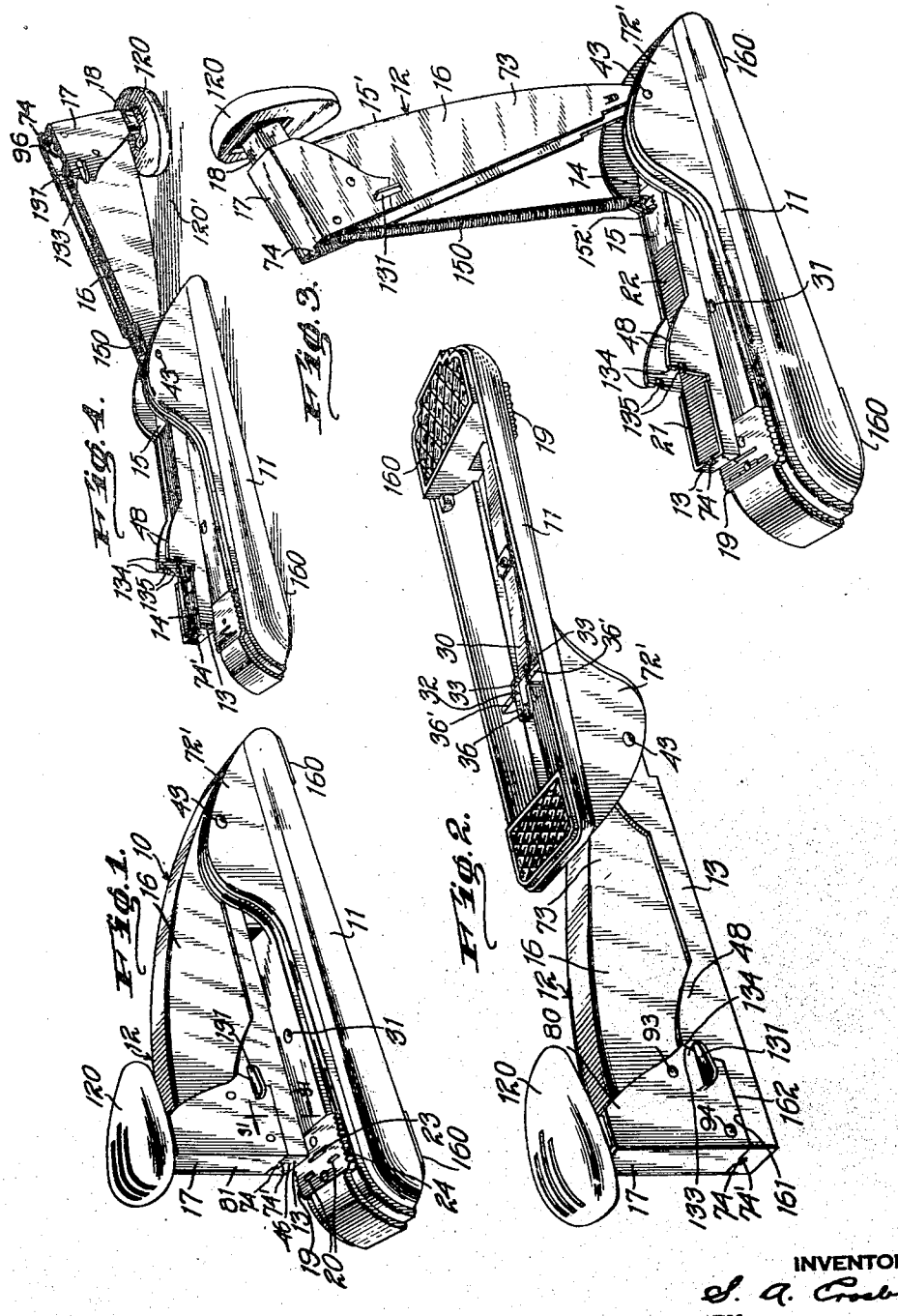
July 29, 1947. S. A. CROSBY 2,424,649

STAPLING MACHINE

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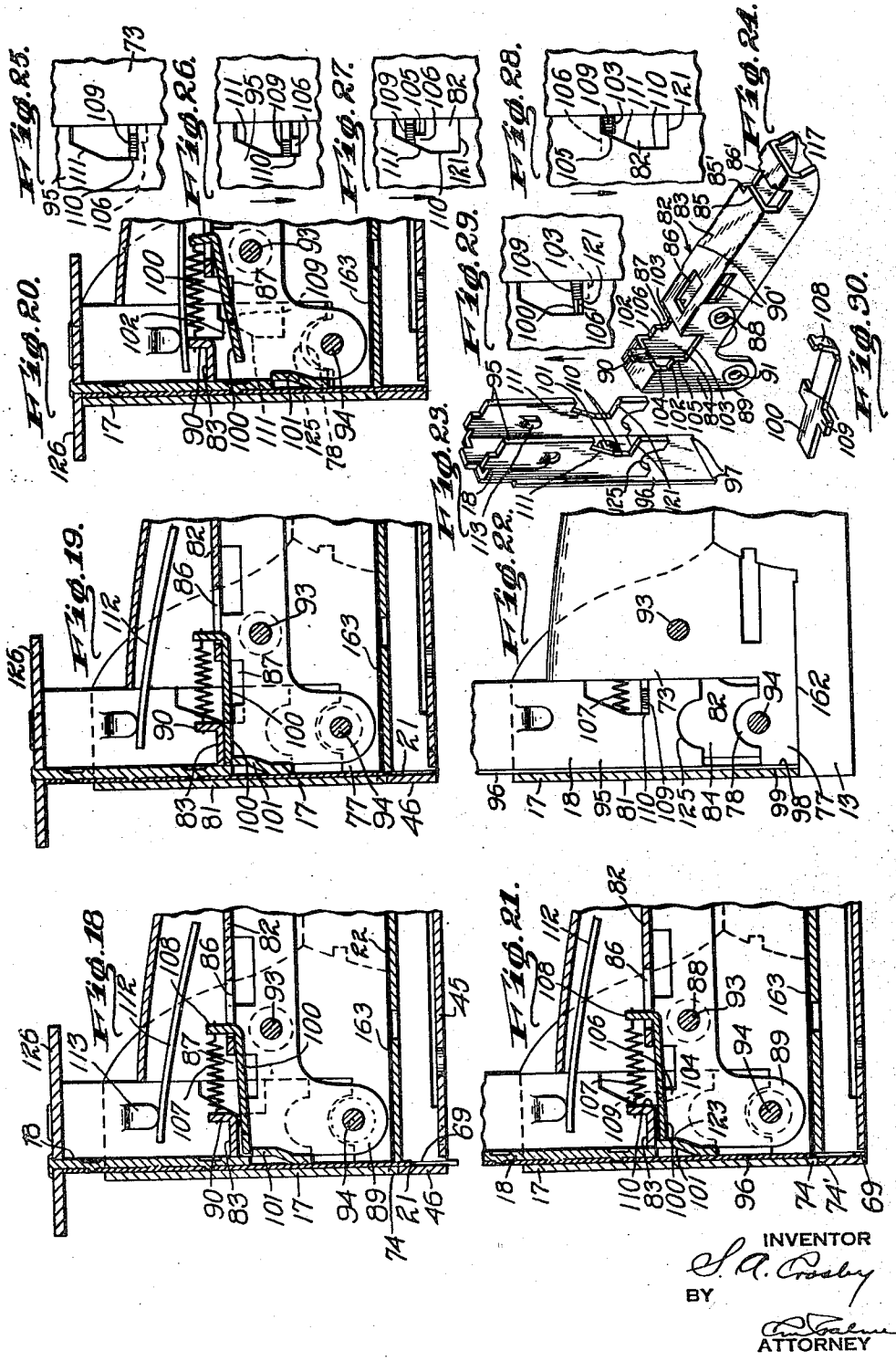
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STAPLING MACHINE

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Application June 7, 1937, Serial No. 146,708

98 Claims. (Cl. 1—3)

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The present invention deals with stapling and more particularly is concerned with an improved stapling machine of the type adapted to be utilized as a tacker. One object of the invention is to provide a serviceable top loading stapling machine which is practical and efficient in operation. Another object of the invention is to provide a novel stapling machine of the character referred to which is of simple construction and free of complicated mechanism. Another object of the invention is to provide a stapling machine of the character referred to which is thoroughly dependable and reliable in operation and which may be readily inspected to remove clogged staples from the magazine thereof. Another object is to provide a stapling machine capable of meeting various requirements of practical use in a highly satisfactory manner. Another object is to provide a serviceable stapling machine which is compact in construction. Another object is to provide a functionally and structurally improved stapling machine which is convenient to operate. Specifically another salient and important object of the invention is realized in the provision of an efficient top loading stapling machine wherein quick access may be had to substantially the entire length of the wide open channel of the staple magazine thereof to permit speedy loading of a full staple strip through the open top of the magazine after merely swinging the reciprocable cover for the magazine rearwardly pursuant to instantaneous unlocking of the cover from the magazine. Another significant object is concerned with effective means for retaining the staple strip in the open top magazine against upward displacement in the provision of a hollow housing or cover which is adapted to be swung towards or away from the magazine in a single arcuate motion and which embodies marginal means to telescope with the sides of the magazine for desirably and operatively aligning the cover with the magazine on closing of the latter by the cover. Another essential object is also concerned with utilizing the marginal means of the spaced sides of the cover in the closed relation of the latter to preclude upward displacement of the staple strip in the magazine. Another specific object resides in the provision of spring controlled latch means automatically effective to instantaneously but disconnectably lock the cover and magazine on the completion of the closing of the magazine by the cover. Another important object is also realized in the provision of an improved staple follower slidably guided within the magazine and

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attached to one end of a helicoidal elastic connection trained over slidably guided latching means while another end of this spring is attached to the cover, the arrangement being such that upon swinging of the cover rearwardly the follower is automatically displaced from the front part of the magazine towards the rear thereof and upon closing of the cover the follower is automatically shifted from the rear of the magazine towards the front part thereof to shift the staple strip towards the forward part of the magazine which includes a front transversely arranged wall or immovable means relative to the magazine to limit the forward displacement of the staple strip and to preclude slippage of the staple strip forwardly of the front wall of the magazine. Another specific object deals with novel means for instantly locating a staple guiding rail within the magazine. Another significant object is concerned with an effective clearing latch swingably carried by the base of the stapling machine and having means for disconnectably holding the magazine in a convenient but fully opened position to permit relatively instantaneous loading of the entire staple strip through the open top of the magazine after the cover for the magazine has been swung to the rear of the magazine to be substantially in longitudinal alignment therewith. Another important object has to do with a novel cover for the magazine adapted for quick assembly and comprising a hollow rearwardly disposed channel shaped member or component straddled by and carrying a channel shaped sheath or component at the front part thereof, the sheath having a lower rim having a peripheral face adapted to meet the upper peripheral face of the rim of the magazine for limiting the displacement of the cover towards the magazine while the rearwardly disposed channel shaped member embodies transversely spaced lower margins or depending means removably received between and contiguous to the sides of the magazine to limit as previously mentioned upward displacement of the staple strip. Another specific object of the invention is directed to supplementary means to align the front of the sheath with the front transverse wall of the magazine in the provision of a depending tongue on the sheath removably interlocking with the walls of a notched or recessed portion of the front transverse wall of the magazine. Another specific object of the invention is realized in the provision of means to preclude involuntary removal of the helicoidal spring or elastic connection from the slidably

guided follower. Other objects, advantages, and features of the invention will be in part obvious and in part hereinafter more particularly pointed out and this application is a continuation in part of the application for Stapling machines, S. N. 118,811, filed January 2, 1937.

The invention accordingly consists in the features of construction, combination of elements, and arrangement of parts as will be exemplified in the improved construction hereinafter described and the scope of the application thereof will be indicated in the appended claims.

In the accompanying drawing in which is shown one of the various possible embodiments of this invention—

Fig. 1 is a perspective view of the improved stapling machine according to my invention.

Fig. 2 is a perspective view illustrating the stapling machine used as a tacker.

Fig. 3 is another perspective view of the stapling machine illustrating the swingable arm thereof partly open to permit ready inspection of the staple strip in the magazine.

Fig. 4 is a view similar to Fig. 3 showing the stapling arm fully opened and the follower at the rear of the magazine to permit loading of staples in the latter.

Fig. 5 is a longitudinal sectional view in elevation of the stapling machine on a larger scale.

Fig. 5ª is a transverse sectional view on the line 5ª—5ª of Fig. 5.

Fig. 6 is a sectional view on the line 6—6 of Fig. 5 however with parts of the base omitted.

Fig. 7 is a broken view in perspective of the staple magazine or box.

Fig. 8 is a fragmentary view of Fig. 7, showing a part of the pivoted latch associated with the base of the stapling machine removably but slidably interlocked with the magazine.

Fig. 9 is a vertical transverse sectional view on the line 9—9 of Fig. 5.

Fig. 10 is a longitudinal sectional view on the line 10—10 of Fig. 5.

Fig. 11 is a longitudinal sectional view on the line 11—11 of Fig. 5.

Fig. 12 is a transverse sectional view on the line 12—12 of Fig. 5.

Fig. 12ª is a sectional view taken on the line 12ª—12ª of Fig. 12.

Fig. 13 is an exploded view in perspective of the swingable magazine, the rail, and the automatically controlled staple follower block.

Fig. 14 is a perspective exploded view of the cover or housing of the swingable arm.

Fig. 15 is a plan view of the front part of the staple magazine showing the staple ejecting gap.

Fig. 16 is a sectional view taken on the line 16—16 of Fig. 9.

Fig. 17 is a fragmentary exploded and perspective view of the forward part of the magazine showing the rail disconnected from the latter.

Figs. 18 to 30 illustrate the stroke control device which in operation precludes the admission of a next successive staple of the staple strip in the vertical raceway when a staple therein has not been previously ejected by the driving blade of the plunger and in particular.

Fig. 18 is a longitudinal and fragmentary sectional view of the pivoted arm showing the plunger partly depressed and the intervenor interposed between the fixed mount and the inwardly overhanging stop lip of the reciprocably guided plunger.

Fig. 19 is a view similar to Fig. 18 wherein the plunger has been retracted before a full down stroke thereof has been made and in such relation the inner lip of the plunger is abutting the slidably guided intervenor, thus preventing a full retraction of the plunger and thus precluding the admission of a next successive staple within the front vertical raceway.

Fig. 20 shows the blade of the plunger fully depressed and the shiftable intervenor yieldingly disposed in a locked position.

Fig. 21 shows the blade of the plunger fully retracted or returned and above the staple raceway, the intervenor being illustrated yieldingly abutting the stop lip of the plunger and ready to intervene just as soon as the plunger moves downwardly, the stop lip being shown abutting the mount or the support for the intervenor.

Fig. 22 is a side view of Fig. 21 however with a side wall of the sheath thereof removed for purposes of clearness to show the normal position of the intervenor at a time when the plunger is fully up or retracted.

Fig. 23 is a perspective view of the plunger showing the inner stop lip and the rectangularly shouldered driving blade thereof.

Fig. 24 is a perspective view of the channeled shaped mount or support on which the float or intervenor is slidably and pivotally sustained.

Fig. 25 is a fragmentary side view of Fig. 22, showing the intervenor in a non-intervening position when the plunger is in its fully up or normal position.

Fig. 26 shows the intervenor when in an intervening position when the plunger has been depressed slightly as in the case of Fig. 18.

Fig. 27 shows the intervenor receding, being urged rearwardly by the inclined cam surface of the plunger on the downward stroke thereof and about ready to fall into locking recesses in the fixed mount.

Fig. 28 shows the position of the intervenor in its locking recess of the mount at the completion of the downward stroke of the plunger as in the case of Fig. 20.

Fig. 29 shows the intervenor just about to be removed by the plunger from the locking recess of the mount at the close of the completion of the full return stroke.

Fig. 30 is a perspective view of the intervenor.

Fig. 31 is an enlarged transverse sectional view on the line 31—31 of Fig. 1.

Fig. 32 is a plan view of the rear end of the plunger raising spring anchored to the rear end of the intervenor mount.

Fig. 33 is a plan view of the butterfly locking latch carried by the closure and utilized to disconnectably interlock with the magazine and

Fig. 34 is a transverse sectional view of the magazine when opened and with the hook or spring anchoring member of the follower in alinement with an opening in the rail to permit removal of the spring from the hook.

Illustrative of the embodiment disclosed, the stapling machine generally denoted 10, comprises, a base 11, and a pivoted arm 12 which includes; a staple box or magazine 13, a staple carrying rail 14, a staple follower 15, a magazine cover or closure 15′ in the form of a housing comprising a pair of overlapped rear and front channel components or shaped members 16 and 17, (the former being of pleasing streamline appearance and may be considered for purposes of specification a fuselage or casing while the latter being in the form of a sheath), a staple driving plunger generally denoted 18, and the stroke control device illustrated in Figs. 18 to 30 inclusive.

Slidably mounted on base 11 is an anvil 19 embodying spaced clinching indentations 20 for temporary fastening of staples 21 of the staple strip 22 and the elongated clinching indentation 23 for permanent anchoring of the staples.

The anvil 19 is provided with serrations 24 on its sides to facilitate gripping thereof where it is desired to shift the same longitudinally of the base 11 for permanent or temporary fastening of the staples as is well understood.

Fixedly anchored to the shiftable anvil is a channel shaped flanged member 25 (see Figs. 5 and 5a), comprising a boss 26 slidably guided in elongated slot 27 of the base 11.

Boss 26 is provided with a downwardly extending struck out medially arranged curved projection 28 which cooperates with a companion curved stud or stop 29 secured at the forward end of a relatively elongated flat spring 30 having its intermediate part anchored by a rivet 31 secured to the base.

As shown in Figs. 1 and 5 the staple clinching anvil is set against the forward transverse abutment end of slot 27 of the base. In such relation, elongated indentation 23 cooperates with the driving blade of the plunger to bend the legs of the staple for permanent fastening. Curved stud 29 however cooperates with projection 28 to lock the anvil against accidental slidable rearward displacement relative to slot 27 of the base.

For temporary fastening of the staples, the anvil may be readily slidably shifted rearwardly to place spaced indentations 20 in alinement with the blade of the driver. In this connection the serrated sides of the anvil are grasped and urged rearwardly, thus snapping or riding projection 28 over the stop or stud 29 and the rear end of boss 26 abuts the rear transverse end of slot 27. On this operation post 29 first moves downwardly thus flexing fore part of the flat spring 30 which in effect is a cantilever beam. After projection 28 has cleared the stud 29, the latter is automatically raised by the leaf spring 30 and now prevents accidental slidable displacement of the anvil towards the front of the base. When the anvil is shifted the transverse ends of slot 27 cooperate with the transverse ends of the boss 26 to automatically dispose either the temporary clinching indentations or the permanent clinching indentation in vertical alinement with the staple raceway of the swingable arm.

Seated on and retained by the rear end of flat spring 30 is a pivoted swingable clearing latch 32 (see Figs. 2, 5, 8, 12 and 12a) having the inwardly turned lips or lugs 33 of the upstanding wings 37 retained in slots 34 of spring 30. The latch is in the form of a bell crank lever comprising a T-shaped head 35 and the manipulator 36 from which wings 37 extend and these wings comprise rounded ears 38 pivotally or tiltably held by spring 30 against the bottom face of the base 11 as shown in Fig. 5, the latch 32 being interposed between and swingably guided by spaced flanges 36' depending from and transversely of the base.

The lower vertical part of latch 32 is loosely disposed in the vertical opening 39 of the base 11 and its T-shaped head 35 may be conveniently and removably arranged to interlock with the bottom wall of the magazine 13 which includes an enlarged opening 40 communicating with reduced slot 41 defined by spaced shoulders 42 in the bottom wall of the magazine.

In Figs. 5 and 12, the latch 32 is shown interlocked with the bottom wall of the magazine. In

such relation, lugs 42 are disposed in slots 42' of the T-shaped head 35. Therefore the latch is interlocked with the magazine and the action of spring 30 is such as to maintain such interlocking relationship and hence the swingable arm 12 cannot be swung rearwardly in respect to the base although the arm may be swung downwardly when the plunger 18 is depressed. During such time shoulders or lugs 42 abut shoulders 43' of the latch 32 causing the latter to move downwardly and flex the rear end of the spring 30 and upon removal of manual pressure on the head of the plunger after its downward stroke, spring 30 releases its energy, causing shoulders 43' to raise lugs 42 of the magazine and hence the latter is automatically elevated.

To disconnect the latch from the magazine, manipulator 36 is moved upwardly toward the upper wall of the base, thus causing the bell crank latch 32 to rock or pivot on the rounded ears 38 which pivot against the base and against the resistance of spring 30, and thus the head 35 of the latch is moved forwardly or out of reduced opening 41 and into enlarged opening 40 of the magazine. Consequently the rockable latch is disconnected from the magazine and the pivoted base may be swung rearwardly in respect to the arm to assume the position shown in Fig. 2. However after the arm is disconnected from the latch and manual pressure is removed from manipulator 36 thereof, spring 30 shifts the T-shaped head rearwardly until limited by the rear wall of slot 39 which serves as a stop.

However the pivoted arm and latch may be readily and automatically interlocked. This is accomplished by swinging the arm towards the base. Eventually the inclined lip 44' strikes shoulders 42. This action causes the bell crank latch 32 to bodily pivot, causing its T-shaped head to be moved forwardly and enter enlarged opening 40 while manipulator 36 is moved upwardly causing spring 30 to flex. When the T-shaped head is sufficiently projected into opening 40, slots 42' thereof ultimately line up with lugs 42 and at this time spring 30 hitherto flexed, releases, and automatically the T-shaped head moves rearwardly and interlocks with lugs 42 while the manipulator 36 automatically moves downwardly and in a direction away from the top wall of the base.

The hollow magazine 13 may be considered as a box or a shoe having its longitudinal channel facing upwardly. It is a one piece rectangularly shaped member as shown in Figs. 7 and 13. It includes the bottom wall 45, front wall 46, upstanding sides 47 having upstanding wings, keepers or cam means 48, rearwardly disposed perforated ears 49, and an upwardly bent rear wall 50 containing the elongated rectangular slot 51'.

The bottom wall 45 of the magazine includes the spaced elongated positioning slots 51 (see Figs. 13, 15, 16 and 17) and the U-shaped opening 52 defining a transverse slot 53 and the communicating longitudinally disposed slots 54. Appropriately positioned within the magazine is the U-shaped staple supporting rail 14 which includes spaced depending sides 56 having depending lugs 57 and 58 while the rear end of the rail is provided with an overhanging lug 61.

Slidably mounted on the rail is the inverted U-shaped follower block 15 having its depending sides 63 slidably straddling the sides 56 of the rail. The depending sides 63 of the follower or follower block 15 each comprise an inwardly

turned lug 64 cooperating with lower parts of the sides 56 of the rail (see Fig. 12) to prevent removal of the follower from the rail after assembly. By this arrangement the follower block 15 is interlocked with the rail 14 although movable longitudinally thereof.

In assembling, the follower or pusher 15 is first placed on the rail and the latter is arranged within the staple box or magazine. In this connection, the rear lug 61 is first placed into the closely fitting elongated slot 51' in the rear wall of the magazine. Hence the rail is positioned transversely and vertically in respect to the magazine. The front part of the rail is now dropped, causing lugs 58 to fall into and project slightly beyond the correspondingly shaped positioning openings 51 of the bottom wall 45 after which lugs 58 are slightly upset to permanently fasten the rail. Therefore the rail is now properly positioned longitudinally of the magazine. In such relation lugs 57 of the sides 56 of rail 14 are within the slots 54 of the U-shaped gap 52 and straddle lip 66 of the bottom wall 45 of the rail.

Therefore the forward transverse face 67 (see Fig. 16) of the rail is spaced from the rear transverse face 68 of the front wall 46 of the magazine, forming a vertically disposed transverse gap or staple raceway or driveway 69 for guiding a single staple 21 of the staple strip 22 downwardly to be ultimately free of the magazine. It should be noted however (see Figs. 9 and 31) that the sides 56 of the rail are spaced from sides 47 of the magazine, thus forming the longitudinally disposed staple strip guide sub-channels or slots 70 which are in communication with the vertically disposed and transverse raceway or guideway 69.

The swingable arm 12 for purposes of specification may be considered as comprising complementary components characterized by the magazine 13 and the hollow cover 15'. These components have their rear ears 49 and 71 (see Figs. 13 and 14) hingedly or pivotally supported on the transverse fulcrum pin 43 carried by the rear curved perforated ears 72' of base 11. Ears 72' of the base straddle perforated ears 49 of the magazine and the latter straddles ears 71 of the streamline fuselage or channel shaped member 16 of the closure 15'. In the particular instance illustrated, it will be appreciated that closure 15' for the magazine may be swung relative to the magazine on fulcrum pin 43 and accordingly the swingable arm 12 may be opened as illustrated in Figs. 3 and 4. In such relation, all the staples within the magazine are accessible and may be readily observed. With this advantage, if the supply of staples within the magazine has become exhausted, a new staple strip may be readily supplied. If on the other hand, a staple of the strip is improperly deformed, it may be readily removed. If the staple raceway is clogged, the clogging staples can be easily seen and removed even by the most unskilled operator. By the present arrangement, the source of trouble due to improper guiding of staples in the staple channel and raceway may be readily determined and easily corrected. This is an important feature of the invention.

The swingable or hinged cover 15' is in effect a housing for concealing the staples within the magazine. As previously stated this cover or closure comprises the rearwardly disposed U-shaped member or fuselage 16 having its channel facing downwardly while the sheath 17 of the

cover 15' is also a U-shaped member having its vertical channel facing rearwardly.

Channeled shaped member 16 embodies a pleasingly curved upper gradually sloping wall 72 having depending sides 73 each having a perforation 75, an elongated slot 76, an overhanging perforated lug 77 comprising a curved stop 78. Sheath 17 of the cover 15 has its sides 80 straddling and fastened to sides 73 and includes the transverse wall 81 having a rectangular shaped depending lug 74 adapted to be received in a correspondingly shaped recess 74' in the front wall 46 of the magazine whereby in closing of the cover 15' the latter is properly centered and positioned in respect to the magazine.

Fixedly mounted within the rear channel member 16 is a mount generally denoted 82 (see Figs. 5, 18 and 24). This mount is of inverted U shape and embodies a top wall 83 having depending sides 84, a rear transverse slot or opening 85 having reentrant cut out portion 85', a stepped shaped opening 87, alined openings 88, the perforated depending ears 89, the upstanding lug 90, and the laterally extending positioning or spacing lugs 90'.

With mount 82 arranged within channel shaped member or rear part 16 of the hinged magazine cover or closure 15', alined openings 88 thereof are in alinement and register with alined openings 75 in the depending sides 73 of fuselage or casing 16 of the cover 15'. Also alined openings 91 in the ears 89 of the mount are in registration with alined openings 92 of the forwardly arranged stop lugs 77 of the fuselage or casing 16 and at the proper time pins 93 and 94 are positioned in these alined openings of the mount 82 and the casing 16 as well as alined openings 93' and alined openings 94' of sheath 17 to fixedly anchor the mount in the casing 16 and sheath 17 to the latter as is well understood.

When the mount 82 is anchored to the channel shaped member or casing 16, the forward portions of the sides 84 thereof overhang the forward part of the channeled member 16 (see Fig. 22). The sides 84 of the mount at the forward overhanging portions thereof are slidably straddled by the spaced sides 95 of the U-shaped plunger 18, that is, the sides 84 of the mount serve to vertically guide the plunger 18. Also the front transverse faces 98 (see Figs. 14 and 22) of the overhanging stop lugs 77 of rear channeled member 16 together with the rear transverse face 99 of the front wall 81 of sheath 17 constitute a transverse vertical gap above but in alinement with the vertical staple raceway 69 to closely but slidably guide the lower part of the staple driving blade 96, thus preventing flexing of or distorting of the latter.

According to the invention a stroke control device is provided for the plunger to prevent the latter from fully retracting unless the blade thereof has first concluded a complete down stroke. To this end, attention is directed to the float or intervenor 100 shown in perspective in Fig. 30, in section in Figs. 18–22, and in side elevation in Figs. 25 to 29. At this time attention is also directed to the inwardly overhanging projection 101 carried by plunger 18, the alined notches 102 of the mount 82, and the alined notches 103 of the latter formed by the stepped transverse opening 87 therein (see Fig. 24). These alined notches 102 and 103 in the sides of the mount 82 form spaced vertical shoulders 104 and 105 and define alined but spaced steps 106. The intervenor 100, projection 101 of the plunger,

the stepped transverse opening 87 of the mount and the helicoidal spring 107 which has its ends connected to the lug 90 of the fixed mount 82 and to the upstanding tail 108 of the intervenor constitute the stroke control device.

As shown, the intervenor comprises an elongated rectangularly shaped body having laterally extending lugs 109. Tail 108 extends upwardly and is slidably guided in rectangular opening 86 in the upper wall 83 of the mount 82.

In the normal or fully raised position of the plunger 18, lugs 109 of the intervenor slightly overhang and are seated on the alined steps 106 of the mount and are spaced from vertical alined shoulders 104 which are flush with alined vertical faces 110 of the sides 95 of the plunger. Shoulders 104 and vertical faces 110 form stop means to limit forward movement of the lugs 109 of the intervenor 100 when the plunger is partly depressed.

When the plunger is fully raised, projection 101 (see Fig. 21) is against the upper wall 83 of mount 82 and hence the plunger cannot be further raised. This is the normal raised position of the plunger. In this relation intervenor 100 is yieldingly abutting projection 101, and the lugs 109 of the intervenor 100 although seated on steps 106, are spaced from stop shoulders 104 and 110 (see Figs. 11, 21, 22 and 25).

When however the plunger is slightly depressed, the intervenor 100 automatically slidably travels into the gap formed between upper wall 83 of the mount 82 and projection 101 of the plunger (see Fig. 18) due to the action of the normally expanded spring 107. In this particular instance, lugs 109 of the intervenor 100 abut alined shoulders or stop faces 104 and 110 (see Fig. 26).

If before the completion of a full down stroke of the plunger, the latter is retracted, intervenor 100 prevents full retraction thereof (see Fig. 19), that is, in this relation, the lower part of the staple driving blade 96 serves as a closure preventing the next successive staple of the staple strip 22 to enter within the vertical raceway 69. But where a full down stroke has been made a full return stroke thereof may be consummated. In this connection, it will be observed that sides 95 of the plunger 18 are provided with alined inclined faces 111 for actuating lugs 109 of the intervenor which overhang the sides 84 of the mount 82, causing the intervenor to move bodily rearwardly or recede during the descent of the plunger.

Towards the completion of the downward stroke of the plunger (see Figs. 20 and 28), overhanging lugs 109 of the intervenor have been moved rearwardly and past the alined steps 106 of the mount and into alined recesses 103 thereof, thus yieldingly abutting vertical and alined stop faces 105 of the sides of the mount and are thus held due to the expansion of spring 107. Thus locked the forward end of the intervenor is out of the path of projection 101 (see Fig. 20).

In accordance with the invention the plunger is automatically raised or retracted after each complete down stroke thereof. For this purpose an elongated metal leaf spring 112 is utilized. This leaf spring 112 has its upper end abutting lugs 113 struck out of the sides of plunger 18 while its lower end is provided with a reduced portion 114 defining a T-shaped head 115 (see Fig. 32) comprising lugs 116 cooperating with ends 117 of the sides 84 of the mount to prevent longitudinal displacement of spring 112 in one direction while shoulders 118 cooperate with the rear vertical side of opening 85 in the mount to prevent longitudinal displacement of the spring 112 in an opposite direction. By the present arrangement it is apparent that the lower end of the spring is interlocked with the mount and may be readily attached to or disconnected therefrom if desired and to facilitate assembly of spring 112 and the mount the latter includes the reentrant opening 85' providing an extension of opening 85 whereby spring 112 may be readily inserted into the latter to dispose lugs 116 at the rear of sides 84 thereof while lip 86' (see Fig. 5) serves as a bearing for the spring 112.

Referring back to the stroke control device, if the plunger 18 has made a complete downward stroke, the intervenor 100 is in a locked position as shown in Figs. 20 and 28. With manual pressure removed from the resilient head 120 attached to the plunger 18, leaf spring 112 automatically raises the latter. Therefore towards the close of its up stroke shoulders 121 of sides 95 of the plunger 18 strike the overhanging lugs 109 of the intervenor 100 lifting these lugs 109 out of the alined transverse recess 103 to clear alined steps 106 (see Fig. 29) but only after projection 101 has about reached upper wall 83 of the mount. When however lugs 109 clear steps 106, spring 107 contracts, thus bodily moving the intervenor 100 forwardly and the forward part thereof yieldingly abuts the back or rear wall 123 of projection 101 (see Fig. 21) or in other words the lugs 109 of the intervenor are in the position shown in Figs. 22 and 25, in the normal or fully raised position of the plunger.

Downward vertical displacement of the plunger 18 is limited by sheath 17, that is, the elongated plate 126 fixedly attached to the top of the plunger or ram 18 to which the recessed and grooved resilient or rubber head or cushion 120 is disconnectably secured, strikes the upper part of the sheath or front part 17 of the cover 15' (see Fig. 20) thus distributing and absorbing the force caused by such impact over a relatively wide area and in such relation reinforcing lugs 78 are slightly spaced from the curved notches 125 in the sides of the plunger (see Fig. 20). With the cover unlocked or unlatched from the magazine and in the position illustrated in Fig. 4, resilient head 120 is against the supporting surface 120' which may be a desk or other suitable support and therefore the latter is prevented from being marred or scratched.

It has been previously pointed out that the arm 12 comprises a staple magazine 13 and a swingable cover or closure 15' therefor. These parts may be quickly swingably separated and may be readily closed. If in a closed relation and it is desired to swing the cover away from the magazine, a slidable latch generally denoted 130 is first manipulated to unlock the cover from the magazine.

This latch 130 is slidably arranged in the alined openings 76 in the spaced sides 73 of the channel member or back part 16 of the cover. Latch 130 is also slidably guided in the horizontally and transversely alined slots 132 in the spaced sides 80 of sheath 17. When channel member 16 is telescoped and set within the front sheath 17, slots 132 are in alinement with the elongated openings 76 in the spaced sides 73 thereof.

As shown, the intermediate rear curved faces 133 of the spaced sides 80 of the sheath 17 are complementary to the front but transverse cam faces 134 of the spaced wings 48 of the magazine

13. When the cover is closed complementary faces 133 and 134 are disposed in close proximity and sides 80 of the sheath 17 are flush with the spaced wings or keepers of the magazine.

The curved cam faces 134 of wings 48 however include the transversely alined horizontal gaps or slots 135 which are complementary to alined gaps 132 of the sheath 17 and these combine when the cover is closed to form elongated slots 136 in which the butterfly latch 130 is slidably guided.

Slidably mounted within and supported by the walls of the alined slots 76 in sides 73 of casing 16 is a transversely disposed shaft 138 supporting roller or wheel 139 which in part is received by the central reentrant recess 140 in the body of the manipulatable latch 130 which includes the spaced notches 141 defining rear lip 142. The sides of recess 140 are formed by the spaced lugs 143 integral with the body of latch 130 and these lugs 143 are spaced from the outer portions of wings 131 to form spaced notches 144 (see Figs. 6 and 33).

As shown in Figs. 1, 2, 5 and 6, the cover 15' is latched or locked to the notched wings 48 of the magazine 13. In this relation, spaced parts or shoulders as 145 of latch 130 are received by notches 135 of the wings 48 of the magazine and interlock therewith thus preventing accidental hinged separation of the cover relative to the magazine. In the interlocked relation of the cover and magazine lip 142 is between the sides of casing 16 and transverse walls of notches 141 abut the transverse wall of the notches 135 in wings 48. In such position latch 130 may be considered retracted.

If the slidable latch 130 be interlocked with the magazine it is prevented from accidentally unlocking by the cocked helicoidal spring or connection 150 trained over the roller or pulley 139 and has one end retained by lug 151 struck out of a side 73 of the channeled member or casing 16 and has its other end 152 anchored to the curved eye or hook 153 struck out of the follower block 15. If therefore the cover or closure 15' is latched to the magazine it is held in such relation until latch 130 is grasped at the manipulatable and overhanging wings 131 and slidably moved towards the front of the machine, thus projections or lugs 143 of slidable latch 130 strike the ends of shaft 138 thus slidably and bodily moving the latter in the alined guide slot 76 in a similar direction. It follows that the roller 139 is correspondingly displaced and the spring 150 is distended. This operation however causes the latch to become free of openings 135 of the wings 48 of the magazine and accordingly the cover may be swung away from the magazine and thus the staple arm is separated and full access is had to the staple supporting rail or to the staple strip within the magazine. It should be observed however that after latch 130 has been unlocked from the magazine and finger pressure against wings 131 is removed, spring 150 automatically retracts the latch 130.

Again referring to follower block 15 (see Figs. 5, 6 and 34), the hook or retaining member 153 is struck out of the top wall thereof and is provided with curved sides 153' to prevent shearing of the several coils 152' of the end 152 of spring 150 and to prevent accidental disconnection of coils 152', the free terminal or nose 154' of hook 153 is slightly spaced from the adjacent upper face of the rail. However to attach coils 152' to hook 153, the cover 15' is raised and the nose 154' of the follower block is lined up with opening 155' (see Fig. 34) at which time only the terminal 154' of hook 153 is sufficiently accessible to permit coils 152' to be removably mounted or threaded on the terminal of the hook. After such operation the follower is moved away from opening 155' and hence coils 152' are prevented from being accidentally removed from hook 154' since the terminal of the hook and the top wall of the rail provide an insufficient gap to prevent removal of coils 152' unless of course the follower is so held that the hook is deliberately over opening 155'.

With the cover 15' of the arm 12 opened as shown in Figs. 3 and 4, the latch 130 is retracted and consequently shoulders 145 of latch 130 abut the rear vertical transverse faces 156 (see Fig. 14) of the openings 76 in the sides 73 of the casing or fuselage 16.

Therefore shoulders 145 are in the path of the curved cam faces 134 of the upstanding wings 48 of the magazine when the cover 15' is swung to a closing position and accordingly these cam faces 134 constitute means for actuating latch 130 bodily forwardly until shoulders 145 of the latch are in alinement with notches 135 of wings 48. Thereupon spring 150 automatically retracts latch 130 causing shoulders 145 to fall into notches 135 and hence the latch 130 is interlocked with the wings 48 at a time when the cover is closed in respect to the magazine.

By the present arrangement, to open the cover, the operator simply moves latch 130 forwardly out of wings 48 of the magazine and the cover is swung rearwardly on fulcrum pin 43. It follows that the cover 15' may be swung to the position shown in Fig. 3 to inspect the staples in the magazine to determine if there be any deformed staples therein or the cover may be further swung away from the magazine as illustrated in Fig. 4 to permit loading of the latter at which time the resilient head or cushion 120 of the plunger 18 lies against a suitable supporting surface, such as, the top surface of a desk or the like. Or in other words the reciprocable cover or housing 15' may be rotated, from its closed position after having been unlocked by the latch 130, upwardly and rearwardly beyond the plane substantially normal to the longitudinal axis of the magazine and containing the axis of the fulcrum or hinge pin 43 to provide for access to the elongated and longitudinal channel of the magazine and of course to the rail or the staple strip mounted on the latter. The spaced rubber feet 160 secured to base 11 cooperate to prevent scratching of the supporting surface. With the cover as shown in Fig. 4 it should be noted that the staple follower 15 is at the rear of the staple supporting rail 14, or fully retracted. In Fig. 3, follower 15 is not fully retracted.

Where the magazine is interlocked with the swingable latch 32 and the cover is swung rearwardly, lugs 45' (see Fig. 12) of latch 32 cooperate with the shoulders 42 of the bottom wall 45 of the magazine to limit appreciable upward pivotal displacement of the latter. It follows that although the magazine is held in a desired raised position by spring 30 the rail thereof is fully accessible to permit loading of staples, that is a strip of staples, thereon as is evident upon inspection of Fig. 4.

When the cover is closed, wings 48 automatically actuate the butterfly latch 130 to bodily shift or slide the latter forwardly until this latch reaches notches 135 of the wings and spring or

elastic connection 150 retracts the latch 130, thus the latter disconnectably interlocks with the magazine, however, at this time the bottom peripheral face 161 of sheath 17 is against and seated on the upper horizontal faces 162 of the magazine and lower margins 163 of spaced sides 73 of the fuselaged channel shaped member or back of the cover 15' project downwardly beyond the sheath 17 or front part of cover 15' and are telescopically but removably received between sides 47 of the magazine 13 (see Figs. 9 and 31), and in effect, the upper peripheral face 162 of the magazine serves as a stop to limit downward displacement of the cover and also serves to absorb and distribute the impact of the cover in closing but the lower margin 163 is slightly above the staple strip 22 and hence casing 16 serves to prevent upward displacement of the staples mounted on the staple supporting rail.

During closing of the cover 15' of the swingable arm 12, the action of spring 150 causes the follower 15 to slidably and automatically move forwardly, thus urging a forward staple 21 of the staple strip 22 to be disposed within the vertical raceway 69 but just below the squared corner shoulders 97 of the driving blade 96 of the plunger 18 in the normally raised position of the latter as illustrated in Figs. 5 and 21. If the plunger be depressed the swingable arm 12 is pivoted downwardly on pin 43 and the staple raceway 69 lines up with either clinching indentation 23 if the anvil has heretofore been adjusted for permanent fastening or with the spaced clinching indentations 20 if the anvil is adjusted for temporary fastening.

Where one staple is in raceway 69, another staple of the staple strip cannot be admitted due to the action of the stroke device which prevents complete retraction of the staple driving blade whereby the lower portion of the latter serves as a closure preventing the admission of a next successive staple of the staple strip to enter the raceway 69 until the driven staple within the raceway is ejected therefrom (see Fig. 19). At the completion of the full down stroke of the plunger squared projections 97 cooperate with the corners of a staple in the raceway 69 and with the aid of the anvil the legs of the staple are deformed for clinching purposes as is well understood.

As illustrated in Fig. 2, the pivoted clearing latch 32 is free of or unlocked from the magazine and the base has been swung approximately one hundred and eighty degrees in respect to the arm. In such relation, the arm of the machine is utilized as a tacker since no clinching anvil is required. The base 11 however may be readily swung to be underneath the arm as shown in Fig. 1. During such operation the swingable latch 32 automatically interlocks with the magazine which may be disconnected from latch 32 by manually actuating manipulator 36 to free head 35 thereof and hence the arm 12 may be swung away from the base.

Comparing the present embodiment with stapling machines of the prior art, it is important to note that with prior art stapling machines the latter possessed an inherent functional and structural defect in the matter of the arrangement of the several members defining the walls of the front vertical staple raceway, which defect caused in actual practice, large variations in size or control of dimensions of the raceway. With the prior art machines, the dimensions of the raceway were difficult to control due to the springing and yielding of the parts of the raceway under load. Broadly speaking many parts having numerous controlling dimensions were fabricated and assembled to form the staple raceway walls and in the manufacture, the difficulties arising in maintaining the accuracy of the numerous controlling dimensions of the several parts resulted in the practical impossibility in maintaining the necessary accuracy of the raceway.

Attempts had been made hitherto to provide in stapling machines of the prior art a more effective raceway by utilizing a U-shaped housing at the front end of the machine having the inner face of the transverse wall thereof forming the front guide face of the plunger and the front wall of the raceway. But even in these types of constructions control in manufacture in respect to dimensions of the raceway has been difficult.

As previously pointed out, the raceway of the magazine of the present construction is formed by a front transverse wall of a U-shaped box or shoe drawn out in a single operation in sheet metal and by the front transverse wall of an inverted U-shaped rail while the longitudinal guide channel for the staple strip is formed by the spaced sides of the magazine and the sides of the rail therein.

In this type of construction, the width of the staple raceway 69 is automatically controlled by reason of the positioning lugs 58 falling closely within the cooperating slots 51 in the magazine, that is, the rail is positioned transversely and longitudinally of the magazine by relatively simple means to provide the proper width of the raceway.

Hitherto the stapling machines of the prior art in so far as I am aware were so called "front or rear staple loaders." In these types if the staple strip was locked in the longitudinal staple channel it was at times impossible to remove the locked staples without knocking down the machine. Usually an inexperienced office operator has not sufficient skill to disassemble the machine to remove the wedged or locked staples in the staple strip channel. Hence the machine was sent to the factory to be knocked down to remove the locked staple strip. This practice led to inconvenience and always is a source of annoyance. The present invention overcomes this difficulty whereby even an unskilled operator may readily determine where the locked or wedged staples in the magazine are by simply unlocking and swinging the cover away from the magazine. Thus having full access to the staple strip, the troublesome or wedged staple may be quickly removed by a finger nail file or the like, that is, according to the present invention, the swingable arm of the stapling machine is split to provide a staple magazine and cover therefor whereby these members may be separated to permit convenient loading of the magazine or to determine where any wedged staples may be present for ready removal thereof since access may be had to the vertical raceway and the entire staple strip, see for example Figs. 3 and 4.

Another feature of the invention resides in the provision of a staple follower which is interlocked with the rail and thus cannot after assembly be damaged by the user due to accidental removal therefrom. Further advantages are the novel butterfly latch for properly alining and locking the cover with the magazine, the provision of cocked spring 150 which has many important functions, to wit, one in automatically actuating the follower upon movement of the cover relative

to the magazine, two, in serving as means to automatically retract the butterfly latch after having been manually or automatically forwardly displaced, three, in precluding the need of manual control of the follower and hence obviating telescoping of the staple strip due to snapping of the follower on the part of the operator.

With the cover 15' open, the follower is at the rear of the rail. When closed, cocked spring 150 imparts a forwardly directed force on the slidable follower and the latter imparts adequate pressure on the staple strip to permit the foremost staple thereof to be arranged in the vertical raceway 69. In closing of the cover, however, pressure is applied by spring 150 gradually and progressively to the follower to prevent an appreciable or abrupt impact against the staple strip which otherwise causes telescoping of the staple strip as is well apparent.

As previously set forth the hollow magazine 13 is an open box and the transversely spaced side walls 47 and the front transverse wall 46 thereof in fact define a rim having the upper peripheral face 162 (Figs. 13 and 31) while the elongated channel is defined by the bottom wall 45, the front wall 46, sides 47 of the magazine and the rear wall 50, and the rail 14 is appropriately disposed below the upper rim of the magazine. Consequently the front transverse wall 46, that is, the immovably sustained means relative to the magazine extends above the elevation of the rail to prevent spillage of the staple strip forwardly of the raceway 69. This front wall 46 also limits the displacement of the staple strip towards the front part of the magazine. The upstanding wings or keepers 48 may also be considered as abutment means for the spring controlled movably guided means or latch 130 which yieldingly bears against the cam faces 134 on closing of the magazine until this latch automatically snaps into the alined notches 135.

Furthermore it will be appreciated that on the downward stroke of the plunger the impact thereof is transmitted by its elongated upper plate or ram head 126 to the upper rim of sheath 17 (see Fig. 20) and through the latter vertically downwardly to the magazine, and to the anvil, however, without affecting or varying the size, or transverse and longitudinal dimension of the vertical staple raceway or the staple strip channel and as shown, the former, to wit, the staple raceway being only slightly higher than the height of a staple. In other words, the force transmitted by the ram head 126 against the sheath 17 or front channeled component is transmitted downwardly to the front wall of the magazine and to the anvil. However the compressive stresses set up in sheath 17 and the magazine are not transmitted to the rear component 16 of the cover and since component 16 constitutes with the magazine and the rail therein, the staple strip guide channel, the original and desired dimensions of the latter remain the same and are not disturbed through abusive handling of the driver. It is also apparent that the original width of the staple raceway also remains intact since the stresses imparted to the front wall of the magazine are vertically downwardly on each down stroke of the driver even though the latter in use is abused.

As many changes could be made in the above described embodiment and many apparently widely different embodiments of the invention could be devised without departing from the scope thereof, it is intended that all matter contained in the above description and shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a stapling machine, an elongated magazine, a staple supporting rail therein, a cover, a hinged connection between said cover and magazine at the rear ends thereof, said cover adapted to be swung rearwardly away from said magazine substantially beyond a plane normal to the longitudinal axis of said magazine and passing said hinged connection to permit full access to the staples on said rail longitudinally of the latter, said cover adapted to be swung towards and against said magazine to close the latter, and driving means carried by said cover for ejecting a staple from said magazine.

2. In a stapling machine, a substantially horizontally disposed base, an arm comprising a magazine, a rail disposed in said magazine for slidably substantially horizontally disposed guiding staples, a hollow member extending longitudinally of said magazine and in superimposed relation therewith, said magazine and member having a connection at the rear ends thereof and constituting means to permit the front part of said member to be swung upwardly and rearwardly into a vertical plane passing through the axis of said connection and rearwardly beyond said plane, said connection also constituting means to permit said member to be swung towards and against said magazine to close the latter, and releasable latch means between said magazine and member for disconnectably locking both of the latter.

3. In a top loading stapling machine, a magazine, a rail therein adapted to support one or more staples, a housing for covering the top face of said rail, means hingedly connecting said housing to said magazine, and interlocking means for positioning said rail relative to said magazine comprising spaced means depending from said rail and correspondingly spaced openings in said magazine to receive said depending means.

4. In a stapling machine, a magazine having a front transversely arranged wall, a rail for supporting staples and disposed within said magazine and spaced from said wall to define a staple raceway, a cover member substantially coextensive with the length of said magazine and in superimposed relation therewith, means hingedly connecting said member and magazine at the rear ends thereof, movable latch means carried by said member, said magazine having keeper means for displacing said latch means during pivotal displacement of said member towards said magazine, means to limit pivotal displacement of said member towards said magazine, spring means for urging said latch means to automatically and disconnectably interlock with said keeper means towards the completion of pivotal displacement of said member towards said magazine, said magazine and cover member having transversely spaced marginal portions closely but removaly disposed in straddling relation to aline said cover member relative to said magazine towards the completion of said pivotal displacement of said member towards said magazine but prior to said interlocking of said keeper means and said movable latch means, and driving means carried by said member for ejecting a staple through said raceway and out of said magazine in the closed relation of the latter and said member.

5. In combination, a staple magazine, a rail disposed longitudinally thereof for supporting a staple strip, a cover member substantially coextensive with the length of said magazine and in

superimposed relation therewith, means hingedly connecting said member and magazine at the rear ends thereof, separable interlocking means to automatically aline said member relative to said magazine upon closing of said magazine by said member, said rail and magazine defining a vertical raceway adapted to receive the foremost staple of said strip, reciprocable means for driving said foremost staple through said raceway and out of said magazine, movable latch means carried by said member, a follower having means slidably guided by said rail, and spring means connected to said member and follower and cooperating to normally urge said latch means towards the rear of said member and cause said latch means to automatically interlock with said magazine upon closing of the latter by said member.

6. In combination, a staple magazine, a rail disposed longitudinally thereof for supporting a staple strip, a follower mounted on said rail, means for slidably interlocking said follower on said rail, a cover member substantially coextensive with the length of said magazine and in superimposed relation therewith, means hingedly connecting said member and magazine at the rear ends thereof, said rail and magazine defining a vertical raceway adapted to receive the foremost staple of said strip, means for driving said foremost staple through said raceway and out of said magazine, a spring cooperating with said driving means to automatically retract the latter pursuant to a driving stroke thereof, and spring means cooperating with said follower to shift the latter relative to said rail during movement of said member towards or away from said magazine.

7. In a stapling machine, an elongated magazine, a relatively elongated cover comprising separate channeled members defining an elongated housing, a staple supporting rail arranged in said magazine and defining therewith a vertical raceway, a follower block slidably interlocking with said rail, means hingedly connecting said magazine and cover whereby said cover may be swung relative to said magazine to permit inspection or removal of said staples on or from said rail, and means responsive to the movement of said cover for shifting said follower in a direction towards or away from said raceway.

8. In combination, an elongated magazine, a cover comprising separate channeled members defining an elongated housing, a staple supporting rail arranged in said magazine and defining therewith a vertical raceway, means hingedly connecting rear portions of said magazine and cover whereby said cover may be swung relative to said magazine to permit inspection or removal of said staples on or from said rail, said cover being substantially coextensive with the length of said magazine and adapted to be swung to a superimposed relation in respect to said magazine to close the latter, and latch means for disconnectably locking said cover and magazine.

9. In combination, an elongated magazine, a cover comprising separate channeled members defining an elongated housing, a staple supporting rail arranged in said magazine and defining therewith a vertical raceway, means hingedly connecting said magazine and cover at the rear ends thereof whereby said cover may be swung away from an towards the rear of said magazine to permit inspection or removal of said staples on or from said rail, said cover adapted to be swung to a superimposed relation in respect to said magazine to close the latter, shiftable means carried by said cover, said magazine having cam means for actuating said shiftable means during closing of said magazine by said cover, and said magazine having means adapted to interlock with said shiftable means to prevent accidental separation of said cover and magazine.

10. In combination, an arm comprising a magazine, a rail therein adapted to support a staple strip, a follower slidably interlocked with said rail, a cover hinged to said magazine and substantially coextensive with the length thereof, spring means interconnecting said cover and follower, said cover adapted to be superimposed in respect to said magazine to close the latter, said spring means upon closing of said magazine by said cover automatically moving said follower forwardly to urge said staple strip forwardly, and means for locking said cover upon closing of said magazine thereby.

11. In combination, an arm comprising a magazine, a rail therein adapted to support a staple strip, a follower slidably interlocked with said rail, a cover hinged to said magazine and substantially coextensive with the length thereof, spring means interconnecting said cover and follower, said cover adapted to be superimposed in respect to said magazine to close the latter, said spring means upon closing of said cover automatically moving said follower forwardly to urge said staple strip forwardly, and means for locking said cover upon closing thereof, said locking means comprising shiftable means adapted to be actuated by said magazine upon closing thereof by said cover but against the resistance of said spring means, said magazine having means for receiving a part of said shiftable means to interlock with the latter.

12. In combination, a staple magazine, a staple supporting rail mounted in said magazine and having an opening, a follower slidably mounted on said rail and having means interlocking therewith and including a retaining member, a cover hinged to said magazine for closing the latter, and spring means connected to said cover and follower and having one end mounted on said retaining member, said retaining member and rail cooperating to prevent removal of said end from said member during displacement of said follower relative to said rail, said member and opening when in alinement permitting removal of said end from said member.

13. In combination, a magazine, a rail therein and adapted to support staples, a follower slidably mounted on said rail, and a cover comprising a rear part hinged to said magazine and a front part in overlapping relation in respect to said rear part, said rear part extending below said front part to provide lower marginal portions adapted to be removably received by said magazine to prevent upward displacement of said staples.

14. In combination, a base, a staple clinching anvil shiftable longitudinally of said base, an arm swingably connected to said base, a spring, a latch carried by said spring and adapted to interlock with said arm, and means carried by said spring adapted to cooperate with said anvil to hold the latter in a set position.

15. In a stapling machine, an elongated magazine, a staple carrying rail in said magazine, fulcrum means at the rear end of said magazine, a cover substantially coextensive with the length of said magazine and having rearwardly disposed and depending means rotatably mounted on said fulcrum means to permit said cover to be rotated

upwardly and rearwardly beyond a plane substantially normal to said magazine and containing the axis of said fulcrum means to permit full access to said rail, and a releasable locking connection between said cover and magazine.

16. In a stapling machine, an elongated magazine, a staple carrying rail in said magazine, fulcrum means at the rear end of said magazine, a cover substantially coextensive with the length of said magazine and having rearwardly disposed and depending means rotatably mounted on said fulcrum means to permit said cover to be rotated upwardly and rearwardly beyond a plane substantially normal to said magazine and passing through the axis of said fulcrum means to permit full access to said rail, a follower slidably guided on said rail, and spring means connected to said follower and cover to automatically shift said follower rearwardly upon opening of said magazine by said cover.

17. In a stapling machine, an elongated magazine, a staple carrying rail in said magazine, fulcrum means at the rear end of said magazine, a cover substantially coextensive with the length of said magazine and having rearwardly disposed and depending means rotatably mounted on said fulcrum means to permit said cover to be rotated upwardly and rearwardly beyond a plane substantially normal to said magazine and containing the axis of said fulcrum means to permit full access to said rail, a follower slidably interlocked with and guided on said rail, and spring means connected to said follower and cover for automatically shifting said follower rearwardly upon opening of said magazine by said cover and for automatically shifting said follower forwardly upon closing of said magazine by said cover.

18. In a stapling machine, a magazine, a staple supporting rail therein, a follower slidably guided on said rail, a cover for said magazine, a hinged connection between said cover and magazine to permit said cover to be swung relative to said magazine, and a connection between said cover and follower for moving the latter away from the forward part of said magazine upon opening of the latter by said cover.

19. In a stapling machine, a magazine, a staple supporting rail therein, a follower slidably guided on said rail, a cover for said magazine, a hinged connection between said cover and magazine to permit said cover to be swung relative to said magazine, a connection between said cover and follower for moving the latter away from the forward part of said magazine upon opening of the latter by said cover and for moving said follower forwardly upon closing of said magazine by said cover, and means for automatically locking said cover and magazine upon closing of said magazine by said cover.

20. In a stapling machine, an elongated magazine, a staple supporting rail therein, and defining therewith a raceway, a follower mounted on said rail, means slidably interlocking said follower on and with said rail, an elongated cover for said magazine, a hinged connection between said magazine and cover, and means for automatically moving said follower in one direction away from said raceway upon opening of said magazine by said cover and for moving said follower in an opposite direction towards said raceway upon closing of said magazine by said cover.

21. In a stapling machine, an elongated magazine, a U shaped staple supporting rail within said magazine, an elongated cover substantially coextensive with the length of said magazine, a

hinged connection between said cover and magazine to permit said cover to be swung to be substantially normal to said magazine, slidable staple driving means carried by said cover, means carried by said cover extending within said magazine and adjacent upper portions of said staples to prevent upward displacement of said staples on said rail in the closed relation of said cover and magazine, and means to automatically aline the forward part of said cover with the forward part of said magazine upon closing of said magazine by said cover.

22. In a stapling machine, a magazine having spaced sides, a cover for said magazine and movable relatively thereto and substantially coextensive with the length thereof, a U-shaped staple supporting rail within said magazine, staple driving means movably carried by said cover, said cover having marginal means for removably overlapping and extending between said sides upon closing of said magazine by said cover to position said marginal means in close proximity to the upper parts of said staples supported by said rail to prevent upward movement of said staples on said rail, and means to limit the insertion of said marginal means in said magazine.

23. In a stapling machine, an elongated magazine, a relatively elongated cover comprising separate and overlapped channeled members defining an elongated housing mounted on said magazine, a staple supporting rail within said magazine and defining therewith a vertical raceway, means hingedly connecting said magazine and cover whereby the latter may be swung relative to said magazine to permit inspection or removal of said staples on said rail, and a latch for releasably interlocking said cover and magazine.

24. In a stapling machine, a magazine, a rail in said magazine and defining therewith a raceway, a follower slidably mounted on said rail, a cover, means movably connecting said cover and magazine to permit said magazine to be opened or closed, and means interconnecting said cover and follower and responsive to the movement of said cover for moving said follower towards or away from said raceway.

25. In a stapling machine, a magazine having a staple raceway, a rail in said magazine for supporting staples, a cover for closing said magazine and substantially coextensive with the length of the latter, means hingedly connecting said cover to said magazine to allow swinging of said cover towards said magazine to close the latter and to allow swinging of said cover away from said magazine to open the latter, staple driving means carried by said cover for ejecting one of said staples out of said raceway in the closed relation of said magazine and cover, said cover and magazine having marginal cooperative and separable interlocking means for telescopically arranging said cover and magazine to operatively aline said cover in respect to said magazine and dispose said driving means in alinement with said raceway upon closing of said magazine by said cover whereby the latter is in superimposed relation with said magazine, and spring controlled movable latch means for automatically locking said cover and magazine against hinged separation upon closing of said magazine by said cover.

26. In a stapling machine, a magazine, a rail therein for supporting staples, a cover for closing said magazine, means hingedly connecting said cover to said magazine to permit said cover to be swung towards or away from said magazine, reciprocable staple driving means carried by said

cover, said magazine having a wall provided with a recess, and said cover including depending tongue means receivable in said recess to aline said cover in respect to said magazine upon closing of said magazine by said cover.

27. In a stapling machine, a magazine, a cover, and means hingedly connecting said cover to said magazine to permit said cover to be swung away from or towards and against said magazine, said magazine having a front transverse wall provided with a reentrant recess, and said cover including a depending projection receivable in said recess and interlocking with the walls of said recess to aline said cover in respect to said magazine upon closing of said magazine by said cover.

28. In a stapling machine, a magazine for supporting staples, a cover, and means connecting said cover to said magazine to permit said cover to be swung towards or away from said magazine, said cover comprising front and rear overlapping channeled members, said rear member extending below said front member and adapted to be received within said magazine to be disposed adjacent said staples to prevent upward displacement thereof.

29. In a stapling machine, a magazine, a rail therein for supporting staples, a cover, and means hingedly connecting said cover to said magazine to permit said cover to be swung towards and against said magazine, said cover comprising front and rear channeled members, said rear member having lower marginal portions extending below said front member, said front member at said lower marginal portions defining shoulders, said marginal portions adapted to be closely but removably and telescopically received within said magazine to locate said cover relative to said magazine, and said shoulders upon contact thereof with said magazine constituting means therewith to limit downward pivotal displacement of said cover relative to said magazine.

30. In a stapling machine, a magazine having spaced sides, a staple supporting rail within said magazine and spaced from said sides, a cover comprising a downwardly and rearwardly curved wall having integrally depending sides, means hingedly connecting lower and rear portions of the sides of said cover with the rear parts of the sides of said magazine, means depending from said cover and receivable in said magazine to aline said cover in respect to said magazine in the closing relation of said cover with said magazine, and means effective automatically to lock said cover in the alined relation thereof with said magazine.

31. In combination, a magazine having spaced sides, a rail therein for supporting staples, a follower slidably mounted on said rail, a cover hinged to said magazine and comprising a part adapted to be straddled by said sides upon movement of said cover towards said magazine to prevent upward displacement of said staples from said rail, and means to limit movement of said cover towards said magazine in closing the latter.

32. In a stapling machine, a magazine, a staple supporting rail therein, swingable means, a follower slidably mounted on said rail and having a retaining member, and a spring connected to said retaining member for actuating said follower upon movement of said swingable means towards or away from said magazine.

33. In a stapling machine, a magazine, a staple supporting rail therein, a follower slidably mounted on said rail and having a retaining member including a free end, a spring having one or more loops threaded onto said retaining member, said rail having means to prevent removal of said loops from said end, and a cover swingably connected to said magazine for controlling said spring to shift said follower relative to said rail upon swingable movement of said cover towards or away from said magazine.

34. In combination, a base, a spring secured to said base, an arm swingably connected to said base, and a latch seated on and interlocking with said spring and comprising upstanding means for disconnectably interlocking with said arm and including a laterally extending manipulator adapted to be moved towards said arm to remove said upstanding means from said arm to permit the latter to be swung relative to said base.

35. In a stapling machine, a base, an arm comprising a magazine and a cover, spaced lugs carried by said base, fulcrum means carried by said lugs for pivotally supporting said magazine and cover, staple driving means carried by said cover, and a cap mounted on said driving means, said cover adapted to be swung rearwardly relative to said magazine to overhang the latter and assume therewith an angle of approximately one hundred and eighty degrees, said cover and magazine adapted to be bodily swung relative to said base to permit said cap to be in spaced relation in respect to said base and at the rear thereof and substantially in alinement therewith.

36. In combination, a magazine having a front wall provided with a rear transverse face, a staple supporting rail, said rail and magazine having cooperating positioning means to space the forward part of said rail away from said transverse face to provide a transversely disposed staple raceway, said positioning means comprising depending means projecting from said rail and means within said magazine for receiving said depending means, the latter in part projecting through said positioning means within said magazine and adapted to be upset to provide laterally extending means cooperating with said magazine to anchor said rail, a cover swingably connected to said magazine, and staple ejecting means carried by said cover.

37. In combination, a base, a spring secured to a bottom face of said base, an arm swingably connected to said base, and a latch swingably seated on said spring and comprising upstanding means for disconnectably interlocking with said arm and including a manipulator out of alinement with said upstanding means and adapted to be moved relative to said arm to remove said upstanding means from said arm to permit the latter to be swung relative to said base.

38. In combination, a base having a transversely disposed slot, a leaf spring secured to said base and having a free end including alined notches arranged below and in alinement with said slot, a staple holding arm movably connected to said base and having an opening comprising an enlarged portion and a reduced portion in communication with said enlarged portion and defining therewith spaced lips, a tiltable clearing latch comprising a bell crank lever embodying upstanding means movably projecting into and in part through said slot and having an upper portion provided with spaced gaps to define a restricted part removably receivable in said enlarged and reduced portions of said opening and to define upper and lower shoulders to removably interlock with said lips to preclude displacement of said arm away from said base, an inclined part

extending from said upper portion and coacting with said lips on the downward displacement of said arm towards said base for tiltably displacing said latch against the resistance of said spring, said latch embodying a manipulator substantially normal to said upstanding means and integral therewith and disposed below and beyond said free end, said upstanding means including spaced lugs having inwardly turned portions interlocking with and retained by the walls of said notches of said leaf spring, said lugs having rounded portions held yieldingly by said spring against said base for tiltably holding said latch thereagainst, and means depending from said base for movably guiding said latch, said lips cooperating with said lower shoulders in the interlocked relation of said arm and latch to bodily depress said latch and the free end of said spring against the resistance of the latter upon displacement of said arm towards said base, said manipulator adapted to be displaced in a direction towards said arm for removing said shoulders out of interlocking relation with said lips for removing said restricted part of said latch out of the reduced portion of said opening and said inclined part of said latch into said enlarged portion of said opening for unlocking said arm from said latch.

39. In a stapling machine, a magazine, a cover swingably connected to said magazine and including spaced sides, a rail in said magazine, a follower slidably mounted on said rail, a slidable latch carried by said cover and having wings overhanging said sides, a rotatable member slidably disposed within said cover and adjacent said latch, and a spring trained over said rotatable member and having ends connected to said cover and follower.

40. The stapling machine according to claim 39 wherein said cover comprises a rearwardly arranged U-shaped member having its channel facing downwardly and a forwardly arranged U-shaped member having its channel facing rearwardly and including sides straddling said rearwardly arranged member which includes a downwardly and rearwardly curved sloping wall, and said members include slot means for rectilinearly guiding said latch longitudinally of said cover.

41. The stapling machine according to claim 39 wherein said cover comprises a rearwardly arranged U-shaped member having its channel facing downwardly and a forwardly arranged U-shaped member having its channel facing rearwardly and including sides straddling said rearwardly arranged member which includes a downwardly and rearwardly curved sloping wall, and said members include slot means for rectilinearly guiding said latch longitudinally of said cover, and said rotatable member carries means slidably guided by said slot means.

42. In a stapling machine, a staple supporting rail, means immovably sustained relative to said rail and constituting therewith a staple guideway, a housing movable relative to said rail to cover or expose the latter, a staple follower slidably guided along said rail, driving means movably sustained in said housing for ejecting a staple from said guideway, locating means for positioning said driving means in alinement with said guideway on the completion of the covering of said rail by said housing, latch means operable on the completion of the covering of said rail by said housing to prevent displacement of the latter relative to said rail, means for shifting said follower along said rail and towards said guideway on movement of said housing towards said guideway, and means for shifting said follower along said rail and away from said guideway on the movement of said housing away from said guideway.

43. In a stapling machine, a staple supporting rail, means immovably sustained relative to said rail and constituting therewith a staple guideway, a housing movable relative to said rail to cover or expose the latter, a staple follower reciprocably guided along said rail, driving means for ejecting a staple from said guideway, locating means movable relative to said rail for positioning said driving means in alinement with said guideway on the completion of the covering of said rail by said housing, latch means operable on the completion of the covering of said rail by said housing to prevent displacement of the latter relative to said rail, automatic means operable in response to movement of said housing relatively away from said guideway to shift said follower away from said guideway, and automatic means operable in response to the movement of said housing towards said guideway to shift said follower relatively towards said guideway.

44. In a stapling machine, a staple supporting rail, means immovably sustained relative to said rail and constituting therewith a staple guideway, a housing movable relative to said rail to cover or expose the latter, a staple follower slidably guided along said rail, means for automatically positioning said follower rearwardly relatively to said rail upon movement of said housing in a direction away from said guideway, staple driving means movably guided in said housing for ejecting a staple from said guideway, locating means for positioning said driving means in alinement with said guideway on the completion of the covering of said rail by said housing, and latch means operable on the completion of the covering of said rail by said housing to prevent displacement of the latter relative to said rail.

45. In a stapling machine, a rail for supporting staples, means at and immovably secured relative to the front part of said rail and defining therewith a transversely arranged staple guideway, a follower slidably mounted on said rail, a housing movable towards or away from said guideway to cover or expose said rail respectively, means to shift said follower relative to said rail and in a direction relatively away from said guideway upon movement of said housing in a direction away from said guideway, means for urging said follower in a direction relatively towards said guideway upon movement of said housing relative to said rail to cover the latter, means bodily movable with said housing and cooperating with said staples on said rail to prevent upward displacement of said staples, and means for locking said housing on the completion of the covering of said rail by said housing.

46. In a stapling machine, a rail for supporting staples, means at and immovably secured relative to the front part of said rail and defining therewith a staple guideway, a follower slidably mounted on said rail, a housing movable towards or away from said guideway to cover or expose said rail respectively, means to shift said follower relatively in a direction away from said guideway upon movement of said housing in a direction relatively away from said guideway, means for urging said follower in a direction relatively towards said guideway upon move-

ment of said housing to cover said rail, means bodily movable with said housing and cooperating with said staples on said rail to prevent upward displacement of said staples, and automatic means for locking said housing in the covering relation of the latter relative to said rail.

47. In a stapling machine, a rail for supporting staples and having spaced sides and transversely arranged and vertically disposed front surface means constituting staple guiding means, a member at least in part at the front of said rail and immovably secured relatively thereto and having spaced sides straddling the sides of said rail and spaced therefrom to characterize staple guiding channels disposed longitudinally of said rail, said member having a transversely arranged wall spaced from said staple guiding means and defining therewith a vertically disposed transversely arranged staple guideway, a U-shaped follower slidably mounted on said rail and having depending sides movably disposed in said channels, a housing movable relatively towards said staple guideway for covering said rail, spring means urging said follower towards said guideway on covering of said rail by said housing, automatic means for urging said follower rearwardly relative to said member upon opening movement of said housing relative to said rail and away from said guideway, spaced marginal means removably and telescopically receivable within and between the sides of the member upon covering of said rail by said housing, and driving means for ejecting a staple from said guideway.

48. In a stapling machine, a rail for supporting staples, means immovably secured relative to said rail and defining with the forward end thereof a staple guideway, a staple follower slidably mounted on said rail, a housing movable relatively towards or away from said guideway to cover or expose the latter respectively, automatic means to displace the forward end of said rail relatively forwardly of said follower upon movement of said housing relatively away from said guideway, and automatic means for relatively shifting said follower towards said guideway on movement of said housing towards said guideway.

49. In a stapling machine, a rail having spaced sides and a transversely arranged and vertically disposed front surface constituting staple guiding means, a member at least in part at the front of said rail and secured thereto and having spaced sides straddling the sides of said rail and spaced therefrom to characterize staple driving channels disposed longitudinally of said rail, said member having a transversely arranged wall spaced from said staple guiding means and defining therewith a vertically disposed transversely arranged staple guideway, a follower slidably mounted on said rail and having depending sides movably disposed in said channels, a housing movable relatively towards said staple guideway for covering said rail, spring means for urging said follower towards said guideway on covering of said rail by said housing, automatic means for urging said follower rearwardly of said guideway upon displacement of said rail relative to said housing, spaced locating means telescopically receivable within and between the sides of said member upon covering of said rail by said housing to facilitate positioning of the latter in the covering of said rail, means for driving a staple through said guideway, and automatically operable latch means for locking said housing on the completion of the covering of said rail.

50. A staple holding magazine comprising an elongated box having a horizontal bottom wall and vertically arranged and longitudinally disposed upstanding and spaced side walls integral with said bottom wall, a transverse front wall integral with and bridging said side walls and defining therewith spaced corners, said bottom wall having a U-shaped slot comprising spaced side notches and a common communicating cutaway portion defining a tongue spaced from said side walls and said front wall, a rail adapted to be mounted within said magazine and having depending spaced portions disposed in said notches and closely straddling said tongue for locating the rail relative to said magazine, said rail and said front wall being spaced apart and defining a vertical staple guideway, and means for securing said rail to said bottom wall.

51. A staple holding magazine comprising an elongated one piece box having a horizontal bottom wall and vertically arranged and longitudinally disposed upstanding and spaced side walls integral with said bottom wall, a transverse front wall integral with and bridging said side walls and defining therewith spaced corners, said bottom wall having a U-shaped slot comprising spaced side notches disposed longitudinally of said bottom wall and a transversely arranged cutaway portion communicating with said notches and defining substantially a rectangularly shaped tongue spaced from said side walls and said front wall at the forward part of said magazine, a rail mounted within said magazine and having vertically arranged depending spaced portions disposed in said notches and closely straddling said tongue for locating the rail relative to said magazine, said rail and said front wall being spaced apart and defining a vertical staple guideway, and means for securing said rail to said bottom wall.

52. The magazine according to claim 51 wherein said longitudinally arranged and spaced notches have rearwardly disposed transversely arranged surfaces constituting stop means for said depending portions of said rail to limit rearward displacement of the latter relative to said bottom wall.

53. In a stapling machine, a magazine for holding staples, means at the front end of said magazine constituting a staple guideway, a housing substantially coextensive with the length of said magazine and normally in superimposed and telescopic relation therewith and movably guided relative to said magazine for covering and uncovering the latter, a staple follower slidably guided relative to said magazine, means for automatically shifting said follower rearwardly relative to said magazine upon displacement of said housing in a direction relatively away from said guideway, means for automatically shifting said follower in a direction towards said guideway upon movement of said housing in a direction relatively towards said guideway, and staple driving means carried by said housing for ejecting one of said staples from said guideway.

54. In a stapling machine, a magazine for holding staples, means at the front end of said magazine and constituting a staple guideway, a housing substantially coextensive with the length of said magazine and normally in superimposed and telescopic relation therewith and movably guided relative to said magazine for covering or uncover-

ing the latter, a follower within said machine and slidably guided relative to said magazine, means for automatically shifting said follower rearwardly relative to said magazine upon displacement of said housing in a direction relatively away from said guideway for uncovering said magazine, means for automatically shifting said follower forwardly in a direction towards said guideway upon movement of said housing in a direction relatively towards said guideway to cover said magazine, means for locking said housing against accidental movement relative to said magazine on covering of the latter by said housing, and driving means carried by said housing for ejecting one of said staples from said guideway.

55. In a stapling machine, a magazine for holding staples, means at the front end of said magazine and constituting a staple guideway, a housing substantially coextensive with the length of said magazine and normally in superimposed and telescopic relation therewith and movably guided relative to said magazine for covering or uncovering the latter, a follower within said machine and slidably guided relative to said magazine, a connection between said follower and said housing for automatically shifting said follower rearwardly relative to said guideway upon bodily displacement of said housing in a direction relatively away from said guideway, and driving means carried by said housing for ejecting one of said staples from said guideway.

56. In a stapling machine, a magazine for holding staples, means at the front end of said magazine and constituting a staple guideway, a housing substantially coextensive with the length of said magazine and normally in superimposed and telescopic relation therewith and reciprocably guided relative to said magazine for covering or uncovering the latter, a follower slidably guided relative to said magazine, a connection between said follower and said reciprocably guided housing for automatically shifting said follower rearwardly relative to said guideway upon displacement of said reciprocably guided housing in a direction relatively away from said guideway, means for automatically urging said follower in a direction relatively towards said guideway on movement of said housing in a direction relatively towards said magazine in covering of the latter by said housing, means for automatically and disconnectably locking said housing against movement relative to said magazine towards the completion of the covering of the latter by said housing, and driving means carried by said housing for ejecting one of said staples from said guideway.

57. In a stapling machine, an open top magazine having a transverse front wall and spaced sides substantially normal to said wall and defining with the latter a rim having an upper face, a rail for supporting a staple strip and fixedly disposed within said magazine and below said upper face, said rail defining with said wall a staple raceway and with said sides staple guide slots, a spring controlled follower for urging the foremost staple of said strip into said raceway, a cover for closing said magazine and having spaced sides, a hinged connection between said cover and magazine, said cover adapted to be swung rearwardly and away from said magazine for opening the latter, said cover adapted to be swung towards said magazine to close the latter and to closely but telescopically arrange said spaced sides of said magazine and said spaced sides of said cover to aline the latter relative to said magazine, said front wall extending above said rail to prevent spillage of staples of said strip forwardly of said raceway on swingable movement of said cover rearwardly away from said magazine, movable driving means carried by said cover for ejecting a staple from said raceway in the closed relation of said magazine and cover, abutment means carried by said sides of said magazine and appreciably spaced from and extending above the elevation of said rail, and spring controlled movable means carried by said cover and in part projecting laterally thereof and adapted to automatically interlock with said abutment means on the closing of said magazine by said cover to prevent pivotal separation of the latter relative to said magazine.

58. In a stapling machine, an arm comprising an open top magazine having a front transverse wall and spaced sides defining a rim including an upper face, a staple strip supporting rail disposed below said face in said magazine and having a forward portion spaced from said wall to define a vertical raceway and having sides spaced from the spaced sides of said magazine to define staple guide slots, a spring controlled follower for urging the foremost staple of said strip into said raceway, a hollow cover member having spaced sides extending longitudinally of and substantially coextensive with the length of said magazine and in superimposed relation therewith, a swingable connection between said magazine and member whereby the latter may be swung away from said magazine to open the latter and whereby said member may be swung towards said magazine to close the latter, said front wall of said magazine extending upwardly beyond said rail to prevent spillage of staples from said magazine and in a direction forwardly of said raceway during swingable movement of said cover member towards or away from said magazine when said machine is inclined to dispose the rear end thereof above the elevation of said forward portion of said rail, said sides of said magazine extending upwardly beyond the elevation of said rail and adapted to closely but removably telescope with said sides of said cover member to dispose said sides of the latter and said sides of said magazine in close overlapping relation, said sides of said magazine having upwardly extending wings, spring controlled latch means in part within said cover member and having manipulating portions extending laterally and outside of said sides of said cover member, said wings having means for initially actuating and subsequently automatically interlocking with said latch means towards the completion of the swingable movement of said cover member towards said magazine on closing the latter to prevent accidental swingable movement of said cover member rearwardly away from said magazine, and staple driving means for ejecting a staple from said raceway in the closed relation of said magazine and cover member.

59. In a stapling machine, a staple magazine having a front wall and spaced sides, a rail spaced from said wall and sides and disposed within and longitudinally of said magazine for supporting a staple strip, a cover member substantially coextensive with the length of said magazine and in superimposed relation therewith, means hingedly connecting said member and magazine, said rail and magazine defining a vertical raceway adapted to receive the foremost staple of said strip, and means for driving said foremost staple through said raceway and out of said magazine.

60. In combination, a staple magazine having

front and rear transverse walls and spaced sides, a rail interposed between said sides for supporting a staple strip and disposed within and longitudinally of said magazine and spaced from said front wall and sides, a cover member substantially coextensive with the length of said magazine and in superimposed relation therewith, means hingedly connecting said member and magazine, the front part of said rail and said front wall of said magazine defining a vertical raceway adapted to receive the foremost staple of said strip, means for driving said foremost staple through said raceway and out of said magazine, and a spring cooperating with said driving means to automatically retract the latter pursuant to a driving stroke thereof.

61. In a stapling machine, an elongated magazine comprising an open top box having a front transverse wall and spaced sides, a relatively elongated cover defining a hollow housing having spaced sides substantially coextensive with the length of said box, a staple supporting rail fixedly arranged within said box and spaced from said wall and disposed below the upper peripheral face of said box and defining with the latter a staple raceway and staple guide channels, means hingedly connecting said cover and magazine whereby said cover may be swung towards or away from said magazine, said front wall extending above the elevation of said rail to prevent spillage of staples from said rail forwardly of said raceway during swingable movement of said cover relative to said magazine on opening or closing of the latter by said cover, disconnectable interlocking means carried by the sides of said cover and the sides of said magazine and automatically operable on closing of said magazine by said cover on movement of said cover towards said magazine for disconnectably locking said cover against accidental swingable displacement relative to said magazine, and driving means carried by said cover for ejecting a staple from said raceway.

62. In combination, an elongated magazine comprising an open top box having a front transverse wall and spaced side walls, a cover comprising separate channel members defining an elongated housing, a staple supporting rail fixedly arranged in said magazine and spaced from said front wall and defining therewith a vertical raceway, means hingedly connecting said magazine and cover whereby said cover may be swung relative to said magazine to permit inspection or removal of said staples on or from said rail respectively, said cover adapted to be swung to a superimposed relation in respect to said magazine to close the latter, and means for disconnectably locking said cover and magazine.

63. In combination, an elongated magazine comprising an open top box having a front wall and spaced sides, a cover comprising front and rear separate channel members defining an elongated housing, a staple supporting rail arranged within said box and spaced from said wall and sides and below the upper peripheral face of said box, means hingedly connecting said rear channeled member and said magazine whereby said cover may be swung relative to said magazine to permit inspection or removal of said staples on or from said rail respectively, said cover adapted to be swung to a superimposed relation in respect to said magazine to close the latter, and slidable latch means carried by said cover, said magazine having cam means for actuating said slidable latch means during closing of said magazine by said cover, said cam means having means adapted to interlock with said slidable latch means to prevent accidental separation of said cover and magazine.

64. In combination, a base, a staple carrying magazine pivoted at the rear end of said base, a spring secured to said base, a latch seated on said spring and extending upwardly through said base, and a cover for said magazine pivotally mounted at said end, said magazine having cooperative means to disconnectably interlock with said latch during displacement of said magazine towards said base for sustaining the forward part of said magazine in spaced relation to said base, said cover during interlocking relation of said magazine and latch adapted to be pivotally swung towards and away from said magazine.

65. In combination, a base, a staple carrying magazine, a spring carried by said base, a latch seated on said spring, a cover for said magazine and substantially coextensive with the length of the latter, and means pivotally supporting said cover and magazine at the rear of said base, said magazine having cooperative means adapted to interlock with said latch during pivotal displacement of said magazine towards said base, said cover during interlocking relation of said latch and magazine adapted to be swung upwardly and rearwardly away from said magazine.

66. In combination, a base, a magazine, a spring carried by said base, a latch swingably seated on said spring and extending through said base, a cover for said magazine and substantially coextensive with the length of the latter, and means pivotally supporting said cover and magazine at the rear of said base, said magazine having cooperative means adapted to disconnectably interlock with said latch during pivotal displacement of said magazine towards said base, said cover during interlocking relation of said latch and magazine adapted to be swung upwardly and rearwardly away from said magazine to permit access to said rail, said cover adapted to be pivotally swung towards said magazine to close the latter and prevent access to said rail.

67. In combination, a base, a magazine, a staple carrying rail in said magazine, a spring, a latch seated on said spring, a cover for said magazine and substantially coextensive with the length of the latter, means pivotally supporting said cover and magazine at the rear of said base, said magazine having cooperative means adapted to interlock with said latch during pivotal displacement of said magazine towards said base, said cover during interlocking relation of said latch and magazine adapted to be swung upwardly and rearwardly away from said magazine to permit access to said rail, said cover adapted to be pivotally swung towards said magazine to close the latter and prevent access to said rail, and means for interlocking said cover and magazine at the conclusion of the pivotal displacement of said cover towards said magazine to prevent accidental pivotal separation of the latter and said cover.

68. In combination, a base, a magazine, a staple carrying rail, a spring carried by said base, a latch seated on said spring and extending through said base, a cover for said magazine and substantially coextensive with the length of the latter, means pivotally supporting said cover and magazine at the rear of said base, said magazine having cooperating means adapted to automatically interlock with said latch during pivotal displacement of said magazine towards said base, said cover during interlocking relation of said latch and magazine adapted to be swung upwardly and

rearwardly away from said magazine to permit access to said rail, said cover during said interlocking relation of said magazine and said latch adapted to be pivotally swung towards said magazine to close the latter and prevent access to said rail, a follower slidably mounted on said rail, slidable means carried by said cover, spring means interconnecting said follower and cover, rotary means actuated by said spring means for urging said slidable means towards the rear of said cover, said magazine having abutment means for displacing said slidable means towards the front of said cover towards the completion of the downward displacement of said cover relative to said magazine, said abutment means having means to interlock with said slidable means to prevent pivotal separation of said cover and magazine, and said spring means urging said rotary means to hold said slidable means interlocked with said abutment means on the completion of the closing of said magazine by said cover.

69. In combination, a base, a magazine, a staple carrying rail in said magazine, a follower slidably guided on said rail, a latch movably seated on said spring, a cover for said magazine and substantially coextensive with the length of the latter, means pivotally supporting said cover and magazine at the rear of said base, said magazine having cooperative means adapted to disengageably interlock with said latch during pivotal displacement of said magazine towards said base, said cover during interlocking relation of said latch and magazine adapted to be swung upwardly and rearwardly away from said magazine to permit access to said rail, said cover adapted to be pivotally swung towards said magazine to close the latter and prevent access to said rail, abutment means carried by said magazine, manipulatable movable means carried by said cover, rotary means carried by said cover adjacent said movable means, and a coiled spring trained over said rotary means and secured to said follower and cover for urging said movable means to automatically interlock with said abutment means towards the completion of the swingable downward movement of said cover in closing of said magazine.

70. In combination, a base, a magazine, a staple carrying rail in said magazine, a spring carried by said base, a latch seated on said spring, a cover for said magazine and substantially coextensive with the length of the latter, means pivotally supporting said cover and magazine at the rear of said base, said magazine having cooperative means adapted to interlock with said latch during pivotal displacement of said magazine towards said base, said cover during interlocking relation of said latch and magazine adapted to be swung upwardly and rearwardly away from said magazine to permit access to said rail, said cover adapted to be pivotally swung towards said magazine to close the latter and prevent access to said rail, slidable means carried by said cover, rectilinearly displaceable rotary means, and spring means trained over said rotary means for urging said slidable means towards the rear of said cover, said magazine having abutment means for displacing said slidable means towards the front of said cover towards the completion of the closing of said magazine by said cover to actuate said rotary means and distend said spring means, said abutment means having means for disengageably interlocking with said slidable means upon completion of the closing of said magazine by said cover, said spring means urging said rotary means to shift said slidable means rearwardly to interlock with said abutment means at the completion of the closing of said magazine by said cover.

71. The combination according to claim 64 wherein said spring is depressed by said latch upon downward pivotal displacement of said magazine.

72. The combination according to claim 64 wherein said latch swingably interlocks with said spring and includes a manipulator for manually displacing said latch to disengage the latter from said magazine whereby said cover and magazine may be bodily pivoted and moved towards and away from said base.

73. The combination according to claim 70 wherein said latch includes shoulders serving as abutment means for said magazine to displace said latch and depress said spring.

74. The combination according to claim 70 wherein said base includes an anvil adapted to be shifted longitudinally thereof, and a flat spring is secured to said base and includes a projection cooperating with a projection carried by said anvil to hold the latter in a set position.

75. In combination, a staple magazine having a front transverse wall and spaced sides, a rail fixed within and longitudinally of said magazine and spaced from said front wall and sides for removably supporting a staple strip, a swingable hollow closure for and substantially coextensive with the length of said magazine and in superimposed relation therewith, means hingedly connecting the rear parts of said closure and magazine, the front part of said rail and said front wall of said magazine defining a vertical staple raceway, said front wall constituting means to prevent spillage of staples of said strip forwardly of said raceway, means for driving the foremost staple of said strip through said raceway and out of said magazine, abutment means spaced from said rail and carried by and extending from said magazine, and spring controlled movable latch means carried by said closure and in the path of movement of said abutment means on the swingable movement of said closure towards said magazine to close the latter for automatically and disengageably interlocking with said abutment means to prevent rearward pivotal separation of said closure away from said magazine.

76. In combination, a magazine comprising an elongated hollow box including a rim having a front transverse wall and spaced sides and defining an open top channel, a staple strip supporting rail disposed below the upper surface of said rim and fastened within and longitudinally of said magazine and within said channel and spaced from said front wall and sides, a swingable cover substantially coextensive with the length of said magazine and in superimposed relation therewith to close said channel, means hingedly connecting said magazine and cover to permit said cover to be swung towards or away from said magazine, the front part of said rail and said front wall of the magazine defining a vertical staple raceway, means carried by said cover for driving the foremost staple of said strip through said raceway and out of said magazine, wing means extending from said magazine above said sides, and latch means carried by said cover for disengageably interlocking with said wing means to hold said cover in closed superimposed relation with said magazine and against accidental swingable movement away from said magazine.

77. In a top loading staple machine, an elon-

gated magazine comprising an open top box having a front wall and spaced sides, a relatively elongated closure comprising separate and overlapping front and rear channel shaped members defining an elongated housing substantially coextensive with the length of said magazine, a staple carrying rail fixedly arranged within said box and spaced from said wall and sides and below the upper peripheral face of said box, and means hingedly connecting said magazine and closure whereby the latter may be swung relative to said magazine to open or close the latter, said rear member having a marginal extension projecting below said front member and the latter having a lower peripheral face, said marginal extension adapted to closely but removably telescope within said box between said sides and the upper peripheral face of said box constituting stop means for said lower peripheral face.

78. In a top loading stapling machine, a magazine comprising an open top elongated hollow box having an elongated channel and having spaced sides and a transversely arranged front wall, means within said box and defining a staple raceway, guide means within said channel for guiding a staple strip and for guiding the foremost staple of said strip towards said raceway, spring controlled means within said channel for urging the foremost staple of said strip to said raceway, a hollow cover substantially coextensive with the length of said box and having transversely spaced sides, staple driving means carried by said cover for ejecting the said foremost staple out of said raceway, fulcrum means pivotally sustaining the rear ends of said sides of said box and the rear ends of said sides of said cover to allow said cover to be swung towards said box to cover the latter and be in superimposed relation therewith and to allow said cover to be swung rearwardly relative to said box to dispose the length of said cover substantially in longitudinal alignment with the length of said box, shiftable latch means carried by said cover, and keeper means on said box for interlocking with said latch means on the pivotal movement of said cover downwardly towards said box to cover the latter.

79. In a top loading stapling machine, a magazine for receiving a staple strip and comprising an open top hollow and elongated box having an elongated channel and having space sides and a transversely arranged front wall, spring controlled means within said box for urging the foremost staple of said strip forwardly, a hollow cover substantially coextensive with the length of said box and having transversely spaced sides, staple driving means carried by said cover for ejecting a staple from said box, fulcrum means pivotally sustaining the rear ends of said sides of said box and the rear ends of said sides of said cover to allow the latter to be swung towards said box to cover the latter and be in superimposed relation therewith and to allow said cover to be swung rearwardly relative to said box to dispose the length of said cover substantially in longitudinal alignment with the length of said box, shiftable latch means carried by said cover, keeper means on said box for disconnectably interlocking with said latch means, and means for urging said latch means to automatically interlock with said keeper means on the pivotal movement of said cover downwardly towards said box to cover the latter.

80. In a stapling machine, a base, a magazine comprising an open top hollow box pivoted substantially at the rear of said base, said box comprising transversely spaced sides disposed longitudinally of said base, guide means within said box for guiding a staple strip, means within said box and defining a staple raceway, a spring controlled follower for urging the foremost staple of said strip to said raceway, a cover for said box and substantially coextensive with the length thereof and adapted to be disposed in removable superimposed relation therewith for covering and uncovering said box, said cover having longitudinally arranged and transversely spaced sides substantially coextensive with the length of said cover, means pivotally sustaining said spaced sides of said cover with said spaced sides of said box whereby said cover may be bodily swung upwardly and rearwardly and in a direction away from said raceway to provide longitudinal access to said guide means and whereby said cover may be bodily swung downwardly and towards said box to cover the latter, staple driving means carried by said cover for ejecting said foremost staple out of said raceway, said spaced sides of said cover and said spaced sides of said box on pivotal movement of said cover downwardly towards said box on the covering of the latter by said cover removably telescoping along the length of said box to dispose said spaced sides of said cover and said spaced sides of said box in close but removably overlapping relation to locate said cover relative to said box and to locate said driving means substantially in vertical alignment with said raceway, and means for automatically and disconnectably locking said cover and box on the covering of the latter on the downward pivotal displacement of said cover towards said box.

81. In a stapling machine, a base, a magazine comprising an open top hollow box pivoted substantially at the rear of said base, said box comprising transversely spaced sides disposed longitudinally of said base, guide means disposed below the upper peripheral face of said box for guiding a staple strip, means within said box and defining a staple raceway, a spring controlled follower in said box for urging the foremost staple of said strip to said raceway, a cover for said box and substantially coextensive with the length thereof and adapted to be disposed in removable superimposed relation therewith for covering and uncovering said box, said cover having longitudinally arranged and transversely spaced sides substantially coextensive with the length of said cover, means pivotally sustaining said spaced sides of said cover with said spaced sides of said box whereby said cover may be bodily swung upwardly and rearwardly and in a direction away from said raceway to provide access to said guide means longitudinally of the latter and whereby said cover may be bodily swung downwardly and towards said box to cover said box, staple driving means carried by said cover for ejecting said foremost staple out of said raceway, said spaced sides of said cover and said spaced sides of said box on pivotal movement of said cover downwardly towards said box on the covering of the latter by said cover removably telescoping substantially along the length of said box to dispose said spaced sides of said cover and said spaced sides of said box in close but removably overlapping relation to locate said cover relative to said box and to locate said driving means substantially in vertical alignment with said raceway, means for automatically and disconnectably locking said cover and box on the covering of the latter on the down-

ward pivotal displacement of said cover towards said box, and means extending above the elevation of said guide means and adjacent thereto to prevent spillage of said staple strip forwardly of said raceway.

82. In a device of the type indicated, a stapling arm comprising a magazine having an open side, a cover on the magazine for closing the open side thereof, said cover being movable with respect to the magazine to open the latter to receive a supply of staples, a pusher mounted in the magazine and slidable therein to advance the staples therealong, a spring for yieldingly advancing the pusher, staple-applying means movable relatively of the magazine for driving staples therefrom, and means connecting the cover and pusher to retract the latter in the magazine when the cover is moved to open the magazine.

83. In a device of the type indicated, a hollow stapling arm comprising parts pivotally connected at one end and adapted to be rocked relatively of each other to open the arm to receive a supply of staples, a pusher mounted on one of the parts and slidable thereon to advance the staples along the arm, a spring for yieldingly advancing the pusher, staple-applying means for driving the staples from the arm, and means connecting the pusher and another of the relatively movable parts of the arm to retract the pusher along the part on which it is mounted when the parts of the arm are moved relatively of each other to open the arm.

84. In a stapling machine, an elongated magazine for housing a staple strip and including a staple guideway, a cover movably guided relative to said magazine, a slidably guided follower in said magazine, automatic means for urging said follower away from said strip and away from said guideway upon movement of said cover in a direction rearwardly of said magazine on opening of the latter by said cover, spring means for automatically urging said follower towards and against said strip on movement of said cover towards said guideway, and driving means carried by said cover for ejecting a staple of said strip through said guideway.

85. In a stapling machine, an open top magazine for guiding staples and including a staple driveway, a front transversely arranged wall carried by said magazine to limit displacement of said staples, staple follower means slidable in said magazine to shift said staples towards said driveway and wall, a cover pivotally connected to said magazine and movable away from said top and wall for opening said magazine to render said staples accessible and movable in an arcuate direction towards said wall to close said top and for closing said magazine for covering said staples and follower means, expandible and contractible spring means connected to said cover and follower means for urging said follower means towards said driveway upon shifting of said cover in a direction towards said driveway and wall and for shifting said follower means away from said driveway and wall upon movement of said cover in an arcuate direction away from said wall, means to limit movement of said cover in a direction towards said driveway upon the completion of the closing of said magazine by said cover, keeper means carried by said magazine, manually displaceable locking means carried by said cover and cooperating with said keeper means to prevent involuntary movement of said cover away from said magazine, said spring means being looped over said locking means for automatically actuating the latter into interlocking engagement with said magazine upon closing of said magazine by said cover, and driving means for ejecting one of said staples out of said driveway.

86. In a stapling machine, a magazine for guiding staples and having a driveway, a follower in said magazine, means slidably retaining said follower within said magazine, a cover movably connected to said magazine and displaceable towards or away from said driveway to render said staples and follower inaccessible or accessible, latching means for disengageably locking said magazine and cover, a helicoidal spring looped over said latch and having ends connected to said cover and follower, and driving means for ejecting one of said staples out of said driveway.

87. In a stapling machine, a magazine for guiding staples and having a driveway, a follower in said magazine, means slidably retaining said follower within said magazine, a cover pivotally connected to said magazine and displaceable in an arcuate direction towards or away from said driveway to render said staples and follower inaccessible or accessible, latching means for disengageably locking said magazine and cover, a helicoidal spring looped over said latching means and connected to said cover and follower, and driving means carried by said cover for ejecting one of said staples out of said driveway.

88. In a stapling machine, a magazine for guiding staples and having a driveway, a follower in said magazine, a cover pivotally connected to said magazine and displaceable in an arcuate direction towards or away from said driveway to render said staples and follower inaccessible or accessible, a movable latch carried by and in part projecting laterally of said cover, keeper means for disengageably interlocking with said latch, and a spring looped over said latch and connected to said cover and follower for automatically interlocking said latch with said keeper means on the completion of the movement of said cover towards said driveway, and driving means for ejecting one of said staples out of said driveway.

89. In a stapling machine, a magazine for guiding staples and having a driveway and comprising an open top, a follower in said magazine, a cover pivoted to said magazine and displaceable in an arcuate direction towards or away from said driveway and open top to render said staples and follower inaccessible or accessible, a movable latch carried by and projecting laterally of said cover, keeper means on said magazine, and a helicoidal spring looped over said latch and connected to said cover and follower for automatically interlocking said latch with said keeper means on the completion of the movement of said cover towards said magazine.

90. In combination, a magazine for guiding staples and having keeper means, a movable cover connected to said magazine, a staple follower, means slidably retaining and movably guiding said follower within said magazine, a latch movably guided in said cover, a roller for abutting said latch and disposed within said cover, pin means for sustaining said roller, said cover having means for slidably guiding said pin means, and a helicoidal spring acting against and looped over said roller and connected to said follower and cover for urging said latch to disconnectably interlock with said keeper means upon complete closing of said magazine by said cover.

91. In combination, a magazine for housing

staples and having keeper means, a rail within said magazine for slidably guiding said staples, a movable cover connected to said magazine, a staple follower in said magazine and having means slidably interlocking with said rail, a latch movably guided in said cover comprising a recess, a roller in part disposed in said recess, means slidably guided by said cover and sustaining said roller, and a spring acting against and looped over said roller and connected to said follower and cover for urging said latch to disconnectably interlock with said keeper means upon complete closing of said magazine by said cover.

92. In combination, a magazine for guiding staples and having keeper means, a movable cover connected to said magazine and comprising spaced side walls, a staple follower slidably guided in said magazine, a latch movably guided in said sides and comprising a recess, a roller in part disposed in said recess, means slidably guided by said cover and sustaining said roller, a helicoidal spring acting against and looped over said roller and connected to said follower and cover for urging said latch to interlock with said keeper means upon complete closing of said magazine by said cover, and said latch having spaced notches receiving said sides and including walls cooperating with said sides to limit displacement of said latch relative to said cover.

93. In combination, a magazine for guiding staples and having keeper means, a movable cover connected to said magazine and having spaced sides including alined openings, a staple follower slidably guided in said magazine, a latch slidably guided in said alined openings and having finger gripping portion projecting laterally therefrom to extend beyond said cover and comprising a recess, a pin disposed transversely of and within said cover, said cover having means for slidably guiding said pin longitudinally thereof, a roller rotatably mounted on said pin and in part disposed in said recess, a spring acting against and looped over said roller and connected to said follower and cover for urging said latch to disconnectably interlock with said keeper means upon complete closing of said magazine by said cover, said latch having a rear end provided with spaced notches including walls for movably straddling said sides and comprising spaced projections adjacent to and for actuating said pin, and means to limit forward and rearward displacement of said pin.

94. In combination, a magazine for guiding staples and having keeper means, a swingable cover connected to said magazine, a staple follower in said magazine, staple driving means carried by said cover, a latch movably guided in said cover, a helicoidal spring looped over said latch and connected to said follower and cover for urging said latch to removably interlock with said keeper, and means upon complete closing of said magazine by said cover, said spring comprising upper and lower reaches, said lower reach bridging said cover and magazine during swingable displacement of said cover towards or away from said magazine, said upper reach being continuously disposed within said cover, said lower reach adapted to shift said follower in a direction towards or away from said driving means during closing or opening of said magazine by said cover, said lower reach having one end shiftable in a direction longitudinally of said magazine during opening or closing of the latter by said cover.

95. In a top loading stapling machine adapted to utilize a staple strip; a staple supporting magazine having an open top coextensive with substantially the entire length of said magazine and through which said entire staple strip is adapted to be dropped and having a relatively elongated channel in which said entire staple strip is adapted to be received, said magazine having means at the front part thereof constituting a staple guideway for receiving the foremost staple of said staple strip, a cover substantially coextensive with the entire length of said magazine for rendering said guideway and substantially the entire length of said channel accessible or inaccessible, means mounting said cover for movement relative to said magazine to allow displacement of said cover relative to said magazine to fully expose said open top and channel preparatory to dropping a staple strip through said open top and into said channel, a follower slidably guided within said channel and adapted to be disposed at the rear of said staple strip, means for automatically shifting said follower rearwardly relative to said guideway upon displacement of said cover in a direction away from said guideway, means for automatically shifting said follower in a direction towards said guideway and against said staple strip upon movement of said cover in a direction towards said guideway, and means for ejecting said foremost staple through said guideway.

96. In a top loading stapling machine adapted to utilize a staple strip; a staple supporting magazine having an open top coextensive with substantially the entire length of said magazine and through which said entire staple strip is adapted to be dropped and having a relatively elongated channel in which said entire staple strip is adapted to be received, a rail secured within said magazine for supporting said entire staple strip, said magazine and rail having means at the front part thereof constituting a staple guideway for receiving the foremost staple of said staple strip, a cover substantially coextensive with the entire length of said magazine for rendering said guideway and substantially the entire length of said channel accessible or inaccessible, means mounting said cover for movement relative to said magazine to permit displacement of said cover relative to said magazine to fully expose said open top and channel preparatory to dropping a staple strip through said open top and into said channel for seating of said staple strip on said rail, a follower having means slidably interlocked with said rail and adapted to be disposed at the rear of said staple strip, means for automatically shifting said follower rearwardly relative to said guideway upon displacement of said cover in a direction away from said guideway, means for automatically shifting said follower in a direction towards said guideway and against said staple strip upon movement of said cover in a direction towards said guideway, and staple driving means carried by said cover for ejecting said foremost staple through said guideway.

97. In a stapling machine, staple supporting means, means at the front end of said supporting means and constituting therewith a staple guideway, means movably guided relative to said supporting means for covering or uncovering the latter, a follower slidably guided on said supporting means, and a connection between said follower and said movably guided means for automatically shifting said follower rearwardly relative to said guideway upon displacement of said movably guided means in a direction away from said guideway.

98. In a stapling machine, means for supporting staples, means at the front end of said supporting means and constituting therewith a staple guideway, means reciprocably guided relative to said supporting means for covering or uncovering the latter, a follower slidably guided relative to said supporting means, a connection between said follower and said means reciprocably guided relative to said supporting means for automatically shifting said follower rearwardly relative to said guideway upon displacement of said means reciprocably guided relative to said supporting means in a direction away from said guideway, and means for automatically urging said follower in a direction towards said guideway in the covered relation of said supporting means by said means reciprocably guided relative to said supporting means.

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