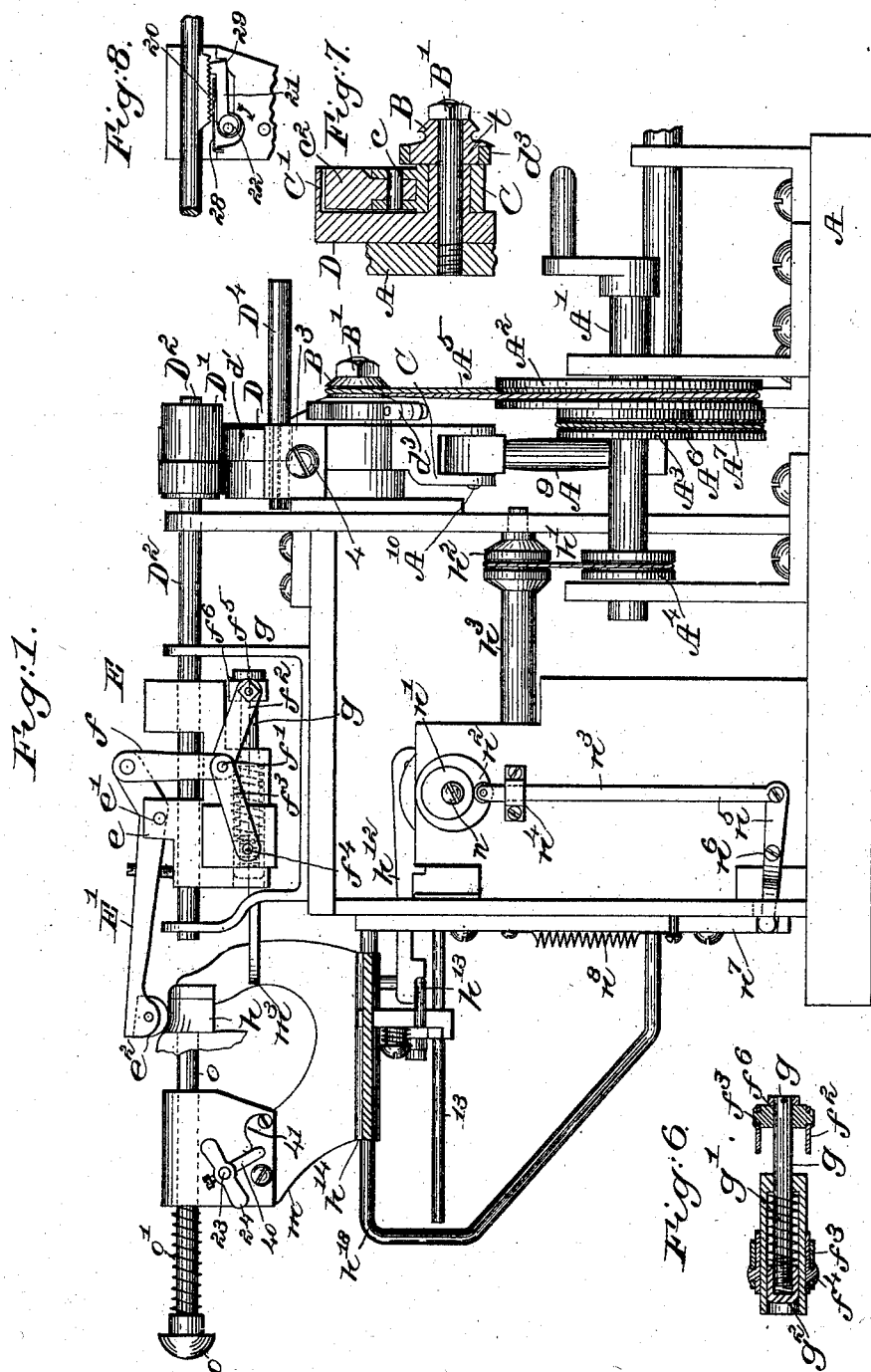


H. M. LOOMER.
HEEL BURNISHING MACHINE.

No. 505,050.

Patented Sept. 12, 1893.



Witnesses.
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Inventor
Henry M. Loomer
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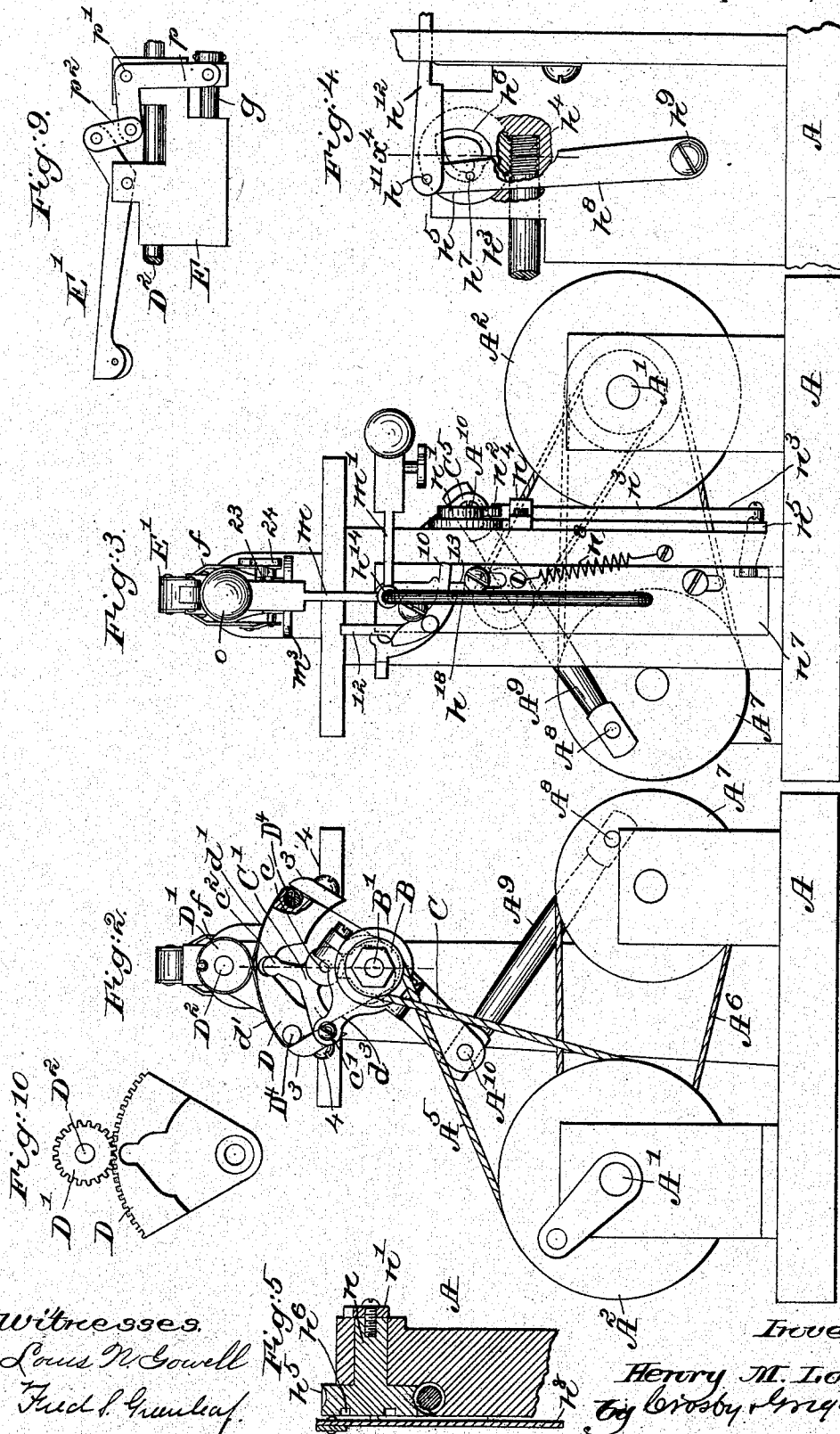
(No Model.)

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By Crosby & Higgins, Attys.

UNITED STATES PATENT OFFICE.

HENRY M. LOOMER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE TAPLEY MACHINE COMPANY, OF PORTLAND, MAINE.

HEEL-BURNISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 505,050, dated September 12, 1893.

Application filed February 10, 1892. Serial No. 421,037. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. LOOMER, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Heel-Burnishing Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 This invention is intended as an improvement on that class of heel burnishing machines wherein a vibrating arm provided with a pivoted burnishing tool is made to oscillate about the heel of a shoe, the tool bearing on the heel and burnishing the same from its heel-seat to its tread end, the jack carrying the shoe in the meantime being moved in the direction of the length of the heel.

15 In my invention I have provided improved means for keeping the tool against the heel during the vibrations of the arm carrying the same; and I have devised means whereby the tool-carrying arm while moving from one to the other corner of the heel breast is made to reciprocate or have several short reverse strokes between one and the other breast corner.

20 Other features of my invention will be pointed out in the specification and defined in the claims at the end thereof.

25 Figure 1, in side elevation represents a heel burnishing machine embodying my invention. Fig. 2, is a rear end elevation of the machine shown in Fig. 1; Fig. 3, a front end elevation; Fig. 4, a detail from the rear side of the machine shown in Fig. 1 chiefly to illustrate devices instrumental in imparting to the jack a movement to carry the heel under the burnishing tool. Fig. 5, is a section in the line x^1 , 30 Fig. 4; Fig. 6, a longitudinal horizontal section in the dotted line through the rod g , Fig. 1. Fig. 7, is a sectional detail of the parts mounted on the stud B' . Fig. 8, is a detail of one of the clamps to show the dog within it, and part of the jack rod. Fig. 9, is a modification of my invention. Fig. 10 shows a modified form of sector.

35 A represents the frame work of any suitable shape to support the working parts.

40 The main power shaft A' , which may be rotated from any suitable source, has fast upon

it three pulleys A^2 , A^3 , A^4 , the pulley A^2 receiving a cross-belt A^5 which surrounds and rotates a pulley B , loose on a stud B' to be described. The pulley A^3 is surrounded by 55 an open belt A^6 extended over a pulley A^7 having a crank pin A^8 , said crank pin receiving upon it a connecting rod A^9 joined by a pin A^{10} to an outwardly extended arm of a lever C having as its center of motion the stud B' referred to. The upper end of the lever C , as shown best in Fig. 2, has ears between 60 which is placed part of a lever C' , a pin c , pivoting the lever C' upon the lever C . As represented the lever C' is a sort of three-armed lever, one arm as stated being pivoted at c , another arm being joined by a pin c' to the eccentric strap d^3 surrounding an eccentric t , connected to and forming part of the pulley B , the said eccentric and pulley being 65 freely rotated on the stud B' , and in its rotation causing the lever C' to be moved about its pivot or point of oscillation c several times during each rotation of the crank pin A^8 . The upper arm c^2 of the lever C' preferably 70 round, is made to engage a sector D in such manner that the lever moves the sector in unison with it, the joint between the lever and sector being a ball-joint. In practice, however, this invention is not limited to the 75 particular shape of the lever C' or its particular form of connection with the sector, so long as the joint between the lever and sector is of the nature of a universal or self-adapting joint. Neither is my invention limited 80 to the exact shape shown for the sector, nor to the exact point at which the lever joins the sector or its equivalent. The function and purpose of this sector are to hold the ends of straps d' which are suitably connected 85 thereto, preferably by plates 3, having screws 4, the opposite ends of the strap being passed about a drum D' on an oscillating shaft D^2 , so that as the sector is reciprocated in the direction of its length, it will through the 90 straps oscillate the shaft D^2 .

This invention is not to be limited to the use of two straps, as it will be obvious that a single strap or cord might be made to perform the same function as the two straps, 100 and so also instead of the straps I might provide the sector and the arm with teeth as in-

indicated in the modification Fig. 10, and the drum D' with teeth.

The sector D herein shown is pivoted or oscillated about the stud B'. In the present instance, however, of my invention, wherein I have seen fit to depend upon a flexible connection between the sector and drum, I have combined with the ends of the straps, take-up studs D⁴ which are split to receive the ends of the straps, the rotation of the take-up studs stretching the straps, the blocks 3 being compressed against the straps on one side, while the take-up studs bear against their other sides.

The oscillating shaft D² has fast upon it the block E having ears *e* between which by a pin *e'* is pivoted the arm E' provided at its free end with the burnishing tool *e*², it being of any usual or suitable construction. The arm E' has suitably connected with it a link *f* which is attached by pin *f'* to two links *f*², *f*³, constituting a toggle lever, the link *f*³ being pivoted at *f*⁴ upon a part of the block, while the link *f*² is pivoted at *f*⁵ upon a collar *f*⁶ surrounding a shaft *g* also surrounded by a spring *g'*, see Fig. 6, the latter acting normally to move the shaft in such direction as to cause the pivot *f*⁵ to approach the pivot *f*⁴ thus holding the toggle lever *f*², *f*³ in such position that by the said lever and link *f* the tool will be kept in contact with the heel *h* being burnished, the force of contact of the tool against the heel being thus determined by the spring *g'*. It will be also noted that when the arm E' is lifted away from the work sufficiently to cause the pivotal point or joint *f'* to pass below the line of the two pivots *f*⁴, *f*⁵ the said arm will be held in its elevated position.

I have provided, see Fig. 6, a nut *g*² by which to regulate the effective force of the spring *g'* according to the work to be done. The pulley A⁴ on the shaft A' by the belt *h'* over the pulley *h*² rotates the shaft *h*³, it in practice having a worm *h*⁴, see Fig. 4, which engages a worm toothed wheel *h*⁵ provided with a cam-groove *h*⁶ represented as of heart-shape, said cam-groove receiving a pin *h*⁷ of a radius bar *h*⁸ pivoted at *h*⁹, the said radius bar having jointed to it at *h*¹¹ a latch *h*¹², shown best in Fig. 1, the outer end of the said latch being suitably shaped to engage a projection *h*¹³ forming part of the sleeve *h*¹⁴ to which jacks *m* and *m'* are attached, best shown in Fig. 3, two such jacks being preferably used in order that while the heel of one shoe is being burnished, the operator may either remove from the other jack a shoe the heel of which has been burnished, or apply to the said jack a shoe, the heel of which is next to be burnished. The projection *h*¹³ is of such shape that it may be engaged by the latch of whichever jack is uppermost. The sleeve *h*¹⁴ is adapted to be reciprocated and oscillated on a suitable guide or support *h*¹⁸.

The frame work of the machine is provided with a guide *m*³, between the sides of which

one arm of the jack being used, enters, when the latch *h*¹² is in engagement with the projection *h*¹³, and thereafter in the operation of the machine the jack through the latch and cam *h*⁶ will be moved on the guideway *h*¹⁸ so that the heel being acted upon by the tool will be moved longitudinally under the tool.

In practice it is the more common to commence burnishing the heel when the jack is to the right viewing Fig. 1, the jack being moved outwardly so that the tool commences to act upon the heel-seat end of the heel and follows down to the tread end, and during this operation for the best results the guide or track *h*¹⁸ should rise automatically to thereby insure the same uniformity of contact between the tool and heel. I accomplish this upward movement of the track *h*¹⁸ in the following manner:—Referring to Fig. 1, the shaft *n*, it being the same shaft to which is attached the worm wheel *h*⁵, has a cam *n'* which acts upon a roller *n*² at the upper end of a link *n*³, guided in a suitable box *n*⁴ and jointed at its lower end to a lever *n*⁵ having a suitable pivot as at *n*⁶, the opposite end of the said lever being shaped to engage the lower end of the vertically moving slide *n*⁷ which carries the track *h*¹⁸ referred to, a spring *n*⁸ in this present instance acting to keep the roller *n*² against the cam *n'*. The sleeve *h*¹⁴ has suitably pivoted upon it suitable latches 10, 12, which are adapted to engage respectively with the projection 13 forming part of or extended from the vertically moving slide *n*⁷, the said latches being solely for the purpose of retaining a jack *m* or *m'* in proper vertical position so that it may correctly register with and enter the opening in the guide *m*³, the jack *m* in Fig. 3 being shown in vertical position. The jack rod *o* is surrounded by a spring *o'* which normally acts to retract the jack rod. This jack rod has teeth 20 which are adapted to be engaged by the teeth of a dog 21 mounted upon an eccentric 22, fast on a shaft 23, having a suitable hand-wheel 24 by which the said eccentric may be turned when desired. A spring 28 fast upon or with relation to the jack bears upon the dog 21 and normally acts to throw the teeth of the dog out from engagement with the teeth of the jack rod *o* when the eccentric is in position to retract the dog 21 to the left, viewing Figs. 1 and 8, the end of the dog when the eccentric has its point of gravity in the position to the left viewing said figures sliding by the projection 29.

In the use of these devices the shoe having been put upon the jack rod the operator will push against the outer end of the jack rod by his breast, and with his hand on the hand-wheel 24 will rotate the shaft 23 causing the eccentric 22 to be moved in the direction of the arrow near it into substantially the position Fig. 8 and during such movement the teeth of the dog in engagement with the teeth of the jack rod will cause the jack rod to be moved slightly to the right to yet further clamp the heel and at the same time the dog

riding upon the projection 29 will lock the jack rod and fix it in position so that it cannot be released or shaken off until the eccentric is returned. The teeth of the dog and rack are sufficiently thin to enable the jack rod to adapt itself to any thickness of heel. The shaft 23 carrying the eccentric 22 has, as represented in Fig. 1, a projection 40 at or near the hand-wheel or hand devices 24, against which acts a spring 41, the latter serving normally to keep the eccentric 22 on the shaft 23, in such position as to cause the toothed end of the dog to engage the teeth of the jack rod when the latter is pushed forward by the operator the movement of the shaft 23 against the spring 41 for some little distance effecting the release of the dog from the jack rod.

While I prefer to use between the tool-carrying arm E' and the spring controlled rod g , the link system shown in Fig. 1, yet my invention is not to be limited to the precise construction of the said links which constitute jointed connections between said rod and arm. for in Fig. 9, I have shown for such purpose an elbow lever p , pivoted at p' , and an intervening link p^2 .

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a heel-burnishing machine, an oscillating shaft, and an arm operatively connected therewith, and provided with a heel-burnishing tool; combined with a link pivoted thereto, a lever to which said link is also pivoted and a spring acting upon and to normally cause the lever acting through the link to keep the tool in contact with the heel with a yielding pressure, substantially as described.

2. In a heel-burnishing machine, the oscillating shaft, the block attached thereto, provided with a slide rod, a spring surrounding said slide rod, and a pivoted tool-carrying arm, combined with jointed connections between said rod and arm, substantially as described.

3. In a heel-burnishing machine, the oscillating shaft, the block attached thereto, provided with a slide rod, a spring surrounding said slide rod, and a pivoted tool-carrying arm, combined with jointed connections between said rod and arm; and with means to adjust the force of the spring, substantially as described.

4. In a heel-burnishing machine, an oscillating shaft, a block, and a tool-carrying arm

55 mounted thereon, provided with a heel-burnishing tool, combined with a sector, connections between said sector and shaft; a crank to effect the movement of the said sector to carry the tool from breast to breast of the heel, and an eccentric, and intermediate lever connected by a universal joint to and co-operating with the said sector to reciprocate the same during each complete stroke effected by the crank referred to, to operate substantially as described.

5. In a heel-burnishing machine, an oscillating tool-carrying arm, a slide having a track, and a cam, and intermediate devices to raise the said slide, combined with a shoe-holding jack mounted upon a track extended from the said slide, and with a cam and intermediate connections between it and the said jack to move the same longitudinally upon the said track to enable the heel to be burnished from one to its other end during the vibrations of the tool about the heel from breast to breast, substantially as described.

6. In a heel-burnishing machine, a vertically-movable slide provided with a track, actuating devices for said slide, combined with a double or twin jack, and suitable latches to retain the jack in either of its two positions, to operate, substantially as described.

7. In a heel-burnishing machine, the combination with a heel-burnishing tool, and a jack, and a vertically movable slide on which said jack is mounted, of a lever, a link, and a cam to move the slide and jack vertically, and a cam to move the jack horizontally on said slide bar, substantially as described.

8. In combination with heel burnishing mechanism, a yoke-like jack to hold the shoe, a toothed jack rod, a toothed locking dog and an eccentric upon which said dog is mounted to actuate the said dog and increase the holding force of the jack rod, a shaft upon which the eccentric is fast, and means to turn the shaft, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY M. LOOMER.

Witnesses:

GEO. W. GREGORY,
FRANCES M. NOBLE.