Nov. 20, 1928. 1,692,182

F. MAYER

METHOD OF INSERTING TUBULAR RIVETS

Filed May 27, 1927

Fig. 1.

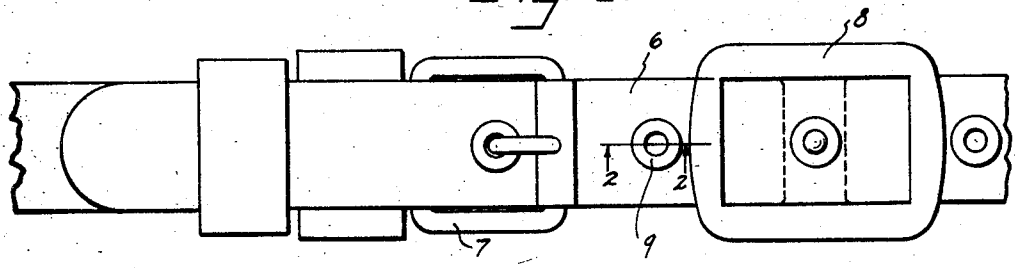


Fig. 2.

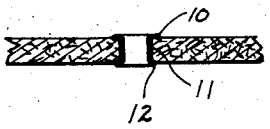


Fig. 3.

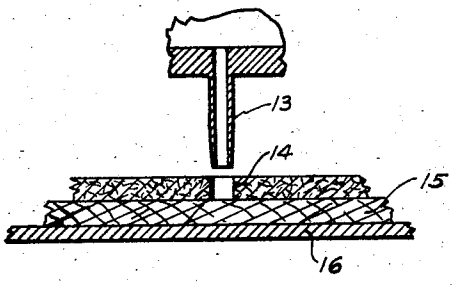


Fig. 4.

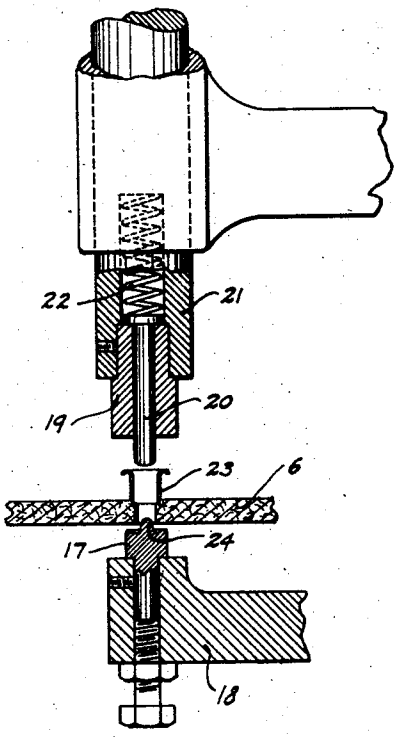
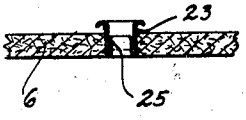


Fig. 5.



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UNITED STATES PATENT OFFICE.

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METHOD OF INSERTING TUBULAR RIVETS.

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The invention relates to a method of inserting tubular rivets in harness straps, however specially named, used in harness where adjustments are necessary.

It has been the practice for years to provide for the adjustment of a harness strap by the use of a buckle having a tongue or pin adapted to engage in one of a series of spaced holes punched in the strap, the buckles being either of the pivoted tongue or fixed pin type. It has long been realized by the manufacturer that these holes weaken the straps and that the harness generally fail at this point but no satisfactory solution was advanced and prior to this invention the art sought to do away with buckles entirely yet buckle type harness possessed decided advantages for quick and ready adjustment. To meet this situation the object of this invention is to secure all the advantages of the old type buckle harness without its disadvantages and to produce an improved harness strap having metal lined buckle holes. More specifically, the metal lining of each hole is provided by a tubular rivet in close contact throughout its barrel as well as its ends with the strap leather, these rivets being applied in what I believe to be a novel manner by first punching holes in the harness and then inserting rivets therein of larger diameter than the holes by chiselling out the material surrounding the hole so that the barrel of the rivet has what may be termed a "cutting" contact fit throughout its entire length with the surrounding leather and its ends in contact with the top and bottom surfaces of the strap, it being noted that harness leather is twice or three times as thick as the heaviest leather used, in shoe making, where eyelets are used, and that these metal linings cannot, therefore, rely entirely on the clamping pressure exerted between their flanged ends but the leather must be so closely associated with the medial part of the strap surrounding the hole as to transmit strains directly thereto.

The invention further consists in the several features hereinafter set forth and more particularly defined by claim at the conclusion hereof.

In the drawings Fig. 1 is a plan view of my new harness strap, showing different types of buckles applied thereto, parts of the strap being broken away;

Fig. 2 is a vertical sectional view of a portion of the strap;

Fig. 3 is a vertical sectional view of one of the steps of my method;

Fig. 4 is a view partly in section of apparatus for inserting the metal lining;

Fig. 5 is a detail sectional view showing the action of the metal lining.

Referring to the drawings, in Figs. 1 and 2 I have shown a portion of the completed harness strap, the numeral 6 designating the strap generally, 7 a buckle of the usual pivoted tongue type secured to one end of the strap, 8 a buckle of the fixed pin type applied to the strap, the spaced buckle holes of the strap being provided with metal linings or liners 9. These liners are preferably in the form of tubular rivets having flanged heads 10, a barrel portion 11 and a turned-over end 12, the barrel having a cutting fit contact throughout its length with the surrounding leather of the strap.

My method of applying these liners to the strap consists in first punching the leather by means of a suitable tubular punch 13 to form a hole 14, the punch generally being reciprocated toward and away from a wooden block 15 on a support 16, the holes 14 being placed at such a distance apart along the length of the strap as necessary for the desired adjustment. Thereafter the liners are applied by an eyelet or riveting machine that has been used in other arts and is found suitable for this purpose, whose essential parts consist of an anvil 17 adjustably mounted on a fixed support 18, a punch 19 provided with a centering pin 20 mounted in a reciprocating plunger 21, the pin 20 having movement relative to the punch 19 and movable upwardly within the member 21 against the pressure of a spring 22. The holes 14 as punched are smaller than the outside diameter of the rivet barrel though it will be understood that the inserting end of the rivet 23 is flared slightly inwardly.

To insert the rivet the strap 6 is placed in position with the hole 14 over the prong 24 of the anvil and the rivet 23 positioned at the edge of the hole, after which the plunger 21 is moved downwardly, the pin 20 passing

through the bore of the liner, the punch thereafter engaging the flanged head of the rivet and forcing it through the leather and during such movement effecting a chiselling out of an annular part 25 of the leather surrounding the hole, as best shown in Fig. 5, with the result that when the rivet has been forced through the hole and its lower end turned over by the anvil, as shown by the lower end 12 in Fig. 2, the barrel throughout its entire length will have a cutting contact fit with the relatively deep section of the leather so that strains imposed upon the harness through the pull by the tongues or pins of the buckles against the sides of the holes will not be taken alone through the clamping engagement effected between the solid flanged ends of the rivet and the leather but the medial portions of the leather will have the strains directly transmitted thereto and thus the rivet becomes what may be termed an integral part of the strap and being of brass or other suitable metal, preferably non-corrosive, of greater tensile strength than the leather greatly reinforces the same and prevents the usual breakage of the strap between or across the buckle holes. Furthermore, the appearance of the harness is greatly enhanced by the bright or colored finish of the eyelets or rivets which give it a decorative and distinctive appearance.

I desire it to be understood that this invention is not to be limited to any particular form or arrangement of parts except in so far as such limitations are specified in the claim.

What I claim as my invention is:

The method of reinforcing buckle holes in harness straps which consists in punching a hole in the strap, taking a tubular rivet having an outside barrel dimension of larger diameter than the hole and causing said rivet to chisel out the hole to a diameter to snugly engage the outer surface of the rivet barrel throughout its entire length and upsetting the chiselling end of the barrel against the lower side of the strap.

In testimony whereof, I affix my signature.

FRANK MAYER.