

PATENT SPECIFICATION

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(54) STAPLING MACHINE.

(71) I, HUI-NENG CHI, a citizen of Taiwan, of No. 58, Ta-Chih Road, Taichung City, TAIWAN, do hereby declare the invention for which I pray that a patent may be granted to me and the method by which it is to be performed, to be particularly described in and by the following statement:-

This invention relates to a spring-energised stapling machine.

According to the present invention, a spring-energised stapling machine comprises a body having a base, an actuating arm pivotally mounted on the body, spring means for ejecting staples from the machine upon operation of the actuating arm, a check plate slidably mounted on the body and selectively movable into a position to immobilise the actuating arm, the check plate being mounted on the body by means of a pin extending through the body and through slots in the check plate, a movable fitting having a base panel with recesses therein and two side walls, each side wall having an inverted substantially U-shaped slot therein co-operable with a pair of pins on the body whereby the fitting, when mounted on the body, is slidable between the first position at which the fitting is spaced from the base of the body to enable the recesses in the base panel to clinch staples ejected from the machine, a second position at which the fitting abuts against the base of the body to block the ejection of staples from the machine and a third position at which the base panel is angularly displaced through substantially 90° to allow staples to be ejected without clinching from the machine, the machine further comprising a staple supply guide having two sets of parallel grooves to accept staples of different sizes, the supply guide being positioned to supply staples to the spring means and having staple removal means thereon.

The invention will be described further, by way of example, with reference to the

accompanying drawings, in which:-

Figure 1 is a perspective view of a spring-energised stapling machine according to the present invention;

Figures 2a and 2b respectively show a movable fitting and a check plate forming parts of the machine;

Figure 3 is an elevation of a spring mechanism for effecting staples and an actuating arm in an operative position;

Figure 4 is an elevation corresponding to Figure 3 with the actuating arm in an inoperative position; and

Figure 5 is a perspective view of a staple supply guide employed in the machine.

Referring to Figure 1, a spring-energised stapling machine comprises a body 10 and an actuating arm 14 which is secured to the body to pivot about a spindle 15. A pin 13 forms a mounting for a check plate 30, the check plate being movable back and forth for locking and unlocking the actuating arm 14. Two further pins 11 and 12 provide a mounting for a movable fitting 20. A small opening 51 is provided near the front end of base 50 of the body to enable a user to view the staple supply within the machine.

The movable fitting 20 and the check plate 30 are shown in Figures 2a and 2b respectively. The movable fitting 20 comprises a base panel 24 and two side walls, each side wall having an inverted U-shaped slot 21 therein. A protuberance 22 is provided on one of the side walls whereby to provide a means for locking the fitting 20 in desired positions by engaging corresponding recesses in the body 10. The movable fitting 20 is mounted on the body 10 of the stapling machine, such that the pins 11 and 12 engage in the slots 21 in the side walls. The fitting 230 can be moved by sliding about the pins 11 and 12. Two recesses 23 formed in the base panel 24 serve to clinch the ends of staples when the stapling machine is used to fasten together loose sheets of paper.

When driving staples into other objects, the movable fitting 20, by virtue of the slots 21 and the pins 11 and 12, can be turned through substantially 90° into a position at which the base panel 24 is perpendicular to the base 50 and disposed against the front face of the machine. The movable fitting 20 can also be adjusted to abut against the base 50. In this position the panel 24 blocks the outlet of the staples thus preventing any harm caused by misuse of the machine.

The check plate 30 includes two projections 32, one check tip 33 and a pair of corresponding slots 31 formed in the two walls thereof. The check plate 30, when mounted on the body with the pin 13 passing through the slots 31 forms a releasable lock means for the actuating arm 14. When the stapling machine is not in operation, the check plate 30 is moved towards the actuating arm 14 whereby the check tip 33 contacts the front end of an extension 141 on the arm 14 to immobilise the arm 14 as shown in Figure 4.

Figures 3 and 4 show the operation of the actuating arm 14. Figure 3 shows the arm in its initial position prior to operation to eject a staple from the machine, and Figure 4 shows the arm in a locked position and engaged by the check tip 33 as stated hereinabove.

To eject staples the actuating arm 14 is depressed to pivot about pin 15 and against the action of a leaf-spring 16. Initially, the movement of the arm 14 causes a tongue 17 on the arm to engage and lift a retainer 18 for a main spring 19 of the machine. For this purpose an end portion 171 of the tongue 17 engages beneath a lug 181 on the retainer 18. Upon lifting the retainer 18 the spring 19 is compressed. Continued movement of the arm 14 causes the end portion 171 to break contact with the lug 181 whereupon energy stored in the spring 19 is released to return the retainer 18 to its initial position. A plunger attached to the retainer 18 ejects a staple from the machine.

Two linear measure scales are provided on both sides of the base 50. One scale is graduated in centimeters and the other in inches. The scales assist a user to determine a desired position for ejecting staples by indicating the distance along the base from the point of ejection.

Referring to Figure 5, a staple supply guide 40 includes two sets of grooves whereby making it possible to accept staples

of different sizes. The guide 40 includes an end portion 41 having upper and lower claws 411 and 412 which serve to extract staples from objects.

WHAT WE CLAIM IS:

1. A spring-energised stapling machine comprising a body having a base, an actuating arm pivotally mounted on the body, spring means for ejecting staples from the machine upon operation of the actuating arm, a check plate slidably mounted on the body and selectively movable into a position to immobilize the actuating arm, the check plate being mounted on the body by means of a pin extending through the body and through slots in the check plate, a movable fitting having a base panel with recesses therein and two side walls, each side wall having an inverted substantially U-shaped slot therein co-operable with a pair of pins on the body whereby the fitting, when mounted on the body, is slidable between a first position at which the fitting is spaced from the machine and a third position at recesses in the base panel to clinch staples ejected from the machine, a second position at which the fitting abuts against the base of the body to block the ejection of staples from the machine and a third position at which the base panel is angularly displaced through substantially 90° to allow staples to be ejected without clinching from the machine, the machine further comprising a staple supply guide having two sets of parallel grooves to accept staples of different sizes, the supply guide being positioned to supply staples to the spring means and having staple removal means thereon.

2. A stapling machine according to Claim 1 comprising measuring scales indicating the distance along the base from the point of ejection of staples.

3. A stapling machine according to Claim 1, including an opening for viewing the stock of staples in the staple supply guide, the opening being provided near the front end of the base of the body.

4. A spring-energised stapling machine substantially as herein described with reference to and as illustrated in the accompanying drawings.

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When driving staples into other objects, the movable fitting 20, by virtue of the slots 21 and the pins 11 and 12, can be turned through substantially 90° into a position at which the base panel 24 is perpendicular to the base 50 and disposed against the front face of the machine. The movable fitting 20 can also be adjusted to abut against the base 50. In this position the panel 24 blocks the outlet of the staples thus preventing any harm caused by misuse of the machine.

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