(No Model.)

2 Sheets—Sheet 1.

C. S. SNEAD.

SAND MOLDING MACHINE.

No. 475,523. Patented May 24, 1892.

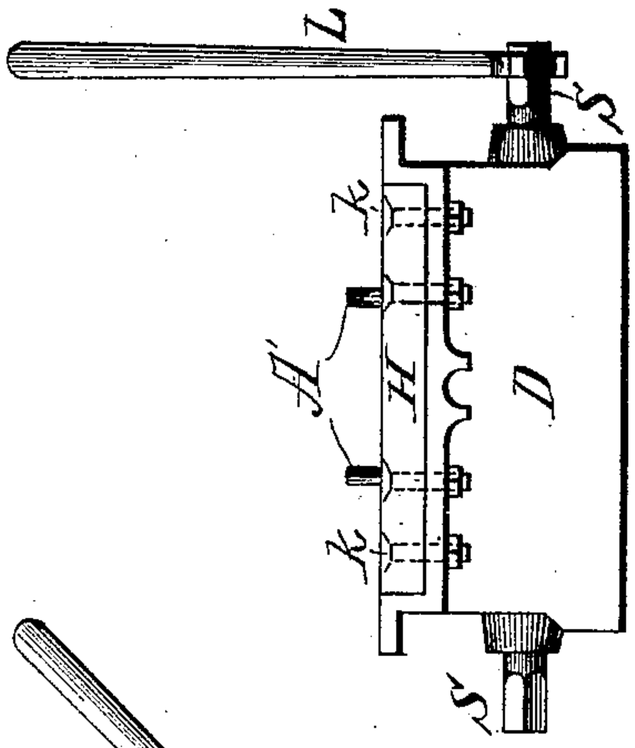

Fig. 2.

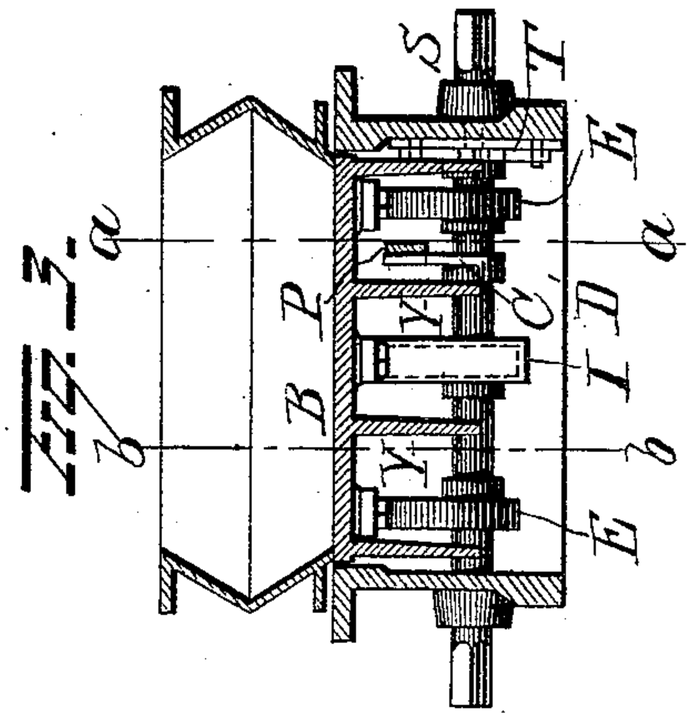

Fig. 3.

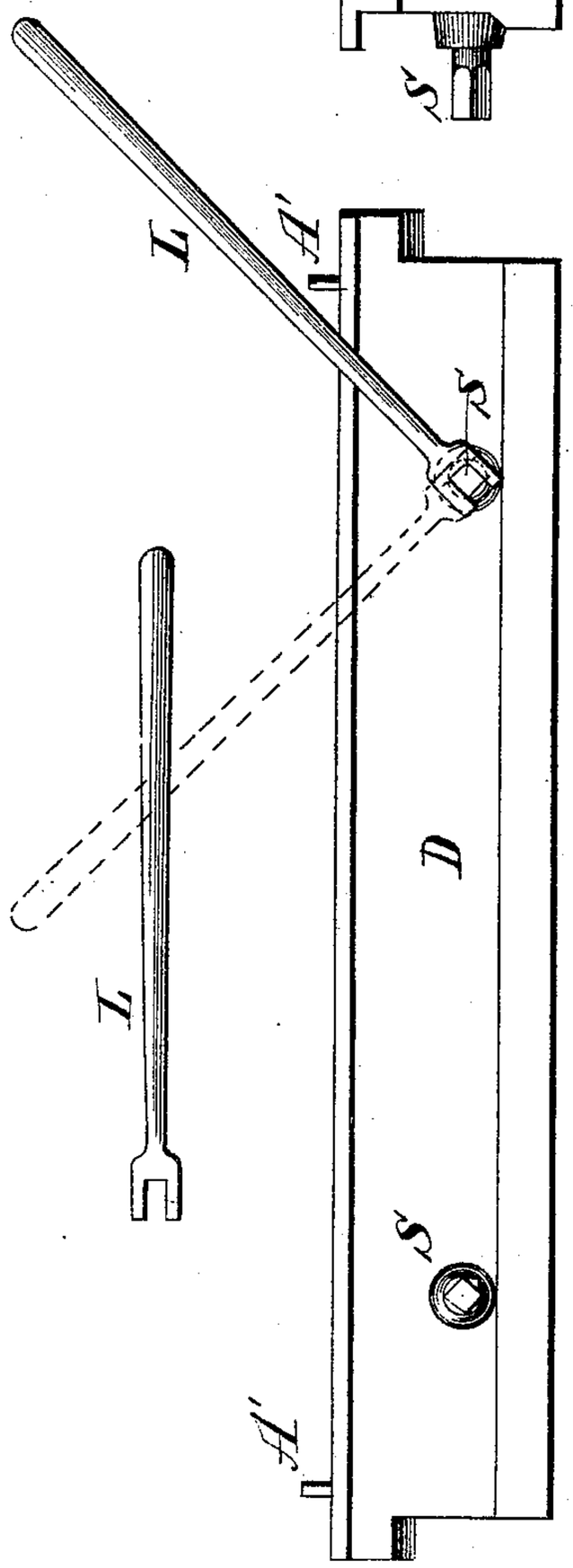

Fig. 7.

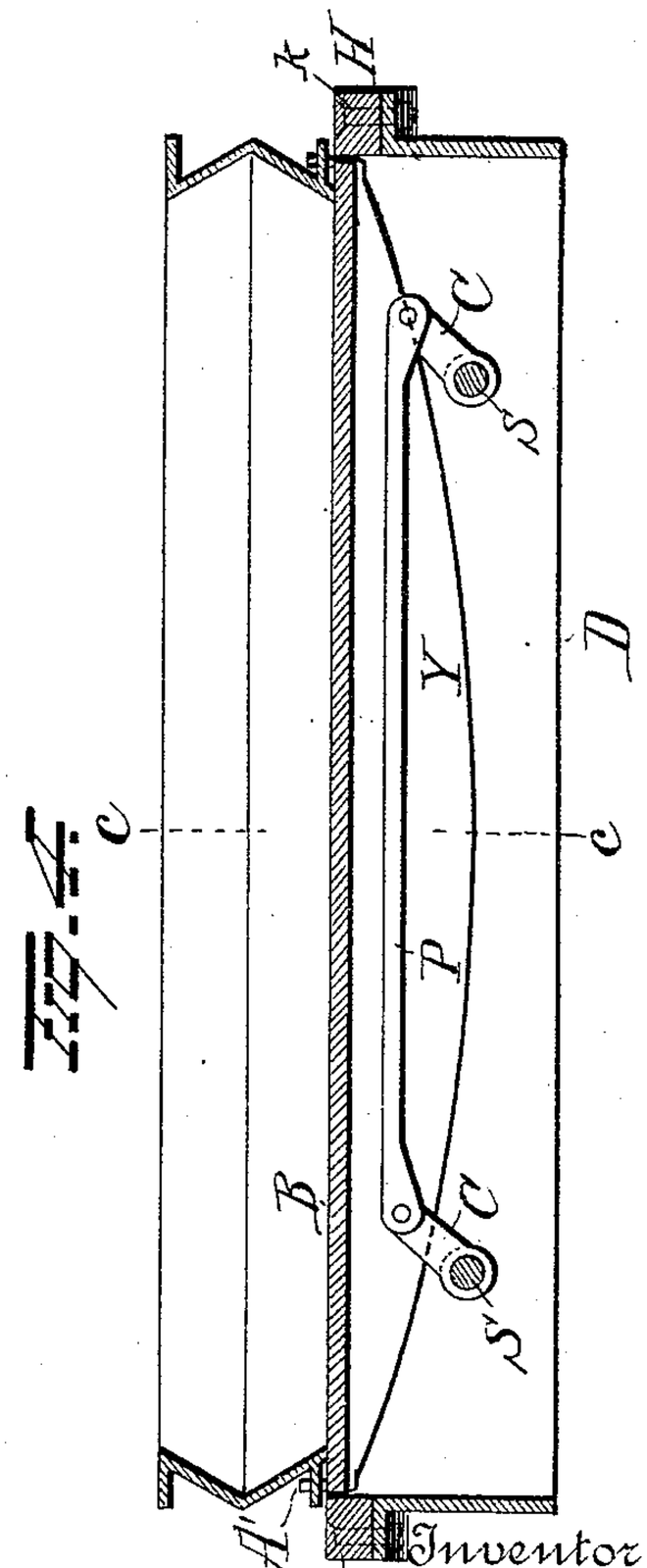

Fig. 4.

Witnesses
C. F. Hottinghaus
G. F. Downing

Inventor
Charles S. Snead
By H. A. Seymour
Attorney

(No Model.) 2 Sheets—Sheet 2.

C. S. SNEAD.

SAND MOLDING MACHINE.

No. 475,523. Patented May 24, 1892.

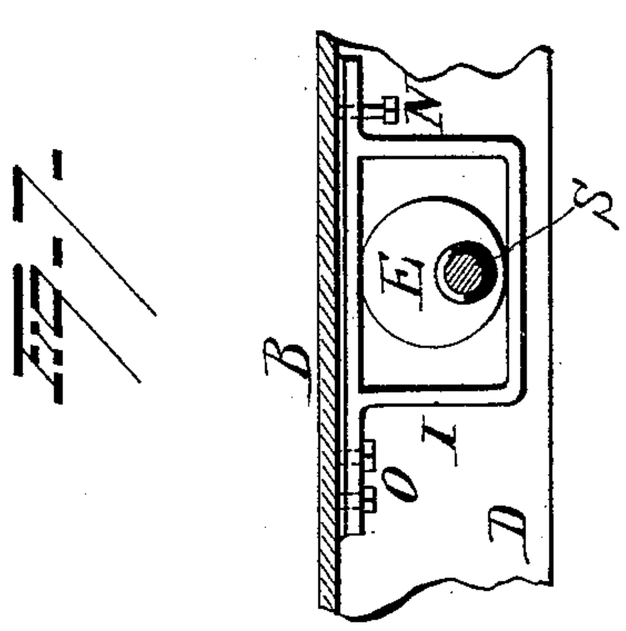

Fig. 4.

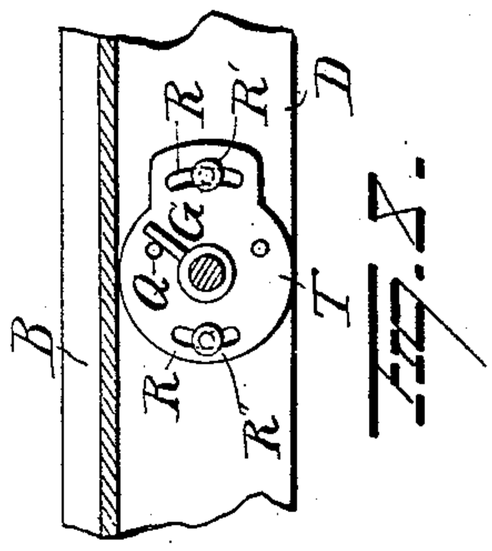

Fig. 7.

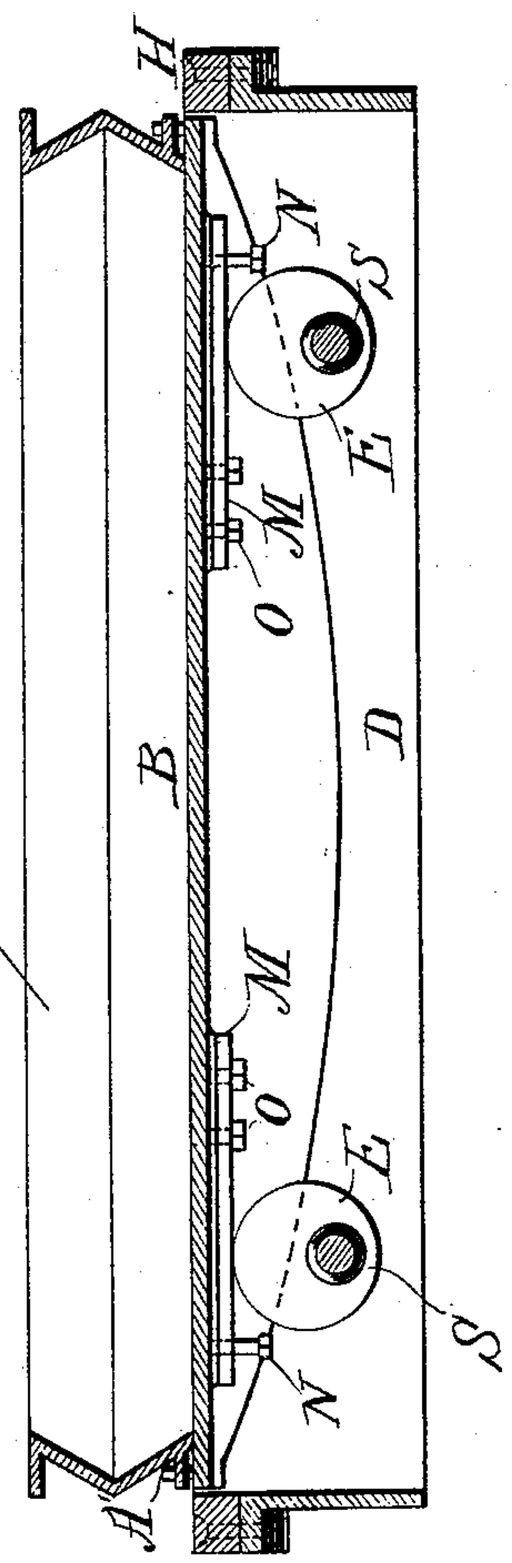

Fig. 3.

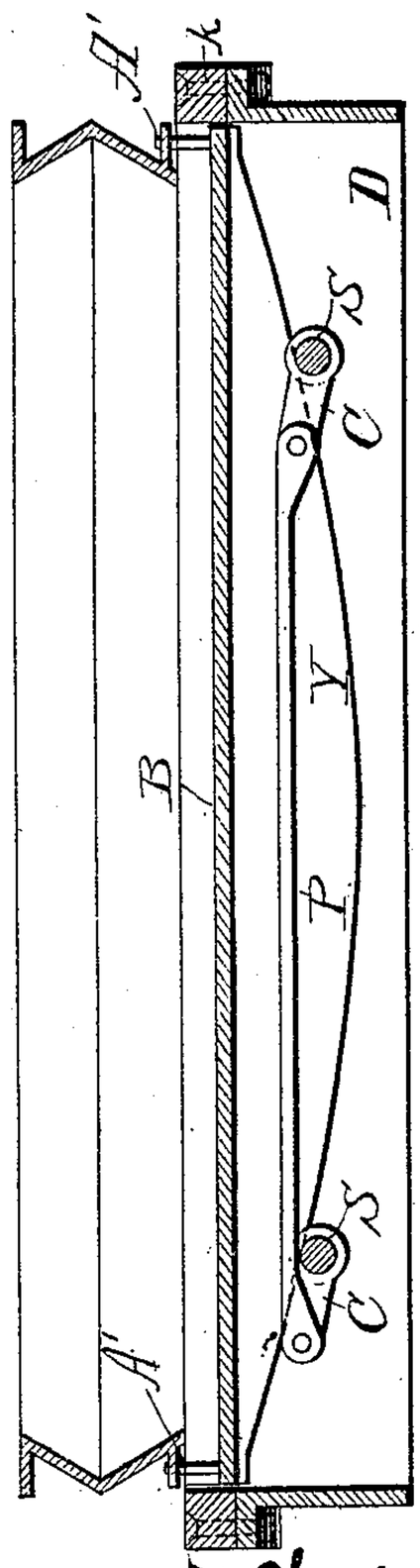

Fig. 6.

Witnesses
E. F. Attinghaus
G. F. Downing.

Inventor
Charles S. Snead
By H. A. Seymour
Attorney

UNITED STATES PATENT OFFICE.

CHARLES S. SNEAD, OF LOUISVILLE, KENTUCKY, ASSIGNOR TO THE SNEAD & CO. IRON WORKS, OF SAME PLACE.

SAND-MOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 475,523, dated May 24, 1892.

Application filed May 16, 1891. Serial No. 393,038. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. SNEAD, of Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Sand-Molding Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in sand-molding machines, and more particularly to means for removing the pattern from the sand after the latter has been firmly compressed about the pattern; and it consists in a frame for supporting the sections of a flask, a follow-board to which the pattern is secured, means for elevating and lowering the follow-board and for guiding it in its movements, and means for taking up the wear of the parts.

In the accompanying drawings, Figure 1 is a view in side elevation of the frame. Fig. 2 is an end view. Fig. 3 is a view in transverse section on line *c c* of Fig. 4. Fig. 4 is a longitudinal sectional view on the line *a a* of Fig. 3. Fig. 5 is a similar view on the line *b b* of Fig. 3. Fig. 6 is a view similar to Fig. 4, showing the follow-board lowered. Fig. 7 is a view of a modified form of bearing for the cam, and Fig. 8 shows the mechanism for limiting the movement of the follow-board.

The great difficulty encountered in producing in sand or other material strictly perfect molds has been in the removal of the pattern from its matrix without disturbing or distorting the mold. This is due to the almost certain unsteadiness of the hand, which by any side or endwise movement or by the pattern being drawn one end or one side faster than the other causes a breaking down of the mold.

With my improved machine the pattern is actuated or withdrawn solely by devices which under all conditions and circumstances move away from the sand in a direction at right angles to the face of the mold, and as the pattern is guided in its movements it is of course held against end or sidewise movement and breaking down of the mold prevented.

D represents a rectangular open frame, its internal dimensions being preferably slightly longer than the flask and somewhat narrower than the flask, so that the latter, or rather the cope or drag, will be supported at its side edges on said frame. The ends of the frame, which is preferably of metal, are slightly lower than the side edges to form seats or depressions for the blocks H, which are provided with smooth inner faces and are adjusted to snugly fit against the ends of the follow-board or platform B and guide the latter and hold it positively against endwise movement until it has withdrawn the pattern from the sand. These blocks H are removably secured in place by the bolts *k*, which pass through flanges in the ends of the frame D, and are held in place by nuts.

S are horizontal shafts passing transversely through the frame and provided with angular outer ends for the reception of the head of lever L, by which they are rocked. Each shaft is provided with a crank-arm C, and the latter are connected by the pitman P, so that when one shaft is rocked the other is rocked an equal distance in the same direction. Each shaft is also provided with two or more, preferably three, cams E, all of which are arranged in proper position relative to each other to raise or lower the boards or platform B toward and away from the cope or drag.

In the drawings I have shown three cams on each shaft, each cam bearing against a wearing-plate M, secured to the under side of the board B by two screws O, and each plate being provided with a set screw N, by which the plate can be adjusted to compensate for any wear and the board or platform accurately adjusted with relation to the frame. The center cams on each shaft are preferably surrounded by the yokes I, integral with or rigidly secured to the wearing-plates M. These yokes are intended to produce more positive downward movement of the follow-board.

T is a plate adjustably secured by means of segmental slots R′ and bolts R to the inner face of the side of the frame D, with its slots concentric to shaft S. This plate is provided with two stops Q, and the shaft is provided with an arm G, which latter moves between the stops, and consequently limits the movements of the shafts and the board B, carried by the cams on said shafts. The board B is

provided on its under side with longitudinal strengthening-ribs Y.

I prefer to have one frame such as described for the cope and one for the drag, the only difference being that for the cope the board B instead of being provided with pins A′, as shown, is provided with holes for the pins in the cope.

In using the device a section of the pattern is secured to the board B, and if it be the cope-section the sprue-pattern is also secured to said board. The cope or drag is then placed in position on the frame D and sand is rammed in in the usual way until the section is filled. Then by turning lever L until it is stopped by arm G striking stop Q, as shown in Fig. 8, the bottom is gradually and evenly lowered without end or sidewise movement until the pattern thereon has left the sand, thus leaving the mold strictly perfect. The flask-section is then removed and placed on the floor to receive the other section, or placed on the other section, as the case may be.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a frame having depressions or seats at its ends, of blocks removably secured in said seats or depressions, a movable board or platform located within the frame, the ends of the board or platform being in close proximity to the blocks, and means for elevating and lowering the said board or platform.

2. The combination, with an open frame and a movable board located in position to move in and out of the frame, of removable blocks connected with the ends of the frame and adapted to limit the endwise movement of the board, and means for raising and lowering the board, substantially as set forth.

3. The combination, with a frame and a board located in position to move in and out of the frame, of blocks connected with the ends of the frame and adapted to limit the endwise movement of the board, rocking shafts having cams thereon, said shafts connected to move in unison, adjustable wearing-plates on the board, and strengthening-ribs on the inner face of the board adapted to bear on the shafts when the board is lowered, substantially as set forth.

4. The combination, with a rectangular frame for supporting a cope or drag, the said frame having removable bearing-blocks at its ends, shafts journaled in said frame and coupled up to move in unison, cams on the shafts, means for limiting the movements of the shafts, and cams rigidly mounted on said shafts, of a board or platform resting on and carried by said cams, substantially as set forth.

5. The combination, with a frame, shafts therein, means connecting said shafts, whereby they are caused to move in unison, cams on said shafts, and an arm on one of said shafts, of a board or platform resting on the cams and a plate adjustably secured to the frame and provided with stops adapted to engage the arm on the shaft, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES S. SNEAD.

Witnesses:
WILLIAM R. SNEAD,
N. J. JOHNSTON.