

(No Model.)

3 Sheets—Sheet 1.

F., R. & O. KAMPFE.
MACHINE FOR GROOVING RAZOR STROPS.

No. 520,851.

Patented June 5, 1894.

Fig. 1.

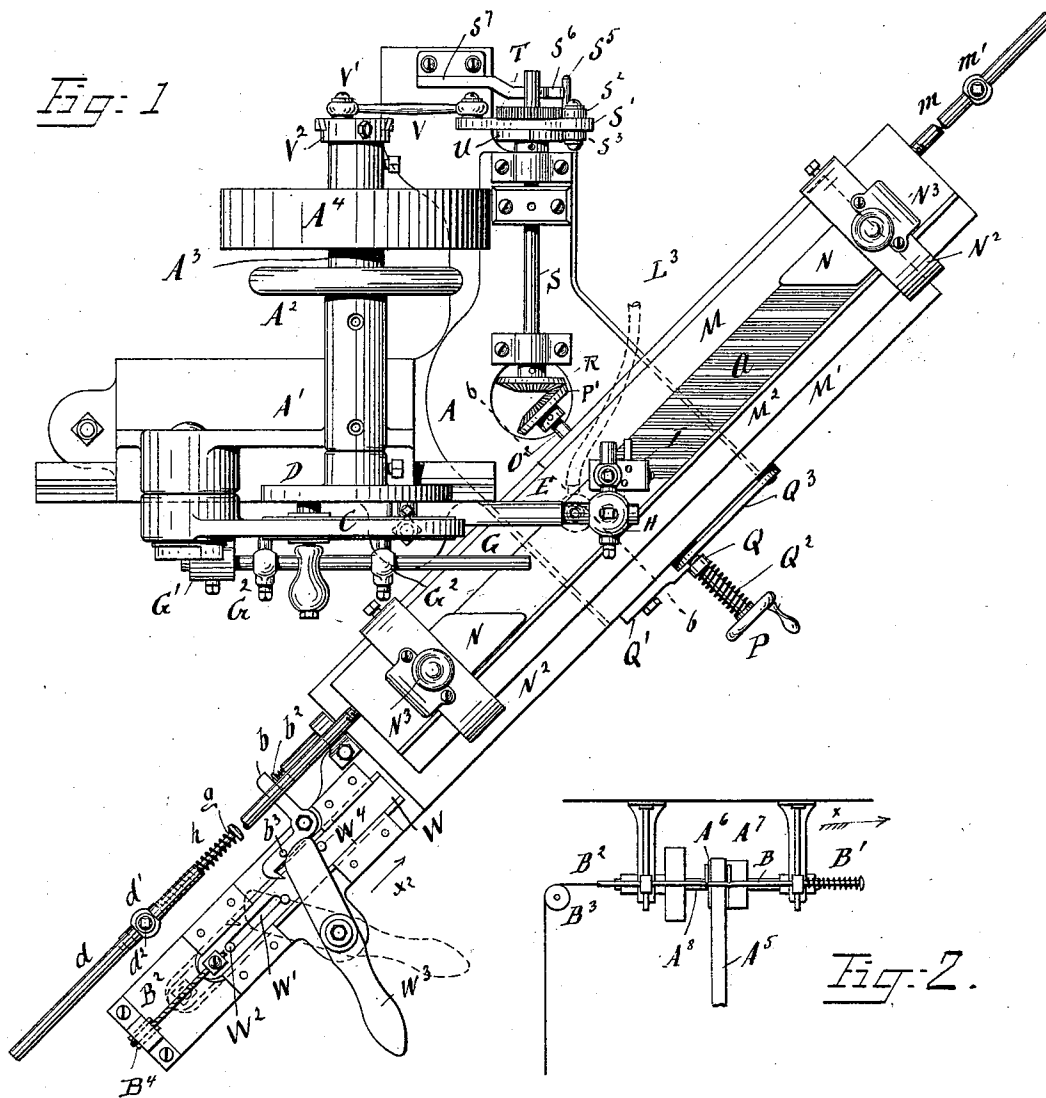


Fig. 2.

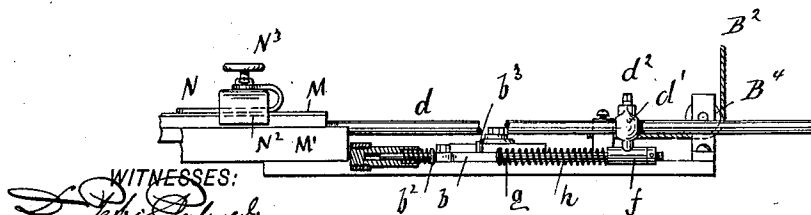
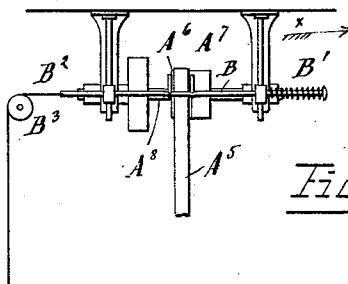


Fig. 3.

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K. R. Brennan

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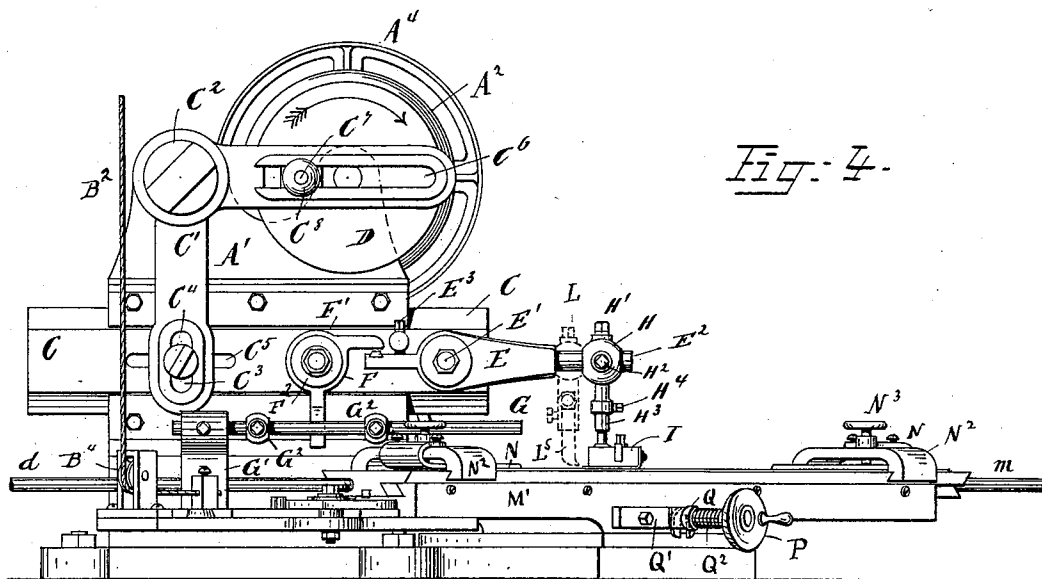


Fig. 4.

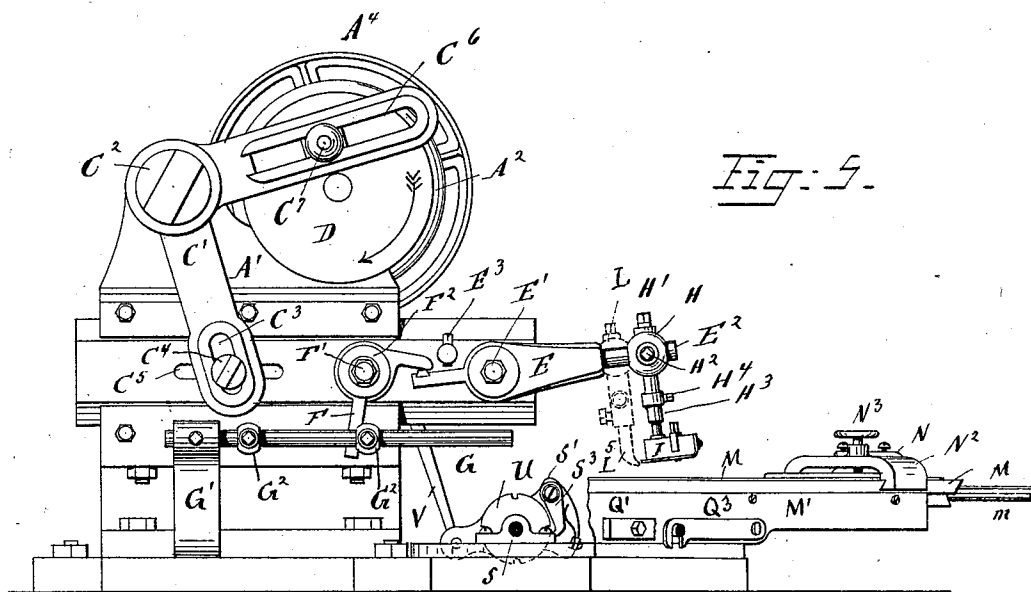


Fig. 5.

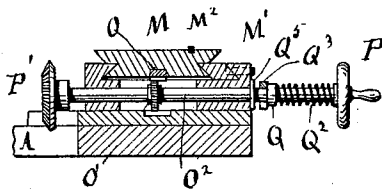


Fig. 6.

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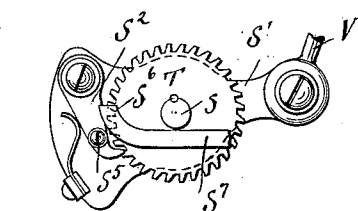
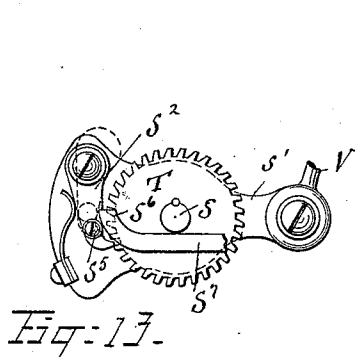


Fig. 13.

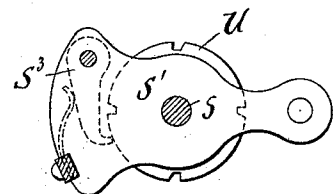


Fig. 14.

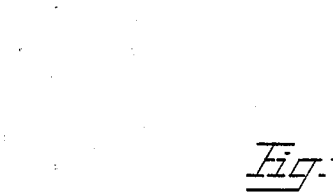


Fig. 15.

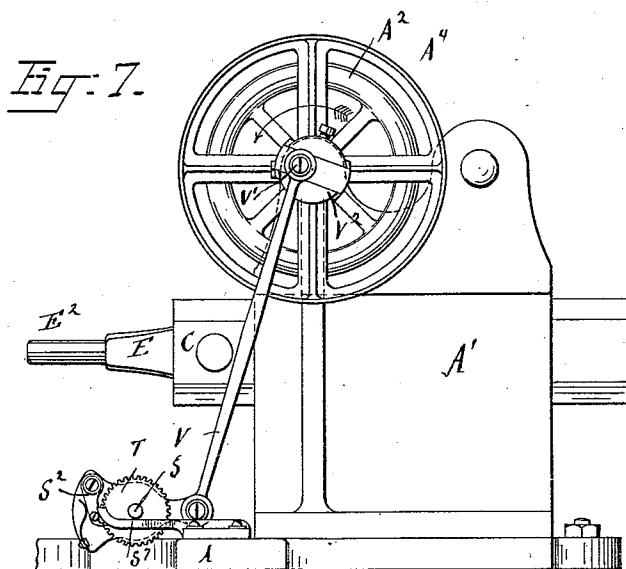


Fig. 7.

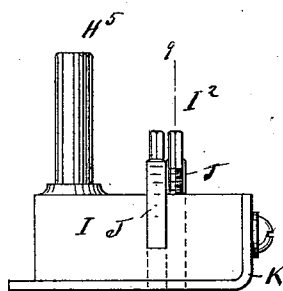


Fig. 8.

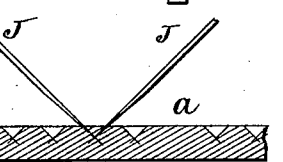
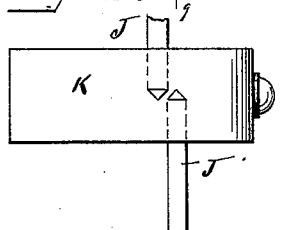


Fig. 9.

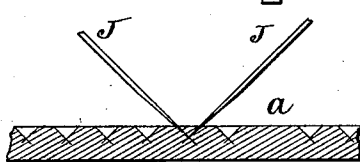


Fig. 10.

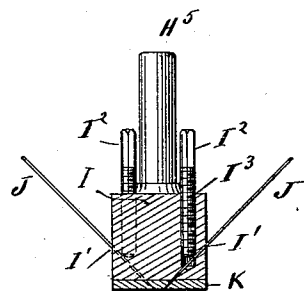


Fig. 11.

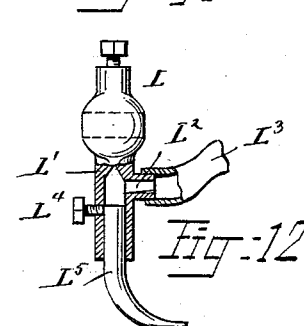


Fig. 12.

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UNITED STATES PATENT OFFICE.

FREDERICK KAMPFE, RICHARD KAMPFE, AND OTTO KAMPFE, OF BROOKLYN,
NEW YORK.

MACHINE FOR GROOVING RAZOR-STROPS.

SPECIFICATION forming part of Letters Patent No. 520,851, dated June 5, 1894.

Application filed December 26, 1893. Serial No. 494,760. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK KAMPFE, RICHARD KAMPFE, and OTTO KAMPFE, citizens of the United States, and residents of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machines for Grooving Razor-Strops, of which the following is a specification.

This invention relates to a new and improved machine for cutting grooves in the surfaces of leather razor strops of the kind described in the Patent No. 477,902, issued to us on the 28th day of June, 1893.

The object of our invention is to provide a machine for cutting a series of groups of parallel grooves in the face of a leather strop, which machine is so constructed that it can be adjusted for cutting grooves of various sizes, for strops of various widths, to feed the strop uniformly as may be necessary according to the arrangement of grooves and to stop the machine automatically when the strop has been cut.

The invention consists in a machine for cutting grooves in leather strops, which machine is constructed with a reciprocating slide and a support for a blade-holder.

The invention consists in the construction and combination of parts and details which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan-view of our improved machine for grooving razor-strops. Fig. 2 is a detail elevation of the pulley and a belt-shifting device, for the machine. Fig. 3 is a detail side-view of the automatic stop mechanism for the machine, parts being broken out. Figs. 4 and 5 are side-views of the machine, showing the parts in different positions, parts being omitted. Fig. 6 is an enlarged detail sectional view through the carriage and mechanism for guiding the same, on the line 6--6 of Fig. 1. Fig. 7 is a side elevation of the machine, showing the side opposite the one shown in Figs. 4 and 5. Fig. 8 is a side view of the blade-holder. Fig. 9 is a vertical transverse sectional view of the same, on the line 9--9, Fig. 8. Fig. 10 is a plan-view of the under side of the blade-holder. Fig. 11 is an enlarged de-

tail longitudinal sectional view of part of the strop, showing the manner in which the blades cut the grooves. Fig. 12 is an enlarged detail sectional view of the blower nozzle for removing the slivers of leather cut out by the blades, and Figs. 13, 14 and 15 are detail side-views of the ratchet and pawl mechanism for shifting the carriage in the direction of its length.

Similar letters of reference indicate corresponding parts.

The machine-frame rests on a base-plate A provided with the standard A' in which the main shaft A² is mounted horizontally, said shaft carrying the hand wheel A² and the pulley A⁴ for the driving-belt A⁵, which passes over the driving-pulley A⁶ fixed adjacent to the loose pulley A⁷ on the counter-shaft A³. A belt-shifter B is mounted to slide on the supports of the counter-shaft A³, and by means of a spring B' coiled around said belt-shifter between a button on the end of the same and one of the supports of the counter-shaft said belt-shifter is pressed in the direction of the arrow x, Fig. 2. A chain or cord B² which is attached to the opposite end of the belt-shifter passes over pulleys B³ and B⁴ and is connected with parts of the machine, as will be described hereinafter.

In a suitable groove in the side of the standard A', a slide C is mounted to reciprocate horizontally which slide is worked from the main shaft A² by means of a bell-crank lever C' pivoted at C² to the standard A'. Said bell-crank lever C' is provided in the end of its downwardly projecting arm with a longitudinal slot C³, through which a screw C⁴ passes that also passes through a longitudinal slot C⁵ in the slide C, by means of which screw and slots the connection between the end of the arm of the bell-crank lever and the slide can be adjusted as circumstances may require. The upper arm of the bell-crank lever is provided with a longitudinal slot C⁶ through which a pin C⁷ passes into the face of a disk D fixed on the end of the shaft A³ outside of the standard A', which pin C⁷ carries a handle C⁸. On the outer end of the slide C a two-armed lever E is pivoted to the outer side of said slide at E' which lever is provided at its outer end, projecting beyond

the slide, with a stem E^2 , which carries the blade-holder, which will be described hereinafter. The throw of said arm E can be limited by an adjustable check-screw E^3 screwed through a boss projecting from the side of the slide. An angle-lever F is pivoted at F' to the slide C between the point of connection of said slide with the bell-crank lever C' and the lever E, which angle-lever F is held friction tight on the slide by means of suitable washers, of which one, F^2 , is shown in Fig. 5. The upper arm of the angle-lever F projecting toward the front end of the slide C, extends over the rear or left-hand arm of the lever E and can depress the same so as to raise the outer end of said lever E. A rod G is held parallel with the slide C a short distance below the same on a bracket G' projecting from the side of the standard A', on which rod G two adjustable stops G^2 are mounted, between which the lower arm of the angle-lever F reciprocates, and which stops, at the ends of the strokes of the slide C act on the downwardly-projecting arm of the angle-lever F and turn the same a short distance, alternately in opposite directions.

On the stem E^2 a ball H is mounted, which ball can be locked in place on the stem by means of a binding-screw H' in the top of the ball and can be locked at any desired inclination by means of a screw H² in the side of the ball. From said ball a tubular arm H³ projects downward, which is provided with a binding-screw H⁴ for holding a stem H⁵, which can be inserted into the lower end of the tubular arm H³ and projects upward from the blade-holder I. Said blade-holder is composed of a block of metal having two inclined slots I' extending one from each side diagonally through the block and serving to receive the blades J. Said blades are locked in place in the holder by means of binding-screws I² which are screwed into vertical apertures I³ in said blade-holder. An L-shaped plate K of spring metal is fastened to the front end of the blade-holder and extends along the bottom of the same, said plate having slots that coincide with the lower ends of the slots I'. The slots I' for the blades are arranged one in advance of the other and the blades, which have their lower ends beveled and sharpened, are so arranged that the points of the blades cross each other, as shown in Figs. 8, 9 and 11. Between the end of the arm E and the ball H a like ball L is held on the stem E^2 , which ball L is provided with a downwardly-projecting tubular arm L' having a laterally-projecting neck L², on which a hose L³ can be coupled. By means of a binding-screw L⁴ a curved nozzle L⁵ can be held in the lower end of said arm L'. The hose L³ is connected with any suitable air compressing device, which is not shown, as it forms no part of this invention. So as not to render the drawings obscure, the arm carrying the nozzle and the hose have been drawn in dotted lines in Figs. 1, 4 and 5.

The piece of leather a or strop is placed upon the carriage M having dove-tailed sides and mounted to slide in dove-tailed guides M'. In the top of the slide M a strip M² of wood is inserted, which extends the length of the carriage and forms a rest for the edge of the piece of leather a . The ends of the piece of leather a are clamped upon the carriage by the U-shaped clamping-pieces N, each fastened at its upper end to a yoke N², on the ends of the carriage, which clamping-pieces can be pressed upon the ends of the leather piece a by the screws N³ screwed through said yokes N². A rack O is formed in the under side of the carriage M and is engaged by a pinion O' fixed on a shaft O² passing transversely through the guides M' below the carriage M and adapted to turn in said guides and to move through said guides in the direction of its length, which shaft is provided at its outer end with a hand-wheel P and at its inner end with a bevel cog-wheel P'. The shaft O² passes through a guide-collar Q a short distance from the front face of the outer guide M' and fixed on a bracket Q', and between said guide-collar Q and the hand-wheel P a helical spring Q² surrounds the shaft O² and presses the same in the direction toward the hand-wheel, which movement of the shaft O² in the direction toward the hand-wheel P is limited by the hub of the bevel cog-wheel P' at the inner end of said shaft. A collar Q⁵ is fixed on the shaft O² in front of the guide M'. A latch Q³ is pivoted to the front of the outer guide M' and is provided at its swinging end with a notch adapted to receive the shaft O². As long as said latch Q³ is in lowered position and rests on the shaft O² the notched end of said latch being between the guide-collar Q and the collar Q⁵ on the shaft O², it prevents the spring Q² from pulling the shaft O² in the direction toward the hand-wheel P; but as soon as the latch Q³ is raised the spring Q² draws the shaft O² in the direction of its length and toward the hand-wheel. When said shaft O² is in its inner position the bevel cog-wheel P' on said shaft is engaged with the bevel cog-wheel R on one end of the shaft S journaled horizontally on the base-plate, which shaft S carries the two ratchet-wheels T and U and between them a rocking-pawl lever S'. The ratchet-wheel T is provided with teeth throughout its entire circumference, whereas the ratchet-wheel U is only provided with a limited number of notches, for example, four, which are equi-distant from each other, the distance between any two notches of the ratchet-wheel U corresponding to a fixed number of notches or teeth of the ratchet-wheel T. On the opposite sides of the pawl-lever S' two pawls S² and S³ are pivoted, which are acted upon by springs that press their ends against the teeth of the ratchet-wheels. The pawl S² is provided near its swinging end with a projecting pin S⁵ that slides on the curved cam-end S⁶ of an arm S' projecting

from the base-plate of the machine at the side of the ratchet-wheel T. The pawl-lever S' is connected by a connecting-rod V with an adjustable pin V' held eccentrically in a disk V² on the end of the shaft A³. As the pawl-lever rocks up and down it is moved such a distance that the pawl S² for each stroke of said pawl-lever slides up over two teeth of the ratchet-wheel T, but at the same time it is thrown outward during its upward movement by the cam S⁶, so that at the beginning of its downward stroke said pawl cannot engage the upper one of the two teeth over which it has passed, but only the lower one, so that although the pawl is moved upward the distance of two teeth for each stroke of the pawl-lever, it nevertheless rotates the ratchet-wheel T and the shaft S the distance of one tooth only by its return movement. By the time that the ratchet-wheel T has made a quarter of a turn the ratchet-wheel U is brought into such a position that its pawl S³ can pass into one of the notches of said ratchet-wheel U. Said pawl S³, however, is not affected by a cam-piece in the manner that the pawl S² is, and as the pawl-lever S' swings a sufficient distance to rotate the ratchet-wheels the distance of two teeth of the ratchet-wheel T, it follows that by the next downward stroke of the pawl-lever S' the pawl S³ is moved downward the distance of two teeth of the ratchet-wheel T. Then the ratchet-wheel T is again moved successively the distance of one tooth until the two wheels together have again made a quarter turn, when the pawl S³ again engages the ratchet-wheel U and the two ratchet-wheels are again turned the distance of two teeth of the ratchet-wheel T, and so on. It thus follows that the carriage M, which is driven by means of the bevel cog-wheels R and P' from the shaft S, is moved uniformly a certain distance for every stroke of the pawl-lever S' until the shaft S has made a quarter turn and the pawl S³ can engage its ratchet-wheel U. Then the carriage is moved double the distance that it was moved for each preceding stroke of the pawl-lever. By changing the cam-piece and the ratchet-wheels the feed can be so arranged that the pawl S³ moves the distance of three teeth of the ratchet-wheel T for each stroke of the pawl-lever, but nevertheless rotates said ratchet-wheel T the distance of one tooth only. Likewise by using different wheels the machine can be so adjusted that this larger movement takes place once, twice, three or more times for each complete rotation of the ratchet-wheel U.

A slide W is suitably guided on the base-plate of the machine and is provided with a longitudinal slot W' through which a stop-pin W² passes from the base of the machine. A handle-lever W³ pivoted on a bracket of the base of the machine can shift the slide W in the direction of the arrow x^2 by acting on a pin W⁴ of the slide. The chain or cord B² previously mentioned and connected with the

belt-shifter B is connected with one end of said slide W. An angle-latch b is pivoted on the base of the machine and is provided at one end with a prong b' that can pass into a notch in the slide W. On the opposite end of said angle-latch a spring-pressed pin b² acts in such a manner as to press the hook-end of said latch against the edge of the slide W. The latch b carries a pin b³, on which the rounded inner end of the handle-lever W³ can act, to press the hook-end of the latch out of the notch in the slide W. A rod d projects from the end of the carriage and carries an adjustable ring d' that can be locked in place on said rod by means of a binding screw d². A sleeve f is attached to the bottom of said ring d' and contains a slide-rod g provided with a head between which head and the sleeve f a cushion spring h is interposed. A rod m projects from the opposite end of the carriage and carries an adjustable stop m'.

The operation is as follows: The piece of leather a is clamped on the carriage M, its edge resting against the wooden strip M². The latch Q³ is raised, so as to permit pulling the shaft O² outward to disengage the bevel cog-wheel P' from the bevel cog-wheel R. By turning said shaft O² the carriage is so adjusted that the end of the same, shown at the top of Fig. 1, is below the blade holder I. The stops G², the stop-screw E³ and the blade-holder are adjusted according to the thickness and width of the piece of leather a. The blades J are finely adjusted and then locked in place by means of the screws I², according to the depth of the cut and the thickness of the piece of leather. The shaft O² is pushed back to its original position and locked in place by the latch Q³. The lever W³ is brought from the position shown in dotted lines in Fig. 1 into the position shown in full lines, and thereby the slide W is moved in the direction of the arrow x^2 and is locked in place by the angle-latch b. The cord or chain B² is also pulled in the direction of the arrow x^2 , Fig. 1, and thereby the belt-shifter B is moved in the inverse direction of the arrow x , Fig. 2, and the belt A⁵ is moved upon the driving-pulley A⁶ on the counter-shaft and the machine is started. The slide C is now reciprocated, and as it makes its stroke to the front the blades I each make a cut through the piece of leather a, which cuts are at an angle to the face of the piece of leather. As the blades are inclined in opposite directions, two such cuts will be made and thereby a sliver of leather, triangular in cross section is cut from the piece a, one blade cutting slightly in advance of the other. The sliver thus cut from the piece of leather is immediately blown away by the current of air issuing from the nozzle L⁵, so as to leave the piece of leather entirely clear and prevent the blades from being clogged by slivers previously cut out. When the slide C has about completed its outward stroke the downwardly-projecting arm of the angle-lever F strikes against the front stop-

piece G^2 and is thereby tilted, causing its upper arm to strike the rear extension or arm of the lever E, whereby the outer end of the lever E and the blade-holder thereon are raised. As the angle-lever F is held friction-tight on the slide, it remains in this tilted position, as does also the lever E, and in this position the lever E is carried back during the return stroke of the slide. Just before the slide C completes its return stroke the downwardly-projecting arm of the tilted angle-lever F strikes against the rear stop G^2 , whereby the upper arm of the angle-lever F is swung upward, permitting the lever E to swing down under the action of its own weight and that of the blade-holder until the rear extension of the lever E rests against the stop-screw E^3 , which was previously so adjusted that when said rear extension of the lever E rests against it the blades will be in the proper plane for making the cut in the piece of leather. The slide C now begins another forward stroke, the blades are pushed through the leather and cut out another triangular sliver, and so on. After each cut the carriage is moved forward the distance of one tooth of the ratchet-wheel T, but after every seventh cut, for example, the carriage is moved the distance of two teeth, so that a stop is obtained in which seven cuts are arranged side by side, an equal distance from each other, and then a space is left on the stop, another group of cuts is made, and so on alternately. The carriage continues moving in the inverse direction of the arrow x^2 until the entire stop has been cut. By this time the rod g arrives at the angle-latch b and strikes against the outwardly-projecting arm of the same, the blow being deadened by the cushion-springs b^2 and h . Thereby the angle-latch b is disengaged from the slide W, which is pulled by the spring B' in the inverse direction of the arrow x^2 , and thereby the handle-lever W^3 is brought from the position shown in full lines in Fig. 1 into the position shown in dotted lines. The stop that has just been cut is now removed, another piece of leather is placed on the carriage and the above operation repeated. If at any time the operator discovers that any parts of the machine are out of order he can instantly stop the machine by drawing the lever W^3 into the position shown in dotted lines, whereby the latch b is thrown out, by the action of the end of the lever W^3 on the pin b^3 on said latch.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

60 1. The combination with a reciprocating slide, of a lever pivoted to the same, a blade-holder on said lever, a pivoted angle-lever held friction-tight on said slide, a rod adjacent to the slide and adjustable stops on said rod, substantially as set forth.

65 2. The combination with a reciprocating slide, of a lever pivoted on the same, a blade-

holder on said lever, an adjustable stop-screw above one part of said lever, an angle-lever mounted pivotally and friction-tight on the slide, and two adjustable stops that act on said pivoted angle-lever, substantially as set forth. 70

3. The combination with a reciprocating slide, of a swinging blade-holder supported by the same and a blower-nozzle supported by said blade adjacent to and swinging with the blade-holder and participating in all the movements of the same, substantially as set forth. 75 80

4. The combination with a reciprocating slide, of a swinging blade-holder supported by the same, means for adjusting said blade-holder higher or lower toward or from the end of the slide, and an air-delivery nozzle adjacent to the blade-holder and also supported on said slide, and means for adjusting the nozzle according to the position of the blade-holder, which nozzle participates in all the movements of the blade-holder, substantially as set forth. 85 90

5. The combination with a blade-holder or block having two diagonal slots extending from the opposite sides to the bottom of said block, one slot being in advance of the other, of blades fitting in said slots, and screws for holding said blades in place, substantially as set forth. 95

6. The combination with a blade-holding block having inclined slots for receiving the blades, of a spring plate held to the bottom of the block and having apertures through which the lower ends of the blades can pass, substantially as set forth. 100

7. The combination with a reciprocating blade-holder, of a carriage, means for moving the carriage intermittently, and two blades held in the blade-holder in such a manner that their cutting ends intersect, one blade being in advance of the other, substantially as set forth. 105 110

8. The combination with a reciprocating blade-holder, of a sliding carriage below the same, a rack and pinion for shifting said carriage in the direction of its length, a shaft for driving the pinion shaft, two ratchet-wheels on said shaft, of which ratchet-wheels one has a greater number of teeth than the other, a pawl-lever on the shaft, and two pawls on said lever for engaging the ratchet-wheels, and means for operating said pawl-lever, substantially as set forth. 115 120

9. The combination with a reciprocating blade-holder, of a sliding carriage below the same, a rack and pinion for moving said carriage, a shaft for engaging the pinion shaft, two ratchet-wheels on said shaft, of which one has a greater number of teeth than the other, a pawl-lever on said shaft, two pawls on said pawl-lever, a pin projecting from one of said pawls, a cam-piece on which said pinion can slide, and means for operating the pawl-lever, substantially as set forth. 125 130

10. The combination with a reciprocating

blade-holder, of a sliding carriage below the same, a rack and pinion for moving said carriage, a shaft engaging the pinion shaft, a pawl-lever mounted on said shaft, and means for rotating said shaft uniformly a number of times, then moving it a greater distance and then again moving it uniformly for a number of times by means of said pawl-lever, substantially as set forth.

11. The combination with a reciprocating blade-holder, of a carriage below the same, a spring-actuated belt-shifter acting on the belt by means of which the mechanism for reciprocating the blade-holder is operated, a slide, a cord connecting the slide with the belt-shifter, a latch for locking said slide in place, and means carried by the sliding carriage for tripping said latch, substantially as set forth.

12. The combination with a reciprocating blade-holder and means for operating the same, of a sliding carriage below the blade-holder, a spring-actuated belt-shifter for the belt for driving the mechanism by which the blade-holder is reciprocated, a slide, a rope connecting the belt-shifter with the slide and passing over suitable pulleys, a lever for shifting said slide, a spring pressed latch for lock-

ing said slide, and means carried by the sliding carriage for tripping said latch, substantially as set forth.

13. The combination with a reciprocating blade-holder and means for reciprocating the same, of a sliding carriage below the blade-holder, a spring-actuated belt-shifter for shifting the belt that drives the mechanism for reciprocating the blade-holder, a slide, a rope connecting the slide with the belt-shifter and passing over suitable pulleys, a handle lever for shifting said slide, a spring-actuated latch for locking said slide, a rod projecting from one end of the carriage, a sleeve held adjustably on said rod, and a spring-actuated pusher held in said sleeve, which pusher serves for tripping the above-mentioned latch, substantially as set forth.

In testimony that we claim the foregoing as our invention we have signed our names in presence of two subscribing witnesses.

FREDERICK KAMPFE.
RICHARD KAMPFE.
OTTO KAMPFE.

Witnesses:

OSCAR F. GUNZ,
K. R. BRENNAN.