Feb. 22, 1938. J. LANDGRAF 2,109,254

FASTENING DEVICE

Filed Aug. 27, 1936

Fig. 1.

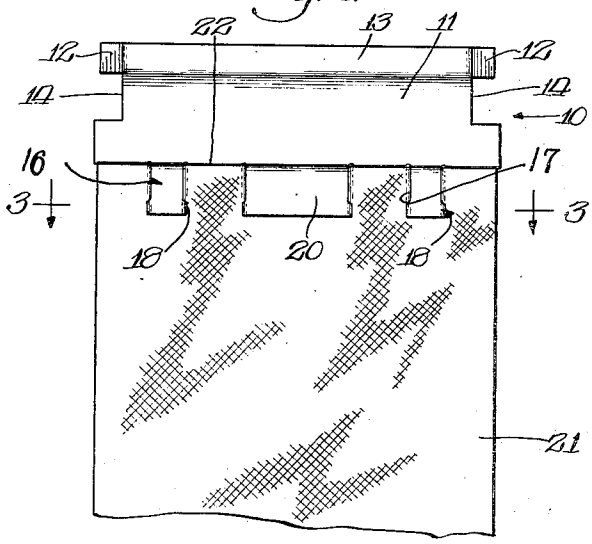


Fig. 2.

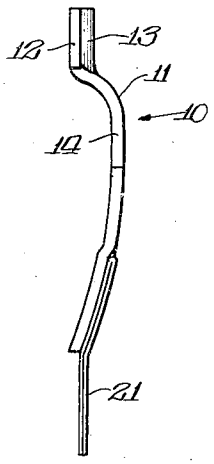


Fig. 3.

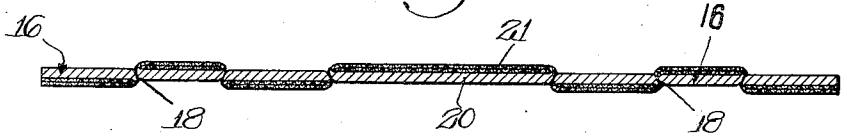
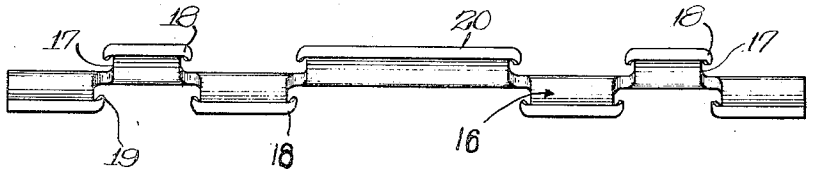


Fig. 4.



Inventor:-
Joseph Landgraf,
By Foorman L. Mueller Atty.

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UNITED STATES PATENT OFFICE

2,109,254

FASTENING DEVICE

Joseph Landgraf, Chicago, Ill.

Application August 27, 1936, Serial No. 98,184

6 Claims. (Cl. 282—29)

My invention relates in general to means for fastening a metal member onto a piece of cloth or joining a metal member and piece of cloth together without supplementary material such as threads, eyelets or the like, and more in particular to a metal clip for fastening onto an inked ribbon or tape to mount the ribbon in office appliances such as addressing machines and the like.

Although it has been common practice to put metal clips, tips, and like members, onto cloth tape and ribbons, it has been found difficult to retain the tape or ribbon with the metal, except by a laborious and expensive assembly which often necessitated a relatively expensive metal member. This assembly has in the past been accomplished by the use of a metal clip or buckle-like member with a transverse slot through which the ribbon is passed, and the ribbon then usually sewed or eyeletted through a folded over end portion to retain the same on the clip. This type of fastening permits the ribbon to slide on the metal member in the slot and thus become wrinkled or out of place. It also promotes wear on the ribbon to often cut through the same. Furthermore, with the ribbon being passed through the slot in the clip, the width of the ribbon must conform to the width of the slot. If the ribbon is wider than the slot it is wrinkled up in a manner to often interfere with the operations of the machine.

It is an object of my invention to provide an improved fastening device for securing a metal member and a cloth ribbon or tape together.

Another object is to provide an improved metal clip which may be very quickly and securely applied to a piece of cloth.

A further object is to provide a punched out, one-piece metal clip which is simple, yet extremely sturdy.

It is also an object of my invention to provide a clip or other metal member for fastening onto a piece of cloth without the use of any other fastening material, and in such a manner that the cloth is very firmly and securely retained therewith, but with the final assembly such that the cloth and metal are substantially only as thick as the original thickness of the metal alone for the cloth, particularly an inked ribbon for a business machine is of negligible thickness.

Other objects and advantages will be apparent from the description taken with the drawing, in which:

Fig. 1 is a front view of the clip fastened in position on a cloth ribbon. This figure is illustrated on an enlarged scale.

Fig. 2 is a side view of the structure of Fig. 1.

Fig. 3 is a sectional view along the line 3—3 of Fig. 1, but still further enlarged.

Fig. 4 is an enlarged front view of the clip itself, illustrating particularly the position of the fastening means when originally stamped out, and before being applied to the cloth.

In practicing the invention, the clip is stamped out to provide a one-piece metal member having a mounting body portion and a plurality of clamping fingers extending from one side, with alternate fingers originally inclined away from the body portion to permit the insertion of a piece of cloth therebetween, preferably at the edge of the cloth or at an edge provided by a fold therein. After insertion of the cloth, the fingers are pressed together by means of a small hand press or the like, to frictionally engage the cloth, and with teeth-like projections or burrs at the end of the fingers to actually bite into the cloth. In the pressing operation the clip as a whole is preferably formed to a slight curve to follow the normal curvature of a roller, should such ribbon and clip pass around a roller in the normal operation of a machine for which the assembly is designed.

Referring now to the drawing, the clips 10 are stamped out from a strip of sheet metal or the like by a continuous die in a single stamping operation, to provide a body or mounting portion 11. For purposes of illustration, a body portion is shown with a bent ear 12 at each end of a flange 13 at the top of the clip. Slots 14 are cut out at each end of the body portion below the ears to fit into a corresponding portion of an office machine employing an inking ribbon therein, to which the clip is secured. It is understood, however, that the body portion may be varied in form, depending upon the use to which the clip is put.

Although, as stated above, metal clips have been secured to the ends of cloth ribbons and tapes in the past, the securing operation has often been laborious and expensive, and the clip itself of such a construction that it would not remain securely fastened to the ribbon for any length of time. This difficulty is overcome in the present invention by a plurality of substantially T-shaped fingers 16 extending from one side of the body portion 11 of the clip. These fingers are formed in the stamping operation so as to incline alternately to one side and then to the other, as shown in Fig. 4, with a small portion of metal removed from the finger at 17 so as to provide outwardly extending ears 18 at the end or head of each finger. Except for being integral with the body portion,

the fingers are each independent of one another. The die is so designed that in the stamping the fingers are stamped out and separated in a shearing action so that projections 19 extend inwardly from each ear 18 like a sharp burr or tooth. These projections extend substantially over the outer edge of each of the ears 18 of the T-shaped fingers and substantially to the tip thereof. An enlarged or widened finger 20 is provided midway between the ends. This provides added rigidity for the clip at the middle, and provides a larger metal bearing surface at that portion.

In assembling a ribbon 21 and the clip 10 together, the ribbon is folded over at its end to provide additional strength, and this folded portion is inserted between the formed-apart fingers 16 as shown in Fig. 4. This may be accomplished by the use of a thin shim-like tool inserted within the ribbon as the fold is made thereover, and then pressed into the open teeth to carry the cloth up to the portion 22 of the clip to provide the greatest bearing surface for the fingers on the ribbon. The shim-like tool is then removed and the clip and ribbon fastened together by pressing the fingers into the cloth by means of a small clinching machine which may be supplied with the clips.

This clinching machine presses the fingers into the position shown in Fig. 3 to frictionally and firmly engage the cloth and in addition curve the entire clip slightly if desired, as shown in Fig. 2, to more closely conform to the circumference of a roller on any machine in which the ribbon is used. In the clinching operation the sharp projections or burred edges 19 of the ears 18 on the head of each finger 16 are pressed into the cloth in such a way that they ordinarily cut through the same at that point, to additionally prevent the withdrawal of the ribbon from the clip without any possibility of the ribbon tearing from that point, for the remainder of the cloth between the fingers or adjacent thereto is not cut at all. With the fingers alternately spaced and formed at their outer ends as described, they may be pressed down to the place where the adjacent projections 19 lie substantially in engagement and the fingers as a whole are relatively no thicker in cross section (Fig. 3) across the entire clip than the original metal itself from which the clip is stamped. In this condition, the clip will more readily pass through the operating and guiding mechanism of a machine to provide a more satisfactory and efficient operation thereof.

The particular fastening means is also important because in the use of a metal clip of any form on the end of the ribbon to mount the same in an office machine, it is desirable to have the clip as short as possible in the dimension away from the ribbon so that it will readily pass around a roller or circular guide. With the gripping means provided, the fingers may be relatively short, yet secure the cloth in a substantially permanent grip. Furthermore, to facilitate movement of the ribbon over rollers, it is desirable that there be no metal tail, or overlapping portion extending onto the ribbon beyond the point at which the metal grips the cloth. In the present invention the fingers 16 and projections 19 thereon engage the cloth right up to the end of the metal and there is no overlapping portion.

The fastening device of my invention has a further advantage over such devices of the prior art and particularly the buckle-like members with a transverse slot through which the ribbon is inserted, in that it prevents any sliding on the clip and thus keeps the ribbon in proper alinement, as well as preventing wear and wrinkling with such sliding. This difficulty is particularly apparent in a wide clip where the slot may be as much as one inch in width. The clip of my invention may be stamped out in various widths without very much added expense in tooling, and the desired width of ribbon then maintained in accurate alinement when mounted by means of the clip in a machine.

Although the invention has been illustrated and described in its preferred embodiment, it is understood that it is not limited thereby, but is limited only by the scope of the appended claims.

I claim:

1. A metal clip for securing to a piece of cloth, including a body portion, and cloth securing means comprising a plurality of T-shaped fingers each having a head and a body portion extending from the body portion of the clip, said fingers formed to receive the cloth therebetween, and having projections on the outer ends for engaging the cloth and cooperating to retain said cloth secured to the clip.

2. An article of manufacture for sewing to a piece of cloth, including a body portion and a plurality of fingers extending from one side thereof all of a single thickness of metal, with adjacent fingers having corresponding piercing projections at the side near the ends thereof to pierce the cloth and cooperate to retain the same, and corresponding recesses on adjacent fingers intermediate the ends of the fingers and the body portion of the article to non-piercingly receive the ribbon therein.

3. A metal tip for a cloth ribbon, said tip having cloth sewing means integral therewith comprising a plurality of forwardly extending fingers originally alternately bent to one side and then to the other away from the plane of the body portion to receive cloth therebetween, and pressed to substantially a single thickness in cloth securing position, with cloth piercing means on the side ends of said fingers, and with said fingers shaped in a manner intermediate the ends thereof and the body portion of the clip to receive the cloth ribbon between two adjacent fingers at said intermediate portion without cutting or piercing the same.

4. A clip for mounting an inking ribbon in an office machine comprising a one-piece metal member, having a substantially rectangular body portion with a relatively narrow flange on one side with notches at each end of the body portion below the flange to provide outwardly extending ears on said flange for mounting said clip in the office machine, and ribbon engaging means on the other side of said body portion including a plurality of separated fingers each having a T-shaped end portion with ribbon piercing projections at the side ends thereof, with said fingers acting to secure said ribbon in said clip.

5. In combination a metallic clip, and cloth secured in said clip, said clip comprising a body portion, and a plurality of separated forward extensions from said body portion, with each extension having an ear at one side of the end thereof cooperating with a similar ear on an adjacent extension to piercingly engage the cloth at that point, with said extensions shaped in a manner to provide corresponding recesses in adjacent extensions to form an opening and with said opening intermediate the cooperating ears and body portion of the clip to non-piercingly receive the cloth therein.

6. In combination a metallic mounting clip, and a ribbon secured therein, said clip comprising a mounting portion and a plurality of separated fingers extending from one side thereof, with each finger having an ear with a projection extending to one side at the end thereof and a recess in the finger on that side and rearwardly of the ear, with said fingers pressed onto the ribbon to all lie in substantially a single plane with the ear projections on adjacent fingers cooperating to piercingly engage the ribbon and the finger recesses on adjacent fingers cooperating to form an opening to non-piercingly receive the ribbon rearwardly of the ends of the fingers.

JOSEPH LANDGRAF.