July 20, 1954 F. E. GRANNEN 2,683,909

SEPARABLE BUTTON

Filed March 10, 1949

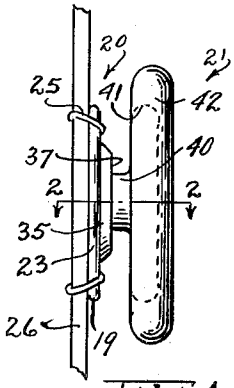


Fig. 1

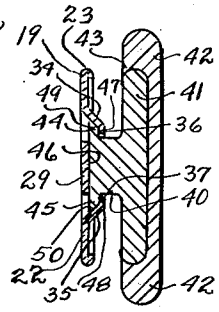


Fig. 3

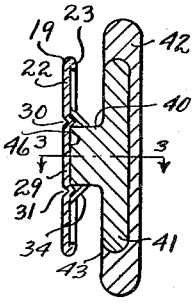


Fig. 2.

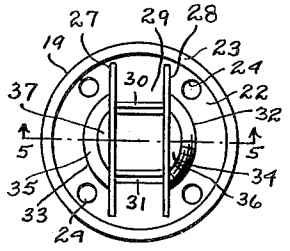


Fig. 4.

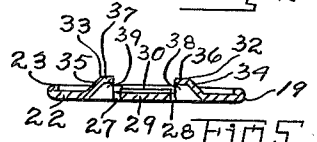


Fig. 5.

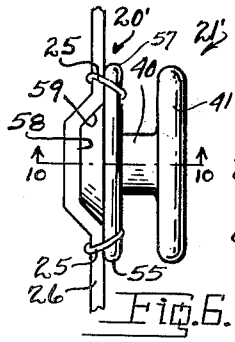


Fig. 6.

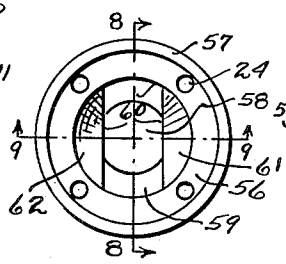


Fig. 7

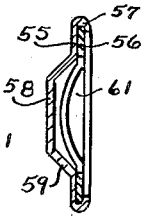


Fig. 8.

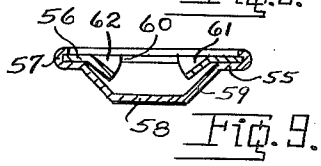


Fig. 9.

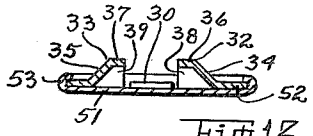


Fig. 15.

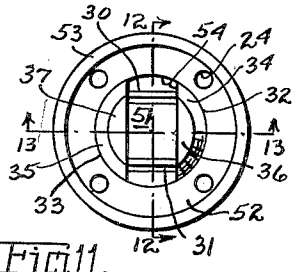


Fig. 11.

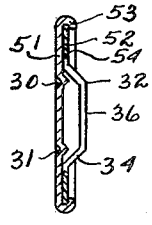


Fig. 12.

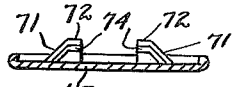


Fig. 16.

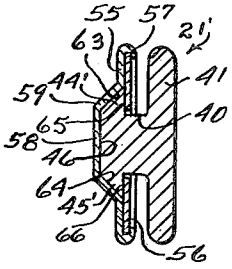


Fig. 10.

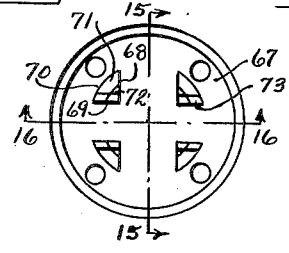


Fig. 14.

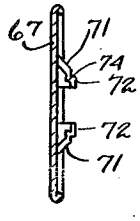


Fig. 15.

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SEPARABLE BUTTON

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4 Claims. (Cl. 24—109)

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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.

In the past, removable buttons have been employed in which use was generally made of 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 easily be misplaced and at the same time very clumsy to use when applying the button to the garment. Furthermore with this style of removable button it was necessary to supply the garment with an aperture or hole through which a part of the button projected and which hole was subjected to considerable wear and tear in the normal use of the button and at the same time allowed considerable free play between the parts and the garment resulting in further wear and tear on the garment and particularly around the aforementioned aperture or hole. Attempts have also been made to provide removable buttons that included 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.

It is with the latter type of removable button that this application is concerned and which button of the present invention overcomes 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 to which the button itself is readily applied and removed yet resists inadvertent disassociation from said carrier or plate.

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.

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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 an elevational view of one form of a removable button 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 plan view of the plate or holder of the button of Figs. 1, 2 and 3.

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

Fig. 6 is a view, similar to Fig. 1, showing in elevation a second form of the invention as attached to a piece of fabric or garment.

Fig. 7 is a plan view of the holding member or plate of the button of Fig. 6.

Fig. 8 is a vertical sectional view of the plate of Fig. 7 as seen from line 8—8 on said Fig. 7.

Fig. 9 is a cross-sectional view through the plate of Fig. 7 taken at right-angles to Fig. 8 as seen from line 9—9 on Fig. 7.

Fig. 10 is a cross-sectional view through the assembled button of Fig. 6 as seen from line 10—10 on said Fig. 6, the fabric illustrated in said Fig. 6 being omitted from Fig. 10.

Fig. 11 is a plan view of a third form of holding plate with which the button of Fig. 1 may be employed.

Fig. 12 is a vertical sectional view through the plate of Fig. 11 as seen from line 12—12 on said Fig. 11.

Fig. 13 is a sectional view of the plate of Fig. 11 taken at right-angles to Fig. 12 as seen from line 13—13 on said Fig. 11.

Fig. 14 is a view similar to Fig. 11 of a fourth form of the button holding member or plate.

Fig. 15 is a vertical sectional view through the holding plate of Fig. 14 as seen from line 15—15 on said Fig. 14.

Fig. 16 is a sectional view taken at right-angles to Fig. 15 through the plate of Fig. 14 as seen from line 16—16 on said Fig. 14.

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, aprons, 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.

Various forms of invention are illustrated in the drawings with each form embodying the underlying principles and essential elements of the construction and the several forms will be described with reference to the modification in the several forms as distinguished from the preferred construction, that illustrated in Figs. 1 to 5, inclusive.

As shown in said preferred construction use is made of a holding member or plate indicated in its entirety by the reference numeral 20 with which is detachably connected a button indicated in its entirety by the reference numeral 21. The holding member or plate 20 is formed as a stamping from a single sheet of material preferably in circular or disc form 19 and including a central or body portion 22 having the perimeter thereof upset or turned on itself to provide a reinforcing rim 23. The said holding member or plate is provided through its body portion 22 with a plurality of apertures 24 through which stitching or the like 25 extends for securing the said plate 19 to the fabric or garment, diagrammatically illustrated in the drawings at 26. It is to be understood that, insofar as the construction of the button is concerned, the fastening of the plate 20 to the garment may take a form other than by the use of thread or stitching 25.

The body 22 of the plate 19 is provided vertically thereof with a pair of slits 27 and 28 forming between them, within the plate body 22, a bridge or central portion 29. Intermediate the ends of the bridge 29 transverse lugs 30 and 31 are formed which upstand from the surface of said bridge. The said lugs 30 and 31 are shown in cross-section in Fig. 2 and their specific purpose will be subsequently described. The body portion 22 of the plate or disc, outwardly of each of the slits 27 and 28, is raised as at 32 and 33 to form outwardly projecting bosses, respectively having an arcuate upwardly extending portion 34 and 35 for each of said raised bosses 32 and 33 with said portions 34 and 25 terminating in inwardly projecting lips 36 and 37.

By this construction there is provided, as seen in Fig. 5, a plate or holding member 19 with lips 36 and 37 upwardly of the exposed or outer surface of the disc body portion 22 resulting in arcuate passageways 38 and 39 immediately beneath the lips 36 and 37 and which passageways, transversely of the plate are wedge shaped, being formed by the incline portions 34 and 35 as clearly shown in Fig. 5.

The button 21, per se, is illustrated as a solid member comprising a shank 40 preferably, but not necessarily, circular in cross-section and having an enlarged flange or head 41 at one end thereof. The flange or head 41 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 42. 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 edges as at 43 overlapping the button head 41. Hereinafter, the reference to the button will contemplate the button head 41 either by itself or with an overlay or attached decorative outer surface.

The button shank 40 has at its other end a pair of arms 44 and 45 which project in opposite directions beyond the shank 40 and preferably have the outer edge plain or flat as at 46, and desirably so centrally of its ends immediately ahead of the shank 40. The said arms 44 and 45 have their other surfaces formed to substantially coincide with the arcuate passageways 38 and 39 of the plate projections 32 and 33. For this reason the said arms are provided immediately outwardly of the shank 40 with plain or flat portions 47 and 48 followed by outwardly and downwardly inclining portions 49 and 50 which conform with the cross-section of the said arcuate passageways 38 and 39, and particularly conform to said passageways transversely of the plate or disc 19.

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 46 of the shank 40 on the bridge 29 with its arms 44 and 45 projecting in the direction of the slits 27 and 28, as seen in Fig. 4. A slight pressure on the button causes an outward springing of the bridge 29 whereupon the button is rotated in either a clockwise or counter-clockwise direction thereby passing the button arms 44 and 45 into the arcuate passageways 38 and 39 of the arcuate projections or bosses 32 and 33. The button is rotated through an angle of ninety degrees whereupon the sides of the arms 44 and 45, and continuous edges of the shank 40, are transversely of the body portion 22 of the plate 19. The button arms 44 and 45 in passing over the ribs 30 and 31 cause the said bridges 29 and the lips 36 and 37 to spring away from one another until the transverse position of the arms 44 and 45 is reached whereupon the bridge 29 and the lips 36 and 37 spring to their normal positions causing the ribs 30 and 31 of the bridge to flank the sides of the said arms 44 and 45 and contiguous portions of the shank 40. The said ribs 30 and 31 yieldably lock the button, per se, to the holding plate or backing disc 19.

It will be undersood that to remove the button from its plate or holding member 19 the button is merely reversed in its rotation which through the inclined walls of the ribs 30 and 31 again spring the bridge 29 and the lips 36 and 37 from one another until the arms 44 and 45 are aligned with the slits 27 and 28 whereupon the button is free for removal. It will be noted that the garment or fabric 26 is tightly drawn across the back side of the holding disc 19 thereby keeping the said garment fabric out of the apertures resulting when the arcuate raised portions 32 and 33 are formed so that no interference is had to the operation of the button on the bridge 29.

The modification illustrated in Figs. 11, 12 and 13 is substantially identical with that illustrated in Figs. 1 to 5, inclusive, except that it is formed of two discs including a bottom or outer disc 51 which is unslit and substantially flat throughout its area except for the transverse lugs 30 and 31 which occupy substantially the same positions with respect to the disc 51 as said lugs occupy

with respect to the body portion 22 of the back plate or disc 19. Secured to the upper surface of the disc 51 is a second or inner disc 52 held or secured to the disc 50 by upsetting or crimping the periphery of the disc 51 onto the periphery of the disc 52 and illustrated at 53. The inner disc 52 is provided centrally with an aperture 54 which is of a transverse dimension substantially equal to that across the slits 27 and 28 of the disc 19. Transversely of the disc 52 along the edges of the aperture 54 there is provided raised portions or bosses 32 and 33 substantially identical with the similar raised portions or bosses 32 and 33 in the disc 19.

It will be obvious from Figs. 11, 12 and 13 that the said parts provide a holding plate or disc which is substantially identical with that illustrated in Figs. 2, 3 and 4 and which cooperates with the button 21 in a manner identical with that above described.

The modification illustrated in Figs. 6, 7, 8, 9 and 10 is substantially the reverse of the construction of Figs 11, 12 and 13 comprising an outer disc 55 and an inner disc 56 secured to one another by upsetting or folding the perimeter of the disc 55 onto the perimeter of the disc 56 as illustrated at 57. In this construction the outer disc 55 has its center portion depressed to form a depression having a base 58 with an upwardly and outwardly or angularly projecting flange 59 which terminates in the body portion of the disc 55.

The inner disc 56 is provided with an aperture 60 which, similar to the aperture 54 in Fig. 11, is of a width substantially equal to the distance between the slits 27 and 28 and for the same purpose as the aperture 54. The portion of the inner disc 56 immediately adjacent the sides of the aperture 60 is depressed as illustrated at 61 in Fig. 8 and at 61 and 62 in Fig. 9.

The depressed portions 61 and 62 of this modification correspond to the spring fingers 36 and 37 resulting from the upstanding portions or bosses 32 and 33 of Figs. 4 and 11 and in their final operative position form arcuate passageways which are reversed, insofar as their wedge shaped wall portion is concerned, from that of Figs. 5 and 13. For this reason the button 21', per se, of Fig. 10, is modified to the extent that the arms 44' and 45' of the shank 40 are inclined, as at 64 and 63, on the outer surface of said arms instead of on the inner surface thereof as illustrated in Fig. 3. This also results in the said arms 44' and 45' having their inner faces plain or flat as at 65 and 66 from the said shank 40 to the extreme ends of said arms instead of having said flat portions for a short distance only as at 47 and 48 in said Fig. 3.

The operation of the modified button 21' of Figs. 6 to 10, inclusive, is substantially identical with that above described except that no great pressure is required to start the button beneath the spring arms 61 and 62 since, as seen in Fig. 8, the thin portion of the wedged ends of the arms 44' and 45' will immediately start beneath the said spring portions 61 and 62 to lift the said spring portions against their normal yielding reaction. As the button is turned to its ninety degree position the spring tension will be increased so that upon reaching said ninety degree position the button arms 44' and 45' will be tightly, yieldingly wedged in place.

In both modifications illustrated in Figs. 6 to 13, inclusive, the outer surface of the holding disc or plate 20 is perfectly plain or flat on which is properly stretched the garment or fabric 26

in being attached thereto wherefore no interference to the button, per se, its shank or arms is possible.

The modification illustrated in Figs. 14, 15 and 16 is again formed of one piece insofar as the holding plate is concerned. As illustrated the plate body or disc 67 is provided, at equally spaced points, with a right-angular or L-shaped cut each including a vertical cut 68 and a horizontal cut 69. Said cuts are so related that the vertical cuts 68 are opposed to one another while the horizontal cuts 69 are likewise opposed to one another with the distance between said vertical cuts 68 being substantially equal to the distance between the slits 27 and 28 while the distance between the horizontal cuts 69 is less than that between the vertical cuts 68. It is understood that this space between the vertical slit 68 as well as the space between the slits 27 and 28, the transverse dimension of the aperture 54 in Fig. 11 and the transverse dimension of the aperture 60 in Fig. 7 are such as to freely admit the button shank arms therein. The portion of the disc 67 embraced within the slits 68 and 69 constitute lugs with their outer or remaining edge provided by an arcuate bend line 70. The said lugs in their final form are as shown in Figs. 15 and 16 each comprising an upwardly, inwardly, inclined portion 71 terminating in a horizontal portion 72 in angular relation to one another corresponding to the inclined walls and spring lip of raised portions or bosses 32 and 33 of Fig. 4.

The said lugs 70 are finally provided along their portions adjacent to cuts 69 with an offset portion 73 thereby providing an inwardly projecting shoulder 74, see Fig. 15, on each lug. The distance between opposed shoulders 74 of opposed lugs is substantially equal to the distance between the lugs vertical slits, which, as noted above, is substantially equal to the width of the button shank and the transverse dimension of the button shank arms 44 and 45.

The operation of this modification in Figs. 14, 15 and 16 is believed obvious and is substantially identical with that above described since the button is disposed to have its arms 44 and 45 between the lugs slits or sides 68 whereupon it is rotated in either a clockwise or counter-clockwise direction to project the same beneath the lugs. This movement of the button will initially either outwardly spring the bridge portion of the disc 67 or outwardly spring the lugs until the button has reached a position ninety degrees from its original position, or transversely of the disc 67, whereupon the arms will snap into the recess provided between the inwardly projecting shoulders 74 and beneath the offsets 73 and thereby lock the parts in operative position.

The small apertures resulting through the plate or disc 67 by the lugs is again spanned, on the outer surface of the plate or disc 67 by tightly drawing the garment or fabric thereover wherefore no interference is had with the operation of the parts.

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 a pair of spaced parallel slits providing a bridge between the slits, upwardly stamped projections from

said plate outwardly of said slits with said projections forming passageways therebeneath, said projections having their free ends in spaced relation to provide a way therebetween to the passageways below 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 having a combined length greater than the space between the slits to have portions received in the passageways beneath said projections, and said shank being of such length as to be exposed between the ends of 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 with a pair of spaced parallel slits providing a bridge between the slits, upwardly stamped projections from said plate outwardly of said slits with said projections forming passageways therebeneath, said projections having their free ends in spaced relation to provide a way therebetween to the passageways below the projections, a detachable button having a shank projecting therefrom with arms at the free end of the shank radiating from opposite sides thereof, said arms having a combined length greater than the space between the slits to have portions received in the passageways beneath said projections, said bridge and projections cooperating with one another to form a yieldable clamp on said arms to retain them in position, said shank being of such length as to be exposed between the ends of the projections and button and to space the button from the plate, and means carried by said bridge extending longitudinally of the button shank and arms when said button shank arms are in the passageway for flanking the said shank and arms to yieldingly retain them in position within the passageways.

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 of the material with which it is to be used, said plate being provided with a pair of spaced parallel slits providing a bridge between said slits, upwardly stamped projections from said plate outwardly of said slits with said projections forming passageways therebeneath, said projections having their free ends in spaced relation to provide a way therebetween to the passageways below the projections, a detachable button having a shank projecting therefrom with arms at the free end of the shank radiating from opposite sides thereof, said arms having a combined length greater than the space between the slits to have portions thereof received in said passageways beneath said projections, said shank being of such length as to be exposed between the ends of the projections and button and to space the button from the plate, said projections including an upwardly, inwardly inclined portion and a portion parallel with the bridge whereby the passageways are substantially wedge shaped, and said shank arms portions underlying the plate projections conforming with said inclined portions of the passageways.

4. 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 of the material with which it is to be used, said plate being provided with a pair of spaced parallel slits providing a bridge between said slits, upwardly stamped projections from said plate outwardly of said slits with said projections forming passageways therebeneath, said projections having their free ends in spaced relation to provide a way therebetween to the passageways below the projections, a detachable button having a shank projecting therefrom with arms at the free end of the shank radiating from opposite sides thereof, said arms having a combined length greater than the space between the slits to have portions thereof received in said passageways beneath said projections, said shank being of such length as to be exposed between the ends of the projections and button and to space the button from the plate, said projections including an upwardly, inwardly inclined portion and a portion parallel with the bridge whereby the passageways are substantially wedge shaped, and means carried by said bridge extending longitudinally of the button shank and arms when said button shank arms are in the passageways for flanking the said shank and arms to yieldingly retain them in position within the passageways.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
138,107	Washbourne	Apr. 22, 1873
478,174	Sherer	July 5, 1892
1,523,009	Folkman	Jan. 13, 1925
2,023,457	White	Dec. 10, 1935

FOREIGN PATENTS

Number	Country	Date
126,545	Great Britain	May 15, 1919
96,246	Austria	Mar. 10, 1924