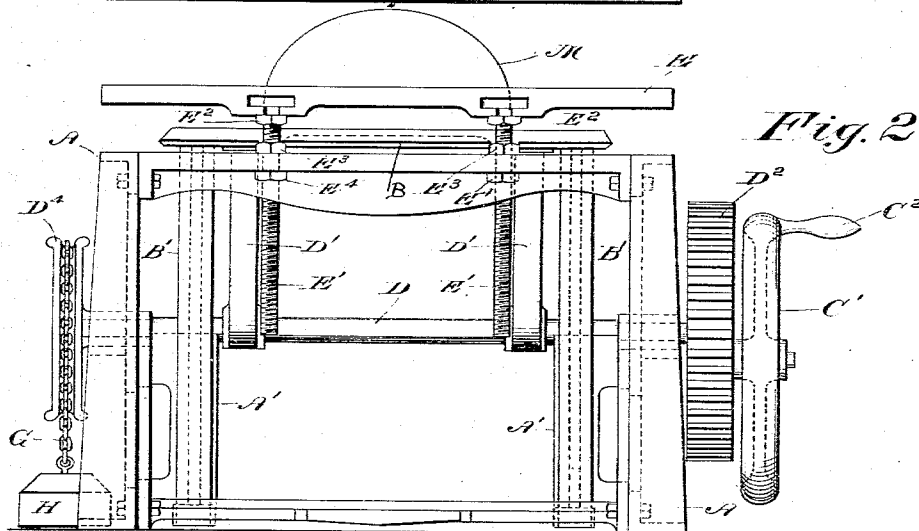
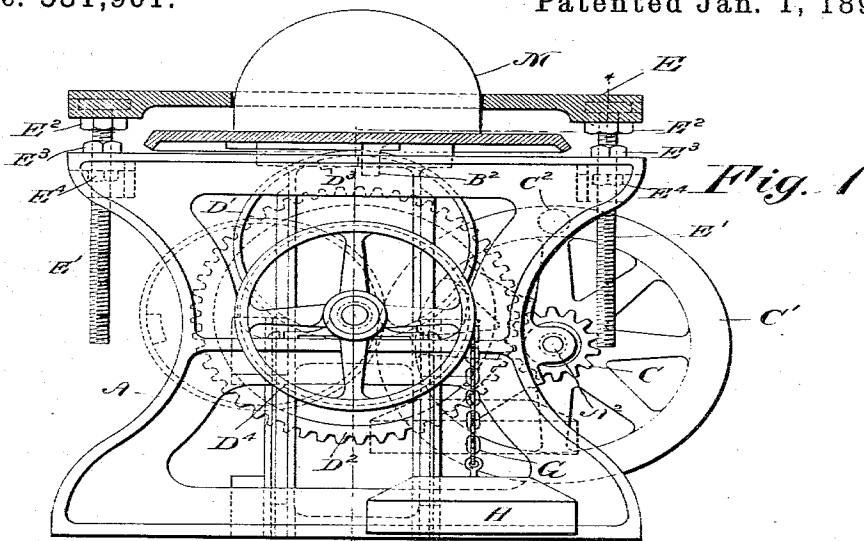


M. J. BROSNAN & G. SHARPE.
MACHINE FOR SAND MOLDING.

No. 531,901.

Patented Jan. 1, 1895.



Witnesses:

M. F. Boyle
Charles R. Seale.

Inventors:

Michael J. Brosnan
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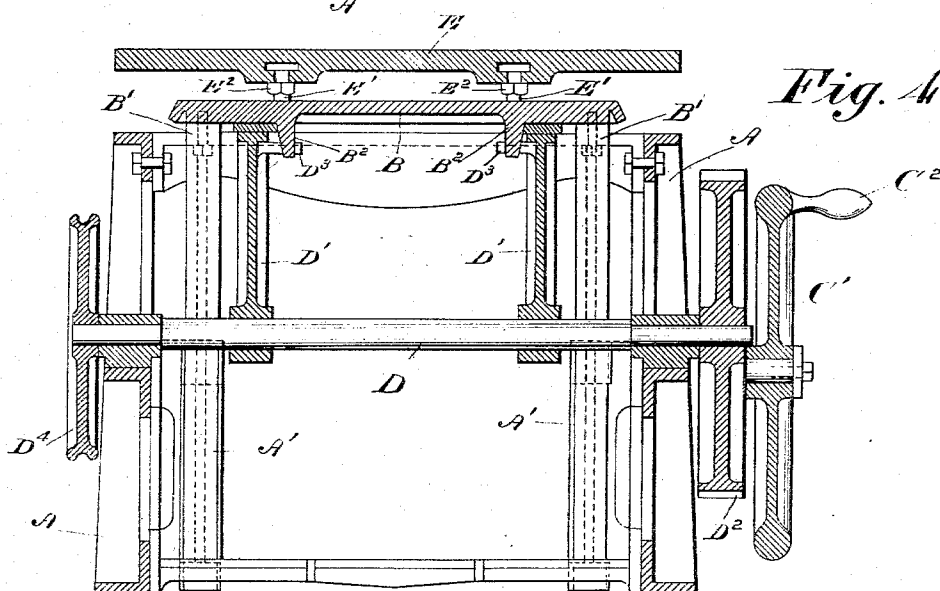
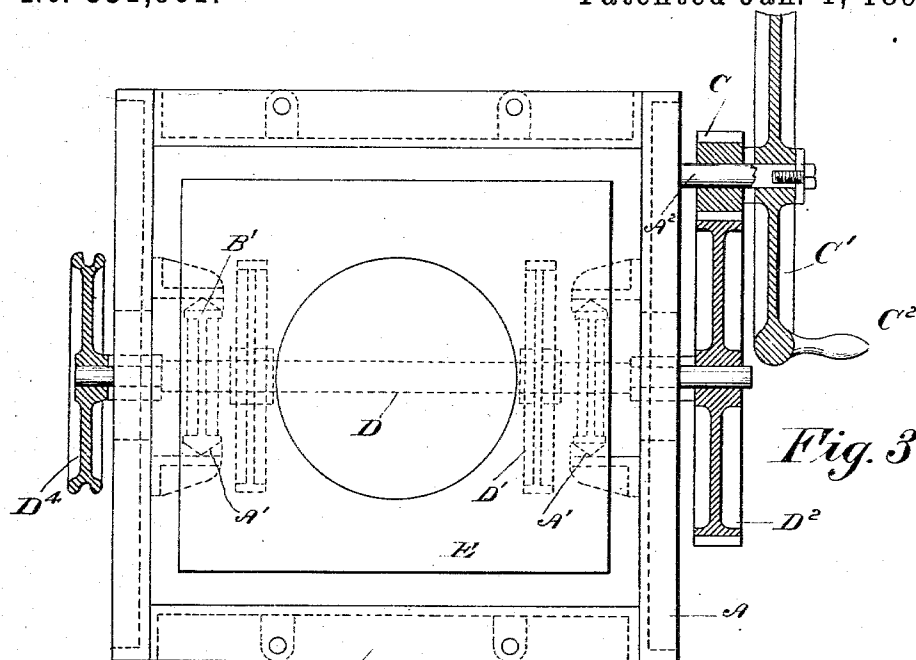
(No Model.)

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UNITED STATES PATENT OFFICE.

MICHAEL J. BROSANAN AND GEORGE SHARPE, OF COXSACKIE, NEW YORK.

MACHINE FOR SAND-MOLDING.

SPECIFICATION forming part of Letters Patent No. 531,901, dated January 1, 1895.

Application filed March 2, 1894. Serial No. 502,029. (No model.)

To all whom it may concern:

Be it known that we, MICHAEL J. BROSANAN and GEORGE SHARPE, citizens of the United States, residing at Coxsackie, Greene county, in the State of New York, have invented a certain new and useful Improvement in Machines for Sand-Molding, of which the following is a specification.

Our improvements relate to that class of machines having provisions for drawing the pattern by a cam motion. We have devised a form of machine having a pattern plate counterbalanced. A simple operation by hand or by power, communicates a partial revolution which raises the pattern and after the sand is applied and compressed, a proper motion of the cam-shaft in the opposite direction draws the pattern down from the stripping-plate. A positive stop arrests the revolution at the right point when the pattern is up. The arrangement holds the pattern-plate alternately at the respective ends of its motion first with the pattern up and then with it down without requiring any fastenings.

The machine is conveniently portable, is strong and simple, and eminently adapted for the general work of the foundry.

The accompanying drawings form a part of this specification and represent what we consider the best means of carrying out the invention.

Figure 1 is an end elevation partly in vertical section. Fig. 2 is a corresponding side elevation. Fig. 3 is a plan view partly in horizontal section with the stripping plate removed. Fig. 4 shows the machine with the pattern removed. It is a section on the line 4—4 in Fig. 1.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

A is a rigid framing made of cast iron or other suitable material, and adapted to support firmly the several parts. It is provided with nicely finished vertical ways or guides A', which receive long straight parallel arms B', rigidly bolted to and extending down from a rising and sinking table or pattern plate B, on which we secure the pattern M.

A small pinion C is mounted on a fixed stud A² supported on the framing A and by means

of a light fly-wheel C' and a crank-handle C², is turned at will in either direction.

D is a cam-shaft carrying eccentric cams D', D' of equal size, and similarly set on the shaft. A large gear-wheel D² on one end of this shaft is engaged by the pinion C.

E is an adjustable and exchangeable stripping-plate, and E' E' are T-headed screws engaged in corresponding recesses in the plate, and extending downward therefrom through proper holes in the framing A. They are stiffly set by means of nuts E², E³, E⁴.

The under face of the pattern-plate B presents nicely finished surfaces adapted to receive the action of the eccentric cams D'. By giving the crank C² a few strong turns in one direction, the cam shaft is partially revolved and the pattern-plate B is raised to the required position, protruding the pattern M to the required extent through the carefully executed aperture in the stripping-plate and by means of the long straight guide arms B', held firmly against tilting.

The flask, not shown, is applied and the sand introduced, rammed and struck, by hand or by machinery, in any ordinary or suitable manner. Now the attendant turns the crank C² a few revolutions in the opposite direction, with the effect to lower the pattern-plate and its attachments including the pattern M. The eccentric form of the cam and the fact that the crank C² is started from a state of rest, insure that the descending motion of the pattern shall be slow at the commencement. The efficient guides or vertical ways A' steady the movement, so that there is no trembling or irregularity laterally, and the pattern is drawn smoothly out of the sand, the first part of the motion being slow and the later portion of the descending movement rapid.

D³ is a projection cast or otherwise firmly fixed in the required position on one side of each cam.

B² are stops cast or otherwise firmly fixed in the required positions on the under face of the pattern-plate B. When the cam-shaft has been sufficiently rotated to bring the cams into their highest position the projections D³ strike the stops B² and insure that the motion is arrested at that point.

D⁴ is a grooved pulley keyed or otherwise firmly fixed on the end of the shaft D, and car-

rying a chain G by which a sufficiently heavy weight H is suspended. The force thus received tends to turn the cam-shaft in the direction to lift the pattern-plate and its attachments. The gravity of the weight H should be less than is required to balance the load when the eccentric cams are at their mid-height, but it is more than sufficient to lift the load when the cams are quite up.

10 The arrangement offers little friction, and allows the attendant to turn the crank with ease alternately in opposite directions, as required, and insures that the pattern-plate shall be held reliably without other fastening at the two ends of its motion, respectively.

15 When it is up it will be held up by reason of the fact that the eccentric cams are on their centers, and the gravity of the counterbalance weight is of full effect, and when it is down it will remain down by reason of the fact that the counterbalance weight is not sufficient to overcome the gravity of the plate and its attachments in addition to the friction when the parts are in that position.

20 The work with our machine can proceed rapidly. It requires little skill. It is portable. The smoothness of the motions, the economy of construction of the machine, its adaptation for working by hand, and its quality of holding automatically at either end of the motion, will be appreciated.

Modifications may be made by any good mechanic without departing from the principle or sacrificing the advantages of the invention.

The positions of the projections D³ or of the stops B² against which they strike may be made adjustable.

Parts of the invention can be used without the whole.

The projections and stops may be dispensed with, and the rotation of the cam shaft may

be arrested at the approximately right place by providing any suitable cushion under the weight H to arrest its descent when the eccentric cams are at or very near their highest points.

The pattern and the stripping plates may be changed indefinitely.

We claim as our invention—

1. The portable machine described comprising a frame A and having guides A', a pattern plate B having vertical guiding arms B', traversing such guides, an eccentric cam D' with means for turning it, a partial counterbalancing weight H, and a flexible connection G operating on a pulley D⁴ turning the said cam in one direction with a constant force adapted to urge the pattern-plate alternately to each end of its motion, and the projection D³ on the cam D', and the stop B² on the pattern-plate for arresting the turning of the cam at the proper point for producing the mold, all combined and arranged for joint operation substantially as herein specified.

2. In a machine for sand molding, a frame having guides, a pattern-plate having arms traversing in such guides, an eccentric cam and means for turning it, the stripping plate E, screws E', and lock-nuts E², E³, E⁴, adapted to adjust the height and level of the stripping plate, and a counterbalancing weight H, and connection G and pulley D⁴, combined and arranged for joint operation substantially as herein specified.

In testimony that we claim the invention above set forth we affix our signatures in presence of two witnesses.

MICHAEL J. BROSNAN.
GEO. SHARPE.

Witnesses:

A. C. DWIGHT,
II. SALISBURY, Jr.