(No Model.) 2 Sheets—Sheet 1.

E. GRANT.

FOUNDER'S MOLDING MACHINE.

No. 516,267. Patented Mar. 13, 1894.

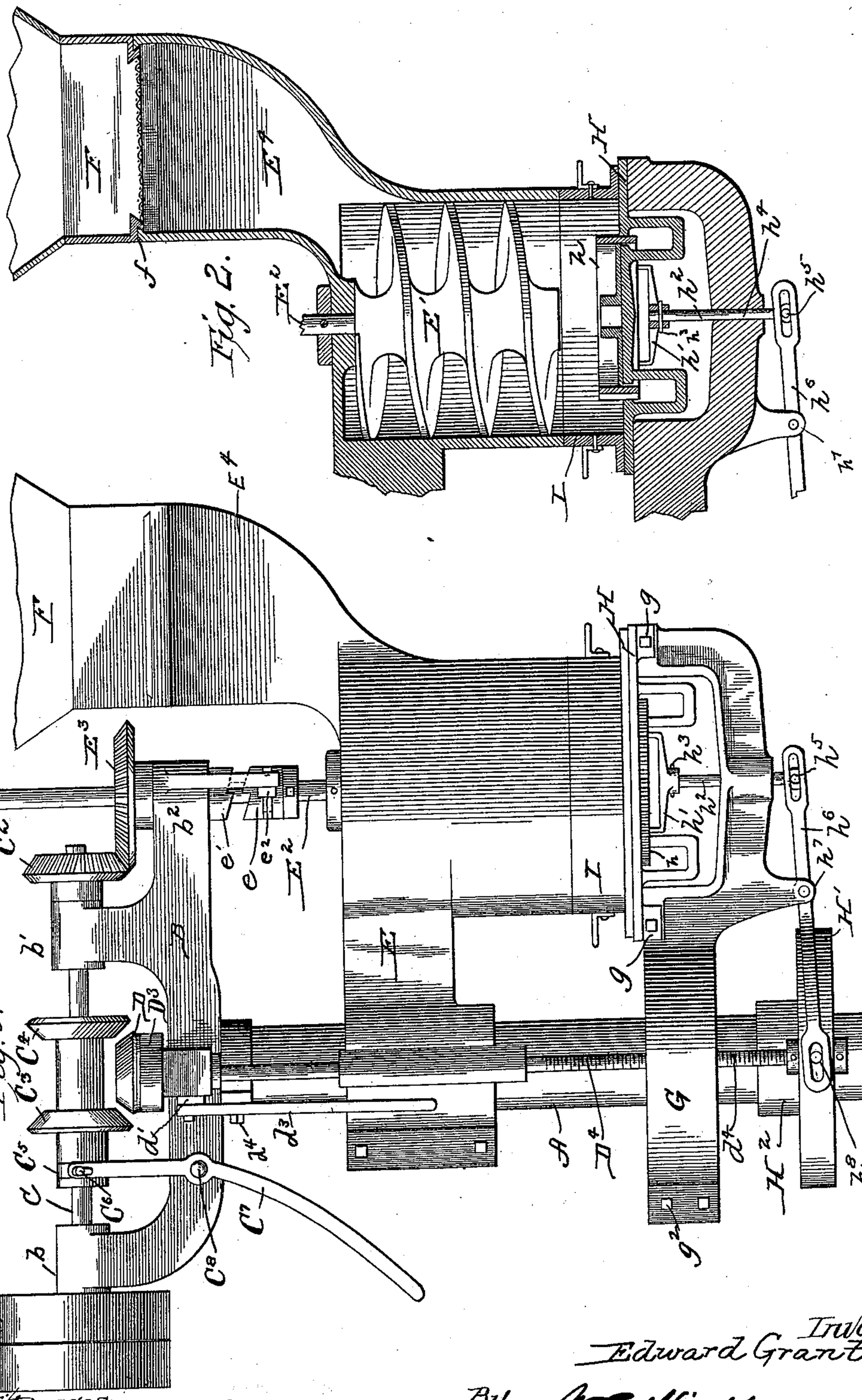

Fig. 2.

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2

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FOUNDER'S MOLDING MACHINE.

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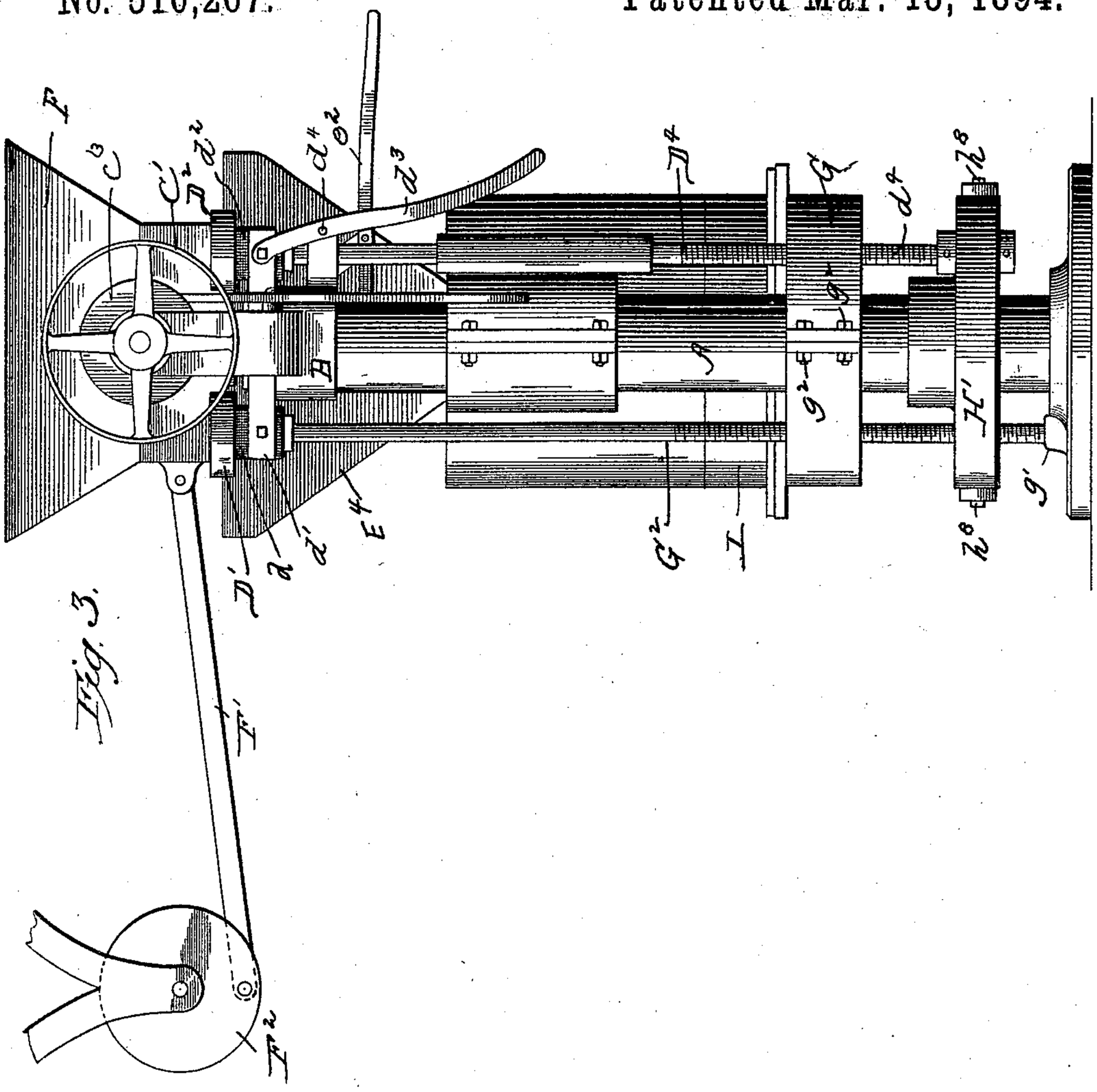

Fig. 3.

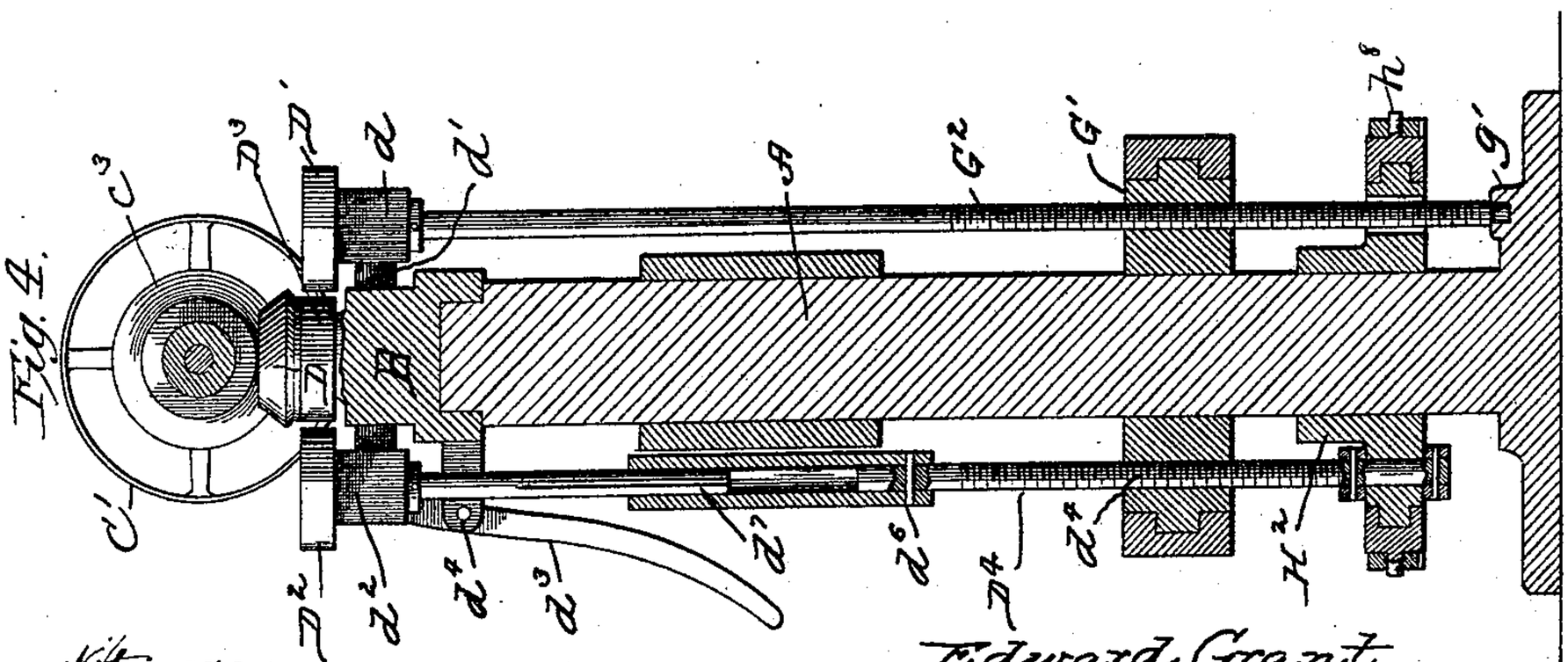

Fig. 4.

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UNITED STATES PATENT OFFICE.

EDWARD GRANT, OF KANKAKEE, ILLINOIS.

FOUNDER'S MOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 516,267, dated March 13, 1894.

Application filed March 17, 1893. Serial No. 466,473. (No model.)

To all whom it may concern:

Be it known that I, EDWARD GRANT, a citizen of the United States, residing at Kankakee, in the county of Kankakee, in the State of Illinois, have invented a new and useful Improvement in Founders' Molding-Machines, of which the following is a specification.

My invention relates to machines for making molds for small castings, of which a great number are required of the same pattern, and the objects of the invention are to provide a quick operating machine which can be easily manipulated and which will have great capacity and further in the details of construction described herein and the invention consists in the mechanical elements and combinations set forth in the claims hereof.

Reference will be had to the accompanying drawings in which—

Figure 1 is a side view of the machine. Fig. 2 is a side sectional view through the molding mechanism. Fig. 3 is a back view of the machine. Fig. 4 is a front sectional view through the sustaining shaft of the machine.

In the drawings, "A" designates the vertical sustaining shaft of the machine, on the top of which there is fixed a cross frame "B" which has bearing "*b*" and "*b'*" for the shaft "C." On the shaft "C" there are tight and loose driving pulleys "C'" and a gear wheel "C^2" and friction wheels "C^3" "C^4" which are fixed on one block and slide on the shaft "C," but are made to revolve with it by a key-way and feather; on which friction wheel block "C^3, C^4" there is a ring "C^5" carrying pivots "C^6" which engage in a slot of a lever arm "C^7" pivoted to the casting "B" at "C^8." The operator by this lever, can engage either friction wheel "C^3" or "C^4" with the friction wheel "D" which is an idler on a vertical spindle on the frame "B" and carries just below a friction wheel "D^3."

To the sustaining shaft "A," there is fixed a molding casing "E" which carries a molding worm "E'" on the shaft "E^2" which is driven by the clutch "*e*" by a feather and key-way. The clutch "*e*" can engage by a lever "e^2" with the hub "*e'*" of a gear wheel "E^3" journaled in the frame "B" at "b^2" and driven by gear wheel "C^2." The casing "E" is provided with a sand hopper "E^4" on the top of which in ways "*f*" there is a sand sifter "F" which is actuated by a pitman "F'" to a crank wheel "F^2." The shaft "A" supports a molding table frame "G" which is carried by a collar "G'" and revolves on said collar "G'" and is clamped to it by the screws "g^2" and said collar "G'" is raised and lowered, carrying the molding frame with it by the screw "G^2" which is stepped at "*g'*" in the bed plate and held in a bearing block "*d*" at the top, which is pivoted to a cross bar "*d'*" carrying a bearing block "d^2" provided with a lever "d^3" pivoted to a projection in the frame at "d^4." Said shaft "G^2" has a friction wheel "D'" at its top, and by the lever "d^3" the operator engages the friction wheel "D'" with "D^3" and by lever C^7 the wheel "D" to the friction wheels "C^3, C^4" and thus raises and lowers the molding table frame as desired. The molding table frame "G" is provided with supporting brackets "*g*" to which a molding table "H" may be attached. To this molding table "H" the pattern is fitted so as to be withdrawn down into the bed as in ordinary machine molding. The pattern is here shown as a gear "*h*" and is connected underneath the bed by cross arms "*h'*" to the shaft "h^2" to which it is attached by a pin "h^3." The shaft "h^2" slides in a hole in the table frame at "h^4" and is connected at "h^5" to a lever "h^6" pivoted at "h^7" to the table frame "G" and pivoted at "h^8" to a collar "H'" carried by a collar "H^2" on the shaft "A" which collar "H^2" is raised and lowered, thereby raising and lowering the pattern in the molding table by the mechanism last described, by a screw shaft "D^4" working in a thread "d^4" in the collar "G'" connected to a sleeve "d^6" turned by a shaft "d^7" working a feather in a key way in said shaft "d^7." Said shaft "d^7" is supported by a bearing block "d^2" and is driven by a friction wheel "D^2" engaged to friction wheel "D^3" by the lever "d^3." Thus the operator pushes up and withdraws the pattern in the table by the levers "C^7" and "d^3."

The operation is thus: The flask "I" is placed on the molding table and the pattern run up in place and the operator pulls down the lever "e^2" engaging the clutch "*e*," starting the worm "E'" which forces the sand compactly in the mold flask "I" and when

sufficiently compact, he disengages the clutch "*e*" and by the levers "C⁷" and "*d*³" engaging the friction wheels draws down the pattern and then swings the table from under the casing "E" and removes the flask and replaces another and so on, molding one half of the flask and when a sufficient number of halves of that pattern is molded, he changes the molding table "H" for one of another pattern or other half of the first pattern and then molds the balance of the flask. The table "H" is very readily removed by loosening the pins at "*g*" and "*h*³" and thus little time is lost in molding the halves of the flask.

What I claim is—

1. A molding machine substantially as described, having mechanism for forcing sand into the flask and forming the molds in combination with an adjustable pattern holding molding table, having mechanism for raising and lowering the same, and mechanism for raising and lowering the pattern within the table, the mechanism for operating the table and pattern connected to the driving gear of the machine so as to be available for its functions at all positions of the said table and pattern.

2. A molding machine substantially as described, having a vertical sustaining shaft "A" supporting a horizontal gear, frame "B" which carries the actuating shaft "C" having gearing "C²," a molding frame "E" supported from shaft "A" and carrying a shaft "E²" having gear "E³" engaging gear "C²" and driven thereby, and a table frame "G" supported from shaft "A," combined and arranged substantially as shown and described.

3. A molding machine substantially as described, having a supporting frame "A," an adjustable pattern-holding molding-table frame "G," a pattern to which the table is fitted, mechanism for raising and lowering the table frame "G," mechanism for raising and lowering the pattern within the table, a main driving shaft "C" carrying wheels "C³"—"C⁴" and mechanism for engaging the same to drive the said mechanism for raising and lowering the table frame "G," and for engaging to drive said mechanism for raising and lowering the pattern within the table substantially as shown and described.

4. In a molding machine substantially as shown, having a molding table having an opening for the pattern, a pattern to which the opening is fitted, adapted to be raised and lowered within the table, a shaft "G²" geared to raise and lower the molding table, and a shaft "D⁴" geared to raise and lower the pattern within the table, said shafts driven by friction wheels substantially as shown, and connected by suitable mechanism to an actuating lever "*d*³" whereby the one lever serves to engage either shaft as shown.

5. In a molding machine substantially as shown the combination of the following devices: a molding table having an opening for a pattern, a pattern to which the opening is fitted, a main driving shaft "C" geared to revolve continually during the operation of the machine, mechanism for forcing the sand into the flasks, connected to said shaft by a detachable clutch, mechanism for raising and lowering a molding table connected to said shaft by detachable mechanism, and mechanism for raising and lowering the pattern within the table, connected to said shaft by detachable mechanism combined and arranged substantially as shown.

6. A molding machine substantially as described, having mechanism for forcing sand into the flask, thereby forming the molds, an adjustable pattern-holding molding table, a pattern to which the table is fitted, and mechanism for raising and lowering the table and the pattern within the table, which mechanism is driven by friction gearing in connection with main driving mechanism substantially as shown.

7. A molding machine substantially as described having a vertical sustaining shaft "A," a rotatable molding table frame "G," a molding table having an opening for a pattern, a pattern to which the opening is fitted, and mechanism for raising and lowering the pattern within the table, driven by gearing which extends on the side of the vertical shaft "A," and is connected to the pattern within the table by a lever "*h*⁶" substantially as shown.

In witness whereof I have hereunto subscribed my name in the presence of two witnesses.

EDWARD GRANT.

Witnesses:
D. L. DURHAM,
B. W. BROWN.