

No. 643,937.

Patented Feb. 20, 1900.

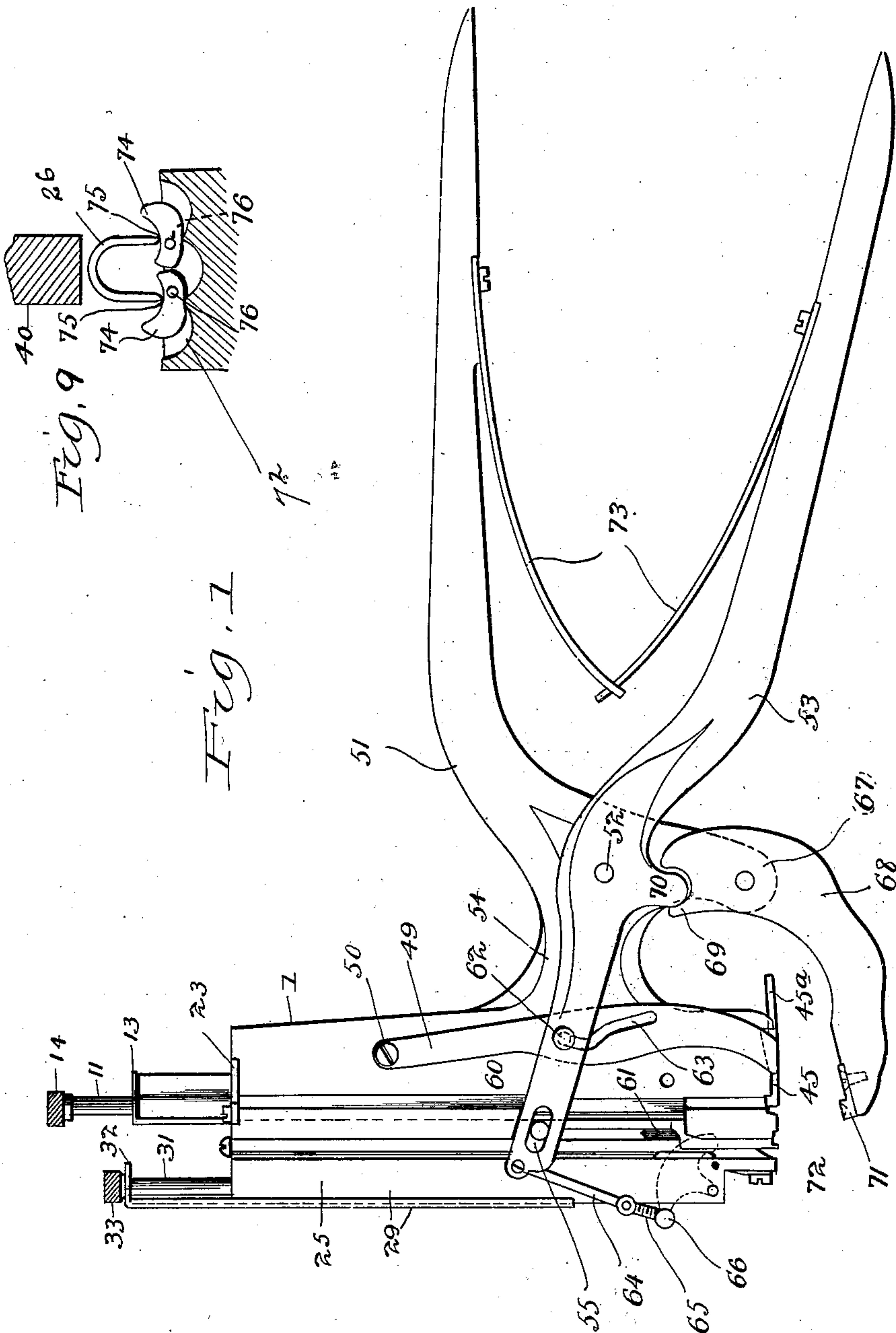
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MACHINE FOR ATTACHING HOOKS AND EYES.

(Application filed Oct. 10, 1898.)

(No Model.)

2 Sheets—Sheet 1



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# UNITED STATES PATENT OFFICE.

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## MACHINE FOR ATTACHING HOOKS AND EYES.

SPECIFICATION forming part of Letters Patent No. 643,937, dated February 20, 1900.

Application filed October 10, 1898. Serial No. 693,111. (No model.)

*To all whom it may concern:*

Be it known that I, LOTTIE A. BOGGS, a citizen of the United States, residing at Lincoln, in the county of Lancaster and State of Nebraska, have invented certain new and useful Improvements in Machines for Attaching Hooks and Eyes, of which the following is a full, clear, and exact specification.

My invention relates to a machine for attaching hooks and eyes, and has for its primary object to provide improved means for readily attaching the same by means of staples, whereby the slow operation of sewing will be avoided and greater security also insured.

A further object of my invention is to provide a device for attaching hooks and eyes that may be readily operated by one hand to place and attach the hook or the eye, as the case may be, thus leaving the other hand of the operator free to handle the garment or goods to which the hooks and eyes are to be attached.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a side elevation of my improved device. Fig. 2 is a vertical longitudinal sectional view thereof. Fig. 3 is a similar section on an enlarged scale, the anvil-carrying jaw and other parts hereinafter described being omitted. Fig. 4 is a transverse section taken on the irregular line 4 4, the staple-feeder being in its normal position. Fig. 4<sup>a</sup> is a detail of the staple-feeder. Fig. 5 is a bottom view with the anvil-carrying jaw omitted and the handle and operating-lever also omitted. Fig. 6 is a vertical longitudinal section of the magazine for carrying the hooks, the slide which closes one side thereof being elevated. Fig. 7 is a view looking at right angles to Fig. 6, also showing the slide elevated. Fig. 8 is a transverse section taken on the line 8 8, Fig. 6; and Fig. 9 is a modification hereinafter explained.

1 represents a frame or stock which is vertically elongated and in one side of which is secured a block or plate 2, which forms one

side of a vertically-elongated socket 3 in the stock 1, and in which socket may be placed the magazine for either the hooks or the eyes, which are adapted to be inserted into the socket 3 from the upper end thereof, as more clearly shown in Figs. 2 and 4. In these two figures of the drawings, as well as in Figs. 1 and 3, is shown the magazine for the eyes only; but inasmuch as the thread-eyes of both the hooks and the eyes are of substantially the same formation and dimensions the barrel 4 of the eye-magazine differs in contour from the barrel 5 of the hook-magazine only as the eye differs from the hook, the rear part or side of the hook-magazine being elongated, as shown in Fig. 8, to accommodate the hook portion and the socket 3 of the stock 1 being similarly enlarged, as shown in Fig. 4, to accommodate this elongated part of the hook-magazine. Both the hook-magazine and the eye-magazine, therefore, have shoulders 6, which fit around the thread-eyes, and the socket 3 is provided, as shown in Fig. 4, with complementary shoulders which fit the shoulders 6, and thus hold the magazine firmly against the plate 2. The side of the magazine contiguous to the plate 2 is closed by a removable slide 7, which has its edges lapped over the edges of the barrel 4 of the eye-magazine, the corresponding side of the hook-magazine being closed by a similar slide 8, attached to the barrel in a similar manner, and the socket 3 being provided with a groove, as clearly shown in Fig. 4, in which the edges of the slides 7 8 fit when the magazine is inserted in the socket 3. The eyes, which are shown at 9 in Figs. 2, 3, and 4, are arranged in their magazine transversely and placed one upon another, they being inserted through the open side when the slide 7 is elevated, the magazine having been previously withdrawn from the socket 3, and they are held in a compact form and against the bottom of the magazine by a follower 10, which is secured to the end of a follower-rod 11, projecting upwardly through the top of the magazine-barrel 4 and has sleeved thereon a coiled spring 12, which abuts against the top of such barrel and presses the follower 10 downward against the eyes. The slide 7, if desired, may be provided with an overhanging flange 13, through which the follower-rod 11 also passes, so that when the slide 7 is elevated it will



also elevate the follower-rod by engaging under a head 14 thereon. The magazine for the hooks is provided with a similar follower 15, attached to a follower-rod 16, upon which is  
 5 sleeved a similar spring 17, the rod passing through a flange 18 on the slide 8, as before described with reference to the eye-magazine, the only difference being that the follower 10 of the eye-magazine is substantially flat, so as to rest squarely upon the stack of eyes, while the follower 15 is provided on each side with a foot-piece 19, which rest, respectively, upon the thread-eyes of the hooks, the main part of the follower resting upon the upturned  
 15 hook 21, which passes between the pieces 19, when the hook is withdrawn. The hook and eye magazines are each provided on one side with a notch 22, in which engages a pivoted latch 23, which constitutes a lock for holding  
 20 the magazine against withdrawal from its socket 3.

In the side of the plate 2 opposite that upon which the slide 7 is located is formed a vertical channel 24, whose outer side is closed by  
 25 a vertically-elongated block 25, dovetailed or otherwise secured to the plate 2, as clearly shown in Fig. 4, thus constituting a chute for the reception of the staples preparatory to being driven. The staples are shown at  
 30 26, and they are arranged in a staple-holder formed longitudinally in the block 25 and preferably consisting of a channel 27, containing a bar 28, which the staples straddle, the latter being inserted through the side of  
 35 the channel 27 when a slide 29, closing the same, is elevated. The staples rest upon one another at substantially right angles to the staple-chute 24 and are held in a compact form by a follower 30, which is elongated  
 40 lengthwise of the bar 28 and saddled over such bar, so as to fit against the staples and follow them down to the end of their channel 27. This follower 30 is provided with a follower-rod 31, extending upwardly through the  
 45 staple-holder and also through a flange 32 on the slide 29, so that when the slide 29 is raised the flange will strike a head 33 on the follower-rod 31, and thereby lift the follower, with the slide, and expose the bar 28 for the reception of a fresh supply of staples. The slide  
 50 29 is fitted to the staple-holder by being provided with overlapping flanges 34, which engage over outwardly-extending flanges 35 on the sides of the staple-holder.

55 Arranged immediately at the lower end of the bar 28 is a staple-feeder for conveying the staple from its holder to the staple-chute 24. This feeder preferably consists of a segment 36, pivoted at 37 between portions 38, formed on the block 25, and being so arranged as to always project across the staple-holder, and thereby enable the staples to rest against it, and its arc of oscillation is such that it will be at a tangent to the staple-chute  
 60 24. The face of the segment at one end is provided with a depression or imprint 39, (see

Fig. 4<sup>a</sup>,) which is complementary in shape to the staple and which when the staple-feeder 36 is in its normal position, with the imprint 39 in the staple-holder, will receive the lower-  
 70 most one of the staples and permit the same to descend below the lower end of the bar 28, while the plain face of the segment 36 will hold all the other staples up in place against the bar 28. The staple-feeder 36 having been  
 75 permitted to return to its normal position to receive one of the staples from the holder will, if oscillated to the position shown in Figs. 2 and 3, carry such staple into the staple-chute 24 and deposit it directly under the staple  
 80 driver or plunger 40, which is located in the upper end of the chute 24. The arc of the segment 36, it will be seen, cuts into the side of the chute 24, so that when the segment 36 is in the position shown in Figs. 2 and 3 it  
 85 will constitute one side of such chute. In order to insure against the staple hanging in the imprint 39 when the segment 36 is in the position shown in Fig. 3, I provide the segment with an ejector consisting of a pivoted  
 90 lever 41, having a point or finger projecting out through the imprint 39, and a weighted end arranged to strike against a yielding abutment or spring 42 when the segment 36 comes down into the position shown in Fig.  
 95 3, thus causing the finger or point of the lever 41 to kick the staple 26 out of the imprint into the chute 24, where it is yieldingly retained in readiness to be driven by small leaf-springs 43, arranged on opposite sides of  
 100 the chute 24. The lower end of the plunger or driver 40 is notched, as shown at 44, so as to avoid the possibility of the staple being crowded to one side and forced through the opening left by the segment 36 when the lat-  
 105 ter turns back to receive another staple.

As the staples are successively deposited in the chute 24 the hooks or the eyes, as the case may be, are advanced one at a time from their magazine directly under the staple and  
 110 in such a position that the legs of the staple will pass through the thread-eyes of the hook or eye. This is accomplished by an ejector 45, arranged to vibrate back and forth immediately under the end of the socket 3. This  
 115 ejector 45 is provided with upwardly-extending beveled claws 46, which project into the hook or eye magazine through notches 47, formed in the lower end thereof through the enlarged shoulders 6, so that the claws 46 will  
 120 engage directly behind the thread-eyes and force the hook or the eye laterally from the magazine, the lower end of the slides 7 and 8 being cut away to permit a single hook or a single eye to pass out without carrying the  
 125 others with it, as shown at 48. This cut-away portion at the end of the slides 7 or 8 is complementary in shape to the transverse section of the hook or the eye. As the hook or the eye is advanced toward the plunger the body  
 130 portion of the hook or the eye is supported by the ejector 45, while the thread-eyes are of



course protruded beyond the end of the ejector and held in position for the downward passage of the legs of the staple.

The ejector 45 makes its advancing movement with the hook or the eye while the plunger 40 is descending, and while these movements are taking place the staple-feeder 36 is making its return movement for the reception of another staple. The ejector 45 is supported by a pair of swinging arms 49, which are arranged on opposite sides of the frame 1 and pivoted thereto at 50. The frame 1 is provided with a handle 51, to which is pivoted at 52 a lever 53, having a bifurcated end forming two arms 54, which straddle the frame 1 and each of which is provided with a slot 55, in which engage lugs 60, projecting through slots 61 in the sides of the plunger-chute 24 and being secured to the plunger 40. Each of the arms 54 is also provided with a lug 62, which engages in cam-slots 63, formed in the arms 49, respectively, and being of such formation that when the lever 53 is pressed toward the handle 51 the ejector 45 will be advanced until the thread-eyes of the device to be attached come under the legs of the staple and will remain in this position until the plunger has completed its downward stroke. One of the arms 54 is provided with jointed connection with one end of the segment 36, consisting of a link 64 pivoted to a rod 65, which is screw-threaded in an arm 66 projecting from the side of the segment, the rod 65 being threaded for the purpose of permitting of adjustment.

The handle 51 is provided with a lug 67, to which is pivoted a jaw 68, having a notch or socket 69, in which engages a knee 70, formed on the lever 53, so that when the lever is oscillated the jaw will partake of a like oscillation and an anvil 71, carried on the end of the jaw, will be forced upwardly toward the descending plunger. The anvil 71 is provided with cavities 72, into which the points of the staple engage and by which such points are clenched or turned upwardly into or against the goods, which are placed between the jaw 68 and the end of the staple-chute. The lower end of the socket 3 for the reception of the magazines is open to permit the magazine to come down into proper position, and in order to avoid the possibility of the goods being crowded up unduly against the bottom of the magazine or becoming entangled with the ejector 45 the latter is provided with a heel-piece 45<sup>a</sup>, which covers the lower end of the socket 3 when the ejector 45 advances.

The lever 53 is forced away from the handle 51 by a pair of springs 73.

In Fig. 9 I have shown a modified form of the anvil. In some instances it might be found that the points of the staple cannot, by means of the anvil 71, be turned sufficiently into the goods. It may therefore be desirable to compose the anvil of two separate pivoted blocks 74, each having a cavity 75 in its up-

per face, which receives one of the points of the staple as the latter descend and turns such point outwardly. As the pressure of the plunger increases and the points spread farther apart the inner ends of the blocks 74 descend and their outer ends rise, and consequently carry the points of the staple up into the goods. The blocks 74 are pivoted at 76 in a cavity in the jaw 68, so that the pressure of the plunger upon their inner ends will cause their outer curved ends to bend or curve the points of the staple upwardly into the goods.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. A machine for attaching hooks and eyes having in combination a magazine for the devices to be attached, a staple-holder, a staple-chute, a circular feeder for conveying the staple from the staple-holder to said chute, arranged contiguous to and constituting one side of said chute, a plunger in said chute, an anvil opposite the end of said chute and means for conveying the device to be attached from said magazine into line with the plunger, substantially as set forth.

2. A machine for attaching hooks and eyes having in combination a magazine for the devices to be attached having a side opening for the exit of the device to be attached and a foot-piece under said opening for supporting the device to be attached, staple-driving mechanism, and means for ejecting the devices to be attached through said side opening toward said staple-driving mechanism, having claws projecting toward the magazine beyond said foot-piece and into said side opening so as to engage with the device to be attached, substantially as set forth.

3. A machine for attaching hooks and eyes having in combination a magazine for the devices to be attached, a staple-holder arranged parallel with said magazine, a staple-chute and a plunger or driver in said chute arranged between and parallel with said staple-holder and magazine, means for feeding the staples to said chute, means for advancing the devices to be attached into line with said plunger, and an anvil, substantially as set forth.

4. A machine for attaching hooks and eyes having in combination a staple-holder, a staple-chute, a feeder for conveying the staples from said holder to said chute, having an imprint for the reception of the staple, means for driving the staple, means for holding the device to be attached opposite the staple-driving means and an anvil for clenching the staple, substantially as set forth.

5. A machine for attaching hooks and eyes having in combination a staple-holder, a staple-chute, a rotary feeder arranged across said staple-holder for conveying the staples therefrom to said chute, and having a depression for the reception of the staple, means for driving the staple, means for holding the



device to be attached opposite the staple-driving means, and an anvil for clenching the staple, substantially as set forth.

6. A machine for attaching hooks and eyes  
5 having in combination a staple-holder, a staple-chute, a feeder arranged across said staple-holder and having a depression for receiving the staple, an ejector in said feeder for throwing the staple from said depression  
10 into said chute, means for driving the staple from said chute, means for holding the device to be attached and an anvil for clenching the staple, substantially as set forth.

7. A machine for attaching hooks and eyes  
15 having in combination a staple-holder, a staple-chute, a feeder arranged across the staple-holder for conveying the staple to said chute, having an imprint for the reception of the staple, a pivoted ejector carried by said  
20 feeder and having one end arranged in said imprint, a yielding abutment for engaging with the other end of said ejector for forcing the staple from said imprint, means for driving the staple from said chute, means for  
25 holding the device to be attached and an anvil for clenching the staple, substantially as set forth.

8. A machine for attaching hooks and eyes having in combination a staple-holder having  
30 a bar which the staples straddle, a spring-follower saddled over said bar and pressing against said staples, a staple-chute, a feeder for conveying the staples from said holder to said chute, arranged across said holder and  
35 against which feeder the staples are pressed by said follower, means for driving the staple from said chute, means for holding the device to be attached, and an anvil for clenching the staple, substantially as set forth.

9. A machine for attaching hooks and eyes  
40 having in combination a staple-holder, a staple-chute, a rotary feeder for conveying the staple from said holder to said chute, located across said staple-holder and having its arc  
45 of rotation arranged tangentially to said staple-chute, means for driving the staple from said chute, means for holding the device to be attached, and an anvil for clenching the staple, substantially as set forth.

10. A machine for attaching hooks and eyes  
50 having in combination a staple-holder for a plurality of staples, a magazine for the devices to be attached, a staple-chute arranged between and lengthwise of said holder and magazine, a rotary staple-feeder extending across

the staple-holder and arranged with the chute at a tangent thereto, a plunger or driver in said chute, means for automatically advancing the device to be attached into line with  
60 said driver and an anvil arranged opposite said driver, substantially as set forth.

11. A machine for attaching hooks and eyes having in combination a magazine for the  
65 devices to be attached, the staple-driving mechanism, an ejector for conveying the device to be attached from its magazine to the staple-driving mechanism, a lever for operating the staple-driving mechanism, a swinging  
70 arm supporting said ejector, said arm and lever having pin and cam slot connection, and an anvil for clenching the staple, substantially as set forth.

12. A machine for attaching hooks and eyes having in combination a magazine for holding  
75 the eye, whose cross-section is complementary in shape to the eye, said magazine being provided at its lower end with a side opening and with vertical openings in the larger part of its cross-section, an ejector for forcing the  
80 eye from said magazine, having claws adapted to engage with the shoulders of the eye through said vertical openings, staple-driving mechanism to which the eye is advanced by said ejector, and an anvil, substantially as set  
85 forth.

13. A machine for attaching hooks and eyes having in combination a staple-holder, a staple-chute, a plunger in said chute, a pivoted  
90 segmental feeder for conveying the staple from said holder to said chute, a magazine for the devices to be attached, a pivoted jaw provided with an anvil, an ejector for advancing the devices to be attached into line with said plunger, a lever having pin-and-  
95 slot connection with said ejector and also with said plunger and a jointed connection with said jaw and also with said segmental feeder, substantially as set forth.

14. A machine for attaching hooks and eyes  
100 having in combination a plunger, means for holding the device to be attached, and an anvil provided with tilting members having their inner ends arranged under and depressible by said plunger and their outer ends upwardly deflectable, substantially as set forth. 105

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