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MAGAZINE AND FEED MEANS FOR STAPLING MACHINES

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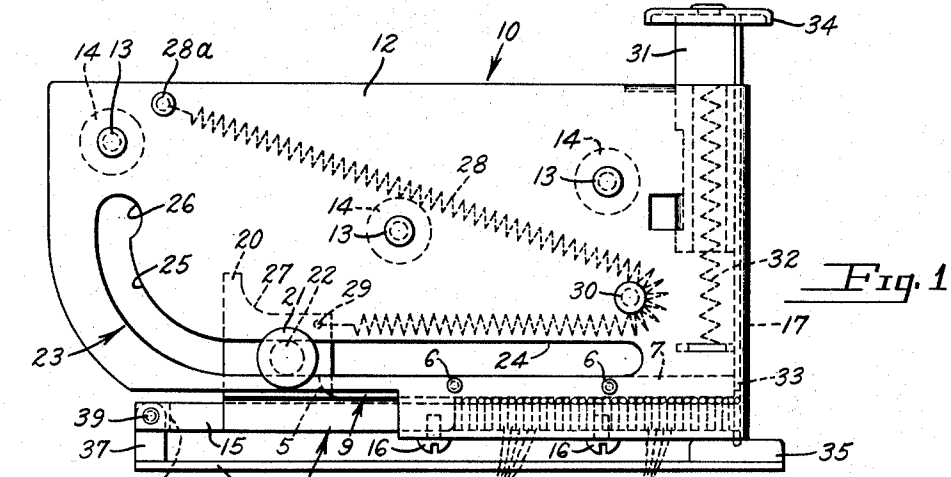


Fig. 1

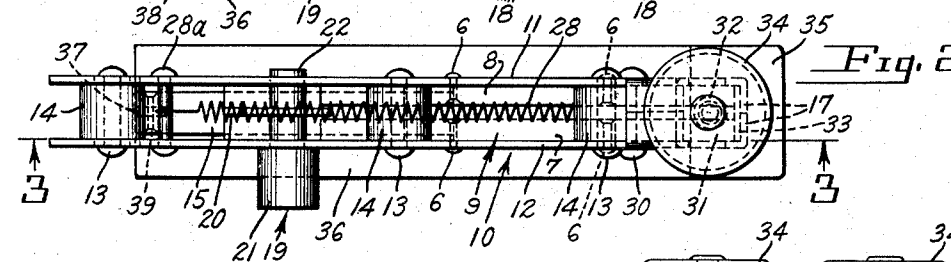


Fig. 2

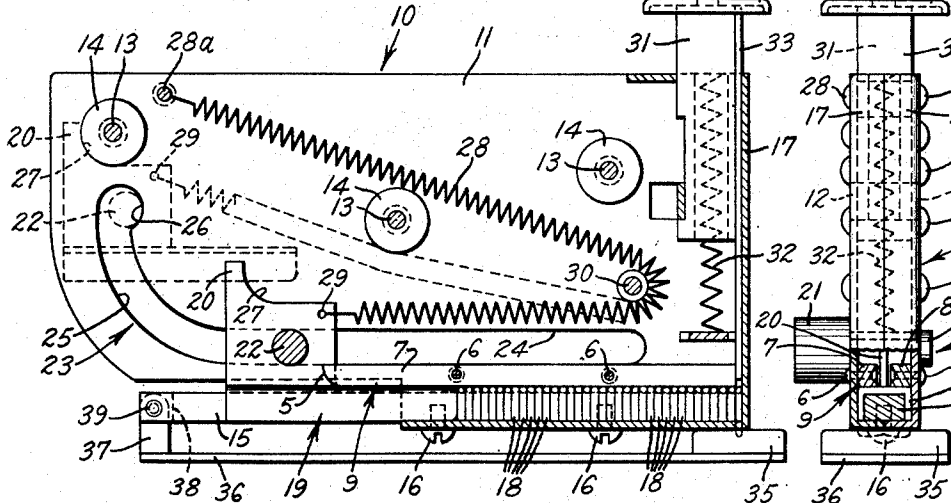


Fig. 3

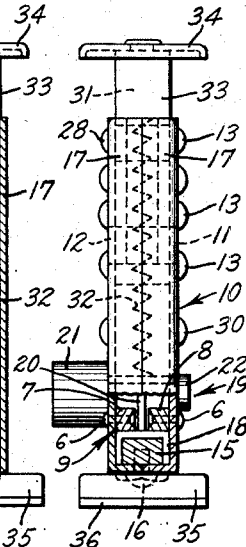


Fig. 4

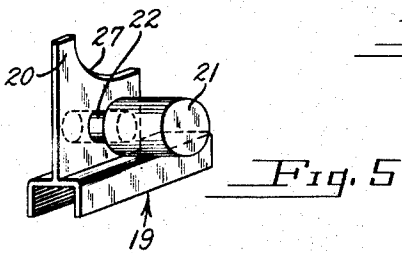


Fig. 5

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MAGAZINE AND FEED MEANS FOR STAPLING MACHINES

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9 Claims. (Cl. 1—3)

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This invention relates to new and useful improvements in staple driving machines.

Objects of the invention are to provide a staple driving machine of simple and rugged construction and to provide one wherein the loading of the machine with staples is made relatively easy.

Other objects and advantages of the invention will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawing wherein a satisfactory embodiment of the invention is shown. However, it is to be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claims.

In the drawing:

Fig. 1 is a side elevational view of the staple driving machine of the invention;

Fig. 2 is a top plan view thereof;

Fig. 3 is a sectional view taken along the plane of the line 3—3 of Fig. 2;

Fig. 4 is a front end elevational view of the machine with parts broken away; and

Fig. 5 is an isometric view of the follower employed in the machine.

The present application is a division of my application Serial Number 702,958 filed October 12, 1946.

Referring in detail to the drawing, my improved staple feeding and staple driving means, as therein disclosed, is generally designated 10. Such means comprises flat inner and outer side plates 11 and 12 secured together by pins or rivets 13 and held in spaced parallel relation by means of spacers 14 located on such pins or rivets between such side plates. Between the lower edges of the plates 11 and 12 is a rail 15 secured in place and to the plates by rivets or screws 16. This rail extends to a point adjacent a forward wall 17 of the means 10, which forward wall is formed by turning in or toward one another the forward end portions of the plates 11 and 12. The lower rear portions of such plates are cut away whereby the rear end portion of the staple rail 15 is exposed, as clearly shown in Figs. 1 and 3.

In the drawing, a series of staples 18 are shown as straddling the rail 15. Also, straddling said rail, but in the rear of such staples, and constantly urging them toward the front end of the rail is a follower 19 including an upwardly extending block portion or web-like portion 20 located between the mentioned side plates. A finger piece 21 includes and is rigid with a stem 22

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passing through aligned slots 23 in the side plates 11 and 12 and rigidly connected with the block or web 20. Obviously, the finger piece is movable with the follower 19 or conversely such follower is movable with said finger piece.

A staple and follower guide 9 is located between the side plates 11 and 12 in parallel slightly spaced relation to the upper side of the rail 15. Such guide is spaced above the rail a distance substantially equal to the diameter of a staple crown or the thickness of the stock of the bight portion of the follower body and comprises a pair of bars 7 and 8 secured to the respective side plates by rivets or the like 6. The bars are in spaced parallel relation and have their forward ends flush with the forward end of the rail 15 and their rear ends are curved as at 5 and stop considerably short of the rear end of the rail. In the forward positions of the follower 19, the block or web 20 extends between the bars 6 and 7 of the guide 9 and that is the reason the guide is made up of the two spaced bars.

Attention is directed to the fact that the slots 23 include straight portions 24 which are parallel with the upper surface of the rail 15 and the slots further include rear upwardly curved portions 25. When the staples 18 are to be loaded onto the rail 15, the finger piece 21 is used to slide the follower rearwardly and in such case the stem 22 is simply moved rearwardly and then slides upwardly in the curved portion 25 of the slot to carry the follower to an out-of-the-way position.

In the mentioned out-of-the-way position, the follower is entirely clear of the rail and is located as shown by the dotted lines in Fig. 3. There it will be noted that the stem 22 of the finger piece is located in a lateral extension 26 of the curved portion 25 of the slot and that the upwardly extending block or web portion 20 of the follower has its curved edge portion 27 about a spacer 14.

As the follower is being so lifted there is a tendency for it to turn in a clock-wise direction with the stem 22 as a fulcrum. However, the operator in shifting the follower has a hold on the finger piece 21 and restrains the follower against such tendency until the upper portion of the web 20 is about the spacer and the stem 22 in the offset. As this latter portion of the movement takes place, the follower portion 20, or the curved edge 27 of such follower portion, engages the round spacer 14 and thereafter additional upward movement of the follower results in the latter reaching the dotted line position of Fig. 3.

There it will be observed that the follower is being held in a horizontal position by engage-

ment of the stem 22 in the lateral extension or enlargement 26 of the slot portion 25 and engagement of the surface or edge 27 of part 20 with one spacer 14. Thus, the follower is entirely clear of the rail 15 and it is again mentioned that the rear end portion of said rail is exposed below the rear portions of the side walls or plates 11 and 12. A long coil spring 28 through its pull on the follower maintains the latter in the described position, holding it in engagement with the mentioned spacer and with stem 22 in the off-set 26.

It is noted that the follower is of considerable length whereby to insure feeding of the last staple from the rail 15. Therefore, it is desirable that the follower be maintained in the horizontal position shown by the dotted lines in Fig. 3 when staples are to be placed on the rail. If the follower is permitted to tilt, its free end portion will swing down toward the rail and interfere with a staple loading operation.

The long coil spring 28 is anchored at one end to a pin 28a extending between the upper rear portions of the side plates 11 and 12 and has its other end connected with the extension 20 of the follower at 29. A suitable guide roller 30 is provided for the coil spring whereby it extends from the connection 28a forwardly between the plates 11 and 12 over the guide roller 30 and then rearwardly to its connection with the extension or web 20. With this construction, it will be understood that the spring 28 is constantly urging the follower forwardly along such rail 15.

The place 29 of the attachment or connection of the spring to the follower is offset from the axis of the stem 22 of the finger piece 21, being forwardly of and above such stem. Thus, the spring 28 tends to rock the follower in a clockwise direction about the axis of the stem 22, or in a direction to engage the forward end of the follower with the top of the rail 15. This tendency is resisted by engagement of the curved edge 27 of web 20 with the spacer 14 when the follower is in the out-of-the-way position shown by the dotted lines in Fig. 3.

When staples have been loaded onto the rail 15, the operator then grasps the finger piece 21 and turns the same, and thus the entire follower 19, in a counter clockwise direction rolling the stem 22 out of the notch 26 and shifting the curved edge 27 of the web 20 from the separator 14. The operator retains hold on the finger piece and lowers the follower. At this time, the spring 28 is pulling on the follower and if the latter is released will snap it into place on the rail. However, as the operator keeps control he permits the stem 22 to move down through the curved portion 25 of slot 23 and at this time the follower tilts, rocking in a clockwise direction.

As the lowering or return movement of the follower continues, the forward lowermost edge of the follower engages the rail 15 just rearwardly of the guide 9 and slides under the curved rear end 5 of the latter as the lowering or return movement continues. This insures return of the follower to its proper position where it is held in position on the rail 15 by the guide 9, the latter serving to restrain both the follower and the staples 18 against upward movement off said rail.

In the forward end portion of the housing formed by the plates 11 and 12 is a vertically reciprocable plunger 31 normally held in elevated position by a coil spring 32 and carrying a plate-like driver 33. When the plunger 31 and the driver 33 are in raised or normal position as in

Figs. 1, 3 and 4, the forwardmost staple 18 from the rail 15 is moved into the raceway under the driver 33 by the urging of the spring 28 acting through the follower 19. Then, the next time the plunger is depressed the driver drives or forces such staple down through the raceway and out of the lower end thereof for use as will later appear. On the plunger 31 being thereafter released, the spring 32 raises it and the driver 33 upwardly clearing the raceway whereby the next staple 18 on the guide bar may move into the raceway.

While the plunger 31 may be operated in any suitable manner, it is here shown as provided at its upper end with a knob or button-like hand piece 34 which may be struck by the palm of the hand or on which the palm of the hand may be placed for a slow steady push-like depression of the plunger. A staple driven by the plunger may simply pass through an address tag or card or the like to staple it to a container or the staple may be driven through papers or the like and then clinched to secure such papers or the like together. In the latter instance, the papers or the like to be stapled together are placed on an anvil block 35 located on the upper side of the forward end portion of a base member 36, which latter at its rear includes a post-like vertical portion 37 entering into a notch 38 in the guide bar 15 and therein secured as on a pivot 39.

With this construction, it will be clear that the mounting of the base leaves the sides and top of the guide bar in their normal condition and that the base is mounted for pivotal movement to carry the anvil block 35 away from the housing of the staple driver or the staple driver may be rocked on the pivot 39 to carry the lower end of its raceway away from the anvil block 35. The anvil block may be of any or the usual construction to provide for the clinching of the staple whereby permanent fastening results or it may spread the legs of the staple to provide a pin-like temporary securing means.

Having thus set forth the nature of my invention, what I claim is:

1. In a staple applying implement, a pair of flat plates, means connecting and maintaining said plates in spaced parallel relation, said plates including depending extensions located toward their forward ends and stopping short of their rear ends, a staple rail between said extensions, a follower on said rail for urging staples therealong, said rail of a length whereby at its rearward end it projects beyond said plate extensions and is exposed below the lower edges of the rearward portions of said plates for ease in mounting staples and said follower thereon.

2. In a staple applying implement, a pair of flat plates, means connecting and maintaining said plates in spaced parallel relation, a staple guide rail between the lower portion of said plates, a follower on said rail for urging staples therealong, one of said plates having a slot therein including a portion in spaced parallel relation with said rail and a rear upwardly curved portion, a finger piece connected with said follower and passing through said slot for use in retracting the follower and shifting the same rearwardly off the rail, a rigid means between said plates and spaced upwardly with respect to said rail, and an extension on said follower to engage said rigid means when said finger piece is at the upper end of the curved portion of said slot whereby to support the follower in position spaced from said rail.

3. In a staple applying implement, a pair of flat plates, means connecting and maintaining

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said plates in spaced parallel relation, a staple guide rail between the lower portions of said plates, a follower on said rail for urging staples therealong, said rail at its rearward end exposed below the lower edges of the plates for ease in mounting staples and said follower thereon, one of said plates having a slot therein including a portion in spaced parallel relation with said rail and a rear upwardly curved portion, a finger piece connected with said follower and passing through said slot for use in retracting the follower and shifting the same rearwardly and upwardly off the rail, a rigid means between said plates and spaced upwardly with respect to said bar, and an extension on said follower to engage said rigid means when said finger piece is at the upper end of said curved portion of said slot whereby to support the follower in a position spaced from the rail.

4. In a staple applying implement, a pair of flat plates, means connecting and maintaining said plates in spaced parallel relation, a staple guide rail between the lower portions of said plates, a follower on said rail for urging staples therealong, a guide between said plates toward the forward end portions thereof, a long coil spring connected at one end to said follower carried about said guide and anchored at its other end, one of said plates having a slot therein including a portion in spaced parallel relation with said rail and a rear upwardly curved portion, a finger piece connected with said follower and passing through said slot for use in retracting the follower and shifting the same rearwardly off the rail, a rigid means between said plates and spaced upwardly with respect to said bar, and an extension on said follower to engage said rigid means when said finger piece is at the upper end of the curved portion of said slot whereby to support the follower in position spaced from said rail.

5. In a staple applying implement, a pair of flat plates, means connecting and maintaining said plates in spaced parallel relation, a staple guide rail between the lower portions of said plates, a follower on said rail for urging staples therealong, a guide between said plates toward the forward end portions thereof, a long coil spring connected at one end to said follower carried about said guide and anchored at its other end, one of said plates having a slot therein including a portion in spaced parallel relation with said rail and a rear upwardly curved portion, a finger piece connected with said follower and passing through said slot for use in shifting the follower rearwardly along the rail and then upwardly off the same as said finger piece is shifted rearwardly and then upwardly in said slot, a rigid means between said plates and spaced upwardly with respect to the upper end of the curved portion of said slot, said slot having a lateral notch at its upper end to receive a portion of said finger piece when the same is shifted to the upper end of said slot, an extension on the upper side of said follower to engage said rigid means when said finger piece is at the upper end of the curved portion of said slot, and a coil spring connected at one end with said follower in offset relation to said finger piece and extending forwardly of said follower

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when the same is in said upper position to retain the same in said upper position with said portion of the finger piece in said notch and said extension against said rigid means.

6. The device as in claim 5 wherein said finger piece is rigid with said follower and said portion of said finger piece comprises a transversely round stem.

7. The staple applying implement as in claim 5 including a staple and follower guide above and parallel with the forward portion of said staple guide rail, said guide having a curved rear end portion stopping short of the rear end of said staple guide rail and located to have said follower enter thereunder as the follower tilts in a clockwise direction and said finger portion moves downwardly in the curved portion of said slot as the follower is being returned to position on said staple guide rail.

8. The staple applying implement as in claim 5 including a staple and follower guide above and parallel with the forward portion of said staple guide rail, said guide having a curved rear end portion stopping short of the rear end of said staple guide rail and located to have said follower enter thereunder as the follower tilts in a clockwise direction and said finger portion moves downwardly in the curved portion of said slot as the follower is being returned to position on said staple guide rail, and said staple and follower guide longitudinally divided whereby said follower extension may enter the same as the follower moves along said staple guide rail.

9. In a staple applying implement, a pair of spaced side plates, said plates toward their forward ends having downwardly directed extensions and having the edge portions of said extensions inturned into substantially abutting relation, spaced rivets passing through the upper portions of said plates, spacers on said rivets between said plates and against which the rivets are clamping the plates whereby the latter are secured together in spaced parallel relation, a staple guide rail between the extensions of said plates, means securing said guide rail against the inturned edge portions of said extensions with the sides of said guide rail in spaced relation to said plates and with said guide rail extending beyond the rear edges of said extensions, and means to feed staples along said guide rail.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,244,695	Blumenthal	Oct. 30, 1917
1,599,774	Kuch	Sept. 14, 1926
2,042,958	Pankonin	June 2, 1936
2,150,332	Maynard	Mar. 14, 1939
2,298,123	Harred	Oct. 6, 1942
2,312,142	Abrams	Feb. 23, 1943

FOREIGN PATENTS

Number	Country	Date
561,308	Germany	Oct. 13, 1932