Jan. 28, 1964 L. BELLO 3,119,115

SNAP BUTTON STAPLER

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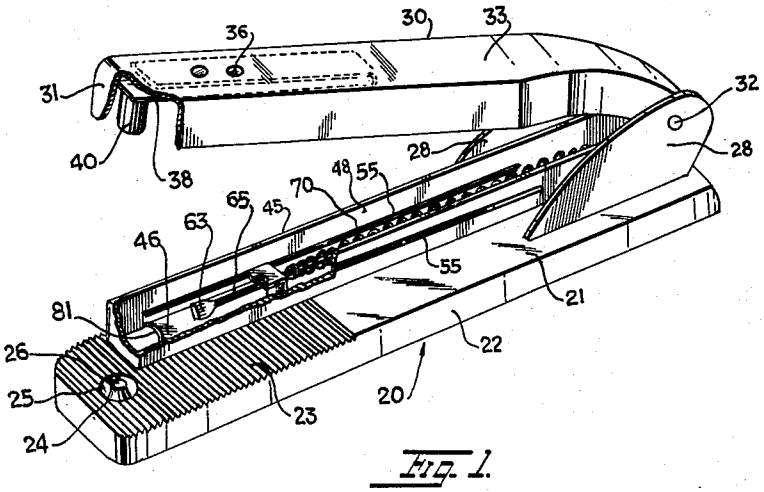


Fig. 1.

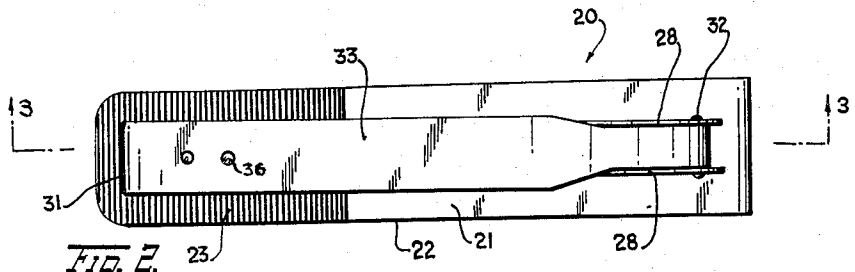


Fig. 2.

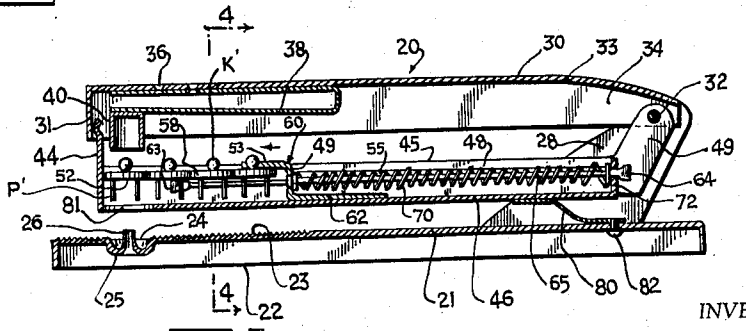


Fig. 3.

INVENTOR.
LOUIS BELLO
BY
ATTORNEY

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SNAP BUTTON STAPLER

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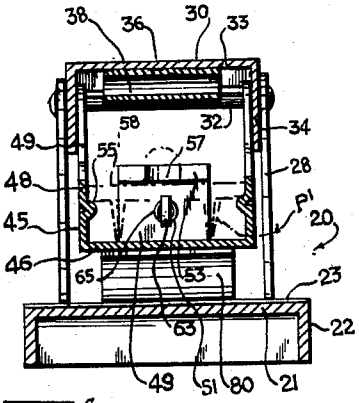


Fig. 4.

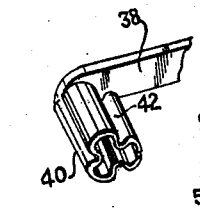


Fig. 5.

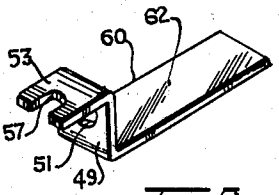


Fig. 6.

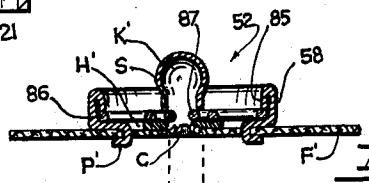


Fig. 8.

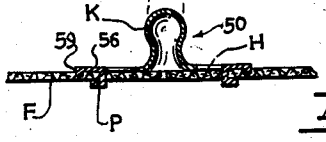


Fig. 9.

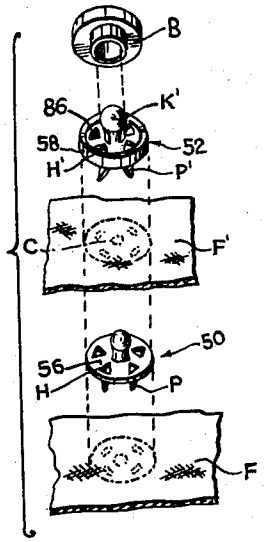


Fig. 7.

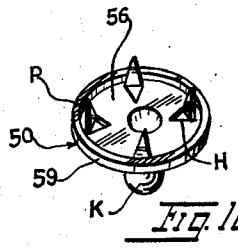


Fig. 10.

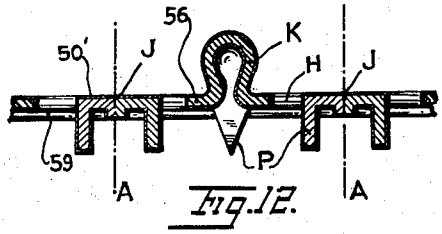


Fig. 12.

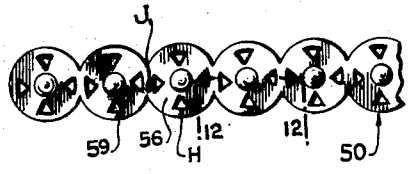


Fig. 11.

INVENTOR.
LOUIS BELLO
BY Lotton & Blackstock
ATTORNEY

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3,119,115

SNAP BUTTON STAPLER

Louis Bello, 95 Old Broadway, New York, N.Y.

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1 Claim. (Cl. 1—318)

This invention concerns a manually operable snap fastener attachment device, wherein male and female members of snap fasteners are quickly attached to fabric.

According to the invention, the snap fastener members are provided in strips which are inserted into the device. The snap fastener members are pushed out one at a time and engaged in the body of a sheet of fabric supported on an anvil in the device. The snap fastener members have pliable depending prongs which are bent in the anvil to engage in the fabric. The anvil includes a punching element which perforates or punctures the fabric to permit passage of a male fastener element therethrough. The snap fastener strip is disposed in a guide in the device and is spring urged forwardly in its plane to a position where an ejector element pushes the fastener member on the end of the strip through a hole in the guide on to the fabric held on the anvil. The ejector element is carried by an operating bar of the device.

It is therefore a principal object of the invention to provide a snap fastener attachment device wherein male or female snap fastener members are detached one at a time from a strip of fastener members and secured on a piece of fabric.

Still another object of the invention is to provide a device as described wherein the fabric is perforated while the fastener member is attached thereto, the perforation serving to pass a male snap fastener element through the cloth for engaging a female snap fastener element.

A further object is to provide a manually operable snap fastener attachment device including an operating bar carrying a snap fastener ejector element, a guide for a strip of interconnected snap fastener members, and an anvil for bending prongs of an ejected fastener element to engage the same on a piece of fabric held on the anvil.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claim in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

FIG. 1 is a perspective view of a device embodying the invention, parts being broken away.

FIG. 2 is a top plan view of the device.

FIG. 3 is a sectional view taken on line 3—3 of FIG. 2.

FIG. 4 is a cross-sectional view on an enlarged scale taken on line 4—4 of FIG. 3.

FIG. 5 is a perspective view of part of the snap fastener ejector element.

FIG. 6 is a perspective view of a pusher plate for the snap fastener strip.

FIG. 7 is an exploded perspective view of parts of a snap fastener assembly.

FIGS. 8 and 9 are sectional views on an enlarged scale of assembled snap fastener members.

FIG. 10 is a perspective view on an enlarged scale of a male snap fastener member in an inverted position.

FIG. 11 is a top plan view of a strip of snap fastener members.

FIG. 12 is a sectional view on an enlarged scale taken on line 12—12 of FIG. 11.

Referring to FIGS. 1–4, there is shown the device 20 including a base 22 having a flat top plate 21 formed with transverse corrugations or teeth 23 at its forward end. Centrally located in the flat top of the plate near its forward end is an anvil 24 which is formed as an annular concave recess 25 having an upwardly extending hollow central punch 26. Secured to the rear end of the flat top is a pair of stationary vertical hinge plates 28. Pivotally mounted on a shaft 32 extending horizontally between plates 28 is an operating channel bar 30. This bar is inverted so that it has a closed top plate 33 and depending vertical sides 34.

Secured by rivets 36 to the underside of plate 33 is a bent leaf spring 38. The free end of the spring carries an inverted cup-shaped snap fastener ejector member 40, shown best in FIGS. 1, 3 and 5. The member 40 may have radial corrugations 42 to engage the knob K or K′ of male or female snap fastener members 50, 52 respectively, shown in FIGS. 3 and 7–12. Bar 30 has a forward, end wall 31 engageable by a flexible finger 44 extending upwardly from the front end of a guide channel bar 45, when the bar is manually pressed down to the position shown in FIG. 3.

Channel bar 45 has a straight, flat bottom 46 and vertical parallel side walls 48. The walls 48 have rear, upward extensions 49 pivotally engaged on shaft 32. The bar 45 is slightly narrower than bar 30. Straight parallel fastener guide ridges 55 are formed on the inner sides of walls 48. On these ridges ride disk-like bodies 56 or 58 of the male or female snap fastener members 50, 52.

A pusher plate 60 for the fastener members is disposed in the guide bar. This plate, as best shown in FIGS. 1, 3, 4 and 6, has a flat rectangular base portion 62 which rides on the flat bottom 46 of bar 45. The plate 60 has an upstanding wall portion 49 provided with a hole 51. At the forward end of the plate is a lip 53 extending forwardly of wall portion 49 and provided with a curved recess 57 at its free end. This recess receives the knob K or K′ of the fastener member located at the rear of a strip of such members inserted in the guide channel bar 45. A shaft 65 passes horizontally through hole 51 in the pusher plate. A coil spring 70 is engaged on the shaft and is compressed between the plate 60 and a stationary finger 72 extending upwardly at the rear of bar 45. The shaft has flattened heads 63, 64 at opposite ends to prevent the pusher plate from coming off the front end of the shaft and to prevent the rear end of the shaft from disengaging finger 72. The shaft 65 extends below the coplanar bodies 56 or 58 of a strip of fastener members between depending pairs of prongs P or P′. The shaft 65 and ridges 55 cooperate to serve as supports and guides for the fastener members as they are moved in the device. A leaf spring 80 secured by a rivet 82 in plate 21 extends upwardly and bears on the underside of the bottom 46 of channel bar 45. A hole 81 is formed in the front end of bottom 46, equal in diameter to that of snap fastener members 50, 52.

Male snap fastener members 50 are shown in FIGS. 7, 9 and 10. The male member has a disk-like circular body 56 formed with an annular depending flange 59 and four circumferentially spaced triangular prongs P struck out, leaving triangular holes H in the bodies 56. The center of the body is struck out oppositely of the prongs forming a knob K with rounded head. In FIG. 9 the prongs are extended through a fabric piece F and bent underneath.

The female snap fasteners 52 are shown in FIGS. 7 and 8. Each member 52 has a disk-like circular body

58 with prongs P' struck out, leaving triangular holes H'. The body 56 has a turned in flange 85 under which engages a bent wire spring 86. The spring has two portions 87 extending in lateral slots S formed in the shank of knob K'. Knob K can enter the interior of knob K' and will be engaged by the spring portions 87 with a snap fit. The prongs P' are inserted through fabric F' and are bent under to secure the fastener member 52 to the fabric. A central hole C is formed in the fabric through which the knob K passes to engage in the interior of knob K'.

FIGS. 11 and 12 show a strip of snap fastener members 50 integrally joined together at joints J by a film 50' of metal electroplated upon all exposed surfaces of the members 50. To separate the several fasteners the joints are broken on lines A when the strip of fastener members is inserted in the device 10 during operation thereof. Snap fastener members 52 are similarly joined at their contacting peripheries to form the strip shown in the device in FIG. 3. The fastener members could be formed into a strip forming coating 50' from a transparent thermoplastic material instead of using metal. In any event the joints J will be sufficiently strong to hold the fasteners together forming a stiff non-buckling strip. However, the joints will be broken during operation of the device.

In operation, the strip of fasteners 50 or 52 is inserted into the guide bar 42 with the circular bodies 56 or 58 resting on the ridges 55 and with prongs P or P' straddling the shaft 65. The pusher plate lip 53 will engage the knob of the rear fastener member and the front fastener member will be located just above hole 81. After the fastening of an individual fastener member spring 80 will return channel bar 45 to the normally horizontal position shown in FIG. 3, leaf spring 38 will bias fastener ejector element 40 to operative alignment with the next fastener member as shown, spring 70 will advance the next fastener to a position to be engaged by ejector element 40, and operating bar 30 is moved upwardly away from channel bar 45 by any desired conventional means, and the device is ready for a subsequent operation. When the operating bar 30 is pressed down, the ejector element 40 will bear on the top of the fastener body breaking the joint J and will push the fastener member out of the guide channel 45 through hole 81. The prongs P or P' will pierce a piece of fabric F or F' placed and held on the corrugated portion 23 of plate 21 and will be bent around in the recess 25 of anvil 24. The punch 26 will form a hole C in the fabric and will enter the hollow knob K or K' to stabilize the fastener member while the prongs are bent in recess 25.

If desired, a button B can be mounted subsequently on the exterior of knob K' by slipping the button over the knob K'. Such a button would change the appearance of the fastener device, and such a button could be colored to correspond with the color of the fabric thereby enhancing the appearance of the attachment. As each fastener member is ejected, the next fastener member will be

advanced over hole 81 for ejection during the next operation of the operating bar 30. The spring 80 retracts the parts to inoperative position as shown in FIG. 3. The vertical walls 48 of the guide bar bear on corrugations 23 and will hold the fabric in place during attachment of the snap fastener member. If desired, the anvil 24 can be formed in a separate plate secured to plate 21.

The invention makes it possible to attach one fastener member after another to sheet material such as cloth or the like.

While I have illustrated and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claim.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

A device for attachment of snap fastener members to fabric, comprising a channel-shaped support having a flat bottom and upstanding side walls, said walls having inwardly extending ridges supporting a strip of snap fastener members having disk-shaped bodies interconnected at their peripheries, prongs depending underneath said bodies and hollow knobs extending upwardly from said bodies, said bottom having a hole at its forward end for passing a forward end of one of said members therethrough, means mounting a shaft parallel to said bottom and side walls, a pusher plate movable on said shaft and engageable with a rear one of said members to advance the strip forwardly in said support, a base, an operating bar, means pivotally mounting said bar and said support at the rear end of said base, and a spring mounted cup-shaped ejector member carried by said bar in alignment with said opening to engage the knob and body of the forward end one of said members and to push the same through said opening, said base having an anvil at its forward end, said anvil including an annular recessed portion and an upstanding center punch, said anvil being located in alignment with said opening for receiving the ejected member and for bending the prongs thereof, said forward end having corrugations formed therein for gripping a fabric sheet between said base and said support while said punch pierces said sheet forming a hole in alignment with the knob of the ejected member and enters said knob to stabilize the ejected member while the prongs are being bent in said recess.

References Cited in the file of this patent

UNITED STATES PATENTS

1,352,153	Smith	Sept. 7, 1920
1,415,330	Frankel	May 9, 1922
1,804,951	Reiter	May 12, 1931
2,137,467	Vogel	Nov. 22, 1938
2,227,314	Maynard	Dec. 31, 1940
2,593,506	Wales	Apr. 22, 1952