

Oct. 3, 1939.

H. M. SEARS ET AL

2,174,708

STAPLING APPLIANCE

Filed April 5, 1937

2 Sheets-Sheet 1

FIG. 1.

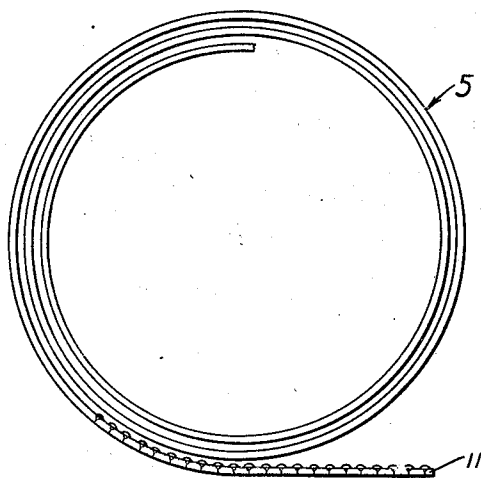


FIG. 2.

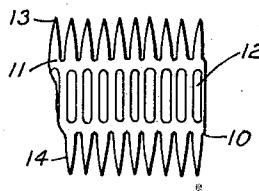


FIG. 3.

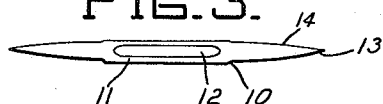


FIG. 4.

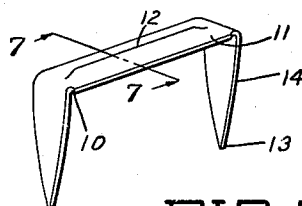


FIG. 5.

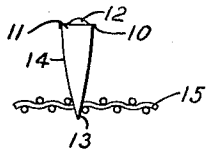


FIG. 6.

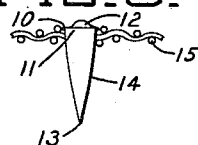


FIG. 7.

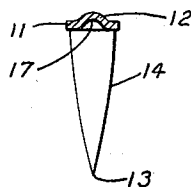


FIG. 8.

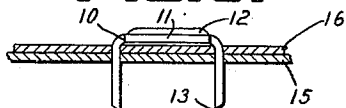


FIG. 9.

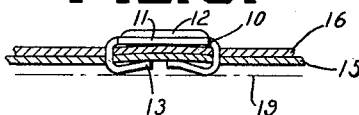
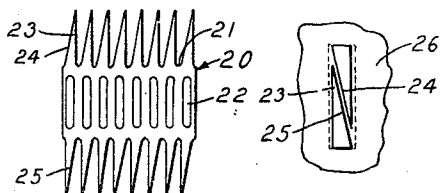


FIG. 10. FIG. 11.



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2 Sheets-Sheet 2

FIG.12.

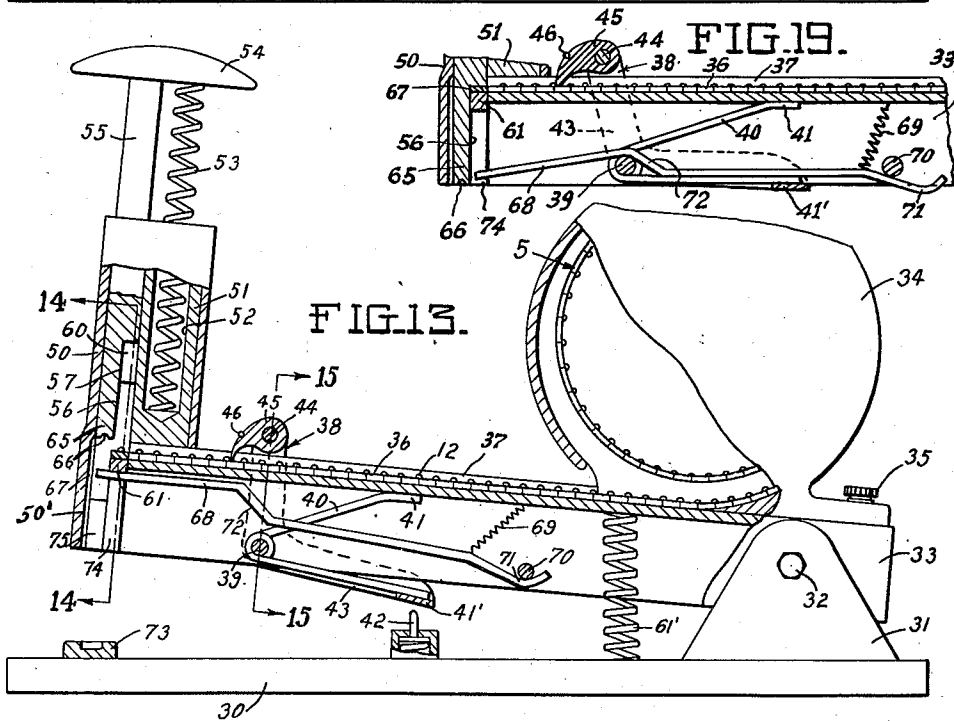
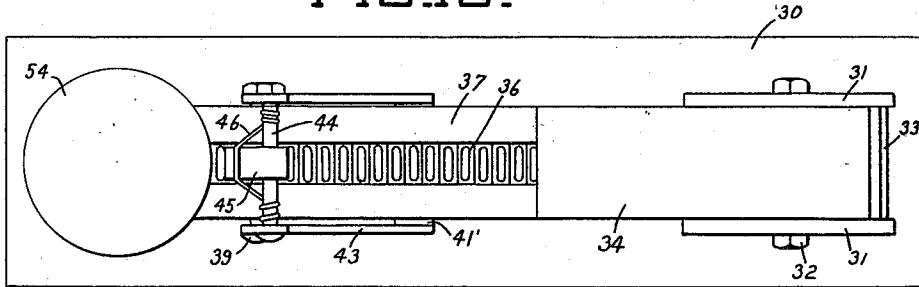


FIG.13.

FIG.19.

FIG.14. FIG.16. FIG.17.

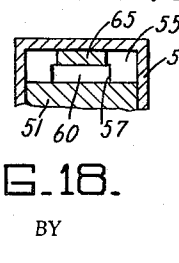
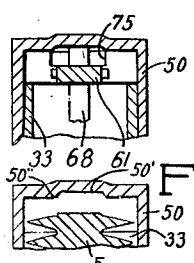
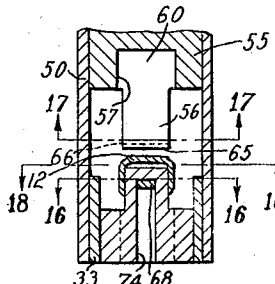
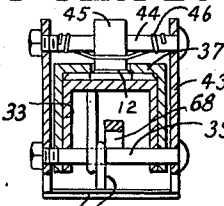


FIG.18.

FIG.15.



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STAPLING APPLIANCE

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Application April 5, 1937, Serial No. 134,944

3 Claims. (Cl. 1—2.1)

This invention relates to stapling appliances.

The general object of the invention is to provide an improved staple and staple fastening apparatus which is particularly adapted for use in securing tags on garments.

Another object of the invention is to provide a novel garment tag staple.

A further object of our invention is to provide a novel roll of garment tag staples.

An additional object of the invention is to provide a novel apparatus for securing garment tag staples in position.

Other objects and the advantages of our invention will be apparent from the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is a fragmentary side elevation showing a roll of our staples;

Fig. 2 is a fragmentary plan view showing the staples;

Fig. 3 is a plan view showing a single staple removed from the roll;

Fig. 4 is a perspective view showing a staple after it has been bent;

Fig. 5 is an end view of a staple being inserted between the threads of a garment;

Fig. 6 is a view similar to Fig. 5 showing the staple completely passed through the fabric;

Fig. 7 is a section taken on line 7—7 Fig. 4;

Fig. 8 is a side elevation of an inserted staple;

Fig. 9 is a view similar to Fig. 8 showing the prongs in closed position;

Fig. 10 is a view similar to Fig. 2 showing a slight modification of staple;

Fig. 11 is a fragmentary bottom plan view showing the modified staple;

Fig. 12 is a top plan view of stapling machine embodying the features of our invention;

Fig. 13 is a side elevation with parts in section showing the machine;

Fig. 14 is a section taken on line 14—14 Fig. 13;

Fig. 15 is a section taken on line 15—15 Fig. 13;

Fig. 16 is a section taken on line 16—16 Fig. 14;

Fig. 17 is a section taken on line 17—17 Fig. 14;

Fig. 18 is a section taken on line 18—18 Fig. 14;

and

Fig. 19 is a fragmentary, sectional view showing the support 68 retracted.

Referring to the drawings by reference characters we have shown our invention as embodied in a roll of staples indicated generally at 5. These staples are preferably intended for use in connection with fabrics and as a result the staples are preferably made of a non-corrodible material such as aluminum.

The roll is formed in suitable manner and includes a plurality of individual staples shown in Fig. 2 wherein the staples are formed in an integral roll being connected by necks 10 and each staple includes a central body portion 11 having an outwardly directed stiffening rib 12 thereon and extending substantially the full length of the body and having pointed ends 13 with the edges of the ends curved as at 14. The rib terminates near the ends of the neck.

The staples are manufactured with their parts in integral relation and they are sheared off just prior to use as will be later described.

Heretofore it has been the practice to use wire staples and as such staples have burred ends the fabric is frequently torn while the staples are being inserted. With our staple as shown in Fig. 5 the use of a burr is avoided and the staple passes between strands of fabric pushing these strands aside as shown in Fig. 6 until the body of the staple engages the surface of the fabric as shown in Fig. 8. In the drawings the fabric is indicated at 15 and the label or tag which is to be secured to the fabric is indicated at 16.

When the staple is inserted by hand it is pushed completely through the fabric as shown in Fig. 8, and the ends 13 are bent towards the body with the extreme tips of the ends preferably forcing the fabric slightly into the groove 17 formed along the lower surface by the rib 12. This disposition of the points 13 slightly above the plane 19 (see Fig. 9) of the ends of the staple prevents catching of the points. The ends of the neck 10 and the rib 12 determine the line of bend and add stiffness in body of the staple while the projecting portion of the neck adds to the area of engagement with the garment.

In Figs. 10 and 11 we show a slight modification of our invention wherein the staple indicated generally at 20 is provided with a neck portion 21 and with a rib 22 similar to the neck and rib portions previously described. One of the ends of the modified staple as at 23 is provided with straight edges 24 and with the axis of the end 23 inclined relative to the axis of the body of the staple. The end 25 is also inclined but is arranged at the other side of the body of the staple so that when the staple passes through goods 26 as shown in Fig. 11 the ends 24 and 25 will be contiguous to each other and will not overlap. With this construction longer points can be provided without undue thickness.

In Figs. 12 to 19 inclusive we show our improved apparatus for securing our improved staples in place. As shown the apparatus in-

cludes a base 30 having upwardly projecting brackets 31 at one end. A shaft 32 passes through the brackets and pivotally engages a U-shaped operating member frame 33. Mounted upon this operating member frame we show a removable housing 34 which may be held in place by a thumb screw 35. The housing is preferably cylindrical and is adapted to receive a roll 5 of our improved staples. The strip of staples extends as at 36 having its edges passing beneath a U-shaped member 37 (see Fig. 15).

In order to advance the strip step by step we show a feed device indicated generally at 38 and including a shaft 39 mounted on the frame member 33. This shaft is surrounded by a spring 40 one end 41 of which engages beneath the member 33 while the other end is provided with a contact plate 41' which is adapted to engage a spring pressed pin 42 mounted on the base 30. The spring tightly engages the shaft 39 so that when the contact member 41' is engaged by the pin 42 the shaft 39 is rotated. Mounted on this shaft we show a pair of arms 43 which at their upper end receive a shaft 44 on which a feed dog 45 is mounted to turn and which is normally urged downwardly by a spring 46.

The construction is such that when the shaft 39 is rotated the shaft 44 goes forwardly and the dog engaging one of the corrugations 12 advances the strip of staples and when the shaft 39 is rotated in reverse direction the dog passes freely over the top of the rearward staple.

Mounted on the forward end of the frame 33 we show a housing 50 which includes an inner guide member 51 having a recess 52 in which a spring 53 is mounted and which engages a knob 54 on a plunger member 55 the lower portion of which is cut away as at 56 and is notched as at 57 to form a recess 60 which is of sufficient width to straddle a bending member 61 mounted on the frame 33.

The result is that when the knob 54 is struck the frame 33 moves downwardly advancing the strip of staples as previously described, the plunger 55 then moves downwardly thus bending the staple beneath the recess 60 against the sides of the block 61. The plunger 55 then moves upwardly and the support 68 moves back to its former position. The frame member 33 then moves upwardly to its former position due to the fact that the spring 61' is more resilient than the spring 53. A spring 61' normally urges the frame 33 upwardly. The forward staple previous to the bending operation just described is engaged by hammer member 65 which includes a recess 66 to engage the rib 12. The edge 67 constitutes a shear edge which severs the staple intermediate the neck thereof and moves the staple down into contact with a support member 68 which is urged upwardly by a spring 69 and which rests beneath a pin 70 on the frame 33. The curvature of the member 68 at 71 where it engages the pin is such that the member 68 is held in the position shown in Fig. 13 until the frame 33 is swung about its pivot 32 whereupon the shaft 39 engages a cam surface 72 on the member 68 and moves the latter towards the shaft 32 thus moving the end of the member 68 from beneath the staple. This allows the plunger 55 to press the staple through the fabric and against an anvil 73 on the base 30 into the shape shown in Fig. 9. The block 61 (Figs. 13

and 16) is provided with a slot 74 in which the member 68 slides and with a recess 75 through which the staple slides.

The front wall of the housing 50 at its lower end includes an outwardly directed recess 50' into which the severed neck portion of the forward staple projects. The sides of the recess 50' are tapered and are spaced apart a distance greater than the width of the projecting severed end. Consequently the end of the staple fits in this recess 50' and the die cut portion of the staple engages the wall 50 at 50'' at its junction with the recess 50'. Thus accuracy is secured and cumulative error is prevented. This result is due to the fact that the pin 42 is spring pressed and at each downward movement of the magazine arm urges the staples forward so that the foremost staple engages the wall 50 at 50''.

From the foregoing description it will be apparent that we have invented a novel staple and appliance which can be economically manufactured and which is highly efficient in use.

Having thus described our invention we claim:

1. A stapling machine including a pivoted support for a strip of material having oppositely disposed prongs from which staples may be formed, means to bend a pair of oppositely disposed prongs to form a staple, means to advance the bent staple, means engaging the prongs of the bent staple to limit the feeding movement, said staple advancing means including a pivoted arm having a dog pivoted thereon, said dog being adapted to engage a staple, and means to rock said arm when the support is swung on its pivot.

2. A stapling machine including a pivoted support for a strip of material having oppositely disposed prongs from which staples may be formed, means to bend a pair of oppositely disposed prongs to form a staple, means to advance the bent staple and means engaging the prongs of the bent staple to limit the advancing movement, said staple advancing means including a pivoted arm having a dog pivoted thereon, said dog being adapted to engage a staple, means to rock said arm when the support is swung on its pivot, a plunger member on said pivoted arm, said plunger member including a shear edge adapted to sever a previously formed staple from the strip, and an anvil disposed in the path of movement of said plunger member.

3. A stapling machine including a pivoted support for a strip of material having oppositely disposed prongs from which staples may be formed, means to bend a pair of oppositely disposed prongs to form a staple, means to advance the bent staple and means engaging the prongs of the bent staple to limit the feeding movement, said staple advancing means including a pivoted arm having a dog pivoted thereon, said dog being adapted to engage a staple, means to rock said arm when the support is swung on its pivot, a plunger member on said pivoted arm, said plunger member including a shear edge adapted to sever a previously formed staple from the strip, means to support a severed staple, an anvil disposed in the path of movement of said plunger member, and means to shift the staple supporting means from the path of movement of the staple when the pivoted arm is moved towards the anvil.

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