Oct. 17, 1933. R. J. FRETER 1,930,611

TACK BUTTON AND METHOD OF MAKING SAME

Filed Feb. 1, 1933 2 Sheets-Sheet 1

Fig. 1.

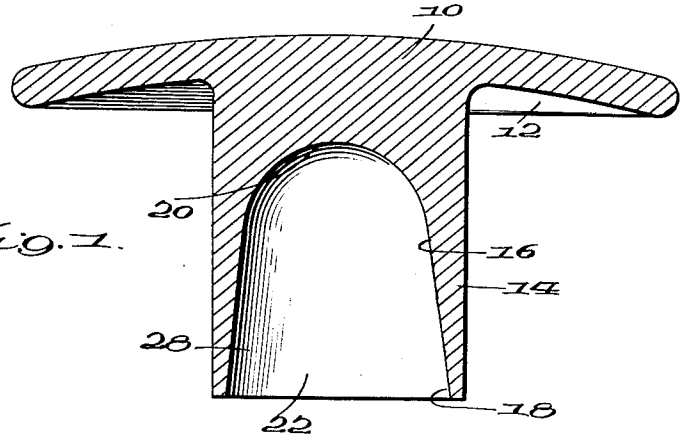


Fig. 2.

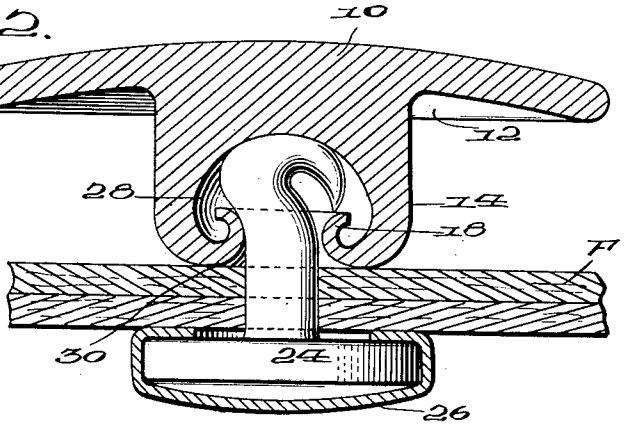
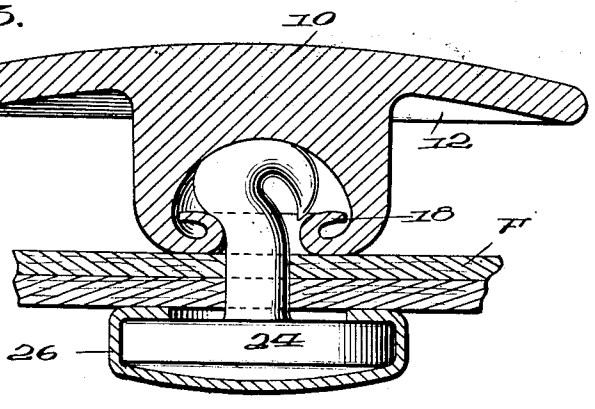


Fig. 3.



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Filed Feb. 1, 1933 2 Sheets-Sheet 2

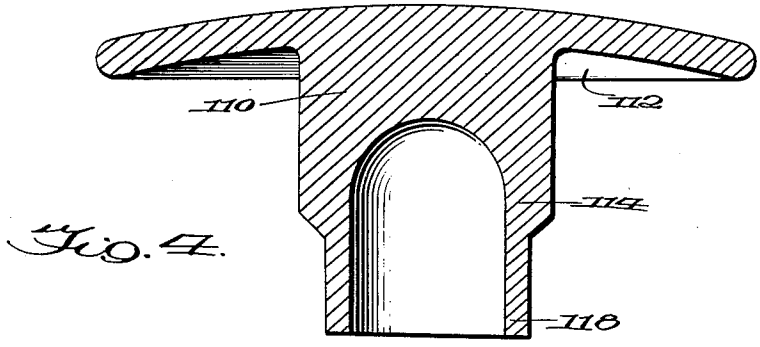

Fig. 4.

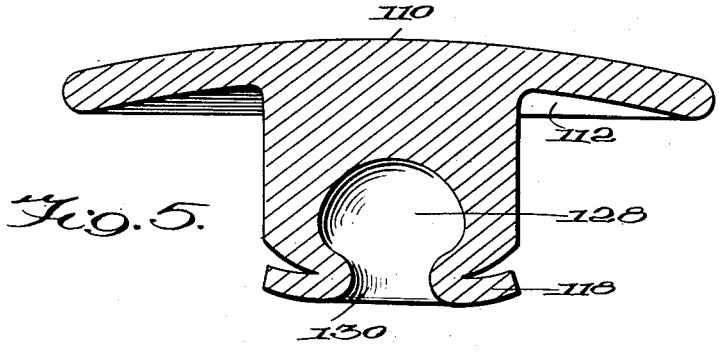

Fig. 5.

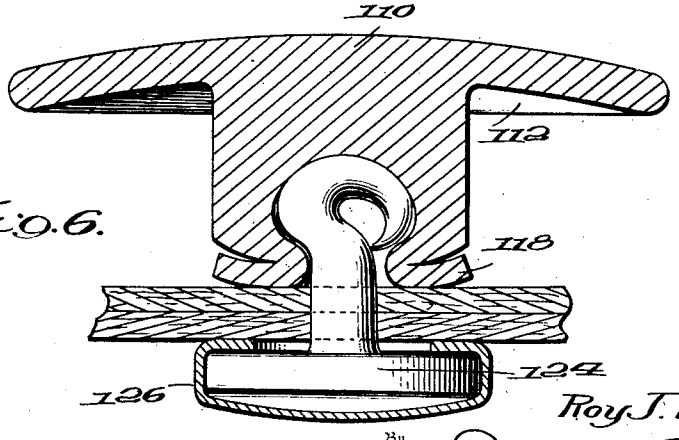

Fig. 6.

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UNITED STATES PATENT OFFICE

1,930,611

TACK BUTTON AND METHOD OF MAKING SAME

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Application February 1, 1933. Serial No. 654,725

15 Claims. (Cl. 29—148)

The present invention relates to buttons, and particularly to buttons of the so-called tack fastened variety, and to a method of making same. The invention is particularly directed to improvements over the structures and methods disclosed in the patent to Capewell No. 619,277, dated February 14th, 1899, and Purinton No. 1,496,017, dated June 3rd, 1924.

As is well known to those skilled in the art, tack buttons consist of a button head and a fastening member in the form of a tack, which latter is driven up through the work into the button head, and bent or mutilated, so that it will be impossible after a tack is once applied for the button head to become detached or lost from the garment. These buttons are used principally on overalls, working men's suits or other similar garments wherein there will be a great strain on the buttons.

The buttons and tacks are applied by using a fastening machine which mechanically forces the respective tacks into the respective heads in a remarkably rapid manner.

Buttons of this class, particularly when made of metal, have heretofore been formed with a body, in which is positioned a separately formed die or anchor and a separately formed anvil, the button accordingly being composed of several parts, and thus requiring a considerable number of operations in its makeup and the final assemblage of the various parts in their proper relation.

Among the objects of the invention are to provide a one-piece, solid button of simple, cheap construction, adapted for attachment to a fabric by a tack which pierces the fabric and enters the button, and a method whereby same may be rapidly, accurately, and inexpensively produced by simple manufacturing operations, while possessing all the advantages and characteristics of the assembled button as above outlined. The invention contemplates a button structure having, preferably, a solid head, integral with a stem or hub, the hub being tubular and formed in a preferred form, with its inside walls converging toward the head, i. e., tapering outwardly to the bottom of the tube, and then rounded to form an anvil within the hub; the outer edge of the hub forming the tube being turned, and rolled or coiled inwardly to form a partially closed chamber within the hub provided with a restricted opening or aperture effective to receive the shank of an attaching tack, and taking the place of the usual, separately formed anchor.

Another object of the invention is to provide a button so designed that the squeeze between the hub and tack, upon application of assembling pressures, will be cushioned, thus avoiding any tendency toward cutting the fabric, when the parts of the button are mated from opposite sides of the fabric to which they are attached. The design is such that any excess pressure between the tack and the outer surface of the hub will be taken by the inwardly rolled, or coiled portion of the hub, and will compress such portion to shorten the length of the hub, which will act as a spring-like form to prevent cutting of the fabric.

In making the button a blank is used, preferably of solid metal stock and of metal having sufficient hardness to prevent the tack from penetrating the anvil of the button head.

The metal rod or wire, may be made of steel, brass, aluminum or any other desired material, this wire being fed into an automatic heading machine as used in the formation of rivets, and automatically cut to length; the resultant slug is then swaged or headed to form a blank composed of a head and hollow shank. The side walls of the tubular or hollow shank are then subjected to the action of a set of dies whereby the shank is rolled or coiled inwardly thus providing a restricted opening leading into the tack receiving chamber.

The tubular structure having tapered side walls, the outer edges of which have been rolled inwardly, and the method of forming same represents a distinction over known methods and structures involving tubes which have been rolled inwardly, and the formation of the springy, coil-like hub offers additional novelty.

Heretofore rivets have been drilled with straight walls and extruded with straight walls and formed with shoulders at their outer edges, but these methods and structures are open to objections from a practical standpoint. The present invention, providing a one-piece button of hard metal having tapered walls and a coil-like, springy hub, and in which structure the use of hardened linings or anvil surfaces are avoided, is believed to be novel, and advantageous particularly in the avoidance of sharp cutting edges which might injure the fabric.

The formation of buttons by a heading or swedging process from a continuous length of wire has been found to be extremely economical in that no scrap whatever is produced, and further, a very high rate of production may be maintained. Further, the formation of buttons by means of a header produces a very desirable but-

ton, in that it is made up entirely of one-piece of metal.

In the forming of buttons by the heading process, it has been found that the best results are obtained and the most desirable button produced when a comparatively soft metal such as zinc or aluminum, is used. These soft metals, however, have heretofore required that the metallic fastener be also formed of a soft metal. It is accordingly an object of this invention to provide a button formed by the heading process wherein the fastener receiving chamber and anvil is of such a nature that the usual and inexpensive, although satisfactory, type of steel fastener may be used. This is accomplished by providing sufficient excess metal extending above the anchor chamber or recess as to form a very effective anvil, and prevent distortion of the anchor chamber and surrounding metal, as the metallic fastener or tank is driven into place and upset therein.

If desired the button may be provided with an ornamental hard metal cap, regardless of whether such button is produced from an aluminum slug or wire, or other material.

To the attainment of the above and other objects which will appear as the description proceeds, reference may be made to the accompanying drawings, in which:—

Fig. 1 is a sectional elevation of the tubular headed blank, prior to rolling of the edges;

Fig. 2 is a sectional view of the same blank after the edges have been rolled in and illustrating application thereof to the work, with the securing tack in position;

Fig. 3 is a view similar to Fig. 2 but illustrating position of the parts, upon the application of increased pressure;

Fig. 4 is a sectional elevation of a slightly modified blank, prior to rolling of the edges;

Fig. 5 is a sectional view of the same blank after the edges have been rolled to form the finished button; and

Fig. 6 is a view showing application of such button to the fabric or work.

Referring more particularly to the drawings, in which like reference numerals designate like parts, it will be observed that in preparing the button the first operation is the formation of a tubular rivet, generally indicated at 10 (Fig. 1), this operation being effected on a cold header using header wire which has been cut to a predetermined length to form a blank or slug. The rivet formed from the slug will have a flanged head 12 and a tubular hub 14, the inner surfaces 16 of which are tapered from the outer edges 18 inwardly to the anvil 20, there being provided an excess of metal at the point 20, to form the body of such anvil with the inner surface thereof curved as shown.

The second operation takes place in another machine which uses a suitable forming die or rolling-in anvil, the shape of which will transform the tubular rivet to the shape of the finished button shown in Fig. 2, by causing the edges 18 to roll inwardly and partially close the opening 22. The edges 18 will coil back upon themselves, as shown in Fig. 2, to form a chamber 28 having a restricted opening 30, and the button proper is then complete, ready for the button attaching machine.

A third operation utilizing the button attaching machine, provides a setting of the securing tack 24 into the closing chamber within the hub, and with the fabric or work F positioned between the rolled-in neck of the button, at the opening 30, and the head of the securing tack (Fig. 2). This head may be a separately applied element 26, or it may be integrally formed on the stem of the tack.

The rolled neck acts as a cushion, and being compressible may be rolled further if the pressure on the tack 24 is sufficient. Fig. 3 illustrates the limit of the squeezing operation which would result if the anvil of the button attaching machine were set too close; if not set too close the finished button and attaching tack will appear as shown in Fig. 2.

When further rolling takes place as in the case of the showing in Fig. 3, the button 12 is shortened somewhat in shank length due to the compression of the edges 18 and the roll is closed to the tack, giving the advantage of preventing the tack from rattling and from being loose within the closing chamber of the hub. The yielding movement of the coiled or rolled portion of the hub softens the pressure against the tack so that the tack head will have no tendency toward cutting the fabric.

In Fig. 4 there is illustrated a slightly different form of blank in which the hub 114 has its walls thinner adjacent the outer edges 118, producing the effect of a taper toward the thicker portion of the button. When the second step of the method is effected, the edges 118 will roll outwardly, that portion of the wall immediately above, however, rolling inwardly to restrict the chamber 128 at its opening 130, (Fig. 5). This is accomplished by confining or preventing the bottom portion of the hub from rolling larger than the hub diameter. The advantageous features discussed in connection with Figs. 1 to 3 obviously will be present in this construction, as the button is attached to the fabric, (Fig. 6).

One marked advantage of the construction set forth, resides in the allowance for variations in adjustment of the attaching machine. If, for example, the machine is set for a double thickness of fabric but should be applied to a triple or quadruple thickness, or its equivalent in especially thick goods, there would undoubtedly be an excessive amount of squeezing between the hub and the tack, which would tend to cut into the fabric. The spring-like form of the tubular hub will take up such extra pressure and avoid excessive constriction between the tack head and the outer surface of the hub.

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

1. A tack button comprising a solid body having a head and a hollow shank projecting therefrom, the outer edges of said shank being coiled to form a restricted opening and a yieldable end for said shank.

2. A tack button comprising a solid body having a head and a hollow shank projecting therefrom, the side walls of said shank having portions projecting inwardly to reduce the internal diameter of the shank and portions reversely bent to provide a springy coiled section.

3. A tack button comprising a body having a head and a hollow shank projecting therefrom, the walls of the hollow shank being thinner adjacent the outer extremity of the shank than adjacent the head, and the outer edges of the shank being coiled to form a restricted opening and a yieldable end for the shank.

4. A tack button comprising a solid body having a head and a hollow shank projecting there-

from, the side walls of the hollow shank being thinner adjacent the outer extremity of the shank than adjacent the head, and portions of said walls adjacent the end of the shank being inwardly projected to reduce the internal diameter of the shank, and the extreme outer edges thereof being reversely bent to provide a springy coiled section.

5. A tack button comprising a solid body having a head and a hollow shank projecting therefrom said body being provided with an excess of material at the junction of the shank and head and forming an anvil effective to turn the prong of a tack fastener, the edges of said shank being curled to form a yieldable cushion at the end of the shank.

6. A tack button comprising a body formed of a single piece of material, said body having an enlarged head, and a hub formed integrally therewith, said hub having an enlarged, fastener-receiving chamber formed therein, and a restricted opening leading into the fastener-receiving chamber, the side walls of said chamber having an initial outward taper and the outer edges thereof being inwardly coiled and reversely bent to form a cushion about said restricted opening.

7. A tack button composed of a body formed of a single piece of material, said body having an enlarged head, and a hub formed integrally therewith, said body being provided with an excess of material at the junction of the hub and head and forming an anvil effective to turn the prong of a tack fastener, said hub having an enlarged, fastener-receiving chamber formed therein, and a restricted opening leading into the fastener-receiving chamber, the side walls of said chamber having an initial outward taper and the outer edges thereof being inwardly coiled and reversely bent to form a cushion about said restricted opening.

8. A tack button composed of a single piece of metal formed from bar stock and comprising an outwardly flared head, a hub projecting therefrom and formed integrally therewith, said hub being provided with an enlarged fastener-receiving chamber having a restricted opening leading therein, sufficient metal being located above said chamber to form an anvil for upsetting the point of a fastener thereagainst, the outer edges of said hub being inwardly coiled and reversely bent to form a cushion about said restricted opening.

9. The method of forming a tack button which comprises shaping a predetermined length of bar stock to provide a flanged head and a tubular shank projecting therefrom, and curling in the outer edges of the shank to form a yieldable cushion at the end of the shank.

10. The method of forming a tack button which comprises shaping a predetermined length of bar stock to provide a flanged head and a tubular shank projecting therefrom, and rolling in the outer edges of the shank to form a restricted opening and a coil-like cushion at the end of the shank.

11. The method of forming a tack button which comprises shaping a predetermined length of bar stock to provide a flanged head and a tubular shank projecting therefrom, shaping the walls of said shank to provide a greater thickness therein adjacent said flanged head, than at the outer extremity, and curling in the outer edges of the shank to form a yieldable cushion at the end of the shank.

12. The method of forming a tack button which comprises shaping a predetermined length of bar stock to provide a flanged head and a tubular shank projecting therefrom, shaping the walls of said shank to provide a greater thickness therein adjacent said flanged head, than at the outer extremity, and rolling in the outer edges of the shank to form a restricted opening and a coil-like cushion at the end of the shank.

13. The method of forming a tack button which comprises shaping a predetermined length of bar stock to provide a flanged head, a tubular shank projecting therefrom, and an excess of metal at the junction of said shank and head sufficient to form an anvil effective to turn the prong of a tack fastener, curling in the outer edges of the shank to form a restricted opening thereinto, said curling being sufficient to turn the extreme edges into the shank and thereby form a yieldable cushion.

14. The method of forming a tack button which comprises shaping a predetermined length of bar stock to provide a flanged head and a tubular hub projecting therefrom, shaping said hub to provide a greater thickness in the walls thereof adjacent said flanged head than at the outer extremity of the hub and to provide an excess of metal at the junction of said hub and head, sufficient to form an anvil effective to turn the prong of a tack fastener, curling in the outer edges of the hub to form a restricted opening thereinto, said curling being sufficient to turn the extreme edges into the hub and thereby form a yieldable cushion.

15. The method of forming a tack button which comprises shaping a predetermined length of bar stock to provide a flanged head, a tubular hub projecting therefrom, and an excess of metal at the junction of said hub and head sufficient to form an anvil effective to turn the prong of a tack fastener, curling in the outer edges of the hub to form a restricted opening to the hub, said curling being sufficient to turn the extreme edges into the hub thereby forming a yieldable cushion, and thereafter inserting a tack fastener in said hub under sufficient pressure to upset the prong of the fastener against said anvil to secure the fastener in position.

ROY J. FRETER.