No. 855,401. PATENTED MAY 28, 1907.

J. B. HADAWAY.

IMPRESSION STITCH MACHINE.

APPLICATION FILED APR. 25, 1904.

2 SHEETS—SHEET 1.

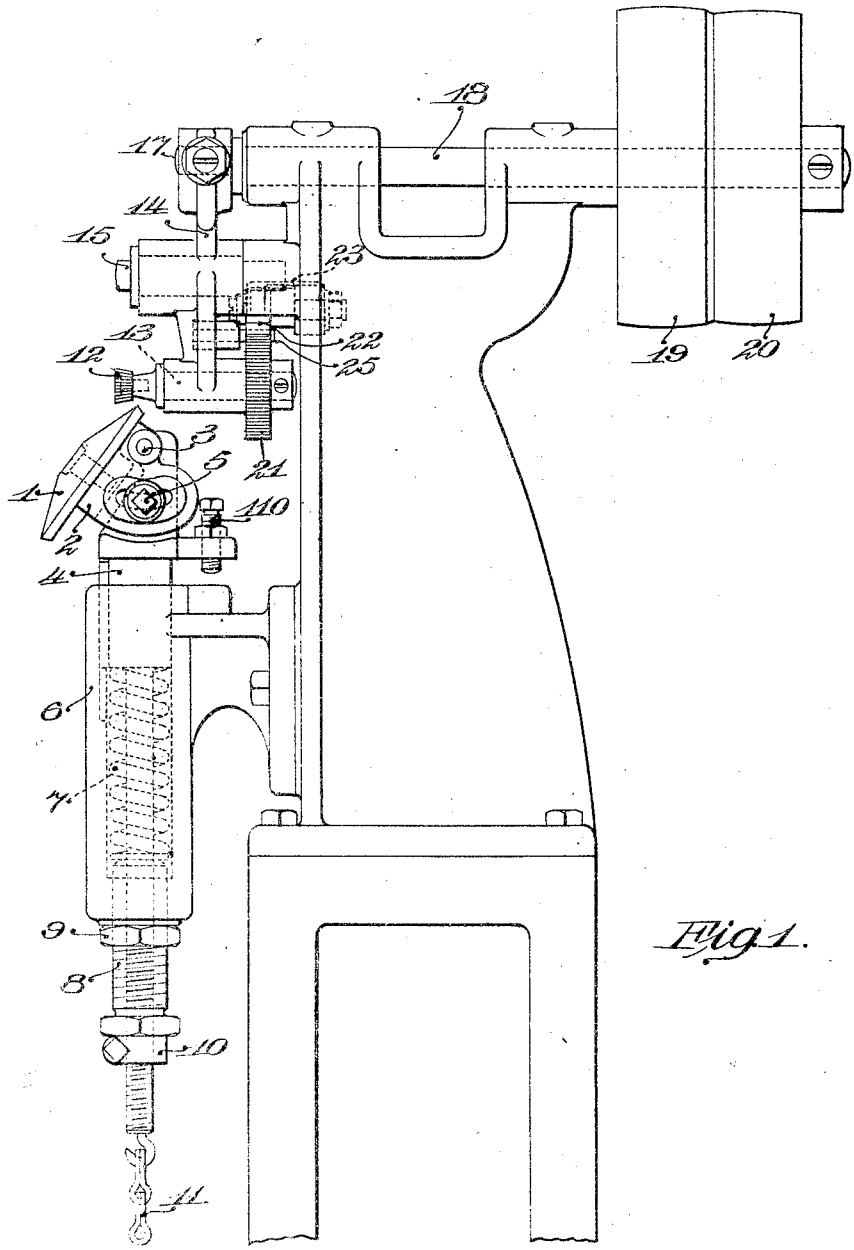

Fig 1.

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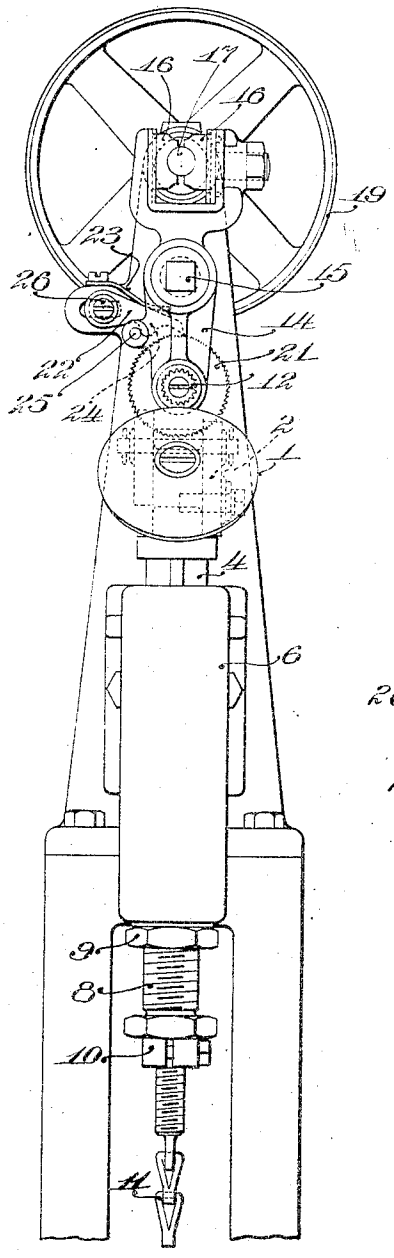
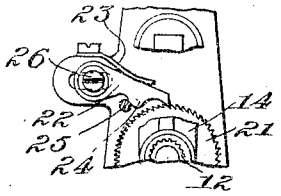


Fig. 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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IMPRESSION-STITCH MACHINE.

No. 855,401. Specification of Letters Patent. Patented May 28, 1907.

Application filed April 25, 1904. Serial No. 204,663.

To all whom it may concern:

Be it known that I, JOHN B. HADAWAY, a citizen of the United States, residing at Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Impression-Stitch Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to impression or imitation stitch machines which are used in the manufacture of boots and shoes to form a series of indentations upon the upper surface of the projecting edge of the sole, in order to give this portion of the shoe a finished and pleasing appearance.

Machines of the class above referred to comprise a rotary indenting wheel provided with teeth so spaced and shaped as to produce the desired form of indentation. In these machines as heretofore usually constructed, a continuous rotary movement in one direction has been imparted to the indenting wheel so that the wheel acts to feed the work and each portion of the work is acted upon but once by the indenting wheel. It is desirable that the indenting wheel should act more than once on each portion of the work in order that the work may be more deeply indented and the imitation stitches produced be more accurately formed and more highly polished. To secure this result it has been proposed to rotate the indenting wheel intermittently and alternately in opposite directions, the intermittent movements in one direction being greater than those in the other, so that the work is fed through the machine. This manner of actuating the indenting wheel is objectionable, however, as a backward and forward vibrating movement is imparted to the work, which movement renders it difficult for the operator to properly guide the shoe and also necessitates the running of the machine at a comparatively slow rate of speed.

The object of the present invention is to produce an impression or imitation stitch machine, comprising an indenting wheel, in which the indenting wheel is caused to act upon each portion of the work a plurality of times without imparting a backward and forward vibrating movement to the work and without interfering with the manipulation of the shoe by the operator and in which the movements which are imparted to the indenting wheel do not preclude the successful operation of the machine when running at a high rate of speed.

With this object in view, the present invention contemplates the provision in an impression or imitation stitch machine comprising an indenting wheel, of means for rolling the wheel back and forth over the work, and for feeding the work in one direction only. By so actuating the indenting wheel and feeding the work the wheel is caused to act upon each portion of the work a plurality of times in order to properly indent the same and shape and polish the imitation stitches formed and the work can be fed through the machine at a high rate of speed. Also the work can be readily manipulated by the operator so as to be properly presented to the indenting wheel. Broadly considered the invention contemplates any suitable means for feeding the work but preferably the indenting wheel is used for this purpose, means being provided for imparting a work feeding movement to the wheel in addition to its rolling movements over the work. By utilizing the indenting wheel to feed the work, the work is fed in a certain and reliable manner and at the same time a simpler and more compact machine is produced than when means separate from the wheel are utilized for this purpose.

In order to vary the number of times each portion of the work is acted upon by the indenting wheel to suit the character of the stock being acted upon, means are preferably provided for varying the extent of the feeding movements imparted to the indenting wheel, and a feature of the invention contemplates the provision in a machine in which an indenting wheel is given a rolling movement over the work and a work feeding movement, of means for adjusting the extent of the work feeding movement.

The work feeding movement may be imparted to the indenting wheel in any suitable manner, but is preferably accomplished by stopping the rolling movement of the wheel while moving in one direction, and then continuing the bodily movement of the wheel to feed the work. This manner of imparting a work feeding movement to the wheel allows the use of a simple and efficient mechanism and is considered to be a feature of the present invention.

The present invention will be clearly un-

derstood from an inspection of the accompanying drawings in which is illustrated an impression or imitation machine embodying the same in its preferred form.

This machine, in addition to the features of invention above referred to, also embodies certain novel features of construction and arrangement of parts hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art from the following description.

Referring to the drawings, Figure 1 is a view in side elevation of the machine and Fig. 2 is a view in front elevation thereof. Fig. 3 is a detail showing the pawl and ratchet mechanism.

Described in general terms, the machine illustrated in the drawings comprises a work support upon which the tread surface of the sole of a shoe being operated upon by the machine rests. Above the work support in position to bear upon the upper surface of the projecting edge of the shoe sole is an indenting wheel which is moved bodily back and forth over the work in the line of feed. During its backward bodily movement, the wheel rolls over the work, being rotated on its axis by the engagement of the work with the teeth of the wheel. During a portion of its forward bodily movement the indenting wheel also rolls over the work, but before it completes its bodily forward movement the rotation of the wheel is stopped by the engagement of a pawl with a ratchet wheel mounted to move bodily and rotate with the indenting wheel so that during the last portion of its bodily forward movement the indenting wheel acts to feed the work.

The work support upon which the tread surface of the sole rests during the operation of the machine is indicated at 1 and as shown is frusto-conical in shape and is mounted to rotate upon a stud projecting from a supporting block 2. The block 2 is pivotally mounted at 3 upon the upper end of a vertical slide 4 and is provided with ears extending on opposite sides of the upper end of the slide, one of which is provided with an arc-shaped slot through which a securing bolt 5 passes and screws into the upper end of the slide. This manner of supporting and holding the block 2 allows for an adjustment of the block about the pivot 3 to bring the work supporting surface of the work support 1 into the desired position with relation to the indenting wheel.

The slide 4 is mounted to reciprocate in a vertical guideway formed in a bracket 6 secured to the front portion of the machine frame and is forced upwardly by means of a spring 7 coiled around a rod depending from the slide and interposed between a shoulder at the lower end of the slide and the upper end of a sleeve 8 having a screw-threaded engagement with the bracket 6. During the operation of the machine, the spring 7 forces the work support upward and presses the work against the indenting wheel with a sufficient pressure to cause the teeth of the indenting wheel to indent the work. The tension of the spring 7 can be adjusted to exert the required amount of pressure by adjusting the sleeve 8 in the bracket 6, the sleeve being held locked in position after adjustment by the locking nut 9. When there is no work in the machine, the upward movement of the slide 4 and the work support mounted thereon is limited by a collar 10 clamped to the lower end of the rod depending from the slide. A chain 11 connects the rod with a foot treadle by means of which the slide and the work support can be depressed by the operator when work is to be inserted in the machine, and an adjustable stop screw 110 mounted in the upper end of the slide and arranged to engage the upper surface of the bracket 6 limits the downward movement of the slide and work support.

The indenting wheel is indicated at 12 and is secured by means of a screw to the forward end of a shaft 13 journaled in the lower end of a lever 14 pivotally mounted about midway its ends upon a stud 15 projecting from the front portion of the machine frame. The upper end of the lever 14 is slotted and in the slot are mounted two blocks 16 in which is formed a bearing for an eccentric pin 17 upon the forward end of a driving shaft 18 journaled in bearings in the upper portion of the machine frame. Upon the rear end of the shaft 18 are mounted fast and loose pulleys 19 and 20 over which the driving belt of the machine passes. When the machine is in operation a constant rotation in one direction is imparted to the shaft 18, and through the eccentric pin 17 and lever 14 a bodily forward and backward movement is imparted to the indenting wheel in the line of feed. The shaft 13 is mounted to rotate freely in the lower end of the lever 14 so that during the bodily backward and forward movements of the indenting wheel it is rotated by the engagement of the teeth of the indenting wheel with the work and the wheel is caused to roll back and forth on the work.

While the indenting wheel is rolling over the work the work remains stationary and in order to cause the work to be fed to present successive portions of the work to the action of the indenting wheel means are provided for stopping the rolling movements of the wheel during its bodily movement in one direction. To this end a ratchet wheel 21 is rigidly secured to the rear end of the shaft 13, so as to rotate and move bodily with the indenting wheel, and upon the frame of the machine is pivotally mounted a pawl 22 which is pressed toward the ratchet wheel by means of a leaf spring 23. The pawl 22 is provided upon its under side with a projection 24 with which a pin 25 projecting from the lever 14 is ar-

ranged to engage during the vibrating movements of the lever, the arrangement of the pin 25 and projection 24 being such that the pawl is held out of engagement with the teeth of the ratchet wheel during a portion of the backward and forward bodily movements of the indenting wheel, and is allowed to move into engagement with the teeth of the ratchet wheel before the indenting wheel completes its bodily forward movement. As soon as the pawl engages a tooth of the ratchet wheel the rolling movement of the indenting wheel is stopped as will be apparent from an inspection of Fig. 2, and during the continued bodily forward movement of the indenting wheel a feeding movement is imparted to the work. This feeding movement is due to the continued forward bodily movement of the indenting wheel and to a rotation of the wheel produced by the engagement of the pawl with the ratchet wheel.

It will be evident that the indenting wheel will act upon each portion of the work a plurality of times, the number of times each portion of the work is acted upon depending upon the extent of the feeding movements imparted to the work. It is desirable that means be provided for varying the number of times each portion of the work is acted upon by the indenting tool to adapt the machine for satisfactory operation upon different qualities of stock and upon stock in different conditions of temper. To this end, the pawl 22 is adjustably secured to the frame of the machine by means of a pivot pin 26 passing through a slot in the frame of the machine. By adjusting the pin 26 the pawl can be caused to engage the ratchet wheel at different points in the bodily forward movement of the indenting wheel and thereby the extent of the feeding movement imparted to the work varied as desired.

It will be evident that in the machine illustrated in the drawings the operation of automatically feeding the work may be eliminated entirely, if for any reason it is desired to operate the machine in this manner, by adjusting the pawl 22 so that it is held out of engagement with the ratchet wheel during the entire bodily forward movement of the indenting wheel. In such case the indenting wheel will roll backward and forward over the work without imparting any feeding movement thereto, and the work will be fed through the machine by the operator.

The operation of the machine illustrated in the drawings has been indicated in connection with the description given above of the construction and arrangement of the various parts and will be readily understood by those skilled in the art without a separate description thereof.

The nature and scope of the invention having thus been indicated and a machine embodying the same in its preferred form having been specifically described, what is claimed as new is:—

1. A machine for making impression or imitation stitches, having, in combination, a work support, an indenting wheel, and means for imparting to the wheel a rolling movement over the work and a work feeding movement, substantially as described.

2. A machine for making impression or imitation stitches, having, in combination, a work support, an indenting wheel, means for rolling the wheel back and forth over the work and for feeding the work in one direction only, substantially as described.

3. A machine for making impression or imitation stitches, having, in combination, a work support, an indenting wheel mounted to be rotated by the engagement of the wheel with the work, and means for feeding the work and for moving the wheel bodily back and forth over the work while in contact therewith to cause the wheel to roll over the work alternately in opposite directions.

4. A machine for making impression or imitation stitches, having, in combination, a work support, an indenting wheel, means for moving the wheel bodily back and forth over the work while in contact therewith to cause the wheel to roll over the work alternately in opposite directions, and means for stopping the rolling movement of the wheel during its bodily movement in one direction to cause the wheel to feed the work, substantially as described.

5. A machine for making impression or imitation stitches, having, in combination, a work support, an indenting wheel, means for moving the indenting wheel bodily back and forth over the work while in contact therewith, a ratchet wheel mounted to rotate and move bodily with the indenting wheel, a pawl and means for moving the pawl into and out of engagement with the ratchet wheel to cause the indenting wheel to feed the work during its bodily movement in one direction, substantially as described.

6. A machine for making impression or imitation stitches, having, in combination, a work support, an indenting wheel, means for moving the indenting wheel bodily back and forth over the work while in contact therewith, a ratchet wheel mounted to rotate and move bodily with the indenting wheel, a pawl mounted on a fixed support arranged to engage the ratchet wheel and cause the indenting wheel to feed the work during its bodily movement in one direction, and means for adjusting the pawl to vary the extent of the feeding movement imparted to the indenting wheel, substantially as described.

7. A machine for making impression or imitation stitches, having, in combination, a work support, an indenting wheel, means for imparting to the wheel a rolling movement

over the work and a work feeding movement, and means for adjusting the extent of the work feeding movement, substantially as described.

8. A machine for making impression or imitation stitches, having, in combination, a work support, an indenting wheel, means for imparting to the wheel rolling movements over the work alternately in opposite directions, and work feeding movements, substantially as described.

9. A machine for making impression or imitation stitches, having, in combination, a work support, an indenting wheel, means for imparting to the wheel rolling movements over the work alternately in opposite directions, and work feeding movements, and means for adjusting the extent of the work feeding movements, substantially as described.

10. A machine for making impression or imitation stitches, having, in combination, a work support, an indenting wheel, means for moving the wheel bodily back and forth over the work while in contact therewith to cause the wheel to roll over the work alternately in opposite directions, means for stopping the rolling movement of the wheel during its bodily movement in one direction to cause the wheel to feed the work, and means for varying the point in the bodily movement of the wheel at which its rolling movement is stopped to adjust the extent of the feeding movement, substantially as described.

11. A machine for making impression or imitation stitches, having, in combination, a work support, an indenting wheel, and means for feeding the work and for rolling the wheel back and forth over the work, substantially as described.

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

JOHN B. HADAWAY.

Witnesses:

FRED O. FISH,

ALFRED H. HILDRETH.