Aug. 10, 1937. F. POLZER 2,089,572

WORK LOCATING MEANS FOR PLIER TYPE STAPLING MACHINES

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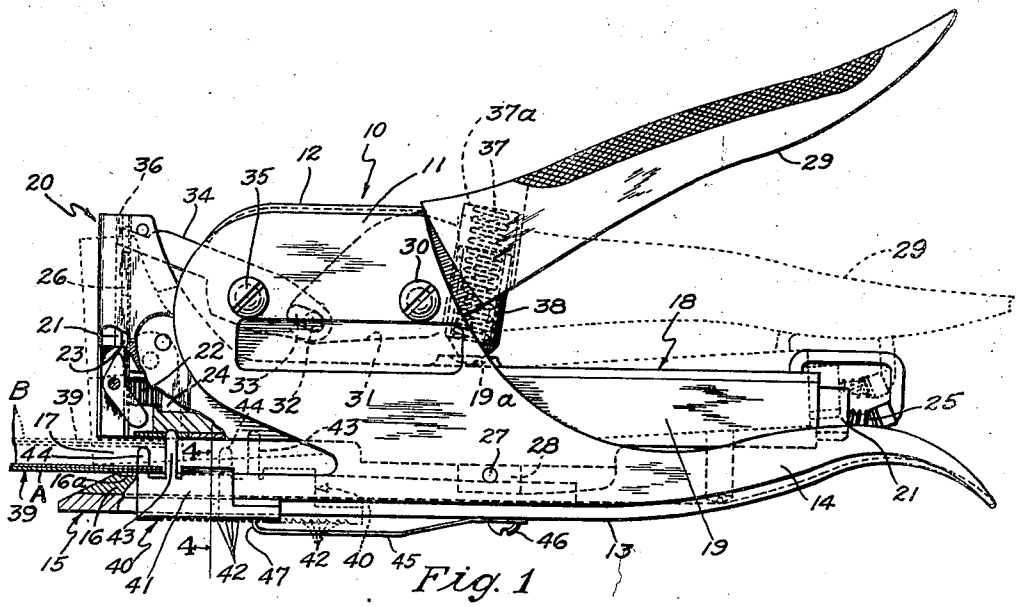


Fig. 1

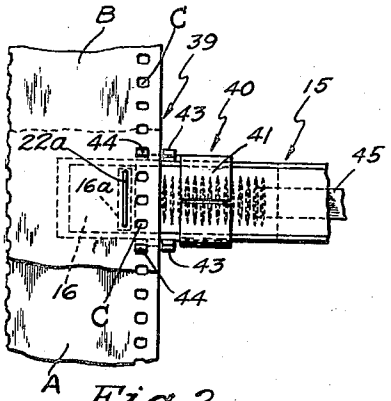


Fig. 2

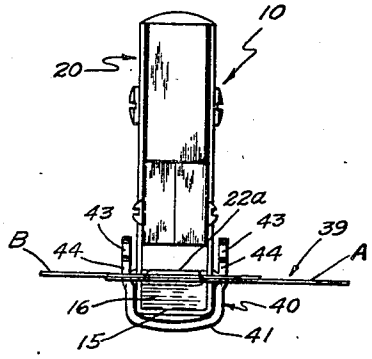


Fig. 3

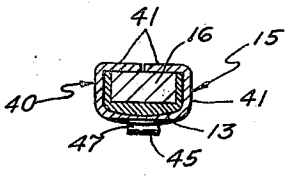


Fig. 4

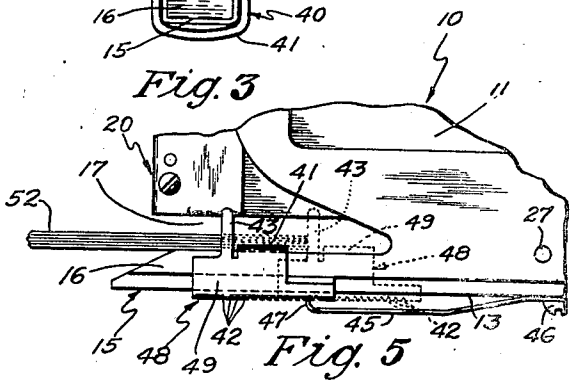


Fig. 5

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WORK LOCATING MEANS FOR PLIER TYPE STAPLING MACHINES

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10 Claims. (Cl. 1—49)

This invention relates to new and useful improvements in stapling machines and has particular relation to work locating means for plier type stapling machines.

An object of the invention is to provide in a stapling machine means for entering perforations in overlapping film portions or other articles for accurately locating the same with respect to the raceway of the machine and for keeping the overlapping portions of the articles in alignment while being stapled together.

Another object is to provide a stapling machine including a work locating means and wherein the means is adjustable with respect to the raceway of the machine.

Other objects and advantages will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawing wherein satisfactory embodiments of the invention are shown. However, it will be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claims.

In the drawing:

Fig. 1 is a side elevational view with parts broken away showing the invention as applied to a plier type stapling machine;

Fig. 2 is a top plan view of the lower jaw or anvil portion of the machine of Fig. 1 and showing the locating means in place thereon;

Fig. 3 is an end view of the machine;

Fig. 4 is a detail sectional view taken substantially along the line 4—4 of Fig. 1; and

Fig. 5 is an elevational view of the forward portion of the machine equipped with a slightly modified construction of stop or locating means.

Referring in detail to the drawing, and at first particularly to Figs. 1 through 4, there is shown a plier type stapling machine including a main housing 10 comprising side walls 11, a top wall 12 and a bottom wall 13. The housing 10 is open at its front and rear ends and its bottom and side walls are carried rearwardly to form a handle 14. Further, the bottom wall of the housing 10 is carried forwardly to provide a lower jaw 15 on which is mounted an anvil bar 16 having an anvil 16a which may include a clinching recess, and above said jaw the side walls of the housing are cut away to provide a mouth or slot 17 into which articles to be stapled may be inserted.

A staple supporting housing or magazine generally designated 18 is pivotally mounted on the main housing 10 and includes an elongated body 19 at its forward end carrying a head generally designated 20. A staple guide bar 21 extends through the elongated body 19 and supports a strip of staples 22 which are to be fed one at a time to a raceway 23 in the head 20. On the guide bar 21 and urged forwardly therealong in the usual manner by a spring 25 and constantly urging the staple strip 22 along the guide bar toward the raceway 23 is a follower 24. A plunger 26 is operable to drive the staples one at a time through the raceway in the direction of the anvil 16a. By means of a pin 27 passing through the side walls 11 of the main housing 10 and through ears 28 at the lower side of its elongated body 19 the staple supporting housing 18 is pivotally mounted in the main housing 10 in such relation that said housing 18 may move to carry its head 20 toward and from the anvil 16a.

A handle 29 is mounted on the housing 10 as by a pivot 30 passing through the handle intermediate its ends and supported in the side walls 11 of the housing and the inner portion 31 of the handle carries a pivot pin 32 passing through a slot 33 in the inner end portion of a lever 34 also mounted in the main housing as on a pivot 35 extending through an intermediate portion of the lever and mounted in the side walls of the main housing. The outer end portion of the lever 34 is reduced as at 36 and this reduced portion of the lever passes through an opening in the upper or outer end portion of the plunger 26.

Arranged between the handle 29 and the elongated body 19 of the housing 18 is a spiral spring 37 normally acting to maintain said handle and housing in the positions in which they are shown in full lines in Fig. 1. At its upper end the spring bears against the handle rearwardly of the pivot 30 in a socket 37a and at its lower end the spring bears against a member 38 engaging the upper wall of the elongated body 19 in a rounded recess 19a forwardly of the pivot 27. When the machine is to be used the articles to be stapled together are inserted into the slot or mouth 17 and the handle 29 is operated or moved toward the handle 14. Initial movement of the handle 29 compresses the spring 37 and the latter acting against the housing 18 said housing is rocked about its pivot 27 in a direction to carry its head 20 toward the anvil 16 as shown by the dotted lines in Fig. 1.

The head 20 is thus carried down against the articles to be stapled and on further movement of the handle 29 its inner end through the pin and slot connection with the lever 34 rocks said lever on its pivot 35 so as to carry the forward or reduced end 36 of the lever downwardly. This

movement of the lever causes movement of the plunger 26 as will be understood and the plunger being operated through the raceway drives a staple therethrough and through the articles 39 and the prongs of the staple are turned by the anvil recesses 16a so that the staple is clinched in the usual manner. On release of the handle the spring 37 returns the parts to their normal position.

Mounted on the jaw 15 of the machine is a work locating means generally designated 40. This means as here disclosed is made up of a piece of sheet metal and includes a body 41 encircling the jaw 15 and on its under side provided with a series of grooves or notches 42. Extending upwardly from the sides of the body 40 are a pair of stop pins 43 and it will be noted that these pins are arranged in lateral alignment and that they are spaced apart transversely of the machine so that there is a pin at each side of the head 20, and the pins are of such length that their upper ends are at the sides of the head when the latter is in its normal or upper position. From this it will be clear that the pins 43 form effective stops and limit the extent to which articles 39 may be passed into the slot or mouth 17.

Forwardly of the pins 43 the body 41 carries upstanding pins 44 also arranged on opposite sides of head 20 and housing 19 as are the pins 43, but of less height than the pins 43 and extending upwardly for less than the normal distance between the anvil 16 and the head 20. This work locating means 40 is particularly adapted for use in the stapling together of perforated articles. As here disclosed the means is for use in the stapling together of the broken ends of a motion picture film. With the present means a temporary or emergency repair of a broken film may be made so that the film may be wound in the usual manner for transportation to a repairer for the gluing or otherwise permanently securing together of the broken ends of the film.

When using the present means the broken ends of the film, as for example, the ends A and B, are arranged in overlapping relationship as shown, and with the edges and perforations of one portion in alignment with and registering with the edges and perforations of the other portion. While manually held in alignment the overlapped end portions of the film are passed into the slot 17 of the machine and when the forward edge of the film has been inserted the proper distance such edge will engage the stop pins 43, (see dotted lines Fig. 1) and the film is then lowered so as to have the locating pins 44 enter spaced pairs of registering openings in the overlapping film portion.

From this it is to be understood that the distance that the pins 44 are located forwardly of the pins 43 is substantially the distance between the edge of a film and the sprocket teeth receiving perforations adjacent said edge of the film. With the overlapping film portions located as described the handle 29 may be operated to drive a staple through such film portions. As the handle is operated the housing 18 will be rocked on its pivot to carry its head 20 down against the film portions or from the full to the dotted line position of Fig. 1, it being understood that the said head moves downwardly between the pairs of pins 43 and 44. On further movement of handle 29 a staple 22a (see Figs. 2 and 3) is driven through the film ends and clinched.

Thus the two overlapping pieces of film are stapled together with their feed perforations C in alignment, and the overlapped pieces are necessarily so stapled because the pins 44 in the perforations hold the sections in the desired relative positions. This permits the film to be properly wound, and the temporary repairs to a broken film can be easily and quickly made in a projection booth with very little delay.

The work locating means 40 may be positioned as shown in full lines in Figs. 1 and 2 so as to locate the work to have a staple driven through it adjacent its near edge. However, the means 40 is adjustable along the jaw 15 as suggested by the dotted lines in Fig. 1 whereby the work will be located to have the staple driven through it inwardly of its near edge or if desired adjacent its outer edge or any other location desired. To maintain the locating means in adjusted position a spring arm 45 is provided. This arm 45 which is shown as in the form of a length of flat spring, is secured at one end to the main housing 18 as by means of a screw 46 and has its other end bent to provide a tooth 47. Owing to the inherent resiliency of the arm 45 its tooth portion 47 is maintained in a selected one of the grooves or recesses 42 in the under side of said body and retains this body in any desired position.

While the means 40 has been particularly described in connection with the making of a temporary repair of a film, it will be understood that the means will be effective in the aligning of any other perforated articles and in the holding of such articles in aligned relationship while they are being stapled.

Fig. 5 shows a slight modification of work locating means generally designated 48. In this figure the same stapling machine is illustrated and has the reference characters applied thereto as in Fig. 1. The means 48 includes the body 49 encircling the jaw 15 as will be understood. This member is the same as that of Figs. 1 and 2 except that the pins 44 are omitted, and is intended as a limit stop in stapling articles where it is not necessary that locating perforations be used, such for example as plain unperforate sheets of paper and so forth.

Having thus set forth the nature of my invention, what I claim is:

1. In a stapling machine, a head having a raceway therein, means to feed staples to said raceway, a plunger operable to drive staples through the raceway, a jaw below said head, an anvil on said jaw below the raceway, means to operate the plunger to drive a staple, a body on and adjustable along the jaw toward and from the anvil and having a series of recesses in its under side, a pair of spaced pins on said body and extending upwardly therefrom, said pins of a length less than the distance between the anvil and head and adapted to be passed through perforations in articles introduced over them between the anvil and head when in normal position to locate and maintain said articles in position for stapling, a flat spring secured to the underside of said jaw, and said spring including an inwardly extending tooth to enter a selected recess in the body and maintain the same in adjusted position.

2. In a stapling machine, a head having a raceway therein, means to feed staples to said raceway, a plunger operable to drive staples through the raceway, a jaw below said head, an anvil on said jaw below the raceway, means to operate the plunger to drive a staple, a stop on and extending upwardly above said jaw inward-

ly of the anvil to limit movement inwardly between the jaw and head of articles to be stapled, a body carrying said stop and partly encircling and slidably adjustable along said jaw toward and from the anvil and having a series of recesses therein, and a spring means arranged to enter a selected recess in the body and maintain the stop in adjusted position.

3. In a stapling machine, a head having a raceway therein, means to feed staples to said raceway, a plunger operable to drive staples through the raceway, a jaw below said head, an anvil on said jaw below the raceway, means to operate the plunger to drive a staple, a stop on and including a part extending upwardly above said jaw inwardly of the anvil to limit movement inwardly between the jaw and head of articles to be stapled, said stop including a body partly encircling and slidably adjustable along said jaw toward and from the anvil and having a series of recesses in its under side, a flat spring secured to the under side of said jaw, and said spring including an inwardly extending tooth to enter a selected recess in the body and maintain the stop in adjusted position.

4. In a stapling machine, a jaw, an anvil on the jaw, a head normally above and movable toward and from the jaw and having a raceway above said anvil, a plunger operable to drive staples through said raceway, means to operate the plunger, a pair of stop pins on the jaw inwardly of the anvil and extending upwardly from the jaw laterally of the head to points above the lower edge of the head when the latter is in normal position, and a second pair of pins extending upwardly of said jaw forwardly of said first pins and terminating below the lower edge of the head when the latter is in normal position.

5. In a work locating means for a stapling machine, a body to be positioned on the machine, a pair of aligned pins extending upwardly from said body forming stops to limit insertion of articles to be stapled into the machine, and a second pair of spaced pins extending upwardly from the body forwardly of and of less height than the first pair of pins so as to be passed over by said articles before they engage the first pins.

6. In a stapling machine, a jaw, an anvil on the jaw, a head normally above and movable toward and from the jaw and having a raceway above said anvil, a plunger operable to drive staples through said raceway, means to operate the plunger, a pair of stop pins extending between the jaw and head inwardly of the anvil to limit movement inwardly between the jaw and head of articles to be stapled, and a pair of locating pins forwardly of said stop pins to enter perforations in the articles and insure alignment of the articles.

7. In a work locating means for a stapling machine, a body positioned on the machine, stop means extending from said body to limit insertion of articles to be stapled into the machine, and a pair of spaced pins extending from the body forwardly of and of less height than said stop means so as to be passed over by said articles before they engage the stop means.

8. In a stapling machine, a head having a raceway therein, means to feed staples to said raceway, a plunger operable to drive staples through the raceway, a jaw below said head, an anvil on said jaw below the raceway, means to operate the plunger to drive a staple, a pair of spaced work locating pins on and extending upwardly above said jaw to locate between the jaw and head articles to be stapled, a body carrying said pins and partly encircling and slidably adjustable along said jaw toward and from the anvil, and a cooperating series of notches and a spring operated catch means on the body and the jaw to hold the pins in adjusted positions.

9. In a stapling machine, a head having a raceway therein, means to feed staples to said raceway, a plunger operable to drive staples through the raceway, a jaw below said head, an anvil on said jaw below the raceway, means to operate the plunger to drive a staple, a work locating means on and extending upwardly above said jaw to locate articles to be stapled between the jaw and head, a body carrying said work locating means partly encircling said jaw for mounting it thereon and slidably adjustable along said jaw toward and from the anvil, and means for securing said body in adjusted positions.

10. In a stapling machine, a jaw, an anvil on the jaw, a head above the anvil and having a raceway, a plunger operable to drive a staple through the raceway, means to operate the plunger, a pair of laterally spaced locating pins extending upwardly above the jaw to enter spaced openings in articles inserted between the head and anvil to insure alignment of the articles, and a stop located inwardly from said pins to engage the edges of said articles to limit their movement inwardly between the head and anvil.

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