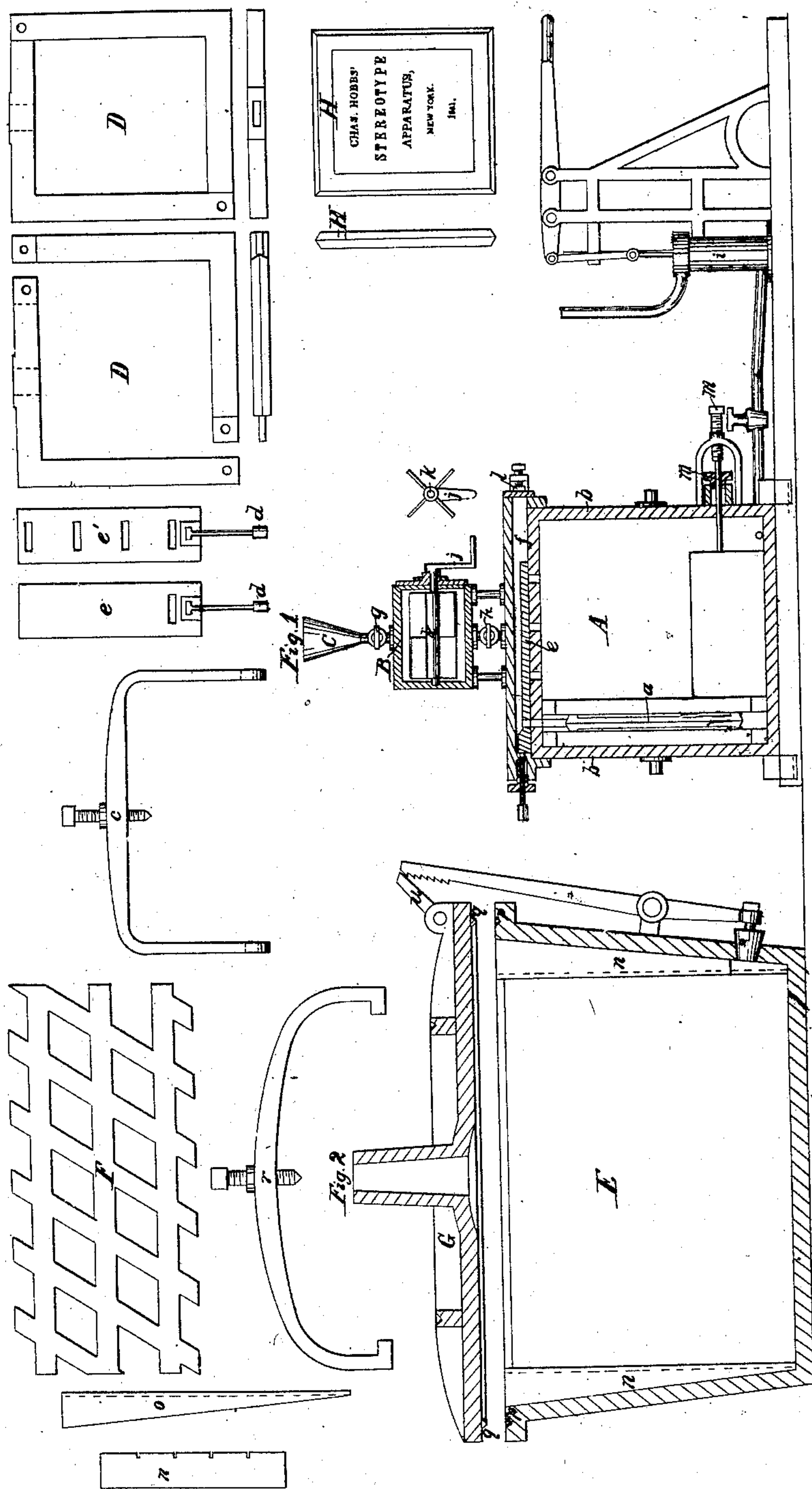


MOLDING AND CASTING STEREOTYPE PLATES.

Patented Sept. 2, 1851.



UNITED STATES PATENT OFFICE.

CHAS. HOBBS, OF NEW YORK, N. Y.

MOLDING AND CASTING STEREOTYPE-PLATES.

Specification of Letters Patent No. 8,333, dated September 2, 1851.

To all whom it may concern:

Be it known that I, CHARLES HOBBS, of the city and county of New York, have invented a new and Improved Method of
5 Molding and Casting Stereotype-Plates from Type, Woodcuts, Medals, &c., and I do hereby declare that the following is a full and exact description.

10 The nature of my invention consists in molding and casting any given number of stereotype plates at one operation: besides making them more rapidly than can be made by any other known method, it makes them more perfect.

15 I will state some of the advantages it possesses over the usual method of molding and casting. First, I exhaust the air from the plaster and from the type before I apply the plaster to the type, when making
20 molds. The usual way is to roll the air from the plaster and face of the type by hand, after the plaster has been applied to the type. This can not be done without forcing the plaster into some parts harder than
25 in others, which will cause the plaster to adhere to the face of the type, and portions of it break off when the mold is drawn. Second, I mold a much larger number in the same time than can be made by any other
30 known method. I also save material by making the molds with two faces thus making one mold do instead of two. Third, in casting the molds I stand them on edge with a body of stereotype metal above them, thus
35 having the largest body of metal above the molds. The usual method of casting is, to leave the edges and the corners of the casting pan open for the metal to run in and lay the mold down on a piece of flat
40 iron which fits the bottom of the casting pan, thus when the metal runs into the corners the piece of iron floats and brings the mold directly in contact with the cover of the pan, thus leaving the largest body of
45 metal below the molds, this leaves them liable to hollows in the face, called shrinkages, and also to places where the air and steam has lodged called blows. This is prevented in my method, by the largest body of
50 metal being above the molds the shrinking always taking place where the largest body is, and the molds being placed on edge leaves little or no opportunity for the air or steam to lodge near them. Fourth, when I put
55 my pan in the pot of fluid metal I do not

open the valve to let the metal into the molds until I have sunk it some distance below the surface thus preventing the liability of dross or dirt flowing into the face of
60 the molds. The usual method of casting is to lay the molds down on its face thus leaving it liable to retain any light substance that may float underneath it and destroy the face. Fifth, in my apparatus it requires very little labor in order to release
65 the plates from their places in the casting box, but in the usual method it requires considerable. In my apparatus I can cast ten or even twenty times as many as can be cast in the usual way and I have only to take
70 off the top wedge and two side wedges in order to release the whole of them, whereas in the usual way they have to knock off all the metal around the edge of each cast (which only contains one layer where mine
75 contains ten) before they can get at the plates. Sixth, in my apparatus the molds are stood on edge and having two faces the metal flows alike on both sides thus the pressure of metal is equal on both sides of
80 the molds this prevents the molds from breaking while they are being cast. In the method now used the pressure comes on but one side of the mold and anything lodging on the back part of the mold sufficient to
85 cause unevenness, will cause the mold to break thus spoiling the plate, this is quite a discount on the present mode of casting. Seventh, I can cast with the metal at a much lower heat than can be done by the present
90 method. In the present method they bring the face perfect by heat and they very often over heat the metal causing a bad face to the plate, and oxidizing the metal. I prevent this by not requiring so much heat
95 but bringing the face perfect by the weight of metal confined over the molds.

To enable others skilled in the art to make and use my apparatus or invention I will proceed to describe its construction and
100 operation.

Figure 1 in the annexed drawings is the molding apparatus; Fig. 2, the casting apparatus.

Letter A the air tight molding box; B, 105 an air tight cylinder for exhausting the air from the plaster; C, a funnel to admit the plaster into the cylinder; D, D, the flasks (open and closed) that contain the molds; E, the casting box; F, a rack to put over 110

the molds when in the casting box, to prevent them from floating against the cover of the box.

G, is the cover of casting box.

5 H represents the molds when taken from the flasks.

Having now described the use of the main parts I will proceed to describe its sections and its operation. The forms of type, wood
10 cuts, medals, &c. having been previously oiled and prepared to receive the plaster, I put them in box A with a flask between every two forms as represented in the drawing letter *a* standing them upright with the
15 mouth of the flasks next to the top of the molding box. The mouths of the flasks are covered with india rubber on the upper side so that when it comes in contact with the top of the box forms a tight joint. There
20 are openings in the top of the box to correspond with the mouths of the flasks. After I have filled the molding box with forms I close the cover against the open edge of the box *b b* which is also covered with india
25 rubber and then attach the clamp *c* to the projections on the side of molding box tightening the screw in the clamp against the cover, until it has compressed the india rubber sufficient to make the joint air tight. I
30 now draw the rod *d* it being attached through a stuffing box to cut off plate *e* this opens the connection between the flasks and pipe *f* there being openings in the cut
35 off to correspond with the number of flasks in the molding box. (Thus, if I had but one flask in the box I would use the plate *e* with one opening and if four flasks the plate *e'* with four openings.) After drawing the rod *d* with cut off plate *e* I open valve
40 *g* and *h* then pour water into funnel C until the whole apparatus is filled with water as far as valve *g*; I then close valve *g* and pump the water out. This leaves a vacuum in the whole apparatus between the pump *i* and
45 valve *g*. I now tighten the screws *m, m*, which have rods working through stuffing boxes against the forms and flasks in the box, this forces them closely together, they having been left partially open in order to
50 let the water run from them, it's now necessary that they should be tight to keep the plaster from running out of the flasks. This being done I mix the plaster with water and pour it in funnel C then shut
55 valve *h* which prevents the plaster from running out of the cylinder B. I then open valve *g* and the plaster then runs into the cylinder; I shut the valve *g* before the plaster has quite run from the funnel this prevents the air fol-
60 lowing the plaster into the cylinder I then rapidly turn the crank *j* which is attached to a propeller inside of the cylinder B, this agitates the plaster and separates the air from it. The crank is connected with the
65 propeller *k* by passing through a stuffing

box at one end of the cylinder where the cover is attached. The cover at the end of the cylinder is made to fit air tight by means of a spherical joint and can be taken
70 off or put on by turning it round, there being wedge pieces on the side, which fit into the clamps on the side of the cylinder. This is for cleaning it out with facility in case of accident or when it may require it. The
75 air being now taken from the plaster I open valve *h* the plaster now flows from the cylinder into pipe *f* from pipe *f* into the flasks in the molding box, which confines the plaster to the face of the type, wood cuts, &c. The molds are now made. In order to clean
80 it out before the plaster has become hard I push in rod *d* which cuts off the connection between the molding box and the apparatus above it. I then shut valve *h* and open valve *g* after this I pour water into funnel
85 C until it is filled, then wash the plaster from the funnel and turn crank *j* a minute or so, then loosen the screw at the end of pipe *f* and take out bonnet *l* opening valve
90 *h*. I then turn crank *j* until the water has all run out at the end of pipe *f*. The apparatus now being washed clean I take out the cut off plate *e* and stand it to dry. The plate is taken out of the opening in pipe *f*.
95 The cut off plate and inside of pipe *f* should be oiled when dry to keep them from rust. After I have washed the apparatus I take off clamp *c* and let down the cover. I then take out the forms in pairs with their
100 flasks between them lay them on a level bed of stone then take four wedges or screws and insert one under each corner of the top form and force it from the mold after this I insert the wedges or screws under the flask, and force it from the bottom form. I now
105 take out the pins in the two corners of the flask and draw the two pieces apart (as represented in the annexed drawings D, D) this liberates the mold ready for use.

Having described the operation of mold-
110 ing I will proceed to describe the casting. I first take the molds and place them in an oven to dry, I then take the casting apparatus (Fig. 2) and place it in a pot of fluid type metal (sufficiently large to immerse the
115 whole casting box as far as the column), I let it remain there until it is heated to the same temperature as the type metal, I then inspect the molds in the oven, and if dry enough to cast I take the casting box out of
120 the metal, and take it apart. I then cleanse each part of it from dirt or dross that may hang to it. I now stand the casting box E on the side of the metal pot, putting in the
125 two wedges *o* at the sides of the box and then the two grooved at the two ends. The grooved wedges *n* are made so that the partitions can slide in easily and yet be tight, this necessary precaution is, that the plates may be of an even thickness. After putting 130

the partition plates into the grooved wedges
n n I take the molds out of the oven and
 place them between the partition plates until
 the casting box is filled, I then cover the top
 5 of the molds with rack *F* which prevents the
 molds from raising when the metal is ap-
 plied to them. I next take some plaster of
 paris and lay it around in groove *p* at the
 top of the casting box. I then put on the
 10 cover *G* placing the bead on the under part
 of the cover (marked *q q*) directly into the
 groove *p, p*, (on the top of the plaster). I
 now fasten the two clamps *r* on the box and
 tighten the two screws against the cover, this
 15 forces the bead *q q* firmly into the plaster
 in groove *p p* thus making a joint sufficiently
 tight that the metal can not run through it.
 I now lift the whole apparatus into the
 metal pot by means of a crane made for that
 20 purpose. I then sink the casting box into
 the fluid metal beyond valve *s* then open
 valve *s* by means of the lever *t* and this
 admits the metal to the molds, after the box
 has filled as far as the column with metal,
 25 I close valves *s* and fasten it by means of
 ratchet *u* then let it remain in the metal
 until the air and moisture has escaped
 through the column at the top of the box.
 I then fill the column with metal and let it
 30 remain five or ten minutes; after this, I lift
 it out of the metal into a cooling trough, by
 means of the crane. I let it remain there
 until the metal has got hard, I then lift it
 out of the cooling trough by means of pul-
 35 leys attached to the ceiling. I now take off
 the clamps *r* and then the cover *G*, after this
 I turn the box on its side and take a ham-
 mer and strike the column of metal until I

have jarred the contents of the box loose, I
 then remove the box turning its contents 40
 out on its side then I force off the top
 wedge *o* and afterwards the two end grooved
 wedges *n n*. I now separate each layer of
 plates by lifting the partition plates of iron
 that separate them. The plates are now 45
 ready to be cleansed from the plaster and
 sent to the finishing room. In order to re-
 lieve the rack *F* from the metal which sur-
 rounds it I throw it into the metal pot where
 it melts off. 50

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

1. The molding in plaster of one, or more
 forms of type, wood cuts, medals, &c., at one
 operation in air tight vessels by means of 55
 exhaustion.

2. I claim the making of the plaster molds
 with two faces.

3. I also claim the casting from one or
 more molds in a box sufficiently tight to hold 60
 fluid metal and bringing the face perfect
 by means of the weight of fluid metal con-
 fined above them in column, or otherwise.

4. I also claim the grooved wedges for re-
 taining the molds in their places while cast- 65
 ing from them.

5. I also claim the non admission of fluid
 metal to the molds until the orifice through
 which it enters is sunk beneath the surface
 of the fluid metal thus preventing the dirt 70
 and dross from entering with it.

CHARLES HOBBS.

Witnesses:

JOHN GILBERT,
 LYMAN D. C. WILEY.