No. 607,140. Patented July 12, 1898.

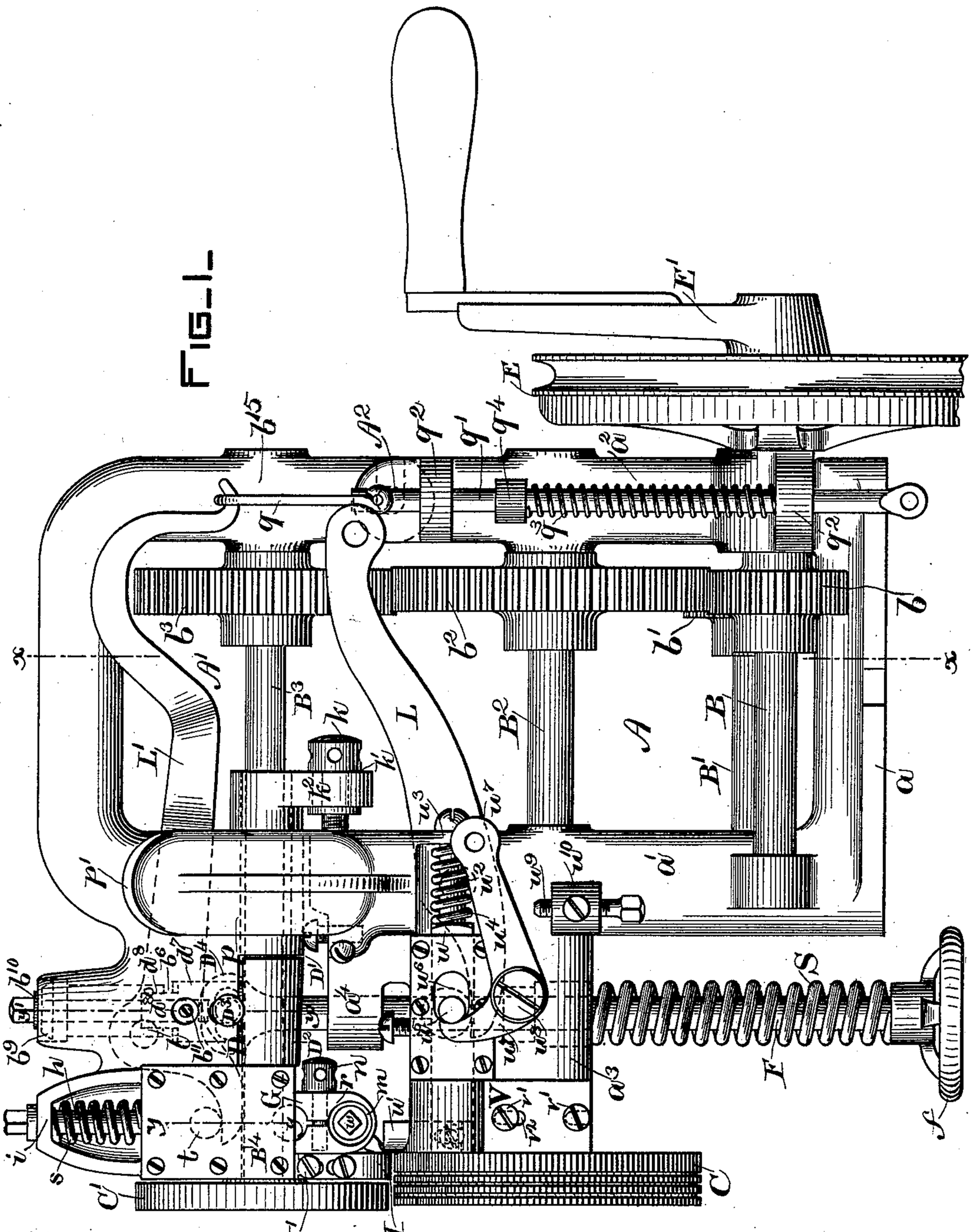
C. P. STANBON.

CHANNELING MACHINE.

(Application filed Oct. 8, 1896.)

(No Model.) 2 Sheets—Sheet 1.

FIG. 1.



WITNESSES

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FIG. 2.

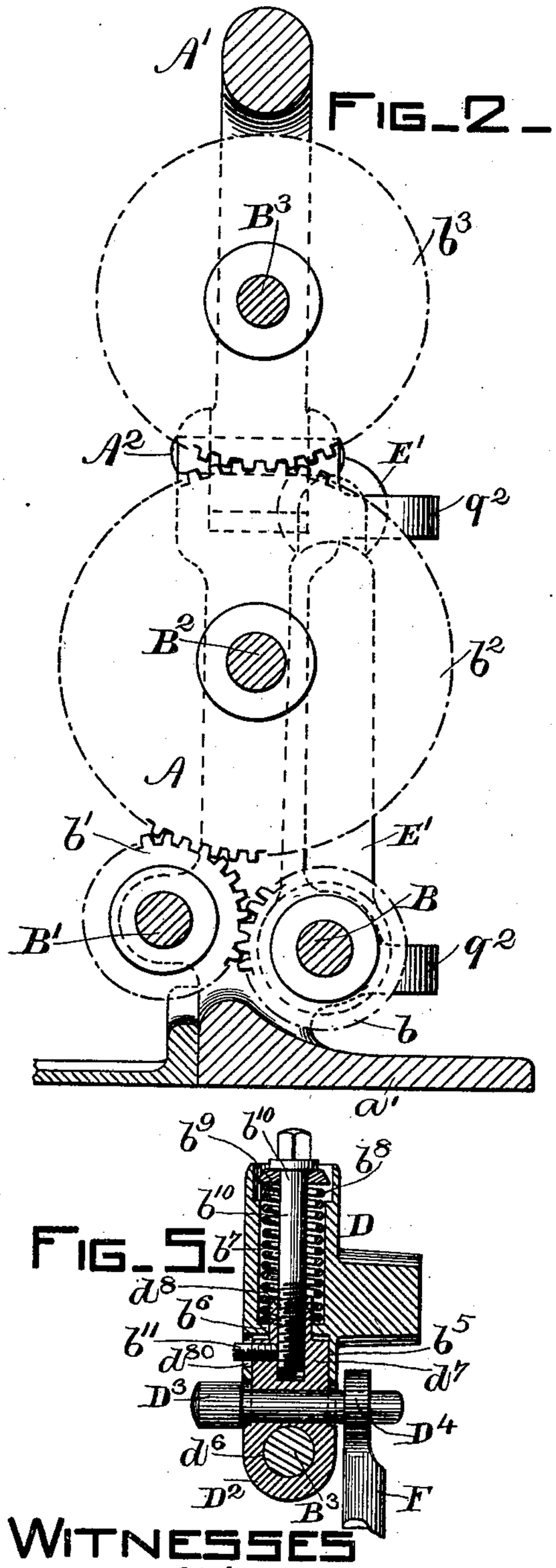

FIG. 3.

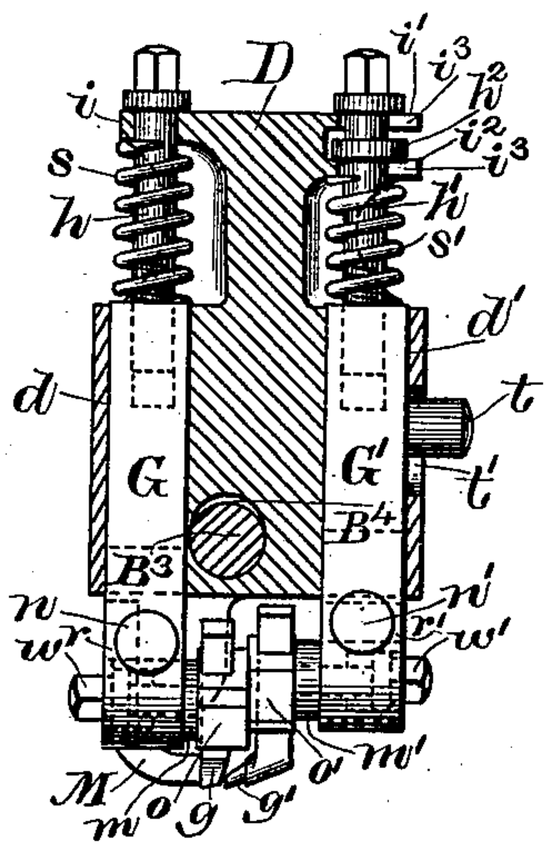

FIG. 4.

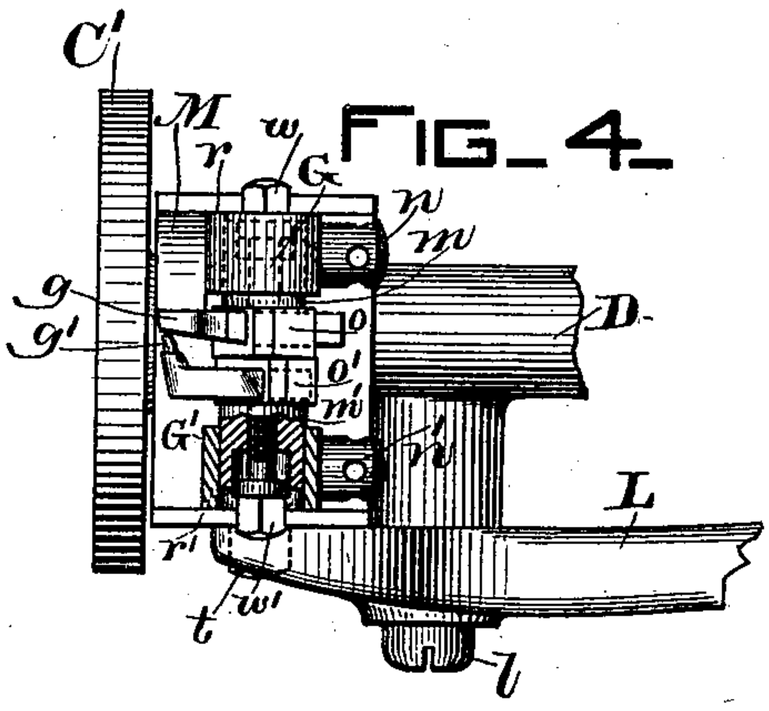

FIG. 5.

WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES P. STANBON, OF LYNN, MASSACHUSETTS.

CHANNELING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 607,140, dated July 12, 1898.

Application filed October 8, 1896. Serial No. 608,270. (No model.)

To all whom it may concern:

Be it known that I, CHARLES P. STANBON, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Channeling-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 channeling-machines, and has for its object to improve the general construction and operation of such machines; and to this end it consists of a channeling-machine embodying certain improvements in the form and arrangement of the knife-carriers, whereby the channeling-knife and the grooving-knife may be capable of easy adjustment toward and from each other.

It further consists of a channeling-machine having an upper feed-wheel which is adapted to have a vertical yielding movement independent of the knives and presser-foot.

It further consists of means for lifting the grooving-knife from the work independent of the channeling-knife.

It further consists of an improved arrangement of the driving mechanism whereby the crank may be turned in either direction to suit different operators; and it further consists of the devices and combination of devices which will be hereinafter particularly described and claimed.

The invention is illustrated in the accompanying drawings, in which similar letters of reference refer to similar parts, and in which—

Figure 1 represents the machine in side elevation. Fig. 2 represents a sectional view upon line $x\ x$ of Fig. 1, looking toward the right. Fig. 3 represents a sectional view upon line $y\ y$, Fig. 1. Fig. 4 represents an under side view of the head of the swinging frame (partly in section) and portions of said frame and the lever for lifting the grooving-knife. Fig. 5 is a section on line $y'\ y'$, Fig. 1.

The machine of the drawings comprises a lower frame A and an upper frame A′, the frame A′ being loosely connected to frame A at A^2 by a slot-and-bolt connection in such manner that it has a swinging movement toward and from frame A and also a limited longitudinal adjusting movement.

The frame A is of a general U shape, as shown, it comprising a base a, from which project upwardly standards $a'\ a^2$, in which are mounted in suitable bearings the driving-shaft B and B′ and the shaft B^2, upon the forward end of which is fixed any suitable work-supporting feed-wheel C, the standard a', having a projected block a^3, through which the shaft B^2 passes, and upon which are mounted suitable guards and gages, as will be hereinafter explained.

The swinging frame A′ is of the general yoke shape, as shown, and at its forward end has a suitable head D, which carries the channeling and grooving knives $g\ g'$, and it also carries in suitable bearings a shaft B^3, upon the outer end of which is fixed the upper feed-wheel C′, which is adapted to have a vertical movement independent of said head for a purpose to be described and which is in vertical alinement with the work-supporting feed-wheel C, the feed-wheels C and C′ being adapted to be rotated in opposite directions and to grip and feed the sole beneath the knives, as will be explained.

The independent movement of the feed-wheel C′, above referred to, is obtained by forming the bearings of the shaft B^3 slightly enlarged or elliptical, as shown in dotted line, Fig. 1, and at B^4, Fig. 3, and by fitting it loosely in the end bearing b^{15}.

The head D is cut out, as shown at D′, and in the recess thus formed is fitted a block D^2, which has a bearing d^6 for the shaft B^3. The block D^2 has a boss d^7, which fits into a bearing b^5 in the head D, and a projected stud d^8, which fits into a bearing b^6 in the base of a chamber b^7 of the head D. Within the chamber b^7 is a spring b^8, which rests at one end on the bottom of said chamber and which bears at its upper end upon a collar b^9, which is carried by a threaded rod b^{10}, tapped into the stud d^8 and boss d^7 of the block D^2. By turning the rod b^{10} the tension of the spring b^8 can be adjusted. A set-screw b^{11}, set in the boss d^7 and engaging the rod b^{10}, holds it in adjusted position.

Fitted in the block D^2 is a stud D^3, which is engaged by the slotted head D^4 of the tension-rod F, whereby the frame A′ is normally held toward the frame A and the feed-wheels

in close proximity. The rod F passes down through a guide a^4 and the block a^3 on the frame A, and has surrounding its lower end a spring S, confined by an adjustable nut f on the end of said rod, the upper end of said spring bearing against the under side of the block a^3, the spring S normally tending to depress the rod F and the swinging frame A′ and to bring the feed-wheel C′ in close proximity to the feed-wheel C. By turning the nut f the tension of the spring S may be adjusted and the pressure of the feed-wheel on the work regulated.

It will be noted that the pressure of the feed-wheel C is controlled and adjusted by means of the rod F and spring S, and that the tension or pressure of the knives and presser-foot is controlled by the rod b^{10} and spring b^8, and the downward pull of the rod F and spring S being extended to the head D through the spring b^8 and rod b^{10}, and that therefore the pressure of the feed-roll can be adjusted independently of the knives and presser-foot, the arrangement permitting the feed-wheel C′ to rise and accommodate a bunch or obstruction in the work without displacing the channeling and grooving knives g and g'.

The movements of the swinging frame A′ are guided and lateral movement thereof prevented by suitable guiding projections p on frame A, which embrace flattened faces p', formed on frame A′.

Frame A′ is raised for the purpose of inserting and removing the work by a bent lever L, which is suitably fulcrumed to frame A and engages a projection (see dotted lines, Fig. 1) upon the rod F, the lever L being depressed by a rod and treadle, as usual in these machines.

Motion is imparted to the feed-wheels C and C′ by the shafts B and B′ (arranged as shown) through the intermeshing gears b, b', b^2, and b^3, which are fixed to the shafts B, B′, B², and B³, or through the shafts B B² B³ and gears b, b^2, and b^3, as will be hereinafter explained. I may provide either a power attachment comprising the clutch E and a crank E′, as shown, to impart power to shaft B or simply the crank. In either case it is desirable that the crank be capable of being turned in either direction to suit the habits of different operators, and for this reason the two shafts B and B′ are provided. When arranged as shown in the drawings, the crank is adapted to be turned forward, and the power from shaft B is communicated through the shaft B′; but if it should be desired to adapt the machine for an operator who is in the habit of turning the crank backward the shafts B and B′ are shifted and their positions reversed. Thus the power from shaft B would be communicated directly to shaft B² and shaft B′ would be an idle-shaft. By this arrangement no matter which way the crank E′ may be turned the feed-wheels C and C′ would always turn in the same direction.

The channeling-knife and the grooving-knife have a simultaneous vertical movement with the swinging frame and are each capable of an independent vertical yielding movement, and the grooving-knife is arranged for a vertical movement independent of the swinging frame and the channeling-knife whenever it is desired to channel the sole without grooving it.

The action of the knives above set forth is secured, preferably, by the following mechanism:

Within the head D are formed vertical guideways d d', in which are mounted the knife-carriers G G′, carrying the channeling-knife g and the grooving-knife g'. The carriers G and G′ are adapted to slide freely in the guideways d d', and each has at its upper end a guide-rod h h', which slides through guides i i' in the upper end of head D, the rods h h' being provided with a head or enlargement to limit the downward movement of the carriers and knives.

Suitable springs s and s', surrounding the rods h and h' and bearing upon the carriers G and G′, tend to normally hold the carriers and knives down and permit an upward yielding movement thereof. Upon the carrier G′ is a stud t, which projects through a slot t' in the side of head D, and it is engaged by the end of a bent lever L′, which is pivoted at l, (see dotted lines, Fig. 1,) the other end of the lever being connected by a link q to a rod q', sliding in bearings q^2 and connected at its lower end by a suitable connection with a foot-treadle. (Not shown.)

The vertical movement of the carrier G′ and the grooving-knife g' is of a limited degree, it being desirable to lift the grooving-knife a sufficient distance only to allow the point of said knife to clear the stock at the base of the channel cut by the channeling-knife, so that the grooving-knife will not come into contact with the channel-flap. This limited vertical movement is obtained by providing the head D with a guide-stop i^2 immediately below the guide i' and providing the rod h' with a fixed collar h^2, which has a limited movement between the guide i' and the guide-stop i^2. The guide i' and the guide-stop i^2 are slotted at i^3 for convenience in placing the carrier G′ and rod h' in position in the head. By depressing rod q' the lever L′ is turned on its fulcrum and lifts carrier G′ and the grooving-knife g', leaving the channeling-knife in operative position. To cause the rod q' to be quickly raised when released, it is surrounded by a spring q^3, which bears at one end on the bearing q^2 and at its other end against a collar or projection q^4 upon said rod.

The knives g and g' are each mounted for an accurate angular adjustment and also for an adjustment toward and from each other preferably as follows:

The lower ends of the carriers G and G′ are each provided with split clamp-bearings r and r', which are adapted to receive the cylindrical blocks m m' and to tightly clamp the same

by means of set-screws n and n', the blocks being capable of a longitudinal and a circular adjustment in the bearings. Each block at its inner end is provided with a bearing o and o' for the shanks of the knives g and g', which are clamped therein by set-screws w and w', tapped into the blocks m and m' and bearing against the shanks of the knives.

In a suitable guideway in the upper side of block a^3 is a slide u, which carries at its forward end a roller or other suitable gage u', which bears against the shoe-sole and positions the same during the channeling operation.

The slide u at its rear end has a rod u^2, which is reciprocated in and is guided by a bearing u^3 in the frame A, it being held normally in a forward position by a spring u^4, surrounding said rod u^2 and bearing at one end on said slide u and at its other end upon the bearing u^3. Upon the side of the slide u is a stud u^5, which projects through a slot u^6 in position to be engaged by one end of a lever u^7, pivoted at u^8, the other end of the lever u^7 being connected to a treadle. (Not shown.)

To limit the rearward movement of the slide u and gage u', an adjustable stop-screw u^9 is fitted in a bearing u^{10} in position to engage the lever u^7.

V represents a guard or table which has an upwardly-curved end which may be adjusted relatively to the periphery of the feed-wheel C, the guard being adjustably attached to the block a^3 by set-screws v' passing through slot v^2 in said guard.

M represents a presser-foot attached to the head D by set-screws M′ and having a curved end located adjacent to the knives g and g', as is usual in these machines.

To correctly position the frame A′ relatively to frame A, and thus position the feed-wheels relatively to each other, I have provided a screw or bolt k, which is fitted in a portion of frame A, the head of which is grooved at k', and in said groove k' is adapted to fit a forked lug k^2 upon frame A′. By turning the screw or bolt k the relative longitudinal positions of the frames and feed-wheels can be adjusted.

The operation of my machine is as follows: The knives and gage having been adjusted to suit the work in hand, the sole to be channeled is inserted between the feed-wheels C and C′, with its edge against the gage u'. Motion is imparted to the feed-wheels in the machine, as illustrated, through the shafts B, B′, B^2, and B^3, and they are caused to feed the sole beneath the channeling and grooving knives, which cut a grooved channel in the surface thereof.

If it is desired to cut a channel or any portion of a channel without the groove, this can be performed by lifting the grooving-knife carrier by the lever L′, as before explained.

Having fully described my invention and its mode of operation, I claim as new and desire to secure by Letters Patent of the United States—

1. In a channeling-machine, the combination with a channeling-knife and a single grooving-knife arranged to cut a groove in the channel cut by the channeling-knife near the base of such channel, of independently vertically yielding carriers for such knives, means to impart a simultaneous vertical movement to said knives and carriers and means to impart an independent vertical movement to the grooving-knife, substantially as described.

2. In a channeling-machine, the combination with the independently-movable carriers, of the independently-adjustable blocks mounted in said carriers, a channeling-knife mounted in one block and a grooving-knife mounted in the other block, means for adjusting the blocks circularly and transversely in their carriers and means for adjusting the knives in the blocks, substantially as described.

3. In a channeling-machine, the combination with the independent carriers, of the independent blocks mounted in said carriers and arranged to be moved transversely of said carriers and to be turned therein, a channeling-knife mounted in one block and a grooving-knife mounted in the other block, and means to adjustably secure said blocks in the carriers, substantially as described.

4. In a channeling-machine the combination with a grooving-knife, of means to move it vertically and guide-stops to limit its vertical movement in both directions, substantially as described.

5. In a channeling-machine, the combination with a head or frame, and suitable guide-stops on said head or frame, of a knife-carrier movable in said head or frame, a guide-rod on said carrier and a fixed collar on said guide-rod between said guide-stops, substantially as described.

6. In a channeling-machine, the combination with a movable block, a shaft having a bearing in said block, a feed-wheel on said shaft, and mechanism connected to the block to raise and lower the block of a swinging frame carrying a channeling-knife, and a yielding connection between said block and swinging frame, substantially as described.

7. In a channeling-machine, the combination with the swinging head, of a feed-wheel movable with and independently of said head, a spring-controlled connection between the feed-wheel and a fixed portion of the machine, and an independent spring connection between the feed-wheel and swinging head, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES P. STANBON.

Witnesses:

T. HART ANDERSON,

A. G. CLIFFORD.