Aug. 9, 1932. G. JOHNSON 1,871,373

METHOD OF MAKING ATTACHING MEMBERS

Filed Feb. 21, 1930

Fig. 1.

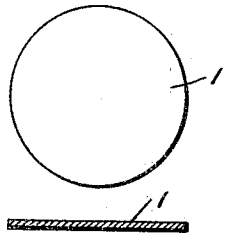


Fig. 2.

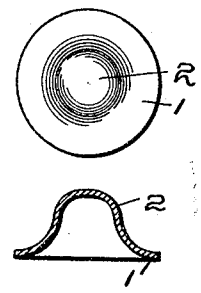


Fig. 3.

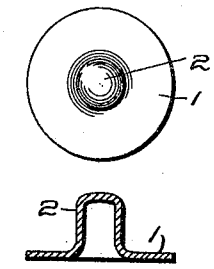


Fig. 4.

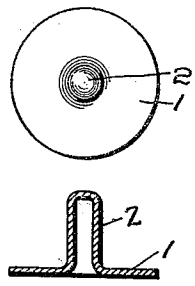


Fig. 5.

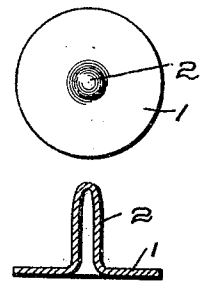


Fig. 6.

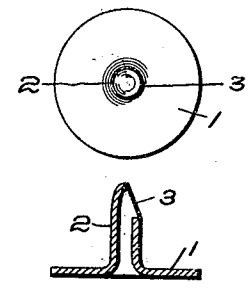


Fig. 7.

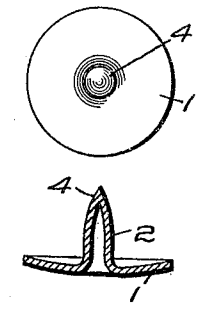


Fig. 12.

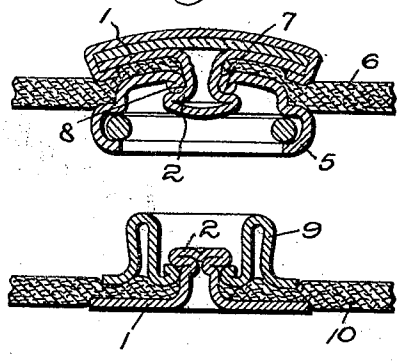


Fig. 8.

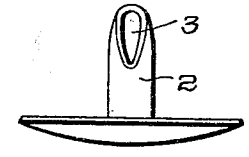


Fig. 9.

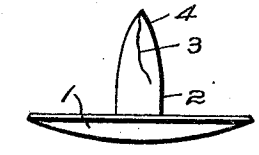


Fig. 10.

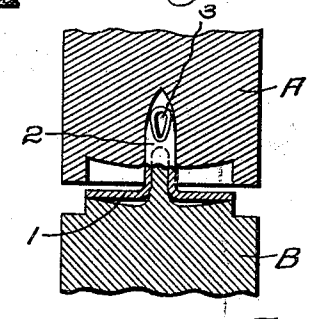
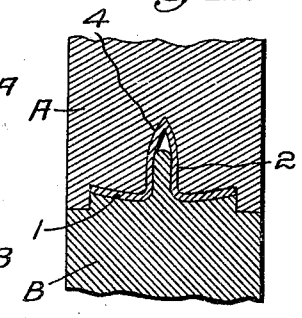


Fig. 11.



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Attys

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UNITED STATES PATENT OFFICE

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METHOD OF MAKING ATTACHING MEMBERS

Application filed February 21, 1930. Serial No. 430,366.

My invention aims to provide improvements in attaching members and the method of forming the same and is adapted particularly to improvements in sheet metal rivets or tacks for attaching buttons, snap fastener elements and the like to their carrying mediums.

Reference is hereby made to my divisional application Serial No. 494,031, filed November 7, 1930.

In the drawing which illustrates a preferred embodiment of my invention:—

Figures 1 through 7 show a plan and cross-section of a step in the process of forming my device from the flat disc to the complete sharp pointed tack;

Fig. 8 is an enlarged elevational view of the device shown in Fig. 6, and showing the aperture in the shank of the tack;

Fig. 9 is a view of the complete tack showing the aperture closed;

Fig. 10 is a view showing the die means for pointing the apertured end of the shank of the tack just prior to compressing the material;

Fig. 11 is another view of the means shown in Fig. 10 after the dies have been forced together and the end of the tack has been pointed; and

Fig. 12 includes a section of a socket member of a snap fastener and a section of a stud member of a snap fastener, each fastener member being secured to a carrying medium by my improved attaching members.

Referring to the embodiment of my invention selected for illustration in the annexed drawing I have shown a self-piercing rivet or tack which is formed from a single piece of sheet metal. The tack may be made of brass, steel or the like in a suitable machine by passing a piece of metal beneath a series of pressing dies in a step by step manner as will be readily understood from an inspection of the figures of the drawing by anyone skilled in the art.

The various forms shown by Figs. 1 through 5 are so obviously illustrative of the steps of one method of forming my sheet metal tack that they need no description and therefore I shall continue from that point to describe my invention so that it will be readily understood by anyone skilled in the art.

In Fig. 6 I have shown a tack having a base 1 and a hollow shank 2. The shank has been cut away on a line extending at an angle to the axis of the shank to remove some of the metal adjacent to the end thereby forming an aperture 3. Any suitable method may be used to cut away a portion of the end of the shank but I have provided an attachment on the machine which operates transversely to the axis of one of the dies and cuts away a portion of the end of the shank after the blank has assumed the shape shown in Fig. 5.

After the blank has been formed and cut as shown in Fig. 6 it is forced into a female forming die A by a male die B, as shown in Fig. 10, where the end of the shank is pressed into a symmetrical sharp pointed portion 4, as shown in Figs. 9 and 11. Thus the opening in the shank adjacent to the end is closed (Fig. 9) to provide a smooth substantially continuous outer surface and the tack is ready for use.

My improved rivet or tack is particularly adapted as a means of attaching snap fastener members to their carrying mediums, as shown in Fig. 12. In that figure I have shown a socket 5 attached by a tack which has pierced the carrying medium 6 and has its end upset against a reinforced portion 7 of the socket which surrounds the aperture 8 through which the shank 2 passes. A stud 9 is also shown, in Fig. 12, secured to its carrying medium 10 in substantially the same manner as the socket 5.

I am aware of the fact that fastener members have been attached by tacks and by tubular rivets but so far as I have been able to ascertain no one has been successful in making a tack of sheet metal and with a sharp point so that it can pierce its own way through cloth, leather, cardboard or the like. Heretofore, the tacks which have been used for attaching buttons, snap fasteners and the like were of the type commonly called cut tacks having solid shanks. Those tacks are not adapted to be used as rivets because

in many instances the ends are broken when they are upset and if the riveting operation is successful the metal is so weakened that the upset portions will break loose under ordinary strains exerted upon the fastener installations.

When round ended sheet metal rivets are used a hole must be previously formed in the material before the rivet can be inserted.

My sheet metal sharp pointed tack is easy to make and has proved successful against every test when used as a rivet for attaching buttons, fasteners and the like. Many tests have been made on installations similar to those shown in Fig. 12 and the carrying medium tears or cuts loose from the fastening when great stress is exerted without in any way breaking or loosening the shank of the tack from its grip on the fastener member.

While there are several ways in which I may accomplish the pointing of my sheet metal tack I have found that the method described above and illustrated in the drawings accomplishes the desired result in a very efficient and simple manner. It is particularly adapted for quantity production methods. Therefore while I have illustrated and described a preferred embodiment of my invention and a method of producing the same, I do not wish to be limited thereby because the scope of my invention is best defined in the following claims.

I claim:

1. The method of forming a sheet metal tack having a head, a shank and a sharp point on the end of the shank, which comprises pressing a hollow blunt closed end shank from a sheet metal blank, cutting away a portion only of the blunt end of the shank to form an aperture therein thereby to reduce the amount of material at the end and thereafter closing said aperture and forming the blunt end of said shank into a relatively long tapered sharp-pointed portion.

2. The method of forming a sheet metal tack having a head, a shank and a sharp point on the end of the shank, which comprises pressing a hollow shank from a sheet metal blank, cutting away a portion of the shank in a plane at an angle to the axis of the shank adjacent to its end and thereafter forming the remainder of the material of said shank adjacent to the cut end into a sharp point.

3. The method of forming a sheet metal tack having a head, a shank and a sharp point on the end of the shank, which comprises pressing a hollow substantially rounded end shank from a sheet metal blank, cutting away a portion of the shank adjacent to the rounded end in a plane at an angle to the axis of the shank, and thereafter pressing the rounded end of the shank into a suitable die by longitudinal approaching movement of one toward the other to compress the rounded end of the shank and form a sharp pointed portion.

In testimony whereof, I have signed my name to this specification.

GUSTAV JOHNSON.