

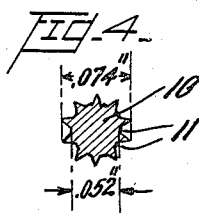
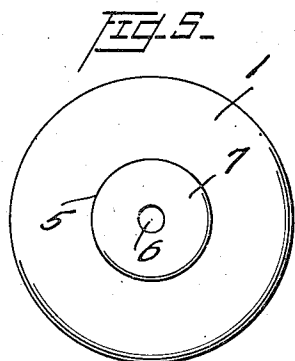
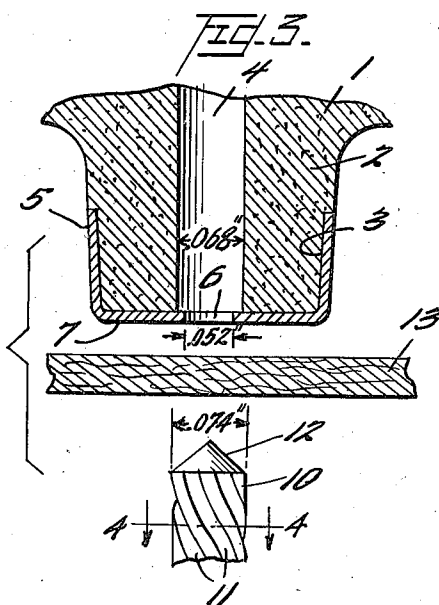
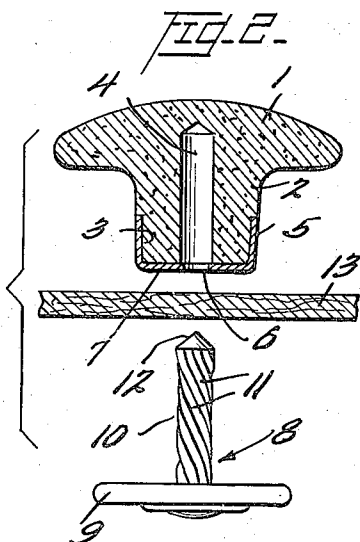
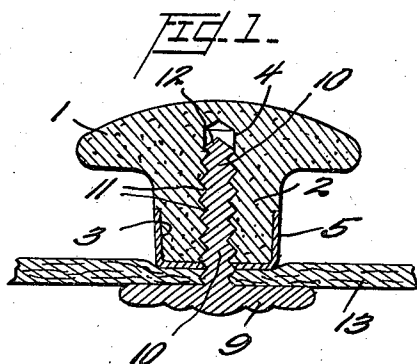
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W. A. ZWIEBEL

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PLASTIC BUTTON

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Inventor

William A. Zwiebel,

By Parker Cook

Attorney

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PLASTIC BUTTON

William A. Zwiebel, Waterbury, Conn., assignor to
The Patent Button Company, Waterbury,
Conn., a corporation of Connecticut

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My invention relates to new and useful improvements in buttons, and more particularly to a reinforced tack button that is to be used especially on material which is thinner than the ordinary overall denim, such as sport clothes, slacks, beach clothes or children's playsuits.

When the ordinary form of tack button is used on a relatively thin fabric, the material about the head of the tack is very likely to pucker and thus be unsightly and interfere with the sale of the article.

One of the objects, therefore, of the present invention is to provide a button to be used with a certain type of tack so that the front end of the tack and the metal reinforcement about the hub of the button act similarly to a punch and die, so that as the tack is driven up into the bore at the button head, it will cleanly cut the cloth. Thus, there are no unshared threads or fibers pulling on the cloth surrounding the tack to cause wrinkles or puckers radiating from about the tack head.

Still another object of the invention is to provide a plastic button having a hub and a central bore therein together with a ferrule over the free end of the hub, the ferrule provided with a central opening through which is to be driven a tack preferably having a conical shaped point on its free end.

Still another object of the invention is to provide a plastic button that is provided with a reinforced ferrule, which latter has an opening in its closed face. Into this ferrule is to be driven a fluted shank tack fastener, and it is to be noted that the opening in the ferrule is of the same diameter as the root diameter of the tack, so that as the tack passes through the cloth and cuts into the walls about the opening of the ferrule, the tack will also cleanly shear the fibers of the cloth so that the cloth will strip back along the shank and thus prevent the puckering of the material around the base of the tack.

With these and other objects in view, the invention consists in certain new and novel arrangements and combination of parts as will be hereafter more fully explained and pointed out in the claims.

Referring now to the drawing, showing a preferred embodiment,

Fig. 1 is an enlarged central sectional view of a button as attached to its cloth or carrying medium,

Fig. 2 is an enlarged sectional view showing the several parts of the button and tack as well as a fragmentary portion of the cloth,

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Fig. 3 is an enlarged sectional view of the ferrule, the cloth, and the tack to show the relative size of the opening in the ferrule and the tack,

Fig. 4 is a sectional view taken on line 4-4 of Fig. 3, and

Fig. 5 is an enlarged bottom plan view of the button.

Referring now more particularly to the several views and for the moment to Fig. 2, there is shown on an enlarged scale a plastic button 1, having a depending hub 2, which is slightly reduced as at 3. There is also the central bore 4, which extends through the hub 2 up into the body of the button 1.

As the invention may possibly be better understood if dimensions are set out, the critical ones are enumerated, but it is to be understood that these are proportional and if buttons of greater size are made, the dimensions set out would have to be changed but keeping the relatively same proportions.

In the present instance, the diameter of the bore 4 is sixty-eight one-thousandths (.068") of an inch. After the buttons are molded there is fitted on the reduced portion of the hub 2 a small metal ferrule 5 with a centrally located opening 6 in the bottom face 7 thereof.

As may be seen in Fig. 1, the ferrule 5 is to be fitted tightly over the reduced portion of the hub 2 so that the side walls of the ferrule 5 will be flush with the outer walls of the hub 2.

The ferrule 5 serves a double function: first, it reinforces the hub 2 to prevent any tendency of the hub 2 from splitting when an oversize tack fastener is driven up into the hub 2. Even should the hub 2 fracture, the ferrule 5 will still hold the fractured parts of the hub 2 securely in place and thus not destroy the usefulness of the button. The second function is to prevent the cloth from pulling or puckering during the attaching operation.

Now I make the opening 6 with a diameter of fifty-two thousandths (.052") of an inch, which, it will be noticed, is less than the diameter of the bore 4 in the plastic button.

I then utilize a tack fastener 8 having a head 9 and a shank 10, on which shank is formed the spiral grooves 11, while the end of the tack may be conically pointed as at 12.

The tack shank is made from wire having a diameter of six hundred twenty-five thousandths (.0625") of an inch, and after the flutes are formed the outside diameter of the tack shank is seventy-four thousandths (.074") of an inch, while the root diameter of the tack shank at the

bottom of the flutes is fifty-two thousandths (.052") of an inch; or, in other words, the same diameter as the diameter of the opening 6 in the bottom face 7 of the ferrule 5.

Thus the shank 10 of the tack fastener 8 acts as a punch and the walls about the opening 6 of the ferrule 5 act as a die. In this case, however, the shank 10 being provided with flutes 11, the root diameter is equal to the diameter of the opening 6; while the outside diameter of the tack 8 is greater than the diameter of the opening 6. Thus, the top edges of the flutes 11 cut into the metal side walls surrounding the opening 6. Thus, the flutes 11 cut grooves in the walls of the metal about the opening 6 as deep as the height of the flutes, and between these grooves during the cutting action are left small tongues of the ferrule metal which support the fabric 13. Thus there is a cutting of all the threads about the tack as the tack cuts the grooves into the walls, so that no puckering of the cloth can occur. Also, the tack will cut grooves in the wall about the bore 4 of the button 1 to thus tightly hold the button 1 to its cloth 13.

If plastic materials were less brittle, it would be possible to make the diameter of the bore 4 as small as the root diameter of the tack 8; but the thermostatic plastics which have the physical characteristics necessary for buttons to be used on washable garments are too brittle, so that the diameter of the bore 4 of the button 1 has to be slightly greater than the diameter of the opening 6 in the ferrule 5, but less than the outside diameter of the shank 10.

Thus, it might be said that the bore 4 and the opening 6 in the ferrule 5 provide a structure of two different diameters. The diameter of the bore 4 in the button 1 provides the holding strength necessary for securing the button 1 to the garment, but is large enough so that the button 1 will not break during the attaching operation; whereas the diameter of the hole 6 in the ferrule 5 which forms the entrance to the bore 4 is small enough to prevent a distortion of the threads and permits a clean cutting of the threads so they are not pulled up into the bore 4 of the button 1 to thus pucker or distort the fabric 13.

I have found that buttons formed as above set forth, together with a fluted shank tack fastener will easily withstand a pulling test of about one hundred pounds (100 lbs.) before the tack will be separated from the head, which is more than sufficient where buttons are to be used on light materials, such as for playsuits, etc.

Again, by using the ferrule as heretofore mentioned, the probability of the hub 2 splitting during the entrance of the tack 8 during the attaching operation is reduced to a minimum; and, the button 1 may be used on a relatively thin cloth without any fear of unsightly wrinkles or puckers, which is practically impossible with the ordinary form of tack button.

It will also be understood that the buttons might be other than round, just so the ferrule is fitted in the proper place and the diameter of the opening in the ferrule is the same as the root diameter of the tack, so that a cutting action is presented when the tack is forced into the reduced opening.

From the foregoing it will be seen that I have provided a reenforced plastic button, wherein the tack rather than distorting the threads of the garment during an attaching operation will cut them cleanly so that there will be no drawing action on the cloth by the threads being pulled into the bore, which is the cause of puckering when buttons are attached to garments made of relatively light material.

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

1. A plastic button having a hub, said hub provided with a bore, a ferrule fitted over the free end of the hub, provided with an opening in its closed face, and the said opening in the ferrule registering with the bore, together with a fluted tack and the root diameter of the fluted tack being substantially the same as the diameter of the opening in the ferrule.

2. A plastic button having a hub, said hub provided with a bore, a ferrule fitted over the free end of the hub, provided with an opening in its closed face, and the said opening in the ferrule registering with the bore, together with a fluted tack and the root diameter of the fluted tack being substantially the same as the diameter of the opening in the ferrule and less than the diameter of the bore in the hub.

3. A plastic button having a hub, said hub provided with a bore, a ferrule fitted over the free end of the hub, said ferrule provided with an opening in its closed face registering with the bore, the diameter of the opening in the ferrule being less than the diameter of the bore, together with a fluted tack whose root diameter is substantially that of the diameter of the opening in the ferrule but less than the diameter of the bore in the hub, whereby the material to which the button is to be attached will be supported and cleanly cut when the tack is driven into the cloth and up into the bore during an attaching operation.

WILLIAM A. ZWIEBEL.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,968,221	Reiter	July 31, 1934
2,254,417	Corley	Sept. 2, 1941
2,299,494	Purinton	Oct. 20, 1942