

(No Model.)

I. E. CHANDLER.
MACHINE FOR SETTING LACING HOOKS.

No. 535,940.

Patented Mar. 19, 1895.

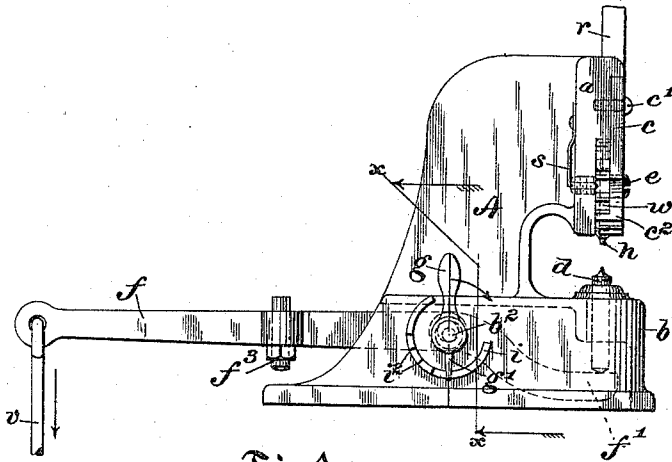


Fig. 1.

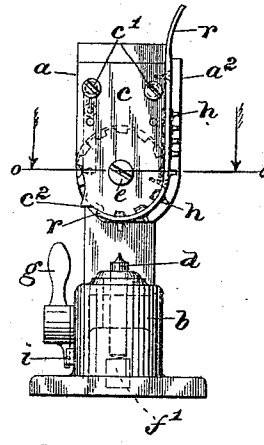


Fig. 2.

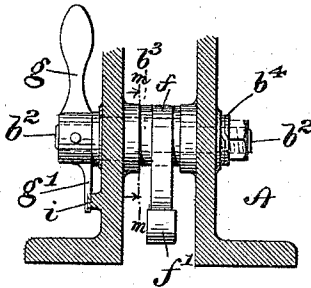


Fig. 3.

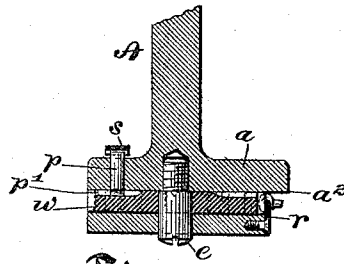


Fig. 4.

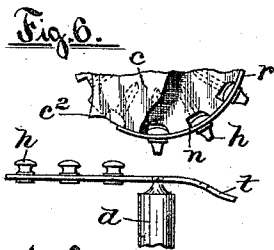


Fig. 6.

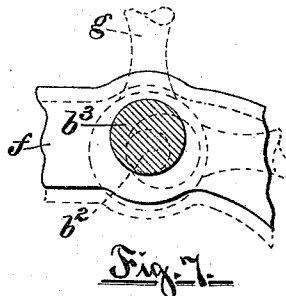


Fig. 7.

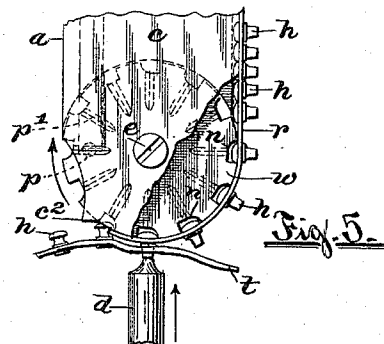


Fig. 5.

Witnesses.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR SETTING LACING-HOOKS.

SPECIFICATION forming part of Letters Patent No. 535,940, dated March 19, 1895.

Application filed January 3, 1895. Serial No. 533,684. (No model.)

To all whom it may concern:

Be it known that I, ISAAC E. CHANDLER, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Machines for Setting Lacing-Hooks; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to machines for setting lacing-hooks; and it consists essentially in the combination with a runway adapted for carrying the hooks and an anvil, of a mounted readily removable setting and feed-wheel arranged with respect to said runway and anvil, and means for upsetting the shank of the lacing-hook in the leather or material, whereby the act of drawing the shoe with its set hook across the anvil the proper distance rotates the said wheel and places another hook in position to be acted upon by the setting mechanism.

It also consists in providing machines of this class with means for readily changing the position of the operating-lever and the setting member with respect to the anvil, whereby leather or material varying in thickness may be employed without change or adjustment of the combined setting and feed-wheel and anvil, all as will be more fully hereinafter set forth and claimed.

The object I have in view is to produce a machine for setting lacing-hooks combining simplicity, great strength, fewness of parts and cheapness of construction. In my improved machine the objects just named have been attained. Moreover, it is so constructed that the setting wheel may be readily changed, thereby adapting the machine so that hooks of any size may be used and set.

By means of my improvements the working parts of the machine are not liable to get out of adjustment in transportation and use, and the machines may be successfully operated by comparatively young and unskilled attendants.

In a patent of the United States issued to me September 18, 1894, No. 526,295, I have described and claimed a machine for feeding

and setting lacing-hooks. In that machine the spacing-wheel, as it is termed, is intermittently rotated, step by step, mechanically through the medium of the stud or hook-setting device; the movement of said wheel, as in feeding the hooks, being wholly dependent upon and controlled by the movement of the lever or connection which actuates the setting-die. In said patented machine the rotation of the hook-feeding wheel causes the work and the attached hook to move forward from the path of the setting-die and at the same time to bring another hook into said path, so that the hooks are properly spaced.

In my present machine, the hook-feeding wheel is not mechanically actuated nor is its movement in any manner dependent upon or controlled by the action of the setting-die; and the feed-wheel is not employed as a spacing-wheel for the hooks. The pockets or recesses formed in the periphery of the said wheel are not spaced or arranged with respect to the distance between the hooks which the latter are to maintain when attached to the shoe or material. In this machine the arrangement is such that the attendant upon pulling or drawing the work ahead, after the hook has been attached to it, thereby rotates the wheel, thus placing another hook in a fixed position over the setting-die. The work is then freed from the wheel and placed so that the next hole (all having been previously formed in the work) lies central with the setting-die, the work then resting upon the die. The die is then moved upwardly, thereby forcing the eyeleted shank of the fixed hook through the hole in the work and attaching the hook thereby to clinching it.

I may state here that in case the work be shoes the interval between the holes may vary, according to the style and kind of shoe; the hooks being spaced much closer in some shoes than is required in others.

In the accompanying sheet of drawings, Figure 1 is a side elevation of a machine for attaching lacing-hooks, provided with my improvement. Means for operating the setting-die lever are omitted. It is obvious that it can be actuated by a treadle attachment operated by the attendant, or by suitable power mechanism. Fig. 2 is a front end elevation. Fig. 3 is an enlarged sectional view, taken on line *x x* of Fig. 1. Fig. 4 is a horizontal sectional view, enlarged, taken on line *o o* of Fig.

2. Fig. 5 is a partial front view, showing the die in the act of setting a hook. Fig. 6 shows the relation of the parts after the hook has been attached to the work and the latter placed in position preparatory to attaching the next hook, and Fig. 7 is a transverse sectional view, enlarged, taken on line *m m* of Fig. 3, showing the lever-shifting device.

A, again referring to the drawings, indicates the frame of the machine as a whole. Its upper portion, or head, *a*, is recessed vertically to receive the feed-wheel, *w*, soon to be described, thereby also forming an overhanging top part to which a removable downwardly extending cap or plate *c* is secured by screws *c'*. The said space or recess, lying between the adjacent faces of the head and cap, is equal to the thickness of the feed-wheel. The latter, as drawn, is mounted to revolve on a strong stud or screw *e* tapped into the frame-head and nicely fitting a hole formed in and extending transversely through the plate *c*, as clearly shown. The lower portion of the plate is curved along its edge and is concentric with the feed-wheel.

To one side or edge of the plate *c* is secured a runway *r*. This runway as drawn consists simply of a flat piece of metal extending above the top end of the head, *a*, and downwardly around and in snug contact with a portion of the said curved part of the plate, thereby forming what may be termed an anvil. The runway is wider than the thickness of the plate *c* and extends rearwardly into the space or recess in which the feed-wheel rotates, and is in close proximity to the periphery of the latter. The usual lacing-hooks or studs *h* are suitably mounted upon the runway, the hook portion proper of the hooks being in engagement with the rear part of the runway, the latter forming a guide for the hooks in conjunction with the frame extension *a'* and causing them to be conducted properly to the feed-wheel. I would state that if desired the upper end of the runway may be arranged to communicate with and lead downwardly from any suitable hook-feeding device adapted to mechanically pick up the hooks from a mass and conduct them one by one to the runway. The runway *r* may be made any desired length practicable.

The feed-wheel, or hook-carrying wheel, *w*, is mounted to revolve on the stud *e*, its periphery being provided with a series of pockets or notches *n* arranged each to freely receive the front or head portion of a lacing-hook. The diameter of the feed-wheel and the number of its notches *n* have no fixed relation to the spacing of the hooks in attaching the latter to the work or material. I prefer to make the forward side of the notches converge say toward the center of the wheel, or radially, the opposite or rear side being beveled, substantially as shown. The rear face of the wheel is provided with a series of V-shaped radial grooves *p'*; the number of the grooves being the same as the number of

notches *n*. The head portion of the frame is provided with a detent or check-pin *p*, its front end being V-shaped and arranged to successively engage the grooves *p'*; a light spring *s* being employed to insure the contact of said parts. By means of this device the wheel and the hooks therein are held in position with respect to the setting-die *d* while the latter is being operated. The device, however, readily yields to permit the wheel to be rotated from groove to groove when desired.

The setting-die *d* is constructed substantially as common. It is mounted to move vertically in the base portion *b* of the frame *A*, its upper end being adapted to enter the eyelet shank of the lacing-hook, so as to expand the shank and clinch it into the interposed work or material *t* as usual. The setting-die is moved up and down through the medium of the operating lever *f*, fulcrumed in the base; the forward part *f'* of the lever being arranged to engage the setting-die. The opposite end of the lever may be connected to a link *v* adapted to be actuated by the foot of the attendant, or the lever may be connected so as to be reciprocated up and down mechanically. In order to limit the downward stroke of the lever I may employ an adjustable stop *f''*, as clearly shown in Fig. 1. Such arrangement, however, is old and well known.

In my present machine I have mounted the lever *f* so that it can be raised or lowered bodily, together with the setting-die *d* resting upon it. This is done in order that the machine can be readily adapted to properly attach lacing-hooks to materials varying in thickness. As drawn, the device for effecting such result consists essentially of a fulcrum-pin *b'* mounted in the frame-base so as to be axially vibrated and having an intermediate enlarged portion *b''* whose axis is eccentric to that of the other portion of the fulcrum-pin. The lever itself is mounted to vibrate on the said eccentric part *b''*, as clearly shown. To the front end of the pin *b'* is secured an operating handle *g* having an extension *g'* on its lower side arranged to engage notches *i'* formed in the raised concentric rib. These notches are arranged with respect to the different thicknesses of work—that is to say, in Figs. 1 and 7 the handle *g* is in a substantially vertical position corresponding to the minimum thickness of the material or leather to which the lacing-hooks are to be attached. When thicker material is used the handle is to be swung toward the right, thereby lowering the lever *f* and increasing the distance between the anvil and setting-die, it being borne in mind that the operating lever swings in a practically invariable circular arc. The several notches *i'* may be suitably marked or numbered in order that the attendant may make the adjustments with more facility and accuracy. The pin *b'* may be provided at its rear end with a spring-collar *b''*, the same being located between the nut and frame, as shown in Fig. 3. This collar serves to hold the

pin in position when adjusted by keeping the pointer or extension g' in yielding contact with the corresponding notch, and is not affected by the vibratory action of the lever f .

5 The following is a description of the operation of the machine: The attendant first places the work or material t (previously punched with properly spaced holes for the reception of the hook-shanks) upon the setting-die d , the latter being centered in one of said holes, as shown in Fig. 6. He next forces the die d upwardly to its limit, through the medium of lever f , &c., thereby causing the shank of the lacing-hook to be pressed into the adjacent hole of the material and clinching or setting it, it being of course understood that the feed-wheel w is already charged with the hooks and that a hook is in position above and in alignment with the die. The setting-die after completing its work is next retracted to its normal position. Now, since the feed-wheel w is independent of the setting-die it is apparent that the wheel and the work will not have been advanced at all during the movement of the die and its actuating mechanism. In order to place the succeeding lacing-hook in position over the die the attendant next draws or pulls the work ahead. The force thus applied operates, by reason of the engagement of the head of the last attached hook with the forward side of the corresponding pocket n of the feed-wheel, to rotate the wheel until the spring-catch p enters the next groove p' . At the same time the work is automatically detached by deflecting it from the wheel and anvil by means of the clearer c^2 extending rearwardly from the front lower side of the plate c and across the periphery of the wheel. When the work has been thus detached the attendant places it in position upon the die-point, as shown in Fig. 6, ready to receive the next hook. In case the thickness of the material or work is greater than as represented in the drawings the attendant simply turns the handle g of the fulcrum-pin to the right until the pointer g' enters the corresponding notch i^2 , thereby lowering the operating-lever and setting-die to the same extent; the stroke of the lever and die d being substantially the same at all times.

By means of my improvement the feed-wheel can be removed and another readily and easily substituted when desired. Such change I may explain becomes necessary when hooks having smaller or larger heads are employed; it being understood that some three or four sizes of lacing-hooks are now generally used. The several feed-wheels are uniform in diameter, but the pockets or notches n formed therein would vary according to the hooks which they are to receive and place in position to be operated upon by the setting-die; and since the wheel is not actuated mechanically it follows that all adjustments of corresponding parts are avoided. Consequently the machine is not so liable to become inoperative but is always ready for use. The means

for changing the vertical position of the setting-die with respect to the work is simple and the change may be quickly and easily effected.

I claim as my invention—

1. In a machine for setting lacing-hooks, the combination with a runway for supplying the hooks, an anvil, a setting-die, and mechanism through which the latter is operated, of a rotatable hook-feeding wheel having pockets in its periphery arranged to receive the hooks singly from said runway, and a checking device in yielding engagement with said feed-wheel; the rotary movement of the feed-wheel being effected by the act of drawing the work from the anvil, and being wholly independent of the setting mechanism.

2. In a machine for setting lacing-hooks, the combination of a movably mounted hook-feeding wheel, as w , having a series of pockets or notches, as n , formed in its periphery, a removably mounted plate, c , located in front of and practically covering said wheel, a stationary runway extending partly round the wheel and plate and forming an anvil, a vertically movable setting-die adapted to operate with said anvil in attaching the lacing-hooks to the work or material and means for actuating the setting-die.

3. In a machine for setting lacing-hooks, the combination with the feed-wheel w , front plate c , and runway r extending partly round the under side of the said wheel and plate, of a suitably mounted and actuated setting-die and a fixed detaching or clearing device, as c^2 , located in advance of the end of the runway, arranged whereby the act of drawing the work forward, after the lacing-hook has been set, deflects the work from the machine, substantially as described.

4. In a machine for setting lacing-hooks, the combination with means for feeding the hooks singly and placing them in position to be attached to the work or material, of a setting-die, as d , a pivotally mounted operating-lever, as f , for actuating said setting-die and means, substantially as described, for changing the position of the lever and die with respect to the lacing-hook held centrally with the die, whereby work varying in thickness may be used without changing the stroke of the die.

5. In a machine for setting lacing-hooks, a pivot-pin, as b^2 , mounted in suitable bearings having an eccentric portion, b^3 , an operating-lever for controlling the movement of the setting-die movably mounted on said eccentric portion and means for turning the pivot-pin axially in said bearings and holding it in position after adjustment, substantially as described.

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

ISAAC E. CHANDLER.

Witnesses:

GEO. H. REMINGTON,
FREDERIC ARNOLD.