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STAPLING MACHINES

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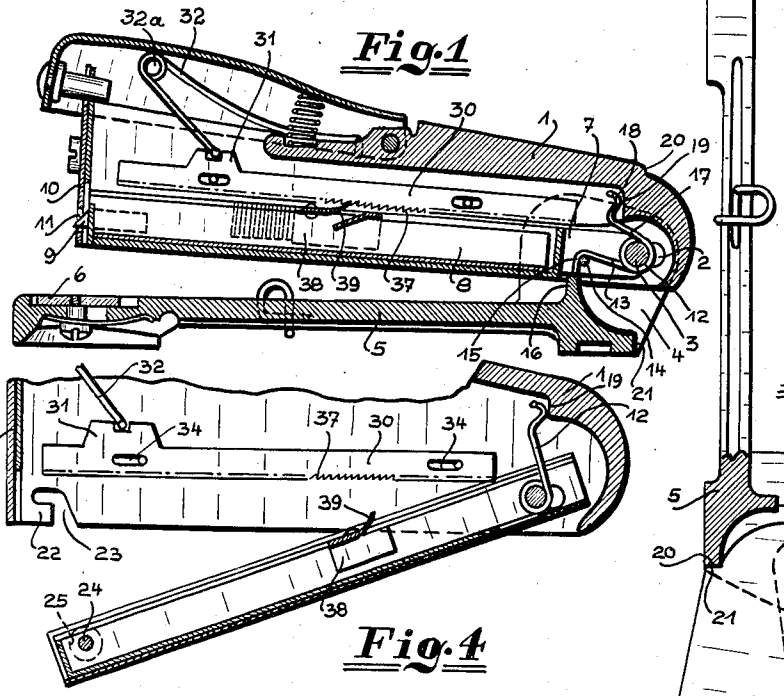


Fig. 1

Fig. 4

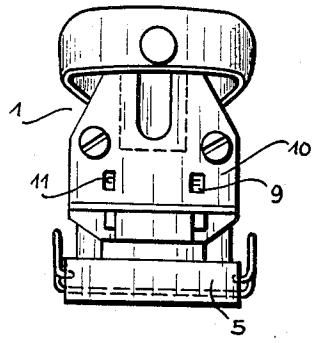


Fig. 2

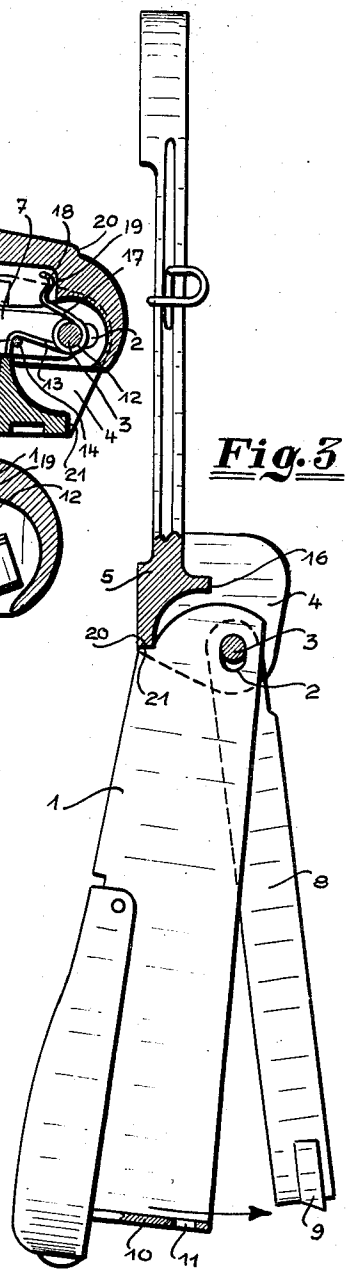


Fig. 3

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STAPLING MACHINES

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2 Claims. (Cl. 1—3)

This invention relates to stapling machines and is more particularly concerned with stapling machines for driving in U-shaped staples which latter are moved intermittently along a staple support by means of a spring or other feed member, and are then driven outwardly when the driver is operated. For replenishing the store of staples in these machines it is known to provide the staple support at its rear end with a removable closure cap to which is also fixed a slide for feeding the staples under the influence of a spring.

It is also known to make the front plate, which shields the staple support at the front end of the feed channel, detachable so that the strip of staples can be introduced from the front in opposition to the action of the spring loaded slide.

According to the present invention there is provided a stapling machine comprising a base plate, a magazine for staples pivotally mounted on the base plate, a housing for the magazine which is also pivotally mounted in the base plate, a staple driver carried upon the housing, the driver being adjacent the feed end of the magazine when the latter is in the housing, means for feeding staples towards the feed end of the magazine so that a staple is engageable by the driver, means for normally locking the magazine within the housing, the locking means being such that when the magazine is locked to the housing and the latter is pivoted relative to the base plate, the magazine is simultaneously pivoted therewith, the locking means being further such that when the magazine is not locked to the housing either the housing or the magazine can be pivoted relative to the base plate independently of each other, and means permitting relative translatory movement between the housing and the magazine, said translatory movement causing said locking means either to lock the magazine to the housing or to unlock the magazine from the housing.

For a better understanding of the invention and to show how the same may be carried into effect reference will now be made to the accompanying drawing, in which:

Figure 1 is a central sectional view of a desk stapling machine,

Figure 2 is a front view of the machine of Figure 1,

Figure 3 is a side view partly in section, illustrating the final swung-out position of the housing of the machine of Figure 1, and

Figure 4 shows a second constructional form of a detail of Figure 1.

Referring now to Figures 1 to 3, a housing 1, which accommodates an otherwise known driving and feed mechanism, is provided at each side with a slot 2 whereby the housing is pivotally mounted on a carrier pin 3. The pin 3 is mounted in bearing lugs 4 provided on a base plate 5, which latter carries an anvil 6. A staple support or magazine 8 having rear lugs 7 is pivotally mounted on the pin 3. Each side wall of the support 8 carries a locking nose 9 which projects beyond the front face of the associated wall. Associated with the two locking noses 9 are slots 11 formed in the end wall 10 of the housing 1.

Arranged about the pin 3 is an expanding spring 12 one arm 13 of which spring 12 is bent about a transverse pin 14 provided on the staple support 8. The end 15 of the arm 13 bears against a nose 16 formed on the base plate 5 whilst the housing 1 is in the normal position of readiness of the machine. The other arm 17 of the spring 12 is bent in a Z-shape, and its bent-over end 18 bears against a shoulder 19 formed on the housing 1.

Thus when the machine is in the position of readiness, the spring 12 maintains a predetermined mouth opening between the housing 1 and the base plate 5. The spring 12 also tends, by reason of the expanding force of its arms 13, 17 to swing the staple support 8 out of the housing 1 and, by means of the bent-over end 18 and its abutting against the shoulder 19 of the housing ensures engagement of the locking noses 9 in the slots 11, since the spring 12 tends to hold the front end (the end nearer to the expeller) of the slots 2 of the housing 1 against the pin 3.

In order to introduce a new strip of staples, the housing 1 is swung out in a clockwise direction about the pin 3 to the position in which a shoulder 20 provided on the back of the housing comes to bear against an abutment edge 21 formed on the base plate 5. In this position the housing 1 can be pivoted, in opposition to the action of the spring 12, further through a small arc with the abutment edge 21 as the pivotal axis, until the rear end of each slot 2 in the housing 1 comes to bear against the pin 3. During this additional pivoting movement the staple support 8 is effectively displaced relatively to the housing 1 so far that the locking noses 9 are lifted out of the slots 10 and the staple support 8 is swung out of the housing 1 (Figure 3). A fresh strip of staples can then be introduced into the said support and then the staple support 8 is manually pressed back into the housing 1 so that the noses 9 engage in the slots 10.

In the construction shown in Figure 4, the side walls 22 of the housing 1 are provided near the front end thereof with angled bayonet slots 23 which open onto the lower edge and whose closed arms are directed towards the front edge of the housing. The staple support 8 is provided at both sides with two transverse pins 24 which carry control knobs 25. The arrangement of the angled slots 22 and pins 24 relatively to one another is such that in the closed position the pins 24 are held in the closed arms of the angled slots 23 by the spring 12. In order to swing the staple support 8 outwards, the latter is first of all displaced, by manipulating the knobs 25, in opposition to the action of the spring 12 and the support 8 is then swung out downwards. In this constructional example the staple feed system comprises a toothed rail 30 in which slots 34 are formed. The rail 30 is guided on transverse pins mounted in the side wall 22 and which engages the slots 34. The rail 30 is provided at its lower edge with saw teeth 37 and carries near its front end a nose 31 which is provided with a recess and into which extends the spring 32 which is mounted on pin 32*a* of housing 1. Spring 32 tends to urge housing 1 and magazine 8 apart. The staple support 8 carries a slide 38 which bears against the rear of the last staple and which has an upwardly bent split tongue 39 engaging in the teeth 37 of the rail 30. At each operation of the stapling machine the saw-toothed rail 30 is displaced rearwardly and, when the machine is released, is again brought by the spring 32 back into the front end position, entraining the slide 38 and thus the supply of staples. The construction is such that when the operating lever is released after each driving operation, the supply of staples

is fed forwards by the width of one staple by the saw-toothed rail.

Arranged parallel to the slide **30** is a similar but fixedly arranged saw-toothed rail in which the tongue **39** also engages. This stationary saw-toothed rail prevents the accidental entrainment of the slide when the adjustable rail **30** moves rearwardly.

What we claim is:

1. A stapling machine comprising a base plate, a magazine member, a magazine housing member, a pivot pin on the base plate pivotally supporting said members, said housing member being provided with a slot for engaging said pin whereby said housing member is displaceable transverse to said pin to provide a relative translatory movement between the members, spring means operatively associated with the members to urge the magazine member out of the housing member, first and second shoulders on said housing member and said base plate respectively, the shoulders engaging each other with the said housing member pivoted from the base plate to a

first determinable position, the engaged shoulders constituting a pivot for said housing member for displacing the latter on said pin, and locking means on and normally locking the members together, said locking means being responsive to the translatory movement for releasing the members from each other whereby the spring means is effective to force the members apart.

2. A machine as claimed in claim 1 wherein the spring means comprises a pin on the housing member and a spring on the pin and including one end portion engaging the housing member and a second end portion engaging the magazine member for urging the members apart.

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