UNITED STATES PATENT OFFICE.

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SEAM-RUBBING MACHINE.


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To all whom it may concern:

Be it known that I, Vertrude P. Buck, a citizen of the United States, residing at Boston, in the county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Seam-Rubbing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention has relation to seam rolling or rubbing machines, and to other machines in which the general mode of working of the tool is similar to that hereinafter set forth.

The invention consists in a novel and improved construction producing an efficient and practical light-running, high-speed, and durable machine.

At the present time, in practice, the rubbing of the seams of shoe-uppers is done most extensively by hand. The work is fatiguing and very hard upon the workman. Various attempts have been made to provide power-actuated machines for the purpose, but those which have thus far been placed upon the market have failed to meet the necessary requirements, and they have not gone very extensively into use. Many machines which have been made and sold have been laid aside after trial as inefficient and unsatisfactory. One serious trouble has been the liability found in the case of such machines to break the stitches of the seams operated upon. This is especially pronounced in the case of uppers in which a portion of the seams is formed by stitches passing through and through the two or more thicknesses of material that are united thereby, and another portion has the edges of the material butted together and united by zigzag stitches, this last being known as zigzag stitching. In working upon uppers containing these two kinds of seams the tools of power-machines at present in use strip and break the zigzag stitches.

One aim of the invention is to produce a seam-rolling or rubbing machine which shall be free from the drawbacks and disadvantages of machines heretofore proposed. A power machine capable of satisfactorily performing the work is very much needed. The serious disadvantage in the case of hand-work is the fact that it calls for strength and great endurance on the part of the operator. There often is a great difference in the character, quality, and thoroughness of the work done by an operator in the course of a day between the seams which he has rubbed in the forenoon upon first beginning operations, and while fresh and unwearied, and those rubbed by him later in the day, after he has become tired by his labor. There is therefore a considerable want of uniformity, and much of his work is of inferior and unsatisfactory character.

A machine is needed, accordingly, in order to turn out work of uniform character.

The drawings show a seam-rolling or rubbing machine embodying the invention.

In the drawings,—Figure 1 shows the machine in side elevation, with its table or bed in vertical section. Fig. 2 shows the machine in front elevation. Fig. 3 is a plan view of the lower collar fastened upon the plunger.

The machine is shown applied to a suitable supporting bench or table, upon which is mounted the base-plate 2 of the machine, the said base-plate having uprights or standards 2', 2'', which are furnished with bearings at 3, 3', for the operating shaft 4 of the machine, the said shaft having in connection therewith the fast pulley 5 and loose pulley 6 for the reception of a suitable driving-band, not shown. The said shaft has 85 fixed upon one end thereof outside the corresponding bearing a face-plate 7 carrying the crank-pin 8 from which the reciprocating movement of the tool is taken. To permit of giving different lengths of stroke to the tool the crank-pin is made adjustable to positions at different distances from the center of rotation of the face-plate. Various constructions providing for the attainment of such a result are well known in the arts in the like connections, and may be employed, as desired. I have shown a simple means for the purpose consisting in a series of holes 9, 9', formed in the face-plate and respectively adapted to receive the crank-pin. With the crank-pin is connected one end of a connecting rod or link 10, the other end of which is connected pivotally with a block 11 made fast upon a rod 12 mounted in guides 13, 14, through which is capable of reciprocating endwise. Upon the forward end of the said rod 12 is mounted the tool-block 15 carrying the tool 16,
the tool being located below the rod. The tool-block is fastened to the rod in manner capable of preventing the tool-block and tool from moving transversely around the rod. In the present instance this result is secured by flattening the forward portion of the rod as at 17 for a portion of the length of the rod, the flat surface of the rod receiving the pressure of the inner end of the clamping-screw 18 by which the tool-block is secured in place upon the rod. The tool-block and tool are mounted upon the rod with capacity for being shifted or adjusted lengthwise along the latter relative to the supporting form or horn 20 on which the work is laid, so as to enable the tool to be located properly for operating upon different portions of the work as required. The flattened portion 17 is of a length corresponding to the extent of the necessary adjustment of the tool-block and tool in and out along the rod 12. The character of the tool may vary according to the views of the builder and user of the machine, and according to the results to be secured in practice. A smooth roll journaled in the forked lower end of the tool-block is shown in the drawings, and intended to roll upon the work in being reciprocated, but the character of the surface of the roller may be varied as deemed desirable, and I do not limit myself to the use of a tool which rolls or turns, as a fixed tool may be employed instead.

The horn or form 20 is supported by the bed-plate of the machine and projects forward beneath the path of movement of the tool.

The bearings 13 and 14 are both pivotally connected with the supports therefor, the pivot 21 of the bearing 13 serving to connect a depending portion of such bearing with the upwardly extending lugs 22 of the bed-plate, between which lugs the said depending portion of the bearing is fitted. A depending portion of the bearing 14 is received between the upwardly extending portions of a fork at the upper end of a vertical plunger 23, the said depending portion of the bearing 14 being connected to the said fork by the pivot 24. The plunger is fitted to a guide 25 at the front of the machine adjacent the horn or work-support 20, the said guide being in the form of an elongated bearing, such bearing being provided mainly in a projection or boss extending down from the bed-plate through an opening in the bench. The plunger is capable of movement endwise vertically through the said bearing or guide, the extent of its rise being limited through the contact of a collar 26, which is fastened in place upon the lower portion of the plunger by the clamping-screw 27, with the lower end of the bearing or guide. The plunger is held normally in its highest position, determined as just indicated by the contact of the stop-collar with the lower end of the bearing or guide, by means of two contracting spiral springs 28, 29, each having the upper end thereof engaged with a screw 29 projecting from the bearing or guide, and the lower end thereof engaged with a laterally projecting ear on a collar 30 (shown separately in Fig. 3) which is secured upon the plunger below the stop-collar by means of a clamping-screw 31. To secure a balanced action in raising the plunger, and obviate tendency to cause the same to cramp and bind in the bearing or guide, the lifting springs are located at opposite sides of the plunger, and the ears with which their lower ends engage are disposed opposite each other, the same being true also of the screws with which the upper ends of the said springs engage. Through the action of the lifting springs in holding the plunger and the guide 12 which is carried thereby in their highest position, the forward end of the rod 12 and the tool mounted thereon are maintained normally in a position elevated somewhat above the horn or work-support, so that in reciprocating while thus elevated the tool is entirely clear of the horn or work-support, affording opportunity for the application of the work to the horn or work-support. For the purpose of enabling the tool to be depressed upon work laid upon the horn or work-support I provide a treacle 32, which is pivoted at 33 to a stand 34 and connected with the plunger. This connection is effected through the agency of a connector 35 and a strong spring 36. The lower end of the connector is joined to the treacle, the upper end thereof being engaged with the lower end of the spring, and the upper end of the spring is engaged with the lower end of the plunger. The spring being much stronger than the two lifting springs 28, 29, pressure applied to the treacle will act through the connector 35 and strong spring 36 to draw down the plunger, overcoming the resistance of the lifting springs, until the tool is in contact with the work resting upon the horn or work-support. The tool will be held yieldingly in contact with the work, so as to cause it to follow variations in height of the different portions of the horn or work-support and the work, as it is reciprocated back and forth. When the pressure upon the treacle is relieved, the lifting springs 28, 29, will raise the plunger and elevate the forward end of the rod and the tool again. The pivoting of the bearings 13, 14, to their supports permits them to swivel so as to accommodate themselves to the different positions of the rod 12. For convenience of adjustment the connector 35 is made in two portions overlapping each other, the overlapping portions being passed through a collar 38 and held...
therein by a clamping-screw 39. This adjustment provides for differences in the height of the bench.

A machine constructed as shown in the drawings has regularly been operated successfully at three hundred strokes per minute.

I claim as my invention:

1. In a machine substantially as set forth, the combination with a work-support, a tool, a carrier for said tool, and means for rapidly reciprocating said carrier lengthwise, of pivoted guides for the front and rear portions of the said carrier, a vertically movable plunger with which the guide adjacent the tool is connected pivotally, a fixed guide in which such plunger is movable vertically, means acting with a tendency to hold the tool, carrier, and plunger normally in elevated position, and manually operated means to depress them to cause the tool to bear upon the work resting upon the work-support.

2. In a machine substantially as set forth, the combination with a work-support, a tool, a rod on which such tool is mounted, and means for rapidly reciprocating said rod lengthwise, of pivoted bearings 13, 14, for the front and rear portions of the said rod, a vertically movable plunger with which one of such bearings is pivotally connected, a fixed guide in which the said plunger is movable vertically, oppositely-located springs tending to hold said plunger elevated with the tool clear of the work-support, and manually operated means to depress the plunger to cause the tool to bear upon the work resting upon the work-support.

3. In a machine substantially as set forth, the combination with a work-support or horn, a tool, a carrier for said tool, and means for rapidly reciprocating said carrier lengthwise, of a vertically-movable plunger, a fixed guide therefor, a stop on said plunger to limit the upward movement thereof, means acting with yielding force to normally hold the plunger elevated, means to depress the plunger, a guide for said carrier pivoted upon the plunger, and a rear guide for the carrier, pivoted to its support.

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

VERTRUDE P. BUCK.

Witnesses:

CHAS. F. RANDALL,
NATHAN B. DAY.

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