March 16, 1926. 1,577,079

F. N. ROSS ET AL

BUTTON

Filed Dec. 3, 1923

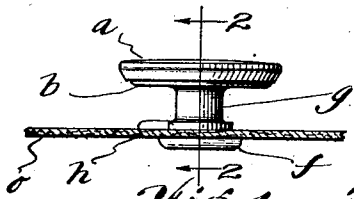

Fig. 1

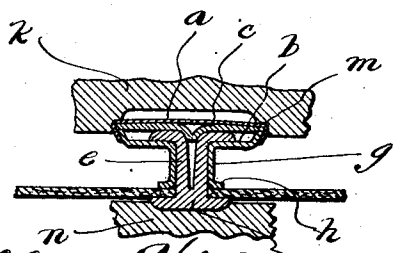

Fig. 2

Fig. 8

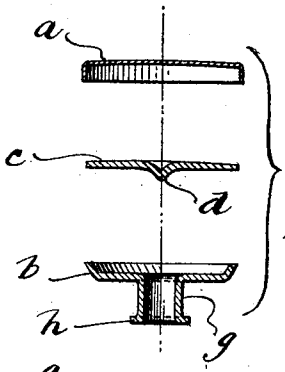

Fig. 3

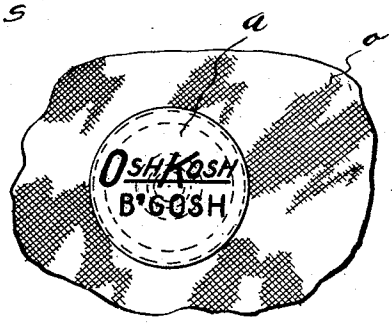

Fig. 5

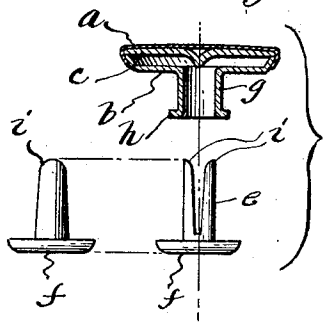

Fig. 4

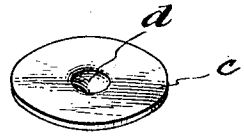

Fig. 6

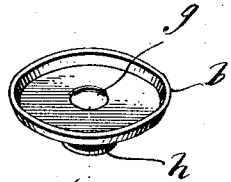

Fig. 7

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UNITED STATES PATENT OFFICE.

FREDERICK N. ROSS AND IRA A. LETHCO, OF PONTIAC, MICHIGAN, ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE BUTTON ATTACHING MACHINE CO., OF WATERBURY, CONNECTICUT, A CORPORATION OF CONNECTICUT.

BUTTON.

Application filed December 3, 1923. Serial No. 678,325.

To all whom it may concern:

Be it known that FREDERICK N. ROSS and IRA A. LETHCO, citizens of the United States, residing at Pontiac, in the county of Oakland and State of Michigan, have invented certain new and useful Improvements in Buttons, of which the following is a specification.

This invention relates to buttons and is more particularly directed to that class of buttons known as tack buttons.

In the tack buttons now on the market, there has been considerable difficulty in forming a tack button with a slender neck. In fact, with the present form of construction, the manufacturer is limited in forming the necks since the button is formed with a slug or anvil contained partially within the neck for the purpose of turning over the tacks. There has also been provided a bar in these buttons over which the tacks are clinched. The necks of these buttons are of such a size that they will spread the button hole, and in time the button hole is torn or worn to such an extent that the buttons may be easily pulled out of the button hole.

It is the object of our invention to overcome this difficulty by forming a slender neck on the button by changing the construction to such an extent that the neck of the button merely acts as a guide for the tack and does not contain any portion of the anvil, and the cloth-clinching flange of the button neck is turned out instead of in as with most buttons of the prior art. Means are provided within the head of the button for turning out the tack prongs and clinching the button onto the fabric. It is possible from this form of construction to obtain a slender neck. In fact, any variation may be obtained by merely using a tack with prongs of smaller cross section.

A further object is to provide an anvil contained within the head of the button, which will positively fold over the tacks for clinching the tack and head onto the fabric. Furthermore, with our construction it is possible to emboss printing across the face of the button. The present form of anvil construction used on the buttons now manufactured requires that the central portion of the button head be kept clear of any embossing because of the fact that the pressure is transmitted through the center of the button onto the forming dies. With our anvil construction, it is possible to support the button head near the periphery. The stress resulting from the clinching operation is then transmitted laterally through the anvil, and thence through the periphery of the button shell onto the dies. This means that the center of the button may be utilized to emboss advertising matter thereon.

In the drawings:

Fig. 1 is an elevation of our improved button and tack clinched to a piece of fabric.

Fig. 2 is a vertical section therethrough taken on the line 2—2 of Fig. 1, showing how the same is supported in the forming dies.

Fig. 3 is a composite view of the button parts before the same are assembled together.

Fig. 4 is a composite view of the button and tack before the same are clinched together.

Fig. 5 is a plan view of the button showing the embossed letters across the face thereof.

Fig. 6 is a detail in perspective of the anvil.

Fig. 7 is a detail in perspective of the button back.

Fig. 8 is a detail showing how our narrow neck fits a button hole.

The button head comprises a cup-shaped front *a*, of thin gauge metal, and the button back *b* is preferably formed of a heavier metal. An anvil *c* is set into the button front and is of such a diameter that it will snugly fit within the cup-shaped button front. The front and back portions of the button are assembled together as shown in Fig. 4, clamping the anvil *c* in place within the head.

The anvil is formed of a heavy stamping with a struck out portion or cone *d*, at the center to provide a sloping surface on which the prongs *e* of the tack *f* are impinged for the purpose of turning over the pronged points to clinch the tack and button together. This struck out central portion of the anvil

is preferably formed by punching or indenting the center, which is the cheapest and quickest way to produce them. The button back is formed with a slender tubular neck *g*, and is provided with the turned out flange *h* to provide a gripping surface so that the fabric may be clinched between this flange and the tack head, as shown in Fig. 2. The tack used is preferably a two-prong tack shown in Fig. 4, the points of said tack being sloping as at *i* to provide a surface for engaging the struck-out anvil center. With this construction it is impossible to jam the tack and button and the prongs will always be turned over and forced out within the button head between the front and back portions of the button head.

In Fig. 2, we show the anvil die *k* which is used to support the button head during the clinching operation. This die is provided with a shoulder *m* which supports the button head at its periphery. The die *n* supports the tack in the usual manner and when these two dies come together, the button head and tack are clinched together, pinching the fabric *o* between the tack head and the flange *h*.

In Fig. 8 we show a button hole *r* which is formed in a piece of fabric. The button hole being formed with an enlarged portion at one end designated *s*. These button holes are uniform in size and to prevent tearing of the same it is necessary that the neck of the button should conform as nearly as possible to the size of the enlarged portion *s* of the button hole. The old style button with the large neck will spread the button hole and tends to tear the same or break the stitches, thus allowing the button hole to become enlarged so that in time it will not hold the button. Our improved construction affords a relatively slender neck which avoids all this trouble.

We are aware that it is not new to use an anvil in a button which turns the prongs of a tack button outwardly. Our improvement resides in the design and assembly of the button elements so as to accomplish two main features. The back of the button, as already described, has a relatively slender neck, while most of the button backs of the prior art will be found to have relatively large diameter necks. These prior art buttons have the cloth-clinching flange at the end of the neck turned inwardly and consequently the necks have to be of relatively large diameter and very often an additional filler member has to be provided in the enlarged neck to fill out the empty space and also act as a guide for the tack prongs. We so form our button back that the neck is of substantially the same inside diameter as the shank of the tack so that it acts as an accurate guide for the tack onto the anvil. Furthermore, it very much reduces the diameter of the neck, affording the slender neck which is so desirable for preventing the distortion of the buttom hole as explained above. We are able to secure these useful results by reason of so forming this button back that the clinching flange *h* is turned outwardly.

The other feature that we refer to is the use of a relatively strong bridge anvil which extends substantially to the edges of the button front. The button front is ordinarily a brass or bronze stamping which has printed matter stamped on the face of the button front before the same is assembled onto the button. As already explained, ordinarily this printed matter is only stamped along the periphery or outside of the button leaving a vacant spot in the center to receive the anvil of the die of the machine when the tack is clinched in place. With our improved construction the anvil is a relatively strong member; it extends clear out to the edges of the button front so as to be able to rest on the shoulder *m* in the anvil die as already explained. The center of the die is arranged to turn the prongs outwardly; this keeps the bending stresses of the prongs on the anvil towards the outside of the anvil where it is better able to resist the same because near the point of support on the die. This permits the center of the anvil die of the machine to be recessed so that the embossed printed matter may lie on the recess. This construction as already stated, permits printed matter to appear straight across the face of the button, front and makes a very much better and neater appearance.

What we claim is:

1. In a button, the combination of a button front of relatively thin gauge flexible material, a button back provided with a relatively long slender tubular neck portion, an anvil contained within the button front, said button front button back and anvil secured together to form a hollow button head with a neck, and a tack having a solid stem portion split to provide a pair of prongs, said tubular neck forming a guide for the rectilinear movement of the tack during the clinching operation, said prongs engaged within the hollow button head to reinforce the front.

2. In a button, the combination of a button front of relatively thin flexible material, a button back provided with a relatively long tubular neck having a relatively small diameter and also provided with a cup-shaped body portion adapted to fit into the button front, an anvil having a diameter approximating the diameter of the button front and arranged to be clamped between the rim of the cup-shaped body portion of the button back and the button front to provide a space between the anvil and the bottom of

the cup-shaped body portion of the button back, and a tack having a relatively long solid stem portion split longitudinally to form a pair of prongs, said neck forming a relatively long guide for the rectilinear movement of the tack during the clinching operation, the points of said prongs arranged to be turned over by the anvil and wedged in the space between the anvil and the button back.

In testimony whereof they have affixed their signatures.

FREDERICK N. ROSS.
IRA A. LETHCO.