April 28, 1931. E. P. KERRUISH 1,802,723

METHOD OF AND APPARATUS FOR MAKING BEARINGS

Filed Dec. 19, 1928

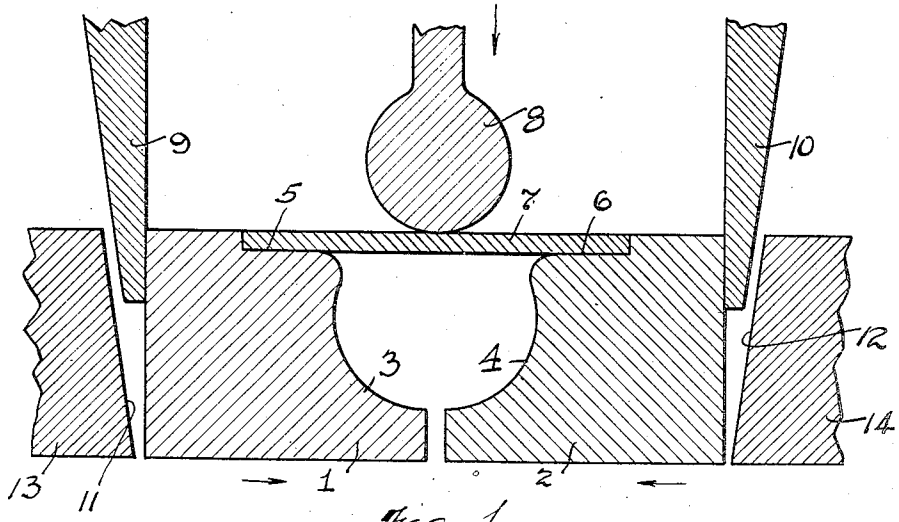


Fig. 1.

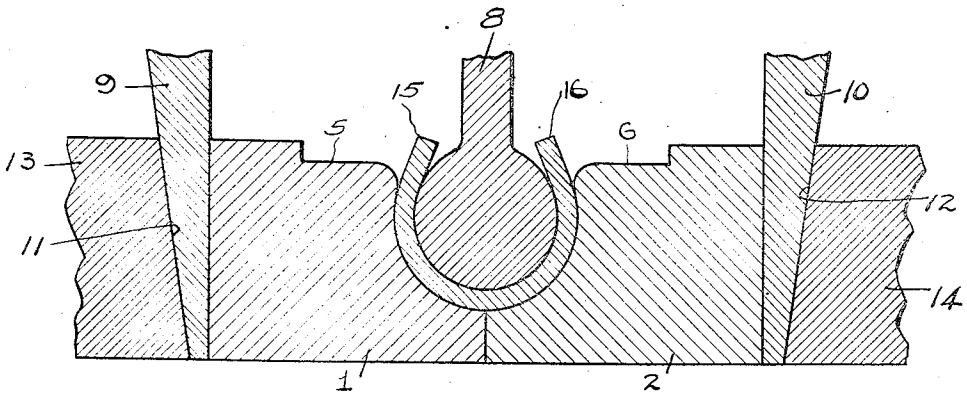


Fig. 2.

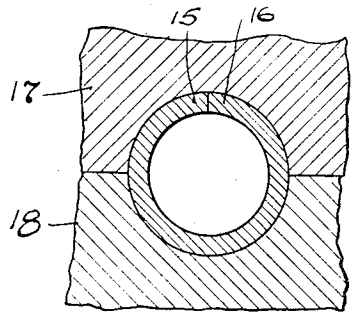


Fig. 3.

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UNITED STATES PATENT OFFICE

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METHOD OF AND APPARATUS FOR MAKING BEARINGS

Application filed December 19, 1928. Serial No. 327,142.

The present invention, relating, as indicated, to a bearing and method of making the same is particularly directed to an improved method and apparatus for the formation of flat stock into closed cylindrical shells for the manufacture of bearings in which a lining of suitable bearing metal is then integrally applied to the interior of the shell. The principal object of the invention is the provision of a new and more rapid method and apparatus for forming the flat strips into cylindrical shells while at the same time securing a pressure-tight butt between the adjacent edges or ends of the flat strip.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims; the annexed drawing and the following description setting forth in detail one method and one product exemplifying my invention, such disclosed procedure and product constituting, however, but one of various applications of the principles of my invention.

In said annexed drawing:—

Fig. 1 is a transverse section through dies adapted to carry out the present invention showing the same at the beginning of the forming operation; Fig. 2 is a similar view, but showing the dies at the conclusion of the first forming operation; and Fig. 3 is a similar view showing semi-cylindrical dies adapted to complete the forming operation and the closed cylinder produced therein.

Referring now to Fig. 1, there are shown complementary dies 1 and 2 provided with complementary recesses 3 and 4 therein and with extensions 5 and 6 of these recesses adapted to receive therein a flat rectangular strip 7 of stock to be formed into the shell. The dies 1 and 2 are adapted to cooperate with a plunger 8 shown above the strip 7 and in position to descend in the direction of the arrows to force the strip 7 into the dies 3 and 4.

In the ordinary methods of forming a flat strip into a shell the first step consists in pressing the strip into a recess in the die to form it into roughly U-shape, after which it is given several subsequent operations to progressively form the U-shaped blank into a closed cylinder. In the present method a number of these subsequent operations are eliminated by mounting the dies 3 and 4 for transverse movement and causing these dies to close in, forcing the strip 7 around a plunger 8 after or during the down stroke of the plunger. This transverse movement of the dies 1 and 2 may be effected in various ways and I have here shown tapered plungers 9 and 10 disposed at the opposite ends of the dies 1 and 2 and movable downwardly in planes parallel to the plane of movement of the plunger 8. As these members 9 and 10 descend they engage the tapered surfaces 11 and 12 on fixed members 13 and 14 and thus act to wedge the dies 1 and 2 inwardly toward each other into the relation which is shown in Fig. 2.

The downward movement of the plunger 8 bends the strip 7 into substantial U-shape, after which the inward movement of the dies 3 and 4 reduces the radius in the bottom of the U, forces the two arms of the U, that is, the two sides of the strip, against the side portions of the plunger 8 and causes the upper ends 15 and 16 of the strip which bend inwardly around the upper surface of the cylindrical plunger 8. The dies 1 and 2 are then retracted (by any suitable means, not shown) and as the plunger 8 is raised the partially formed shell may be pushed longitudinally off from the plunger and the new strip 7 inserted in the recesses 5 and 6 in the upper surfaces of the dies 1 and 2.

The partially formed strip shown in Fig. 2 is then placed between cooperative semi-cylindrical dies 17 and 18 which, upon closing, press the partially formed shell into a complete cylinder, forcing the ends 15 and 16 into a tight engagement which I have found to be pressure tight and to prevent any leakage of fluid metal when Babbitt or similar material is subsequently cast into the interior of the closed shell either by die casting or centrifugal casting.

The present method has been found materially faster and more economical than prior methods of forming flat strips into cylindrical shells, while substantially as tight a

joint is secured by the present method as by any previous method in common use.

Other forms may be employed embodying the features of my invention instead of the one here explained, change being made in the form or construction, provided the elements stated by any of the following claims or the equivalent of such stated elements be employed, whether produced by my preferred method or by others embodying steps equivalent to those stated in the following claims.

I therefore particularly point out and distinctly claim as my invention:—

1. In a method of forming cylindrical shells from flat stock, the steps which consist in bending a strip of flat stock into substantially U-shape between a plunger acting upon one surface of said strip and two spaced die members provided with upwardly facing complementary curved recesses, and then forcing said last-named die members toward each other in a plane at right angles to the line of movement of the first-named die member to bend the side walls of the strip around the first-named die and then closing the open shell thus formed between two semi-cylindrical complementary dies.

2. In a method of forming cylindrical shells from flat stock, the steps which consist in bending a strip of flat stock into substantially U-shape between a plunger acting upon one surface of said strip and two spaced die members provided with upwardly facing complementary curved recesses, and simultaneously forcing said last-named die members toward each other in a plane at right angles to the line of movement of said first-named die member to bend the sides of the shell inwardly around said first-named die member, and then closing said shell between complementary semi-cylindrical dies.

Signed by me, this 12th day of December, 1928.

EDWARD P. KERRUISH.