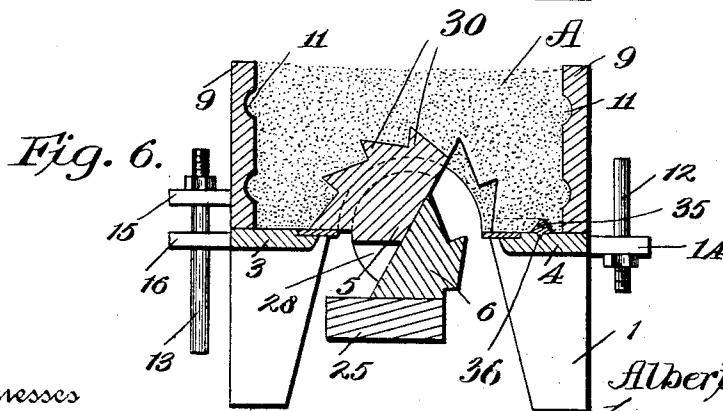
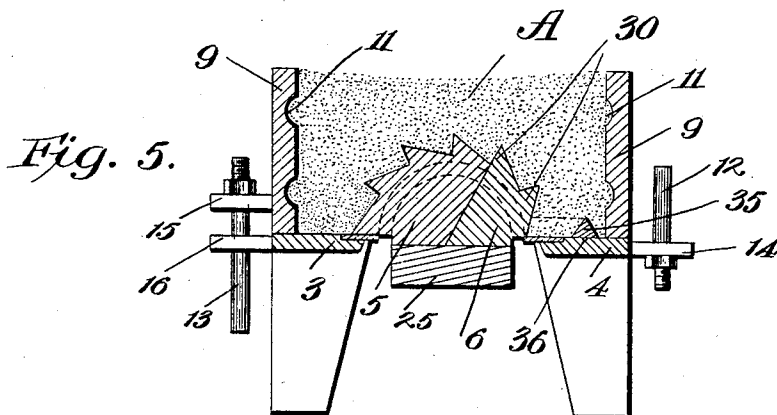
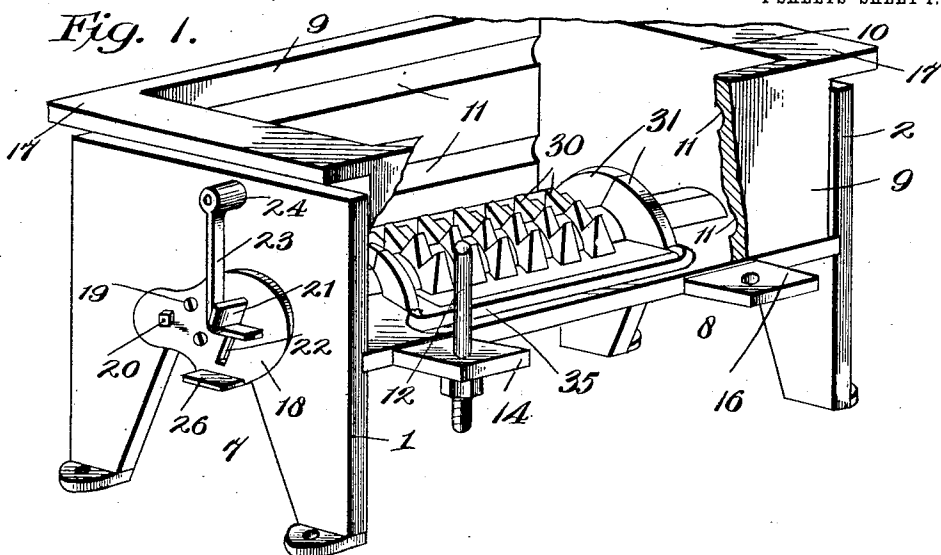


1,039,635.

A. J. BEERS.
MOLDING MACHINE.
APPLICATION FILED JULY 3, 1911.

Patented Sept. 24, 1912.

4 SHEETS-SHEET 1.



Witnesses
N. W. Primm.
H. H. Pryor

Inventor
Albert J. Beers.
By
William W. Hutton, Attorney

1,039,635.

A. J. BEERS.
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4 SHEETS—SHEET 2.

Fig. 2.

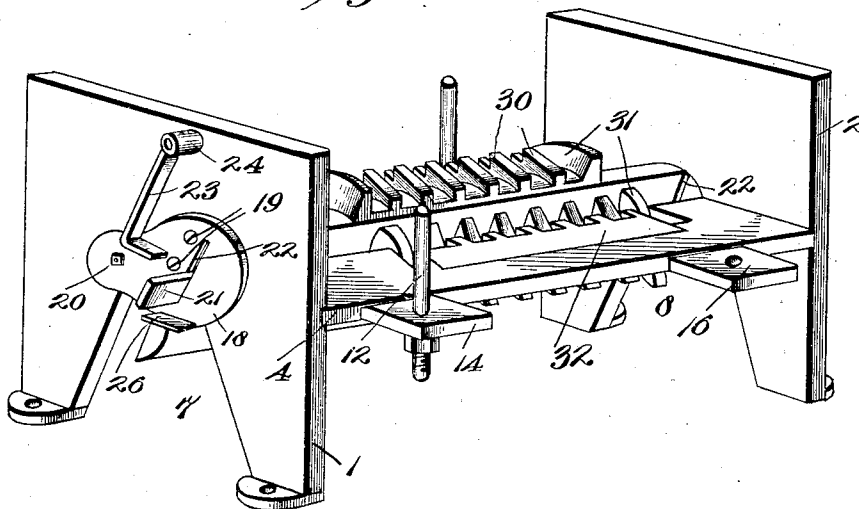
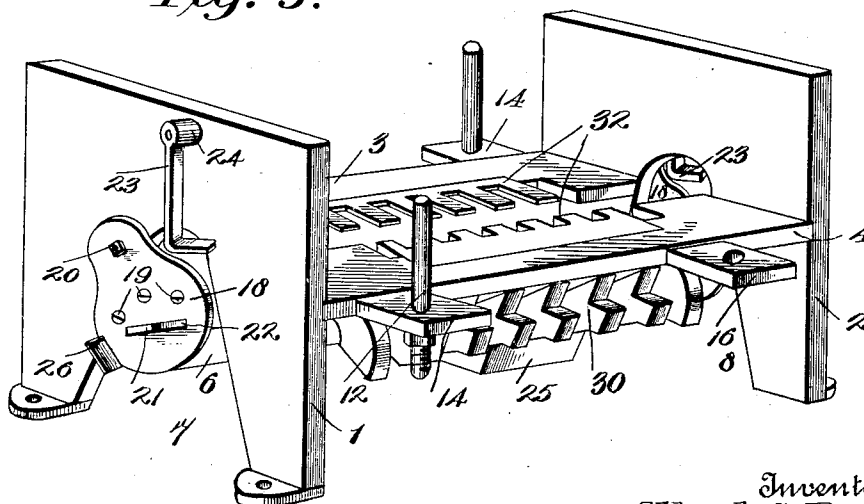


Fig. 3.



Witnesses
H. W. Pimm
H. H. Pym

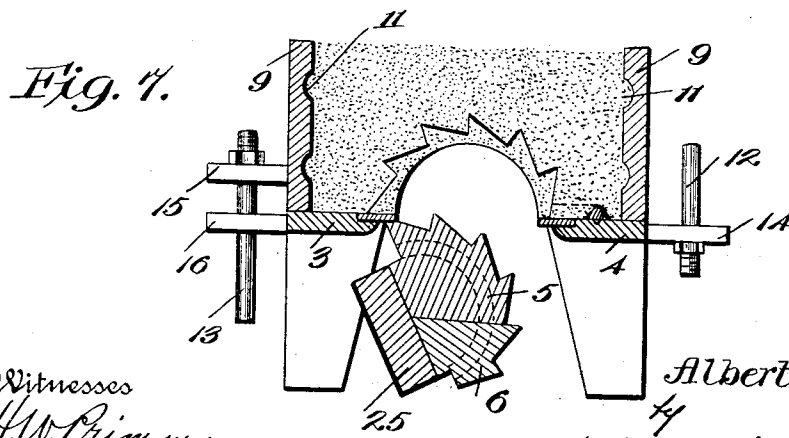
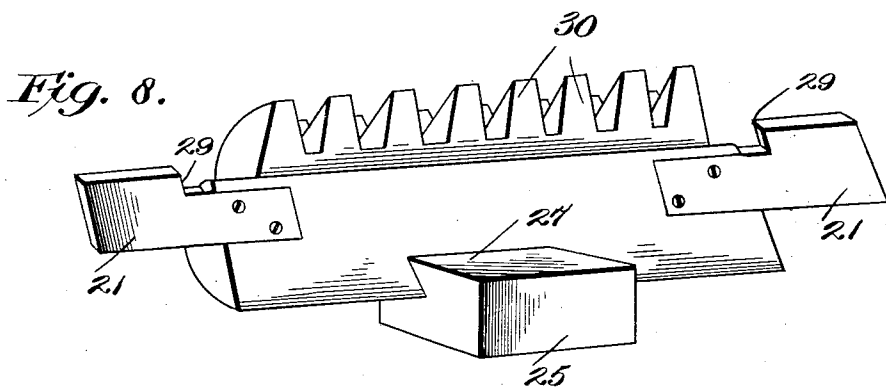
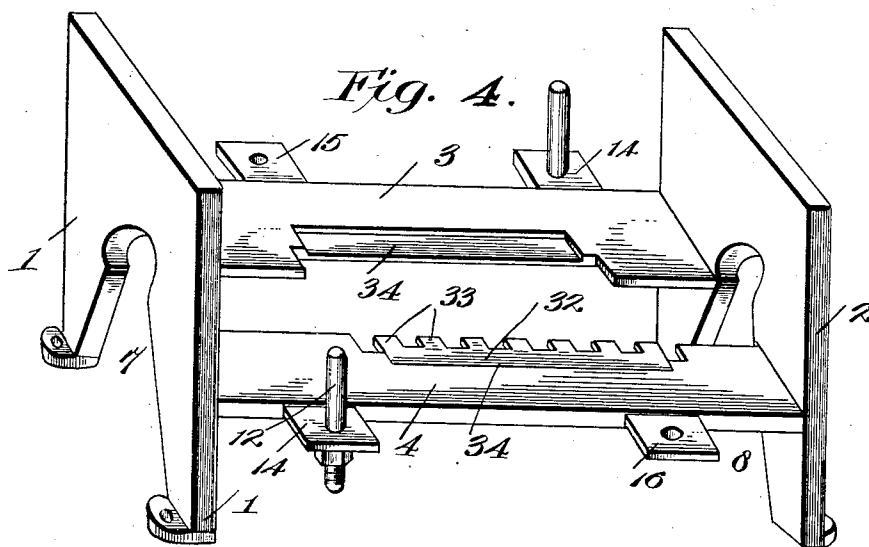
Inventor
Albert J. Beers,
by
Wilkinson, Fisher & Christopher
Attorneys

1,039,635..

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4 SHEETS—SHEET 3.



Witnesses
H. W. Primm
H. H. Pyne

Inventor
Albert J. Beers.
Wilkinson, Fisher & Whitcomb
Attorneys

1,039,635.

A. J. BEERS.
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4 SHEETS—SHEET 4.

Fig. 9.

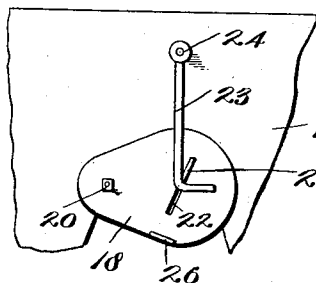


Fig. 10.

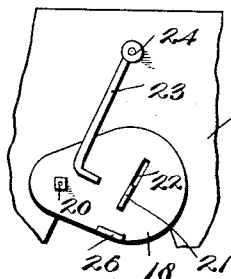


Fig. 11.

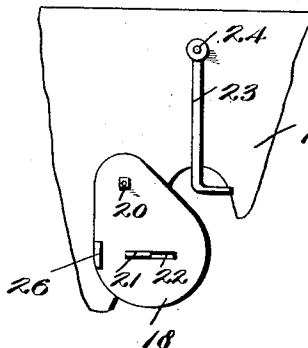
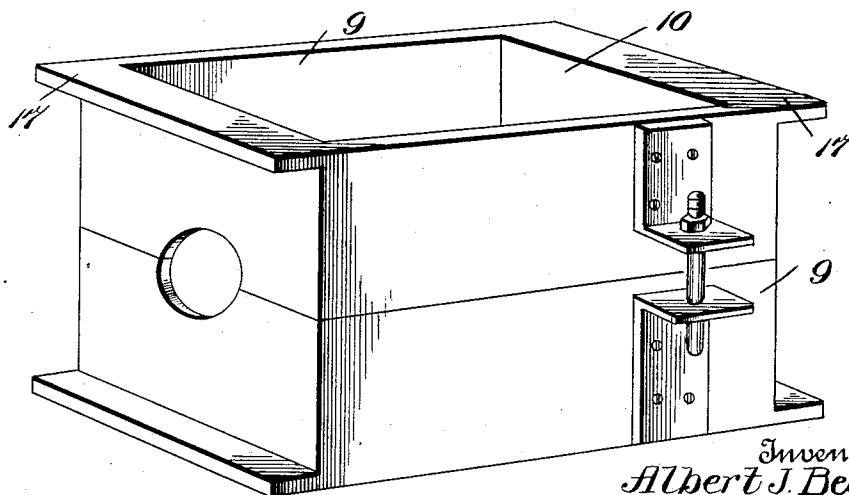


Fig. 12.



Witnesses
H. W. Pimm
H. H. Pyne

Inventor
Albert J. Beers.

by
Williamson, Fisher & Whitcomb
Attorneys

UNITED STATES PATENT OFFICE

ALBERT JAMES BEERS, OF EAST BRUNSWICK, VICTORIA, AUSTRALIA.

MOLDING-MACHINE.

1,039,635.

Specification of Letters Patent.

Patented Sept. 24, 1912.

Application filed July 3, 1911. Serial No. 636,557.

To all whom it may concern:

Be it known that I, ALBERT JAMES BEERS, a subject of the King of Great Britain and Ireland, &c., residing at East Brunswick, in the State of Victoria, Commonwealth of Australia, have invented certain new and useful Improvements in Molding-Machines; 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.

The present invention relates to mold forming apparatus of that type designed for making forms in sand for casting toothed or corrugated shafts, and has for its purpose to provide a construction wherein the sand form may be made with greater unity and stronger than is now obtained.

A further purpose of the invention is to provide an apparatus for casting a number of articles in the one operation; and wherein certain of the parts are interchangeable whereby articles of different sizes may be produced.

With these and other objects in view the invention consists in the novel details of construction and combinations of parts more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification in which like numerals designate like parts in all the views:—Figure 1 is a perspective view of the mold forming apparatus, partly broken away, in position for receiving the sand; Fig. 2 is a similar view with the flask removed, and with the pattern disassembled; Fig. 3 is a view corresponding with Fig. 2 and with the pattern dropped; Fig. 4 is a similar view with the pattern and its associated parts removed; Fig. 5 is a transverse sectional view illustrating the pattern in position in the sand; and corresponding with Fig. 1; Fig. 6 is a transverse sectional view showing one of the pattern sections dropped; and corresponding with Fig. 2; Fig. 7 is a similar view showing the pattern dropped; and corresponding with Fig. 3; Fig. 8 is a detail perspective view of one of the pattern sections; Figs. 9, 10 and 11 are end elevations of the pattern supporting means; and corresponding respectively with the positions thereof indicated in Figs. 5, 6 and 7;

and Fig. 12 is a perspective view of the flasks for holding the sand to receive the poured metal.

Referring to the construction in detail, the mold forming apparatus consists of a pattern or core support comprising a frame having upright end sections 1 and 2, connected by two horizontal sections 3 and 4, which are spaced to receive the pattern sections 5 and 6, as illustrated in the several figures. And the supporting end sections 1 and 2 are suitably cut away to provide clearances 7 and 8 for the dropping of the pattern sections, as will be hereinafter explained.

A flask of ordinary construction, and comprising side and end pieces 9 and 10, is mounted on the plates or lateral members 3 and 4 of the supporting frame. The flask is provided with a plurality of longitudinally disposed channels or grooves 11, formed in the sides 9 thereof to receive the sand A and act as retaining means for holding the same during the stripping operation. The flask is removably mounted on the supporting frame by abutting against the end supports 1 and 2; and is held against lateral movement through the medium of pins 12 and 13 that are carried by lugs 14 and 15 on the supporting frame and flask, respectively. The pins 12 and 13 are adapted to engage within perforated lugs 16 on the supporting frame, accordingly as the flask is being packed for molding the different halves of the article to be cast. At either end, the flask is provided with a projecting flange 17, which sufficiently overlies the pattern supporting mechanism to protect the same from falling sand when the flask is being packed.

The pattern sections 5 and 6 are adapted to have relative movement, and to be moved bodily from the flask; to which end the flask section 5 is secured at either end to a plate 18 by screws, or other means 19; and each plate 18 is pivotally mounted, as at 20, to its respective end of the supporting structure. The pattern section 6 has secured thereon, and at either end, a lug 21 projecting through diagonal slots 22 formed in the pivotal plates 18 (see Figs. 1, 9, 10 and 11). Said pattern section 6 is adapted to move relatively to the pattern section 5 the extent of the slots 22 for the purpose of

initially freeing the pattern in its entirety from the sand. The initial freeing movement of the pattern is clearly shown in Fig. 6, and the bodily movement of said pattern is illustrated in Fig. 7. In their assembled relation, or position within the flask for shaping the sand, both pattern sections 5 and 6 are supported through the medium of hooks or latches 23, hingedly mounted at 24 to the upright end members of the supporting frame. The hooks or latches 23 are adapted to engage with the lugs 21, and said lugs engaging with the swinging plates 18 serve to hold the sections 5 and 6 in assembled relation, and in their position for shaping the sand in the flask. In addition to this means for supporting the pattern, the same may be further supported by any appropriate device, which is placed beneath the supporting frame and engages with the underside of a block 25 that is cast integrally with the pattern section 6. And when such additional supporting means is removed for permitting the pattern section 6 to drop, the pattern section 5 may then be supported by suitable devices engaging with flanges 26 that are formed integrally with the pivotal plates 18. To remove the pattern section 5, and consequently allow the whole pattern to drop, it will then be necessary only to displace such devices as are supporting the end plates 18 through engagement with said flanges 26.

The pattern section 6 is held against lateral displacement relatively to its coöperating pattern section 5 through the medium of the upper portion 27 of the block 25 that engages within a complementary recess 28, cut in the underside of said pattern section 5. And in addition thereto, the supporting members 21 are cut away to provide shoulders 29 that engage with the outer faces of the plates 18, and thus prevent endwise movement of the pattern section 6 when the same is held in its raised position through the hooks or latches 23.

The pattern sections herein illustrated are designed for shaping sand to mold toothed shafts, but it will be readily appreciated that the construction of parts is susceptible of different designs, and may be readily interchanged for molding other articles of that general character, such for instance as clutch members, grooved pulleys and chaff cutters, or the like. In the present embodiment, the pattern is provided with teeth 30 and with semi-circular flanges 31 for designing like structures on the casted article. A pair of comb plates 32 having teeth 33 are adapted to coöperate with the teeth and flanges 30 and 31 of the pattern, whereby to close the space between said teeth and flanges and to support the sand when the pattern sections are stripped therefrom. The combs 32 are suitably secured within recesses 34 formed

in the adjacent face of the bottom plates 3 and 4 of the supporting structure (see Figs. 3 and 4).

A runner strip or bar 35 is mounted on the plate 4 and held against displacement thereof through the medium of studs 36, engaging in the face of said plate, and has for its purpose to provide a curved channel way (see Fig. 1) in the face of each mold sand section A. Said channel way is adapted to register with the channel way of the sand section with which it is associated when receiving the poured metal, the purpose whereof being to permit of ready flowing of the molten metal, as will be understood by those skilled in this art.

In the actual casting operation, two of the flasks supporting the molded sand are assembled, as illustrated in Fig. 12, when the molten mass may be poured to fill the shaped opening within the sand to produce the desired article. It is to be understood, of course, that a suitable core piece is to be used within the sand opening for producing a corresponding shape in the resultant article.

It is obvious that those skilled in the art may vary the details of construction and arrangement of parts without departing from the spirit of my invention, and therefore I do not wish to be limited to such features except as may be required by the claims.

What I claim is:—

1. In a mold forming apparatus, the combination with a support and flask for holding the mold forming material; of a sectional pattern; means swingingly mounted on said support; one of said pattern sections secured to said swingingly mounted means, and the other of said pattern sections movably mounted on said means; and devices mounted on said support for engaging with the second named pattern section and holding the pattern sections together within the flask, substantially as described.

2. In a mold forming apparatus, the combination with a support and flask for holding the mold forming material; of a pattern comprising a sectional bar; devices swingingly mounted at either end of said support; one of said pattern sections secured at either end to said swingingly mounted devices, and the other of said pattern sections mounted to have independent movement on said swingingly mounted devices; and latches mounted on said support and adapted to engage with the second named pattern section and hold the same in engagement with the first named pattern section within the flask; said second named pattern section adapted to be independently released to initially strip the pattern, and the first named pattern section adapted to be stripped from the molded material

through the swinging movement of said supporting devices, substantially as described.

3. In a mold forming apparatus, the combination with a support and flask for holding the mold forming material; of a sectional pattern; plates pivotally mounted to said support at either end thereof and having rigid connection with one of said pattern sections; said pivotally mounted plates provided with slots having slidably mounted therein the ends of the other of said pattern sections; and latches swingingly mounted on said support and adapted to engage with the ends of the movably mounted pattern section and hold the pattern sections assembled and within the flask; said movable pattern section adapted to move the extent of said slots whereby to initially strip the pattern, and the first named pattern section adapted to be stripped from the molded material through the swinging movement of said supporting devices, substantially as described.

4. In a mold forming apparatus, the combination of a support comprising end members and a longitudinally disposed base; a flask movably mounted on said base; a separable pattern swingingly mounted on the end members of said support and adapted to be moved between the sections of said base; each section of said base provided with a recess; and plates removably secured in said recesses and constructed complementary with the surface of said pattern for engaging therewith; said plates adapted to support the mold form when the pattern is stripped therefrom, substantially as described.

5. In a mold forming apparatus, the combination of a support comprising end sections and a longitudinally divided base; a flask movably supported on said base; means for centering the flask on the base; plates pivotally mounted on the end members of said support; a sectional pattern having one member thereof secured to said pivotally mounted plates, and the other member thereof movably mounted on said plates; devices for engaging with said movably

mounted pattern section and holding the pattern sections assembled and within the flask; and plates removably mounted on the sections of said base and having their adjacent edges constructed complementary to the adjacent surfaces of the pattern whereby to close spaces therebetween; said plates adapted to support the molded form when the pattern has been stripped therefrom, substantially as described.

6. In a mold forming apparatus, the combination with a support and a flask for holding the mold forming material; of a sectional pattern mounted on said support and adapted to be moved within and clear of the flask; and means for holding the pattern sections against relative movement comprising a block carried by one of the pattern sections and engaging within a complementary formed recess in the other pattern section; and means for supporting the pattern in position for molding, substantially as described.

7. In a mold forming apparatus, the combination with a support and flask for holding the mold forming material; of a sectional pattern; plates pivotally mounted on said support and having secured thereto one of the pattern sections, and provided with slots; lugs carried by the other section of the pattern projecting through said slots and permitting of movement of said section; said last named pattern section provided with a block adapted to engage within a complementary formed recess in the other pattern section whereby to hold said sections against relative endwise movement; and latches pivotally mounted on said support adapted to engage with the lugs on the movable pattern section and hold the pattern sections assembled and in position for molding, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

ALBERT JAMES BEERS.

Witnesses:

GEORGE G. TURRI,
BEATRICE M. LOWE.