April 12, 1932. T. BIRKENMAIER 1,853,891

CLAMP

Filed May 13, 1931

FIG. 2.

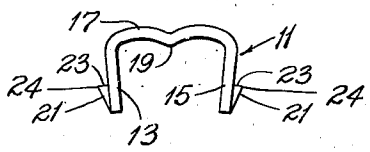


FIG. 1.

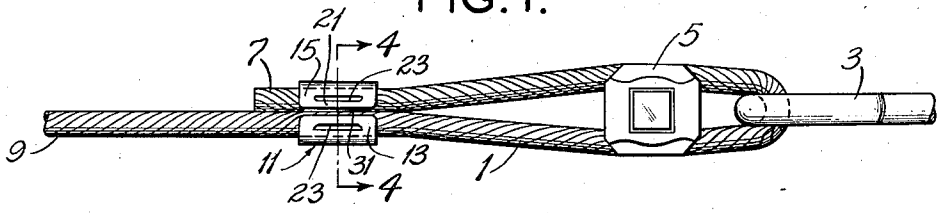


FIG. 4.

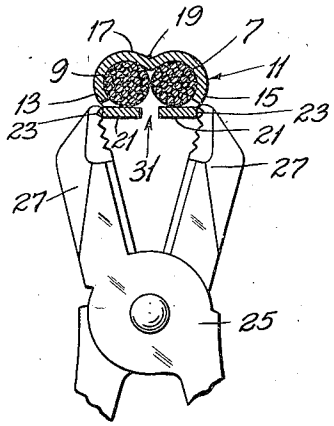


FIG. 3.

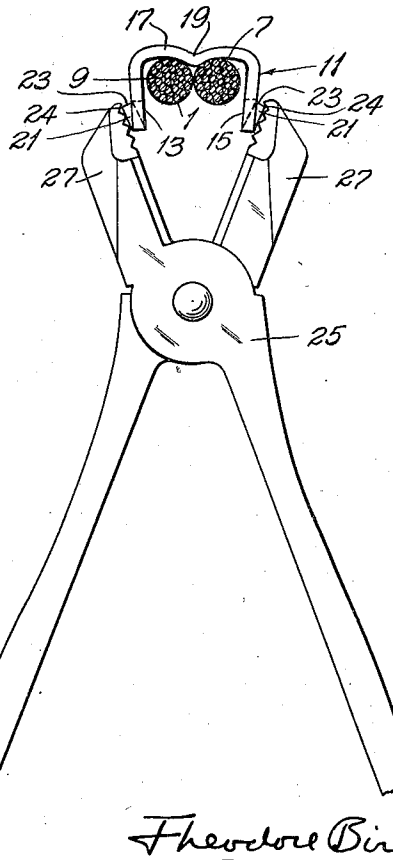
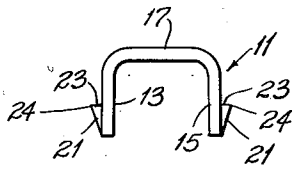


FIG. 5.



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1,853,891

UNITED STATES PATENT OFFICE

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CLAMP

Application filed May 13, 1931. Serial No. 537,021.

This invention relates to clamps, and with regard to certain more specific features to a mousing clamp for fastening wire, rope, cable and similar strands.

Among the several objects of the invention may be noted the provision of an improved and simplified clamp particularly adapted to be used as a mousing and more generally to make a variety of connections; the provision of a clamp of the class described which is formed in one piece and which is applied by an exceedingly simple operation; the provision of a clamp of the class described which is adapted to tightly and positively clamp a strand but which is relatively easily removable therefrom; and the provision of a clamp of this class which is inexpensive to manufacture. Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly comprises the elements and combinations of elements, features of construction, and arrangements of parts which will be exemplified in the structure hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, in which is illustrated several of various possible embodiments of the invention,

Fig. 1 is a plan view of the invention applied to a guy strand;

Fig. 2 is a front elevation of a preferred form of the invention;

Fig. 3 is an elevational view showing the clamp of Fig. 2 being applied by means of a tool;

Fig. 4 is an enlarged sectional view taken on line 4—4 of Fig. 1 (but inverted) and showing the tool of Fig. 3 giving the clamp its final clamping operation; and,

Fig. 5 is a view similar to Fig. 2 but showing an alternative form of the invention.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

Referring now to Fig. 1, there is shown at numeral 1 a cable or strand passed through an eye 3 of a guy rod or the like and clamped by a guy clamp 5. The end 9 of the guy strand 1 is terminated at an object to be guyed by the strand 1, and the loose end 7 is secured to the strand 1 by means of a mousing clamp 11 comprised in the invention herein.

The term "strand" in the present specification and claims is inclusive of strands adapted to function for all purposes and includes wire, rope, cable and the like.

Formerly, the means used to secure a loose end such as 7 comprised winding wire or the like around the two strand ends 7 and 9. This method of fastening the end 7, however, was unsatisfactory for the reason that undue amount of time was consumed in completing such a binding of the loose end 7 to the main strand, and furthermore, there was difficulty incurred in removing the mousing in the event that it became necessary to tighten the strand 1. This involved removing the clamp 5, pulling the loose end 7 farther through the eye 3 and replacing the clamp 5. One of the objects of the mousing is to protect anything which may come in contact with the strand 1 from becoming engaged with the loose end 7 and the wire that was used to bind the loose end 7 to the strand 1, of itself provided loose ends which were also likely to touch or endanger objects coming in contact with the binding. I have overcome the difficulties which ensured in using the old form of mousing and have provided a one-piece band or clamp for such purposes as hereinbefore mentioned by way of example. This mousing is easily applied to fasten the loose end 7 and is also easily removable therefrom, in the event that such removal becomes necessary.

Referring now more particularly to Fig. 2, there is shown at numeral 11 a clamp formed from a preferably soft, metal stock such as aluminum, copper, galvanized iron,

or the like. The clamp 11 has walls 13 and 15 extending substantially at right angles to the plane of the back 17. A ridge 19 is formed longitudinally along the inside of the clamp and is adapted to serve purposes to be described.

Each wall or leg 13 and 15 has spurs 21 struck out therefrom. The spurs extend far enough out to provide the relatively flat areas 23 and, as shown in Fig. 1, extend an appreciable length along the sides of the walls 13 and 15.

Referring now to Fig. 3, the clamp 11 is shown positioned over the ends 9 and 7 of the strand 1 and pliers or a like tool 25 is shown applied to the spurs 21. In order to form or curl the clamp 11 over the ends 7 and 9, the jaws 27 of the pliers 25 are pinched together, and thereby force the walls 13 and 15 together and around the strand 1 until the ends of the walls are juxtapositioned; see numeral 31. A rocking contact between the jaws 27 and the spurs 21 is provided by edges 24 of the spurs 21 so that as the walls 13 and 15 are forced around into a substantially closing position over the cable ends 7 and 9, the jaws finally act directly on the flat areas 23 to further force the ends of the walls 13 and 15 together and consequently to clamp the clamp 11 tightly around the two portions of the strand 1.

Figs. 1 and 4 show the clamp 11 thus tightly positioned or clamped around the ends 7 and 9. The ridge 19 runs along the inside of the back portion 17 of the clamp 11 and keeps the clamp 9 properly centered with respect to the strand as the clamp is applied.

It is clear that the areas 23 provide a substantial surface for the gripping portion 27 of the pliers 25 to finally position the clamp 11 tightly around the two strand portions. The rocking contact provided by the edges 24 permits of the clamping action being carried out with one pinching operation of the jaws 27, for when the jaws 27 are applied to spurs 21, the edges 24 roll on the surfaces of the jaws 27 as the walls 13 and 15 are formed around the cables, until the flat areas 23 are presented to the tip of the jaws at which point the final clamping action is carried out. The roughened surface of the jaw 27 helps to prevent the edges 24 from slipping away from the jaws 27 at any time during the applying operation, although such roughened surfaces are desirable rather than necessary.

The final clamping of the clamp 11 around the two strands tends to pull out the ridge formation at 19, which however, as the gripping members 27 are removed, tends to spring back again, because of the elasticity of the material. Hence the tight gripping of the clamp 7 about the two strands is further enhanced. A relatively soft, though not wholly inelastic metal is preferable because it is more easily formed and does not tend to reopen after being formed to its desired position. The metals enumerated have sufficient elasticity to effect the above-mentioned tightening and still are soft enough to be satisfactorily bent by the pliers.

Referring now to Fig. 5, there is shown a modification of the clamp 11 in which the ridge portion 19 is omitted. This clamp 5 is especially adapted to be used around a single end of a strand to keep the units of a single strand from becoming separated. However, this modification may also be used over a plurality of strand ends.

An advantage of the clamp 11 used as a mousing for strand rope or cable or the like is the ease with which it is applied, and the ease with which it may be removed in the event that removal is necessary. For instance, removal may be effected by inserting in the space between the walls 13 and 15 as shown at numeral 31 a screw driver or the like after which the walls may be pried apart, to allow the clamp 11 to be slipped away from the end 7 while the guy 1 is being readjusted. This removal does not in any way damage the clamp 11 which may be slipped back over the end 7 and tightened as before. The clamp 11 is also adapted to tightly engage the strand 1 and accordingly will not slip or move out of place. Furthermore, the clamp 11 is relatively easy and simple to manufacture, and is accordingly inexpensive. The clamp may be manufactured by a simple stamping and forming operation.

A special advantage of the modification shown in Fig. 5 is that a mousing clamp has been provided for application to the ends of cable, rope and the like to keep the same from shredding, and the application of said clamp is more rapid than the application of twine or wire to the cable to effect the mousing clamp.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As many changes could be made in carrying out the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A clamp comprising a strip of bendable metal adapted to be positioned substantially around a strand, and means formed on said strip adapted to be gripped, said means being adapted to effect said positioning around said strand when force is applied to said means, said means comprising spurs struck out of said strip, said spurs forming first a rocking contact and then a final holding surface for the gripping jaws of a tool adapted to effect said force.

2. A clamp comprising a strip of bendable

metal adapted to be positioned substantially around a strand, and gripping means formed on said strip, said means being adapted to effect said positioning around said strand when force is applied to said means and comprising spurs formed on said strip near the ends thereof.

3. A clamp for a strand comprising a U-shaped length of bendable metal adapted to be placed over said strand, including side legs formed on said strip and means formed on the side legs, said means being adapted to effect a rocking contact and then a holding surface for the pinching jaws of a tool, whereby the ends of said strip may be juxtapositioned.

4. A clamp for a strand comprising a strip of bendable metal adapted to be tightly formed around said strand, said strip having an initial substantially U-shaped cross section, and means formed on side walls of said strip, said means being adapted to effect a rocking contact and then a holding surface for the pinching jaws of a tool whereby said clamp is formed around said strand, said means comprising spurs struck out of said side walls.

5. A clamp for a strand comprising a strip of bendable metal adapted to be tightly formed around said strand, said strip having side walls, means formed on the side walls, said clamp being applied to said strand by inserting said strand between said walls and curling said walls around said strand, said forming action being effected by the pinching jaws of a tool applied to said means and said means comprising spurs struck out of said side walls.

6. A clamp comprising an initially U-shaped bendable member adapted to fit over a plurality of strands, and integral means on the legs of said member adapted to be gripped by a pinching tool, the shape of said means being such that said tool will engage first to bend the legs and then to force the ends of said legs toward one another substantially endwise.

7. A clamp comprising an initially U-shaped bendable member adapted to fit over a plurality of strands, and means on the legs of said member adapted to be gripped by a pinching tool, the shape of said means being such that said tool will engage first to bend the legs and then to force the ends of said legs toward one another substantially endwise and means on the back of the U-shaped member adapted to maintain a predetermined relationship of the device with respect to said strands.

8. A clamp comprising an initially U-shaped bendable member adapted to fit over a plurality of strands, and integral means on the legs of said member adapted to be gripped by a pinching tool, the shape of said means being such that said tool will engage first to bend the legs and then to force the ends of said legs toward one another substantially endwise and integral means comprising an elevation in the back of the U-shaped member adapted to maintain a predetermined relationship of the device with respect to said strands.

In testimony whereof, I have signed my name to this specification this 11th day of May, 1931.

THEODORE BIRKENMAIER.