

(No Model.)

2 Sheets—Sheet 1.

W. HALKYARD.
MACHINE FOR SETTING LACING HOOKS.

No. 454,114.

Patented June 16, 1891.

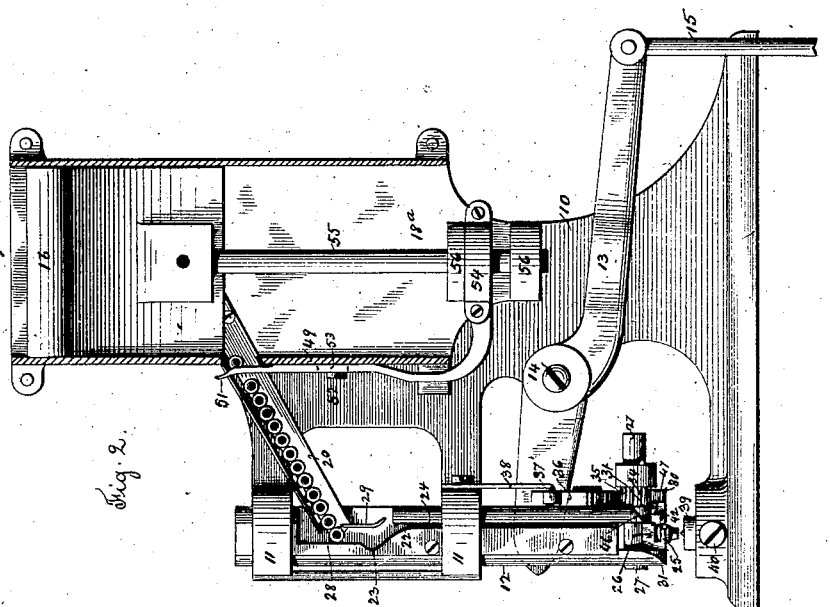


Fig. 2.

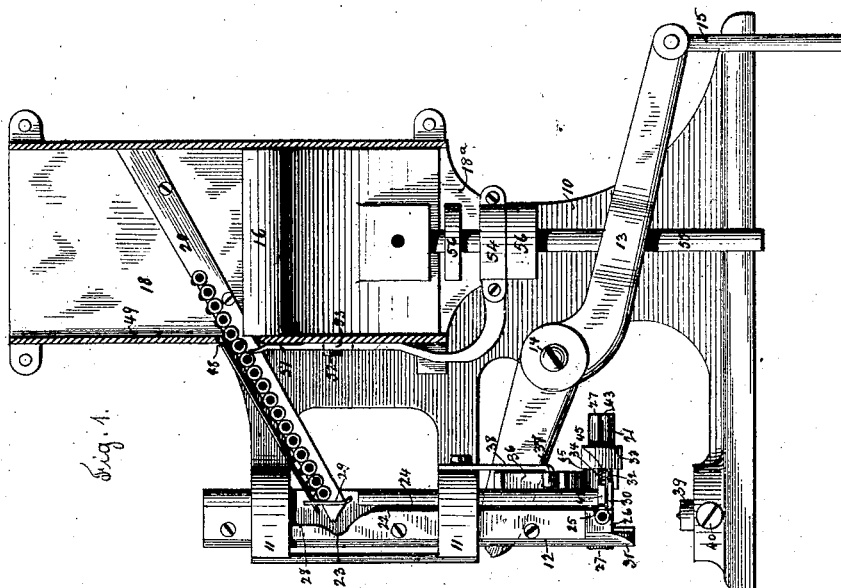


Fig. 1.

Witnesses

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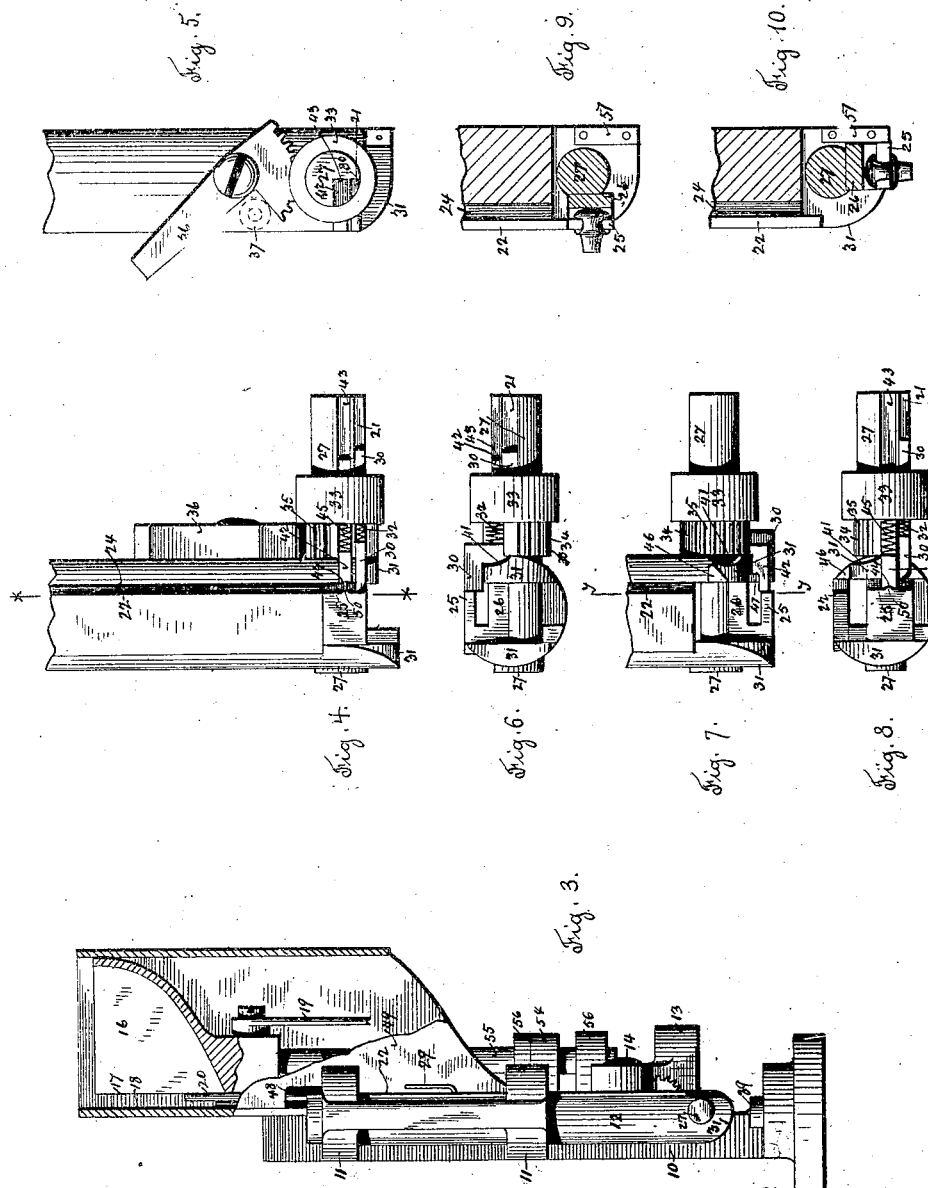
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UNITED STATES PATENT OFFICE.

WILLIAM HALKYARD, OF PROVIDENCE, RHODE ISLAND.

MACHINE FOR SETTING LACING-HOOKS.

SPECIFICATION forming part of Letters Patent No. 454,114, dated June 16, 1891.

Application filed December 1, 1890. Serial No. 373,233. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HALKYARD, a citizen of the United States, residing at Providence, in the State of Rhode Island, have invented certain new and useful improvements in Machines for Setting Lacing-Hooks, of which the following is a specification.

My invention relates to machines for setting or fastening metallic lacing-hooks upon leather or other material; and it consists in a reciprocated feeding-receptacle having an open side, which is directed toward a guiding-wall and toward a feed-track arranged in proximity to said wall, whereby a portion of the lacing-hooks, after being raised by the upward movement of the feeding-receptacle, will be caused to move downward along said wall and be deposited upon the track with their heads arranged between the track and the wall in proper position to be fed to the setting mechanism.

It also consists in providing a frictionally-operated clearing-finger, in combination with the feed-track and a reciprocated feeding-receptacle to prevent a lacing-hook from being caught between the top of one side of the receptacle and the upper edge of an opening in a side wall, through which the track is made to pass.

It also consists in a reciprocated plunger provided with an improved raceway-track, which is adapted to receive the lacing-hooks from the feed-track singly and conduct them to the setting-head of the plunger.

It also consists in a reciprocated plunger provided with a swinging head adapted to receive the lacing-hook from the raceway-track and carry it to its proper setting position over the anvil.

It also consists in improved devices for retaining the lacing-hook in position upon the holding-rest of the swinging head while in its transit from the line of the raceway-track to its setting position over the anvil.

It also consists in improved means for causing the required rocking movement of the swinging head and in the improved construction of the holding-rest to fit the post of the lacing-hook.

Figure 1 represents a side view of my improved machine for setting lacing-hooks, showing the plunger in its highest position

with the feeding-receptacle for the lacing-hooks at its lowest position. Fig. 2 represents a similar view showing the positions of the plunger and feeding-receptacle reversed. Fig. 3 represents an end view corresponding to the position of the parts shown in Fig. 2 with a portion broken away to show the feeding-receptacle. Fig. 4 represents an enlarged side view of the lower end of the plunger. Fig. 5 represents a view of the lower end of the plunger, taken at a right angle to the view shown in Fig. 4. Fig. 6 is a bottom view of the plunger, showing the swinging head in its receiving position. Figs. 7 and 8 represent the swinging head as in its lower position, Fig. 7 being a side view and Fig. 8 a bottom view. Fig. 9 represents a section taken on the line *x x* of Fig. 4. Fig. 10 represents a section taken on the line *y y* of Fig. 7.

In the accompanying drawings, 10 represents the frame of the machine, which is adapted to be secured to the top of the table or bench and provided with the ears 11, which hold the sliding plunger 12, the said plunger being operated in its up-and-down movement by means of the lever 13, which is pivoted at 14 to the frame and connected by means of the link or rod 15 with the foot board or treadle of the machine. The reciprocating feeding-receptacle 16 is open at the side 17 adjacent to the guiding-wall 18, and has a vertical reciprocating movement along the said wall, the said movement being obtained through the link 19, (see Fig. 3,) which is connected with a treadle, by means of which the machine is operated.

To the guiding-wall 18 is attached by suitable means an inclined feed-track 20, which is adapted to catch and retain a number of the lacing-hooks from the feeding-receptacle 16 while the mass of the said hooks are making their downward movement along the side of the guiding-wall, the space between the track and the said guiding-wall being made of sufficient width to loosely hold the heads of the hooks, so that only those hooks which are properly presented will be caught and retained upon the track.

At the side of the plunger 12 is secured by suitable means a flat plate constituting the raceway-track 22, which extends for nearly

the whole length of the plunger and is recessed at 23 to provide for the passage of a lacing-hook from the feed-track 20 to the edge of the raceway-track 22, which forms one side of the raceway 24, through which the lacing-hooks are dropped by gravity one at a time to the holding-rest 25, the said holding-rest forming a part of the swinging head 26, which is journaled by means of the spindle 27 to the cars 31 at the lower end of the plunger. The upper extension 28 of the raceway-track is arranged in line with the lower end of the feed-track 20 and will form a stop at the downward position of the plunger, against which the lacing-hooks on the feed-track will rest, as is clearly shown in Fig. 2.

To the plunger 12 is attached a separating stop-wire 29, so arranged that as the plunger ascends the said wire will be caused to pass between the first and second lacing-hooks on the feed-track, and thus allow only the first lacing-hook to pass into the recess 23 and thence drop through the raceway 24 to the holding-rest 25 and engagement with the sliding stop 30. (See Fig. 1.) It will thus be understood that one and only one lacing-hook will be allowed to enter the raceway 24 at each upward movement of the plunger. The sliding stop 30 rests in a longitudinal groove or recess 21, made in the spindle 27, and is caused to enter the path of the descending lacing-hook by means of the spiral spring 32, one end of which rests against a shoulder on the said sliding stop, while its opposite end rests against the collar 33, which is made fast on the spindle and also serves to retain the sliding stop in the recess 21. The spindle 27 is also provided with a collar 34, having in its periphery gear-teeth 35, which are in engagement with similar teeth provided at one end of the lever 36, the said lever being pivoted to the plunger, so that a rocking movement will be imparted thereto by engagement with the stationary pin or roller 37, which is supported on the arm 38, attached to the lower spindle-supporting ear 11 of the frame 10. In Fig. 5 the roller 37 is represented in dotted lines, and when the plunger is moved downward the upper end of the lever 36 will come in contact with the said roller 37, whereby the lever will be rocked, so as to cause the spindle 27 to turn through one-quarter of a revolution, and thus carry the lacing-hook from its horizontal position as received upon the holding-rest 25 (see Fig. 9) to a vertical position, (see Figs. 2 and 10,) ready to be set in the leather or other material and be also clinched by coming in contact with the anvil 39, which is held in the projecting foot of the frame 10 by means of the set-screw 40, a fixed stop 57 being provided to positively limit the downward movement of the swinging head.

By referring to Figs. 6 and 7 it will be seen that one ear of the plunger is cut away to form a cam 41, which will be engaged by the sliding stop 30 when the said stop is rocked with

the spindle, and will thus cause the withdrawal of the said stop away from the end of the holding-rest 25 against the resilient action of the spring 32, as shown in Fig. 8, thus leaving the lacing-hook free from the sliding stop; but as it is desirable that the lacing-hook be firmly held in its position on the holding-rest 25, in order to properly engage with the anvil 39, I provide for that purpose a sliding holder 42, which will hold the lacing-hook properly and will grip the same as the sliding stop 30 is being drawn away, such construction being shown in Figs. 4, 7, and 8, as follows: Provided in the spindle 27 is a groove 43, adapted to receive the sliding holder 42, the forward end of which is hollowed out, as at 44, to correspond with the shape of the post of the lacing-hook. A spiral spring 45 rests with one end against the side of the collar 33 and with its opposite end against the head portion of the sliding holder 42, thus tending to force the end of the sliding holder either into contact with the end of the holding-rest 25 or into engagement with the post of the lacing-hook deposited upon the said rest in proper position for setting. When the plunger 12 is being raised, the spindle 27 and swinging head 26 will be rocked, so as to carry the holding-rest 25 against the end of the raceway-track 22, and the sliding holder will be caused to move away from the end of the holding-rest 25 against the resilient action of the spring 45 by means of a cam projection 46, (see Fig. 7,) which is engaged by the shoulder 47 of the sliding holder during the latter portion of its movement with the spindle 27, thus forming a passage for the descending lacing-hook and allowing the same to come to a rest against the sliding stop 30, as shown in Fig. 1.

It has been found in practice that when the inclined feed-track 20 is filled with lacing-hooks up to a point within the path of the edge of the feeding-receptacle 16 and the receptacle is caused to ascend, the lacing-hook which is nearest to the opening 48 in the wall 49, through which the feed-track is made to pass, is liable to be caught between the upper edge of a side of the receptacle 16 and the upper edge of the opening 48, whereby injury may be caused to the parts of the machine. I therefore provide a clearing mechanism, which consists of a finger 51, secured to the outside of the wall 49 by means of a screw 52, which passes through a slot 53 in the said finger, so as to provide for a certain up-and-down movement, and to the lower end of the finger 51 is secured the friction-strap 54. The receptacle 16 carries a rod 55, passing through the ears 56, which extend outward from the wall 18 for the purpose of steadying the said receptacle, and also to serve as stops for the said friction-strap 54, which is preferably lined with leather or other similar frictional material and held on the rod 55, so as to move upward with the initial upward movement of the receptacle and downward with the initial downward movement of

the same until it strikes one or the other of the ears 56, as the case may be, upon which engagement the friction-strap 54 and the attached clearer-finger 51 will remain stationary, but will allow the rod 55 to slide through and complete its movement in that direction, and upon the initial upward movement of the receptacle the clearer-finger will operate to move the lacing-hooks remaining on the track in the line of the upward movement of the receptacle backward until a point is reached at which all liability of injurious engagement, as above mentioned, will be obviated.

The holding-rest 25 is preferably provided at its forward edge with a projecting spur 50, which serves to enter the cavity sometimes formed at the inner side of the post of a lacing-hook; but the same may be made without the said spur when the lacing-hooks are of a different construction.

The feed-receptacle, it will be seen, performs a twofold function, in that it not only acts as a feeder, but also as a hopper for holding the mass of hooks.

I claim as my invention—

1. In combination with the setting mechanism, a guiding-wall, a feed-receptacle arranged to move vertically along said wall at a slight distance therefrom and having an open side adjacent to the guiding-wall, and a feed-track located between the open side of the receptacle and the guiding-wall and extending parallel to the latter at a slight distance therefrom, substantially as described.

2. The combination, with the upwardly-moving feeding-receptacle at the inner side of a perforated wall and the inclined feed-track held in front of said receptacle and extending through the perforation in the said wall, of the frictionally-operated clearing-finger arranged at the outer side of the wall and adapted for a limited upward movement with the initial upward movement of the feeding-receptacle to prevent a lacing-hook from being caught between the edge of the upwardly-moving feeding-receptacle and the edge of the perforation in the wall, substantially as described.

3. The combination, with the inclined feed-track, of the reciprocated plunger provided with a raceway-track extending lengthwise of the plunger and which at the downward position of the plunger serves as a stop to prevent the end lacing-hook from leaving the feed-track, and having an intermediate recess, which at the upper position of the plunger will serve to allow the said lacing-hook to pass from the feed-track to the raceway-track, substantially as described.

4. The combination, with the inclined feed-track, of the reciprocating plunger provided with the stop for separating the end lacing-hook from the others on the feed-track, and

with a raceway-track, which at the downward position of the plunger serves as a stop to prevent the end lacing-hook from leaving the feed-track, and having an intermediate recess, which at the upper position of the plunger will serve to allow the said lacing-hook to pass from the feed-track to the raceway-track below the recess, substantially as described.

5. The reciprocating plunger provided with a raceway-track extending longitudinally of the plunger, and with the attached swinging head having a holding-rest, which at its upwardly-turned position forms a continuation of the raceway-track, and having a spring-operated stop which serves to prevent the lacing-hook from escaping downward from the holding-rest upon the descent of the said hook from the raceway-track, substantially as described.

6. In combination with feeding mechanism, a reciprocating plunger, a raceway to lead the hooks to the plunger end, a swinging head to receive the hooks and turn them into setting position, and a sliding stop to limit the downward movement of the lacing-hook, the said raceway, swinging head, and sliding stop being carried by the plunger in its reciprocations, substantially as described.

7. The reciprocated plunger provided with the raceway-track extending longitudinally of the plunger, and with the attached swinging head adapted to receive a lacing-hook from the raceway-track and provided with a sliding stop, which serves to limit the downward movement of the lacing-hook on its descent from the raceway-track to the holding-rest of the swinging head, and a sliding holder adapted to retain the lacing-hook in position upon the holding-rest while the lacing-hook is being turned to its setting position, substantially as described.

8. The combination, with the plunger provided with the swinging head, of the toothed lever attached to the plunger and engaging with the swinging head, whereby upon the engagement of the said lever with a fixed pin on the upward movement of the plunger the said head will be turned in one direction and at the downward movement of the plunger will be turned in the opposite direction, substantially as described.

9. The combination, with the plunger, of the swinging head provided with the holding-rest having a projection which is adapted to enter a recess in the post of the lacing-hook and the holder adapted to retain the lacing-hook in position upon the holding-rest, substantially as described.

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Witnesses:

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