

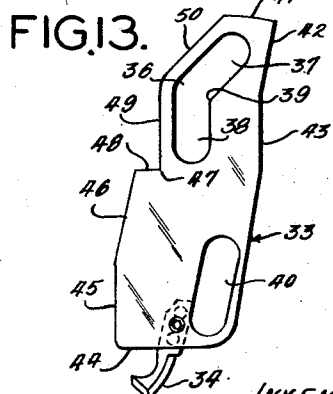
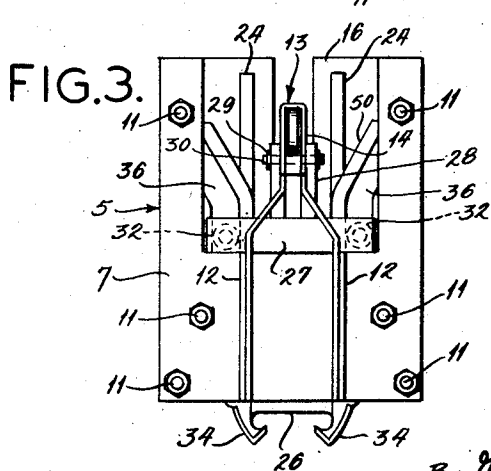
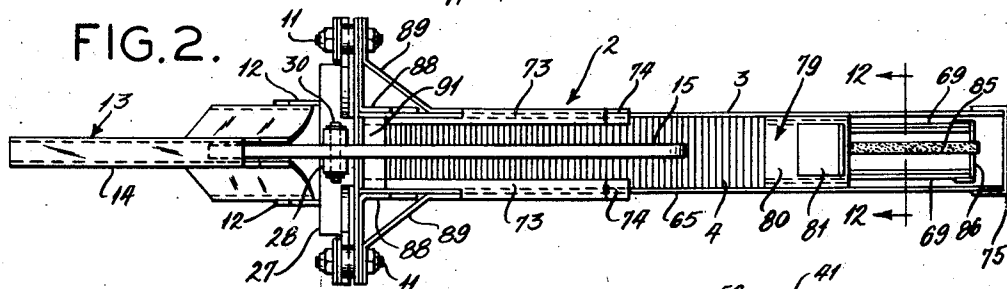
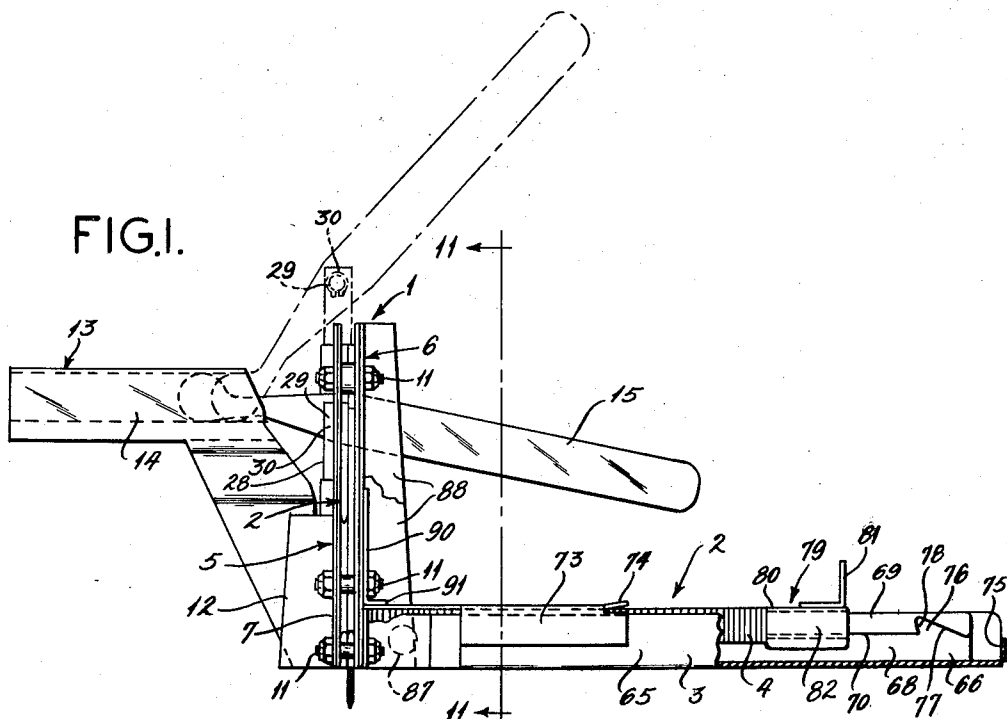
Nov. 20, 1956

W. SCHAFROTH
STAPLING MACHINE

2,770,804

Filed June 23, 1954

3 Sheets-Sheet 1



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FIG. 4.

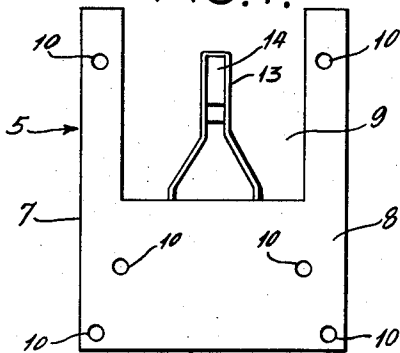


FIG. 6.

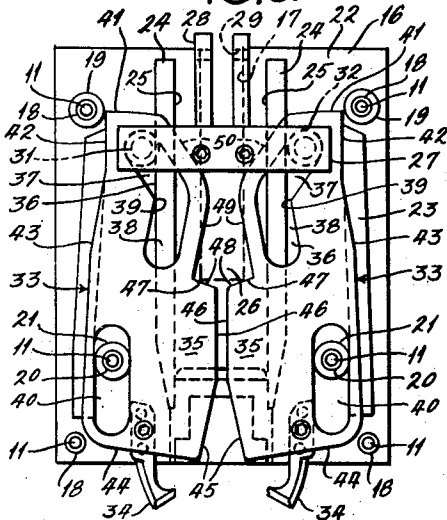


FIG. 8.

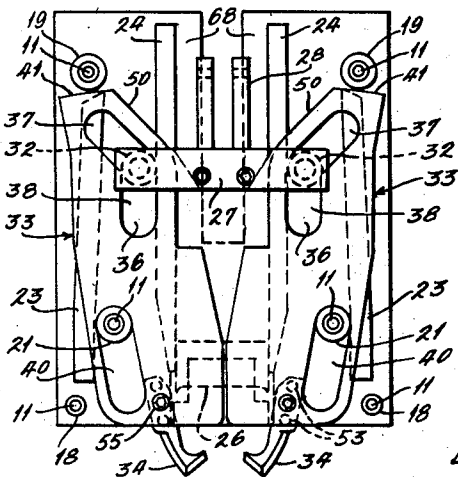


FIG. 5.

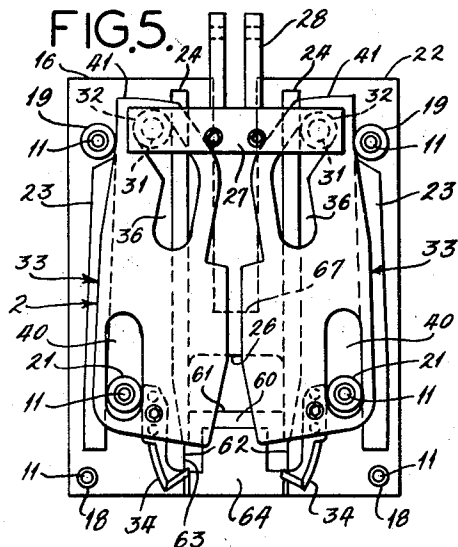
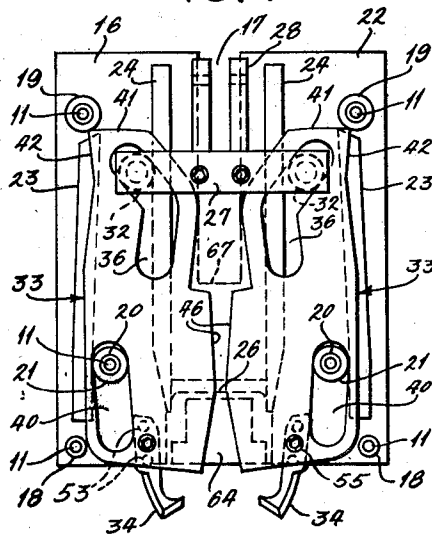


FIG. 7.



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3 Sheets-Sheet 3

FIG.9.

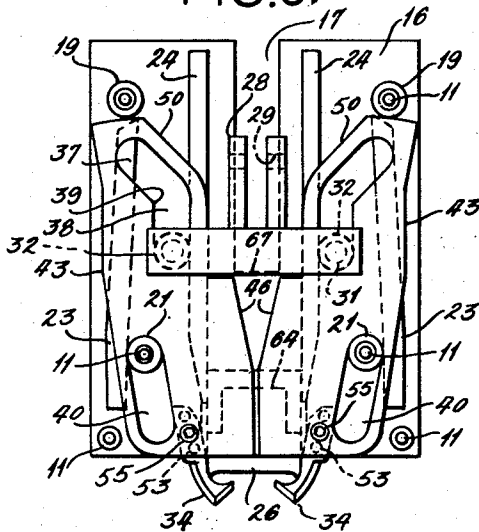


FIG.10.

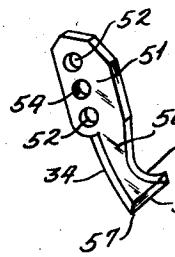


FIG.12.

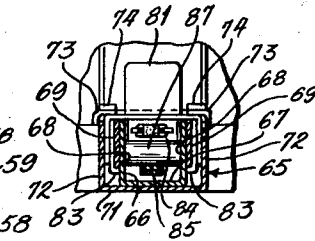


FIG.11.

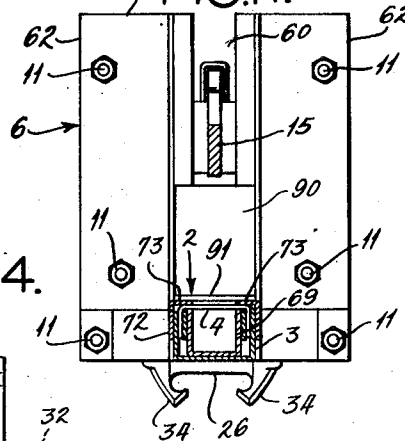


FIG.15.

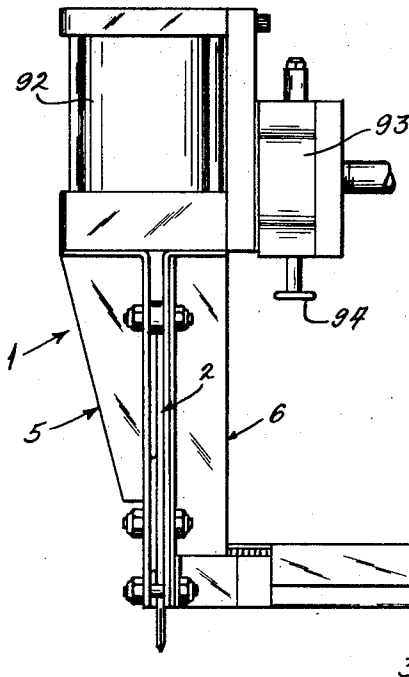
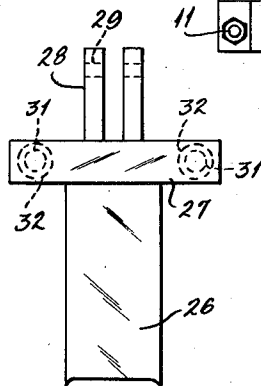


FIG.14.



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2,770,804

STAPLING MACHINE

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Application June 23, 1954, Serial No. 438,679

10 Claims. (Cl. 1—49)

This invention relates to stapling machines in general, and particularly to those of the type which are used to secure the flaps or ends of closed cartons or containers where stationary anvils cannot be used and where movable anvils are used for penetrating the material, guiding and clinching the staples. The invention also relates to a stapling mechanism which provides a novel anvil movement for penetrating the box material, to a novel magazine construction, and to a novel pivotally mounted operating means.

This invention represents a practical improvement over the stapling machines, particularly the stapling means therein, shown in Schafroth patents, No. 2,080,634 dated May 18, 1937; No. 2,234,808 dated March 4, 1941; No. 2,469,054 and No. 2,469,055 dated May 3, 1949; No. 2,470,727 dated May 17, 1949; No. 2,488,940 dated November 22, 1949; and in my co-pending application Serial No. 340,443 filed March 5, 1953. This invention also represents a practical improvement in the magazine which feeds staples one after the other to the staple driving and clinching means, and also represents an improvement in the mounting of the pivotally mounted operating handle.

One of the principal objects of the present invention is to provide a stapling machine having a novel movement for the anvil and anvil securing means whereby said anvils move vertically downwardly to cut the material and then pivot inwardly and slightly upwardly along said cuts into final clinching position prior to the driving, guiding, and clinching of the staple. Another object is to provide a stapling machine wherein most of the parts which are subject to wear and which are required in pairs are reversible so that only one of each pair is needed as a spare part instead of the usual two. Another object is to provide a novel movement to the actuated anvils with a minimum of parts which are designed not to break easily and have a long life. Another object is to provide a positive acting stapling machine which can be repaired easily and quickly by the operator himself who needs only a minimum of spare parts.

Another object is to provide a new magazine construction requiring no full length longitudinal hold down bar and having a novel pusher locking mechanism. Still another object is to provide a novel mounting for a pivotally mounted operating handle.

These and other objects and advantages will become apparent hereinafter.

The invention is embodied in a stapling machine comprising a casing having stapling means therein and means for supplying staples thereto, whereby anvils move downwardly from said casing thereby piercing the box material and then move inwardly and slightly upwardly into clinching position for guiding and clinching a staple driven from said casing by said stapling means by operation of a pivotally mounted operating handle whose fixed fulcrum is forward of the staple driving means.

The invention also consists in the parts and in the arrangement and combination of parts hereinafter de-

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scribed and claimed. In the accompanying drawings, which form part of this specification and wherein like numerals and symbols refer to like parts wherever they occur:

Fig. 1 is a side elevational view, partly in section, of a stapling machine embodying the present invention, the handle of said machine being in its lowest position so that the anvils are in their final or clinching position, said dotted lines showing the handle in its raised position,

Fig. 2 is a top plan view of the machine shown in Fig. 1,

Fig. 3 is a front elevational view thereof,

Fig. 4 is an elevational view of the rear or inner face of the front housing after said front housing has been removed from the stapling machine,

Fig. 5 is an elevational view of the front or inner face of the rear housing after the front housing has been removed, the anvils being shown in their upmost position,

Figs. 6 and 7 are elevational views of the front face of the rear housing shown in Fig. 5 with the anvils and anvil securing plates at various stages of operation, the handle member having been removed for clarity,

Fig. 8 is an elevational view of the front face of the rear housing showing the anvils in their final clinching position with the staple driving blade still in an elevated position,

Fig. 9 is an elevational view of the front face of the rear housing showing the anvil in its final clinching position and the staple drive blade in its lowest or clinching position,

Fig. 10 is an enlarged side elevational view of one of the anvils per se,

Fig. 11 is a vertical cross sectional view taken along the line 11—11 of Fig. 1,

Fig. 12 is an enlarged fragmentary cross sectional view of the rear portion of the magazine taken along the line 12—12 of Fig. 2,

Fig. 13 is a side elevational view of one of the plates per se with an anvil attached,

Fig. 14 is a front or side elevational view of the yoke together with the upwardly extending arms and downwardly extending staple driving blade, and

Fig. 15 is a side elevational view of the stapling machine shown in Fig. 1 in which the handle has been replaced with an air cylinder for operating said machine.

Referring now to the drawings in detail, it will be seen that the embodiment of the invention which has been illustrated comprises an upstanding casing 1 of substantially rectangular shape with a stapling mechanism 2 therein and a magazine 3 which extends rearwardly of said casing 1 and automatically feeds staples 4 to said casing 1.

The casing 1 comprises a front housing 5 and a rear housing 6 with said stapling means 2 therebetween. The front housing 5 comprises a substantially rectangular plate 7 having a rear face 8 and a large rectangular opening 9 in the top central portion thereof. The front housing 5 is provided with six holes 10 for receiving bolts 11 which keep the casing 1 in assembled relation. The forward portion of said front housing 5 is provided with a reinforcing flange 12 and a holder 13 adapted to be grasped by the hand of the operator, said holder 13 having a socket 14 in the rear portion thereof for receiving the forward end of an operating handle 15.

The rear housing 6 is substantially rectangular in shape and includes a rear housing plate 16 having a relatively narrow vertical slot 17 in which said operating handle 15 is free to move. The rear housing 6 is provided with six bolts 11 in registering relation with the holes 10 in the front housing 5 to hold the casing 1 in assembled relation. Each of the bolts 11 is provided with a fixed collar

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18 at its base. The two upper bolts are provided with upper rollers 19 which are free to rotate about said fixed collars. The two intermediate bolts are provided with collars 20 at their base for rotatably receiving lower rollers 21. The front face 22 of the rear housing plate 16 is provided with two outer slightly inclined longitudinal spacer bars 23 along the side edges, and two inner vertical spacer bars 24 having inner guide edges 25 for a guiding staple driving blade 26.

The staple driving blade 26 is fixedly secured to a transverse yoke 27 having two arms 28 extending upwardly therefrom, said arms 28 having registering holes 29 therein for receiving a pin 30 on which is mounted the operating handle 15. The ends of the yoke 27 are provided with pins 31 on which are rotatably mounted vertically movable rollers 32 which move only in a vertical direction between limits as best shown in Figs. 5 through 9.

A pair of anvil supporting plates 33, as best shown in Fig. 13, are slidably mounted in said casing 1 and with respect to said rear housing 6 and are designed to move so that the anvils 34 which are rigidly but removably secured to the bottom securing portions 35 of the plates 33 move vertically downwardly and thence pivot inwardly and slightly upwardly as best shown in Figs. 5 through 9, inclusive. The anvil supporting plate 33 is provided with a curved upper cam slot 36 having an angular upper leg 37 and a straight lower leg 38 with an elbow 39 therebetween, and a straight lower cam slot 40. The anvil supporting plate 33 is of irregular shape and has an upper cam surface 41, a vertical outer cam surface 42 along the upper portion of the outer edge 43 which extends downwardly to the bottom edge 44. The outer cam surface 42, or the upper cam surface 41, or the corner therebetween is always in contact with the upper roller 19. A straight lower inner edge 45, which is parallel to the straight lower leg 38 of the upper cam slot 36 is provided at the bottom of the inner portion of each anvil supporting plate 33 and has a straight intermediate inner edge 46 thereabove with a substantially right angled cutout 47 having a bottom 48 and a side 49 which is connected to a curved upper inner edge 50 which joins the upper cam surface 41. The outer cam surface 42, the lower cam slot 40, and the intermediate inner edge 46 are parallel to each other.

Each anvil 34 is reversible and has an upper securing portion 51 having two orienting holes 52 therein for receiving two pins 53 with a threaded hole 54 therebetween for receiving a stud 55 which secures the anvil 34 to the anvil supporting plate 33. Extending downwardly from said upper securing portion 51 is a clincher 56 having a piercing point 57, a lower cutting edge 58, and a flat inner clinching surface 59. As best shown in Fig. 10, each anvil 34 is provided with a lower cutting edge 58 which extends on either side of the piercing point 57. The projected horizontal length of said lower cutting edge 58 is greater than the projected horizontal width of the narrow throat portion adjacent to the inner portion of the inner clinching surface 59, the excess portion being inwardly of said throat portion.

The anvil supporting plates 33 as well as the individual anvils 34 are reversible so that any plate 33 or anvil 34 can be used either in the left or right side of the machine.

The rear housing 6 has a U-shaped opening 60 therein corresponding in shape to the staples 4 which are received from the magazine 3. The top 61 and outer side 62 portions of the U-shaped opening 60 are formed by the edges of the rear housing plate 16 which has a rectangular opening 63 therein in the bottom thereof. A wear plate 64 forms the inner portions of said U-shaped opening 60, said wear plate 64 being in flush relation with the front face 22 of the rear housing plate 16 and being secured to the magazine 3.

The magazine 3 (Fig. 12) comprises an upwardly opening U-shaped outer channel 65 having an inner channel

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66 secured therein in parallel relation thereto, said inner channel 66 having an open forward portion which is closed by the wear plate 64 positioned in the plane of the rear housing plate 16 flush with the front face 22 thereof. The U-shaped inner channel 66 has a bottom 67 and two upstanding sides 68 each of which has a longitudinal bar 69 secured along the upper outer edge thereof thereby forming a downwardly extending longitudinal ledge 70 (Fig. 1). The U-shaped outer channel 65 has a bottom 71 and two upstanding sides 72 which terminate flush with the front face 22 of the rear housing plate 16. Each side is provided at its forward end with a longitudinal staple holding member 73 having an inclined rear tongue 74. A rear plate 75 closes the rear of said outer channel 65. The rear of each longitudinal bar 69 on the sides 68 of the inner channel 66 is provided with notches 76, each having an inclined top portion 77 and an inclined forward portion 78 adapted to hold a staple pusher 79 in a fixed rear position when staples are being loaded. The staple holding members 73 eliminate the necessity of other hold down bars or means over said staples.

The pusher 79 is slidably mounted in said magazine 3 and comprises a top portion 80 having a pusher handle 81 thereon, and two downwardly extending sides 82, each having an inwardly extending flange 83 thereon which fits beneath the ledge 70 of said inner channel 66. The pusher 79 has a tab 84 extending downwardly for receiving one end of a feed rubber band 85, the opposite end of which is held in position by a pin 86 secured to the rear portion of the inner channel 66. A roller 87 is rotatably mounted in the forward portion of said inner channel 66 about which rubber band 85 is rebent. The rear housing 6 is provided with two upstanding reinforcing flanges 88 and diagonal braces 89 extending and secured to said magazine 3. A staple guide 90 is secured between said flanges 88 above said U-shaped opening 60, said staple guide 90 having a relatively wide rearwardly extending lower flange 91 thereon for guiding said staples 4 into said opening 60. The lower flange 91 and the two longitudinal staple holding members 73 form a U-shaped hold down means over the forward portion of the magazine 3 leaving the rear portion open for receiving and/or holding staples.

Fig. 15 shows a modification of the hereinbefore described stapling machine wherein an air cylinder 92 and valve 93 are substituted for the manually actuated handle 15 for actuating the yoke 27 which in turn actuates the anvils 34 and staple driving blade 26 for driving and clinching a staple. The air cylinder 92 receives pressure fluid from a source not shown through the valve 93 actuated by a trigger 94.

In order to operate the stapling machine, staples 4 are first inserted into the magazine 3 by moving the pusher 79 to the extreme rear of the magazine 3 against the action of the rubber band 85 until said pusher 79 engages the notches 76 thereby locking said pusher 79 in a rearmost position. In this position the pusher 79 is inclined slightly upwardly. A block of staples is inserted into the magazine to the rear of said staple holding members 73 and then moved forwardly thereunder. If desired, a second block of staples can be inserted thereby completely filling the magazine 3. The pusher 79 is released by moving the handle 81 thereof slightly rearwardly and upwardly so that the flanges 83 are in line to slide beneath the longitudinal bars 69 along the ledges 70.

The stapling machine is then placed over the carton or container to be fastened by grasping the holder 13 and/or operating handle 15 until the anvils 34 are directly above the material to be stapled. With one hand preferably securely holding the holder 13, the operator uses his other hand to depress the operating handle 15 to effect the driving and clinching of a staple. The forward portion of said operating handle pivots in the socket 14,

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which constitutes a fulcrum. The yoke 27 with the stapling drive blade 26 secured thereto is relatively close to the fulcrum so that there is a mechanical advantage. The distance between these points can be varied to adjust for different sizes of staples, kinds of material, thicknesses of materials, etc.

Moving the operating handle 15 downwardly causes the yoke 27 to move downwardly from its uppermost position shown in Fig. 5. Downward movement of the yoke 27 causes the rollers 32 to move downwardly with the outer cam surfaces 42 sliding against the inner portions of the upper rollers 19 to a position shown in Fig. 6. The anvil supporting plates 33 move only vertically downwardly from the position shown in Fig. 5 to that shown in Fig. 6, so that the piercing point 57 and cutting edge 58 on either side thereof of each anvil 34 completely pierce the material to be stapled. The cut made by each anvil 34 is of greater length than the width of the narrow throat portion of each anvil. Continued downward movement of the yoke 27 causes further downward and lateral movement, as shown in Fig. 7, when the upper outer corners of the anvil supporting plates 33 are guided along the upper rollers 19 with the lower portions of said anvil supporting plates 33 being guided by the lower rollers 21 in the lower cam slots 40. The combined downward and lateral movement of the anvil supporting plates 33 continues until the lower rollers 21 engage the upper portions of the lower cam slots 40 at which time further downward movement of the yoke 27 causes the rollers 32, which are still in the angularly upper legs 37 of the upper cam slots 36, to force the plates 33 outwardly so that said upper cam surfaces 41 contact the bottom portions of the upper rollers 19. This is a pivoting movement wherein the upper portions of the plates 33 move outwardly about the pivots or rollers 21, and the lower portions with the anvils 34 thereon move inwardly toward each other. The inward movement of the anvils 34 is made easier since the narrow throat portions thereof move inwardly along the cuts already formed in the material by the relatively long lower cutting edge 58. Since the anvils 34 are mounted closer together than said lower rollers 21, said anvils 34 move inwardly along the cuts made by the lower cutting edges 58 and slightly upwardly as they pivot about the lower rollers 21 until they reach their final or clinching position as shown in Fig. 8. Continued downward movement of the yoke 27 causes the rollers 32 to move directly downwardly in the lower legs 38 of the upper cam slots 36 without in any way moving the plates 33 or the anvils 34, said downward movement causing the staple driving blade 26 to engage a staple 4 which has been pushed through the U-shaped opening 60 thereby driving it downwardly between the wear plate 64 of the rear housing 6 and the rear face 8 of the front housing 5. The downwardly extending legs of the staple 4 are engaged and/or guided by the clinching surfaces 59 of the anvils 34 through the material in the space previously cut by the cutting edge 58 of the anvil 34 and are then bent upwardly by the clinching surfaces 59 into clinched or final clinching position.

Thus it will be seen that the plates 33 move through a plurality of stages. First, the plates 33 move vertically downwardly with the staple driving blade 26, said plates 33 being guided by the outer cam surfaces 42 which slide along the upper rollers 19 and the lower cam slots 40 which slide about the lower rollers 21 until the parts are in the positions shown in Fig. 6. Second, the upper outer corners of the plates 33 move along the periphery of the upper rollers 19 thereby causing the upper portions of the plates to move downwardly and outwardly as shown in Fig. 7 until the upper corners pass the lower edges of the upper rollers 19 whereupon the upper cam surfaces 41 slide along said upper rollers 19 thereby allowing the upper portions of plates 33 to move outwardly and causing the lower portions to move inwardly

as shown in Fig. 8. In this position, the anvils are in their final clinching position, and are held against upward movement by reason of the upper cam surfaces 41 abutting against the underside of the upper rollers 19.

Third, continued downward movement of the yoke 27 causes the staple driving blade 26 to engage a staple 4 from the U-shaped opening 60 and drive and guide it downwardly through the material along the clinching surfaces 59 of the anvils 34 into final clinched position.

To disengage the anvils from the material, the operating handle 15 is moved upwardly and the staple driving blade 26 is first moved upwardly and the plates 33 then move in a reverse order as shown in Figs. 9 through 5.

During operation, the plates 33 slide between the rear face 8 of the front housing 5 and the outer faces of the inner and outer spacer bars 23 and 24, said spacer bars having a thickness slightly greater than the thickness of the anvils 34 which are removably but rigidly secured to the plates 34 by the studs 55. The parts are so designed that the staple driving blade 26 engages a staple 4 and starts it on its downward movement prior to the time that the anvils reach their final clinching position. However, the bottom edges of the downwardly extending legs of the staples do not extend from the lower edge of the casing 1 or contact the material to be stapled until the anvils 34 have reached their final position.

A broken anvil 34 or a worn plate 33 can be replaced merely by removing the nuts from the bolts 11 thereby disengaging the front housing 5 which is removed thereby exposing the plates 33 and anvils 34 as shown in Fig. 5. The operating handle, yoke, staple driving blade, and plate assembly can then be lifted from the rear housing 6.

The foregoing manually operated stapling machine can be used in the field or in the factory. Where large quantities of boxes are required to be stapled, it sometimes becomes advantageous to use power operated stapling machines, in which case an air cylinder 92, as shown in Fig. 15, can be mounted on the top of the casing 1 so that a plunger extending from the air cylinder actuates the yoke 27. The operation of the air cylinder 92 is controlled by a valve 93. The stapling mechanism is operated in the same manner as previously described. However, the casing is slightly modified to accommodate the air cylinder 92.

This invention is intended to cover all changes and modifications of the example of the invention herein chosen for purposes of the disclosure, which do not constitute departures from the spirit and scope of the invention.

What I claim is:

1. In a stapling machine having a casing with movable anvils therein, each of said anvils having a relatively narrow throat portion, a relatively long lower cutting edge, and an inner clinching surface, means mounting said anvils for downward movement from said casing for first cutting and penetrating the material to be stapled with said lower cutting edges and then moving said throat portions of said anvils inwardly along the cuts so formed into final clinching position, and means for forcing a staple from said casing through said material, said inner clinching surfaces of said anvils guiding and bending said staple into clinched position.

2. In a stapling machine having a casing with movable anvils therein with relatively narrow throat portions and relatively long lower inclined cutting edges, means mounting said anvils for downward movement from said casing for first cutting and penetrating the material to be stapled and then moving said throat portions of said anvils inwardly and upwardly within the cuts formed by said cutting edges into final guiding and clinching position, and means for forcing a staple from said casing downwardly through said material, said anvils guiding said staple and bending said staple into clinched position.

3. In a stapling machine having a casing and a yoke

movable therein, means mounting a pair of plates for sliding and pivotal movement in said casing, said plates having upper guide means and lower guide means, anvils fixedly secured to the lower portions of said plates, said yoke having means thereon for cooperating with said upper guide means, said casing having means thereon for cooperating with said lower guide means, a staple driving blade fixedly secured to said yoke, and means for moving said yoke downwardly for causing said anvils to move downwardly from said casing for cutting the material to be stapled and then inwardly along the cuts so formed into final clinching position.

4. In a stapling machine having a casing and a yoke therein, means mounting said yoke for movement within said casing, a pair of plates having a pair of upper slots with outwardly extending upper portions and a pair of lower slots, anvils fixedly attached to said plates, said yoke having means extending into and slidable in said upper slots, said casing having means fixed thereto extending into said lower slots, a staple driving blade fixedly secured to said yoke, and means for moving said yoke in a vertical direction for causing said anvils to move downwardly from said casing thereby cutting the material to be stapled and then inwardly along the cuts so formed into final clinching position.

5. In a stapling machine having a casing and means for supplying staples thereto, stapling means comprising a yoke, means mounting said yoke for movement in said casing, means for moving said yoke, a pair of movable plates slidably mounted in said casing, said plates each having an upper cam slot with an upper portion angularly positioned with respect to its lower portion, and a lower cam slot therein, said yoke having means slidably mounted in said upper cam slots, said casing having fixed means extending into said lower cam slots, whereby said plates move substantially vertically downwardly with said yoke for a predetermined distance and then the lower portions of said plates move substantially inwardly for a predetermined distance as said yoke continues to move downwardly and said yoke means moves in said angular upper portion of said upper cam slot until said lower portions of said plates have assumed their final lower and inner positions, said lower portions having anvils fixedly secured thereto for guiding and clinching a staple, said staple driving blade thereafter continuing its downward movement thereby driving a staple through the material being stapled and clinching said staple against said finally positioned anvils.

6. In a stapling machine having a casing and means for supplying staples thereto, stapling means comprising a yoke, means mounting said yoke for movement in said casing, means for moving said yoke, a pair of movable plates slidably mounted in said casing, said plates having curved upper cam slots and lower cam slots therein, said yoke having means slidably mounted in said curved upper cam slots, said casing having fixed means extending into said lower cam slots, said plates having downwardly extending anvils secured thereto, whereby said plates move substantially vertically downwardly with said yoke for a predetermined distance until said fixed means on said casing contact the upper ends of said lower cam slots, said plates then moving substantially inwardly and upwardly for a predetermined distance as said yoke continues to move downwardly and said yoke means slides downwardly in the upper portion of said curved upper cam slots until said anvils have assumed their final positions for guiding and clinching a staple, said staple driving blade thereafter continuing its downward movement thereby driving a staple through the material being stapled and clinching said staple against said finally positioned anvils.

7. In a stapling machine having a casing and a yoke therein, a pair of plates, means mounting said plates for sliding and pivotal movement in said casing for movement toward and from one another, said plates having angularly positioned cam surfaces thereon at the outer

and upper corners thereof, said plates having a pair of upper slots with outwardly extending upper portions and a pair of lower slots, anvils secured to said plates, said casing having fixed means for cooperating with said cam surfaces and fixed means extending into said lower slots, said yoke having means thereon slidable in said upper slots, a staple driving blade operatively connected to said yoke, and means for moving said yoke downwardly for moving said anvils downwardly from said casing into final clinching position, said staple driving blade forcing a staple downwardly from said casing through said material, said anvils bending said staple into clinched position.

8. In a stapling machine having a casing and a yoke therein, a pair of plates, means mounting said plates for sliding and pivotal movement in said casing for movement toward and from one another, said plates having angularly positioned cam surfaces thereon along the upper and side edges thereof, said plates having a pair of upper slots with angularly outwardly extending upper portions and a pair of lower slots, anvils secured to said plates, said casing having fixed means for cooperating with said cam surfaces and fixed means extending into said lower slots, said yoke having means thereon slidable in said upper slots, a staple driving blade operatively connected to said yoke, and means for moving said yoke in a vertical direction for moving said anvils downwardly from said casing for first cutting and penetrating the material to be stapled and then moving said anvils inwardly along the cuts so formed into final clinching position, the cam surfaces along the upper edges of said plates moving outwardly beneath said upper fixed means in said casing for preventing upward movement of said anvils and plates, said staple driving blade thereafter forcing a staple downwardly from said casing through said material, said anvils guiding and bending said staple into clinched position.

9. In a stapling machine having a casing and means for supplying staples thereto, a yoke, means mounting said yoke for movement relative to said casing, means for moving said yoke, means mounting a pair of plates for movement in said casing, said casing having fixed means in the upper portion thereof, each of said plates having an upper cam surface contacting said fixed means in said casing, said plates having curved upper slots with inclined upper portions therein, said plates having lower slots therein, said yoke extending over said plates and having means slidably mounted in said curved upper slots, said casing having fixed means extending into said lower slots in said plates constituting pivot pins about which said plates pivot after they have reached their lowest position, said plates having downwardly extending anvils removably secured thereto, said anvils having inclined cutting edges for first cutting and penetrating the material to be stapled, said yoke forcing said plates and anvils vertically downwardly through said yoke, means operating in the curved upper slots until said pivot pins in said casing abut against the upper edges of said lower slots whereupon continued downward movement of said yoke causes said anvils to pivot inwardly toward each other, a staple driving blade secured to said yoke for thereafter forcing a staple through said material, said anvils bending said staple into clinched position.

10. In a stapling machine having a casing and means for supplying staples thereto, means mounting a yoke for movement in said casing, means mounting a pair of plates for sliding and pivotal movement in said casing, said casing having fixed means in the upper portion thereof, each of said plates having an upper cam surface and an angularly positioned outer cam surface, said cam surfaces contacting the inner or bottom portions of said fixed means in said casing at all times, said plates having curved upper slots therein and lower slots therein, said yoke extending over said plates and having means slidably mounted in said curved upper slots, said casing having fixed means extending into said lower slots in said plates constituting

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pivot pins about which said plates pivot after they have reached their lowest position, said plates having downwardly extending anvils removably secured thereto, said anvils having inclined cutting edges for first cutting and penetrating the material to be stapled, said yoke forcing said plates and anvils vertically downwardly through said means operating in the inclined upper portions of said curved upper slots until said pivot pins in said casing abut against the upper edges of said lower slots whereupon continued downward movement of said yoke causes said anvils to pivot inwardly toward each other through the cuts formed in the material, a staple driving blade secured to said yoke for thereafter forcing a staple through said material, said anvils bending said staple into clinched position.

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1,539,506	Polzer	May 26, 1925
1,541,625	Chapman	June 9, 1925
1,796,572	Matveyeff	Mar. 17, 1931
1,878,417	Matveyeff	Sept. 20, 1932
1,905,241	Polzer	Apr. 21, 1933
2,182,594	Matveyeff	Dec. 5, 1939
2,488,940	Schafroth	Nov. 22, 1949
2,519,617	Wember	Aug. 22, 1950
2,588,929	Jacobus	Mar. 11, 1952