L. W. G. FLYNT.

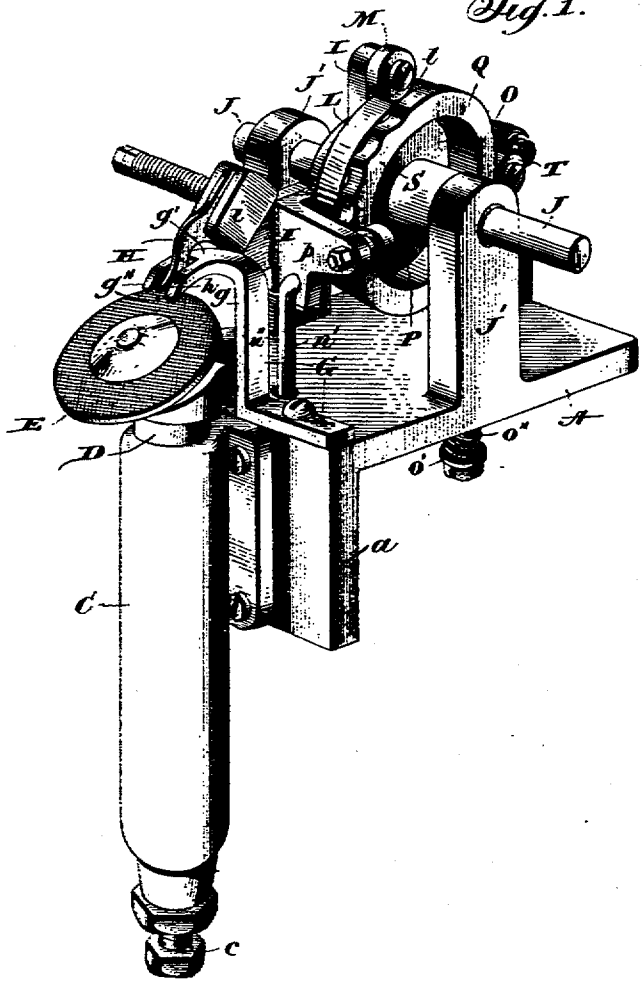
MACHINE FOR BURNISHING STITCH IMPRESSIONS.

APPLICATION FILED JULY 31, 1905. RENEWED NOV. 9, 1911.

1,069,090. Patented July 29, 1913.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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4 SHEETS—SHEET 2.

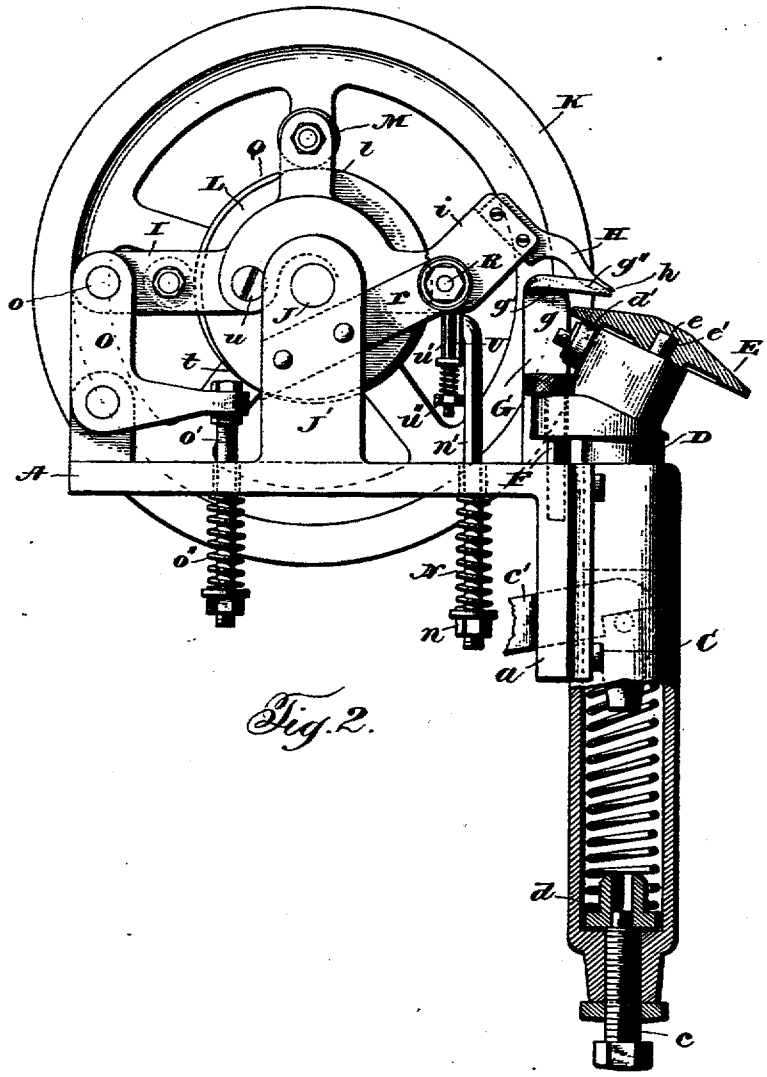


Fig. 2.

Witnesses:

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MACHINE FOR BURNISHING STITCH IMPRESSIONS.

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4 SHEETS—SHEET 3.

Fig. 3.

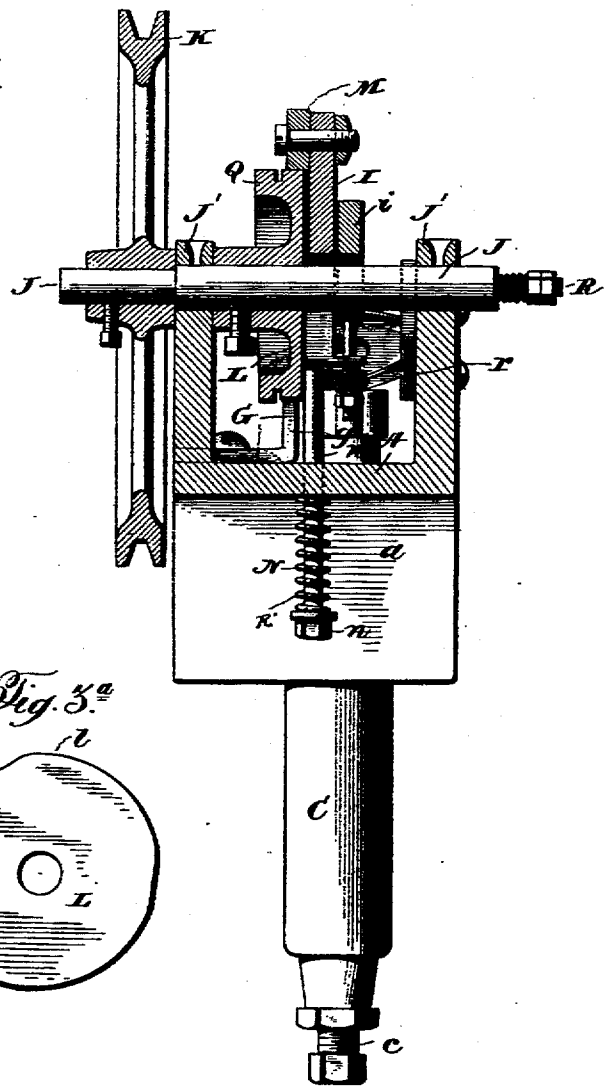


Fig. 3a.

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4 SHEETS—SHEET 4.

Fig. 4.

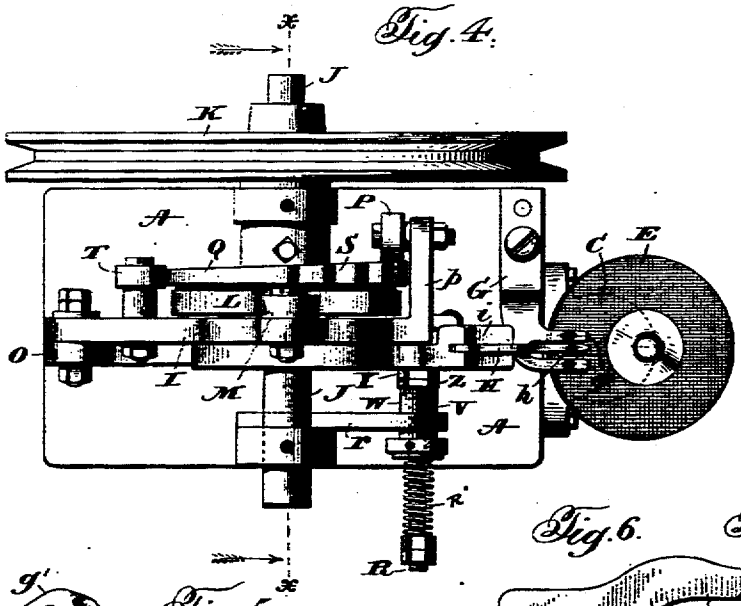


Fig. 5.

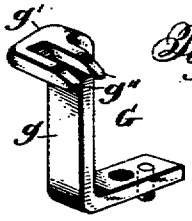


Fig. 6.



Fig. 7.

Fig. 8.

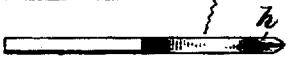


Fig. 9.

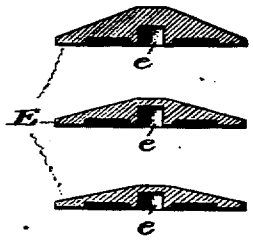
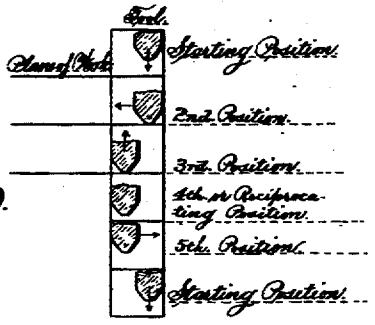


Fig. 10.



Witnesses:

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Calvin T. Milans

Inventor:

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UNITED STATES PATENT OFFICE.

LOUIS W. G. FLYNT, OF ROCHESTER, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR BURNISHING STITCH IMPRESSIONS.

1,069,090. Specification of Letters Patent. Patented July 29, 1913.

Application filed July 31, 1905, Serial No. 272,061. Renewed November 9, 1911. Serial No. 659,444.

To all whom it may concern:

Be it known that I, LOUIS W. G. FLYNT, a subject of Great Britain, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Machines for Burnishing Stitch Impressions, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to machines for operating upon the projecting edges of the soles of boots and shoes and is herein shown embodied in a machine which is intended to burnish the stitch impressions that are commonly formed upon said edges. It will be understood however that certain features of the invention are not limited for use with a machine for burnishing stitch impressions but may be employed with advantage in machines for forming stitch impressions upon the edges of shoe soles or in machines which initially form the impressions and thereafter burnish the impressions so formed.

The primary object of the present invention is to provide a machine of the above type which is adapted to produce work of a superior quality and which may be operated with a minimum amount of effort on the part of the operator.

Another object of the invention is to improve generally the construction of machines of the above type. With these objects in view a feature of the present invention consists in the provision in a machine for operating upon the edges of shoe soles of a non-rotatable tool having an acting edge formed complementary to the impressions to be formed or burnished and means for imparting an operating movement to the tool while its edge is in engagement with the work.

The present invention also contemplates the provision in a machine of this character of means for creating a holding pressure between the tool and the work and means for shifting said tool laterally to feed the work. Preferably there is provided means for relieving the holding pressure prior to the operating movement of the tool, a comparatively slight pressure being preserved between the acting edge of the tool and the surface of the work during the finishing or polishing movement of the former.

The foregoing characteristic features of my present invention, as also other novel features in the construction and arrangement of parts of a practical machine made in accordance with the invention, will be more fully understood from the detailed description hereinafter contained when read in connection with the accompanying drawings forming part hereof and wherein a convenient embodiment of said invention is illustrated.

As will be duly appreciated the embodiment of the invention above noted which I have selected as a fitting disclosure of the invention, embraces a tool which not only performs its desired function of finishing and burnishing the imitation stitch impressions but acts also to feed the work to carry the last burnished impression away from operative relation with the tool, and to present the next adjoining unburnished impression into position to be engaged by said tool, the movement of the tool in this instance being first to descend under relatively heavy or maximum pressure into engagement with the unburnished impression, thence laterally to feed the work a distance equal to the width of space intermediate adjoining impressions, thence vertically to a comparatively slight extent to relieve the pressure between the engaged impression and the edge of the tool while at the same time maintaining surface engagement therebetween under relatively light pressure, thence back and forth in a horizontal direction whereby to reciprocate in a line lengthwise of the impression,—and incidentally lengthwise of the edge of the tool,—to polish off any rough edges of the impression or indentation as initially formed and to straighten and burnish the same, thence still farther vertically away from engagement with the work, and finally back in a reverse lateral direction to the starting point of its operation, that is, in a position to again descend into engagement with the next adjoining impression.

In the drawings, Figure 1 is a perspective view of my machine, showing the same however as detached from its support or column; Fig. 2 is a side elevation, parts being

broken away to better show some of the interior mechanism; Fig. 3 is a transverse section on the line x—x of Fig 4; Fig. 3^a is a detail view of the cam plate; Fig. 4 is a top plan view, parts being shown in section: Fig. 5 is a detail perspective view of the stationary crease gage for holding the work between the same and the table; Figs. 6, 7 and 8 are respectively a side elevation, an edge view, and a bottom view of the finishing, burnishing and feeding tool; Fig. 9 is an elevation of a series of different interchangeable tables; and Fig. 10 is a diagram illustrative of the various movements of the tool in a cycle of its operation.

Referring more specifically to the drawings, wherein like reference characters refer to corresponding parts in the several views, A designates a base plate or frame upon which the moving parts of the mechanism are mounted, said plate being angular as shown to provide a downwardly extending flange a at one end thereof for supporting a tubular guide or casing C for the adjustable shank D of a work table E. The bottom of this casing is open for the passage of an adjusting screw c for regulating the tension of its usual outwardly-thrusting spring d, a cable or link c^1 being connected to said shank and running to any convenient operating device such as a treadle (not shown), and a bolt F loosely engaging an ear on the shank of the table and threaded into the base plate A affording a means for limiting the outward movement thereof under the pressure of its spring. The work table just referred to is of the radially tapering or beveled disk type, but in the present instance contains additional merit in that the same has a recess e in its lower surface adapted to removably receive a stub pintle e^1 on the head of the shank D, the upper surface of said head being arranged at an incline so that the tapering surface of the table when in operating position thereon is approximately parallel with the plane of reciprocation of the tool H to be hereinafter further defined. The peripheral portion of the table at the point of greatest strain thereon, that is directly beneath the tool, is supported upon a large anti-friction roller d^1 disposed at a right angle to the under surface of the table and in peripheral engagement therewith. The special manner of removably supporting the table upon its shank or support enables the provision of a series of interchangeable tables such as illustrated in Fig. 9, all of the tables having a like portion formed complementary to and adapted to rotatably interfit with the support or shank. Rigidly mounted upon the base A is an angle bracket G having a vertical portion g and a right angle portion g^1 arranged in substantially a horizontal plane and offset at its end to project forwardly, said forwardly projecting portion being bifurcated to form separated fingers g'' overhanging the work table to constitute a crease gage between which and the table the work is frictionally held owing to the upward pressure of the table under the influence of its spring.

Arranged to work in the space intermediate the fingers g'' is the finishing and burnishing implement H, the same comprising a flat non-rotatable shank fixedly secured in a yieldable arm i of a holder I, and a single substantially horizontally disposed finishing and burnishing edge h of a shape complementary to the shape of the indentations to be treated, the only difference between the shape of said indentations and said burnishing edge residing in the fact that the walls of the latter are disposed at a somewhat greater angle with respect to each other than the corresponding relation of the side walls or surfaces of the former, the purpose of this being to insure a sufficient surface contact between the burnishing edge of the tool and the side surfaces of the indentations while preventing any perceptible engagement of said edge with the base of the indentations which would tend to deepen the indentations as initially formed, and which in many instances is not desirable.

The tool holder I is so mounted and operatively associated with the other parts of the working mechanism that the same may be given its desired vertical, lateral and reciprocatory movements to accomplish the effect desired on the sole, as will presently appear.

J is an operating shaft mounted to rotate in suitable bearings formed in uprights J^1 at opposite sides of the frame A, said shaft being adapted to be rotated through the medium of any convenient driving mechanism, that shown including a grooved wheel or pulley K for engagement by a belt in communication with any suitable source of power. Fixed to the shaft J is a cam plate L having a raised portion l on its periphery arranged to engage a roller M carried by the tool holder I at the top thereof whereby the tool is in its initial or starting position elevated to its highest position, or that indicated as "Starting position" Fig. 10. The rotation of the shaft carries the raised portion of the cam just referred to away from the roller M of the tool holder and permits the holder and tool carried thereby to drop under the influence of a spring N arranged between the bottom face of the base A and an adjustable nut n on the lower end of a rod n^1 passing loosely through an aperture in said base and connected at its upper end to the tool holder I, it being understood that the tool holder is pivoted at its rear end, as at o to the upper end of a pivoted bell crank lever O mounted on the base, the function of which latter will be soon pointed out, it be-

ing sufficient to note at this point that the opposite end of the bell crank lever carries a rod o^1 under tension of another adjustable spring o'' similar to the one previously defined in connection with the holder. The up and down or vertical movement of the tool holder does not affect the bell crank lever and its spring, the latter during such movement serving as a pivot only for the tool holder.

Of course the indented sole is interposed between the work table and the crease gage and clamped therebetween prior to the depressing of the implement as last above described, and when this is remembered it will be apparent that as the impression tool descends it forcibly engages one of the indentations of the sole, and owing to the comparatively greater strength of the spring N the sole and work table are also depressed against the spring of the work table to free the work from engagement with the crease gage preparatory to the second movement of the tool which is to feed the work and which may now be followed. The rotation of the shaft continuing in the same direction as before carries the raised or thicker portion of a side cam ring Q on the plate L away from a second roller P mounted upon a horizontal bracket p on the tool holder,—which engagement has up to this stage of the operation held the tool and its holder from lateral movement,—whereupon a horizontally disposed outwardly spring pressed rod R connected to the tool holder and mounted to loosely play within an arm r on the nearest upright J^1 of the frame A will shift the tool holder and tool carried thereby laterally to the position marked "Third position" (Fig. 10) which is for a distance equal to the desired length between adjoining impressions, and inasmuch as the tool remains in engagement with the impression engaged by it in the first instance, the work is fed step by step with this lateral shifting of the tool to successively present the unburnished indentations in position to be burnished.

As soon as the implement reaches its third or burnishing position a peripherally corrugated portion S of the cam plate L comes into engagement with a third roller T near the pivotal point of the tool holder with the bell crank lever O and rapidly reciprocates the tool and holder in line with the burnishing edge of the tool, as also in line with the indentation being treated, to finish and burnish said indentation, the bell crank lever rocking on its pivot in short forward and reverse directions, alternately, and in rapid succession under the force of the corrugations just referred to and the spring o''. Previous to this burnishing movement, however, the tool holder, and incidentally the tool, is elevated through the medium of a second peripherally raised portion t on the cam plate L engaging the overhanging or uppermost roller M on the tool holder to somewhat relieve the pressure of the tool on the surface of the indentation, it being noted that as soon as the cam t engages the holder, its spring N can no longer pull said holder and tool in a downward direction as before. This relieving of the pressure on the tool of course permits the table and work to raise sufficiently to be again clamped between the table and crease gage.

For the better class of work it is necessary to have a relatively slight degree of pressure between the burnishing edge and the surface of the indentation, also that the tool be to some extent yieldable. Therefore, when the spring N is thrown out of operation by the cam t and the maximum pressure between the implement and the work correspondingly reduced the yieldable arm i of the holder I becomes available for maintaining a slight pressure between the burnishing edge and the indentation. This arm is pivoted as at u to the rear portion of the main body of the holder I and arches over the operating shaft, whence it extends forwardly to a point near the crease gage. Said main body portion of the holder has a laterally extending lug or flange u^1 through which loosely passes a screw U, the latter engaging at its inner end with the forward portion of the arm i and at its outer end carrying an adjustable nut u'' interposed between which and the bottom of the lug is a relatively light spring coiled upon the screw. Thus the arm i is constantly yieldably pressed downwardly.

When the indentation is properly finished and burnished the raised portion l of the cam engages the roller M to elevate the tool holder and tool, and the cam ring Q again engages the roller Q^1 to shift them laterally in a reverse direction back to the starting point, thereby completing a cycle of operation.

V is an adjustable stop having a threaded sleeve W engaging the arm r for regulating the tension of the laterally shifting spring R^1. Nuts Y, Z threaded on the rod R are arranged to abut the end of the sleeve W to limit the lateral movement of the holder and tool under the influence of the spring R^1.

When the work table E and work thereon is depressed away from the fingers g'' of the crease gage to permit the feeding movement of the work, it will be apparent that the relatively heavy spring N pulls the lever I bodily downward on its pivot o, and the working edge of the burnishing tool H carried by the auxiliary lever i pivoted at u being resisted by the work with which said edge engages, the tendency of the downward movement of the lever I is to com-

press the light spring upon the rod U so that the spring N not only acts to draw downwardly the main lever I but also therewith the auxiliary lever *i* which enables the depression of the work table and work against the action of the table supporting spring *d* as herein previously set forth.

It is to be understood that many changes and alterations may be made in the structure herein disclosed without departing from the spirit of the invention, and also that the invention is susceptible of other embodiments than that described.

The burnishing machine herein disclosed, so far as the broader aspect of the invention is concerned, is covered by claims in my Patent No. 845,939, granted March 5, 1907, on a copending application, Serial No. 231,133, filed November 2, 1904. Therefore, such claims are not included herein.

In some of the claims herein, I will define the burnishing tool as being rigidly mounted, meaning thereby that the tool is held relative to its support or carrier against rotation in a lateral direction in contradistinction to the rotatable tool shown in my above stated application.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a machine of the character described, a rigidly mounted burnishing tool formed to engage stitch impressions on the edges of shoe soles, and means for rapidly reciprocating the same substantially in line with said impressions.

2. In a machine of the character described, a rigidly mounted burnishing tool formed to engage stitch impressions on the edges of shoe soles, and means for rapidly reciprocating the same while in uninterrupted surface contact with the same impressions.

3. In a machine of the character described, a rigidly mounted burnishing tool formed to engage stitch impressions on the edges of shoe soles, and means whereby the same may be rapidly reciprocated in a direction substantially in line with an impression and without withdrawing the tool from engagement with such impression.

4. In a machine of the character described, a burnishing tool having but a single burnishing edge formed to engage stitch impressions on the edges of shoe soles, and means for rapidly reciprocating the same while in engagement with an impression whereby each impression may be burnished independently of the others.

5. A burnishing tool having but a single burnishing edge, said edge being formed to engage stitch impressions on the edges of shoe soles, and means for rapidly reciprocating the same in a direction substantially in line with said edge.

6. In a machine of the character described, a burnishing tool comprising a pivotally mounted reciprocal arm having a burnishing edge formed integral therewith and shaped to engage stitch impressions on the edges of shoe soles, and means for imparting a rapid reciprocating polishing movement to said tool substantially in line with said impressions.

7. In a machine of the character described, a burnishing tool formed to engage stitch impressions on the edges of shoe soles, means for clamping the work, means for initially operating the tool to cause the same to engage an impression, and means for subsequently imparting a rapid reciprocating movement to said tool while in engagement with said impression.

8. In a machine of the character described, a burnishing tool formed to engage stitch impressions on the edges of shoe soles, means for clamping the work, means for initially operating the tool to cause the same to engage an impression and to release the work from the clamping action, means for shifting the tool to feed the work, and means for imparting a rapid reciprocating movement to said tool while in engagement with said impression to burnish the same.

9. In a machine of the character described, a burnishing tool formed to engage stitch impressions on the edges of shoe soles, means for clamping the work, and instrumentalities for operating the tool to shift the work and to impart rapid reciprocating movements thereto while in engagement with an impression to burnish the same.

10. In a machine of the character described, a burnishing tool formed to engage stitch impressions on the edges of shoe soles, means for clamping the work, and instrumentalities for actuating the same whereby during a cycle of operations the tool will engage an impression and shift laterally to feed the work, and also reciprocate rapidly while in engagement with the impression to finish and burnish the same.

11. In a machine of the character described, a burnishing tool formed to engage stitch impressions on the edges of shoe soles, means for clamping the work, means for causing the tool to engage an impression under maximum pressure to release the work from the clamp, means for shifting the tool laterally to feed the work, means for relieving the maximum pressure between the tool and the work to permit the clamp to engage the work, and means for imparting a rapid reciprocating movement to said tool while in engagement with said impression.

12. In a machine of the character described, a burnishing tool formed to engage stitch impressions on the edges of shoe soles, means for causing the tool to engage an impression under maximum pressure to feed the work, means for shifting the tool laterally to cause it to feed the work, means for

relieving the maximum pressure between the tool and the work, and means for imparting a rapid reciprocating movement to said tool while in engagement with said impression.

13. In a machine of the character described, a burnishing tool formed to engage stitch impressions on the edges of shoe soles, means for causing the tool to engage an impression under maximum pressure, means for subsequently shifting the tool laterally to cause it to feed the work, means for relieving the maximum pressure between the tool and the work, and means for imparting a rapid reciprocating movement to said tool while in engagement with said impression, in combination with auxiliary means for maintaining a relatively light pressure between the tool and the work during the reciprocating movement of the former.

14. In a machine of the character described, a burnishing tool formed to engage stitch impressions on the edges of shoe soles, a support for the work, means for causing the tool to engage an impression and for shifting the same laterally to feed the work, means for imparting a rapid reciprocating movement to said tool while in engagement with said impression, and means for returning the tool to its starting position.

15. In a machine of the character described, a burnishing tool formed to engage stitch impressions on the edges of shoe soles, a holder for the work, means for causing the tool to engage an impression and for shifting the same to feed the work, means for imparting rapid polishing movements to said tool while in engagement with said impression, and means for returning the tool to its starting position.

16. In a machine of the character described, a burnishing tool formed to engage stitch impressions on the edges of shoe soles, a holder for the work, means for causing the tool to engage an impression and for shifting the same to feed the work, means for imparting a rapid reciprocating movement to said tool substantially in line with said impression to polish the latter, and means for returning the tool to its starting position.

17. In a machine of the character described, a tool having a burnishing edge formed to engage stitch impressions on the edges of shoe soles, and means for rapidly reciprocating the same substantially in line with said edge, in combination with means for clamping the work independently of the tool.

18. In a machine of the character described, a tool having a burnishing edge formed to engage stitch impressions on the edges of shoe soles, and means for imparting rapid polishing movements to said tool while in engagement with an impression, in combination with means for clamping the work independently of the tool.

19. In a machine of the character described, a tool, a support for the work, means for initially operating the tool to indent the work, means for imparting rapid reciprocating movements to the tool while in engagement with the indentation to burnish the same, and means for actuating the tool whereby it will feed the work.

20. In a machine of the character described, a burnishing tool formed to engage indentations, a support for the work, means for imparting rapid reciprocating movements to said tool while in engagement with an indentation, and means for actuating the tool to feed the work.

21. In a machine of this class, an ornamenting tool, an oscillating tool-holder constructed to hold said tool and having a vertical, reciprocating motion, a lateral feed motion, and a back and forth polishing motion, and means for operating said tool holder.

22. In a machine of this class, an ornamenting tool having an inclined working edge, an oscillating tool holder constructed to hold the said ornamenting tool and to impart to it an up and down motion, a lateral feed motion and to admit the lower or working end of the said tool to glide over and polish the ornament made by the previous action of the said tool, and means for operating the said tool holder.

23. In a machine of this class, an ornamenting tool having an inclined working edge and means for giving it an up and down motion, a lateral feed movement, and a gliding polishing movement.

24. In a machine of the character described, an ornamenting tool mounted to have a lateral feed motion and a back and forth polishing motion, and instrumentalities for imparting the back and forth polishing motion to the tool while in engagement with the work.

25. In a machine of the character described, an ornamenting tool mounted to be raised and lowered and to have a back and forth polishing movement while the tool is in continuous engagement with the work, and means acting automatically to effect all of said movements of the tool.

26. In a machine of the character described, an ornamenting tool, a work support, means for clamping the work to said support, and instrumentalities for imparting a feed motion to the tool, and a back and forth polishing motion thereto while in engagement with the work.

27. In a machine of the character described, an ornamenting tool, a work support, means for clamping the work to said work support, and instrumentalities for imparting a feed motion to the tool, and a back

and forth polishing motion thereto while in engagement with the work, said instrumentalities including means acting automatically to raise and lower the tool.

28. In a machine of the character described, an ornamenting tool mounted to have a feed motion and repeated polishing motions, and means for effecting the repeated polishing motions of the tool while in engagement with the work.

29. In a machine of the character described, an ornamenting tool mounted to have a feed motion and repeated polishing motions, and instrumentalities for effecting the feed motion of the tool, and the repeated polishing motions thereof while in engagement with the work, said instrumentalities including means acting automatically to raise and lower the tool.

30. A stitch-impression machine comprising coöperating work-supporting members engaging the upper and lower surfaces of the work and operating to restrict the vertical movements thereof, a tool, and tool-actuating means operating to vibrate the tool into and out of engagement with the surface of the work to form stitch impressions and longitudinally with respect to the impressions when in contact therewith to burnish the impressions.

31. In a machine of the character described, an impression tool, and tool actuating means operated by the machine to move the tool into and out of engagement with the work and to rapidly reciprocate the tool substantially in line with the impression when in engagement with the work.

32. In a machine of the character described, an impression tool, and tool actuating means operating to advance the tool toward the work to indent the work, then relieve the pressure of the tool slightly and then rapidly reciprocate the tool lengthwise the impression while its pressure is relieved.

33. In a machine for burnishing stitch impressions, a burnishing tool formed to engage stitch impressions on the edges of shoe soles, automatic means for initially operating the tool to cause it to engage an impression, and means for subsequently imparting a rapid reciprocating movement to said tool while in engagement with said impression.

34. A machine of the character described having, in combination, a work support, an impression tool for engaging a stitch impression, a cam for reciprocating the tool lengthwise the impression to burnish it, and a second cam to move the tool toward and from the work into and out of engagement with the impression before and after the burnishing movement.

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

LOUIS W. G. FLYNT.

Witnesses:
FRED C. PATRICK,
QUENTIN W. BOOTH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."