posts 16, the purpose of which will be disclosed in the following description.

A heavy metal bar, or upright, 17 having an integrally formed foot member 18 is adapted to rest upon the adaptor plate 13 with the foot member extending between the posts 15 and 16 as shown. A sleeve 19 is slidably mounted upon the upright 17 and carries a horizontally extending pin 20.

The sleeve 19 with its pin 20 are adapted to be reciprocated on the shaft 17 by means of a lever 21. This lever is pivotally mounted on a fulcrum pin 22 which is carried by a sleeve 23. The sleeve 23 is carried by and mounted for rotation with relation to a nut 24 which is threadedly mounted, for purposes of adjustment, upon the upper threaded end of the upright 17. A lock nut 25 is provided for cooperation with the nut 24 to lock the same in any desired position on the upright 17.

A link 26 is pivotally connected to the lever 21 by means of a pin 27 and connects with the sleeve 19 by means of the pin 20 upon which it is journaled. As the pin 27 is concentric with relation to the fulcrum pin 22 of the lever, it may be seen that movement of the lever about the fulcrum pin 22 will impart reciprocal movement to the sleeve 19 and the pin 20 through the link 26.

In Fig. 1 of the drawing, the lever 21 is in such a position that the pin 20 assumes its highest position, while in Fig. 2 the lever has been thrown to the opposite position and the pin 20 has been forced downwardly as far as possible. In the latter figure, it will be seen that the position of the pin 27 has passed the vertical center of the fulcrum pin 22, so that any upward force directed through the link 26 would tend to lock the lever against being displaced to its original position. A stop 28 is provided on the link 26 to prevent further motion of the lever 21 in the opposite direction.

In the operation of the device, a bearing cap 29 of the bearing to be pressed is placed between the posts 15 with the posts extending through its bolt holes. The bushing illustrated at 30, which conforms in shape to the inner surface of the bearing cap 29, is then placed in the bearing cap. As these parts are submerged in a molten bath, this bushing must be handled with tongs, and in order to facilitate its proper alignment with the bearing cap, it

is held against the guide posts 16, which serve to direct it into its proper position in the cap.

The connecting rod shank, which is illustrated at 31, is next put into place. Like the bearing cap, the bolt holes of the connecting rod shank are fitted over the posts 15. Its wrist pin bearing is positioned over the pin 20 on the sleeve 19. The lever 21 is then moved from the position shown in Fig. 1 to that shown in Fig. 2, causing the sleeve 19 and the pin 20, upon which the wrist pin bearing is now supported, to move downwardly, with the result that the upper half of the connecting rod bearing, or that half which is carried by the shank 31, is pressed into intimate contact with the upper half of the bushing 30 while being guided by the post 15. The pressure thus exerted may be regulated by the position of the nut 24 on the upright 17 and should be sufficient to form a very tight joint, not only between the upper half of the connecting rod bearing and the bushing 30, but also between the bushing 30 and the lower half of the bearing, or cap 29. Thus the bearing may be subjected to a predetermined pressure and the pressure maintained for any desired length of time through the means of the locking feature of the lever.

The adaptor 13, carrying the pins 15 and 16, is so termed because it may be replaced by members of suitable dimensions to accommodate any size of type of bearing. Adjustment of the nut 24 upon the upright 17 will provide for accommodation of connecting rod shanks of various lengths.

Another feature of the invention which is of great importance, is that the upright may be removed from the bath while the bearing is still held in its compressed position. It will be seen that the bearing cap 29, while the pressure is being exerted upon it, is supported by the foot member 18 which, as has been stated, is integrally formed with the upright 17 and removable from the plate 13. When it is desired to remove the bearing from the bath the upright is lifted vertically so that the bolt holes of the bearing members slide free of the posts 15. The lower portion of the upright which then supports the bearing in its compressed position may be immersed in a cooling bath of lesser temperature or treated in any other suitable manner.

While I have shown a preferred form of my invention, it should be understood that various changes may be resorted to in the construction and arrangement of its several parts without departing from the spirit and scope of the appended claims.

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

1. A machine of the character described comprising a member for supporting a pair of bearing halves beneath the surface of a molten metal, means for guiding a bushing to an aligned position between said bearing halves, and press means for forcing said bearing halves into intimate contact with said bushing.

2. A machine of the character described comprising, a member for supporting a pair of bearing halves beneath the surface of a molten metal, means for guiding a bushing to an aligned position between said bearing halves, and press means for forcing said bearing halves into intimate contact with said bushing, said press means being adapted to be removed with said bushing and bearing halves from said supporting member and from said molten metal.

3. A device of the character described comprising a plate having a pair of vertically extending posts capable of being inserted through the bolt holes of a pair of bearing halves to hold the same in an aligned position, other posts carried by said plate for guiding a bushing into place between said bearing halves, and means cooperating therewith to force said bearing halves into intimate contact with said bushing.

4. A device of the character described comprising a plate, means carried by said plate for supporting a pair of bearing halves and a bushing in alignment, an upright member having a horizontal extension on its lower end adapted to rest on said plate and support said bearing halves, and press means carried by said upright member and cooperating with said horizontal extension to exert a pressure upon said bearing halves and bushing.

5. A device of the character described comprising a cradle member adapted to be secured to a pot of molten metal, a plate detachably carried by said cradle member below the surface of said molten metal, means carried by said plate for supporting a pair of bearing halves and a bushing in alignment, an upright member having a horizontal extension on its lower end adapted to rest on said plate and support said bearing halves, a sleeve slidably mounted on said upright member, a pin carried by said sleeve and adapted to engage a wrist pin bearing in one of said bearing halves, and a lever carried by said upright member and cooperating with said sleeve to force it downwardly to exert a pressure on said bearing halves through said pin and said wrist pin bearing.

6. In a device of the class described, a pot, a cradle therewithin, an adapter plate on said cradle, a pair of posts on said adapter plate for aligning connecting rod parts, another pair of posts on said adapter plate for positioning a bushing, a foot member supported by said adapter plate, an upright on said foot member, a lever, a link connected to said lever, a pin on said link, and means for supporting said lever, link and pin adjustably on said upright.

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