Nov. 9, 1954 H. S. VAN BUREN, JR 2,693,625

FASTENING DEVICE

Filed March 6, 1952

FIG. 1.

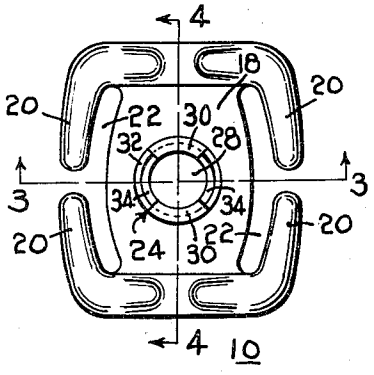


FIG. 2.

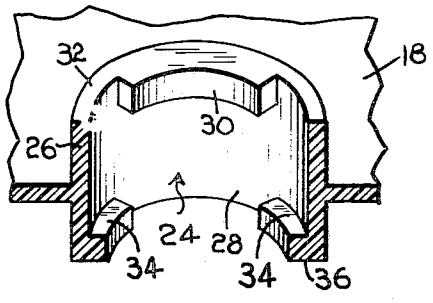


FIG. 3.

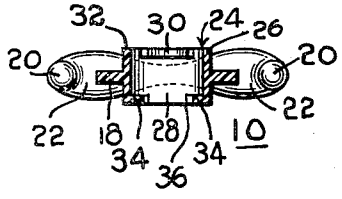


FIG. 4.

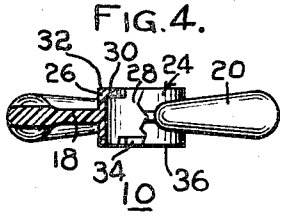


FIG. 5.

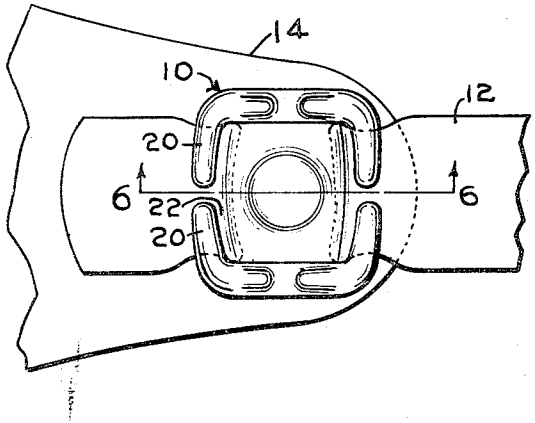
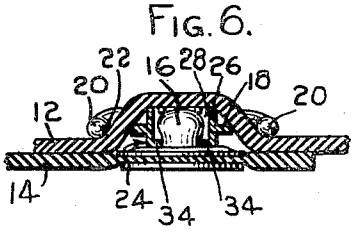


FIG. 6.



INVENTOR:
HAROLD S. VAN BUREN JR.,
BY Robert E Ross
AGENT.

United States Patent Office 2,693,625 Patented Nov. 9, 1954

2,693,625

FASTENING DEVICE

Harold S. van Buren, Jr., Cambridge, Mass., assignor to United-Carr Fastener Corporation, Cambridge, Mass., a corporation of Massachusetts

Application March 6, 1952, Serial No. 275,135

2 Claims. (Cl. 24—77)

This invention relates generally to fastening devices, and has particular reference to a buckle having an integral snap fastener member of improved design disposed thereon.

Plastic buckle members having strap-receiving means at the ends of an intermediate snap fastener member are in common use on various articles of clothing, particularly where it is desirable to easily and rapidly adjust the position of the buckle on the strap on which it is assembled. Heretofore the snap fastener member has been formed of a separate piece of metal, and assembled into the buckle during the manufacture thereof. Since the body portion of such buckles is formed of plastic, there is no problem of applying finishes during manufacture, and no corrosion occurs during use of the body portion. However, since the snap fastener portion is formed of metal such as brass or steel, expensive finishing operations are necessary for such parts, and in addition, such parts must be assembled with the body portion, which adds to the cost of the part. It has long been thought that a buckle of this type formed of a single piece of plastic would be lower in cost and superior in many ways to a buckle formed partly of plastic and partly of metal; however, the problem of providing an integral snap fastener member in the body of the buckle has been exceedingly difficult to solve, both because of the difficulty of finding a suitable design in plastic which will give a proper snap action, and one which is possible to form in an injection molding machine. Meeting this latter requirement is essential, since injection molding is the only practical way to cheaply form such buckles, and has been a difficult requirement to meet. This difficulty is caused by the fact that some sort of shoulder must be provided in the snap fastener to cooperate with a shouldered stud to provide the snap action, yet the presence of such shoulders makes it impossible to withdraw the die after molding, unless the material of which the fastener is formed is extremely resilient, in which case it does not possess a satisfactory snap action.

The object of the invention is to provide a buckle formed of a single piece of molded plastic having an integral snap fastener member disposed thereon.

A further object of the invention is to provide a buckle formed of a single piece of molded plastic having a tubular snap fastener portion disposed thereon to enable assembly of a stud with the buckle from either side thereof.

A further object of the invention is to provide a snap fastener member formed of a single piece of molded plastic in which a tubular stud-receiving portion is provided with a set of stud-engaging shoulders at each end which are circumferentially staggered in relation to each other.

Other objects of the invention will, in part, be obvious, and will, in part, appear hereinafter.

In the drawing:

Fig. 1 is a top plan view of a buckle member embodying the features of the invention;

Fig. 2 is a view of the buckle of Fig. 1 as seen from the right side;

Fig. 3 is a view in section taken on line 3—3 of Fig. 1;

Fig. 4 is a view in section taken on line 4—4 of Fig. 1;

Fig. 5 is a top plan view of the buckle of Fig. 1 with a strap assembled therewith; and

Fig. 6 is a view in section taken on line 6—6 of Fig. 5.

Referring to the drawing, there is illustrated a buckle 10 which is adapted to be assembled onto a strap 12, and

to be attached to a support 14 by receiving a stud 16 in snapping engagement therewith.

The buckle 10 is preferably formed of a single piece of molded plastic, and comprises generally a base or body portion 18 having a pair of arms 20 at each end thereof forming strap-receiving slots 22, and a snap fastener portion 24 disposed centrally in the body portion. The snap fastener portion 24 is molded integrally with the rest of the buckle, and comprises a tubular portion 26 which extends substantially normal to the body portion and protrudes from each side thereof. The tubular portion 26 is provided with a stud-receiving opening 28 which extends therethrough, and to provide means for engagement with a stud, a pair of shoulders 30 is provided in the tubular portion at one end 32 thereof, and a pair of shoulders 34 is provided at the other end 36. The wall of the tubular portion, although being rigidly connected to the base, has a length great enough to permit flexing at the ends. The wall thereby provides the snap action for engaging a stud, by flexing during insertion of a stud to expand on a line connecting the shoulders to enlarge the opening 28. In the preferred embodiment, the shoulders of each pair are circumferentially staggered in relation to each other, that is, as seen from the top as in Fig. 1, no portions of the shoulders 30 overlap any portion of the shoulders 34. This construction enables the buckle to be molded of a single piece of material in an injection molding machine, by a pair of die portions entering from each side of the buckle to form the cavity for the shoulders on the other side of the buckle. Since the shoulder portions at each end are staggered, the dies may be withdrawn after molding without interference with either pair of shoulders. The construction of dies for the molding of a buckle having such a structure will be readily apparent to those familiar with the manufacture of injection molding dies, and will not be described in detail.

Although in the illustrated embodiment a pair of shoulders are provided at each end, it will be understood that perhaps three or four or even more shoulders may be provided at each end with equally good results, and buckles having such modifications may be easily molded provided the shoulders at the opposite ends are staggered in relation to each other as described above.

Since both ends of the tubular portion are adapted to receive a stud, either side of the buckle may be attached to the support. While this feature is desirable in that if the snap fastener becomes damaged on one side, it is still usable on the other side, it is of more importance to the manufacturer of an article of clothing on which the buckles are used, since the buckle may be assembled onto a strap of the article of clothing without consideration as to which side of the buckle is disposed outermost on the strap. Such assembly using prior types of buckles required that the side of the socket having the snap fastener opening be oriented in relation to the strap on which it was assembled. By the use of the buckle of the present invention, time is saved in assembly, and misorientation of the buckle is impossible.

Since certain obvious modifications may be made in the device without departing from the scope of the invention, it is intended that all matter contained herein be interpreted in an illustrative and not in a limiting sense.

I claim:

1. A snap fastener formed of a single piece of molded plastic, comprising a base for attachment to a support and a tubular stud-receiving portion disposed on the base and projecting from both sides thereof, said stud-receiving portion having a stud-receiving aperture extending therethrough, and a series of stud-engaging shoulders projecting into the aperture at each end of the tubular stud-receiving portion, the shoulders of the series at one end being circumferentially staggered in relation to the shoulders of the series at the other end, said tubular stud-receiving portion being flexible at the ends to receive a stud in snapping engagement.

2. A buckle formed of a single piece of molded plastic, comprising a body portion having strap-receiving means at the ends thereof and an integral snap fastener portion disposed on said body portion, said snap fastener portion comprising an elongated tubular stud-receiving portion

extending from both sides of the body portion and having a stud-receiving aperture extending therethrough, and a series of stud-engaging shoulders projecting into the aperture at each end of the stud-receiving portion, the shoulders of the series at one end being circumferentially staggered in relation to the shoulders of the series at the other end, said elongated tubular stud-receiving portion being flexible at the ends to receive a stud in snapping engagement.

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