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BUTTON FOR GARMENT

The present invention relates to a button comprising a capped button body for attachment to a garment by means of a tack adapted to be joined with the button body, and more particularly to a button
5 assembled of a button body, a cap fitted thereover and an anvil plate interposed between the button body and the cap.

A typical prior button for attachment to a garment by means of a tack comprises a mushroom-shaped
10 button body, a cap fitted over the button body and an anvil plate held stationarily in position between the button body and the cap. When attaching such a button to the garment, the tack is forced through the garment fabric into the button and anchored in place as it is
15 deformed against the anvil plate. Buttons of this type have a drawback in that the anvil plate is apt to shift out of place within the button under the influence of pressures exerted peripherally to the button. Some of garments, such as denim jackets or

denim pants, are washed with pebbles or small stones in a turbulent stream of water or a detergent solution for processing the same into a finished product deliberately having a worn-out surface appearance. During this stone washing, the pebbles impinge upon the button head and thereby deform the same with the result that the anvil plate is loosened to move randomly within the button.

This creates a harsh noise which may be minor with a single button, but will grow offensively louder the more there are used such defective buttons as in the case of jackets or the like.

10 It is believed possible by means of the invention to provide a button having a resiliently deformable means capable of absorbing externally applied impact forces thereby maintaining its plate part in position against displacement which would otherwise result in objectionable noise.

15 It is also believed possible by means of the invention to provide a button structure which will find useful application particularly with denim type garments which are finished by stone washing.

According to the present invention, there is provided a button for attachment to a garment fabric by a tack having a shank which engages through the garment fabric with the button, said button comprising:

(a) a button body including a hollow hub for receiving therethrough the shank of the tack, and an annular flange extending outwardly from an end of said

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hollow hub, said annular flange including a flange base
contiguous to said hollow hub, and a first peripheral wall
extending around said flange base and being slanted at an
angle in the range of 15° to 22° degrees with respect to
5 an axis of the button body;

(b) a cap mounted on said button body and having a
circular top wall and a second peripheral wall extending
around said top wall and fitted over said first peripheral
wall;

10 (c) an anvil plate held resiliently between said
button body and said cap and having a peripheral portion
disposed against said flange base;

(d) said flange base having an annular rib disposed
concentrically therewith and supporting said peripheral
15 portion of said anvil plate, and an annular trough disposed
outwardly of said annular rib; and

(e) said anvil plate having a thickness substantially greater than
the distance between a distal edge of said first peripheral
wall and a top surface of said annular rib so that said
20 distal edge of said first peripheral wall is spaced apart
from said circular top wall of said cap to thereby allow
said distal edge to move inwardly without being interfered
by said top wall, the maximum diameter of said anvil plate
being smaller than the inside diameter of said first
25 peripheral wall and larger than the outside diameter of
said annular rib so that said first peripheral wall is
spaced apart from an outermost periphery of said anvil
plate to thereby allow said first wall to flex inwardly
without being blocked by said anvil plate.

30 The invention will be described by way of example with reference to
the accompanying drawings, wherein:-

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Figure 1 is a vertical cross-sectional view of a button embodying the present invention, showing the same disassembled;

Figure 2 is a vertical cross-sectional view of the button of Figure 1;

Figure 3 is a bottom view of Figure 2; and

Figure 4 is a vertical cross-sectional view of the button body of Figure 2 with a tack shown attached to a garment fabric.

As shown in Figures 1 and 2, a button generally designated A comprises a metallic button body B having a double-tubed hollow hub 10 and an annular flange 20 extending outwardly from an end of the hollow hub 10, a cap C mounted on the annular flange 20 of the button body B, and an anvil plate P held resiliently in position between the annular flange 20 and the cap C.

The hollow hub 10 has inner and outer tubes 11, 12 extending coaxially and an annular bottom 13 extending between respective lower ends of the two tubes. The inner tube 11 receives the shank of the tack as hereafter described and has an inner rim 14 rolled outwardly in its upper end.

The annular flange 20 has a flange base 21 extending outwardly from an upper end of the outer tube

12 of the hollow hub and a first peripheral wall 22 flaring upwardly around the flange base 21. The flange base 21 has outer and inner annular troughs 23, 24 and an annular rib 25 formed into an annular raised wall
5 disposed between the annular troughs 23, 24, all of which are disposed concentrically with the hollow hub 25. The annular rib 25 defines a top flat face of the flange base 21. The first peripheral wall 21 shown in Figures 1 and 2 forms a wall slanted preferably at 15
10 degrees with respect to the axis 28 of the button A.

The cap C has a circular top wall 30 and a second peripheral wall 31 disposed around the top wall 30 and turned downwardly. The second peripheral wall 31 has a tab 32 extending from a portion of a peripheral
15 edge thereof for indexing a direction in which the cap should be attached to a garment. The top wall 30 shown in Figures 1 and 2 has a substantially flat surface, which otherwise may be a spherical or convex surface (not shown) with radius of curvature larger than the
20 diameter of the top wall 30.

The anvil plate P is formed into a disc, the maximum outside diameter D1 of which is smaller than the inside diameter D2 of the first peripheral wall 22 of the annular flange 20 and larger than the outside
25 diameter D3 of the annular rib 25 of the latter 20. The anvil plate P has a thickness T1 greater than the distance T2 between a distal edge 26 of the first

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peripheral wall 22 and the top surface of the annular rib 25. The anvil plate P may be formed into a polygonal plate (not shown).

When assembled as shown in Figures 2 and 3, the button A receives therein the plate P placed on the annular rib 25 and then the cap C is fitted over the annular flange 20 by deforming the second peripheral wall 31 radially inwardly by a presser means (not shown) for engaging the second peripheral wall 31 with the first peripheral wall 22 of the annular flange 20.

The assembled button A shown in Figure 2 has the anvil plate P urged against the top wall 30 of the cap 3 by the annular rib 25 of the annular flange 20 for being held resiliently in position therebetween, and an annular cavity 27 disposed around a peripheral end face of the plate P and enclosed by respective peripheral wall portions of the cap C and of the annular flange 20. The annular cavity 27 includes a first space d1 disposed between the peripheral end face of the plate P and the inside of the first peripheral wall 22, and a second space d2 disposed between the distal edge 27 of the first peripheral wall 22 and the inside of the top wall 30 of the cap 3.

Accordingly, the button A is constructed to provide a hollowed peripheral portion therearound, wherein the first and second peripheral walls 22, 31 can be respectively deformed or flexed inwardly when an

external force or pressure is applied thereto, and then return to its original position upon the removal of the pressure.

With this resiliently deformable hollowed
5 structure, the button A can absorb the external force exerted on the peripheral edge portion and maintain the plate P resiliently in position.

In use, the button A is attached to a garment fabric F by a tack 40 which has a head 41 and a shank
10 42 projecting centrally therefrom and having a free end portion 43, whereupon the shank 42 is pierced through the fabric F into the inner tube 11 of the hollow hub 10 and forced against the anvil plate P for thereby bending the end portion 43 in one direction as shown in
15 Figure 4. At this time, the deformed shank firmly engages with the inner rim 14 of the hollow hub 10 and hence secures the button A to the garment. The end portion 43 of the shank 42 may be constructed to be deformed radially outwardly, instead of being bent,
20 into locking engagement with the entire circumference of the inner rim 14 of the hollow hub 10.

Some of garments, such as denim jackets or denim pants, where the buttons have been attached, are washed with pebbles in a turbulent stream of water or a
25 detergent solution for producing a finished product of garment having a worn-out surface appearance. During this washing, the button A is subject to an externally



applied impact force or pressure in a direction indicated by an arrow G in Figure 2 due to the pebbles impinged on the peripheral edge portion of the button head. However, the button A absorbs such impact force G by being resiliently deformed in its peripheral portion for thereby maintaining the anvil plate P in position, wherein the first peripheral wall 22 is resiliently flexed towards the plate P, or otherwise the deformable peripheral portion of the button head is resiliently deformed outwardly about the annular rib 25 in an alternative direction indicated by either arrow g1 or g2 in Figure 2 in such a manner that the space between the flange base 21 and the top wall 30 does not substantially spread. Thus neither the cap C nor the anvil plate P is loosened from its tight engagement, established by assembling the button A, respectively with the button body B and with a combined retaining structure of the cap C and the button body B.

This shock absorbing mechanism of the button A is detailed hereafter:

The first peripheral wall 22 of the flange 20 is spaced from the plate P by the space d1, while keeping the distal edge 27 thereof free from the top wall 30 of the cap C by the space d2. A lower end of the first wall 22 is merged with the outer trough 24 of the flange base 21 which in turn extends to the stationary annular rib 25 held against a lower face of the plate

P. Accordingly, the first peripheral wall 22 can be resiliently deformed or flexed towards the plate P about the stationary rib 25, or otherwise the combined peripheral edge portion of the button head including a
5 peripheral annular portion of the top wall 30 of the cap and the outer trough 24 can be deformed resiliently either upwardly g1 or downwardly g2 as viewed in Figure 2, when is applied thereto with the impact force G due to the stones hit on the peripheral edge portion of the
10 button head, whereupon the impact force G is absorbed through the resilient deformation in a portion of the flange base 21 disposed between the outer trough 24 and the stationary rib 25. Thus this mechanism ensures that the button A resiliently retains the anvil plate P
15 in position between the cap C and flange base 21.



(a) a button body including a hollow hub for receiving therethrough the shank of the tack, and an annular flange extending outwardly from an end of said hollow hub, said annular flange including a flange base contiguous to said hollow hub, and a first peripheral wall extending around said flange base and being slanted at an angle in the range of 15° to 22° degrees with respect to an axis of the button body;

(b) a cap mounted on said button body and having a circular top wall and a second peripheral wall extending around said top wall and fitted over said first peripheral wall;

(c) an anvil plate held resiliently between said button body and said cap and having a peripheral portion disposed against said flange base;

(d) said flange base having an annular rib disposed concentrically therewith and supporting said peripheral portion of said anvil plate, and an annular trough disposed outwardly of said annular rib; and

(a) said anvil plate having a thickness substantially greater than the distance between a distal edge of said first peripheral wall and a top surface of said annular rib so that said



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distal edge of said first peripheral wall is spaced apart from said circular top wall of said cap to thereby allow said distal edge to move inwardly without being interfered by said top wall, the maximum diameter of said anvil plate being smaller than the inside diameter of said first peripheral wall and larger than the outside diameter of said annular rib so that said first peripheral wall is spaced apart from an outermost periphery of said anvil plate to thereby allow said first wall to flex inwardly without being blocked by said anvil plate.

2. A button according to claim 1, wherein said angle is about 15 degrees.

3. A button according to claim 1, wherein said top wall of said cap has a spherical wall with radius of curvature larger than the diameter of said cap.

4. A button according to claim 1 or 2, wherein said top surface of said annular rib is a substantially flat surface.

5. A button according to claim 1, 2 or 3 wherein said anvil plate is formed into a disc.

6. A button according to any preceding claim, wherein said anvil plate is formed into a polygonal plate.

7. A button substantially as described with reference to and as illustrated in the accompanying drawings.
