

No. 845,668.

PATENTED FEB. 26, 1907.

P. H. SWEET, JR.

MOLD FOR MAKING METAL CASTINGS.

APPLICATION FILED OCT. 17, 1904. RENEWED NOV. 24, 1906.

3 SHEETS—SHEET 1.

Fig. 1.

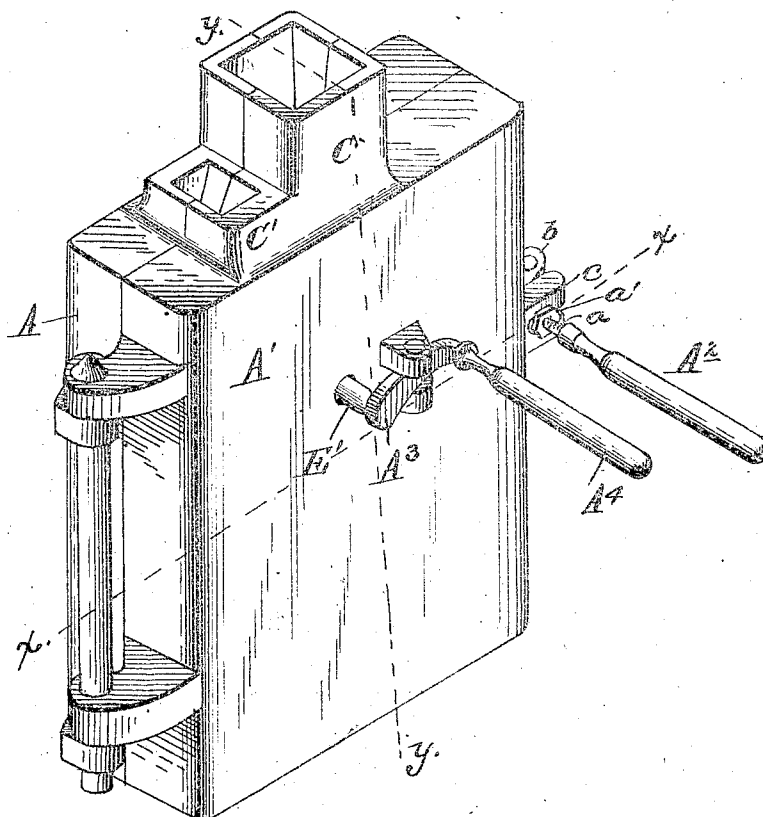
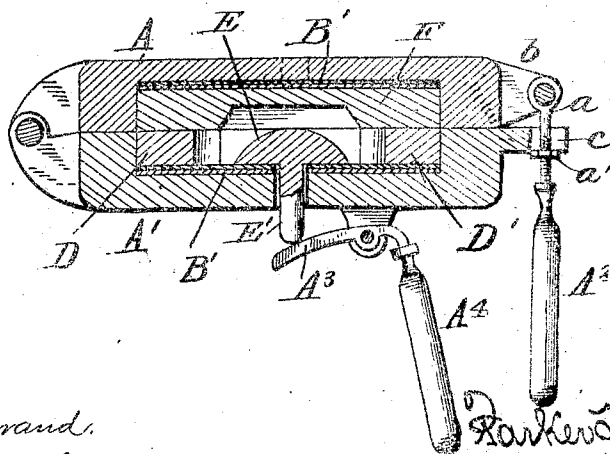


Fig. 2.



Inventor

Witnesses
Frank L. Ormand.
Harold Smith.

Parker Sweet

No. 845,668.

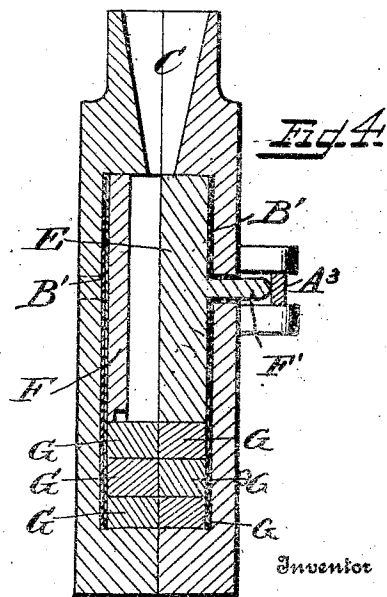
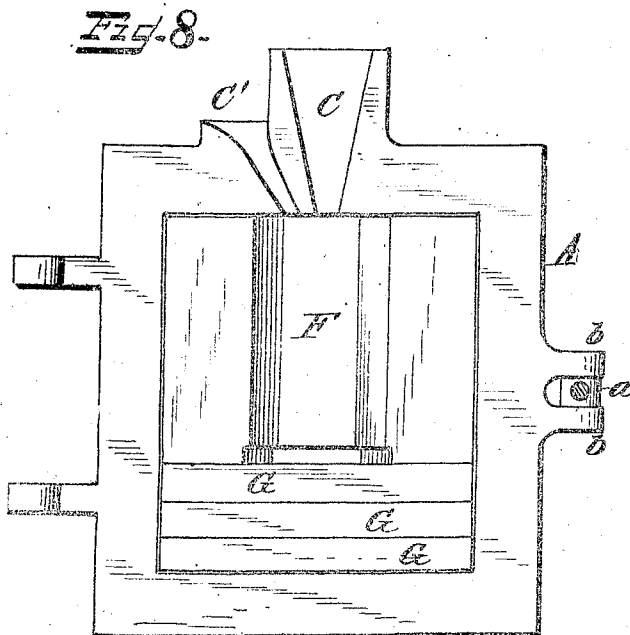
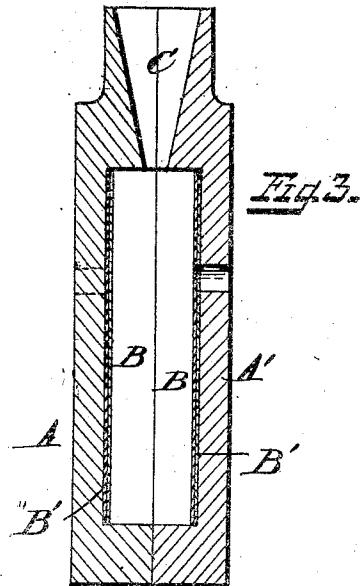
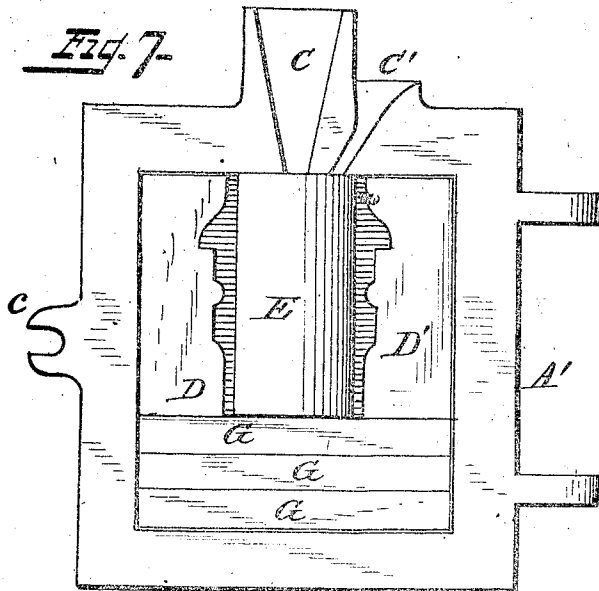
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3 SHEETS—SHEET 2.



Witnesses
H. L. Ormand

Howe & Co.

Parker H. Sweet, Jr.

Inventor

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3 SHEETS—SHEET 3.

Fig. 5.

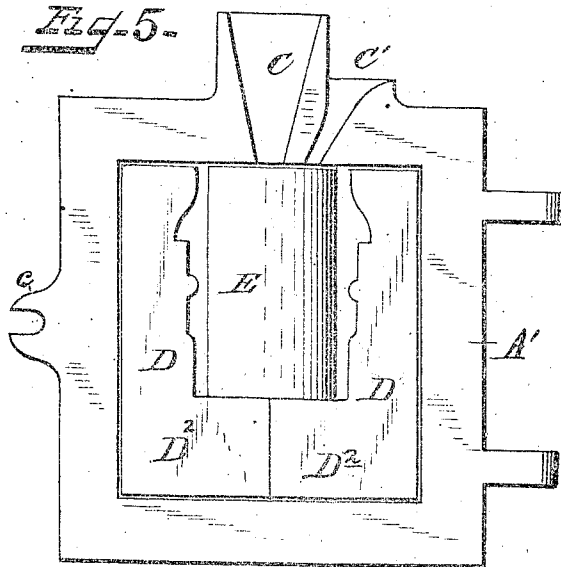


Fig. 6.

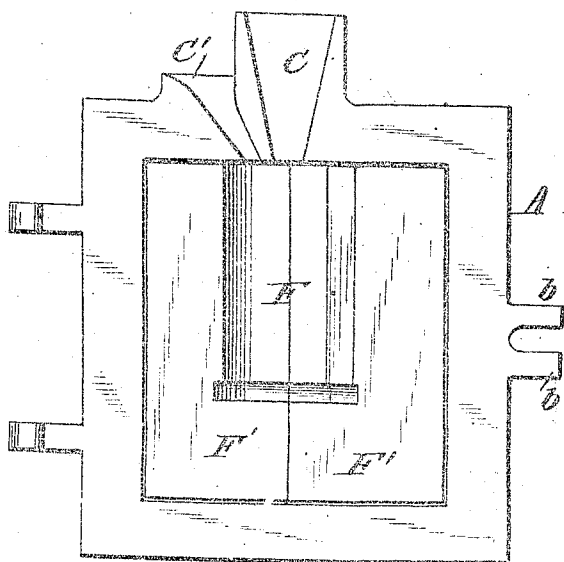


Fig. 10.

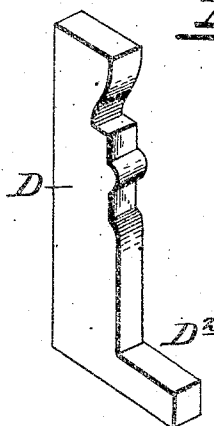
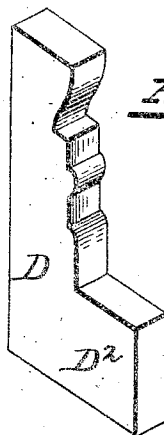


Fig. 7.



Witnesses
F. L. Ormand.

[Signature]

Inventor

[Signature]

UNITED STATES PATENT OFFICE.

PARKER H. SWEET, JR., OF WASHINGTON, DISTRICT OF COLUMBIA,
ASSIGNOR OF THREE-FOURTHS TO JOHN B. MENDENHALL, OF
KANSAS CITY, MISSOURI.

MOLD FOR MAKING METAL CASTINGS.

No. 845,663.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Application filed October 17, 1904. Renewed November 24, 1906. Serial No. 344,982.

To all whom it may concern:

Be it known that I, PARKER H. SWEET, JR., a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Molds for Making Metal Castings, of which the following is a specification.

My invention relates to improvements in molds for making metal castings; and it has for its object to provide a metal mold which can be produced at the minimum of cost and wherein metal castings embodying different shapes and forms and of varying sizes may be successfully produced in the same mold, thus obviating the necessity of employing a separate mold for each different article to be cast and also dispensing with the use of sand-molding and its attendant expense. Heretofore it has been the general custom to use sand for making molds for the casting of metals, and the fact that a new mold must be made by skilled workmen for every casting produced has led to attempts to provide a metal mold which might be used continuously and also cheapen the cost of making castings, and while such molds have been employed with varying degrees of success the main objections to the use of the same lies in the fact that their construction is necessarily expensive, in that the mold-chamber has to be prepared and finished by skilled and high-priced labor and the completed mold liable at any time to split or crack while in use, owing to the rapid expansion and contraction of the same, thus destroying its usefulness in producing perfect castings.

It is the object of my present invention to obviate these disadvantages and to provide a metal mold which can be produced at a low cost without skilled labor, which will not split or crack while in use, and whereby smooth and perfect castings can be produced in large quantities at a greatly reduced cost.

To these ends my invention consists, essentially, of a separable or two-part mold, the inner contacting faces of which are each provided with gate and vent openings and with a recess for receiving removable multi-form face-blocks, an intervening removable arch or crown, and a pattern-block which are to form the inner walls of the mold-chamber and wherein the molten metal is poured to produce the desired shape and size of casting.

My invention further consists in the novel details of construction and general arrangement of parts, as will be hereinafter fully described, illustrated in the drawings, and pointed out in the claims.

The invention will be more fully understood by reference to the accompanying drawings, wherein the same parts are indicated by like letters throughout the several views, and in which—

Figure 1 is a perspective view of the mold in a closed position. Fig. 2 is a horizontal cross-section taken on the line *x x* of Fig. 1. Fig. 3 is a vertical section taken on the line *y y* of Fig. 1, showing the empty recesses in the two sections of the mold. Fig. 4 is a similar view with the various members or parts in position within the recesses of the mold. Fig. 5 is an inside view of one half of the mold with the multiform face-blocks and intermediate arch or crown in position in the recess of the same. Fig. 6 is an inside view of the other half of the mold with a pattern-block in position within its recess. Fig. 7 is an inside view of one half of the mold, showing a modification of the space-blocks at the lower end of the recess. Fig. 8 is an inside view of the other half of the mold with the pattern-block provided with space-blocks at the lower end of the recess. Fig. 9 is a detail perspective view of one of the multiform face-blocks for forming one of the smaller size of castings, and Fig. 10 a similar view of a multiform face-block for forming the larger size of casting.

In this application I have shown a mold and its several parts or members arranged for casting one of the many different sizes of journal-bearings for car-axle boxes, commonly known as "car-brasses," and in order that the invention may be fully understood it is deemed necessary to mention that such journal-bearings are cast in several different sizes—that is to say, from three and three-quarter inches in width by seven inches in length, and so on up to five and one-half inches in width by ten inches in length—and the recesses in the two sections of the body of the mold are therefore of a size to readily admit the multiform face-blocks, an intermediate arch or crown, and a pattern-block of the largest size to produce the largest-sized casting.

As shown in the drawings, the main body of the mold is made in two parts or sections A A', which are hinged together on one side, as shown, while the opposite free ends are provided with a screw-threaded ring-bolt *a*, pivoted between the lugs *b b* on one half of the mold, the free end of said bolt being adapted to engage the slotted lug *c* on the other half of the mold, and by means of the nut *a'* the two sections of the mold may be securely fastened together.

Each part or section A A' is cast with a recess B, which register with each other when the mold is in a closed position. The mold is provided with an ordinary gate C, formed in the two parts of the mold directly above and to the center of the mold-chamber, while a suitable vent-opening *c'*, also formed in the two parts of the mold, is provided immediately adjacent to said gate C, as shown.

In arranging the mold for casting, the two multiform face-blocks D D', having right-angled projections D'' of the proper width and length, according to the size of castings to be produced, are inserted in the recess B of the section A', one on each side of a centrally-arranged arch or crown E, also fitting within the said recess, as fully shown in Figs. 2 and 5 of the drawings. Within the recess B of the opposite section A of the mold is arranged the proper size of pattern-block F, which is to form the crown of the journal-bearing, and when the two sections are closed together and securely fastened the various parts or members contained within the said recesses unite to form the inner walls of the mold-chamber into which the molten metal is to be poured to produce the desired size of casting.

As shown in the drawings, the mold is arranged for casting, and in this instance representing a journal-bearing three and three-quarter inches by seven inches in size, in which case the multiform face-blocks with the largest-sized right-angled projections D² is employed to produce that size of casting, said right-angled projections extending in reverse directions, so as to meet in the center of the recess B and fill the vacant space therein. These right-angled projections increase in size with the smaller sizes of the multiform face-blocks and decrease in size with the larger sizes of said face-blocks, so as to always fill the vacant space in the recess, while the various-sized pattern-blocks F in the opposite recess of the section A have an extension F' at their base corresponding to the projection D² upon the face-block in the opposite section, as fully shown in Fig. 6.

A modification is shown in Figs. 7 and 8, wherein a series of space-blocks G are designed to be substituted for the right-angled projections D² upon the lower ends of the multiform face-blocks D and the lower ends of the extension F' of the pattern-blocks F,

if deemed preferable, a sufficient number of said space-blocks being introduced into the recesses or taken therefrom, according to the size of the casting to be produced. The various widths of the several castings in each instance are provided for by inserting the proper width of face-blocks and intervening arch or crown in the recess of one section, and the corresponding size of pattern-block in the recess of the opposite section, according to the size of the casting that is to be formed in the mold.

The arch or crown E is made in several sizes, according to the size of the journal-bearing to be cast, and each arch or crown is provided with a rod or lug E', which projects into and through an opening in the wall of the section A' of the mold, as fully shown in Figs. 2 and 3.

The free end of the ring-bolt *a*, which locks the two sections A A' of the mold together, is provided with a handle A² for the easy manipulation of the said bolt into and out of engagement with the slotted lug *c*, while the lower end of an angular rod A³, pivoted within a slotted lug on the back of the section A', is also provided with a similar handle A⁴, whereby the free end of said angular rod may be brought into contact with the outer projecting end of the rod or lug E' on the arch or crown E to eject the same and the hardened casting from the mold at the proper time. These handles also serve for the ready manipulation of the mold during the operation of casting.

Each of the recesses B are provided with one or more thin plates B', which snugly fit against the back wall thereof, the object of which is such that when one or more of the castings are to be made thicker or with a greater depth these plates B' may be removed according to the depth of the multiform face-blocks and other members to produce the desired thickness of casting. My invention is equally applicable for casting articles of various shapes and sizes, it being only necessary to insert the proper pattern-blocks or forms within the recesses of the mold to produce the desired casting, and such application is hereby contemplated by me without departing from the spirit of my invention.

My improved mold can be produced at a very low cost, the two parts or sections A A', having the recesses B, gate C, and vent C', being preferably formed of cast-iron, while the multiform face-blocks D D', arch or crown E, and pattern-block F may be cast from some finer grade of metal to present smooth and even surfaces, so as to be capable of readily fitting the recesses of the mold, thus dispensing with the usual labor and expense of forming and finishing the mold-chamber.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. A metal mold for forming castings, comprising two parts or sections provided with central recesses having gate and vent openings formed integral therewith, and contained partially in one of said sections and partially in the opposite section, and one of a series of interchangeable pattern-blocks and space-blocks adapted to fit within said central recesses, substantially as described.

2. A metal mold for forming castings, comprising two parts or sections, each section being provided with gate and vent openings, and with a central recess provided with one or more thin plates fitting the rear walls thereof, and adapted to receive removable pattern-blocks of varying sizes and an arch or crown to produce the desired size and thickness of casting, substantially as described.

3. In a metal mold for forming castings, comprising two parts or sections forming an inclosing case, each section being provided with gate and vent openings, and with a central recess provided with thin plates fitting the rear walls thereof, the combination therewith of removable face-blocks and a centrally-located removable arch or crown fitting within one recess, and a removable pattern-block fitting the opposite recess substantially as described.

4. A metal mold for forming castings, comprising two parts or sections, each section having gate and vent openings, and a central recess provided with interchangeable pat-

tern-blocks, space-blocks, and auxiliary thin plates to produce the desired width, length, and thickness of the casting, substantially as described.

5. In a mold formed of two sections, each section being provided with gate and vent openings, and a central recess to receive interchangeable pattern-blocks or forms and an arch or crown to produce the desired shape and size of casting, the combination therewith of one or more thin plates B' adapted to fit the rear wall of each recess to increase or diminish the thickness of the castings, substantially as described.

6. In a mold formed of two sections, each section being provided with gate and vent openings and a central recess, the combination therewith of interchangeable face-blocks provided with right-angled space-filling projections, an arch or crown centrally located between said face-blocks, in one of said recesses, and a pattern-block or member located in the opposite recess of said sections, substantially as described.

7. In a mold of the class described, a face-block provided at its one end with a right-angled projection, in combination with the inclosing walls of the mold, substantially as described.

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

PARKER H. SWEET, Jr.

Witnesses:

C. W. FOWLER, -
HOWELL BARTLE.