Feb. 20, 1962 F. E. GRANNEN 3,021,583

SEPARABLE BUTTON

Filed Jan. 2, 1959

Fig. 1.

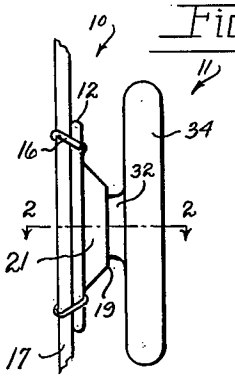
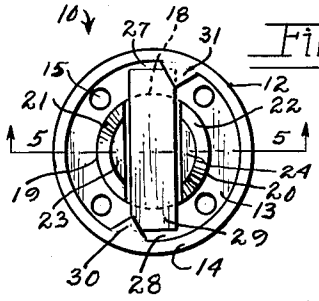


Fig. 4.



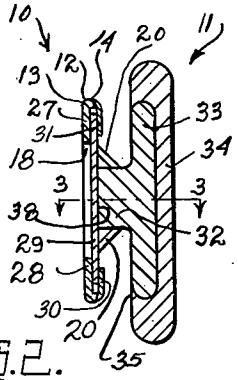


Fig. 2.

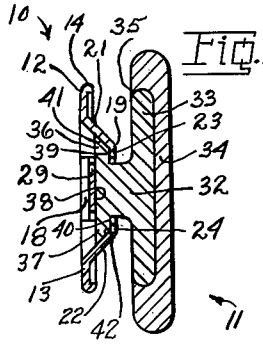


Fig. 3.

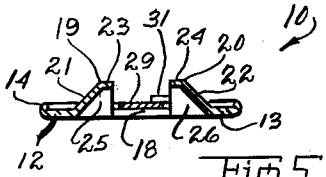


Fig. 5.

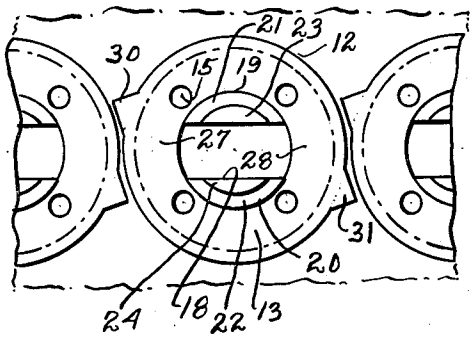


Fig. 6.

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SEPARABLE BUTTON

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6 Claims. (Cl. 24—109)

This invention relates to improvements in buttons and particularly to improvements in so called "two-part buttons," that is, buttons, per se, that are removable from garments prior to cleaning, laundering, pressing or ironing of said garments.

This invention is an improvement on applicant's United States Patent 2,683,909 which issued on July 20, 1954.

In the past, removable buttons have been employed in which use was frequently made a pair of parts each removable from the garment resulting in, frequently, displacement of the parts since one of them was primarily a small wire or pin that could be easily misplaced and at the same time very clumsy to use when applying the button to the garment.

Attempts have been made to provide removable buttons that include two or more parts, with one of the parts permanently attached to the garment and with which permanently attached part the button was interlocked when in its operative position. With this style of button, as heretofore known, the structures were quite complicated and expensive to produce and at the same time were such as to cause friction and wear and tear on the garment fabric around the said permanently attached part thereby causing tears and other damage to the garment fabric resulting in a structure whose use was undesirable.

Attempts were also made such as disclosed in the above identified patent of applicant, to overcome the difficulties of said past constructions and that while such a construction as disclosed by applicant's above identified patent has proven satisfactory some inconvenience was experienced in that it is desired that a firmer resilient hold be had on the button, per se, to prevent any movement of the button except as deliberately effected.

It is with the latter type of removable button that this application is concerned and which button of the present invention overcomes all the heretofore objections thereto.

The principal object of the present invention is, therefore, the provision of a removable button that is simple to use in its application to and removability from a garment.

Another object of this invention is the provision of a removable button which includes a part or holder permanently secured to the garment and which is provided with means for securely holding removable button itself and which button itself is readily applied and removed from said secured part or holder.

A further object of the present invention is the provision of a removable button and a permanently fixed holding member in which there is provided yieldable or spring means which retains the parts, removable button, per se, and holding member, in the desired relationship and prevents displacement of said parts except as forcefully effected.

It is also an object of this invention to provide a button to accomplish the foregoing objects that is inexpensive to manufacture, resulting in economy in purchase and will be readily used because of its cheapness in price.

Other objects and advantages of the present invention should be readily apparent by reference to the following specification considered in conjunction with the accompanying drawings forming a part thereof and it is to be understood that any modifications may be made in the exact structural details there shown and described, within

the scope of the appended claims, without departing from or exceeding the spirit of the invention.

In the drawings:

FIG. 1 is a side elevational view of a removable button with its holding member secured in operative position and embodying the principles of the present invention.

FIG. 2 is a transverse sectional view through FIG. 1 as seen from line 2—2 on said FIG. 1, the fabric illustrated in FIG. 1 not being shown in FIG. 2.

FIG. 3 is a cross-sectional view at right-angles to that of FIG. 2 as seen from line 3—3 on said FIG. 2.

FIG. 4 is a front elevation view of the plate or holder of the button and with said button as disclosed in FIGS. 1, 2 and 3 removed.

FIG. 5 is a sectional view through the plate or holder as seen from line 5—5 on FIG. 4.

FIG. 6 is a view illustrating one method of producing the plate or holder of the present invention and the method of retaining the spring in operative position.

Throughout the several views of the drawings similar reference characters are employed to denote the same or similar parts.

The removable button of the present invention will find its usefulness in connection with uniforms, skirts, dresses and similar garments which are subject to frequent cleaning, laundering, pressing, ironing and the like and can be readily and advantageously used in connection with buttons having their ornamental or exposed surfaces formed of plastic which are relatively fragile and liable to breakage during laundering, pressing, and the like, or subject to damage from the attendant heat during a pressing, ironing, or the like, operation.

As shown in the drawings the preferred construction of the invention use is made of a holding member or plate indicated in its entirety by the reference numeral **10** with which is detachably connected a button indicated in its entirety by the reference numeral **11**. The holding member or plate **10** is formed as a stamping from a single sheet of material preferably in circular or disc form **12** and including a central or body portion **13** having the perimeter thereof upset or turned on itself to provide a reinforcing rim **14**. The said holding member or plate is provided through its body portion **13** adjacent its rim **14** with a plurality of apertures **15** through which stitching or the like **16** extends for securing the said plate **12** to the fabric or garment, diagrammatically illustrated in the drawings at **17**. It is to be understood that, insofar as the construction of the button is concerned, the fastening of the plate **10** to the garment may take a form other than by the use of thread or stitching **16**.

The central or body portion **13** of the plate **12** is provided substantially centrally thereof with an elongated aperture **18**. The central or body portion **13** of the plate or disc, outwardly of each side of the central aperture **18**, is raised as at **19** and **20** to form upwardly projecting bosses, respectively having an arcuate upwardly extending portion **21** and **22** for each of said raised bosses **19** and **20** with said portions **21** and **22** terminating in inwardly projecting lips **23** and **24**.

By this construction there is provided, as seen in FIG. 5, a plate or holding member **12** with lips **23** and **24** upwardly of the exposed or outer surface of the disc body portion **13** resulting in arcuate passageways **25** and **26** immediately beneath the lips **23** and **24** and which passageways, transversely of the plate are wedge shaped, being formed by the inclined portions **21** and **22** as clearly shown in FIG. **5**.

The central or body portion **13** has portions **27** and **28** respectively, located above and below the central aperture **18** thereof, as clearly shown in FIG. 6, and which portions **27** and **28** act as rests or supports for the opposite ends

of a leaf spring 29. The leaf spring 29 forms or constitutes a bridge over the said aperture and, in effect, provides the base for the arcuate passageways 25 and 26 of the bosses 19 and 20.

Any suitable or desirable means may be employed for securing the leaf spring in position on the plate or disc body portion 13. Preferably, however, it is desired to provide hold down lugs, such as 30 and 31, one at each side of the plate 10 and respectively folded over and onto the ends of the leaf spring 29 and impinging same against the spring rests or supports 27 and 28. As disclosed in FIG. 6 the material for the hold-down lugs 30 and 31 is readily available from the material between successive plates or holding members as they are stamped from a strip of stock material.

The button 11, per se, is illustrated as a solid member comprising a shank 32 preferably, but not necessarily, circular in cross-section and having an enlarged flange or head 33 at one end thereof. The flange or head 33 may be employed as the button itself or it may be employed to have connected or attached thereto a facing or exterior surface which is indicated in the drawings by the reference numeral 34. One such facing may be molded plastic, although this facing may be of any other suitable or desirable material such as stamped metal, which could have its edge, as at 35, overlapping the button head 33. Hereinafter, the reference to the button will contemplate the button head 33 either by itself or with an overlay or attached decorative outer surface.

The button shank 32 has at its other end a pair of arms 36 and 37 which project in opposite directions beyond the shank 32 and preferably has the outer edge plane or flat as at 38, and desirably so centrally of its ends immediately ahead of the shank 32. The said arms 36 and 37 have their other surfaces formed to substantially coincide with the arcuate passageways 25 and 26 of the plate projections or raised bosses 19 and 20. For this reason the said arms are provided immediately outwardly of the shank 32 with plane or flat portions 39 and 40 followed by outwardly and downwardly inclining portions 41 and 42 which conform with the cross-section of the said arcuate passageways 25 and 26, and particularly conform to said passageways transversely of the plate or disc 12.

The operation of the separable button is believed obvious from the drawings and the foregoing description since the button, per se, would be positioned to have the end 38 of the shank 32 on the bridge or leaf spring 29 with its arms 36 and 37 projecting in the direction of the major axis of the center elongated aperture 18, as seen in FIG. 4. A pressure on the button causes an outward springing of the leaf spring or bridge 29 whereupon the button is rotated in either a clockwise or counter-clockwise direction thereby passing the button arms 36 and 37 into the arcuate passageways 25 and 26 of the arcuate projections or bosses 19 and 20. The button is rotated through an angle of ninety degrees, whereupon the sides of the arms 36 and 37, and contiguous edges of the shank 32, are transverse of the body portion 13 of the plate 12. The button arms 36 and 37 in passing through the arcuate passageways 25 and 26 increase the tension of the leaf spring or passageways base 29 since the said leaf spring was initially flexed against its normal set by being pressed into the plate or disc central elongated aperture 18 and said leaf spring tends to yieldingly return to its initial set. This tension or clamping of the button arms 36 and 37 between the leaf spring 29 and the inclined portions 21 and 22 of the raised portions 19 and 20 retains the said bottom in any position of adjustment and particularly in the position with the button arms 36 and 37 transversely of the leaf spring 29.

It will be understood that to remove the button from its plate or holding member 12 the button is merely reversed in its rotation which because of the tension of the leaf spring requires some force with said reverse rotation of the button continuing until the button arms 36 and 37 are completely removed from under the raised portions 21 and 22 and lips 23 and 24 and again project in the direction of the major axis of the central elongated aperture 18 whereupon the button is free for removal.

It will be noted that the garment or fabric 17 is tightly drawn across the back side of the holding disc 12 thereby keeping the said garment fabric out of the apertures, resulting when the arcuate raised portions 19 and 20 are formed, so that no interference is had to the operation of the button on the leaf spring or bridge 29.

In view of the foregoing, it is believed now evident that there has been provided a separable two-part button which accomplishes the objects initially set forth.

What is claimed is:

1. In a device of the class described the combination of a plate formed of a single piece of material and provided with means for securing it in position on the surface with which it is to be used, said plate being provided with an elongated aperture substantially centrally thereof, with said aperture having a major and a minor dimension at right angles to one another, upwardly stamped projections from said plate outwardly, laterally, of said central elongated aperture, with said projections forming passageways therebeneath, said projections having their ends in spaced relation to provide a way therebetween to the passageways below the projections, a leaf spring spanning said plate central aperture in the direction of its major dimension beneath the way between the free ends of said projections, and a detachable button having a shank projecting therefrom with arms at the free end of the shank radiating from opposite sides thereof, said arms between the outer ends thereof and including the shank having a combined length greater than the space between the free ends of said projections to have portions of said arms disposed in said passageways beneath the projections, and said shank being of such length as to be exposed between the projections and button and to space the button from the plate.

2. In a device of the class described the combination of a plate formed of a single piece of material and provided with means for securing it in position on the surface with which it is to be used, said plate being provided substantially centrally thereof with an elongated aperture substantially rectangular in area and having a major dimension and a minor dimension at right angles to one another, upwardly stamped projections from said plate respectively laterally outwardly of the central aperture, said projections each including an upwardly, inwardly inclined portion and a portion extending toward another portion of the projection and parallel with the plate and forming beneath each projection a wedge shaped passageway, said parallel portions being spaced from one another a distance substantially equal to the minor dimension of the aperture to form a way between the projections to the wedge shaped passageways therebeneath, said plate outwardly of the aperture in the direction of its major dimension providing supports, a leaf spring on said supports between the projections and forming in effect a base for the wedge shaped passageways beneath the projections, and a detachable button having a shank projecting therefrom with arms at the free end of the shank radiating from opposite sides thereof, said arms between the outer ends thereof and including the shank having a combined length greater than the space between the projections, with said shank arms being received in said wedge shaped passageways beneath the projections, and said shank being of such length as to be exposed between the projections parallel portions and button and to space the button from the plate.

3. In a device of the class described the combination of a plate formed of a single piece of material and provided with means for securing it in position on the surface with which it is to be used, said plate being provided sub-

stantially centrally thereof with an elongated aperture substantially rectangular in area and having a major dimension and a minor dimension at right angles to one another, upwardly stamped projections from said plate respectively laterally outwardly of the central aperture, said projections each including an upwardly, inwardly inclined portion and a portion extending toward another portion of the other projection and parallel with the plate and forming beneath each projection a wedge shaped passageway, said parallel portions being spaced from one another a distance substantially equal to the minor dimension of the aperture to form a way between the projections to the wedge shaped passageways therebeneath, said plate outwardly of the aperture in the direction of its major dimension providing supports, a leaf spring on said supports between the projections and forming in effect a base for the wedge shaped passageways beneath the projections, means carried by the plate for securing the leaf spring in operative position on the plate supports, and a detachable button having a shank projecting therefrom with arms at the free end of the shank radiating from opposite sides thereof, said arms between the outer ends thereof and including the shank having a combined length greater than the space between the free ends of said projections, with said shank arms being received in said passageways beneath the projections, and said shank being of such length as to be exposed between the projections parallel portions and button and to space the button from the plate.

4. A holding mechanism for a detachable button comprising a plate formed of a single piece of material and provided with means for securing it in position on the surface with which it is to be used, said plate being provided substantially centrally thereof with an elongated aperture substantially rectangular in area and having a major dimension and a minor dimension at right angles to one another, upwardly stamped projections from said plate respectively laterally outwardly of the central aperture, each of said projections including an upwardly, inwardly inclined portion and a portion extending parallel with the plate and toward another portion of the other projection and forming beneath each projection a wedge shaped passageway, said parallel portions of said projections being spaced from one another a distance substantially equal to the minor dimension of the aperture to form a way between the projections to the passageways therebeneath, said plate outwardly of the aperture in the direction of its major dimension providing supports, and a leaf spring on said supports between the projections and forming in effect a base for the wedge shaped passageways beneath the projections.

5. A holding mechanism for a detachable button comprising a plate formed of a single piece of material and provided with means for securing it in position on the surface with which it is to be used, said plate being provided substantially centrally thereof with an elongated

aperture substantially rectangular in area and having a major dimension and a minor dimension at right angles to one another, upwardly stamped projections from said plate respectively laterally outwardly of the central aperture, each of said projections including an upwardly, inwardly inclined portion and a portion extending parallel with the plate and toward another portion of the other projection and forming beneath each projection a wedge shaped passageway, said parallel portions of said projections being spaced from one another a distance substantially equal to the minor dimension of the aperture to form a way between the projections to the passageways therebeneath, said plate outwardly of the aperture in the direction of its major dimension providing supports, a leaf spring on said supports between the projections and forming in effect a base for the wedge shaped passageways beneath the projections, and means carried by the plate for securing the leaf spring in operative position on the plate supports.

6. A holding mechanism for a detachable button comprising a plate formed of a single piece of material and provided with means for securing it in position on the surface with which it is to be used, said plate being provided substantially centrally thereof with an elongated aperture substantially rectangular in area and having a major dimension and a minor dimension at right angles to one another, upwardly stamped projections from said plate respectively laterally outwardly of the central aperture, each of said projections including an upwardly, inwardly inclined portion and a portion extending parallel with the plate and toward another portion of the other projection and forming beneath each projection a wedge shaped passageway, said parallel portions of said projections being spaced from one another a distance substantially equal to the minor dimension of the aperture to form a way between the projections to the passageways therebeneath, said plate outwardly of the aperture in the direction of its major dimension providing supports, a leaf spring on said supports between the projections and forming in effect a base for the wedge shaped passageways beneath the projections, and said plate having integral therewith securing lugs overlying the leaf spring at each end thereof, said lugs clamping the leaf spring ends between themselves and the plate supports.

References Cited in the file of this patent

UNITED STATES PATENTS

138,107	Washbourne	Apr. 22, 1873
142,686	Durand	Sept. 9, 1873
1,522,854	Bellavance	Jan. 13, 1925
1,970,901	Röhrs	Aug. 21, 1934
2,472,958	Oldak	June 14, 1949
2,683,909	Grannen	July 20, 1954

FOREIGN PATENTS

89,594	Switzerland	June 1, 1921