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3,531,833

BUTTON WITH FASTENER

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Fig.1

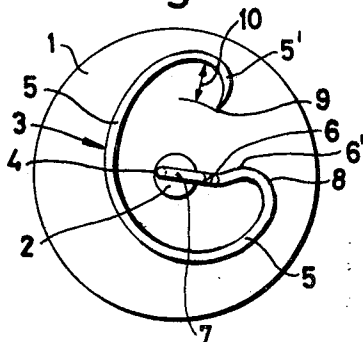


Fig.2

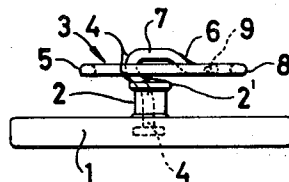


Fig.3

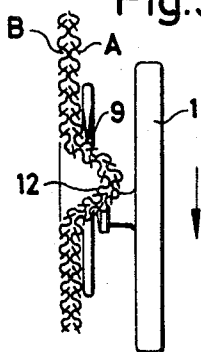


Fig.4

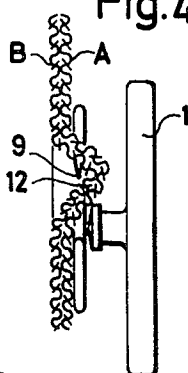


Fig.5

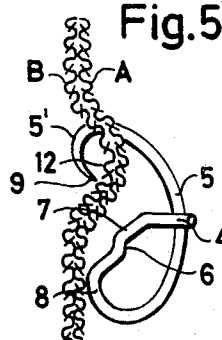


Fig.6

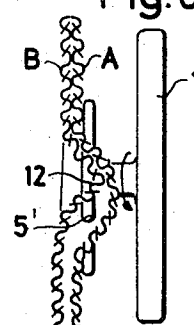


Fig.7

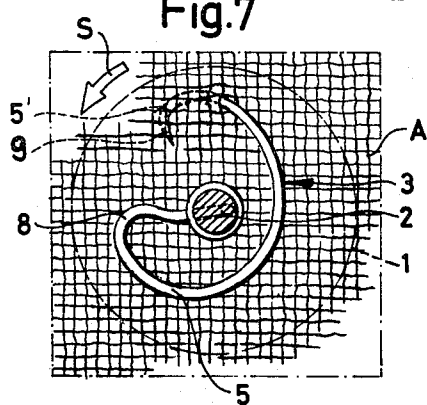


Fig.8

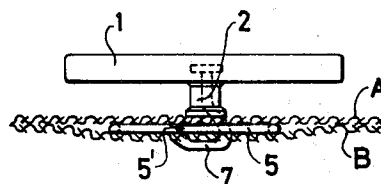
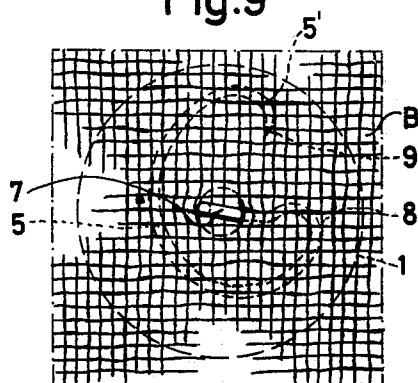


Fig.9



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4 Claims

ABSTRACT OF THE DISCLOSURE

A button fastener attachable to clothing by a sort of screwing motion is formed by curving and bending a stiff needle member substantially into a G-figure and by continuing the inner end of the generally radial section thereof as a stem extending substantially perpendicularly from the plane of the G-figure and having its end secured in a neck portion on the back of the button. The free end portion of the needle member, forming the top of the G, has a pointed end which, while still remaining in the same plane as the G-figure, is curved inwardly towards the stem but spaced therefrom to form a hook. The inner portion of the substantially radial section of the G-figure forms with the adjacent portion of the stem a staple-like bend, which slightly projects over the G-figure plane on the side facing away from the button.

This invention relates to buttons and similar objects, such as marks, badges or emblems, intended for attachment to garments or other articles of cloth for practical and/or decorative purposes and, more specifically, the invention is concerned with an improved fastener for such buttons and the like.

The improved button fastener embodying this invention generally consists of a bent and curved, stiff needle member adapted for insertion through a number of cloth layers in a garment or the like by a sort of screwing motion. More in detail, the improved fastener is of the type, in which the said needle member comprises a substantially central stem section, which is secured, or adapted to be secured, to the back of the button itself in a manner to project backwardly therefrom; an outer loop section curved about said central stem section in a plane substantially parallel with but spaced from the back of the button and having a free end in said plane; and an intermediate section joining said central and outer sections and extending in a substantially radial direction from said stem section, said intermediate section forming, where merging into said central stem section, a staple-like bend slightly projecting beyond the plane of said loop section and, where merging into said outer loop section, a rather accentuated knee.

In other words, the loop section and the intermediate section of the needle member will, when viewed in a direction towards the back of the button, form a figure generally resembling the letter G or a mirror image thereof, while the stem section projects towards the button substantially from the inner end of the horizontal shank of the G—this being, of course, a very simplified description.

Button fasteners of this general type have previously been suggested and described in literature, but they have never been able to gain any noticeable market, obviously because they did not meet practical requirements. The need for an inexpensive, easy-to-handle button that can be conveniently and rapidly fastened to a garment or clothing in a reliable manner without conventional sewing and also without separate attachment accessories is believed to be beyond any doubt, but still there is no such

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button available that can be widely accepted for all types of clothing and in particular for garments.

It has been found that there is at least one major reason for the unsuccessfulness of the old button fasteners referred to above, viz. that they were unable to positively prevent the button from rotating when attached to the clothing. As well known, a button sewed on to a clothing in the conventional manner, is positively prevented from uncontrolled rotation and an angular fixation of the button is ordinarily required by the customer, at least when the button is decorated with a monogram, letters or other signs needing presentation in an upright position to be understandable. However, even if the angular position of the button is not critical in itself, it is important that the fastener should not be able to rotate in an uncontrolled manner, when once attached to a clothing, because such rotation may cause an undesirable wear of the clothing as well as an unfavorable load distribution thereto and increase the risk of unintentional detachment of the fastener. With a freely rotatable button and fastener there is also a greater risk that the pointed end of the needle member could improperly engage and tear the clothing and possibly even harm the wearer.

As well known, buttons are with very few exceptions to be attached to a part of a clothing which is built up or composed of at least two fabric layers, possibly also with a stiffening layer of buckram or the like between them. At least when the button is to be buttoned, it must then be attached to two or more of said layers and commonly all of them, because otherwise undue strains may be put on the clothing and undesirable separation of the layers thereof will occur. With the prior art button fasteners such a satisfactory attachment of the button could only be achieved by threading the needle member through all the said layers and entirely expose the G-like portion thereof on the inside of the clothing. For many and obvious reasons this is objectionable. If there were more than two layers in the clothing, there was also a theoretical possibility that the needle member could be threaded only through some of the layers and thus have its G-like portion concealed, but in practice such an attachment would require too much of time-consuming precision work to be attractive, the more since the pointed end of the prior art fasteners was rather difficult to properly steer through the fabrics.

It is a first and general object of the present invention to provide an improved button fastener of the type referred to hereinbefore which, when properly attached to a clothing built up by at least two fabric layers within the attachment area, is positively prevented from rotating and which will, accordingly, hold its button in a preselected angular position relative to the clothing.

It is also an object of this invention to provide an improved button fastener of the class described which is specifically formed to permit such non-rotatable attachment to a clothing portion comprising at least two fabric layers, but which is yet simple in configuration, easy to use and to manufacture and does not depend on the actuation or manipulation of flexible portions thereof or of additional means for locking and unlocking.

Another object of the invention is to provide an improved button fastener comprising a bent and curved, stiff needle member having a pointed end which, in spite of the fact that it is entirely free and ready for action without any deformation of the needle member, shows no tendency to unintentionally become entangled in or seek its own uncontrolled ways through the fabric layers of the clothing, when the fastener is being attached, and which can cause no harm to the wearer of the clothing or to anybody handling the free button with the fastener secured thereto.

According to the invention these objects are primarily attained by curving the free, pointed end of the outer loop section of the stiff needle member inwardly and substantially towards the stem section thereof so as to form a hook lying within the same plane as said outer loop section. As will appear from the following, the hook thus formed highly facilitates an improved, non-rotatable attachment of the fastener and its button to a clothing and at the same time entirely eliminates the danger and inconveniences encountered in using the old button fasteners discussed hereinbefore.

It is a further object of this invention to provide an improved button for use with the fastener referred to, which button is particularly formed to afford the stem section of the needle member a reliable anchorage and to simultaneously assist in protecting the buttonhole against undue wear. This object is achieved by securing and firmly enclosing a main portion of the stem section of the needle member in a stud-like and neck-forming protuberance on the back of the button. The said protuberance having a thickness considerably exceeding that of the needle member and its free end lying very close to the plane of the loop section of the needle member.

Further objects and features of the invention will become apparent from the following detailed description of a preferred form of the button fastener and the button, to which it is secured, reference being had in this description to the accompanying drawing wherein:

FIG. 1 shows the button and its fastener as viewed from the back,

FIG. 2 shows the button and fastener as viewed from below in FIG. 1,

FIG. 3 illustrates in a slightly simplified manner an initial step in attaching the button fastener to a clothing having two fabric layers,

FIG. 4 illustrates in the same manner as FIG. 3 a second step in attaching the fastener,

FIG. 5 illustrates a third step in attaching the fastener, the latter now being slightly tilted by having its rear part lifted away from the clothing and also being somewhat turned in a counterclockwise direction as compared with in FIG. 4,

FIG. 6 illustrates a fourth step in attaching the fastener, the latter now again lying substantially flat against the clothing and being turned somewhat more in the counterclockwise direction as compared with in FIG. 5,

FIG. 7 shows a front view of the clothing with the fastener in substantially the same position as in FIG. 6 and ready for screwing home, the button head being cut away to expose the fastener,

FIG. 8 shows the button with its fastener properly attached to the clothing, the latter being shown in section, and

FIG. 9 shows the inside or back of the clothing with the button and fastener properly attached, it being specifically noticeable from this latter figure that only a small portion of the entire fastener remains exposed.

The button as illustrated in the drawing has a circular, disk-like head 1, but it should be understood that the shape of the head is not essential and may vary within wide limits. Also, the button head may have its front face covered or otherwise decorated, if so desired. In the example as shown, the button head 1 has on its back a centrally located, stud-like protuberance 2 serving as a neck-forming spacer element between the button head and the clothing and also as a buttonhole protector. The protuberance 2 is preferably formed with a small flange 2' near its end and also serves as a stabilizing support for the fastener 3 by firmly enclosing the stem section 4 thereof. However, in certain cases where the button is not to be used for buttoning or is to be used in light clothings, such as shirts or the like, the protuberance 2 may be entirely dispensed with, if so desired. Both the button head and its protuberance, if provided, may be made of any desirable material, and the fastener 3 may be secured thereto in any suitable manner, such

as by soldering or cementing, by casting or molding the button around the stem section 4, or by any other method preventing the button from rotating relatively to the fastener but possibly allowing it to tilt, if such a freedom is considered desirable for a convenient use.

The button fastener 3 itself consists of a bent and curved needle member which must be made of a very stiff material, such as hardened steel or the like. This needle member comprises an inner or central stem section 4, which is rigidly secured to the button 1 in a manner to project backwardly therefrom, preferably through the protuberance 2 as indicated above. The needle member also comprises an outer loop section 5 curved around and partially encircling the stem section 4 in a plane substantially parallel to but spaced from the back of the button head 1, and an intermediate section 6 joining together the stem section 4 and the outer loop section 5, the said intermediate section 6 extending in a substantially radial direction from said inner stem section 4. All the said sections 4, 5 and 6 of the needle member 3 are, preferably, made in one piece.

The radially inner portion of the intermediate section 6 of the needle member 3 forms with the outer or rear end of the stem section 4 a staple-like bend 7 lying in a plane substantially perpendicular to the plane of the loop section 5. As clearly illustrated in FIG. 2, this bend 7 slightly projects over the plane of the loop section 5. After having formed this staple-like bend 7, the remainder or radially outer portion of the intermediate section 6 extends in the same plane as the outer loop section 5 and merges into the latter through a lateral bow or knee 8, which may well be rather accentuated but not so sharp that it becomes difficult for the fabric layers to pass it during the attachment of the button to a clothing or the like. As may be seen from FIG. 1, the radially outer portion of the intermediate section 6 is also slightly bent back or upwards at 6' before entering the knee 8.

It should be understood from the following that, when the fastener is properly attached to a double- or multi-layer portion of a clothing, the stem section 4 will extend almost perpendicularly through two or more of said layers, whereas the radially outer portion of the intermediate section 6 will be returned through at least the rear one of said layers at an offset point to prevent fastener from unintentional rotation. Accordingly a small portion of said rear clothing layer or layers will be clasped under the staple-like bend 7 and the back-bend 6' of the intermediate section 6 will assist in retaining it there, for instance if the button is subjected to fingering or twisting. It should be noticed, however, that the location of the attached fastener is defined solely by the stem 4, from which the clothing layers can only be removed by forcing them away from the protuberance 2, as by means of a finger nail or a pointed instrument, when detachment of the fastener is desired.

The outer loop section 5 of the needle member 3 is curved somewhat like the contour of a human ear with its middlemost portion extending slightly closer to the central stem section 4 than its extremities, as appears from FIG. 1. The outer, free end portion 5' of the loop section is smoothly turned inwards in a manner to direct its free, pointed end 9 substantially radially towards the stem section 4. The hook thus formed lies in the same plane as the remainder of the loop section 5. The proper configuration of the hook 5' as shown is important for two reasons. Firstly, it will effectively prevent the sharp point 9 from inadvertently interfering with the fabric layers of the clothing or otherwise causing any trouble or harm not only when the button is being attached and when the clothing is in use, but also when the button is not yet attached to a clothing. Secondly, it highly depends on the curvature of the hook whether the fastener will be convenient to use in the intended manner or not, because the proper curvature will assist in returning the point

through the inner or rear clothing layers as shall appear from the following.

Another important thing is the generally radial length of the hook 5' as indicated at 10 in FIG. 1, because the hook is the instrument that has to catch and determine the said portion of the inner or rear clothing layer or layers to be finally received inside the staple-like bend 7 of the intermediate needle section 6, when the attachment operation is completed. If the hook 5' is too short, it will be very difficult if not impossible to get it properly through the clothing layers, as will be described later on, and if it is too long, it may invite the user to let the point 9 return through the rear layer too far from the location of the primary penetration, so that the said portion of the inner clothing layer caught by the hook will become too broad as compared with the staplebend 7, which will, of course, prevent a proper attachment of the fastener to the clothing. In general, the radial length 10 of the hook 5' should be three to four times the total thickness of the clothing layers to be penetrated.

It is also important that the free, pointed end 9 of the needle member is located at the proper distance from the intermediate section 6. This distance is also to a certain degree depending on the total thickness and the flexibility of the fabric layers to be penetrated by the fastener and should never be less than about six to eight times said total thickness to permit easy attachment and detachment of the fastener. As a general rule the point 9 should preferably take a position approximately midway between the ends of the intermediate needle section 6 as shown.

It should again be emphasized that the needle member 3 should be very stiff. It is not intended that the fastener shall be noticeably elastically deformed during attachment or detachment, and it is essential that the outer loop section 5, in spite of its free end, is capable to distribute over substantially its entire face the strains imparted to the button during the normal use of the clothing. In order to make the face of the loop section 5 contacting the fabric of the clothing as large as possible to thereby reduce the wear of the fabric, it may also be advantageous to use a wire or needle having a slightly flattened cross section, when forming the fastener, and to then place the major axis of this cross section parallel with the plane of the loop section 5 as shown in FIG. 2.

It is presumed, as already indicated in the introduction of this specification, that the button fastener now described should be used in clothing manufactured in such a manner that they present at least two fabric layers within the area of attachment of the button fastener. This is usually required in order to give the button a reliable background and support, when the clothing is in use. In a garment the outer fabric layer is also usually heavier than the inner one and possibly reinforced or stiffened by buckram or the like.

When the button is to be attached to such a clothing, it is held in the one hand while the clothing is grasped by the other hand in a manner to form a wave-like fold or ridge in the fabric layers at the desired place of button attachment. This fold or ridge 12 is caused to enter between the pointed end 9 and the intermediate section 6 of the needle member as shown in FIG. 3. The pointed end 9 is then caused to first penetrate both the fabric layers A and B on the one, or upper, side of the ridge, which may be accomplished by simply displacing the button downwardly as shown in FIG. 4. Then the fastener, and the button, is preferably slightly canted, i.e. the rear portion thereof is raised a little from the clothing, and at the same time the button turned a little in the counter-clockwise direction, so that the point 9 will be directed towards, engage and subsequently return through the rear-most fabric layer B on the other, or lower, side of the ridge 12 as shown in FIG. 5. As soon as the point 9 of the needle member has found a hold in the said rear layer B, the ridge 12 is released and allowed to flatten out and at the same time the button and fastener is re-

stored into a position close to and substantially parallel with the outer fabric layer A as in FIG. 6, so that the point 9 will enter between the two layers A and B as shown. This particular threading in of the needle point 9 is highly facilitated by the described and shown curvature of the hook 5' and also by proper adjustment of the ridge in the fabric layers—a technique that can be easily learned.

Now the clothing is preferably spread out on a suitable support, such as a table or the like, and a counter-clockwise turning or screwing motion is imparted to the button as shown by the arrow S in FIG. 7, so that the entire loop section 5 of the needle member will be passed through the passage opened by the needle point 9. It should be clearly understood that, since the needle point 9 is directed towards the stem section 4 as previously described, it will have no tendency to interfere with the surrounding fabric layers during the remaining attachment operation. Subsequently the knee 8 and the intermediate section 6 are also caused to follow the loop section 5 through the fabric layers so that, finally, the stem section 4 of the needle member will be the one passing through both the fabric layers A and B, whereas the bend 7 of the intermediate section 6 will remain visible on the back of the inner fabric layer B, the rest of the intermediate section 6 as well as the entire loop section 5 being concealed between the two fabric layers A and B as shown in FIGS. 8 and 9.

When the fastener, and accordingly the button, is properly attached in the manner described, the fastener will not only reliably remain in place, even if the button is subjected to twisting or tilting, but the button will also be positively prevented from rotating so that it will maintain the angular position once selected for it during the primary steps of the fastener attachment. This fact may be highly important, if the button has a decorated head. If the button is to be detached from the clothing, a pointed instrument or fingernail may be used to push the fabric layers surrounding the stem section 4 inwardly and away from the button, while at the same time the button is actuated to pull the intermediate section 6 back through the clothing. As soon as the knee 8 is passed, the fastener is simply screwed free by turning the button in a direction opposite to that used when attaching the same. Since both the attachment and the detachment of the button is simple and easy to learn, the improved fastener may advantageously be used for buttons in clothings which are cleaned in solutions that may attack the buttons or washed in machines where the buttons may be mechanically damaged or possibly tear the washing.

I claim:

1. A button fastener consisting of a bent and curved, stiff needle member adapted for attachment to a clothing presenting at least two fabric layers within the attachment area of the fastener, the said needle member comprising: a substantially central stem section (4) adapted to be nonrotatably secured to the back of a button (1) in a manner to project backwardly therefrom; an outer loop section (5) curved about said stem section in a plane, to which said stem section is substantially perpendicular; an intermediate section (6) joining said loop section and said stem section together and extending in a substantially radial direction from the latter, the inner portion of said intermediate section forming a staple-like bend (7) merging into said stem section and lying in a plane substantially perpendicular to that of said outer loop section, said staple-like bend projecting slightly over the plane of said outer loop section and on the side thereof facing away from the stem, the outer portion of said intermediate section extending substantially in the same plane as said outer loop section and merging therewith through a lateral knee (8); said outer loop section of the needle member having a free, pointed end portion (5') which is curved inwardly and substantially towards said stem section so as to form a hook lying within the same plane as said outer loop section.

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2. A button fastener according to claim 1, wherein said inwardly curved hook formed by the free end portion of the outer loop section of the stiff needle member is located substantially opposite to the middle of said intermediate section but spaced therefrom.

3. A button fastener according to claim 2, wherein said inwardly curved hook is spaced from said intermediate section a distance approximately equalling twice the radial extension of the hook itself.

4. A button having a fastener as claimed in claim 1, said button being on its back formed with a stud-like and neck-forming protuberance (2) firmly enclosing a main portion of said stem section of the fastener needle

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member and having a thickness considerably exceeding that of the needle member, the free end of said protuberance lying close to the plane of said outer loop section of the needle member.

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