(No Model.) 3 Sheets—Sheet 1.

G. J. SHIMER.

JOURNAL BEARING.

No. 253,117. Patented Jan. 31, 1882.

Fig. 1.

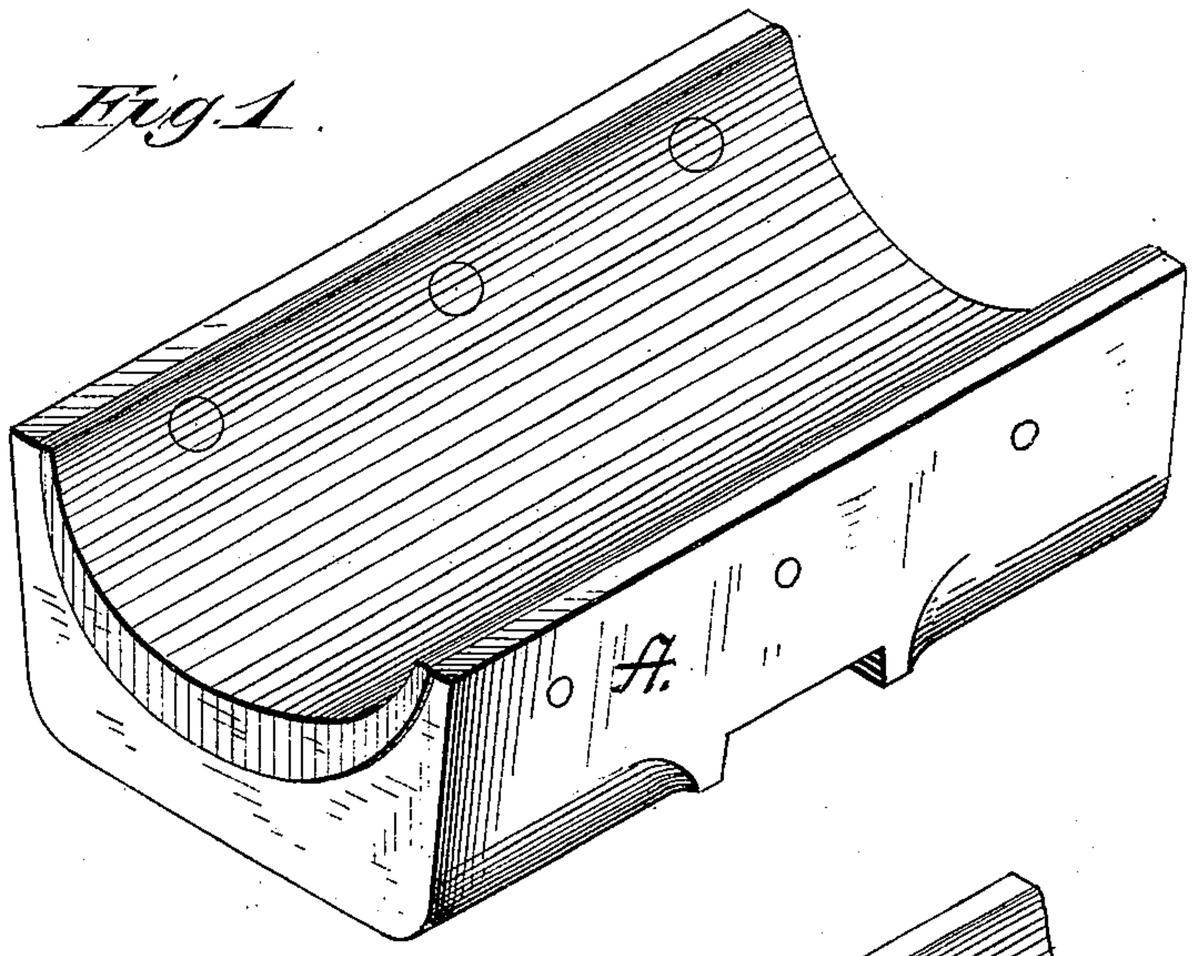
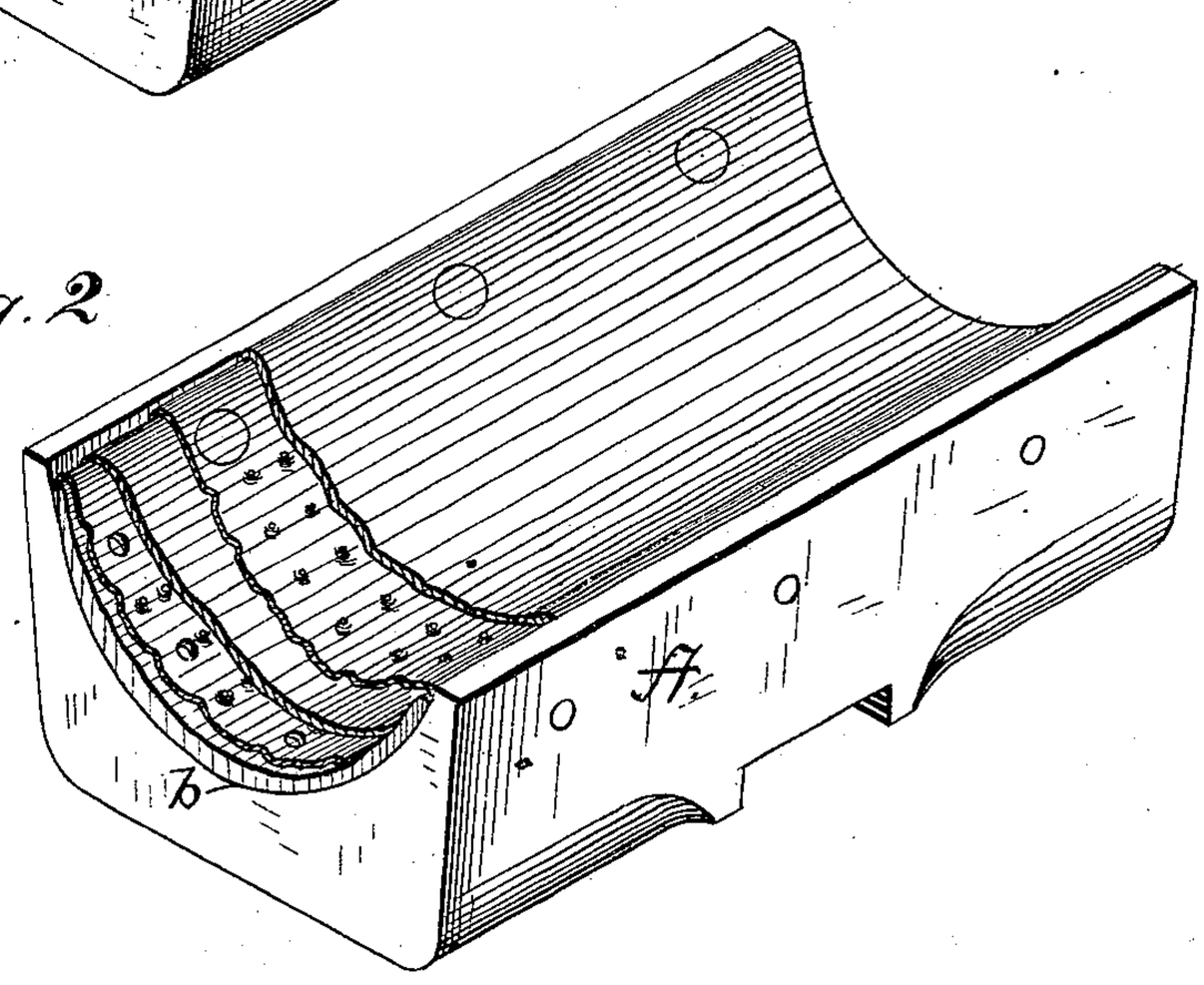


Fig. 2.



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(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

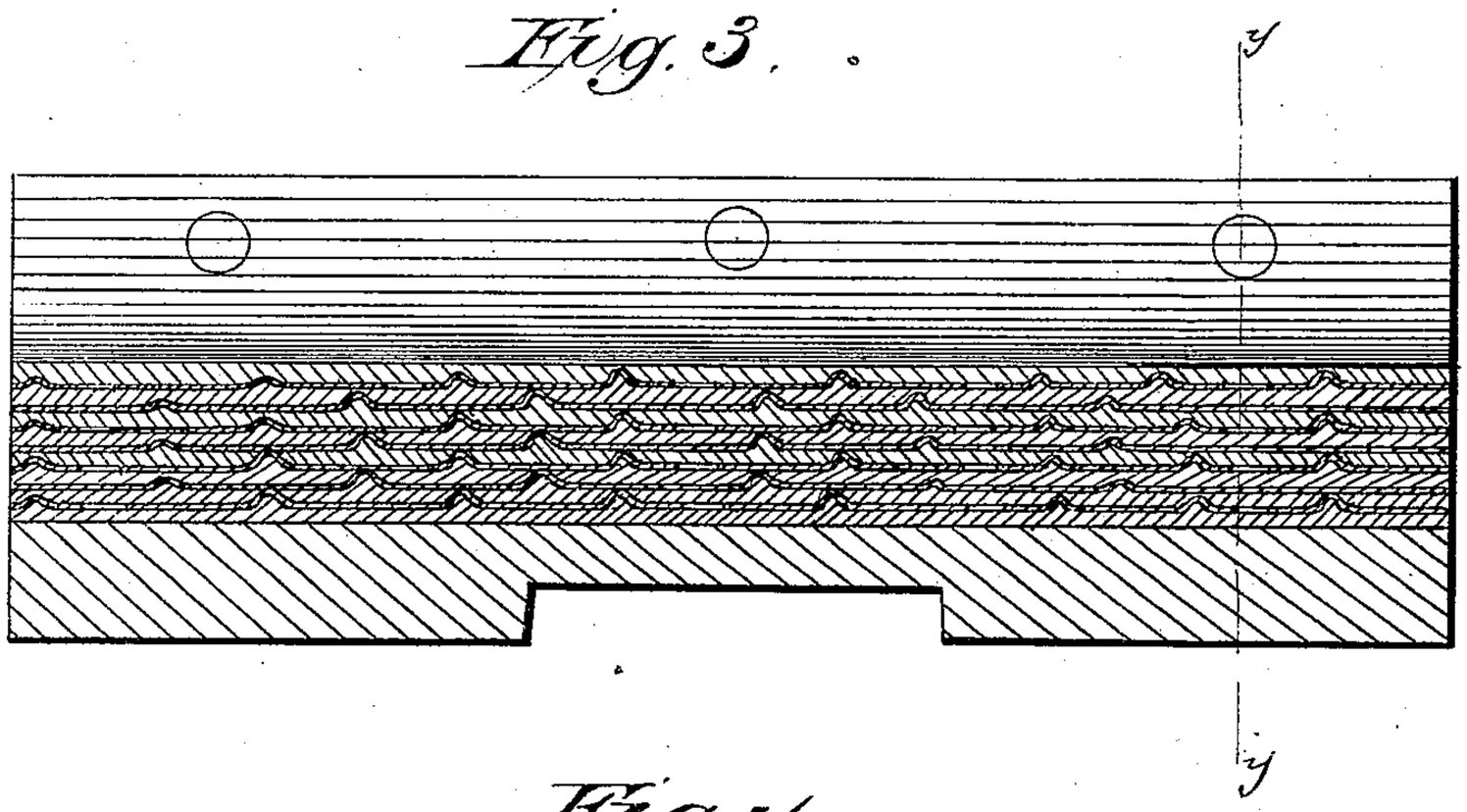
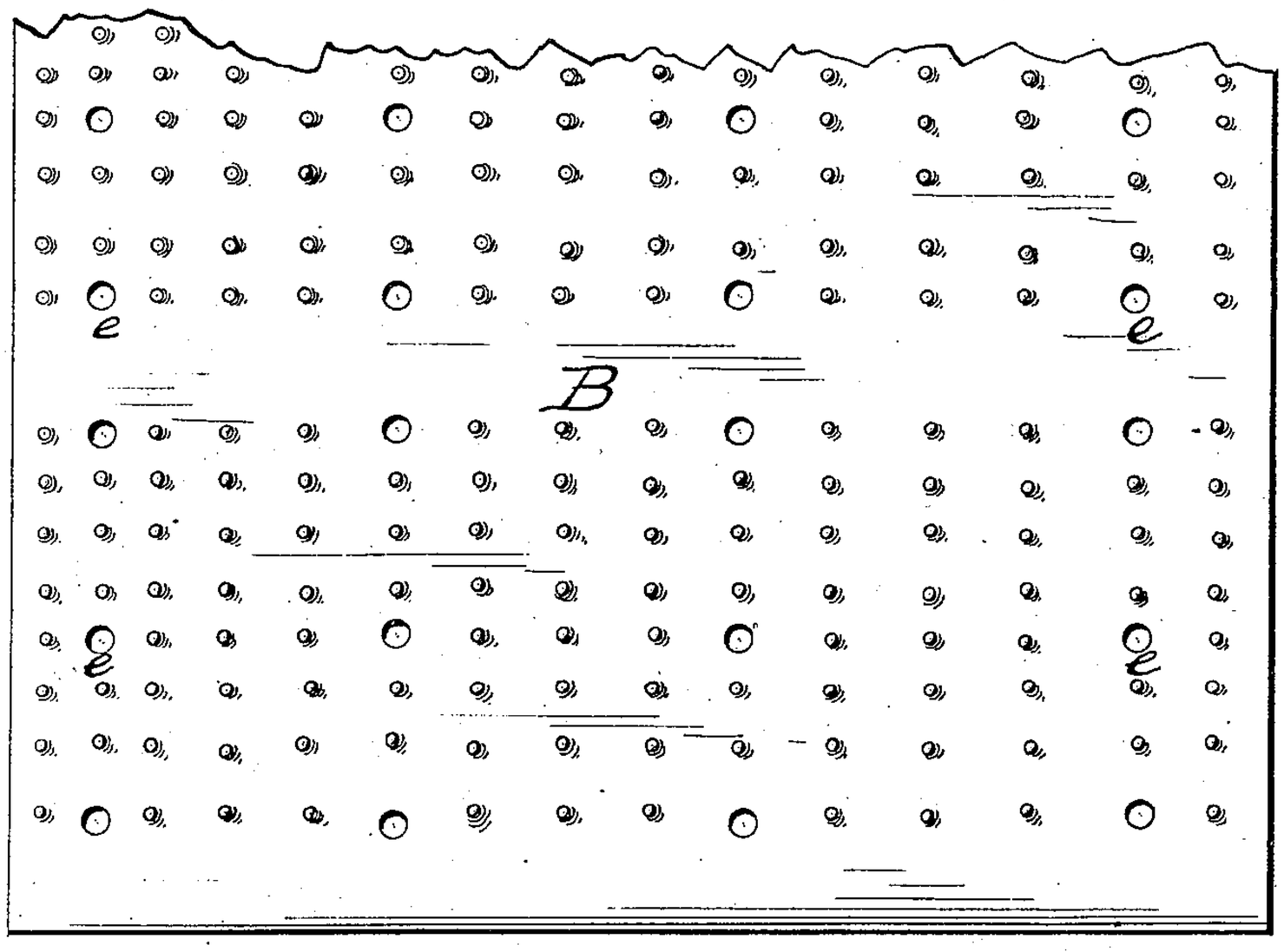


Fig. 4.



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JOURNAL BEARING.

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Fig. 5.

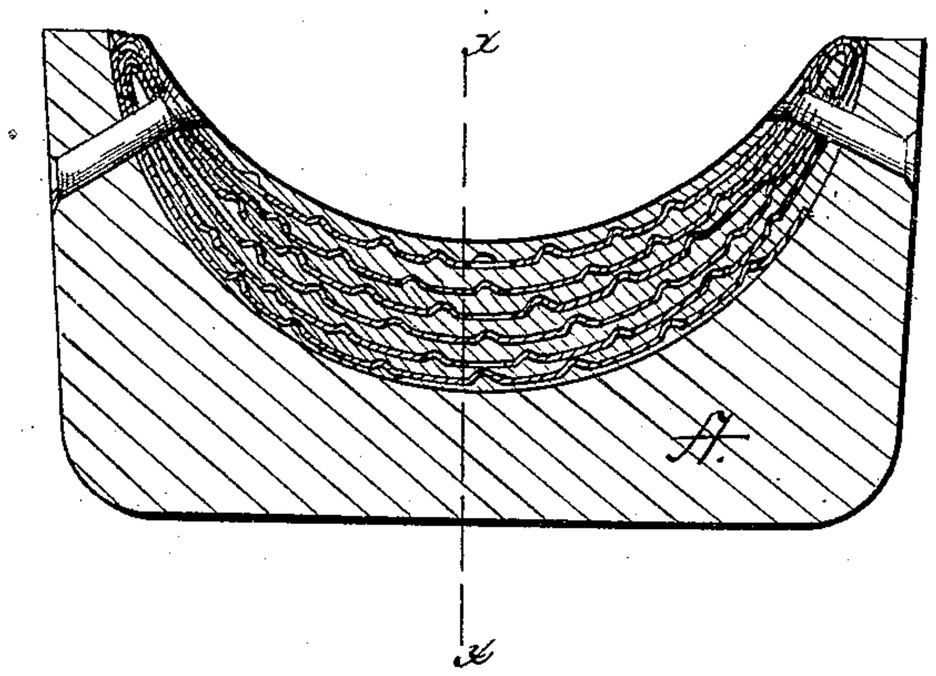
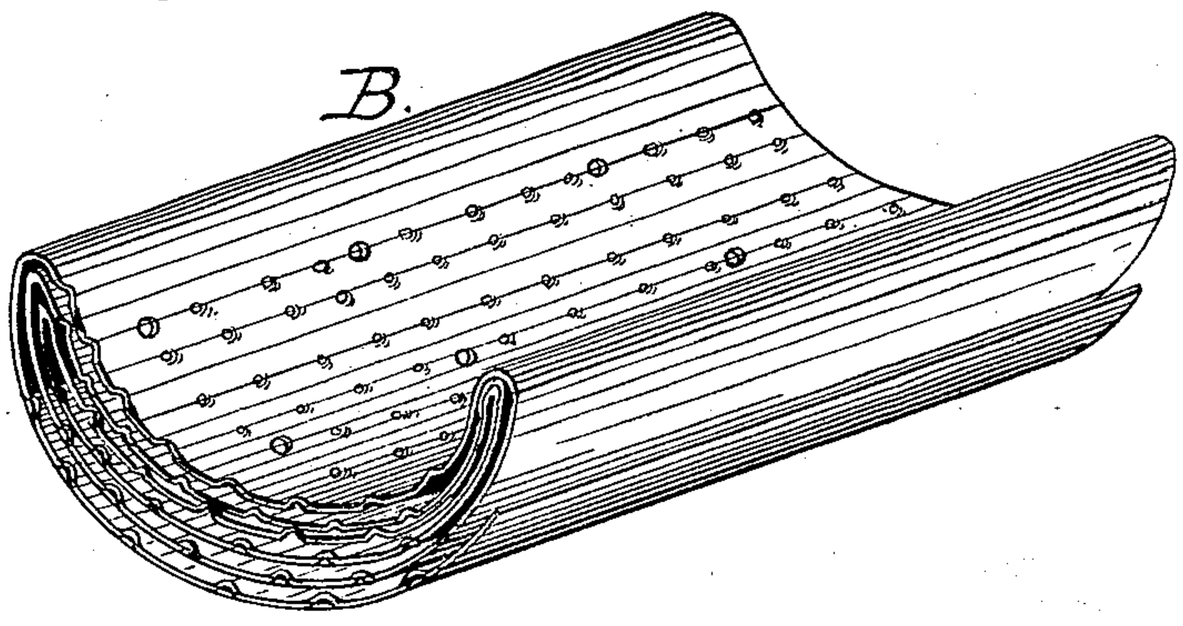


Fig. 6



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UNITED STATES PATENT OFFICE.

GEORGE J. SHIMER, OF FREEMANSBURG, ASSIGNOR OF ONE-HALF TO SAML. J. SHIMER, OF MILTON, PENNSYLVANIA.

JOURNAL-BEARING.

SPECIFICATION forming part of Letters Patent No. 253,117, dated January 31, 1882.

Application filed December 22, 1881. (No model.)

To all whom it may concern:

Be it known that I, GEORGE J. SHIMER, a citizen of the United States of America, residing at Freemansburg, in the county of Northampton and State of Pennsylvania, have invented certain new and useful Improvements in Journal-Bearings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to car-axle journal-bearings, and belongs to the class having an outer shell, of cast-iron or other hard metal, filled with a proper metal for the bearing-surface.

The object of my invention is to produce a yielding bearing that will quickly fit or conform itself to unevenly worn axles. To consummate the object stated I use preferably lead or similar soft metal as a basis for the filling, which, being soft, can practically be retained in the shell through the agency of hard and thin sheet metal under the pressure to which it is subjected in use.

My invention therefore consists in the process or method of producing a yielding journal-bearing, which consists in forming alternate layers of hard and soft metals, as will be hereinafter more fully described.

My invention further consists in the process or method of producing a yielding journal-bearing, which consists in forming alternate layers of hard and soft metals and connecting the layers by fastening means, as will be hereinafter described.

My invention further consists in a yielding journal-bearing composed of alternate layers of hard and soft metals arranged crescent shape, as will be hereinafter more fully described.

My invention further consists in a yielding journal-bearing composed of layers of perforated or punctured sheet metal or its equivalent, and layers of soft metal arranged alternately in the same vertical plane in cross-section.

My invention further consists in a yielding journal-bearing composed of alternate layers of hard and soft metals arranged crescent shape, in combination with an outer shell and fastening means.

My invention further consists in the novel construction, arrangement, and combination of parts, as will be hereinafter more fully set forth and specifically claimed.

Figure 1 is a perspective view of the improved journal-bearing. Fig. 2 is a similar view, with a portion of the yielding bearing broken away to show the different layers of hard and soft metals. Fig. 3 is a longitudinal sectional view of the journal-bearing. Fig. 4 is a plan view of a perforated or punctured sheet of metal. Fig. 5 is a perspective view, showing the same folded and ready to be inserted in the hard-metal shell.

In the annexed drawings, the letter A represents a shell of a journal-box shaped to fit the casing wherein it is to be placed. The concave or inner surface, *b*, of the shell to receive the lining is preferably formed on its circle about one-fourth of an inch larger in diameter than the axle-journal, and the entire concave surface should be plain, without ribs or projections, although ribs or projections are not entirely objectionable. This shell for a journal-box is drilled with four holes, more or less, two on each side, partially through the metal, to receive the soft metal and to anchor the same to the shell.

The letter B represents a plate of thin and hard sheet metal, of a suitable length and width, thickly punctured or indented in sections, and provided at suitable intervals with perforations *e*, as shown in Fig. 4 of the drawings. The sheet metal is tinned over, so as to adhere better to the lead and form a better mass by the fusion of the tin with the lead or soft metal. The sheet of metal is folded several times (about nine or ten times) upon itself, forming a convexed concave shape, but preserving the convexity, so as to fit inside of the shell intended for, as seen in Figs. 6 and 5. The several layers of the thin and hard sheet metal should be about one-sixteenth of an inch apart and the bends made on the non-perforated or punctured parts or divisions.

An advantage of the indentations in the sheets is to simplify the folding, so that each layer will be about one-sixteenth of an inch apart, or the length of the points of the sheet metal raised by the indentations. These perforations facilitate the casting and the even distribution of the soft metal.

To cast or form the journal-box complete I clamp the folded sheet metal between the shell and a follower of the proper size and shape, luting the bottom and side edges, and submerge them into a bath of molten lead or similar soft metal. The molten metal enters and fills all the recesses, indentations, and perforations in the shell and folded sheet metal and between the same, and covering well the ends of the folded metal sheet. When all the parts have become heated to the temperature, or thereabout, of the molten metal, they are taken out and allowed to cool, when the follower is removed and the thus formed or cast bearing further secured to the shell or casing by drilling a number of diagonal holes near the edges, inserting rivets, and riveting the same, substantially as shown. This mode of manufacture produces a yielding journal-bearing composed of alternate layers of hard and soft metals arranged crescent-shaped.

The rivets or their equivalents are made with flat heads, and the ends of the holes on concave face made countersunk to receive them, so that the journal will not rest upon them when the bearing is first applied.

Another mode of uniting the folded sheet metal and soft metal filling and covering in alternate layers is to heat the shell and place it in a suitable mold with the folded sheet metal properly arranged in the concave, and run in the molten lead in the usual manner until the mold is filled, which indicates that all the recesses and indentations are connected.

The terms "crescent shape" and "in the same vertical plane in cross-sections," as herein employed, mean that the layers of hard and soft metals are arranged above and between each other, so that the layers of hard metal are embedded in the intermediate and surrounding layers of soft metal, and the completed journal-bearing takes substantially a crescent shape.

I do not wish to confine myself to the use of thin and hard sheet metal, since the same results can be accomplished by using wire-netting or separate sheets of thin and hard metal riveted together; but I prefer the construction herein described and shown. I also reserve the right to make whatever changes that are within the purview of the spirit of the invention, and apply the improvements to all classes of journal-bearings.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The process or method of producing a yielding journal-bearing, which consists in forming alternate layers of hard and soft metals by bending or folding and casting, substantially as described.

2. The process or method of producing a yielding journal-bearing, which consists in forming alternate layers of hard and soft metals by bending or folding, casting, and riveting the parts together, substantially as described.

3. A yielding journal-bearing for a journal-box, composed of a series of alternate layers of hard and soft metals arranged crescent-shaped in cross-section, substantially as described.

4. A yielding journal-bearing for a journal-box, composed of layers of punctured or indented sheet metal or its equivalent and layers of soft metal arranged crescent-shaped in cross-section, substantially as described.

5. The combination of a yielding journal-bearing composed of a series of alternate layers of thin and hard and soft metals, an outer shell, and fastening means, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE J. SHIMER.

Witnesses:

D. D. KANE,

E. A. DICK.