May 29, 1928. 1,671,107

A. FRICKER

METHOD OF MAKING CLASPS

Filed March 1, 1922 2 Sheets-Sheet 1

FIG. 3.

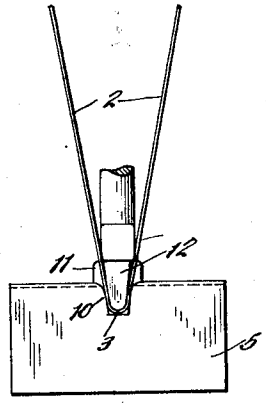
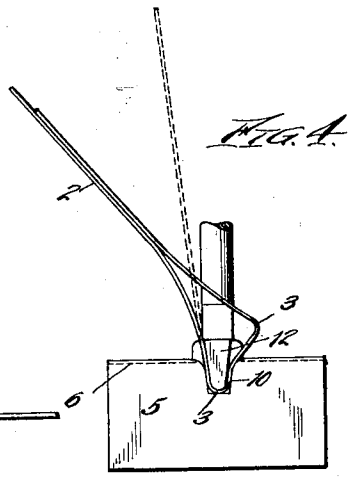


FIG. 4.



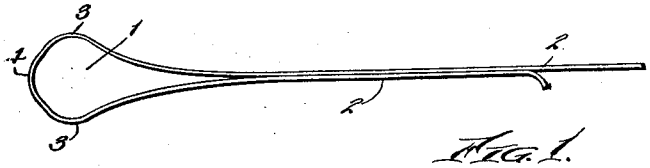


FIG. 1.

FIG. 5.

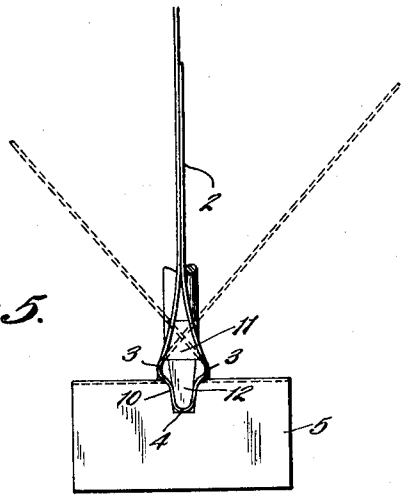
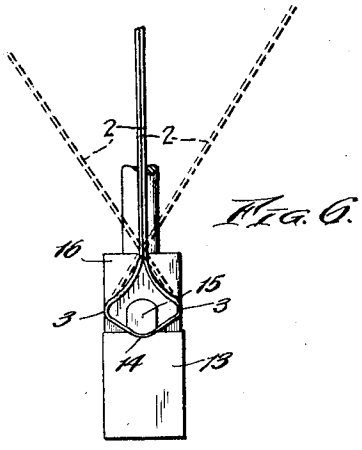


FIG. 6.



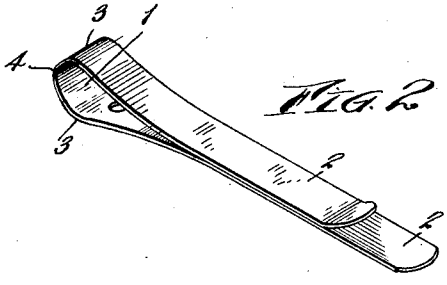


FIG. 2.

INVENTOR,
Anthony Fricker
BY Brockett & Hyde
ATTYS.

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A. FRICKER

METHOD OF MAKING CLASPS

Filed March 1, 1922 2 Sheets-Sheet 2

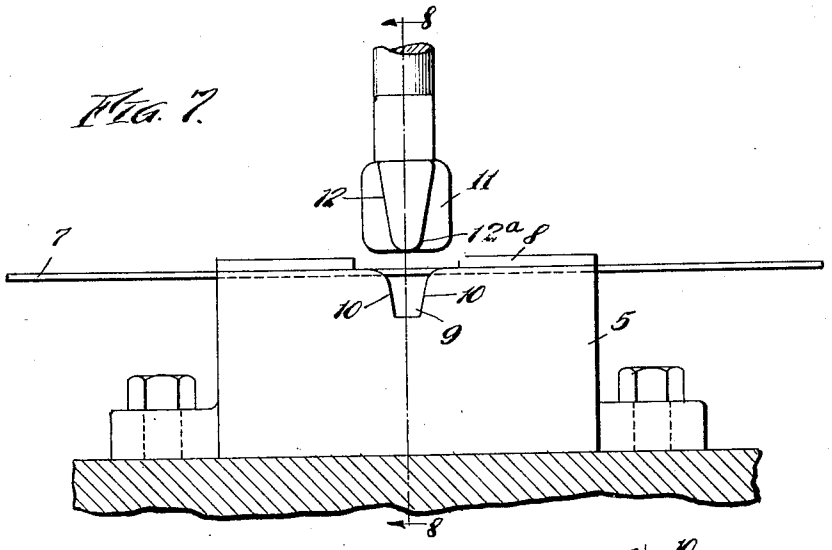


Fig. 7.

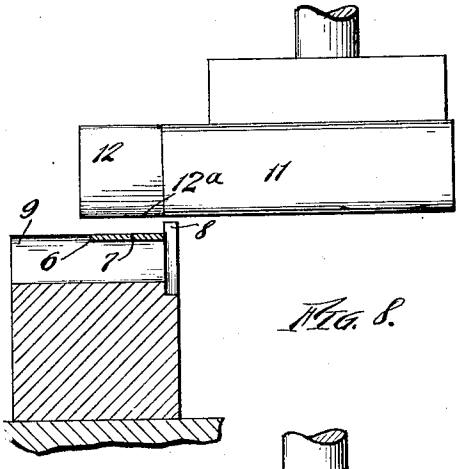


Fig. 8.

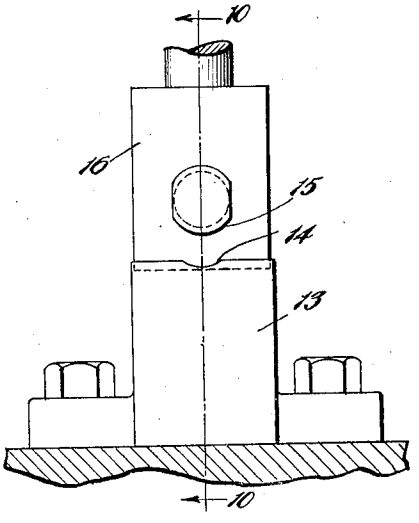


Fig. 9.

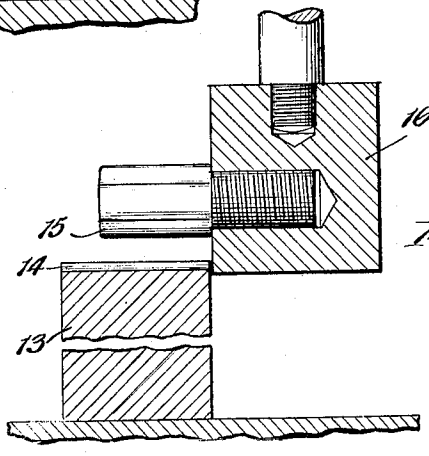


Fig. 10.

INVENTOR,
Anthony Fricker
Brockett & Hyde
ATTYS.

Patented May 29, 1928. 1,671,107

UNITED STATES PATENT OFFICE.

ANTHONY FRICKER, OF LAKEWOOD, OHIO.

METHOD OF MAKING CLASPS.

Application filed March 1, 1922. Serial No. 540,111.

The invention relates to a method of making clasps, such as are used for temporarily binding together relatively thick masses of paper sheets, files or the like, up to thicknesses of an inch or so. Such clasps have heretofore been made from strip steel by first bending the strip to shape and then tempering it, a method which not only fails to impart to the steel the requisite clasping tension, but also is likely to mar or spoil the finished surface of the steel during the tempering operation.

The present invention has for its object to provide an improved method of making a clasp of special form, the clasping arms of which are so formed and are so disposed relative to the joining head that the clasp has maximum inherent spring tension with its arms lying truly parallel up to its maximum open position; and which method enables maximum tension to be given to the arms and avoids injury or marring thereof by tempering or other operations.

Further objects of the invention are in part obvious and in part will appear more in detail hereinafter.

In the drawings, Fig. 1 represents an edge view of a clasp formed according to my improved method; Fig. 2 is a perspective view thereof; Figs. 3, 4 and 5 illustrate successive operations of the forming dies; Fig. 6 illustrates the operation of the shaping dies; Fig. 7 is a detail front view of the forming dies; Fig. 8 is a section thereof on the line 8—8, Fig. 7; and Figs. 9 and 10 are views corresponding to Figs. 7 and 8, and illustrating the shaping dies.

As illustrated in Figs. 1 and 2 the clasp, which forms the subject matter of a copending application filed October 25, 1922, Serial No. 596,832 is made from a single strip of steel of any suitable width and length, one clasp of satisfactory form being about six inches long and made from a strip approximately three-quarters of an inch wide. The head of the clasp, indicated generally at 1, is in the form of a loop or eye joining the two arms 2, which lie parallel and in contact over an appreciable portion of their length due to the formation of the clasp in a manner to impart inherent tension thereto such that the normal positions of the two arms (if they could pass each other) would be as indicated by the dotted lines, Fig. 5. This effect is secured in the present clasp by forming the eye with two side bends 3 and an end or center bend 4, said bends being put into the metal of the tempered strip so that subsequent tempering is unnecessary. According to the present invention these bends are formed in a manner to over-bend the material, or in other words, to put into the clasp more initial tension than is necessary, after which one or more of the bends are straightened to take out a part of the tension and leave just the amount necessary to give the arms sufficient resiliency and holding ability and also keeping them parallel in the various positions of the clasp up to full open position with its arms about an inch apart.

Referring to Figs. 7 and 8, these views illustrate the dies for forming the side and end bends in the head. These dies may be of any suitable character, but as illustrated comprise a female die block 5 having a shallow recess 6 to receive the blank strip 7, which at one edge is moved along a guiding shoulder 8 into position with the proper point in its length above a deep recess 9 which has its side walls 10 inclined to each other. With the lower die block cooperates a vertically movable upper punch block 11, the male punch portion 12 of which is of tapered form to enter the recess 9 but with its lower portion curved on a smooth arc, as at 12^a, to avoid sharp corners or angles. The blank strip is subjected to the successive bending steps illustrated in Figs. 3, 4 and 5. The first step, indicated in Fig. 3, consists in forming one of the side bends 3 by pushing the blank strip down into the recess 9 with the male die 12. This step leaves the two arms thus formed bent at approximately right angles to each other. The second step consists in forming the opposite side bend 3, as shown in Fig. 4, the effect of this step being to bend the two arms of the clasp into engaging contact with each other but without material tension, and particularly without sufficient tension to hold papers between them. In the third step, represented in Fig. 5, the end bend 4 is formed between the two side bends. This produces a more steep inclination to each other of those portions of the arms closely

adjacent to the loop or eye 1, but without any tendency of the free ends of the arms to become separated as sometimes occurs with clasps formed by other methods. The three bending steps therefore materially close the eye 1 and produce proper relation between the two arms of the clasp.

Figs. 9 and 10 illustrate the final shaping dies, which comprise a female die 13 with a shallow curved recess 14 to cooperate with the curved lower face of the male die member 15 carried by a block 16. Member 15 extends from one side of the block 16 so that it can be introduced into the opening in the eye, as shown in Fig. 6, and by then forcing the two dies together a portion of the bend is taken out of the end bend 4. This step really merely changes the shape of the end bend, flattening out its curve and removing some of the tension from the two arms of the clasp. If desired, the same dies 13, 15 may be used for partly straightening the side bends, although this is not essential.

The finished clasp has an eye or loop of pleasing form and with material gripping tension between its two arms. It can be clasped about a thick mass of papers with a good holding quality or ability throughout the length of the arms. At the same time the method provides a clasp which may be made from steel strips so that subsequent tempering operations are unnecessary.

What I claim is:

1. The method of forming a metal clasp consisting in subjecting an intermediate portion of a blank metal strip to the action of reciprocating bending means so as to thrice bend said intermediate portion at three adjacent points, the outer two bends bringing the end portions of the strip into forcible engagement throughout an appreciable part of their length and the intermediate bend effecting more forcible engagement of said end portions.

2. The method of forming a metal clasp consisting in subjecting a plurality of times an intermediate portion of a blank metal strip to the action of reciprocating bending means so as to thrice bend said intermediate portion at three adjacent points, the outer two bends bringing the end portions of the strip into forcible engagement throughout an appreciable part of their length and the intermediate bend effecting more forcible engagement of said end portions.

3. The method of forming a metal clasp consisting in subjecting a plurality of times an intermediate portion of blank metal strip to the action of a single reciprocating bending member so as to thrice bend said intermediate portion at three adjacent points, the outer two bends bringing the end portions of the strip into forcible engagement throughout an appreciable part of their length and the intermediate bend effecting more forcible engagement of said end portions.

4. The method of forming a metal clasp consisting in subjecting three times an intermediate portion of a blank metal strip to the action of a single reciprocating bending member so as to thrice bend said intermediate portion at three adjacent points, the outer two bends bringing the ends portions of the strip into forcible engagement throughout an appreciable part of their length and the intermediate bend effecting more forcible engagement of said end portions.

5. The method of forming a metal clasp consisting in subjecting a plurality of times an intermediate portion of a blank metal strip to the action of reciprocating bending means so as to thrice bend said intermediate portion at three adjacent points, the outer two bends bringing the end portions of the strip into forcible engagement throughout an appreciable part of their length and the intermediate bend effecting more forcible engagement of said end portions, and then partially straightening one of said bends so as to cause the end portions of said strip to less forcibly engage each other.

6. The method of forming a metal clasp consisting in subjecting a plurality of times an intermediate portion of a blank metal strip to the action of reciprocating bending means so as to thrice bend said intermediate portion at three adjacent points, the outer two bends bringing the end portions of the strip into forcible engagement throughout an appreciable part of their length and the intermediate bend effecting more forcible engagement of said end portions, and then partially straightening the intermediate bend so as to cause the end portions of said strip to less forcibly engage each other.

7. The method of forming a metal clasp consisting in subjecting a plurality of times an intermediate portion of a blank metal strip to the action of reciprocating bending means so as to thrice bend said intermediate portion at three adjacent points, the outer two bends bringing the end portions of the strip into forcible engagement throughout an appreciable part of their length and the intermediate bend effecting more forcible engagement of said end portions and then subjecting one of said bends to the action of a single reciprocating bending member so as to partially straighten said bend and thereby cause the end portions of the strip to less forcibly engage each other.

8. The method of forming a metal clasp consisting in subjecting a plurality of times an intermediate portion of a blank metal strip to the action of reciprocating bending means so as to thrice bend said interme-

diate portion at three adjacent points, the outer two bends bringing the end portions of the strip into forcible engagement throughout an appreciable part of their length and the intermediate bend effecting more forcible engagement of said end portions and then subjecting the intermediate bend to the action of a single reciprocating bending member so as to partially straighten said bend and thereby cause the end portions of the strip to less forcibly engage each other.

In testimony whereof I hereby affix my signature.

ANTHONY FRICKER.