Sept. 15, 1953 T. M. SASSER 2,651,775

ELECTRICAL STAPLER

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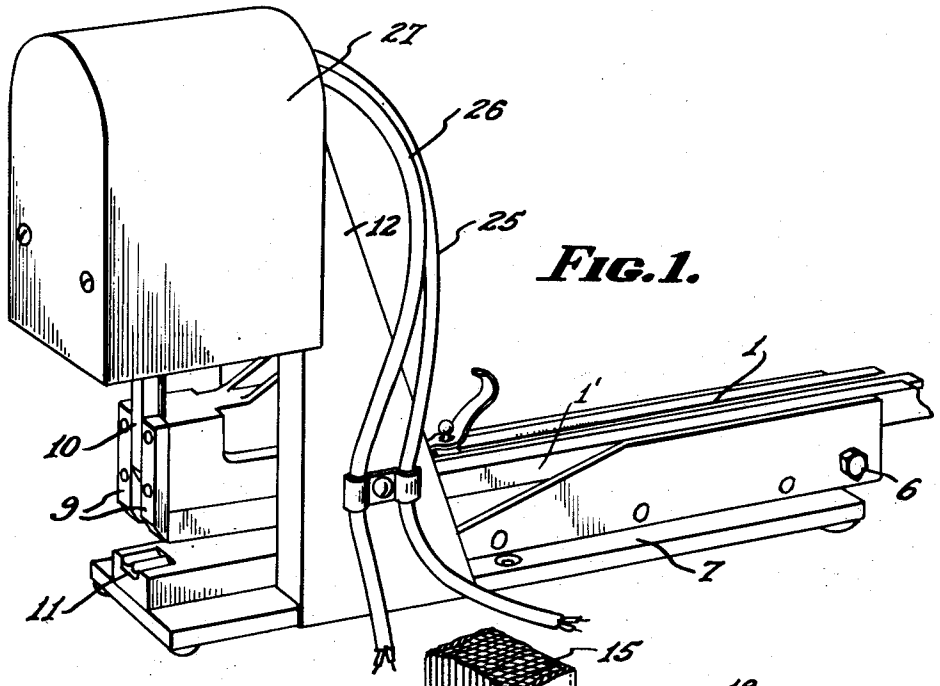



FIG. 1.

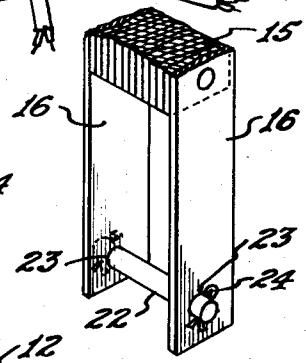



FIG. 4.

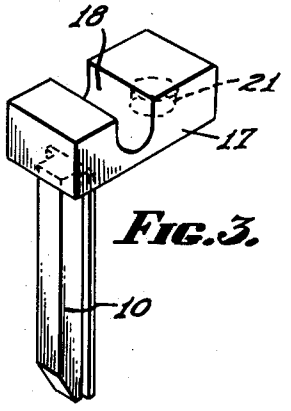



FIG. 3.




FIG. 2.

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## ELECTRICAL STAPLER

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4 Claims. (Cl. 1—3)

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My invention relates to an electric stapler of the type wherein a staple is driven through a plurality of layers of paper and clinched on the other side so as to hold the layers together.

Staplers of this type are often used to close packages and seal bags and it has been the custom more and more in retail stores for the clerks to seal the packages with a stapler and without the necessity of using string or adhesive.

It is an object of my invention to provide a stapler which is electrically operated so as to drive the staple through the material and clinch the same on the other side thereof extremely rapidly and by merely contacting a switch.

It is a further object of my invention to provide a stapler as described above which is extremely simple in its construction and yet sufficiently rugged to withstand the operation of continuous use in retail stores for stapling packages together a full working day.

It is a further object of my invention to provide an electric stapler wherein the staple driving blade may be quickly and easily removed and replaced in the event a staple should become jammed within the blade guide or in the event the slide itself should become injured.

A further object of my invention is to provide an electric stapler which is very easy to load and operate and which has a very pleasing and balanced appearance.

These and other objects of my invention which will be set forth hereinafter or will be apparent to one skilled in the art upon reading these specifications, I accomplish by that certain construction and arrangement of parts of which I shall now describe an exemplary embodiment.

Reference is now made to the drawings which form a part thereof and in which:

Figure 1 is a perspective view of my electric stapler.

Figure 2 is a side elevation of my electric stapler with the housing removed so the internal mechanism is shown.

Figure 3 is a perspective view of the staple driving blade.

Figure 4 is a perspective view of the lower end of the armature and armature straps for driving the blade.

Briefly, in the practice of my invention, I provide a stapler of the usual type wherein succeeding staples are spring fed into the head of the machine and under the driving blade and wherein the portion holding the staple in position is first brought down on the material to be stapled and then the staple blade comes down and drives the staple through the material against a clinching anvil which bends the points of the staple inwardly so as to clinch the same on the other side of the material.

I provide a solenoid mounted on a bracket which is based with the clinching anvil. The armature of the solenoid bears against the upper

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end of the staple driving blade so that upon actuation of the solenoid the armature will first force the staple carrying track or head downwardly on the material and then upon further movement will force the staple driving blade downwardly to drive and clinch the staple. This is all accomplished by merely touching a switch which energizes the solenoid.

Referring to the drawings, I provide the usual type of staple track 1 on which rides a staple pusher 2 and which is spring urged to feed the staples towards the head 3 by the coil spring 4 which is coiled within the housing 5. The staple track 1 is a part of the stapling arm 1' which is pivoted in the usual way at 6 on the base portion 7 and is forced upwardly by the coil spring 8.

On the head 3 I provide blade guides 9 which hold the staple driving blade 10. Below the end of the driving blade 10 and mounted on the base 7 of the stapler, I provide the clinching anvil 11. This anvil 11 is of the usual type which bends the points of the staple inwardly in order to fold them and clinch them after they have passed through the material being stapled.

Mounted on the base 7, I provide upstanding brackets 12 which support a solenoid 13 within a frame 14 screwed to the brackets 12. The solenoid 13 surrounds an armature 15. The armature 15 is contained within straps 16 which project below the lower edge of the solenoid 13 at all times (see Figure 2).

The staple driving blade 10 is mounted on a yoke 17 which carries a transverse channel or groove 18. To maintain the blade 10 in an upward position within the head 3, a coil spring 19 is provided which seats in the aperture 20 within the head portion 3 and which fits within an aperture 21 within the lower surface of the yoke 17.

Mounted across the two ends of the straps 16 a rod or bolt 22 is provided. The bolt 22 is of appreciably smaller diameter than the diameter of the channel 18 in which it rests. The rod 22 projects through holes 23 near the lower end of the straps 16 and is held in place by cotter pins 24.

A current conductor 25 runs from the device to any convenient electrical outlet through a switch which is on the end of an electrical conductor 26. The electrical conductor 26 is of a convenient length so that the switch, may be of either the foot actuated or the knee actuated type, may be placed in a convenient position for the operator. The solenoid mechanism, together with its armature and connections is covered by a housing 27.

While I have shown two electric conductor cords 25 and 26 running into the housing 27, it is, of course, to be understood that a single line may be run to the housing and a switch incorporated in this line, if preferable. The solenoid 13 may be of either the A. C. type or D. C. type, depending upon the source of current available.

The operation of the device is somewhat as follows:

When material to be stapled is placed between the head 3 and the clinching anvil 11 and the switch actuated so as to energize the solenoid 13, the armature 15 is drawn within the solenoid 13, thus lowering the straps 16 and the rod 22. The rod 22 is within the channel 18 and the movement of the armature, therefore presses the yoke 17 downwardly against the resilience of spring 19. Spring 19 is sufficiently stiff so that the head and the stapling head 3 on the stapling arm 1 will be forced downwardly on the pintle 6 so that the material will be held between the head 3 and the clinching anvil 11. When this position is reached, the continued downward movement of the armature 15 within the solenoid 13 compresses the spring 19 and forces the staple driving blade 10 downwardly. The movement of the blade 10 picks up the staple and forces it through the material and against the clinching anvil 11 where it is clinched. This action, of course, is extremely rapid and when the current is broken the solenoid 15 and the rest of the mechanism is forced upwardly to the position shown in Figure 2 by the action of springs 19 and 8.

If it should be desirable to remove the driving blade 10, it is merely necessary to remove the blade guides 9 and then the blade 10 and the yoke 17 may be lifted out of the machine.

From the above, it is very apparent that my electric stapler is extremely simple and rugged in form. There is very little that can possibly get out of order and in the event any part needs to be removed for repairing or replacement, it is very simple to do so, as described above.

The frame 14 is preferably slit as shown so it can act as a guide for the straps 16 holding the armature and actuating the staple driving blade, as is apparent in Figure 2.

It is to be understood that modification may be made in my invention without departing from the spirit thereof, and I do not intend to limit myself otherwise than as pointed out in the claims which follow. Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a stapler, a staple feeding track terminating in a head, a staple driving blade reciprocably mounted in guides affixed to the face of the head and having its working end positioned over a clinching anvil for driving and clinching a staple, the other end of the blade carrying a block having parallel sides and a top surface transversed by a channel joining the parallel sides, said block being positioned above the head and urged upwardly therefrom by a spring, driving means for said blade comprising an armature slidably but nonrotatably mounted within an electric solenoid, said armature having two parallel downwardly projecting straps joined by a cross member spaced from their ends, said strap ends embracing the parallel sides of the block and the cross member positioned within the channel so as to steady the block and blade when the solenoid is energized and the armature forces the block and blade downwardly against the anvil.

2. In a stapler, a staple feeding track terminating in a head, a staple driving blade reciprocably mounted in guides affixed to the face of the head and having its working end positioned over a clinching anvil for driving and clinching a staple, the other end of the blade carrying a



block having parallel sides and a top surface transversed by a channel joining the parallel sides, said block being positioned above the head and urged upwardly therefrom by a spring, driving means for said blade comprising an armature slidably but nonrotatably mounted within an electric solenoid, said armature having two parallel downwardly projecting straps joined by a cross member spaced from their ends, said strap ends embracing the parallel sides of the block and the cross member positioned within the channel so as to steady the block and blade when the solenoid is energized and the armature forces the block and blade downwardly against the anvil, and removable means affixing said guides to the face of the head to permit easy removal of the blade and block from the stapler.

3. In a stapler, a staple feeding track terminating in a head, a staple driving blade reciprocably mounted in guides affixed to the face of the head and having its working end positioned over a clinching anvil for driving and clinching a staple, the outer end of the blade carrying a block having parallel sides and a top surface transversed by a channel joining the parallel sides, said block being positioned above the head and urged upwardly therefrom by a spring, driving means for said blade comprising an armature slidably but nonrotatably mounted within an electric solenoid, said armature having two parallel downwardly projectnig straps joined by a cross member spaced from their ends, said strap ends embracing the parallel sides of the block and the cross member positioned within the channel so as to steady the block and blade when the solenoid is energized and the armature forces the block and blade downwardly against the anvil, and removable means affixing said guides to the face of the head to permit easy removal of the blade and block from the stapler, said straps straddling the solenoid core to prevent rotation of the armature.

4. In a stapler, a staple feeding track terminating in a head, a staple driving blade reciprocably mounted in guides affixed to the face of the head and having its working end positioned over a clinching anvil for driving and clinching a staple, the outer end of the blade carrying a block having parallel sides and a top surface transversed by a channel joining the parallel sides, said block being positioned above the head and urged upwardly therefrom by a spring, driving means for said blade comprising an armature slidably but nonrotatably mounted within an electric solenoid, said armature having two parallel downwardly projecting straps joined by a cross member spaced from their ends, said strap ends embracing the parallel sides of the block and the cross member positioned within the channel so as to steady the block and blade when the solenoid is energized and the armature forces the block and blade downwardly against the anvil, said straps straddling the solenoid core to prevent rotation of the armature.

TRAVIS M. SASSER.

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