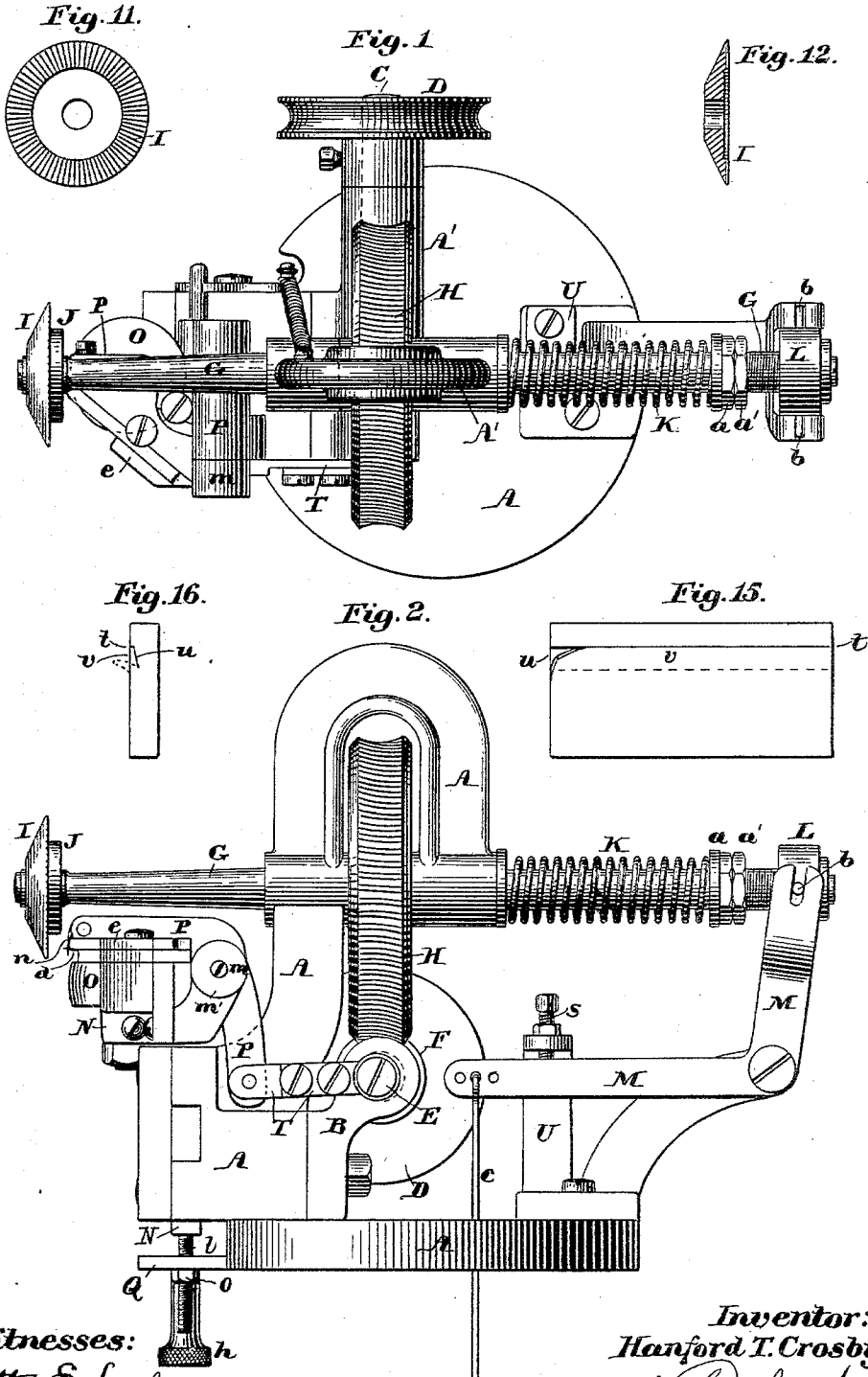


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MACHINE FOR CHANNELING SOLES OF BOOTS OR SHOES.

No. 602,979.

Patented Apr. 26, 1898.



Witnesses:
 Walter E. Lombard
 George H. Brown,

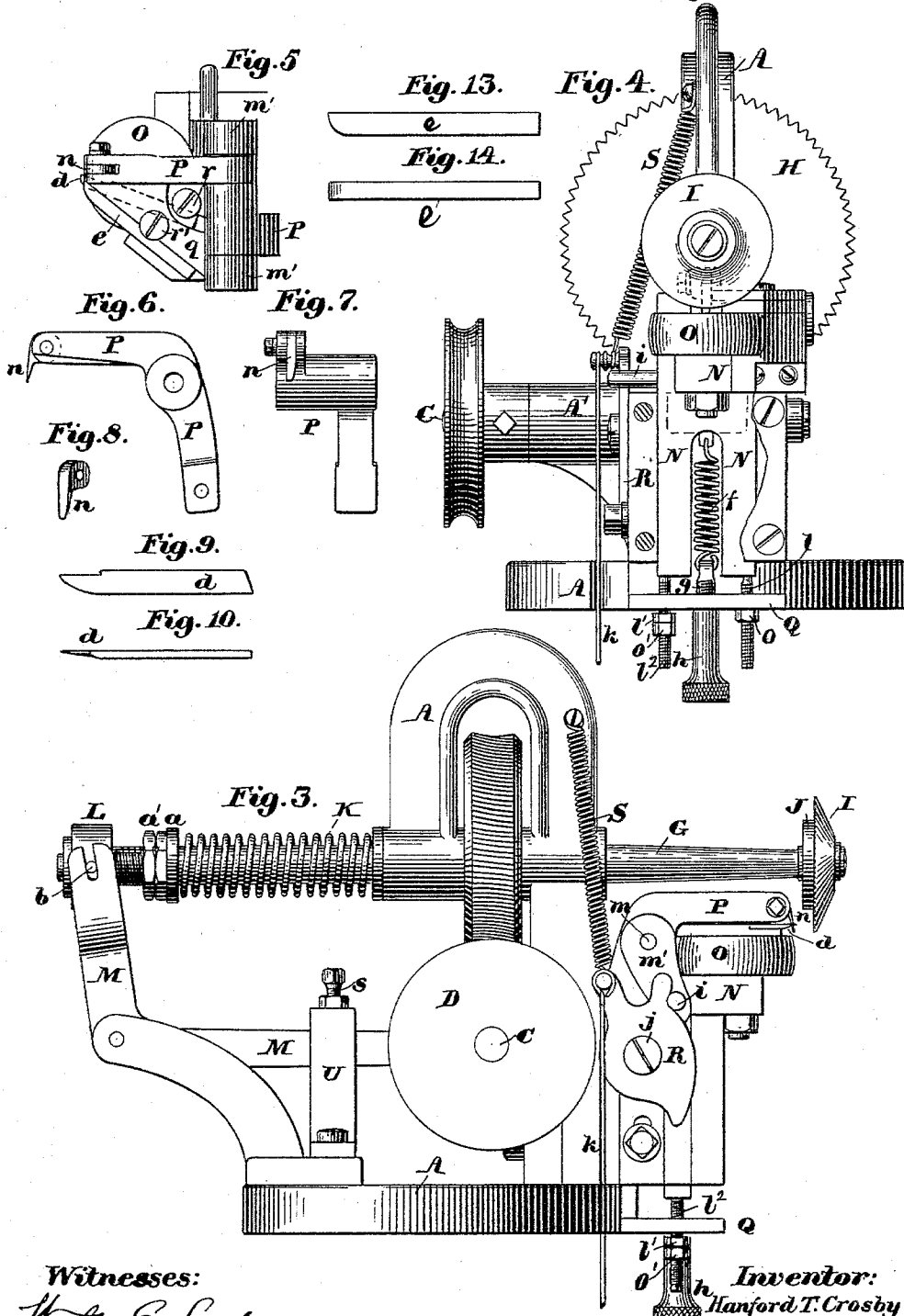
Inventor:
 Hanford T. Crosby
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UNITED STATES PATENT OFFICE.

HANFORD T. CROSBY, OF BOSTON, MASSACHUSETTS.

MACHINE FOR CHANNELING SOLES OF BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 602,979, dated April 26, 1898.

Application filed May 24, 1897. Serial No. 637,844. (No model.)

To all whom it may concern:

Be it known that I, HANFORD T. CROSBY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Channeling the Soles of Boots or Shoes, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to machines for channeling the soles of boots and shoes; and it consists in certain novel features of construction, arrangement, and combination of parts, which will be readily understood by reference to the description of the accompanying drawings, and to the claims hereto appended, and in which my invention is clearly pointed out.

Figure 1 of the drawings is a plan of a channeling-machine embodying my invention. Fig. 2 is an elevation of the same, looking toward the top of Fig. 1. Fig. 3 is an elevation of the opposite side. Fig. 4 is a front elevation with a portion of the front cap broken away. Fig. 5 is a plan of the cutting-tools and gages with the feed-disk removed. Fig. 6 is a side elevation of the vibrating cutter and its carrier detached from the machine. Fig. 7 is a front elevation of the same. Fig. 8 is a perspective view of the vibrating cutter removed from its carrier. Figs. 9 and 10 are respectively a plan and an edge view of the stationary cutter. Figs. 11 and 12 are respectively a rear elevation and a central section of the feed-disk detached from its shaft. Figs. 13 and 14 are respectively a plan and an elevation of the upper or fixed gage; and Figs. 15 and 16 are respectively an elevation and a transverse section of a strip of leather having a channel cut therein, as performed by my improved machine.

In the drawings, A is the frame of the head of the machine, constructed and arranged to be mounted upon a suitable column or bench (not shown) in any well-known manner and having mounted in a bearing A' therein and in the stand B the driving-shaft C, having secured upon one end thereof the driving-pulley D, and having set in its opposite end the crank-pin E, only slightly eccentric to the axis of said shaft, and between said driving-pulley and crank-pin said shaft has firmly secured thereon or formed in one piece therewith the worm F. (Shown only in Fig. 2.)

G is the feed-shaft, mounted in bearings in said frame, so as to be revoluble and movable endwise therein, with its axis in a vertical plane at a right angle to the axis of the shaft C, as shown.

The shaft G has mounted thereon, so as to be revoluble therewith, but so that said shaft may be moved endwise through it, the worm gear-wheel H, which is engaged by the worm F and is revolved thereby.

The shaft G has firmly secured upon its front end the feed-disk I, having the outer portion of its rear face roughened or serrated by radial lines to insure its engagement with the stock to be operated upon. The shaft G also has loosely mounted thereon, just at the rear of the feed-disk I, the guide-roll J, against the periphery of which the rough rounded edge of the sole bears while being channeled, particularly when the sole to be channeled projects varying distances from the edge of the tread-surface of the last, but when the projection of the sole is uniform said guide-roll may be dispensed with and the work be guided by the edge of the feed-disk entering the angular crease between the sole and upper at their junction.

The shaft G extends to the rear to a considerable distance beyond its rear bearing in the frame A, has fitted thereon the nut *a* and check-nut *a'*, and has mounted thereon, between its rear bearing and the nut *a*, the spring K, which serves to move said shaft toward the rear to press the feed-disk into firm contact with the side of the sole edge next the last to insure the proper feeding of the work. The rear end of said shaft has loosely mounted thereon the collar L, provided with the two trunnions *b b*, with which the forked end of the elbow-lever M engages, the long arm of which is connected by a rod or wire *c* with a treadle, near the floor, but not shown, by means of which said shaft G and the feed-disk I may be moved toward the front against the tension of the spring K to facilitate the proper placing of the sole in position for commencing the operation of channeling.

The front of the frame A has fitted to a bearing therein, so as to be vertically movable therein, the slide N, upon the upper end of which are mounted the revoluble gage-roll O, the vibrating cutter-carrying lever P, the

stationary cutter *d*, and the fixed presser-guide *e*.

The slide N has its lower end forked to receive the spring *f*, one end of which is connected to said slide, and its opposite end is connected to a threaded stem *g*, which passes downward through the fixed plate Q and has fitted thereon the thumb-nut *h*, by which the tension of said spring may be increased or diminished at will.

The upper part or head of the slide N has set in its left side the outwardly-projecting pin *i*, with which the eccentric portion of the edge of the cam-plate R, mounted upon the stud *j*, set in the frame A, engages, and by a partial rotation of which the slide N is raised, said cam-plate being connected by the rod or wire *k* with a treadle, (not shown,) by operating which said slide may be raised at the will of the operator, the spring S serving to return said cam-plate and its operating-treadle to their normal positions when the operator's foot is removed from the treadle, the motions of said slide being limited by the adjustable stops *l* and *l'*.

The cutter-carrying lever P is mounted upon the fulcrum-pin *m*, set in the ears *m'* *m'*, and the lower end of its pendent arm is connected by the rod T to the crank-pin E, by which a short, but rapid, vibration is imparted to said lever, causing its upper or horizontal arm to vibrate in a vertical plane or substantially at a right angle to the horizontal plane in which lies the line of feed.

The front end of the lever P is forked and has clamped in said fork the cutter *n*, the right-hand edge of which, as viewed in Fig. 7, is slightly inclined to a perpendicular, and its lower end and said inclined edge are keen cutting knife-edges. The blade of said cutter also has its front face at a right angle to the plane of vibration of the lever P and inclined to a perpendicular to a greater or less extent, according to the depth of channel it is desired to cut.

The cutter *n* at each vibration of its carrying-lever P moves in a plane substantially at a right angle to the plane in which lies the line of feed and at every downward stroke thereof cuts a section of the slit *u* from the slit *t* toward the center of the width of the sole, as shown in Fig. 16.

A normally stationary but adjustable cutter *d* is secured to the head of the slide N, with its upper and lower surfaces in horizontal planes, while its edges are oblique to a vertical plane cutting longitudinally through the axis of the shaft G, as shown in Fig. 5. This cutter *d* and the stationary presser-gage *e* are clamped in the desired adjusted positions in grooves of the plate *q* by the screws *r r'*, respectively, as shown in Figs. 1, 2, and 5.

The rearward movement of the shaft G is limited by the horizontal arm of the lever M coming in contact with the stop-screw *s*, adjustably set in the stand U, as shown in Figs. 2 and 3.

The stop-screw *l* is threaded in the plate Q and secured in the desired adjusted position by the check-nut *o* and serves to limit the downward movement of the slide N by its right-hand portion of the fork coming in contact with the upper end of said screw *l*.

The screw *l'* is firmly set in or formed in one piece with the slide N, passes freely through a smooth hole in the plate Q, and has fitted thereon the stop-nut *l'*, which by engaging the under side of said plate Q limits the upward movement of the slide N, said stop-nut *l'* being secured in the desired adjusted position by the check-nut *o'*.

In Figs. 15 and 16, *t* represents the incision made by the fixed horizontal cutter, and *u* represents the incision made by the vertically-vibrating knife *n*, the flap *v* having a defined thickness at its thin edge instead of a thin feather-edge, as heretofore practiced.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a sole-channeling machine, the combination of a work-feeding mechanism; a cutter-carrying lever constructed and arranged to vibrate in a plane which is at substantially a right angle to the plane in which lies the line of direction of the feed; and a cutter carried by said lever and having a straight cutting end at a right angle to the plane of vibration of said lever.

2. In a machine for channeling boot and shoe soles, the combination of a feeding mechanism; a fixed cutter arranged with its cutting edges in a plane at substantially a right angle to the vertical plane in which lies the line of direction of the feed; and a cutter constructed and arranged to be vibrated in a plane substantially at a right angle to the plane in which lies the line of direction of the feed, and the plane in which lie the cutting edges of the fixed cutter.

3. In a machine for channeling boot and shoe soles the combination of a feeding mechanism; a fixed cutter constructed and arranged as set forth; a pressure-gage arranged and operating as described; and a movable cutter constructed and arranged to vibrate in a plane substantially at a right angle to the plane in which lies the line of direction of the feed.

4. In a sole-channeling machine, a feeding mechanism comprising the driving-shaft C; the worm-wheel H; the worm F mounted on said shaft C, and engaging said worm-wheel; the shaft G carrying said worm-wheel, and movable endwise therein; the feed-disk I mounted upon said shaft G and having its rear face roughened; and the revoluble gage-roll O mounted upon a vertical stud or bearing, all combined and arranged to operate substantially as described.

5. In a sole-channeling machine, the combination of the feed-disk I; the revoluble gage-roll O; the vertically-vibrating lever P; the cutter *n* adjustably mounted on said lever P to vary the angle of said cutter with

relation to said lever P; and means for imparting a rapid vibration to said lever and cutter, in a plane substantially at a right angle to the plane in which lies the line of direction of the feed.

6. The combination of the shafts C and G; the worm F; the worm-wheel H; the feed-disk I; the revoluble gage-rolls J and O; the pivoted elbow-lever P; the cutter *n* adjustably secured to said lever; the crank-pin E; the link or connecting-rod T; the spring K on the shaft G; the nuts *a a* and the trunioned collar L on said shaft; the lever M; means for moving said lever about its fulcrum; and a stop to limit its upward movement.

7. In a sole-channeling machine, the combination of a revoluble feed-disk; a vertically-movable slide; a rotary gage; a fixed horizontal cutter; a pressure-gage and a movable cutter-lever constructed and arranged to vibrate in a plane substantially at a right angle to the plane in which lies the line of direction of the feed, all mounted upon the

head of said slide; a cutter carried by said vibrating lever; a spring to press said slide downward; means for raising said slide against the tension of said spring; and stops for limiting the upward and downward movements of said slide.

8. In a sole-channeling machine, the combination of a feed mechanism; and a channel-cutting blade constructed and arranged to vibrate in a plane substantially at a right angle to the plane in which lies the line of direction of the feed, and having a horizontal cutting edge at its lower end and an inclined cutting knife-edge on that edge thereof toward which the work is fed.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 20th day of May, A. D. 1897.

HANFORD T. CROSBY.

Witnesses:

N. C. LOMBARD,
J. L. CHOATE.