F. E. BROWN.

MOLD FOR BRASS CASTINGS.

APPLICATION FILED DEC. 29, 1909.

966,306.

Patented Aug. 2, 1910.

2 SHEETS—SHEET 1.

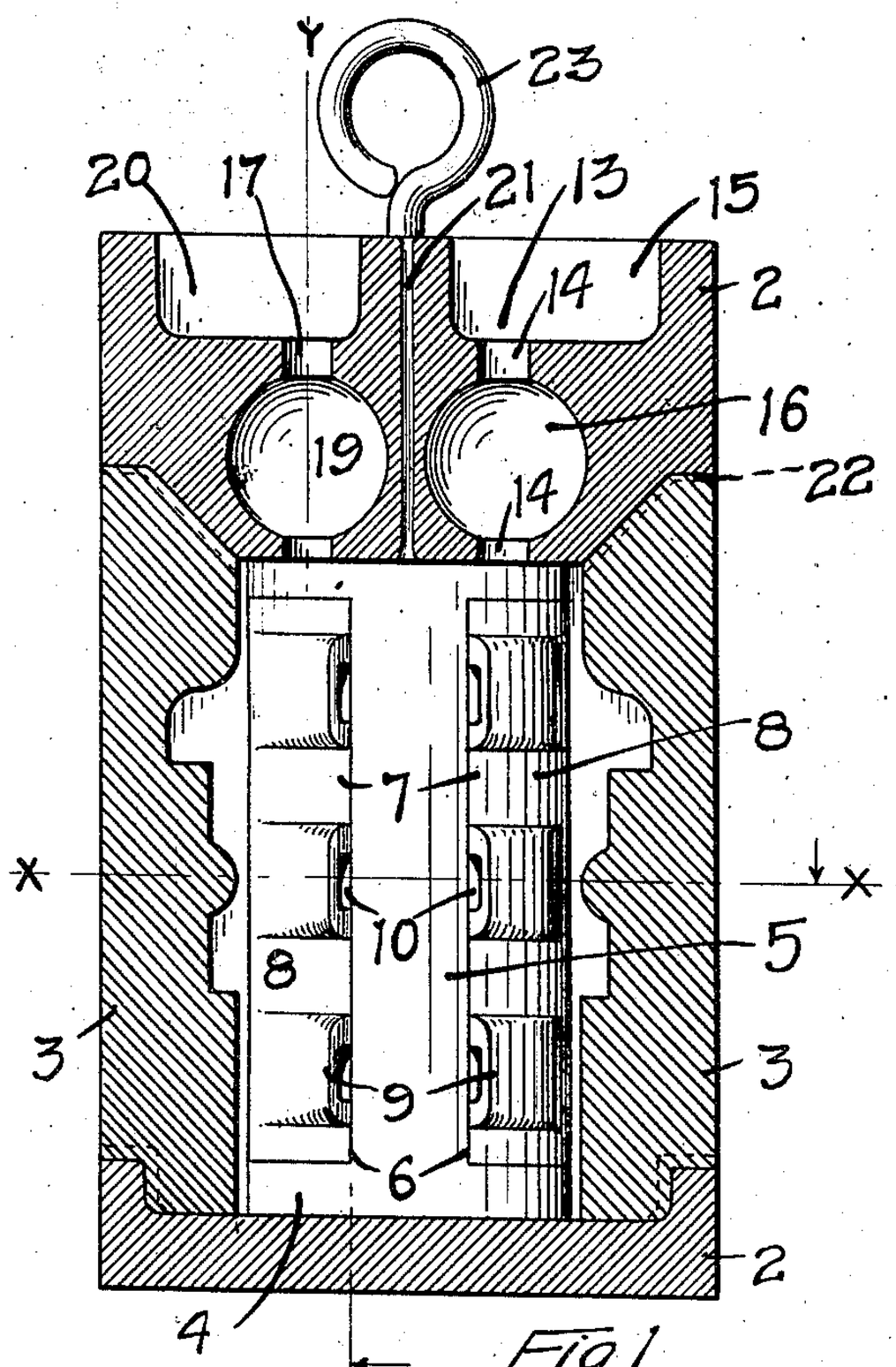

Fig 1.

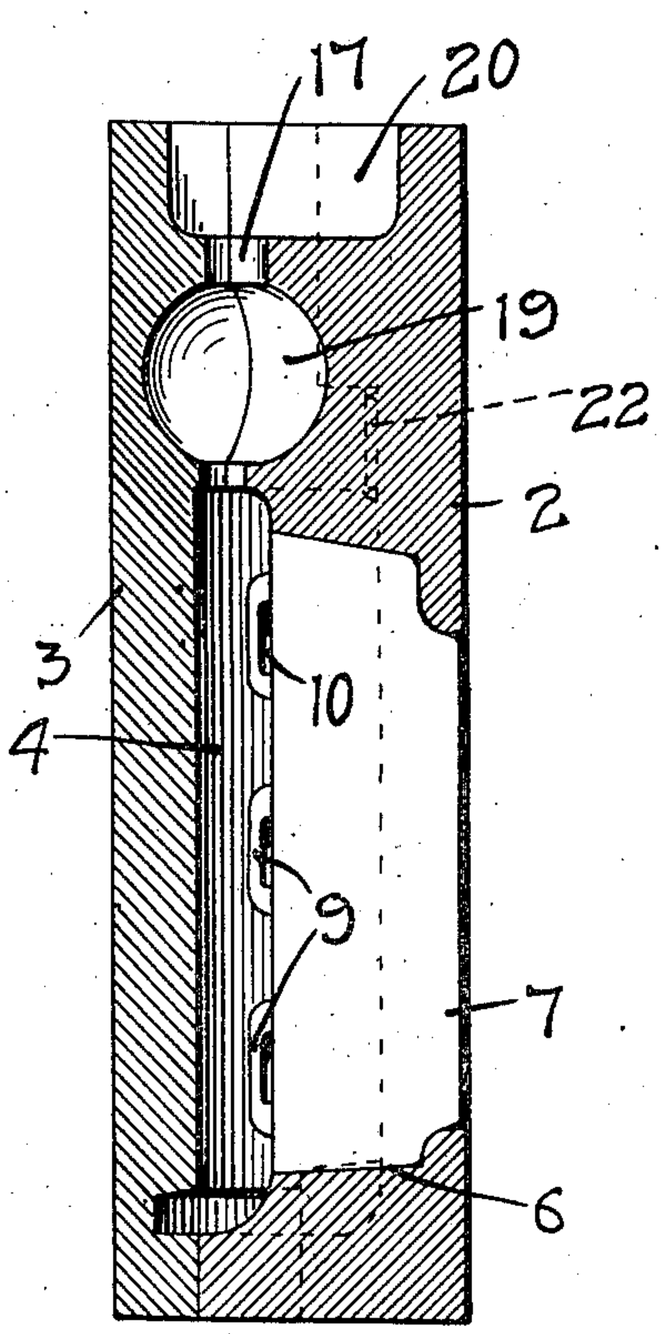

Fig 3.

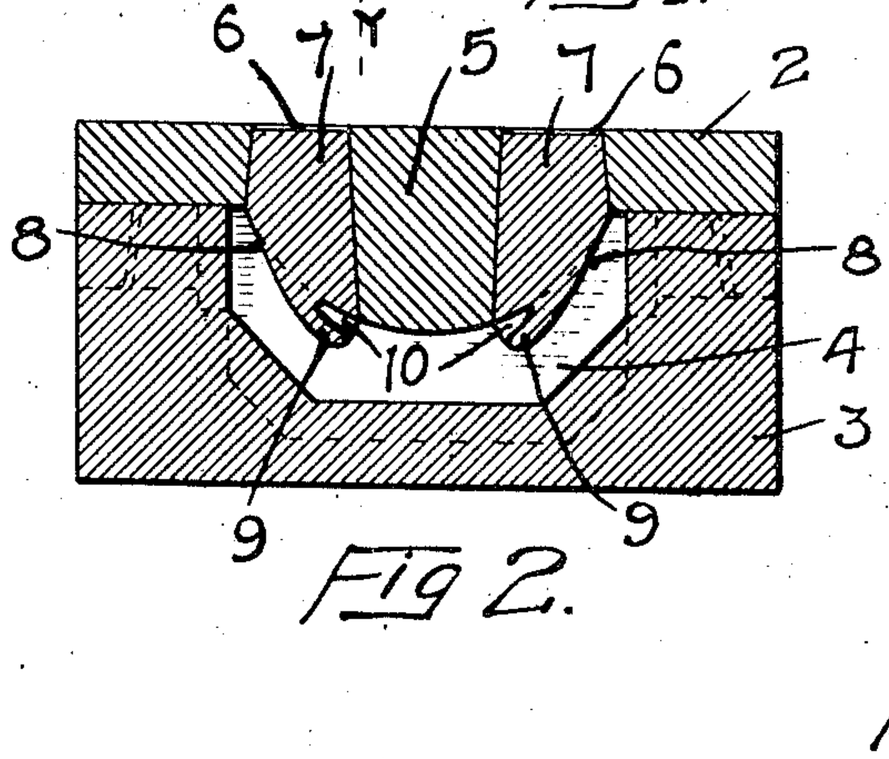

Fig 2.

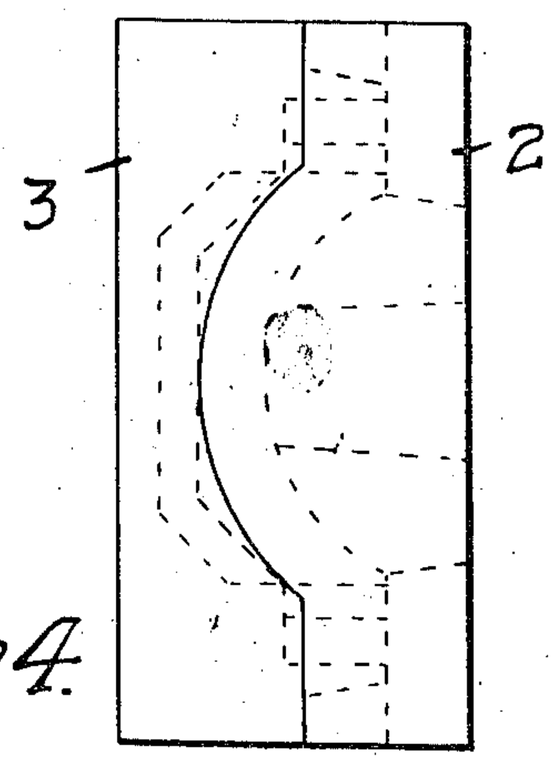

Fig 4.

WITNESSES

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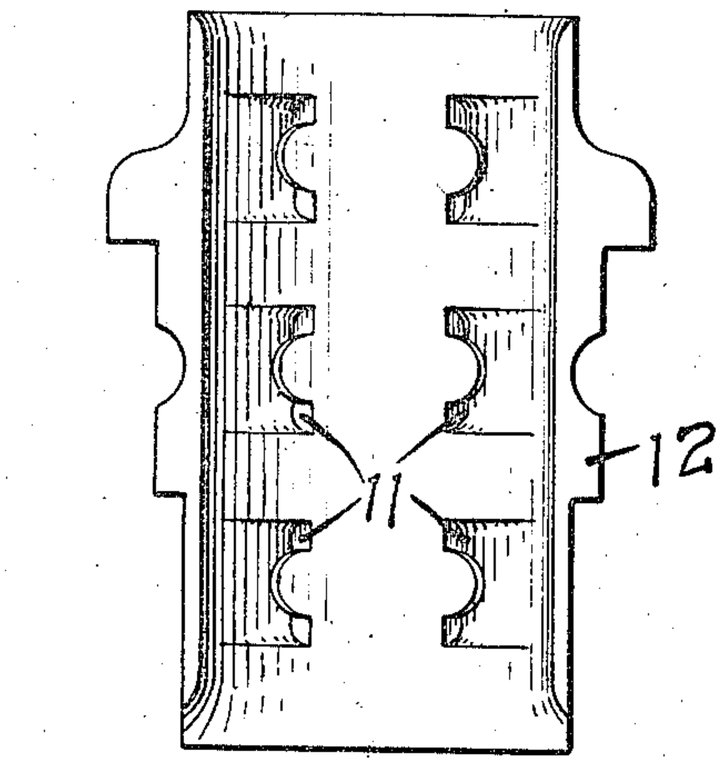

Fig 10

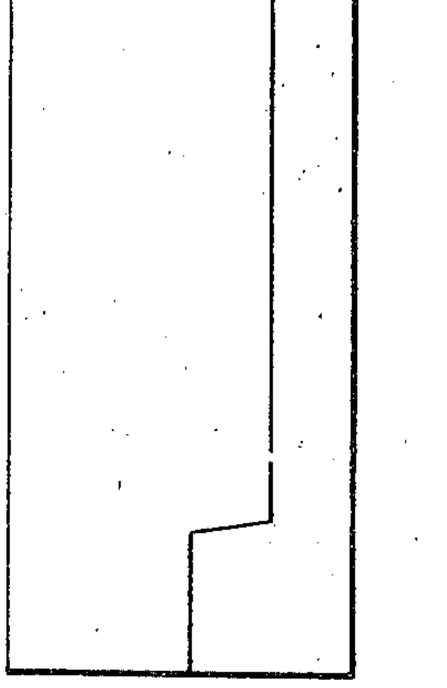

Fig 5.

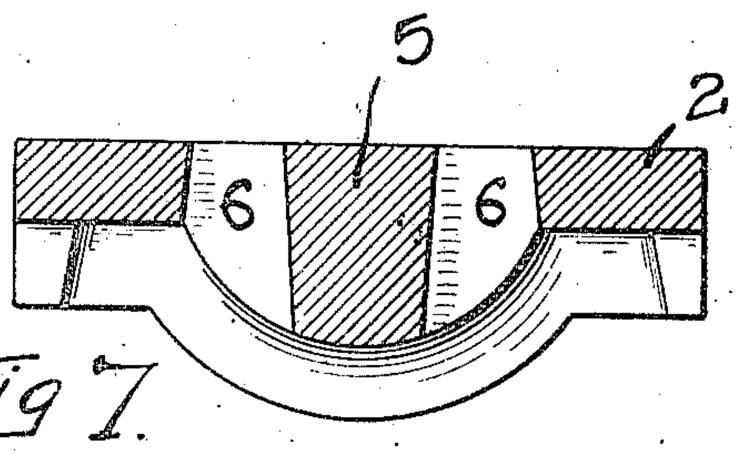

Fig 7.

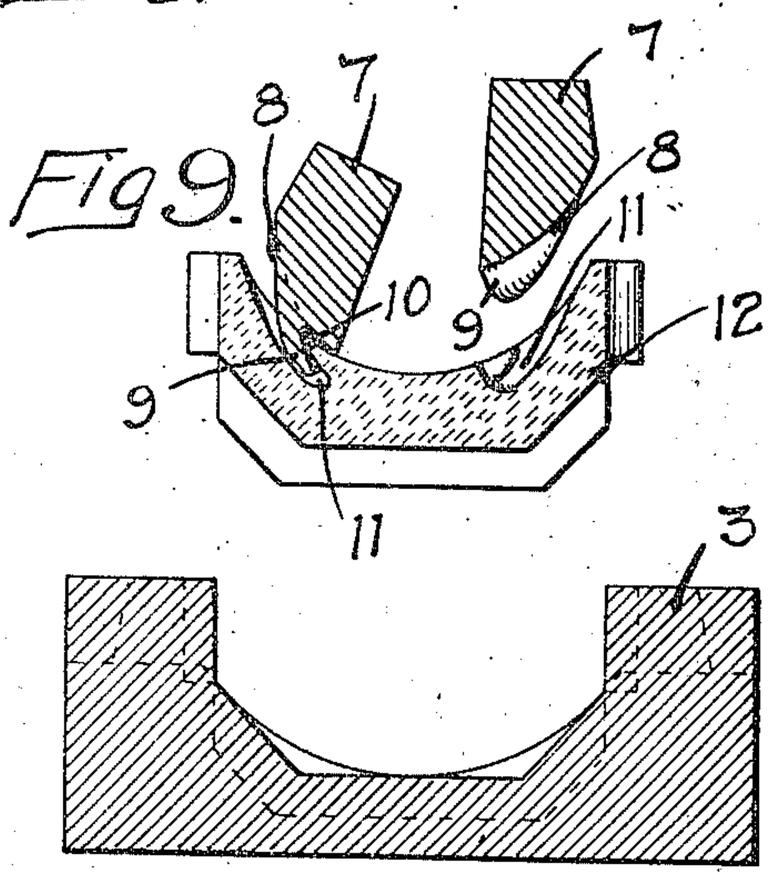

Fig 9.

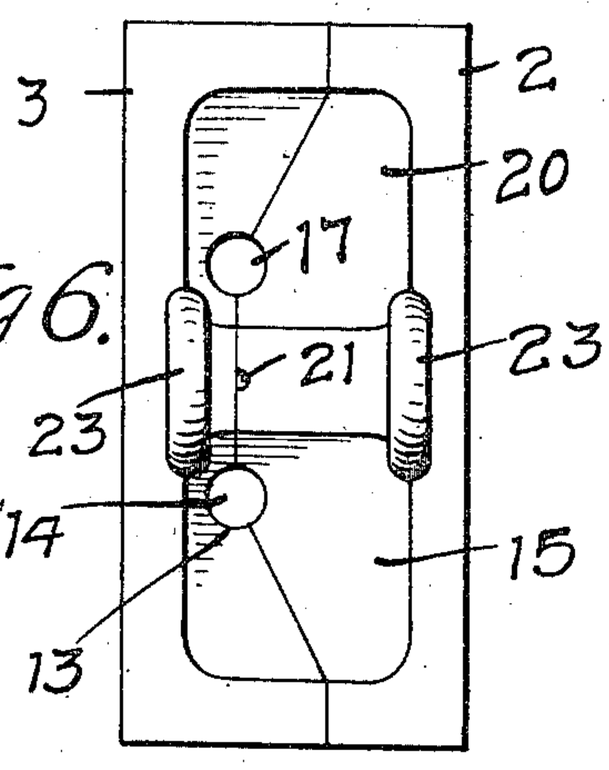

Fig 6.

Fig 8.

WITNESSES

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ATTORNEYS

UNITED STATES PATENT OFFICE.

FREDERICK E. BROWN, OF WINONA, MINNESOTA.

MOLD FOR BRASS CASTINGS.

966,306. Specification of Letters Patent. Patented Aug. 2, 1910.

Application filed December 29, 1909. Serial No. 535,529.

To all whom it may concern:

Be it known that I, FREDERICK E. BROWN, of Winona, Winona county, Minnesota, have invented certain new and useful Improvements in Molds for Brass Castings, of which the following is a specification.

The object of my invention is to provide a metallic mold in which brass castings can be molded, and particularly the journal brasses used in car axle bearing boxes. In molds heretofore employed for casting these brasses, the gate leads into the bottom of the mold, the riser and vent being at the top. It has been found that metal poured in this way will fail to rise and completely fill the mold or will settle or shrink, leaving holes or depressions in the casting.

The primary object of my invention, therefore, is to locate the gate at such a point in the mold that the complete filling of the mold with the molten metal will be assured.

A further object is to provide improved means for forming sockets or recesses in the casting wherein the Babbitt metal will be locked.

My invention consists generally in a mold having a gate and riser in its upper end.

Further the invention consists in enlarging the gate and riser to form chambers or recesses therein, wherein a supply of the molten metal will collect.

Further the invention consists in blocks removably mounted in one section of the mold and adapted to form sockets or recesses in the casting.

Further the invention consists in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification, Figure 1 is a vertical sectional view of a mold embodying my invention, Fig. 2 is a transverse sectional view of the mold on the line *x*—*x* of Fig. 1. Fig. 3 is a vertical sectional view of the mold on the line *y*—*y* of Fig. 1. Fig. 4 is a view of the lower end of the mold, Fig. 5 is an edge view, Fig. 6 is a top view, Fig. 7 is a sectional view of one portion of the mold, Fig. 8 is a similar view of the other portion, Fig. 9 is a sectional view illustrating the manner of removing the blocks from the casting, Fig. 10 is a view of the completed axle brass.

In the drawing, 2 represents one portion or section of the mold and 3 the other section, adapted to be placed together to form the mold preparatory to casting. The section 3 has a recess 4 therein and the section 2 has a longitudinally arranged bar 5 adapted to project into the recess 4 and having openings 6 on each side provided with tapered side walls in which blocks 7 are inserted and provided with inclined faces 8 which project into the recess 4, said faces terminating in a series of longitudinally arranged lips 9, formed by a corresponding number of grooves or recesses 10. The inner curved surface of the bar 5 merges into the walls of the recess 10 on one side, as indicated in Fig. 2, so that the lips 9 project inwardly into the recess 4 beyond the bar 5. These blocks 7 are, as stated, removable with the casting from the mold and when the casting is formed, the molten metal will flow into the recess 10 forming, when the blocks are removed, as indicated in Fig. 9, a series of little pockets 11 in the casting 12. These pockets will receive the Babbitt metal and lock it securely in the bearing brass and render it unnecessary to drill holes in the brass or provide any other means for locking the Babbitt metal therein. The blocks are readily removed from the casting when it is taken out of the mold, as indicated in Fig. 9, the taper of the blocks allowing their ready removal from the mold section 2. It will be noted, however, that the taper of the blocks and the walls on which they bear, prevent outward movement under the pressure of the molten metal. As shown in Fig. 1, the blocks 7 are located on each side of the longitudinal center of the mold cavity, so that a series of pockets will be formed in the brass on each side of its longitudinal center, and as these pockets extend transversely in the casting, it is evident that the Babbitt metal flowing therein will be locked securely against movement in either direction.

In the top of the mold is a gate 13 having a sprue hole 14 leading downwardly into the mold. The gate is preferably provided with a skimming chamber 15 in which the refuse matter may be skimmed from the molten metal. Intermediate to the ends of the sprue hole I provide a chamber 16, spherical in form preferably, in which a considerable body of the molten metal will

collect, flowing therefrom through the lower portion of the sprue into the mold, and insuring a continuous flow of the molten metal into the mold until it is completely filled. A riser 17 is also provided in the corresponding end of the mold, having a spherical chamber 19 and a recess 20 at its outer end, corresponding substantially to the chamber 15. This riser may fill with the molten metal and also has a chamber 19 accommodating a considerable body of it and insuring the perfect formation of the upper end of the casting. A vent hold 21 is provided intermediate to the sprue and riser and side vents 22 extend from the interior of the mold out through the walls thereof.

Each section of the mold has a handle 23, for convenience in setting up and separating the mold sections.

In using the mold, the metal is poured into the chamber 15 and flowing down through the sprue into the mold, will fill the lower end thereof, and as the metal rises in the mold its weight will force the lower portion to flow into all the recesses and corners and insure a perfect casting. The metal, having once reached the lower end of the mold and filled the cavity, does not move thereafter and may be cooled rapidly, and this may continue until the mold is entirely filled, the metal remaining in very nearly the same position in the mold that it occupies when it drops from the sprue. This I have found to be a very much more satisfactory method of casting brass than where the sprue leads into the bottom of the mold, for in that case the metal is compelled to rise in the mold from the bottom to the top and as it cools rapidly, it often does not fill all the cavities therein, and the weight of the metal in the mold has a tendency to retard the flow through the sprue. All this difficulty is avoided by pouring into the top. The metal will drop directly to the bottom of the mold, filling all the recesses and depressions therein, and mounting gradually toward the sprue until the mold is completely filled. The chamber 16 will fill up with molten metal, furnishing a supply to the mold as it cools and shrinks. The chamber 19 in the riser will have a similar function. When, therefore, the sections of the mold are separated, a perfect casting will be found, from which it is only necessary to remove the blocks 7, replace them in the mold section and repeat the operation.

This mold, with suitable modifications, is also adapted for use in casting the brasses for driving boxes where great trouble is experienced owing to the shrinkage of the metal in the casting.

The mold is preferably made of a mixture of 70% of soft iron and 30% of steel. I have found that this proportion used in the manufacture of the metallic mold will render it very much more durable than one composed entirely of iron and I have also found that a percentage of steel mixed with the iron in the mold will make the walls of the mold of finer grain and produce a casting with a smoother surface than has been possible to obtain heretofore with the ordinary iron mold.

I claim as my invention:

1. A mold for brass castings comprising sections adapted, when placed together, to form a cavity, a gate having a sprue leading to said cavity, and said gate having a chamber provided with a flat bottom and communicating at one end with the sprue.

2. A mold for brass castings, comprising metallic sections adapted, when placed together, to form a cavity, a gate having a sprue formed in the metal sections leading to said cavity, and a reservoir chamber formed in said mold intermediate to the ends of said sprue and adapted to contain a quantity of molten metal.

3. A mold comprising sections having a cavity therein, a block removably mounted in one of said sections and projecting into said cavity and having lips formed thereon at intervals on each side of the longitudinal center of said cavity, whereby pockets will be formed in the casting.

4. A mold for journal box brasses composed of sections forming a cavity therein when placed together, one of said sections having a longitudinal bar and openings on each side thereof and blocks fitting within said openings and having means preventing their outward movement, said blocks projecting into said cavity and having lips formed thereon, whereby pockets or depressions will be formed in the curved surface of the brass, and said blocks being removable with the brass from said mold, substantially as described.

5. A mold for journal box brasses composed of sections forming a cavity therein when placed together, blocks having tapered surfaces fitting within sockets in one of said sections and projecting into said cavity, said blocks having inclined surfaces and one of said sections having a curved surface between said blocks, and said curved surface and the inclined surfaces of said blocks forming the wall of the mold for the inner curved surface of the bearing brass, and said blocks having means thereon to form pockets or depressions in the brass, for the purpose specified.

6. A metallic mold composed of a mixture of soft iron and steel in the proportion of substantially two parts of iron to one of steel.

7. A metallic mold comprising sections adapted when placed together to form a cavity between them, a gate and a riser

located in one end of said mold and having sprues communicating with said cavity, said sprues being comparatively small in cross section and having reservoirs formed therein intermediate to their ends and adapted to contain a quantity of molten metal, for the purpose specified.

In witness whereof, I have hereunto set my hand this 22nd day of October 1909.

FREDERICK E. BROWN.

Witnesses:
L. C. CRONEN,
J. A. BYINGTON.