MOLD FOR CASTING BATHS OR OTHER VESSELS.

To all whom it may concern:

Be it known that I, WILLIAM WARD CHAP- MAN, iron-molder, a subject of the Queen of Great Britain, residing at Prescott, in the county of Lancaster, in the Kingdom of England, (whose full postal address is 20 Warrington road, Prescott, aforesaid,) have invented certain new and useful Improvements in Molds for Casting Baths or other Vessels, of which the following is a specification.

In the manufacture of baths the usual plan has been to cast them in sand molds, which, however, is a somewhat slow process, as a mold has to be made for each casting, and a workman at the quickest rate could hardly make more than two molds a day. Now by my present invention I make the baths or other vessels of iron, zinc, spelter, aluminium, or other suitable material. Furthermore, I dispense altogether with the use of sand and make the molds for casting of iron, steel, or other metal suitable for the purpose. The great rapidity with which zinc and spelter chill and become set caused difficulties hitherto in the use of metal molds. This rapid setting and consequent contraction of the spelter in a rigid metallic mold would cause the cast metal to crack, because the metallic mold would not give, as a sand mold would, to the contraction of the cast spelter. To remedy this, I form the core of the mold in sections, which are capable of being drawn in or contracted, thereby allowing the casting to contract without being injured at all.

Referring to the accompanying drawings, Figure 1 is an elevation, partly in section, of a bath-mold in position for pouring in the metal; Figs. 2 and 3, details of Fig. 1, to be hereinafter described; Fig. 4, a longitudinal section of Fig. 1, showing the mold in an inverted position; Fig. 5, a plan view, partly in section, of a portion of Fig. 4; Fig. 6, a detail of Fig. 5; Fig. 7, a cross-section through Fig. 4; Fig. 8, a detail of a portion of Fig. 4; Fig. 9, an enlarged detail view of a portion of Fig. 7; Figs. 10 and 11, an elevation and a plan of a slight modification of part of Fig. 4; Fig. 12, a plan of the mold. Fig. 13 is a detail showing one method of mounting the end pieces upon the standard, hereinafter described.

In the drawings, A is the outer metal casing of the mold, which is supported on trun-
screwed, brazed, or otherwise fixed, as shown
in Fig. 13. The sides in this case give automatic-
ally to the pressure of the contracting metal.
The manner whereby this is done
and which is shown in Fig. 7 consists in hav-
ing a standard T situated in the center of the
core and supported by fixed vertical spindles
U, Fig. 4, passing through it. Hollow bosses T
are formed on this standard to receive springs
V and the ends of rods W, which latter bear
against the springs, the other ends of such
rods being fixed to the side plates K and L.
In order to give more support to these rods
and to prevent the springs forcing the plates
K and L beyond the required distance apart,
which X, Fig. 5, is provided, resting on the
bottom of the core and having holes through
which the rods W pass. Further, by having
collars Y on the rods bearing against the in-
side of the frame these collars, while not in-
terfering with the rods being pressed inward
against the pressure of the springs, will limit
their outward movement.
I do not confine myself to the aforemen-
tioned automatic arrangement as, if it were
deemed advisable, the sides could be con-
tracted by hand by means of levers 1, as shown
by dotted lines in Fig. 7, such levers being
furnished to arms 2, fixed to the central
standard T, and engaging pins on the rods
W. Furthermore, in order to make it impos-
able when springs are used for the side sec-
tions of the core to yield before a given time
I provide vertical screwed spindles 3 mounted
in the central standard T, and bars 4, hav-
ing pins 5, adapted to enter holes in the
rods W. These bars are threaded onto the
spindles, and when the pins 5 fixed thereto
enter the holes in the rods the latter are
locked; but on the hand-wheels being rotated
the pins are raised out of the holes in the rods W,
thereby freeing the same.
As this mold has been designed principally
for baths having flanges, I provide for this
as follows:
6. Fig. 9, is a loose strip of metal curved
in cross-section, as shown, and extending all
around the edge of the bath and supported
by screws 7, by means of which its height is
adjusted between the flange 8 and the outer
casing A.
9 represents brackets which support the
flange 8 and serve as nuts for the screws 7.
10 is a piece similar to the piece 6 and is also
free to be moved vertically by the screw 11.
12 is an angle-iron one flange of which is
removably secured to the flange 8 of the outer
casing A, its other flange being attached to a
bridge-piece 13. The latter in addition to
forming nuts for the screw-pins 11 also serves
to connect the angle-iron 12 with a skeleton
frame 14, which is attached to the top of the
central standard T by nuts screwed on the
end of vertical rods U, which pass through
the frame 14.
In order to better support and guide the
filling-piece O, Fig. 5, I may extend the cen-
tral standard T, as shown in Figs. 10 and 11,
and form a recess or slot 15 therein to receive
the extended portion 16 of the filling-piece O.
70 Pins 17 pass through elongated holes 18 in
the standard T and through the portion 16 of
the filling-piece O, the latter being also sup-
ported by the rod S, which is operated by the
lever P, Fig. 4, in the manner before de-
scribed.
The adjacent edges of the side plates K
and L of the core are preferably sloping, as
shown in Fig. 8, with an overlapping strip 18,
fixed to the upper plate.
The mode of action is as follows: After
screwing up the different parts, so as to make
the joints tight, the mold is turned into the
position shown in Fig. 1, and the metal is
poured into the mold, a suitable air-vent be-
ing provided. I assume that it will take at
least forty-five seconds for the spelter to chill
and become set, and immediately sufficient
metal has been poured in the mold is inver-
ted, and the different sections forming the 90
core are freed, so as to give automatically to
the pressure exerted by the contracting metal
or are drawn in by means of levers or other-
wise. After casting, the core and its connec-
tions are raised and the cast article removed.
95 The molds by constant use are kept at a high
temperature, and this prevents any sudden
chilling of the spelter in casting.
This invention is specially suitable in cases
where a large number of castings are wanted
of one and the same pattern.
I declare that what I claim is—
1. In a mold for casting baths and like ar-
ticles, the combination of a core built up of sec-
ctions adapted to yield under the pressure of
the article being cast, an outer casing of the
shape of the article to be cast, trunnions sup-
porting said casing at each end in such man-
ner that the mold and core can be turned up
side down, an aperture in the bottom of said
outer casing through which the molten metal
can be poured, and a plug H to prevent the
excessive wearing away of the core beneath
said aperture, substantially as described.
2. In a mold for casting baths and like ar-
ticles, the combination of an outer casing
having the shape of the article to be cast, a
core consisting of a bottom formed in one
piece, two sides each of which is made up of
two or more pieces one above another and ex-
tending around to nearly meet at the large
end of the core, a removable piece adapted to
fill in the space between their nearly-meeting
edges, an end piece at the small end of the
core, means for drawing back said end piece
when required, and means for expanding or
contracting the side pieces, substantially as
described.
3. In a mold for casting baths and like ar-
ticles, the combination of an outer casing A,
a core G built up of a plurality of sections,
means whereby the sections may be made to
yield under pressure; a detached flange 8,
surrounding the margin of the casing A, sup-
porting-brackets 9, connecting said flange with the casing A; angle-irons 12 connected to the flange 8; an inner skeleton frame 14; bridge-pieces 13 connecting the angle-irons 12 and skeleton frame 14; relatively adjustable strips 6 and 10 bridging the space between the flange 8 and the casing A and core G respectively; and screws 7 and 11 on which the strips 6 and 10 are respectively mounted turning in fixed nuts in the brackets 9 and bridge-pieces 13 respectively, to effect the vertical adjustment of the strips 6 and 10, substantially as and for the purposes set forth.

4. In a mold for casting baths and like articles, the combination of an outer casing A, a core G built up of a plurality of sections, a standard T within said core, rods W connecting the sections of said core to the standards in such manner as to allow said core to yield under the pressure of the article being cast, and a frame X surrounding the standard T through which the rods W pass, and against which the collars Y are adapted to bear, substantially as described.

5. In a mold for casting baths and like articles, the combination of a casing A, a core G built up of sections, a central standard T, rods W connecting said sections of the core to said standard in such manner as to allow said core to yield to the pressure of the article being cast, screwed rods 3 and arms 4 working on said rods, and pins 5 carried by said arms and adapted to engage and hold the rods W, substantially as and for the purposes set forth.

6. In a mold for casting baths and like articles, the combination of a core G built up of sections, a central standard T within said core, rods W connecting said standard to the sections of said core in such manner as to allow said core to yield under the pressure of the article being cast, collars Y on said rods, and a frame X surrounding the standard T through which the rods W pass, and against which the collars Y are adapted to bear, substantially as described.

7. In a mold for casting baths and like articles, the combination of an outer casing A, a core G built up of a plurality of sections, a standard T within said core, rods W connecting the sections of said core to the standard T through which the rods W connecting the sections of the core to the standard pass, collars X on said rods adapted to bear against said standard frame, brackets 9 mounted on said outer casing A, plates 6 adjustable mounted in said brackets, a flange 8 mounted on said brackets, an angle-iron 12 connected to said flange 8, a bridge-piece 13 connected to said angle-iron, a skeleton frame 14 connected to said bridge-piece, and plates 10 adjustable mounted on said bridge-piece, substantially as described.

In witness whereof I have hereunto signed my name, this 8th day of December, 1900, in the presence of two subscribing witnesses.

WILLIAM WARD CHAPMAN.

Witnesses:

G. C. DYMOND,
ALBERT C. R. HENRI.