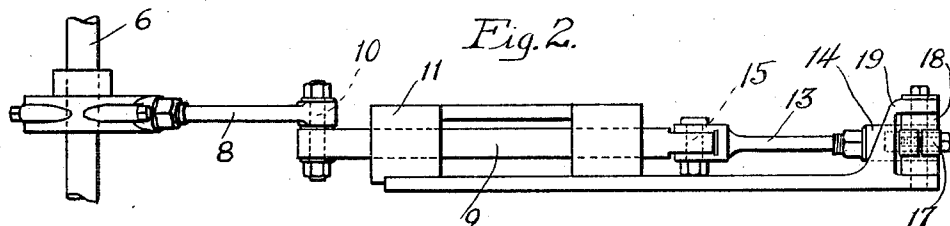
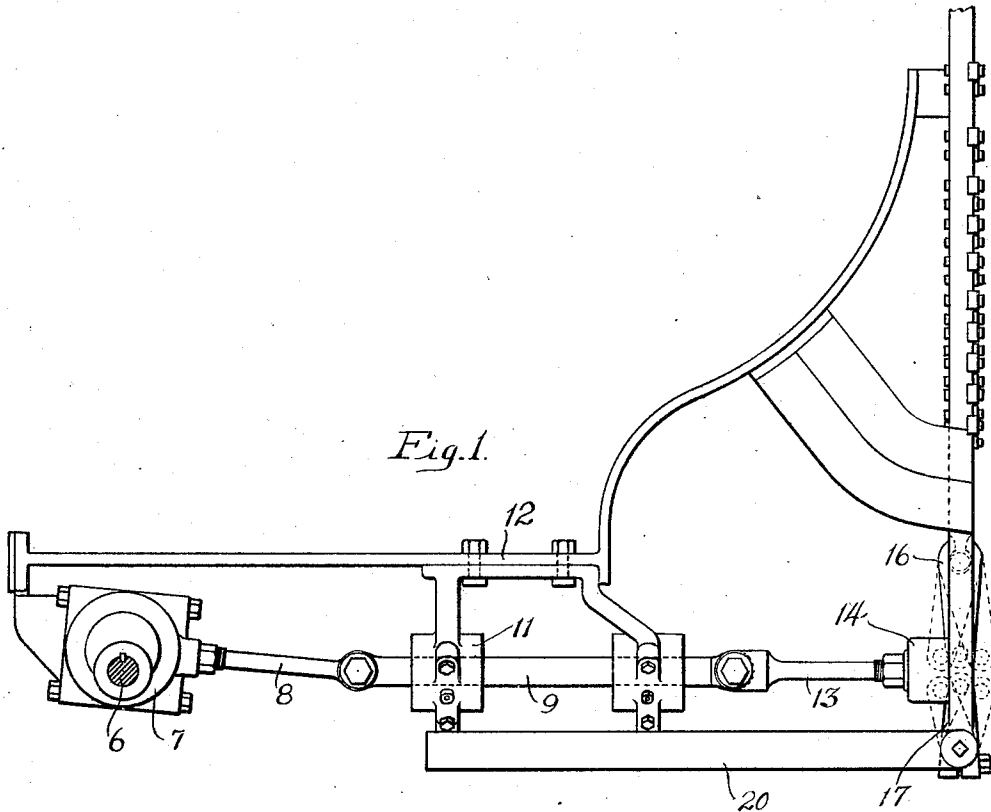


F. H. NULLMEYER.
CRIMPING MECHANISM.
APPLICATION FILED DEC. 5, 1910.

1,005,742.

Patented Oct. 10, 1911.

2 SHEETS-SHEET 1.



Witnesses:
Ephraim Banning
Wm. H. Bond

Inventor:
Frank H. Nullmeyer
BY *Banning & Banning*
Attorneys.

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2 SHEETS—SHEET 2.

Fig. 3.

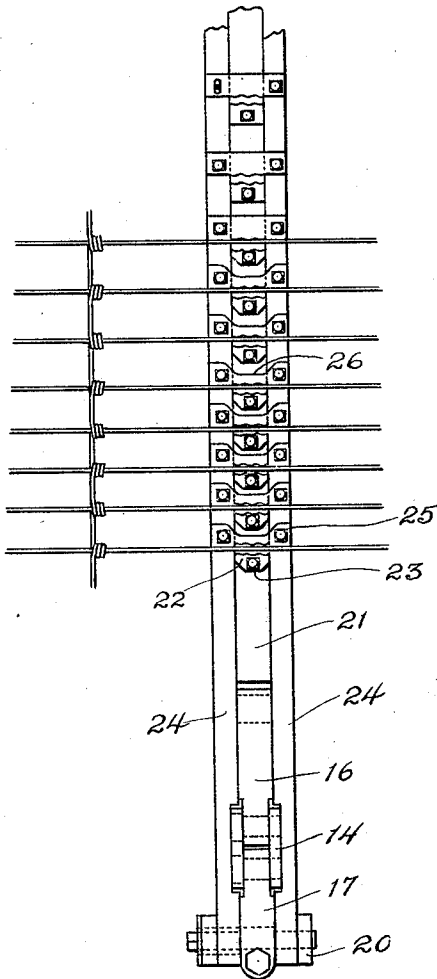


Fig. 4.

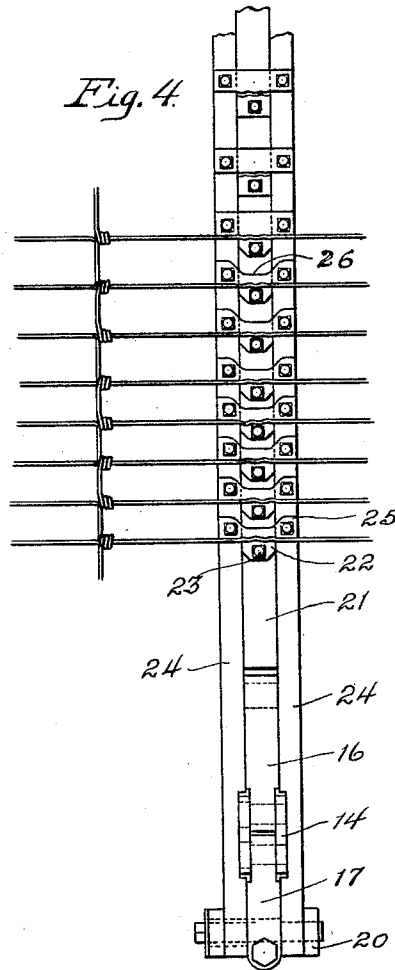
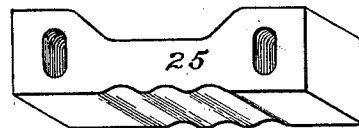


Fig. 5.



Witnesses:
Ephraim Banning.
Wm. J. Bond

Inventor:
Frank H. Nullmeyer.
BY *Banning & Banning*
Attorneys.

UNITED STATES PATENT OFFICE.

FRANK H. NULLMEYER, OF YOUNGSTOWN, OHIO, ASSIGNOR TO THE YOUNGSTOWN SHEET & TUBE COMPANY, OF YOUNGSTOWN, OHIO, A CORPORATION OF OHIO.

CRIMPING MECHANISM.

1,005,742.

Specification of Letters Patent.

Patented Oct. 10, 1911.

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To all whom it may concern:

Be it known that I, FRANK H. NULLMEYER, a citizen of the United States, residing at Youngstown, in the county of Mahoning and State of Ohio, have invented certain new and useful Improvements in Crimping Mechanisms, of which the following is a specification.

The present invention relates to a machine more especially designed and adapted for the crimping of strand wires of the ordinary square-mesh wire fence.

The objects of the present invention are, to provide a mechanism which can be located so as to crimp the wires before or after the coiling of the stay wires around the strand wires; and to construct a device which can be located in any desired relation to the stay wire, so as to place the crimp in any position upon the strand wires relative to the point of juncture of the stay wires with the strand wires.

The invention further relates to the utilizing of power-driven means for operating the crimping mechanism and to the formation and arrangement of the connection between the power-driven mechanism and the crimping mechanism; to the method of mounting the die members so that they may be adjusted to produce crimps of different degrees in the strand wires; and to the providing of a series of independent sets of dies, one set being provided for each individual wire to be crimped, whereby any set of dies desired can be removed and dies of a different nature substituted therefor without disarrangement or removal of any of the remaining sets of dies, thus providing for the uniform crimping of wires of different characters.

The invention further consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation, showing the crimping mechanism in operative relation to the power-driven mechanism for operating the same; Fig. 2, an under plan view of the parts shown in Fig. 1, with the framework removed; Fig. 3, a face view of the crimping mechanism, showing the parts in non-acting position; Fig. 4, a view similar to Fig. 3, showing the mechanism in operative position; and Fig. 5, a perspective of one of the female crimping dies.

Since the present invention relates entirely to the construction and arrangement of the crimping devices and the method of operating the same, it is not deemed necessary to show any of the auxiliary mechanism with which the crimper might be used, as, for instance, the structure of a machine for making square mesh wire fencing. If, however, the device is used in connection with a wire fence machine, it is located in proper position upon said machine, so that the crimping of the strand wires can take place prior to the coiling of the stay wires around the strand wires; or it can be placed to perform such crimping operation after the coiling operation, and it can also be arranged so as to place a crimp in the strand wires at a point midway of the intersection of the strand wires with the stay wires, or it can be placed so as to bring the crimp at the point of intersection or in extreme close proximity thereto.

The crimping mechanism is actuated by the rotation of a power shaft 6. If the mechanism is employed in connection with a wire fence machine, this shaft is timed to rotate in exact accordance with the movements of the coiling mechanism, so that the crimp is placed in the wire at the same time that the coil is being made, this being the time at which the strand wire is at rest. The shaft 6 is connected to an eccentric 7, to which is joined a link 8 connected to a rod 9, the connection between the link 8 and rod 9 being in the form of a pin 10, whereby a pivotal connection is maintained between these two members. The rod 9 is mounted within bearings 11 supported from a suitable frame 12, and the rod is connected at its other end to a link 13, upon which is mounted a block or head 14. The connection between the link 13 and rod 9 is in the form of a pin 15, whereby a pivotal connection is maintained between these two members. By this arrangement the rod 9 is operated with a rectilinear reciprocating movement, but a swinging movement of the connection between the power driven shaft and the rod is permitted, as well as a swinging movement of the connection between the rod and the crimping mechanism.

Attached to the head 14 are oppositely extending arms or links 16 and 17, the arm 16 being connected to the portion of the crimping mechanism carrying the female

die members, and the arm 17 being mounted and fixedly held against reciprocating movement between the forked end 19 of a bar 20, which is secured to the bearings 11.

5 The arm or link 16 is connected to a plate or bar 21, upon which are mounted a plurality of die members 22, held in place by suitable securing means 23, these die members 22 constituting the male die members of the

10 crimping mechanism. Lying upon either side of the plate or bar 21 are plates or bars 24, secured to which are die members 25, these die members constituting the female die members of the crimping mechanism.

15 The die members 25, as shown, are joined to the plates 24 and form means for rigidly securing and maintaining said plates in relative position to one another. The plates 24 have their lower ends mounted between the

20 forked end of the bar 20, and these plates are rigidly maintained at all times against reciprocating movement.

As shown in Figs. 3 and 4, the male die members 22 and the female die members 25

25 are located in such relation to one another as to have one of each of them act upon an individual strand wire. Thus, there is a separate set of dies provided for producing the crimp in each individual strand wire.

30 Both the male and female dies are mounted upon the members to which they are secured in a manner to permit of their adjustment with respect to said members. This adjustment can be brought about by securing the

35 die members to the plates by a bolt and nut connection and by providing a slot in the body of the member carrying the dies, in which slot the bolt rests, (see Fig. 5) or it can be brought about in any other well-

40 known manner. By means of this adjustability, all of the die members, or any selected die member, or any selected set of die members, can be adjusted so as to produce a crimp of greater or less degree in the wire

45 upon which the adjusted dies are acting. In this manner it will be possible to produce a greater amount of crimp in certain of the wires in the fencing than in others. Furthermore, by arranging the die mem-

50 bers so that sets thereof, distinct from one another, are provided for each individual wire, any selected set of die members can be removed and die members of a different character substituted therefor without af-

55 fecting the arrangement of the remainder of the die members. By this arrangement, die members of a different character can be utilized in the crimping mechanism, which is a point of advantage where a fencing is

60 being crimped which is made up of a combination wire of different gage.

An adjustment of the crimping mechanism to decrease or increase the depth of the crimp in all of the wires is provided for

65 by the adjustable connection between the

head 14 and the link 13, and the adjustable connection between the eccentric 7 and the link 8, an adjustment of either one of these connections forming the necessary adjust-

70 ment of the bar or plate 21 carrying the male die members, to increase or decrease the depth of the crimps. As shown in Figs. 3 and 4, certain of the female die members have their surface cut away, as at 26, to permit of the necessary movement of the male

75 die members during the crimping operation.

The operation is as follows: As the shaft 6 is revolved, the eccentric 7 will be actuated to reciprocate the link 8. This in turn will impart a reciprocating movement to the rod

80 9, which will reciprocate the link 13, thus imparting movement to the head 14, which will move the arms 16 and 17 into the positions shown in dotted lines in Fig. 1. Taking the arms 16 to be in the left-hand dotted

85 position shown in Fig. 1, a quarter rotation of the shaft 6 will move the arms 16 and 17 into the position shown in full lines in Fig. 1, or in the position where they are in vertical alinement with one another.

90 In this latter position, they will act to force the bar or plate 21 upward and into the position shown in Fig. 4, where it is acting to place a crimp in the wires. A further quarter revolution of the shaft 6 will carry

95 the arms 16 and 17 into the right-hand dotted position shown in Fig. 1. Thus, a half revolution of the shaft will move the arms from the left-hand dotted position in Fig. 1 to the right-hand dotted position

100 while the remaining half revolution will reverse the operation just indicated. When the arms are at either extremity of their movement, the dies are in the position shown in Fig. 3; and when the arms are in their

105 intermediate position, or the position where they are in vertical alinement with one another, the dies are in the position shown in Fig. 4. But, as heretofore explained, movement of the arms from one of the

110 dotted positions into the position in full lines is produced by a quarter revolution of the shaft, and thus the arms are brought into position to bring the die members into the acting position shown in Fig. 4 twice

115 during a complete rotation of the shaft 6, the arms being in one position of retraction at the commencement of the revolution of the shaft, and being in the other position of protraction at the finish of half of said revo-

120 lution.

It is, of course, understood that the arm 17 is an anchored arm, being held against rectilinear movement by its securance between the forked end of the bar 20, and

125 that the arm 16 is the only member which is capable of rectilinear movement, and this arm is connected to the plate or bar 21. Thus, as the head 14 is moved back and forth by the operation of the eccentric, the

130

rectilinear movement imparted to the arm 16 will be augmented because of the anchorage of the arm 17, since such anchorage will tend to rock the link 13 carrying the head about its pivotal connection with the rod 9. Consequently, a greater degree of movement will be imparted to the bar 21 than would be manifest by the simple moving of the end of the arm from its central position to its position of extreme throw.

The bar 21 will be guided in its movements by the bars 24 and by the female die members, and in practice some means would be provided, as, for instance, a plate (not shown) to prevent movement of the bar carrying the male die member away from the bars carrying the female die members. This plate would be secured to opposite faces of the bars from that to which the female die members are secured; or the device may be so positioned that a portion of the machine with which the device is being used will act in the same capacity as would these plates.

I claim:

1. In a device for crimping wire fencing, the combination of male and female crimping members, a power driven eccentric, toggle mechanism operatively connected, to the male crimping member, a bar between the eccentric and toggle mechanism, means for maintaining said bar in a rectilinear line of travel, a link member adjustably secured to the eccentric and pivotally secured to the bar, a link member adjustably secured to the toggle mechanism and pivotally secured to the bar, the adjustable connections of the link members constituting means for adjusting the normal relation of all the male and female die members, substantially as described.

2. A device for crimping woven wire fencing, comprising male and female crimping members, a power driven eccentric, toggle mechanism operatively connected to the male crimping member, a bar between said eccentric and toggle mechanism, means for guiding said bar to maintain it in a rectilinear path of travel, a link member adjustably secured to the eccentric and pivotally secured to the bar, a link member adjustably secured to the toggle mechanism and pivotally secured to the bar, the adjustable connections of the link members constituting means for adjusting the normal relation of

all the male and female crimping members, and a framework for supporting the crimping mechanism, and operating means therefor, substantially as described.

3. In a device for crimping wire fencing, the combination of male and female crimping members, a support for the male crimping members, a support for the female crimping members, one of said sets of members being adjustably mounted on its support whereby an independent adjustment of any selected set of crimping mechanism may be effected, a power driven eccentric, toggle mechanism operatively connected to the male crimping members, a bar between the eccentric and toggle mechanism, means for maintaining said bar in a rectilinear line of travel, a link member adjustably secured to the eccentric and pivotally secured to the bar, a link member adjustably secured to the toggle mechanism and pivotally secured to the bar, the adjustable connections of the link members constituting means for adjusting the normal relation of all the male and female die members, substantially as described.

4. A device for crimping woven wire fencing, consisting of male and female crimping members, a support for the male crimping members, a support for the female crimping members, one of said sets of members being adjustably mounted on its support, whereby an independent adjustment of any selected set of crimping members may be effected, a power driven eccentric, toggle mechanism operatively secured to the male crimping member, a bar between the eccentric and toggle mechanism, means for guiding said bar to maintain it in a rectilinear path of travel, a link member adjustably secured to the eccentric and pivotally secured to the bar, a link mechanism adjustably secured to the toggle mechanism and pivotally secured to the bar, the adjustable connections of the link members constituting means for adjusting the normal relation of all the male and female crimping members, and a framework for supporting the crimping mechanism, and operating means therefor, substantially as described.

FRANK H. NULLMEYER.

Witnesses:

GUS E. WINFIELD,
W. H. WILSON.