Oct. 31, 1933. B. DARRACH, JR 1,933,050

SHIM

Filed Aug. 28, 1929

Fig. 1.

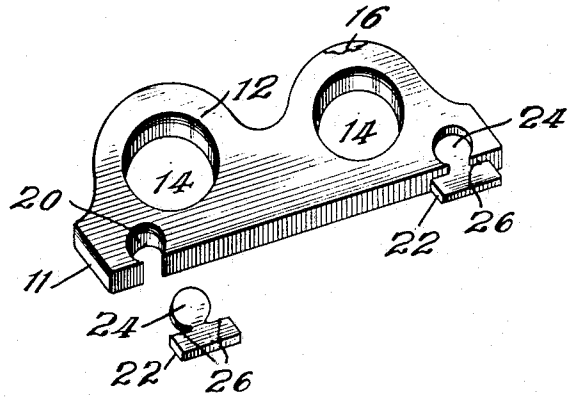


Fig. 2.

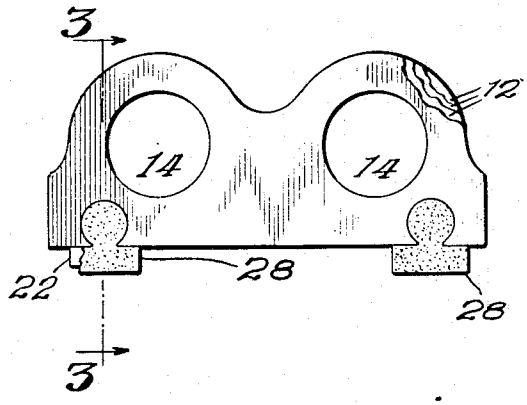


Fig. 3.

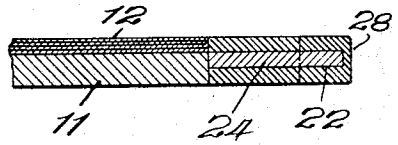
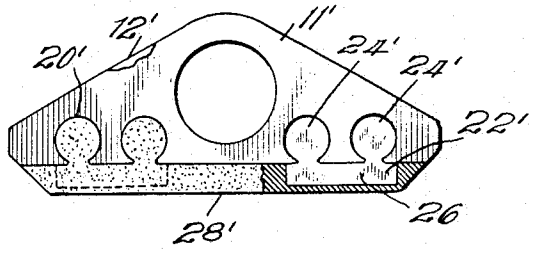


Fig. 4



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SHIM

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Application August 28, 1929. Serial No. 388,908

8 Claims. (Cl. 308—244)

This invention relates to shims which are employed in split bearings to hold the two sections of the bearings in spaced relation and which comprises a hard body portion usually made up of removable layers and having its inner edge faced with babbitt or any other bearing metal adapted to engage the shaft.

This invention is designed to overcome certain difficulties found to be inherent in making shims in accordance with the principles of my prior invention which forms the subject matter of an application filed by me on May 25, 1920, and which matured into United States Patent No. 1,417,039, issued May 23, 1922. In the method of manufacture previously employed, the body of the shim structure was stamped from sheets of suitable material and was provided with a suitable recess into which the babbitt or soft metal similarly stamped from sheets of material was pressed to form a connection between the soft metal along the inner face of the shim and the body of the same. It has been found that the Babbitt metal when connected to the body metal in this way becomes loosened in the recess and may drop out or be knocked loose from the body portion and become lost, thus complicating the assembly work on the engine or with the subsequent danger after the engine has been in use of its becoming dislodged when several of the laminations are removed from the shim to take up on the bearing. The present invention, therefore, contemplates the provision of a means for more securely holding the babbitt facing on the inner edge of the shim so that it will not become loosened in shipping or in handling for original assembly and so that repeated removal of a number of laminations of the shim in taking up the bearing will in no way affect the union between the Babbitt metal and the body of the shim, and the babbitt will remain in position during the life of the shim.

A still further object of the invention is to provide a shim which is extremely rigid in construction. Simplicity and comparative inexpense of manufacture are further desirable features that have been borne in mind in the production and development of this invention.

With these and other objects in view, which will more readily appear when the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts shown in the accompanying one sheet of drawings in which:

Figure 1 is a perspective view of a shim formed in accordance with the present invention and showing the same before the Babbitt metal is applied;

Figure 2 is a plan view of the completed shim, certain parts being broken away for the purpose of clarity;

Figure 3 is a sectional view taken along the line 3—3 of Figure 2; and

Figure 4 is a plan view partly in section of a modified form of shim.

In all of the above described views like characters of reference are employed to designate like parts throughout. The shim comprises a body portion 11 of comparatively hard material and of a shape to accommodate the shape of the bearing to which the same is to be applied. Designated at 12 are a plurality of superimposed layers of relatively thin sheets or laminations, preferably varying in thickness and adapted to be removed when taking up on the bearings. These sheets are formed of metal similar to the metal forming the body portion 11 and may be secured in superimposed relation by means of solder or the like 16 extending along one surface of the same closely adhering thereto. A pair of holes 14 are cut through the shim to receive the clamping bolts of the bearing. The metal forming the body portion 11 and the sheets 12 may be of any suitable material, such as bronze, brass or the like, on account of the extreme durability of these metals. Because of the relative hardness of these materials, they cannot be permitted to contact with the shaft. However, irrespective of the details of manufacture, the essential features of the invention are always preserved.

The front edge of the body portion 11 is provided with a pair of recesses 20, which recesses are adapted to receive tongues 24 formed on a pair of reinforcing and retaining members 22. These retaining members are clearly shown in Figure 1 and are formed of steel, brass or any other suitable hard material. The tongues 24 correspond in shape to the recesses 20 and are slightly larger than these recesses so that they may be driven into the same where they will engage the material around the sides of the recesses and be firmly retained therein against removal. The reinforcing members 22 are considerably thinner than the body portion 11 of the shim and they are adapted to occupy a position between the planes of the upper and lower surfaces of the shim. The reinforcing members 22 are provided with shoulders 26, formed integrally with the tongues, which shoulders extend along the inner edge of the shim, as shown in

the right hand side of Figure 1. The shoulders 26 are adapted to retain therearound facing members 28 formed of soft metal, such as babbitt or the like. These facing members are preferably formed in position on the shim by casting the same around the shoulders 26 and in the recesses 20. However, it is within the spirit of the invention to form these facing members by cold pressing or the like. The upper and lower edges of the facing members 28 are flush with the upper and lower faces of the shim respectively, as clearly shown in Figure 2, to insure uniform thickness of metal between the upper and lower sections of the bearing. The bearing thus formed has a soft facing portion 28 to contact with the shaft which facing portion is firmly anchored and embedded in the body portion 11—12 by the hard metal anchors 22.

In Figure 4, there is shown a modified form of the invention. In this form the body portion, designated at 11', is provided with the usual laminations 12'. The inner edge of the body portion 11' is provided with a plurality of recesses 20' arranged in pairs close to each other. The reinforcing members 22' are provided with a pair of tongues 24' adapted to be received in the pairs of recesses 20'. These tongues are integrally formed with shoulders 26' which are adapted to occupy a position along the inner edge of the shim. The shoulders 26' support therebetween an elongated facing member 28' which extends completely along the inner edge of the bearing. This facing member is preferably cast around the shoulders 26' and is thus rigidly held in position.

In actual operation, the shim is positioned as usual between the upper and lower faces of the bearing between the cap and pillow of the same, with the babbitt face in contact with the shaft, while the harder body portion resists the pressure of the clamping bolts of the bearing. When it is desired to take up on the bearing, the shim is removed from the bearing in the usual manner and a plurality of layers or laminations 12 are removed or peeled from the face of the shim. The shim may then be replaced in position in the bearing. In shims manufactured in accordance with the present invention, it will be found that the facing member will at all times remain in position by virtue of the reinforcing members 22 which are embedded in the facing material and which are firmly held in position by the tongues in the recesses. By forming these reinforcing members of a material which has a different hardness from the material of the shim, the coefficient of friction between the reinforcing member and the shim will be considerably greater than where the reinforcing member is made of the same material as the shim. For this reason dislodgment of the reinforcing members and of the facing member will be extremely unlikely.

It will be understood that while I have described a preferred embodiment of my invention, various modifications and changes may be made therein without departing from the spirit of the invention or the scope of the appended claims.

What I claim as my invention is:

1. A shim comprising a plurality of relatively thin sheets of metal superimposed upon each other, there being a recess in the front edge of said sheets, a hard metal insert wedged in said recess of less thickness than the combined thickness of the sheets, said insert extending outwardly past the front edge of the shim to form a reinforcement and a soft metal facing secured to said reinforcement.

2. A laminated shim comprising a plurality of relatively thin sheets of metal superimposed upon each other and secured together, there being recesses in the front edge of said sheets, a hard metal insert wedged in each recess and of less thickness than the combined thickness of the sheets, said inserts extending outwardly past the front edge of the shim to form reinforcements and a soft metal bearing portion secured to each of said reinforcements.

3. A laminated shim comprising a plurality of relatively thin sheets of hard metal superimposed upon each other and secured together, there being recesses in the front edge of said sheets, a hard metal insert wedged in each recess and of less thickness than the combined thickness of the sheets, said inserts extending outwardly past the front edge of the shim to form reinforcements and a soft metal secured to each reinforcement and supported therebetween on the front face of the shim.

4. A laminated shim structure comprised of a plurality of superposed metal sheets of material having a recess in the front edge of said sheets, a metal insert formed of a harder metal than that forming the sheets and of a slightly greater size than that of the recess, said insert being wedged in the recess and extending outwardly therefrom to form a reinforcement, and a soft metal secured to the reinforcement and extending into said recess on both sides of the insert.

5. A laminated shim structure comprised of a plurality of superposed metal sheets of material having a recess in the front edge thereof a metal insert formed of a harder metal than that forming the sheets and of a slightly greater size than that of the recess, said insert being wedged in the recess, and a soft metal secured to the insert and secured in the recess on both sides of the insert and extending outwardly along one edge of the shim.

6. A laminated shim structure comprised of a plurality of superposed metal sheets of material having a recess in the front edge thereof, a metal insert formed of a harder metal than that forming the sheets and of a slightly greater size than that of the recess, said insert being wedged in the recess and projecting outwardly therefrom on the front face of the shim, said insert and its projecting portion being covered by a soft metal extending into the recess on both sides of the insert.

7. A shim comprising a hard metal body portion having a recess and a soft metal facing and means to secure the facing to the body portion comprising hard metal anchors interlocked in the recess in said body portion and projecting into the facing portion.

8. A shim comprising a body portion of relatively hard metal and having an interlocking portion and a facing portion of relatively soft metal and means for securing the facing portion to the body portion comprising metal inserts interlocked in the interlocking portion of the body portion and projecting therefrom into the facing portion.

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