

(No Model.)

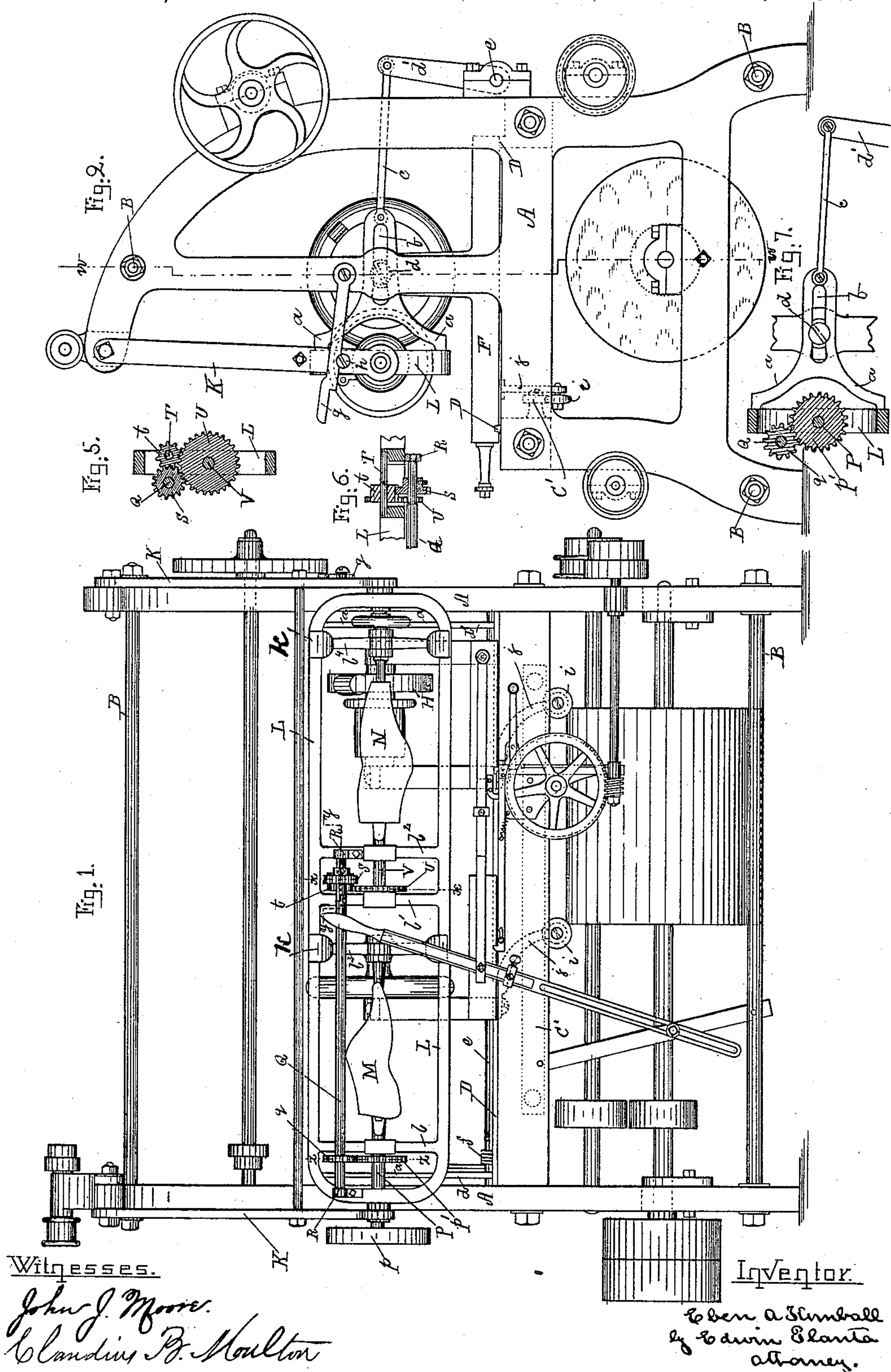
2 Sheets—Sheet 1.

E. A. KIMBALL.

MACHINE FOR TURNING IRREGULAR FORMS.

No. 471,006.

Patented Mar. 15, 1892.



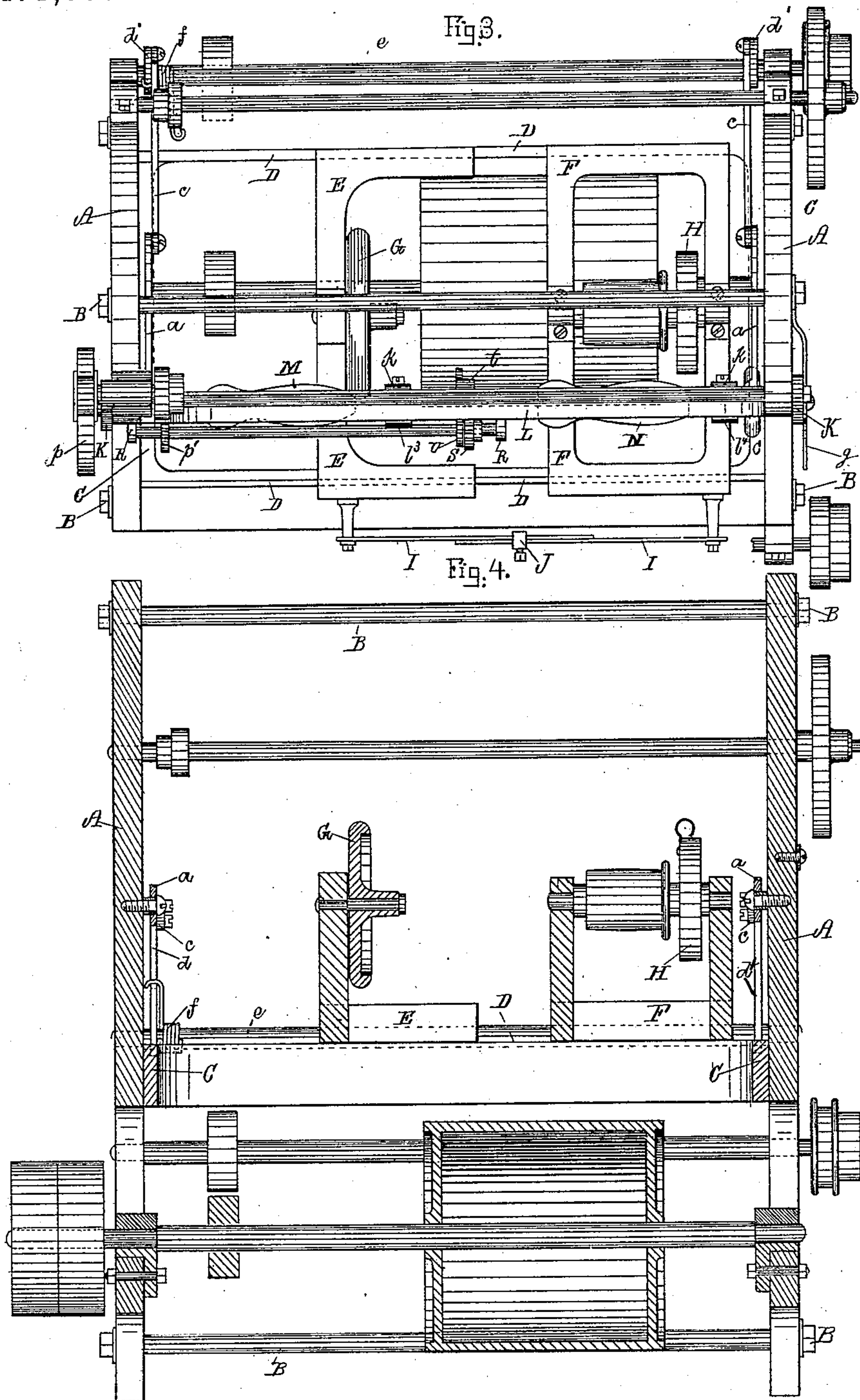
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Witnesses.

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Clausius B. Mottet

Inventor

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UNITED STATES PATENT OFFICE.

EBEN A. KIMBALL, OF BROCKTON, MASSACHUSETTS.

MACHINE FOR TURNING IRREGULAR FORMS.

SPECIFICATION forming part of Letters Patent No. 471,006, dated March 15, 1892.

Application filed September 6, 1890. Serial No. 364,193. (No model.)

To all whom it may concern:

Be it known that I, EBEN A. KIMBALL, a citizen of the United States, residing at Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Machines for Turning Irregular Forms, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to that class of machines employed for turning irregular forms, and is particularly adapted for turning lasts for boots and shoes.

The invention consists in a rectangular frame for carrying the model and block to be cut, said frame being mounted upon arms that are free to swing in and out, and in means for keeping the model and block in the same relation to the center of the pattern-wheel and cutters, whatever position the said frame is caused to assume.

The invention also consists in certain details of construction, as hereinafter fully described, and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 represents a front view of a machine for turning irregular forms embodying my invention. Fig. 2 is a side view of the same. Fig. 3 is a plan or top view. Fig. 4 is a vertical section taken on line *ww* of Fig. 2. Fig. 5 is a vertical section taken on line *xx* of Fig. 1. Fig. 6 is a horizontal section taken on line *yy* of Fig. 1. Fig. 7 is a vertical section taken on line *zz* of Fig. 1.

A A represent the side frames connected together at their upper and lower ends by bolts B in the usual manner.

C is a frame of rectangular form cast in one piece and having two rails D and which forms the bed upon which travel the frames E F, carrying the pattern-wheel G and the cutter-wheel H. These frames E F are held down to the rails D and prevented from rising by means of small wheels *i i*, on the ends of arms *j j*, connected to said frames and running on the under sides of a bar C', secured to the inner side of frame C, and they are adjustably connected together by arms I I and clamp J, motion being imparted to them by worm-gear and rack in the usual manner.

To the upper front part of the side frames A are pivoted two arms K, to the lower ends

of which is pivoted a rectangular frame L, that carries the model M and the block N to be cut. This frame and the means of keeping it in the same position in relation to the center of the pattern-wheel G and cutter-wheel H forms the principal part of my invention, for the frame L must be so held that no matter how much the arms K are thrown out or drawn in the top and bottom edges of the frame L must be the same distance from the center of the pattern-wheel and cutters, otherwise the last when cut the reverse of the pattern would be built up or cut down in places according to the position of the arms K.

The rectangular frame L is formed with three cross-bars *l' l'' l'''* and two adjustable cross-bars *l³ l⁴*, which can be moved to any desired position and held by clamps *k*, Fig. 3, according to the size of the last to be cut.

The center of the bits for holding the model M and block N are in the center of the frame L and also on a level with the center of the pattern and cutter wheel when said frame is at its lowest position.

The pattern and block can be caused to turn in the same or in opposite directions, as may be desired, in the following manner:

On the short shaft P is mounted a pulley *p*, to which motion is communicated by a belt from a pulley on a short shaft mounted in the upper end of the frame, and a cog-wheel *p'* is also mounted thereon that is in gear with a pinion *q* on shaft Q, running in bearings R on the frame L. This shaft also carries a pinion S, adjustably secured thereto by a set-screw, and between the cross-bars *l' l''* is secured a short shaft T, upon which is loosely mounted a pinion *t*. A cog-wheel U is secured to the shaft V, that carries one of the centers that hold the block to be cut in position. By this arrangement of gears S *t* U the pattern and block to be cut can be caused to rotate in the same direction by throwing the pinion S into gear with the cog-wheel U and throwing the pinion *t* out of gear therewith; but if the pinion *t* is in gear with the cog-wheel U and the pinion S with the pinion T, then the pattern-block will rotate in opposite direction. Thus I am enabled to form a last either for the right or left foot from the same model.

To have the blocks cut true, especially

when cutting a last the reverse of the pattern, it is absolutely necessary to have the frame L at all times retain its relative position to the center of the pattern-wheel and cutters independent of the distance they are apart—that is to say, the frame L must always stand at right angles to a straight line taken from the center of the pattern-wheel and cutters and the center of the frame L. This I accomplish in the following manner: To each end of the rectangular frame L is secured an arm *a*, having a slot *b*, through which is passed a screw *d*, that is on a true line with the center of the pattern-wheel and cutter, and which forms a fulcrum upon which the frame L turns when it is thrown out or drawn in, according to the position of the last, the rear end of each arm being by a bar *c* connected to an arm *d'* on a rocker-shaft *e*, a spring *f* on the shaft *e* causes the frame L to be drawn to its normal position—viz., inward toward the pattern-wheel and cutters—one end of said spring being connected to the frame of the machine and the other end to the arm *d*.

After the last has been cut and it is desired to remove the same and insert a new block, the frame L is drawn forward and a small latch *g* falls over a pin *h* on the side of the frame and retains it in place.

The parts of the machine not lettered or de-

scribed are of well-known construction and familiar to those skilled in the art, and are only shown in the drawings to make the connection of my improvements more clear.

What I claim is—

1. In a machine for turning irregular forms, a rectangular frame for carrying the pattern and block to be cut, said frame being pivoted in swinging arms, and arms connecting said frame to studs situated on a line with the center of the pattern and cutter wheels for controlling the position of said rectangular frame as the arms are thrown out or in, substantially as set forth.

2. In a machine for turning irregular forms, the swinging arms K, rectangular frame L, having arms *a*, by which it is connected to studs *d*, which are on a line with the center of the pattern-wheel and cutter, bars *c*, arms *d'*, and rocker-shaft *e*, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 15th day of August, A. D. 1890.

EBEN A. KIMBALL.

Witnesses:

CHAS. STEERE,
EDWIN PLANTA.