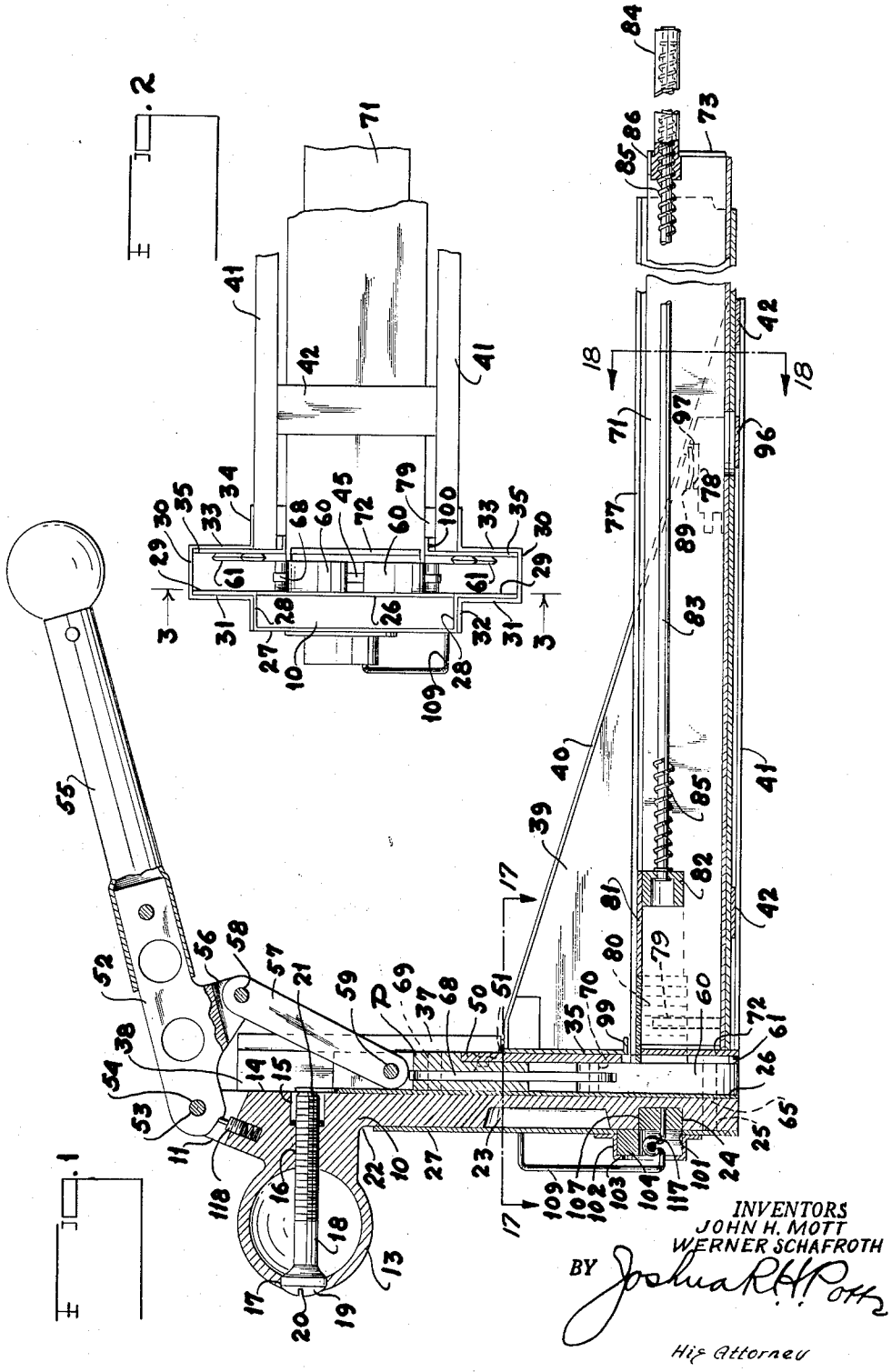
Nov. 1, 1955 W. SCHAFROTH ET AL 2,722,001

RETRACTABLE ANVIL STAPLING MACHINE

Filed Oct. 3, 1950 5 Sheets-Sheet 1



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RETRACTABLE ANVIL STAPLING MACHINE

Filed Oct. 3, 1950 5 Sheets-Sheet 2

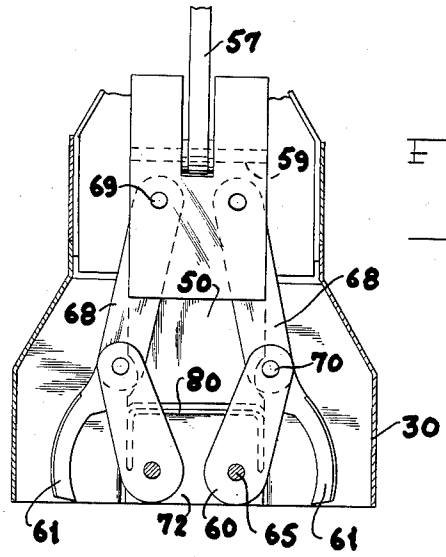


FIG. 3

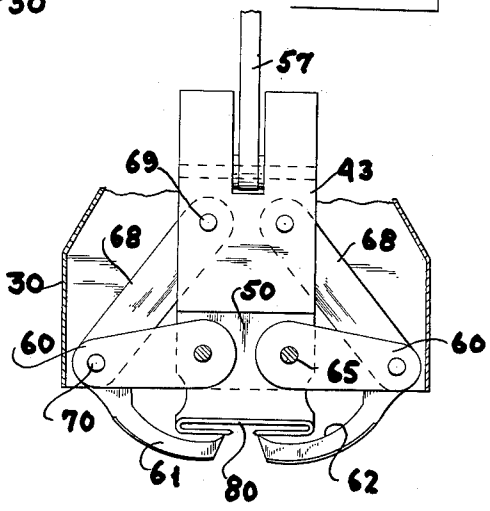


FIG. 4

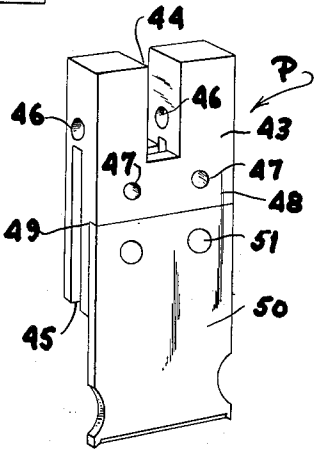


FIG. 5

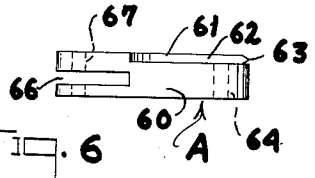


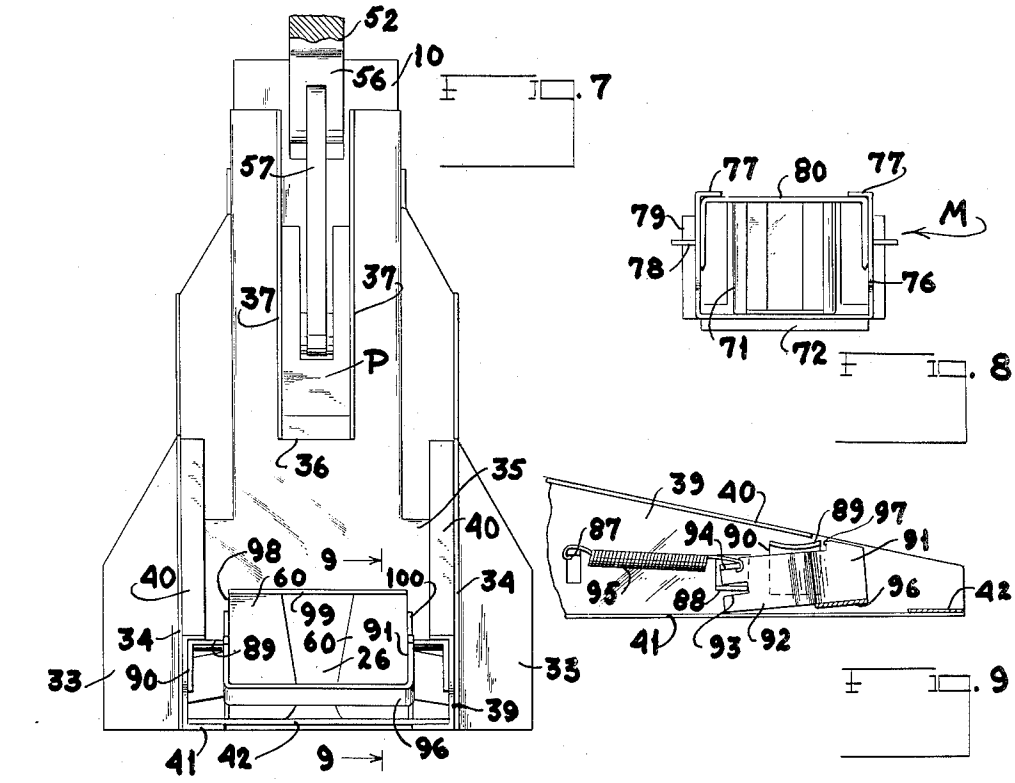
FIG. 6

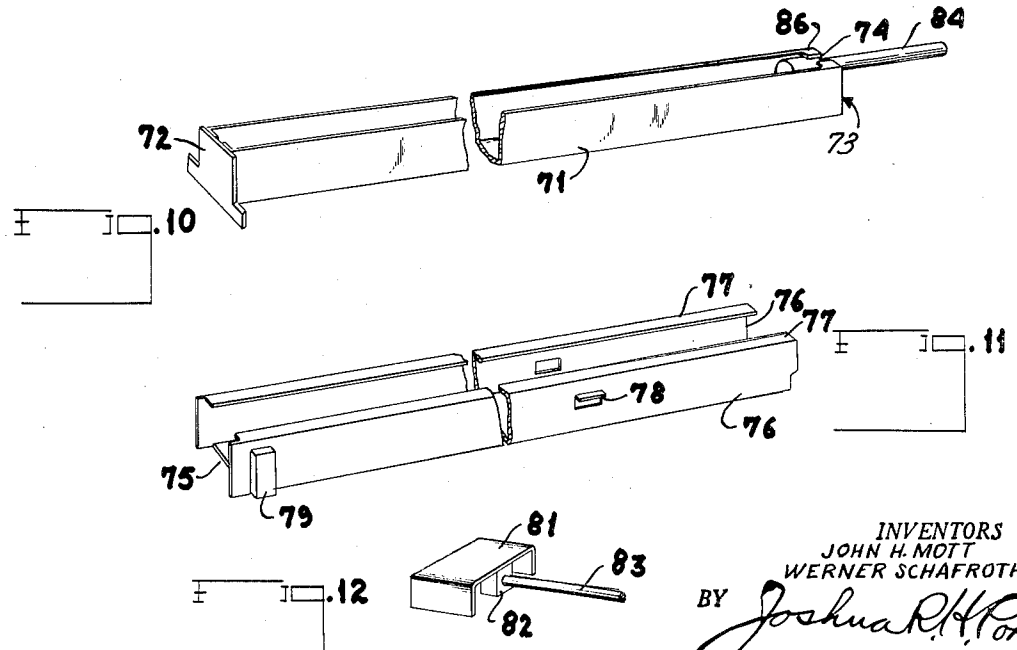
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RETRACTABLE ANVIL STAPLING MACHINE

Filed Oct. 3, 1950 5 Sheets-Sheet 3



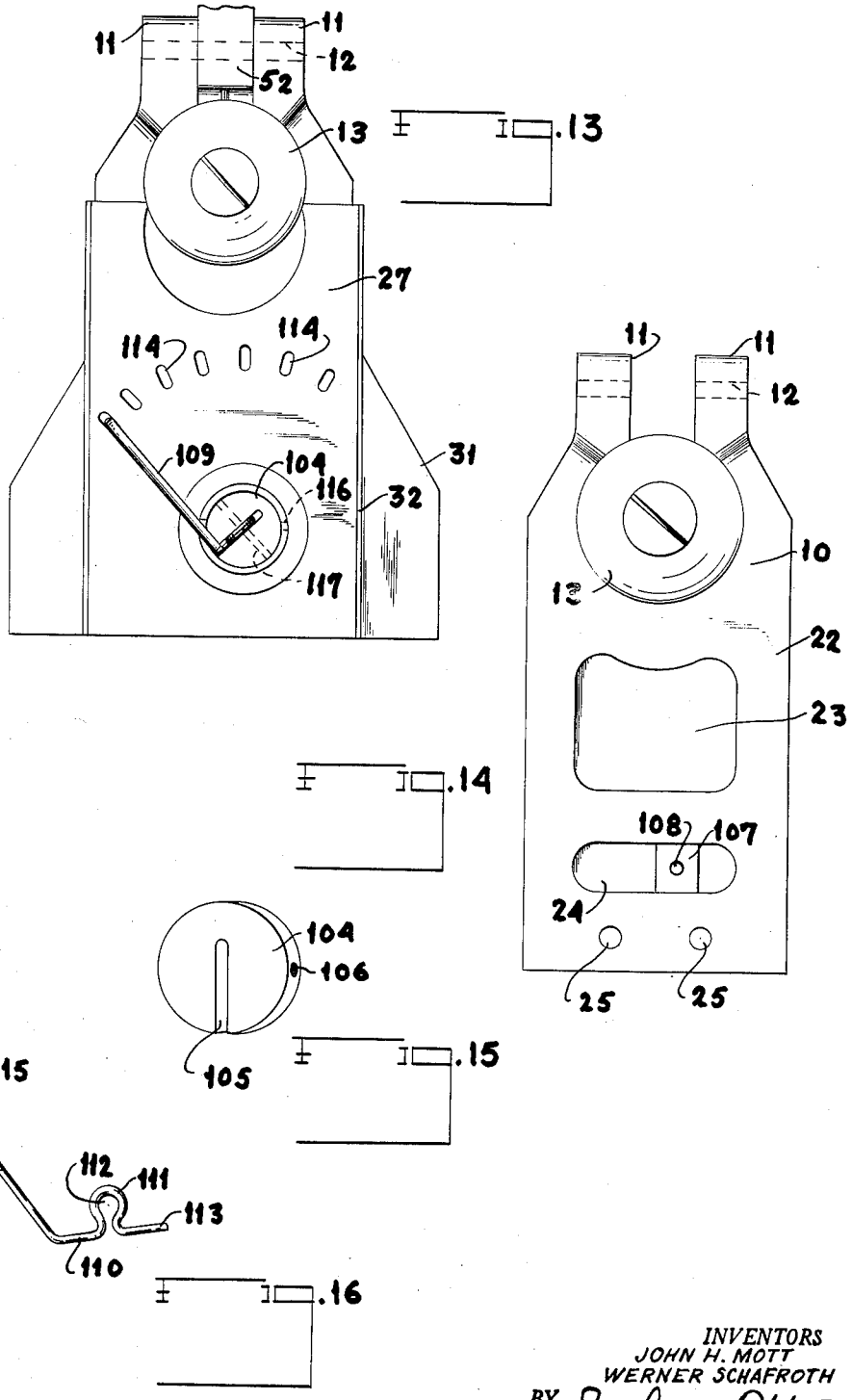


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RETRACTABLE ANVIL STAPLING MACHINE

Filed Oct. 3, 1950 5 Sheets-Sheet 4



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RETRACTABLE ANVIL STAPLING MACHINE

Filed Oct. 3, 1950 5 Sheets-Sheet 5

FIG. 17.

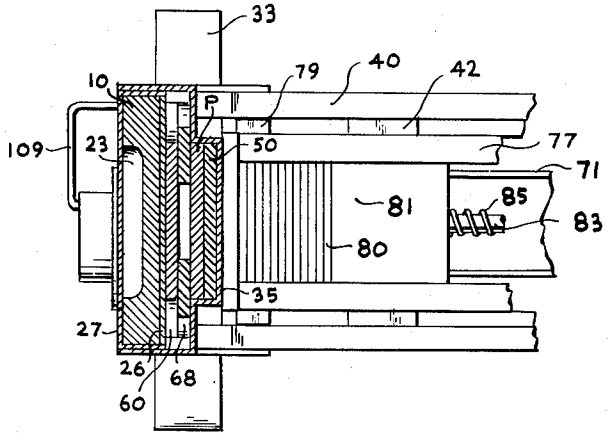
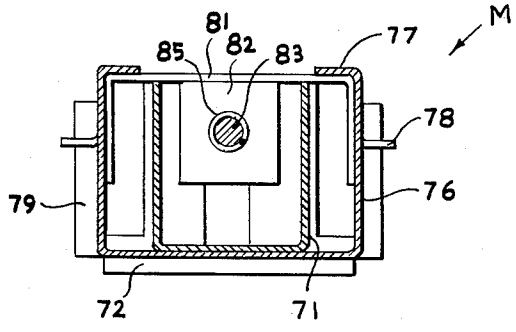


FIG. 18.



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United States Patent Office 2,722,001
Patented Nov. 1, 1955

2,722,001

RETRACTABLE ANVIL STAPLING MACHINE

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Application October 3, 1950, Serial No. 188,117

8 Claims. (Cl. 1—49)

The present invention has to do with stapling machines and is concerned primarily with stapling machines of the retractable anvil type.

The present invention provides a retractable anvil stapling machine which operates on a principle which is novel in this field and because of this radical departure over the known principles the machine is lighter in weight and cheaper in cost than comparable prior art machines and includes other features which are desirable from the viewpoint of practical utility.

As the name implies, a retractable anvil stapling machine is a machine which includes anvils that pierce the material being stapled and which cooperate with the legs of the staple to clinch them. After the clinching operation the anvils are retracted. Such stapling machines are adapted for use where access may be had to only one face of the material being stapled. A good example of this is the closing of the flaps of a corrugated carton.

The first retractable anvil stapling machines operated on the principle of first driving the anvils into clinching position and then driving the staples onto the anvils. In certain later developments it has been proposed to first drive the staples and then drive the anvils to clinch the staples. In either case there are two operating strokes that are more or less independent and it has been necessary to provide for these separate operating motions in the machine. In some instances two separate operating strokes have been used and in others there has been one main operating stroke that is broken up into two components with certain lost motion provided therebetween. It has also been necessary to use cams, cam plates, or similar instrumentalities in providing for the proper operation of the anvils and the corelation of this operation to the driving of the staples.

With the foregoing conditions in mind, the present invention has in view as its foremost objective the provision of a retractable anvil stapling machine in which the anvils and the staple are driven at the same time and by a single operating stroke of the machine. With this operation the legs of the staple pierce the material being stapled while the anvils first penetrate the material on the outer sides of the legs. The anvils then move over into engagement with the staple legs to cause their clinching during the final stages of the driving stroke.

Another highly important object of the invention is to provide a retractable anvil stapling machine in which all cams, cam plates, or comparable instrumentalities are eliminated. This object is achieved by the principle of operation above outlined which is carried out in conjunction with anvils that are pivotally mounted on fixed axes in the machine. The anvils operate with a rotary motion and are connected by links with a plunger which carries the staple driving blade. Thus, all lost motion devices are eliminated as well as cams, cam plates, or other mechanisms in which parts slide relative to one another and cause wear.

A good idea of the practical advantages which are derived from a retractable anvil stapling machine which

operates on this novel principle may be gained by considering the fact that a manually operable machine made in accordance with the latest approved practices in this field which is put out by the assignee of this application weighs about fourteen and one-half pounds. This machine is effective to drive the heavy duty staples which are ordinarily employed in closing cartons. A machine having the same operating capacity may be made following the principles of this invention and will weigh about four pounds and four ounces. Moreover, it is made at a cost of about one-third the cost of the heavier machine. Not only is there this great saving in the initial cost but when it is considered that these machines are intended to be manually handled by operators, many of whom are girls, the importance of the reduction in weight cannot be overestimated.

Just about every stapling machine, whether of the retractable anvil or other type, must include a magazine which feeds the staples into driving position. An important object of the invention lies in the provision of a new and improved magazine that is particularly adapted for use with a retractable anvil machine of the type aforesaid.

In accordance with the present invention the magazine is detachably assembled in the machne but is spring-loaded with the force of the spring maintaining the assembled relation. The magazine carries a supply of staples in the form of a strip of staples which is fed by additional spring means. An important feature of the invention resides in the fact that the spring-loaded clip which holds the magazine assembled cannot be released until the spring-feeding mechanism for the strip of staples has been removed. This guards against accidental release of the magazine.

Another highly important object of the invention is to provide a retractable anvil stapling machine in which the magazine feeds the staple which is to be driven directly into driving position. During the feeding operation the staple does not assume any intermediate or temporary position and all caps or retaining devices, either sliding or fixed, which, in now known machines, hold the staple in an intermediate position are eliminated. With this arrangement substantially all possibility of bad jamming is eliminated and should a staple be malformed upon one operation the machine may be cleared by a subsequent operation without the necessity of disassembling the machine.

From the very nature of their intended use retractable anvil stapling machines are used on different materials having different thicknesses. In view of this condition the machines must be susceptible of adjustment to vary the extent of penetration of the anvils. The now known machines include this feature of adjustment but these machines are generally characterized as including a false bottom which is pivotally mounted on the frame and which is swung on its pivotal mounting to achieve the adjustment. With this arrangement it is obvious that the machine is always tilted at a slight angle.

Another important object of this invention is to provide, in a retractable anvil stapling machine of the type indicated, a new and improved penetration control. This control is highly simplified and is carried out by providing for the adjustment of the entire operating mechanism relative to the frame. Thus, all false bottoms are entirely eliminated and the machine assumes an accurately upright position in which the staples are driven over a path that is normal to the material being stapled.

Another highly important object of the present invention is to provide, in a retractable anvil stapling machine of the character aforesaid, mechanism for adjusting the amount of compression which is achieved by the anvils and the staple driving blade. The extent of this compression depends on the length of the operating stroke.

Thus, during the final stages of this stroke the anvils move toward the blade and the further the movement is continued the more will be the compression.

In accordance with the present invention a screw is adjustably mounted in the frame and has a free end which functions as a stop or abutment in conjunction with the mechanism that drives the plunger to which the anvils and blade are connected. By rotating this screw to adjust the position of its free end the length of the operating stroke may be varied to achieve a desired degree in the compression.

From the aspect of practical utility it is highly important that retractable anvil stapling machines of the type with which this invention is concerned be susceptible of easy disassembly and assembly in the hands of the user. In the machine provided by this invention all complex parts are entirely eliminated and the number of moving parts has been substantially reduced as compared to machines heretofore known. The result is a highly simplified machine which includes only one screw in its entire makeup. This screw is the adjusting screw mentioned above. Moreover, the machine may be entirely dismantled by using a hammer and a tool in the nature of a punch. A nail will fill all the requirements of this punch. When it is considered that the machines heretofore known required special tools for their servicing, the importance of this advantage becomes apparent.

Another object of the invention is to provide a retractable anvil stapling machine of the type indicated which includes a frame, the several parts of which are pressed from sheet metal and welded together. This frame is assembled on the main standard of the machine and the latter is hollowed out at appropriate points to achieve the quality of lightness in a complete machine.

When the large number of staples which are intended to be driven by one of these machines is considered, it is evident that it is desirable to reduce to as great an extent as possible all relative movement between the staples and the retractable anvils. The greater such movement the greater will be the wear on the anvils. The present invention provides for driving the anvils at the same time that the staple is driven and an important object of this invention is to so correlate these movements so as to reduce to an absolute minimum this relative movement between the anvils and the staple.

Various other more detailed objects and advantages of the invention such as arise in connection with carrying out the above noted ideas in a practical embodiment will, in part become apparent, and in part be hereinafter stated as the description of the invention proceeds.

The invention therefore comprises a retractable anvil stapling machine in which the anvils are driven simultaneously with the staple through the medium of actuating mechanism comprising fixed pivotal mountings for the anvils and operating links which are connected to a plunger carrying the staple driving blade. The invention also embraces certain improvements in the magazine, the penetration control, the adjustment of the compression between the anvils and the staple driving blade, as well as other features which provide for a highly simplified machine.

For a full and more complete understanding of the invention, reference may be had to the following description and accompanying drawings wherein:

Figure 1 is a side view taken generally as a vertical section although on different planes through a retractable anvil stapling machine designed in accordance with the precepts of this invention;

Figure 2 is a fragmentary showing taken as a bottom plan view of the forward or operating end of the machine;

Figure 3 is a detailed section through the casing being taken about on the plane represented by the line 3—3 of Figure 2 showing the plunger, retractable anvils, operating links between the two, and the staple driving blade in elevation and in the position which the parts assume at the beginning of an operating stroke;

Figure 4 is a view similar to Figure 3 showing the relative position of the parts upon the completion of an operating stroke;

Figure 5 is a detailed perspective of the plunger and staple driving blade carried thereby;

Figure 6 is a top plan view of one of the retractable anvils per se;

Figure 7 is a view in elevation looking at the machine from the rear with the magazine removed;

Figure 8 is a view in end elevation of the magazine;

Figure 9 is a detailed view looking from the inside at one of the side frame parts showing the spring-loaded clip which biases the magazine;

Figure 10 is a detailed perspective with parts broken away and shown in section of the inner magazine part;

Figure 11 is a similar view of the outer magazine part;

Figure 12 is a detailed perspective of the staple pusher;

Figure 13 is a view in front elevation of the machine with a portion of the operating lever broken away;

Figure 14 is another view in front elevation with certain parts of the penetration control omitted;

Figure 15 is a detailed perspective of one element of the penetration control.

Figure 16 is another detailed perspective of another element of the penetration control.

Figure 17 is a horizontal section through the machine looking downwardly and taken about on the plane represented by the line **17—17** of Figure 1; and

Figure 18 is a vertical section through the magazine looking inwardly towards the machine and taken substantially on line **18—18** of Fig. 1.

Referring now to the drawings and first more particularly to Figure 1, the retractable anvil stapling machine of this invention is shown as including a main standard **10**. This standard **10** is preferably molded in the shape desired with certain surfaces subsequently machined. At the top the standard **10** is formed with a pair of spaced ears **11** through which extend aligned openings **12** for a purpose to be later described.

Below the ears **11** the standard **10** carries a hollowed-out knob **13** which is formed as an integral part of the standard **10**. The inner or rear face of the standard **10** is designated **14** and opening onto this face is a recess **15**. A threaded passageway **16** extends through the thickened portion of the standard **10** and communicates with the recess **15**, the latter being in effect a counterbore of the passageway **16**. The knob **13** is formed with an opening **17** that is in alignment with the passageway **16** and counterbore **15**. An adjusting screw **18** has a head **19** that is formed with a tool receiving kerf **20** and which head is received in the opening **17**. The main body portion of the screw **18** is screwed into the passageway **16** and projects through the counterbore **15**. This screw **18** has a free end at **21** which is adapted to serve as an abutment as will be later described.

The front face of the standard **10** is designated **22** and this face may be formed with a large recess **23** which is provided for the purpose of eliminating unnecessary metal. Below this recess **23** the standard **10** is formed with a transversely extending groove **24** which opens into the front face **22**. Adjacent to its bottom edge the standard **10** is formed with two openings **25** which accommodate the pivot pins for the anvils as will be later described. Covering the rear face **14** of the standard **10** and for all effective purposes constituting a part thereof is a wear plate **26** while a front frame wall **27** covers the front face **22**.

As is brought out more clearly in Figure 2 this front frame wall **27** carries side flanges **28** which encompass the side edges of the standard **10**. Extending outwardly from the flanges **28** are side wings **29**.

Anvil guards designated **30** include front wall sections **31** which overlap the wings **29** and flanges **32** which

overlie the flanges 28. The anvil guards 30 also include rear wall sections 33 which terminate in flanges 34.

A rear frame wall is designated 35 and is shown more clearly in Figure 7 although the lower edges also appear in Figure 2. This rear frame wall 35 is formed with a vertical slot 36 (Figure 7) the edges of which are defined by the rearwardly turned flanges 37. Integrally joined to this rear frame wall 35 are side walls 38 (see Figure 1). These side walls 38 extend to the standard 10 and cooperate therewith in providing a chamber which slidingly receives a plunger to be later described.

Side frame sections 39 have upper beveled edges in the form of inturned flanges 40 and straight bottom edges in the form of inturned flanges 41. The forward ends of these side frame sections are received between the flanges 34 of the anvil guards 30 (Figure 2) to which they are secured as by welding. The end edges abut the rear frame wall 35. Crosspieces shown at 42 extend across the side frame section 39 and preferably have their ends welded to the upper faces of the flanges 41. It is evident that the frame of the machine is made up of front wall 27 and flanges formed integrally therewith, the anvil guards 30 and flanges carried thereby, and the rear wall 35 together with the side wall sections 39 carried thereby.

A plunger is shown in detail in Figure 5 and referred to in its entirety by the reference character P. This plunger P is received in the channel defined by the wear plate 26 on the rear face 14 of the standard 10 and the rear frame wall 35 together with the side walls 38 (Figure 1). The plunger P comprises a block 43 having a slot 44 opening onto its upper edge. This slot 44 extends between the front and rear faces of the block 43. The block 43 is formed with another slot 45 which opens onto its bottom edge and which extends between the side faces of the block.

The block 43 is formed with aligned passages 46 on opposite sides of the slot 44. It is also formed with two pairs of aligned openings 47 on opposite sides of the slot 45. The rear face of the plunger block 43 is designated 48 and is cut away as indicated at 49 to accommodate a staple driving blade 50 so that when this blade is assembled in the manner illustrated its exposed face will be flush with the face 48. Rivets shown at 51 secure the staple driving blade 50 to the block 43.

An operating lever is designated 52 and is illustrated in Figures 1, 7 and 13. One end of this lever is received between the ears 11 and has a passage 53 in alignment with the openings 12. A pivot pin 54 passes through the aligned openings 12 and 53 and serves to pivotally mount the lever 52 on the standard 10. The end of the lever 52 remote from this pivotal mounting carries a handle extension 55.

Extending downwardly from the lever 52 are a pair of ears 56 between which is received one end of a plunger operating link 57. A pivot pin 58 extends through aligned openings in this end of the link 57 and the ears 56. The other or lower end of the link 57 is received in the slot 44 of the plunger block 43 and is formed with an opening in alignment with the passages 46. A pivot pin 59 passes through these aligned openings and serves to operatively connect the link 57 to the plunger block 43.

A pair of retractable anvils are included in the machine. Each of these anvils is referred to in its entirety by the reference character A and one of them is shown in detail in Figure 6. Each anvil A includes a main body portion in the form of a straight lever arm 60 (Figure 4) and a curved anvil section 61 having an anvil surface 62 terminating in a point 63.

The straight lever arm 60 of each anvil A is formed with an opening 64 which is in alignment with one of the openings 25 (Figure 1) in the standard 10. A pivot pin 65 passes through these aligned openings and serves to pivotally mount that anvil A on a fixed axis. The end of the straight lever arm 60 remote from this opening 64 is formed with a slot 66 and with aligned passages 67 on opposite sides of the slot 66.

A pair of anvil operating links are designated 68. Each link 68 has its upper end received in the slot 45 of the plunger block 43 and has an opening in alignment with one set of the passages 47. A pivot pin 69 passes through these aligned openings and serves to pivotally connect that end of the lever 68 to the plunger block 43. The other or lower end of each lever 68 is received in a slot 66 of one of the anvils A and has an opening in alignment with the opening 67. Another pivot pin 70 passes through these aligned openings and pivotally connects that end of the lever to the anvil.

Briefly summing up the operation of the plunger P and anvils A, it will be noted that as the handle 55 is depressed downwardly the link 57 transmits this motion to the plunger P to cause the downward movement thereof. As the plunger P moves downwardly it carries with it the staple driving blade 50 and at the same time the links 68 cause the anvils A to rotate on the pivot pins 65 as fixed axes.

The magazine is referred to in its entirety by the reference character M and is shown assembled in Figure 8. The magazine M comprises an inner channel shaped member 71 which is shown in detail in Figure 10. This inner member 71 carries a wear plate 72 at its inner end and its outer end has an end wall 73 (see Figure 1) formed with a slot 74 (Figure 10). The magazine M also includes an outer channel shaped member 75 having side walls 76 which terminate at their upper ends in inturned flanges 77. Struck from these walls 76 are outwardly extending tabs 78 for a purpose to be later described. The inner ends of these walls 76 carry abutment blocks 79, the purpose of which will later become apparent.

The channel member 71 is assembled within the member 75 and the two welded together. In their assembled relation the side walls of the member 71 are spaced inwardly from the side walls 76. A strip of staples is shown in broken lines in Figure 1 and designated 80. The staple at the rear end of this strip is shown in Figure 8. It will be seen that the back of the staple has its ends disposed beneath the flanges 77 of the outer magazine member 75 with the legs received between the side walls of the inner member 71 and the side walls 76 of the outer magazine member.

A staple pusher 81 is shown in detail in Figure 12. It is of U-shaped formation and assumes the same position in the magazine as does the strip of staples 80. A block 82 is secured to the underface of the staple pusher 81. A rod 83 is connected to this block 82. A spring retaining handle 84 is formed with a bore which receives the other end of the rod 83 together with an expansion coil spring 85 which surrounds the rod. One end of this spring 85 bears against the block 82 and the other against the handle 84. The inner end of the handle 84 is enlarged to provide shoulders which engage the end walls 73 on opposite sides of the slot 74. Thus, with the handle so assembled the spring 85 will urge the staple pusher 81 inwardly against the strip of staples 80 to feed the latter to the machine.

The staple pusher 81 together with the rod 83 and handle 84 and spring 85 may be removed as a unit by simply raising the handle 84 out of the slot 74. This requires an initial inward movement on the part of the handle to clear the latter from the flanges as shown at 86 which are formed as a part of the end wall 73.

A tab 87 is struck from each side frame section 39 and bent inwardly and upwardly to provide a spring anchor, this being clearly shown in Figure 9. Another tab 88 is struck from each side wall section 39 and bent inwardly and downwardly to provide a fulcrum or pivot point. A retaining tab 89 has integrally formed therewith a flange 90 that is welded to the inner face of a side frame section 39. There is one of these retaining tabs 89 for each side frame section.

A spring-loaded clip is designated 91. This clip com-

prises a pair of side walls **92**, each of which is formed with a slot at **93** which receives one of the fulcrum tabs **88**. Above this slot **93** there is a spring anchor **94**. A pair of springs **95** are included in the magazine for the purpose of spring-loading the clip **91**. Each spring **95** has one end anchored to one of the tabs **87** and its other end to the spring anchor **94**. The tendency of the springs **95** is to rotate the clips **91** about the outer edges of the tabs **88** as fulcrums.

Extending between the walls **92** of the clip **91** is a bar **96** which is adapted to be engaged by the finger of an operator to depress the clip for a purpose to be described below. Each of the walls **91** is formed with a shoulder at **97** which is adapted to engage one of the tabs **78** in the outer magazine part **75**.

The rear frame wall **35** (Figure 7) is formed with an opening **98** through which staples are adapted to pass as they are fed into the path of the blade **50**. The upper edge of this opening **98** is defined by the flange **99** as shown in Figure 1.

The side edges of this opening **98** are cut away a short distance below this flange **99** and formed with flanges represented at **100** (Fig. 2) to receive the inner ends of the side walls **76** of the magazine part **75**. With these inner ends so received the abutment blocks **79** engage the frame wall **35** to limit inward movement of the magazine.

In assembling the magazine M in the machine, the magazine is first inserted through the back of the side frame members **39** and advanced until the walls **76** of the magazine M enter between the flanges **100** (Fig. 2). At the same time the bottom of the magazine must be pressed down against the clip **91** to rotate it against the action of the springs **95** (Fig. 9) to permit the tabs **78** (Fig. 11) on the magazine M to be lowered below the tabs **89** (Fig. 1) on the sides **39** of the frame member. As the tabs **78** pass beyond the shoulders **97** on the clip **91**, the clip is rotated counterclockwise by the action of the springs **95** to place the shoulders **97** behind the tabs **78** to lock the magazine M in place, and at the same time urge it inwardly of the frame to cause the abutment block **79** on the magazine to be urged into engagement with the flange **100**, as shown in Fig. 2. To unlock the magazine M the operator need merely press downwardly on the bar **96** through openings formed in the inner channel member **71** and the outer channel member **71**, clearly shown in Fig. 1, and as described above as extending between the walls **92** of the clip **91**, withdrawing the shoulders **97** of the clip **91** from behind the tabs **78**, wherein said tabs may be withdrawn from below the tabs **89** on the sides **39** of the frame member.

After the magazine has been so assembled the staple pusher **81** together with its associated instrumentalities are assembled in the magazine in the manner above described. When so positioned the rod **83** and spring **85** thereabout act as an effective guard to prevent accidental displacement of the clip **91**. It is only by removing the staple pusher and its associated parts that access may be had to the bar **96** to depress the clip **91** and thereby remove the magazine.

The front casing wall **27** is formed with a circular opening **101** (see Figure 1) the center of which is above the horizontal midline of the groove **24** of standard **10**. A circular casing **102** is secured to the outer face of the wall **27** about the opening **101** and concentric therewith. This casing **102** has an inturned circular flange **103**.

A disc **104** is snugly and rotatably received in the casing **102** and projects through the opening **101** so that the inner face engages the front face of the standard **10**. This disc **104** is formed with a slot **105** (Figure 15) and a diametric passageway **106**. A block **107** is slidably received in the groove **24** of the standard **10**. This block **107** is formed with an opening **108** that is located substantially along the midline of the slot. An adjusting lever is designated **109**. At one end this lever carries an inwardly extending arm **110** which is formed with a loop **111** that defines a circular opening **112**. The free end of this arm **110** is designated **113** and is adapted to be received in the opening **108** in the block **107**.

The front frame wall **27** is formed with a plurality of openings **114** which are arranged in an arc concentric with the disc **104**. The lever **109** has an inturned end **115** which is adapted to be received in any of these openings.

The circular casing **102** is formed with diametrically aligned openings **116** in its cylindrical wall. After the loop **111** of the adjusting lever **109** has been positioned in the slot **105** so that the opening **112** is in alignment with the passage **106** the latter passage may also be brought into alignment with the openings **116**. In this position a pin shown at **117** may be inserted to lock the loop **111** in position in the disc **104**. After this assembled relation has been achieved the disc may be rotated whereupon the passage **106** and pin **117** come out of alignment with the openings **116**. Hence, the pin **117** is held in position by the circular wall of the casing **102**. The normal range of adjustment is indicated by the length of the arc over which the openings **114** are arranged. Over this range of adjustment the pin **117** is held assembled in the casing.

It is evident that by rotating the lever **109** the disc **104** is rotated. However, due to the eccentric or off-center relation of this disc, with respect to the opening **108**, such movement will cause a raising or lowering of the standard **10**, relative to the frame. This adjustment of the standard **10** controls the extent of penetration of the curved anvil sections **61**, inasmuch as the said anvils are pivotally fixed to the standard **10** by pins **65**. Thus, any adjustment of the standard **10** effects an adjustment of the anvils, and the amount that the anvils penetrate the material depends upon their position relative to the base of the frame. Accordingly, the lower the standard **10** relative to the frame the greater the penetration of the anvil sections **61**.

It is evident that downward movement of the lever **52** is limited by the free end **21** of the adjusting screw **18**. Thus, by adjusting the screw **18** the extent of the operating stroke may be varied to achieve a desired degree of compression.

Operation

While the operation of the machine is believed to be obvious from the description of the parts given, it may be briefly outlined by noting that the adjusting screw **18** is first availed of to provide the amount of compression desired for the particular material being stapled and the lever **109** employed to give the required amount of penetration.

With the magazine M assembled in the manner illustrated in Figure 1, the staple pusher **81** will force the staple at the innermost end of the strip of staples **80** into position beneath the staple driving blade **50**. The operator now avails of the handle **55** to depress the lever **52** by swinging it about the pivot pin **54** as an axis. This motion is transmitted through the link **57** to the plunger P. As the block **43** of the assembly moves downwardly the staple driving blade **50** is correspondingly moved to pick up the staple positioned therebeneath and drive it through the material being stapled. At the same time the link **68** causes the anvils A to be rotated about the fixed pivots **65** which cause the curved anvil sections **61** to penetrate the material. As the anvils so penetrate they move inwardly into engagement with the legs of the staple and thereby move these staple legs into clinched position depicted in Figure 4.

The handle **55** is then retracted into its upward position in which it will normally be held by a spring-biased pin **118** that is received in the socket formed in the upper edge of the standard **10**.

While a preferred specific embodiment of the invention is hereinbefore set forth, it is to be clearly understood

that the invention is not to be limited to the exact constructions, mechanisms, and devices illustrated and described because various modifications of these details may be provided in putting the invention into practice within the purview of the appended claims.

What is claimed is:

1. In a retractable anvil stapling machine, a frame and operating mechanism supported by said frame, said operating mechanism comprising a standard mounted within said frame and cooperating therewith to provide a chamber, a plunger slidably mounted in said chamber, a staple driving blade carried by said plunger, a pair of retractable anvils each of which is pivotally mounted on said standard, a pair of links operatively connecting said anvils to said plunger, a manually operable lever having one end pivotally mounted on said standard, and a link operatively connecting said lever to said plunger.

2. In a retractable anvil stapling machine, a frame and operating mechanism supported by said frame, said operating mechanism comprising a standard mounted within said frame and cooperating therewith to provide a chamber, a plunger slidably mounted for vertical movement in said chamber, a staple driving blade carried by said plunger, a pair of retractable anvils each of which is pivotally mounted on said standard, a pair of links operatively connecting said anvils to said plunger, a manually operable lever having one end pivotally mounted on said standard, a link operatively connecting said lever to said plunger, and an adjustable abutment for limiting the vertical movement of said lever which causes the driving of said plunger.

3. In a retractable anvil stapling machine, a standard, a pair of retractable anvils rotatably mounted on said standard, a plunger reciprocally mounted in a guideway one side of which is defined by said standard, a staple driving blade carried by said plunger, a pair of links each having one end connected to said plunger and the other end connected to said anvils, a hand lever pivotally mounted on said standard, and a plunger link having one end pivotally mounted to the upper end of said plunger and its other end pivotally connected to said hand lever adjacent to the pivotal mounting thereof.

4. In a retractable anvil stapling machine, a standard, a pair of retractable anvils rotatably mounted on said standard, a plunger reciprocally mounted in a guideway one side of which is defined by said standard, a staple driving blade carried by said plunger, a pair of links each having one end connected to said plunger and the other end connected to said anvils, a hand lever having one end pivotally mounted for vertical movement on the upper end of said standard and formed with a depending ear adjacent to said pivotal mounting, a plunger link having one end pivotally connected to said ear and its other end pivotally connected to said plunger, and an abutment screw adjustably mounted in said standard and having a free end adapted to be engaged by said ear to limit the vertical movement of said hand lever.

5. In a retractabe anvil stapling machine, a frame including a front wall and operating mechanism supported by said frame and including a standard having a face in engagement with said front wall, said standard being formed with a transverse groove opening into the face engaging said wall, a block slidably mounted in said groove and having a central aperture, said front wall being formed with a circular opening the center of which is offset with respect to the midline of said groove, a cylindrical casing carried by said front wall and coaxial with the opening therein, a disc in said casing formed with a radial slot, an adjusting lever having an arm formed with a loop received in said slot and a free end received in said aperture, and means for retaining said loop assembled in the slot of said disc.

6. In a retractable anvil stapling machine, a frame including a front wall and operating mechanism supported by said frame and including a standard having a face in engagement with said front wall, said standard being formed with a transverse groove opening into the face engaging said wall, a block slidably mounted in said groove and having a central aperture, said front wall being formed with a circular opening the center of which is offset with respect to the midline of said groove, a cylindrical casing carried by said front wall and coaxial with the opening therein, said casing being formed with a pair of openings in diametric alignment, a disc in said casing formed with a radial slot, and a diametric transverse passage normal to and crossing said slot, an adjusting lever having an arm formed with a loop received in said slot and a free end received in said aperture, a pin passing through said passage in the disc and the loop in the lever for maintaining said loop assembled in said disc, said pin being adapted to pass through the openings in said casing for disassembly purposes, said front wall being formed with a series of openings over an arc concentric with said casing, and an inturned end portion on the end of said lever adapted to be received in any one of said openings.

7. In a stapling machine, a standard, a staple driving mechanism mounted on said standard and comprising a staple driving blade for engaging a U-shaped staple and driving it downwardly through the standard to project the staple legs through a material to be stapled, a pair of retractable anvils each of which is pivotally mounted on the standard for rocking movement, operating means for simultaneously moving said anvils and the driving blade in staple driving relationship through a connecting means between said anvils and blade, said connecting means being adapted to pivot the anvils and drive the blade simultaneously to project the said staple legs through the material and against said anvils, said pivotable movement of the anvils being continuous during the entire period that the movement of said blade first drives the staple legs against said anvils to the completion of the downward movement of said blade.

8. In a stapling machine, a standard, a staple driving mechanism mounted on said standard and comprising a staple driving blade for engaging a U-shaped staple and driving it downwardly through the standard to project the staple legs through a material to be stapled, a pair of retractable anvils each of which is pivotally mounted on the standard for rocking movement through an arc of approximately 90°, the anvils in retracted position having their ends directed vertically for downward movement to penetrate the work adjacent the lip of the staple, and pivotable from such position toward a horizontal position below the work and the staple, operating means for simultaneously moving said anvils and the driving blade in staple driving relationship, connecting means between said anvils and blade, said connecting means comprising a linkage pivotally connected directly to the blade and to said anvils to pivot the anvils and drive the blade simultaneously and to project the said staple legs through the material and against said anvils as the anvils move under the staple, said pivotable movement of the anvils being continuous during the entire period that the blade contacts the staple and drives the staple legs against said anvil, to the completion of the downward movement of said blade.

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