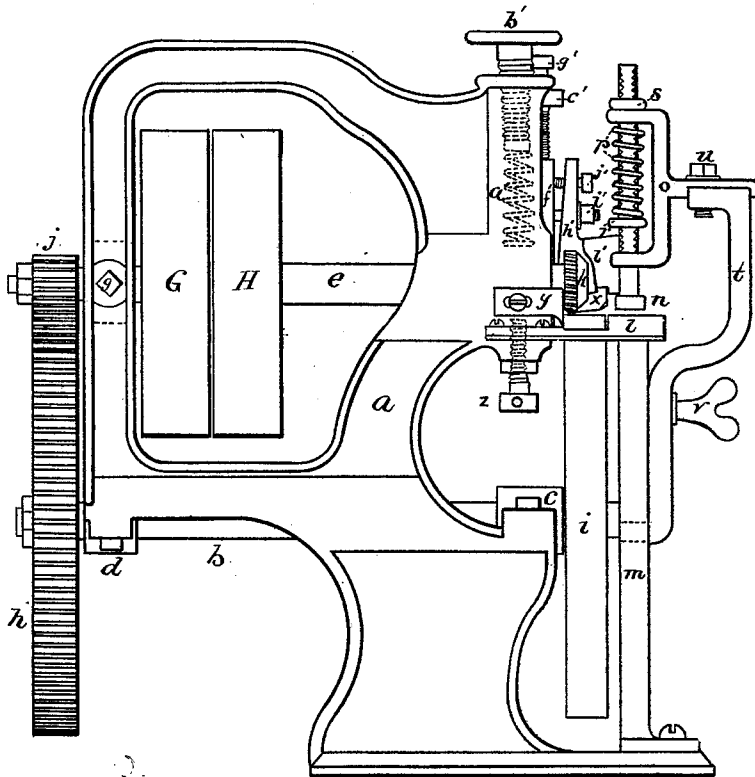


O. LITTLEFIELD.

MACHINES FOR SKIVING BOOT AND SHOE COUNTERS.
No. 175,121. Patented March 21, 1876.

FIG 1



WITNESSES

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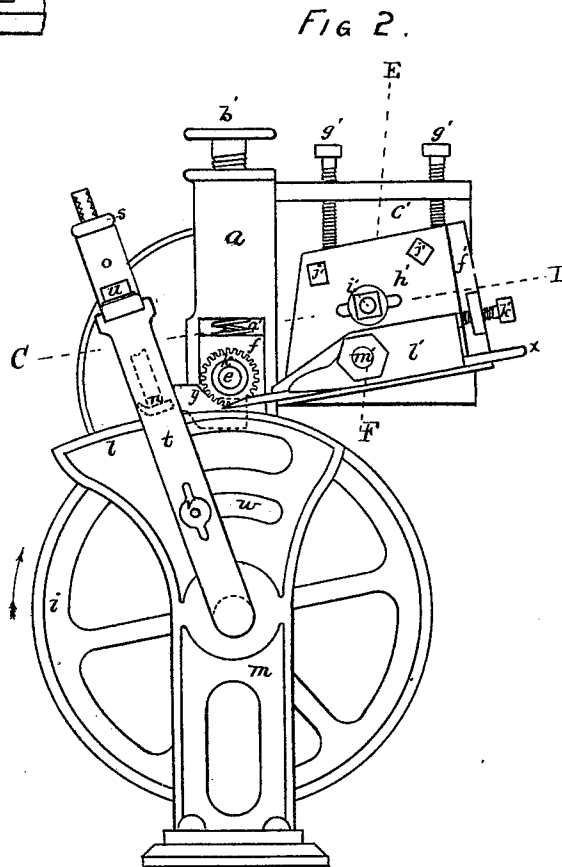
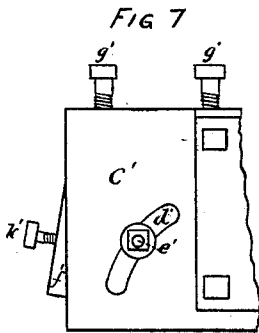
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FIG 5

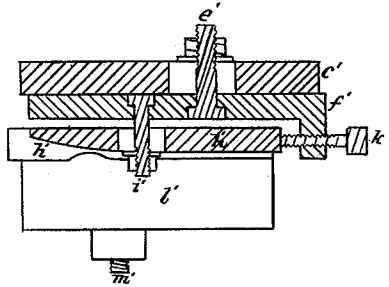


FIG 4.

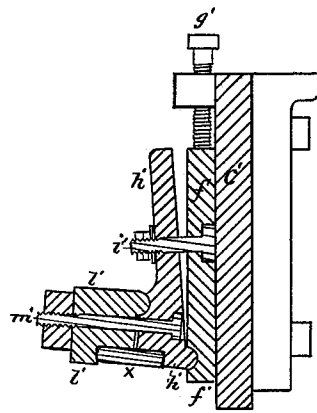


FIG 6

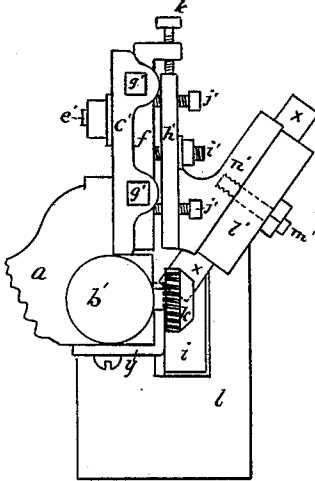
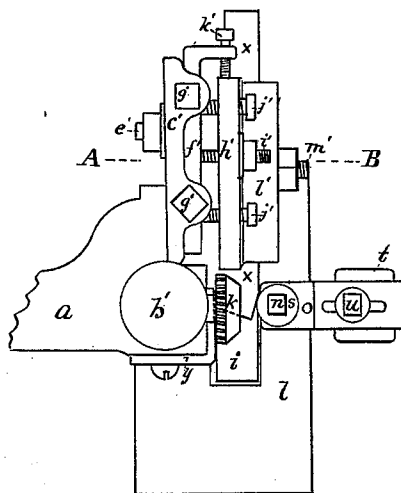


FIG 3.



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UNITED STATES PATENT OFFICE.

ORLANDO LITTLEFIELD, OF LAWRENCE, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR SKIVING BOOT AND SHOE COUNTERS.

Specification forming part of Letters Patent No. **175,121**, dated March 21, 1876; application filed May 31, 1875.

To all whom it may concern :

Be it known that I, ORLANDO LITTLEFIELD, of Lawrence, in the county of Essex and State of Massachusetts, have invented a new and useful or Improved Machine for Skiving Boot and Shoe Counters, of which the following is a specification :

This invention relates to that class of skiving-machines which are constructed with a fixed cutter or skiving-knife, and rotating friction feed-wheels, which feed or carry the article which is being skived past the cutter, thereby bringing the lines of the stiffenings which are to be thus operated upon in contact with the knife-edge; and the invention consists, first, in a presser-foot provided with a double adjustment relatively both to the line of motion of the feed-wheels, and transversely thereto, whereby the foot may be secured in any position relatively to the knife-edge, as the curve of the line which is being skived, and the necessity of giving such line the proper direction past the knife-edge may render necessary; second, in a gage of the edge of the stiffening, which gage is constructed and arranged to extend past the cutting-edge of the knife, and is adjustable relatively to the inner plane of the feeding-wheels, by which means the edge of the stiffening at the point of contact with the knife-edge is held in exact and proper relative position thereto; third, in so constructing or arranging the knife relatively to the plane of the feed-wheels, that the edge of the knife shall be oblique to the line of motion of the feed-wheels, instead of being at right angles therewith, as heretofore; fourth, in providing a four-fold adjustment of the skiving-knife, and in the devices whereby such compound adjustment is accomplished. This adjustment consists, first, in a movement of the knife in the direction of the line of motion of the feed-wheels, so as to bring the cutting-edge nearer to or farther from the axis of the wheels; second in a vertical adjustment as the thickness of stiffening may require; third, in the tangential line of the knife relatively to the face of the large feed-wheel, or in its deviation from a tangent with the face of the wheel at the point of contact with the stiffening with the knife and feed-wheel; and fourth, in an adjustment of the transverse

plane of the knife relative to the horizon, or to the face of the feed-wheel.

Figure 1 is a side elevation taken at the left of Fig. 2. Fig. 2 is an end elevation taken at the right of Fig. 1. Fig. 3 is a detached top or plan view of the right-hand portion of the machine, as seen in Fig. 1. Fig. 4 is a detached vertical section, taken on line A B, Fig. 3, and E F, Fig. 2, and shown as viewed from the right of Fig. 2. Fig. 5 is a detached horizontal section, taken on line C D, Fig. 2, and shown as viewed from the right of Fig. 1. Fig. 6 is a detached top or plan view similar to Fig. 3, but showing a modification of the cutting-blade and its holder. Fig. 7 is a detached elevation, as viewed from a standpoint at the left of Fig. 1.

In the drawings, *a* represents the frame of the machine. *b* is a shaft, journaled at its respective ends in boxes *c d*. *e* is a similar shaft, which, at the back end, (shown at the left in Fig. 1,) is journaled in a box, shown by dotted lines in said figure, and inserted in a passage through the frame. This box is supported by and pivoted upon two screw-bolts, threaded in opposite sides of the frame, in the position of the one shown at *g*. The front end of the shaft *e* is journaled in box *f*, as shown in Fig. 2. This box is also located in a recess in the frame, allowing a free vertical movement. It is seated on the screw-bolt *z*, which is threaded in the frame, as shown by dotted lines, a spiral spring, *a'*, regulated in its pressure by screw *b'*, and bearing upon the upper side of the box. Thus the screw *z* serves as a positive seat for the box, while the spring *a'* serves as a yielding resistance to its upper movement while the stiffening is being skived, as will be more fully described in its order. G H represent a fast and loose pulley on shaft *e*, a belt on said pulleys serving to actuate the machine. *h* is a gear-wheel, secured on shaft *b*, and *j* is a pinion secured on shaft *e*, while *i* is a smooth-faced wheel secured on the former shaft, and *k* is a toothed wheel secured on the latter shaft. The gears *h j* in their diameters bear the same relation to each other as do the wheels *i k*, so that the speed at the periphery of these wheels is coincident, and each tends to impart the same movement to any flat substance interposed between them

and subjected to their united motion. The direction of movement of the feed-wheel *i* is shown by the arrow in Fig. 2, and this wheel and wheel *k* move in conjunction. They, by their united action upon the stiffening as it passes between them, force it past the edge of the knife *x*, the relative position of which is plainly shown in Fig. 2. *n* is the presser-foot, which is held and has a vertical movement in the ears of the carrier *o*. This carrier is secured by set-screw *u* in bracket *t*. A slot in the carrier through which the set-screw passes, as shown in Fig. 3, allows an adjustment to the right or left, as viewed in Fig. 1, while the bracket *t*, which at its lower end is pivoted, as shown by dotted lines, in standard *m*, has a right and left adjustment, as viewed in Fig. 2, by means of the slot *w* and the locking-screw *v*, which latter secures it in position.

Thus the adjustment of carrier *o* by means of the bracket, and the independent adjustment of the carrier, the presser-foot may be placed in any desired position relatively to the cutting-point of the knife, by which means convex lines of greatly varying radii may be automatically fed past the knife, as the presser-foot, by means of its adjustable pressure, next to be described, furnishes the exact degree of necessary resistance to allow the feed-wheels *i* & *k* to force the line to be skived past the edge of the knife.

s is a check-nut, threaded upon the presser-foot rod, and which, by its contact with the top of holder *o*, determines the ultimate descent of the foot. *P* is a coiled spring, through which the rod passes, and which exerts its full force between screw-nut *r* and the upper ear of the carrier, and by adjusting the nut *r* either up or down, the degree of pressure exerted by the foot upon the stiffening may be varied at will. *l* is the feeding-table, formed upon standard *m*, and serves to facilitate the work of feeding the stiffening to the knife, and also furnishes a bearing against which the presser-foot acts through the interposed stiffening.

The devices for holding and adjusting the knife are described as follows: *c'* is a projecting plate, formed upon or secured to frame *a*, as shown in Figs. 2, 3, 6, and 7. In this plate is a short slot, *d'*, cut upon the arc of a circle of the same radius as the distance from the point of knife *x* to bolt *e'*, which passes through this slot. *f* is an intermediate plate, which is secured to plate *c'* by the bolt *e'*, as shown in Figs. 3, 5, 6, 7. *h'* is a vibrating plate, which is secured to the intermediate plate *f'* by the bolt *i* passing through a slot, as shown. This plate *h'* is formed with a longitudinal rib at the lower edge, which fits into a corresponding groove in plate *f*, as shown in Fig. 4. The two set-screws *j' j'*, threaded in plate *h'*, and bearing against plate *f'*, serve, conjointly with bolt *i*, to adjust the plate *h'* at any angle which shall adjust the edge of the knife relatively to the face of wheel *i*. *V* is a bar, which is formed

with a longitudinal rib similar to plate *h'*. This rib is seated in a corresponding groove in the plate *f'*, as shown in Fig. 4. The screw-bolt *m'*, seated in plate *h'*, and passing through *V*, serves as the means of securing blade *x* in position in the seats formed respectively in *h'* and *V*, as shown in said Fig. 4. *k'* is a set-screw, threaded in an ear formed upon plate *f'*, and which acts against plate *h'*, and not only resists end pressure upon the knife, but serves as the means of adjusting the knife in the direction of its axis. *g' g'* are two set-screws, threaded in ears formed upon plate *c'*, and which serve both to resist upward pressure upon the cutter, and as the means of adjusting said cutter in its length at the desired angle, so that its edge shall enter the stiffening at the angle of least resistance, thus insuring the best possible results in its work. It is thus shown that the cutter *x* may be adjusted in its seats in plate *h'* and cap *V* either to the right or left, as shown in Fig. 1, and relatively to the vertical central line of wheels *i* & *k*, as practical results may demand; and, for accomplishing a more delicate adjustment in the same direction without releasing the knife in its holder, by partially slackening the nut on bolt *i*, and actuating set-screw *k'*, such adjustment may be made in any desired degree, the knife and its holder being, in such case, moved together.

By means of the slot *d'* in arm *c'*, and the bolt *e'* and set-screw *g'*, a vertical adjustment may be imparted to plate *f'*, and, through it, to the knife; and by the same means the relative heights of the ends of the knife may be adjusted, as also the edge in regard to its distance from the face-wheel; and the parallelism of the knife-edge to the face of the wheel is adjusted by means of bolt *i* and set-screw *j'*, acting upon the rocking plate *h'*, as described, this latter adjustment determining the angle of the skived bevel. The smaller feed-wheel *k* is toothed as shown, and its contact with the stiffening resting upon the face of wheel *i* drives the stiffening past the knife. *y* is a gage secured to frame *a*, and is inserted between frame *a* and the plane of wheels *i* and *k*. It extends past the edge of the knife, and above and below its edge, as is shown by dotted lines in Figs. 2, 3, and 4, thereby offering a broad and extended surface to the edge of the stiffening, and effectually resisting the inclination of the knife to laterally displace the stiffening from the correct line of movement. In Figs. 1 and 3 the knife is shown with the line of the edge oblique to the side lines thereof, the plane of the feed-wheels, and the line of movement of the stiffening; but in Fig. 6 the line of the knife-edge is shown, by dotted lines, at right angles with its own side lines, but oblique to the plane of the feed-wheels and the line of movement of the stiffening. This latter result is accomplished by means of the angle-arm *w'*, formed upon plate *h'*, and to receive the knife in a seat, as shown in Fig. 4.

The peculiar advantage in thus arranging

the cutting-edge of the knife oblique to the axis of the feed-wheels, instead of in a line therewith, as has heretofore been practiced, arises from the fact that when the edge of the knife is in line with the axis of the feed-wheels it acts at the same moment upon the entire line of fibers extending across the face of the bevel thus being cut by the knife; but, when arranged oblique to the axis of the feed-wheels, it acts successively upon the line of fibers extending across the bevel at right angles to the line of motion, and practically performs what is termed a drawing or "gashing" cut, which obviates all tendency to crowd or double the stiffening back between the wheels.

I do not claim, broadly, a machine adapted to feed stiffenings past the edge of a cutting-blade by means of friction feed-wheels, as many such have been attempted; but

What I do claim is—

1. The combination, with an oblique-cutting blade and feeding mechanism, consisting of the wheel *i* and toothed wheel *k*, the guide *y*, extending beyond the cutting-edge of the knife, and adjustable relatively to the inner plane of the feeding wheels, by which means the edge of the stiffening at the point of contact with the knife-edge is held in exact and proper relative position thereto, substantially as and for the purpose described.

2. In combination with a feed mechanism,

the presser-foot *n*, when constructed and arranged to admit of a double adjustment—that is, an adjustment relatively to the line of motion of the feed-wheels, and transversely thereto, substantially as and for the purpose specified.

3. In a skiving-machine the knife *x*, when so constructed or arranged that the edge thereof is oblique to both the axis and plane of the feed-wheels, substantially as described and shown.

4. In a skiving-machine, the knife-holder *n'*, rocking plate *h'*, and cap *l'*, when constructed and arranged to receive and hold the knife, and to be adjusted in manner substantially as described.

5. In combination with the rocking plate and knife-holder *h'*, the intermediate plate *f'*, provided with a vertical and oscillating adjustment, substantially as described and shown.

6. The combination of the rocking plate and knife-holder *h' l'* with the intermediate adjustable plate *f'* and slotted bracket *c'*, arranged to produce the compound adjustment of the knife in the directions substantially as described, and for the purposes specified.

ORLANDO LITTLEFIELD.

Witnesses:

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E. HATCH.