No. 707,274. Patented Aug. 19, 1902.

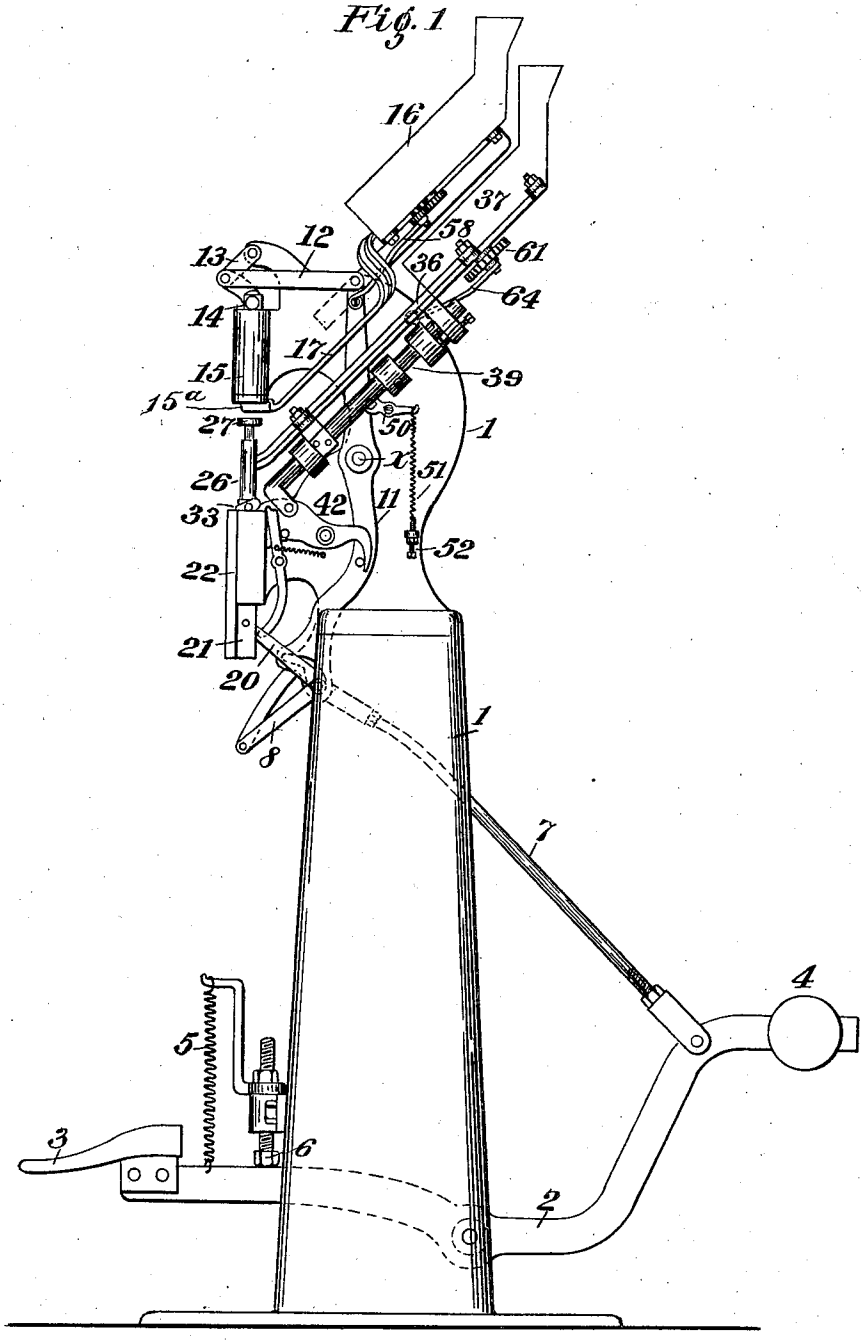
E. B. STIMPSON.

MACHINE FOR SETTING BUTTONS.

(Application filed Sept. 26, 1901.)

(No Model.) 5 Sheets—Sheet 1

Fig. 1



Witnesses
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By his Attorney
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No. 707,274.

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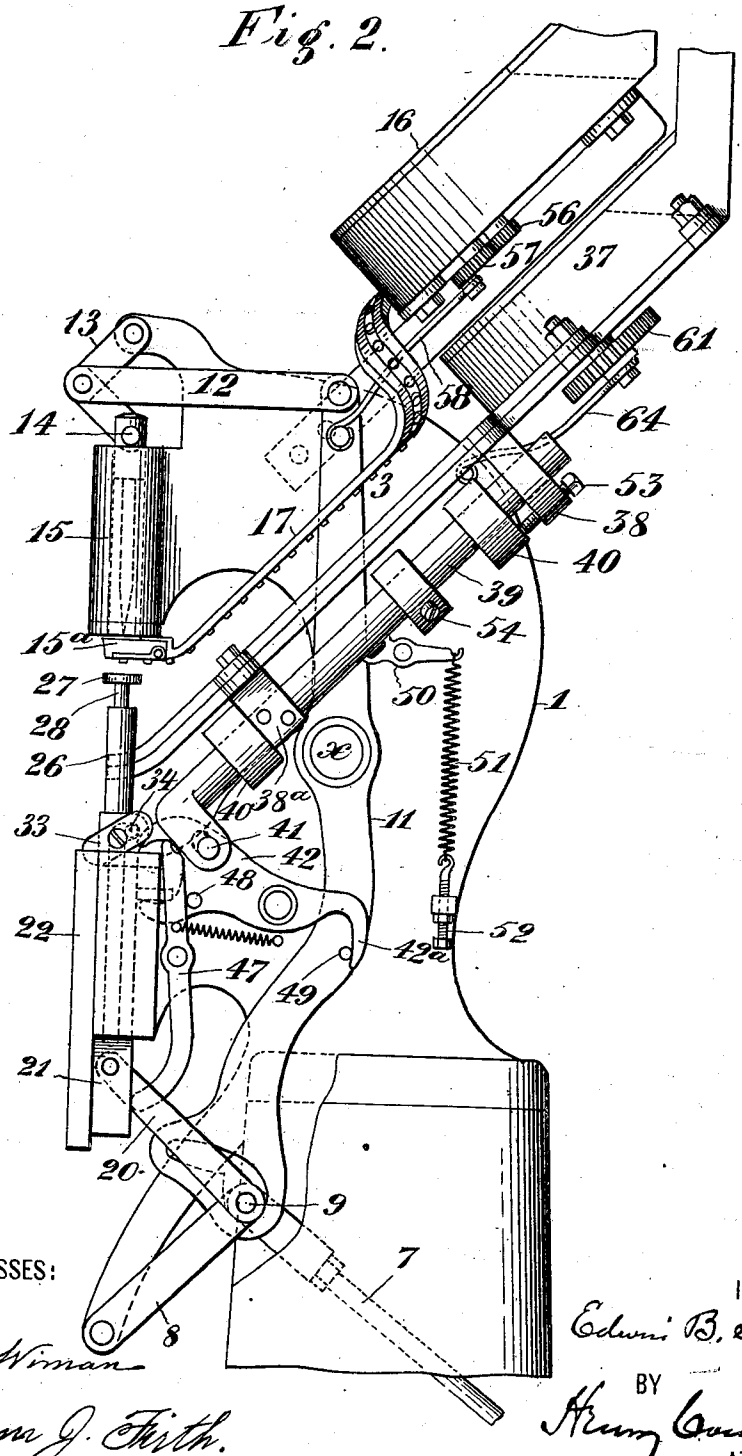
MACHINE FOR SETTING BUTTONS.

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(No Model.)

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Fig. 2.



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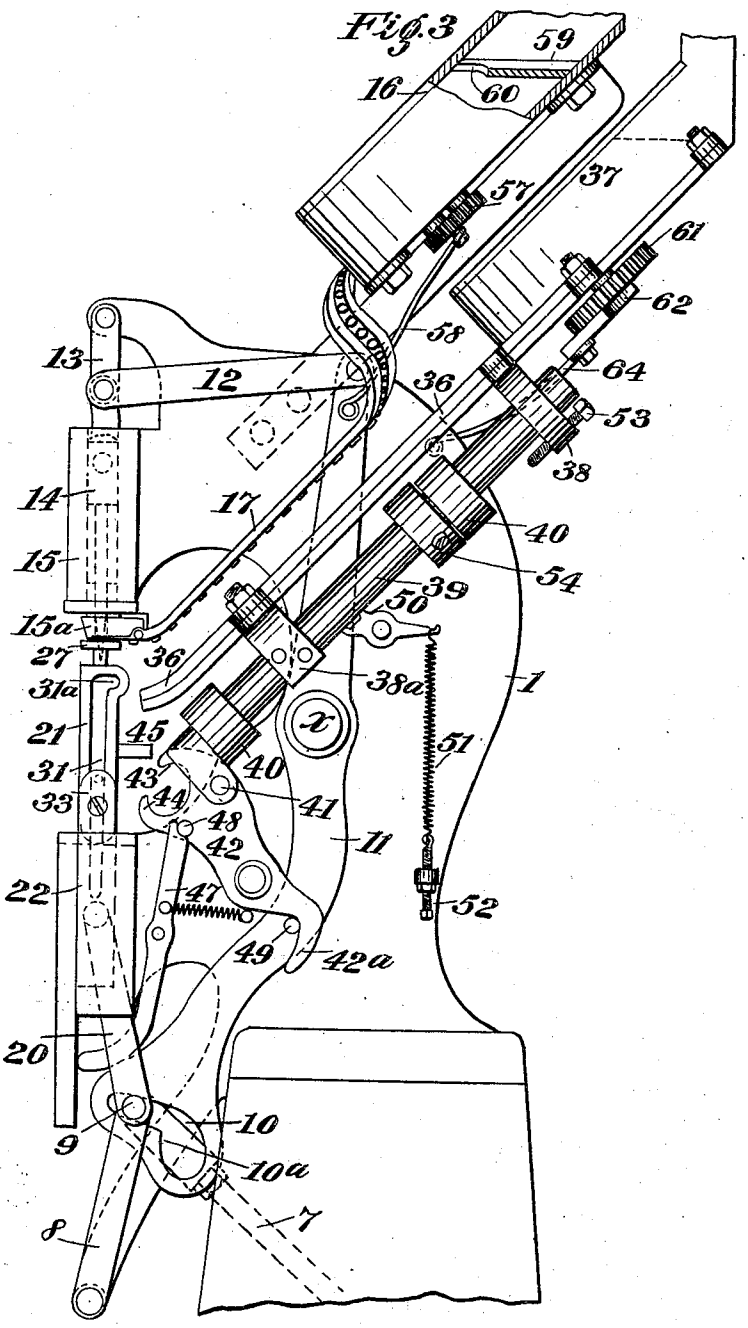
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Fig. 3



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Fig. 4

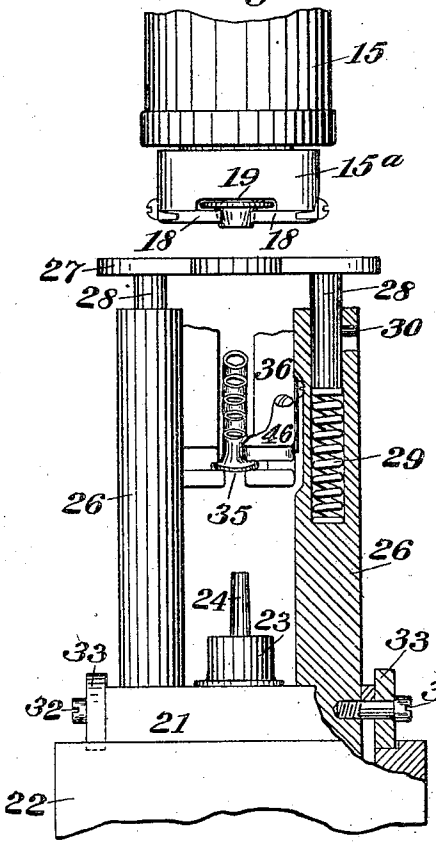


Fig. 5

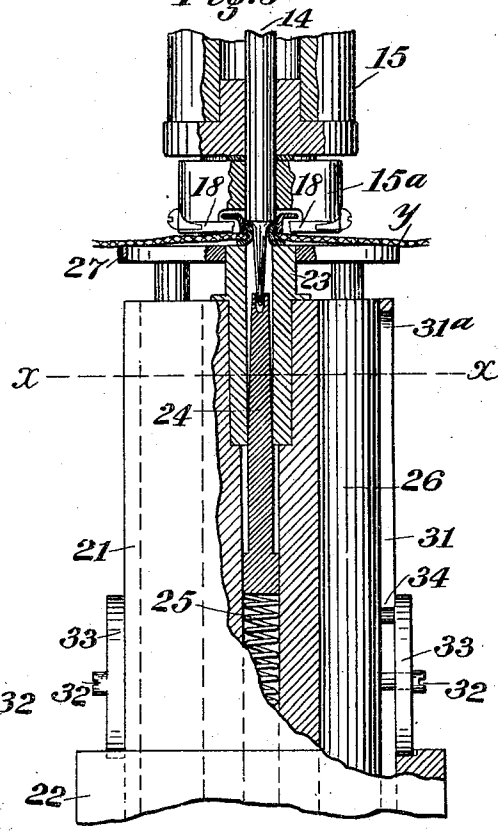


Fig. 7

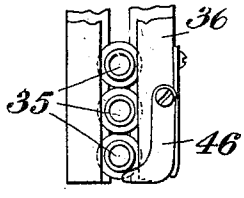


Fig. 8

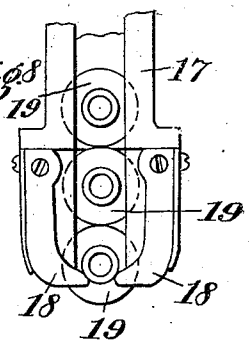
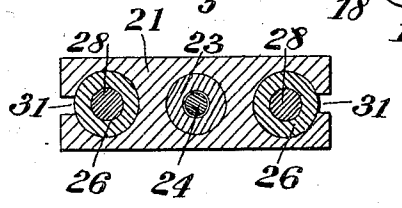


Fig. 6



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No. 707,274. Patented Aug. 19, 1902.

E. B. STIMPSON.

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Fig. 9

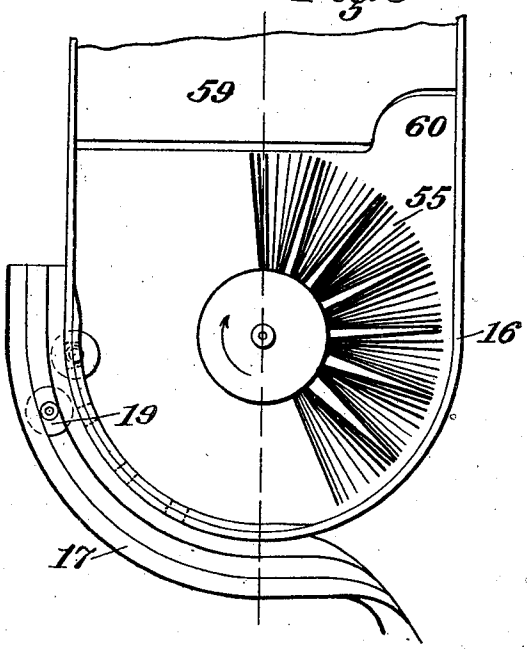


Fig. 10

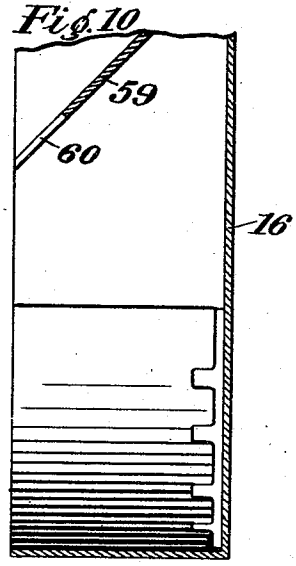


Fig. 11

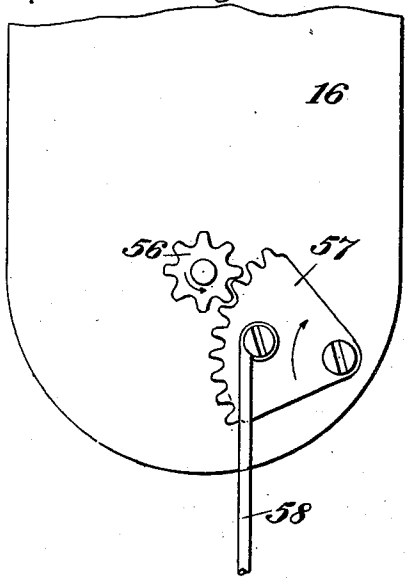
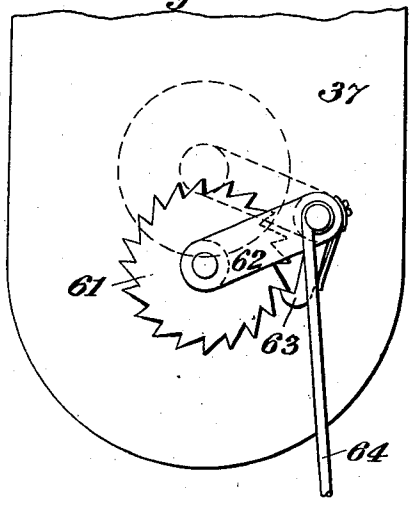


Fig. 12



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UNITED STATES PATENT OFFICE.

EDWIN BALL STIMPSON, OF BROOKLYN, NEW YORK.

MACHINE FOR SETTING BUTTONS.

SPECIFICATION forming part of Letters Patent No. 707,274, dated August 19, 1902.

Application filed September 26, 1901. Serial No. 76,609. (No model.)

To all whom it may concern:

Be it known that I, EDWIN BALL STIMPSON, a citizen of the United States, residing in the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Machines for Setting Buttons and the Like, of which the following is a specification.

This invention relates to the class of machines wherein buttons or their equivalents are fed from a box down to the point where they are to be set, and eyelets for securing them to the fabric are fed from another box down to the same point. The securing-eyelets are clenched by a plunger operated either by the foot or by power.

The novel features of the invention will be hereinafter set forth, and carefully defined in the claims.

In the accompanying drawings, which illustrate an embodiment of the invention, Figure 1 is a side elevation of the machine on a small scale. This view shows the treadle mechanism. Fig. 2 is a side elevation of the upper part or head of the machine, showing the parts in their normal positions, the machine being at rest. Fig. 3 is a view similar to Fig. 2, but showing the positions of the parts when the plunger is depressed. Figs. 4 and 5 are detail views of the setting mechanism, the former showing the ends of the tracks and the latter showing the clenching devices in operation. Fig. 6 is a cross-section at x^6 in Fig. 5. Figs. 7 and 8 are views illustrating the stop devices at the ends of the tracks. Figs. 9, 10, 11, and 12 are views illustrating the construction of the boxes for holding the buttons and eyelets.

Referring primarily to the general views, 1 designates in general the frame and pedestal of the machine, which may be of cast-iron and in one or more parts.

2 is the treadle-lever, provided at the front end with a treadle 3 and at the rear end with a counterweight 1. It may also have a spring 5 to assist the counterweight in elevating the treadle and returning the parts.

6 is an adjustable stop to limit the upward movement of the treadle. From the rear end or arm of the treadle-lever 2 an operating-rod 7 extends to and is coupled to the upper end of a rocking link 8, pivoted at its lower end to a bracket on the main frame. The coupling-stud 9 of the rod 7 engages a slot 10 in the lower end or arm of an upright lever 11, fulcrumed at x on the frame, and the upper end or arm of this lever is coupled by a link 12 to the knuckle of a toggle 13, which operates and drives down a plunger 14, the latter being guided in a head 15 on the frame. The plunger is seen in full lines in Fig. 5 and in dotted lines in Figs. 2 and 3.

16 is the box which contains the buttons, and these are fed from the box to the setting-point by a track 17, the delivery end of which is situated directly under the end of the plunger 14, so that the terminal button will be alined therewith. Figs. 4 and 8 show the delivery end of the track 17, which is provided with two spring-stops 18, designed and adapted to stop the terminal button of the series in the track at the exact point where the axis of the plunger 14 will register with the center of the circular aperture in the button 19. Figs. 5 and 8 show the form of the button, and a detailed description will not be required. The construction of the box 16 will be hereinafter described. It will suffice here to say that the buttons are supplied uniformly and continuously at the delivery end of the track 17 and that this track is stationary.

To prepare the way for the description of other parts of the machine, it may be briefly stated here that the stud 9 acts to swing the lever 11 by impinging on a shoulder 10^a in the slot 10, and when the lever is swung far enough to straighten the toggle 13 the stud 9 wipes over the shoulder 10^a and plays along the slot beyond.

Coupled to the rod 7 at the stud 9 is a link 20, the other end of said link being coupled to a vertically-slidable block 21, mounted in a guideway 22 on the main frame directly below and under the plunger 14. The block or slide 21 is relatively broad, as seen in the cross-section, Fig. 6, and has set in its center a tubular anvil or clenching-seat 23, up through which projects a shouldered spindle 24, backed by a yielding spring 25. When the block 21 is at its lowest point, as in Fig. 4, the spindle projects up through the anvil 23. Mounted in bores in the block 21, at opposite sides of the anvil, are two column-like sup-

ports 26 26 for the work-bed 27, this latter having two legs 28 28, which extend down into sockets in the supports 26 and rest on strong cushion-springs 29, one of which is seen in Fig. 4. A slight depression of the work-bed is permitted by a stud 30 in the leg 28 playing in a slot in the wall of the support 26, as seen at the right in Fig. 4, where the parts are seen in section. Down the respective sides of the block 21 extend slots 31, opening to the respective supports 26, and pivotally attached to the supports by pins or screws 32 through said slots are toggle-plates 33. When the block 21 is depressed, as in Figs. 2 and 4, the columns 26 are upheld by the oblong toggle-plates 33 bearing obliquely or sidewise on the top of the guideway 22, a stud 34 in the plate 33 engaging a cam-like lateral branch 31^a of the slot 31, (seen in Fig. 3,) which permits the toggle-plate to rest obliquely on its seat. It may be best explained here that when the block 21 starts to rise the cam-like branch 31^a of the slot acts first on the stud 34 to swing the toggle-plate 33 to an upright position, as seen in Figs. 3 and 5, thus slightly elevating the work-bed 27 and causing it to press the goods (*y* in Fig. 5) up firmly to the button-track. If the goods be a little thicker than the normal, the springs 29 will yield a little. As the block 21 continues to move upward the spindle 24 encounters and passes up through an eyelet 35 at the delivery end of an eyelet-track 36, fed from an eyelet-box 37. The said box is secured to the upper end of the inclined track, and the latter is secured by clips 38 and 38^a to a cylindrical slide 39, mounted in guideways 40 on the frame. The lower end of the slide 39 has a slotted coupling connection 41 with a lever or rocker 42 on the side of the frame. This lever has at its end nearest the block 21 an upper jaw 43 and a lower jaw 44, and a stud 45 on the inner face of the block 21 takes between these jaws, Fig. 2, when the block is depressed, and as the latter rises as soon as the spindle 24 has passed through the terminal eyelet in the track the stud 45 takes under the jaw 43 and by swinging the rocker 42 moves the track 36 backward and upward, so as to disengage the said eyelet from the track. This it is enabled to do by the yielding of a spring-stop 46, Figs. 4 and 7, at the end of the track. The eyelet is carried upward until the upper end of the yielding spindle 14 encounters the pointed end of the depressed plunger 14, when the spindle will yield and the eyelet will be driven upward about the plunger by the tubular anvil 23 and finally be driven up through the button and clenched. The termination of the operation is seen in Fig. 5, where it will be noted that the anvil 23 passes up through an aperture in the work-bed.

It may now be explained that when the rocker 42 is actuated to move back the eyelet-track 36 the latter is held against accidental return during the setting operation by a spring-detent 47, pivotally mounted on the frame and adapted to take under a stud 48 on the rocker 42, as seen in Fig. 3, and this rocker also has a hook 42^a, which takes behind a stud 49 on the main operating-lever 11, thus guarding against the accidental movement of this lever. The rocker 42 thus performs the function of a lock for the operating-lever 11. When the block 21 descends, its lower end impinges upon the curved lower arm of the lever-detent 47 and disengages the latter, as seen in Fig. 2, which also shows how the stud 45 impinges on the lower jaw 44 of the rocker 42, and thus through the latter brings the eyelet-track back to its normal position. This is the more necessary, as it is deemed advisable to put a light friction-brake 50 on the slide 39 to prevent its too-free movement in its guides. The brake 50 is held in place by a spring 51, the tension of which may be regulated by a screw 52.

The extent of movement downward of the eyelet-track is regulated and limited by a screw-detent 53, set in the upper clip 38 and bearing on the upper guide 40 of the slide 39. To prevent the cylindrical guide 39 from turning in its guides, it has set on it a collar 54, which has a flattened face to bear on the side or face of the frame.

It will be noted that the button-track 17 is secured firmly at its delivery end to a block 15^a, which forms in substance a part of the guide 15, in which the plunger 14 plays.

Figs. 9 and 10 show the interior of the button-box from which buttons are supplied to the track 17. This box has in its lower part a brush 55, which is rotated to and fro by the means seen in Figs. 2 and 11. On the journal of the brush, below the box, is a pinion 56, which gears with a toothed segment 57, and this segment is vibrated at each operation of the machine by a link 58, one end of which is coupled to the lever 11 and the other to the segment. The buttons are placed in the upper part of the box, on an inclined partition 59 therein, and are shaken down through an aperture 60 at one side of the box. The brush drives them out into the track through suitable apertures. As the track and box for the eyelets move to and fro advantage is taken of this for rotating the brush in the box, and the mechanism seen in Figs. 2 and 12 is employed. On the projecting journal of the brush, below the box, is secured a ratchet-wheel 61, and swinging about this journal as a center is an arm 62, carrying a spring-pawl 63. A link 64 couples this arm to the fixed frame, and the to-and-fro movements of the eyelet-box cause the pawl to impart intermittent rotary movement to the brush in the box.

In the operation of setting the button the pointed clenching-plunger first descends through the aperture in the button and pierces the fabric or goods *y*, and the spindle carrying the securing-eyelet then rises until the hollow in its tip is engaged by the point of the plunger, when it ceases to rise farther. The

tubular anvil, however, continues to rise, pushing the eyelet upward over the plunger and driving it up through the fabric and the button and finally turning over and clenching its upper margin on the annular seat in the button, the concave clenching-shoulder on the plunger serving to effect this clenching. The straightening of the toggle 13, Fig. 3, is first effected by the treadle, and this toggle offers a rigid resistance to the yielding of the plunger in clenching. Then the eyelet is taken from the track and driven upward. It should be noted, however, that the movement of the plunger downward is coincident with the upward movement of the work-bed 27, so that the fabric is held and clamped firmly while the plunger is piercing it.

One of the most important features of this invention consists in the positive locking of the plunger when down, so that it cannot be driven upward by direct pressure from below, (this positive lock is the straightened toggle 13;) also, the positive locking of the supports 26 of the work-bed, so that they cannot be depressed by direct pressure from above. This positive lock comprises the toggle-plates 33 and their appurtenances. The work-bed is practically non-yielding, as the supports 26 cannot yield and the springs 29 are made strong enough to resist compression from the pressure due to piercing the goods. In consequence of these positive locks there is no possibility of the yielding of the parts when the eyelet is forced through the fabric and button and clenched.

The words "upward" and "downward" as here used in explaining the movements are merely employed in a descriptive sense. It is not important to my invention in what direction the movements are made. They might all be horizontal, for example.

I have described what I believe to be the best construction for the machine embodying my invention; but I do not limit myself in all respects to the specific features and constructions shown, nor, indeed, to the use of all of the parts and devices herein described, as some of these are in the nature of precautionary devices.

It may be said as to the boxes which form the magazines for the buttons, eyelets, or the like to be set in or on the fabric, that the mass of these articles rest on the partition 59 and pass down a few at a time into the compartment below, which contains the rotating brush 55, so that clogging is thereby prevented.

Having thus described my invention, I claim—

1. In a machine for the purpose specified, a work-bed, a perforating and clenching plunger, means for operating the same to perforate the fabric, means for locking the plunger in its advanced, perforating position in order that it may serve as a clenching device, means for feeding buttons to the setting-point at the plunger, means for feeding the securing-eyelets to the other side of the fabric and in alinement with the plunger, a yielding eyelet-spindle alined with the plunger, a tubular anvil embracing said spindle, and means for operating said spindle and anvil for driving the eyelet through the fabric and button, the eyelet being driven and clenched after the locking of the depressed plunger, substantially as set forth.

2. In a machine for the purpose specified, a work-bed, a perforating and clenching plunger, means for operating the same to perforate the fabric, means for locking the plunger in its advanced perforating position in order that it may serve as a clenching device, means for feeding buttons to the setting-point at the plunger, means for feeding the securing-eyelets to the other side of the fabric and in alinement with the plunger, a yielding eyelet-spindle alined with the plunger, a tubular anvil embracing said spindle, means for operating said spindle and anvil for driving the eyelet through the fabric and button, means, operating simultaneously with the plunger, and moving the work-bed to clamp the fabric during the setting operation, and means for positively locking the supports for the work-bed against depression during the setting operation, substantially as set forth.

3. In a machine for the purpose specified, the combination with a work-bed, a pointed piercing and clenching plunger, means for operating the latter to pierce the fabric, means for locking the said plunger in its advanced, perforating position, means for feeding the apertured buttons or the like into alinement with the plunger, and means operating substantially simultaneously with the plunger for moving the work-bed up to clamp the fabric, of means for positively locking the supports of the work-bed when elevated, and means for driving an eyelet up over the plunger and through the fabric and button and clenching the eyelet, substantially as set forth.

4. In a machine for the purpose specified, the combination with the perforating and clenching plunger and its guide, the toggle coupled thereto, the lever 11, the link coupling said lever to the knuckle of the toggle, means for operating said lever to straighten the toggle and form a positive lock for the plunger when it is depressed, means for feeding apertured buttons or the like into alinement with the plunger, a work-bed to support the fabric, and means operating substantially simultaneously with the plunger for moving the work-bed up to clamp the fabric, whereby the said plunger is operated to perforate the fabric and thereafter lock it in its advanced position in order that it may serve as a clenching device, of means for supplying the eyelets and driving them up over the plunger and through the fabric and button, substantially as set forth.

5. In a machine for the purpose specified, the combination with a pointed perforating and clenching plunger and its guide, means

for operating the latter to pierce the fabric, means for locking the said plunger in its advanced, perforating position, means for supplying apertured buttons or the like to a position of alinement with the plunger, a work-bed to support the fabric, and means for moving said bed upward substantially simultaneously with the descent of the plunger, means for locking the supports of the elevated bed against depression, of a sliding block 21 and its guide, means for moving said block upward under the work-bed, the tubular anvil 23 in said block, the eyelet-spindle 24, in the hollow of said anvil, its spring 25, and means for feeding the eyelets into the path of said spindle, substantially as set forth.

6. In a machine for the purpose specified, the combination with the plunger 14 and its guide, the toggle 13, coupled to said plunger, the lever 11, having in it the slot 10 with a shoulder 10^a, the link coupling the upper end of said lever with the knuckle of the toggle, the operating-rod 7, coupled to the free end of a rocker 8, the said rocker, and a stud 9 in said rod engaging the slot and shoulder in the lever, of a work-bed, means for supplying buttons into alinement with the plunger over the work-bed, and means for supplying and setting the securing-eyelets, substantially as set forth.

7. In a machine for the purpose specified, the combination with means for supporting and holding the fabric, for piercing the latter, for advancing a clenching-plunger, for locking the said plunger in its advanced position during the clenching operation, and for supplying buttons or the like to be set, of the block 21 and its guide, the rod 7 and link 20 for operating said block, the tubular anvil 23, set in said block, the eyelet-spindle 24 and its spring, said spindle being carried by said block and occupying the bore in the anvil, the eyelet-track and box slidably mounted, and means between the block 21 and said track whereby the former, in its upward movement, moves back the track, substantially as set forth.

8. A machine for the purpose specified having the following instrumentalities, namely, the fixed guide 22, the block 21 slidably mounted in said guide and having the slots 31, with cam-like branches 31^a, the column-like supports 26 mounted in said block, the toggle-plates 33, pivotally mounted on said supports through said slots 31 and bearing on the guide 22, said plates being each provided with a stud 34 which engages the slot, the work-bed mounted on said supports 26, and means for moving said block 21 in its guide, substantially as set forth.

9. A machine for the purpose specified having the following instrumentalities, namely, the eyelet-box, a track 36 carrying said box, the slide 39 and its guides, the eyelet-track being secured to said slide, the rocker 42, connected by a slotted coupling to said slide and having a jaw 43, the sliding block 21 having a stud or projecting part 45 to engage said jaw, and an automatic detent to prevent the return of the slide 39, said detent being actuated for disengagement by the block 21, substantially as set forth.

10. A machine for the purpose specified having the following instrumentalities, namely, a plunger and its guide, a toggle for operating said plunger, the lever 11, the link coupling said lever to the toggle, means for operating said lever to straighten the toggle, a rocker 42 having a hook 42^a to engage a stud 49 in the lever and hold the lever against movement, and means for operating the said rocker, substantially as set forth.

11. A machine for the purpose specified having the following coacting instrumentalities, namely, a plunger and its guide, a toggle for operating said plunger, a main toggle-operating lever, a link coupling one arm of said lever to the knuckle of the toggle, a rocker, means for operating said lever and rocker, and means coöperating with the said lever and rocker whereby the latter locks the former in position after the toggle is straightened for advancing the plunger.

12. A machine for the purpose specified having the following instrumentalities, namely, a fixed guide, a block slidably mounted in said guide, a tubular anvil fixed in said block, means for moving said block, a movable work-bed, and means, actuated by said block during the initial portion of its upward movement, for moving said work-bed a limited distance and for locking it when moved, substantially as set forth.

13. In a machine of the character specified, an inclined box or reservoir to contain buttons or the like to be supplied to the machine, said box having a hopper-like inlet at its upper end, an oscillating brush in a semicircular compartment at its lower end, a lateral outlet for the buttons from the brush-compartment, and a substantially level apertured partition 59 between the inlet and the brush-compartment, in combination with the track which receives buttons from the box, substantially as set forth.

In witness whereof I have hereunto signed my name, this 24th day of September, 1901, in the presence of two subscribing witnesses.

EDWIN BALL STIMPSON.

Witnesses:
HENRY CONNETT,
PETER A. ROSS.