

(Model.)

2 Sheets—Sheet 1.

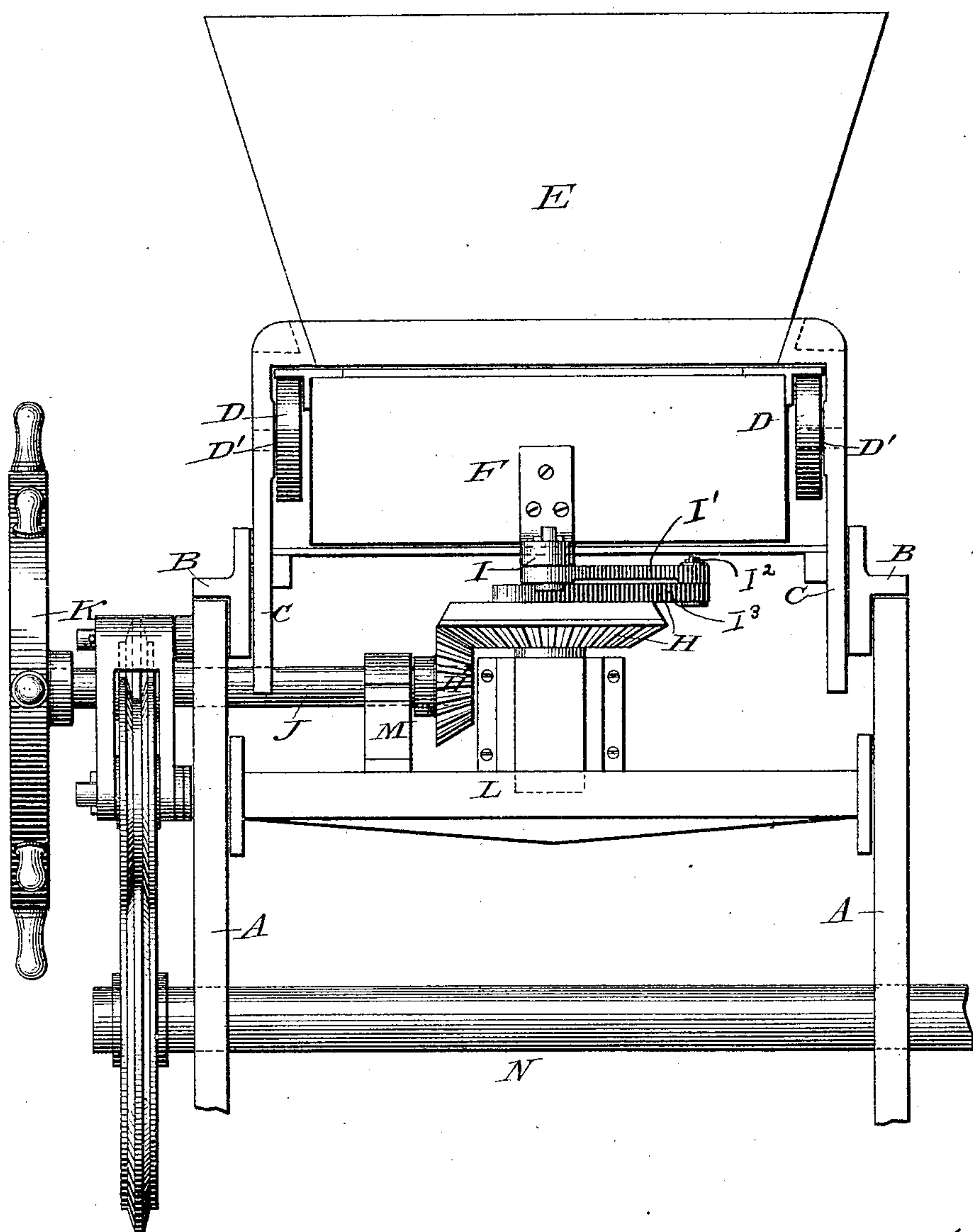
W. W. DRUMMOND.

SAND MOLDING MACHINE.

No. 354,108.

Patented Dec. 14, 1886.

*Fig. 1.*



Witnesses:

*J. L. White*  
*Chas. Cloud*

Inventor.

*W. W. Drummond*

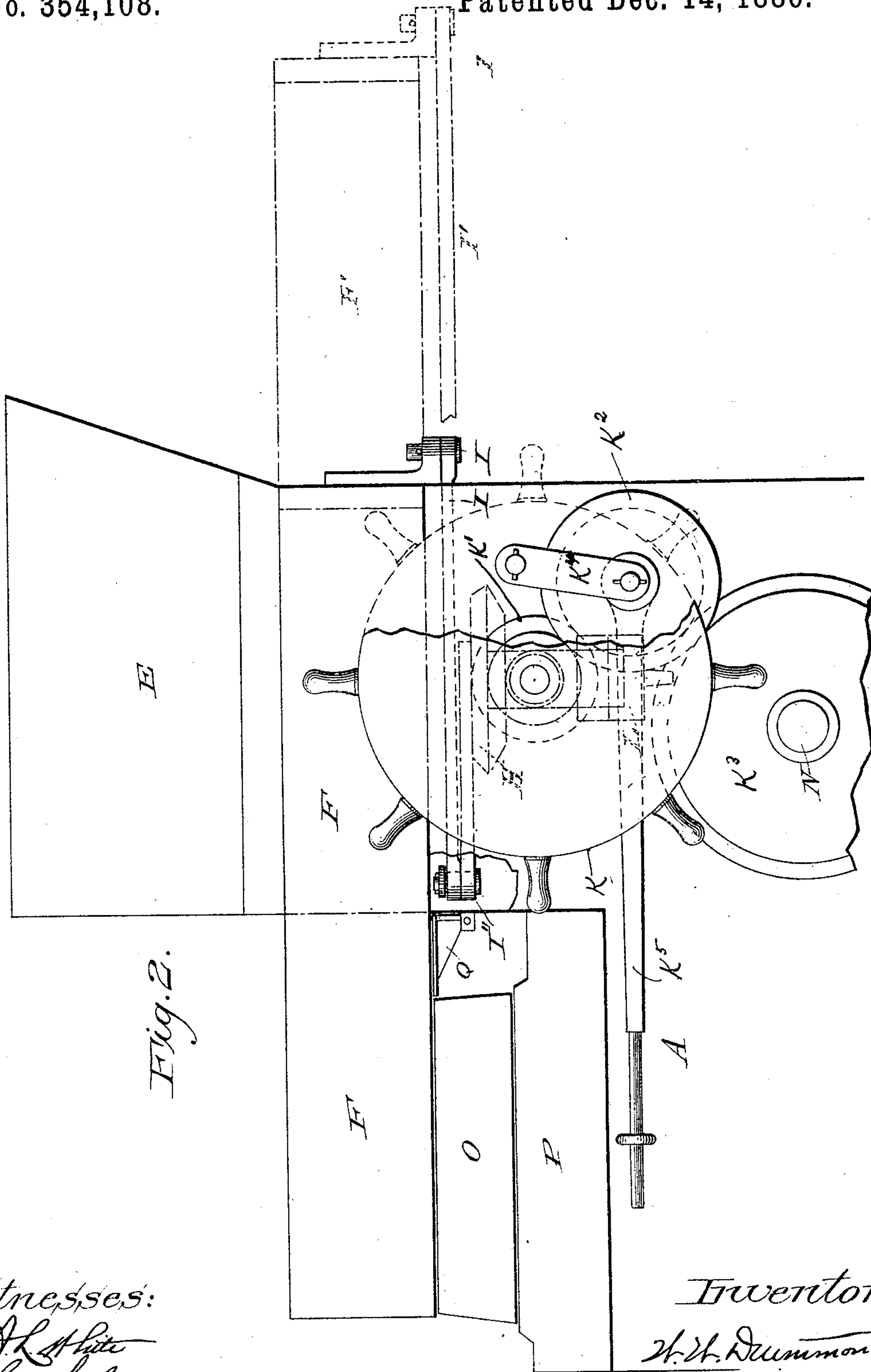
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2 Sheets—Sheet 2.

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Inventor:  
W. W. Drummond



# UNITED STATES PATENT OFFICE.

WILLIAM WHYTE DRUMMOND, OF LOUISVILLE, KENTUCKY.

## SAND-MOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 354,108, dated December 14, 1886.

Application filed July 26, 1886. Serial No. 209,160. (Model.)

*To all whom it may concern:*

Be it known that I, WILLIAM WHYTE DRUMMOND, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented new and useful Improvements in Sand-Molding Machinery, of which the following is a specification.

The improvements which are the subject of this patent are made upon the machines heretofore patented by William Aikin and myself in divers Letters Patent of the United States—viz., Nos. 195,070, 195,071, 195,784, 195,785, 195,786, 201,377, 202,322, 224,570, and 291,124, but more particularly Nos. 224,570 and 291,124, to which said several patents reference is made for the more full description of the parts shown herein, but which it is not necessary to describe further than to explain the proposed modifications applied thereto.

In the annexed drawings, which make part of this specification, Figure 1 is a back view of that portion of molding-machine to which my improvement relates, showing the back end of the sand-drawer and the mechanical appliances for operating the same. Fig. 2 is a side view of the same.

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

In the accompanying drawings, the letter A indicates the sides of the main frame of the machine. On the top part of the back of the frame is fastened the sand-hopper frame B. In this frame the adjustable sand-drawer frame C (having a fixed bottom plate, G,) is placed in proper position and fastened at such height as is required for the depth of such flask as may be used in molding. In this frame four or more wheels, D, are placed, with journaled pins D' to revolve on. These wheels carry the sand-drawer in its movement forward and back.

F is the sand-drawer, which is made with projecting flanges on the upper sides, which bear on the wheels D while being used. The drawer has a proper projection on the back end, to which is fastened a wrist-pin, I, and to which a connecting-rod, I', is fitted to connect to a similar wrist pin, I<sup>2</sup>, on the flange or arm of a bevel-wheel.

H is a bevel-wheel made with a flange or

extended arm to receive the wrist-pin I<sup>2</sup>, which is connected to wrist-pin I on the back end of the drawer by the connecting-rod I'. This bevel-wheel has a central bearing on the cross bearing-bar L.

H' is a bevel pinion (or wheel) which meshes into the bevel-wheel H, being fastened on the shaft J, which has its bearings in journal-boxes M M. On the other end of the shaft J there are fastened a hand-wheel, K, and a cog or friction wheel, K'.

The cross bearing-bar L is fastened to the sides of the main frames A A, and made with journal-bearings to receive the bevel-wheel H and the shaft-bearing M.

N is the main driving-shaft, to which is attached a wheel, K<sup>3</sup>.

K<sup>2</sup> is an intermediate wheel hung in a link, K<sup>4</sup>, which is pivoted to the main frame and is operated by the lever K<sup>5</sup>, all of which are used to connect and convey power from the shaft N to shaft J when it is required to operate the drawer by power.

P is the sand-gage box, in which the patterns are used in molding, and which is fastened to top front part of the frame A. On top of this box the flask O is placed to receive the sand from the drawer, which it brings from the hopper E.

When the machine is to be started, the operation of my improvements is as follows (when using the drawer by hand:) The drawer being in position, as shown by dotted lines in Fig. 2, the sand having been put in the hopper and the flask placed on top of gage-box, the hinged extension-piece Q (see Patent 224,570) is let down into position to form a connection between the bottom plate and the flask. The hand-wheel is then rotated, which brings the bevel-wheels into motion, thus bringing out the drawer with its load of sand from the hopper until it is in position, as shown by solid lines in Fig. 2. Then the wheel is stopped until the sand from the drawer is dropped into the flask. The wheel is again rotated, which carries the drawer back into the hopper, and the extension-piece is then raised and the molds made as described in patents referred to. When the drawer is to be operated by power, the lever K<sup>5</sup> is pulled out, which brings the intermediate wheel, K<sup>2</sup>, in

contact with the other wheels, thus rotating  
the shaft, which brings out the drawer, with  
its load of sand, over the flask. The lever is  
then pushed back, leaving the drawer stand-  
5 ing (as the wheels are thus thrown out of gear)  
as shown by solid lines in Fig. 2. After the  
sand is dropped into the flask the lever  $K^5$  is  
again pulled out, and the intermediate wheel,  
coming again in contact with the other wheels,  
10 takes the drawer back to its first position in  
the hopper, and the mold made, as before  
described.

I do not confine my improvements to any  
particular machine, as they can be adapted to  
any molding-machine using a sand-drawer. 15

What I claim is—

In a sand-molding machine, in combination  
with a reciprocating sand-drawer, the wheels  
 $H H'$ , the connecting-rod  $I'$ , and pins  $I I^2$ , as  
and for the purpose shown and set forth.

WILLIAM WHYTE DRUMMOND.

Witnesses:

CHAS. A. CLOUD,  
A. L. WHITE.