

April 23, 1929.

J. W. FREE

1,709,908

TIE WIRE INSERTING AND CRIMPING TOOL

Filed May 28, 1926

2 Sheets-Sheet 1

Fig. 2.

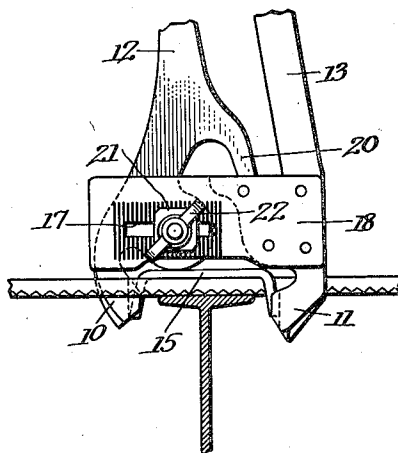


Fig. 1.

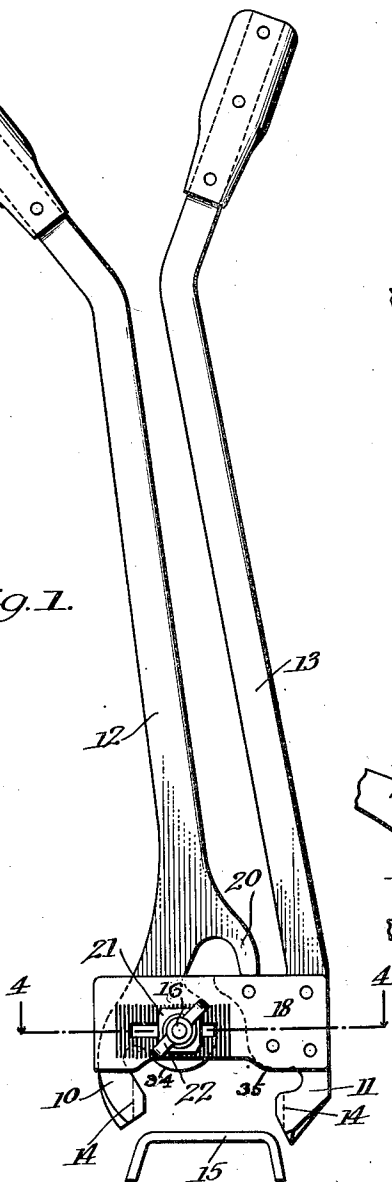
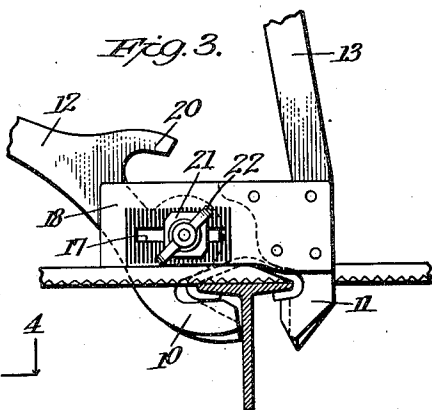


Fig. 3.



Inventor

John W. Free.

By *Emery, Bortle, Janney & Vanney*

his Attorneys

April 23, 1929.

J. W. FREE

1,709,908

TIE WIRE INSERTING AND CRIMPING TOOL

Filed May 28, 1926

2 Sheets-Sheet 2

Fig. 4.

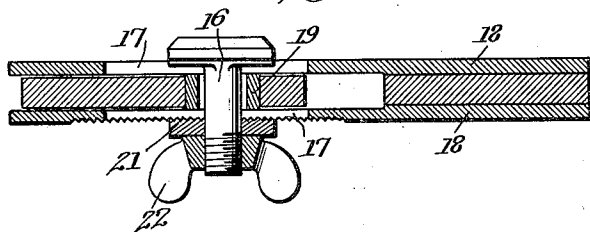


Fig. 5.

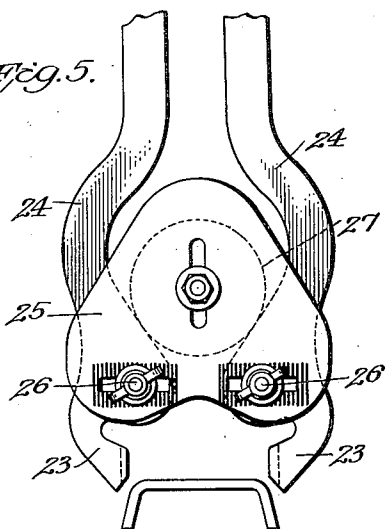


Fig. 6.

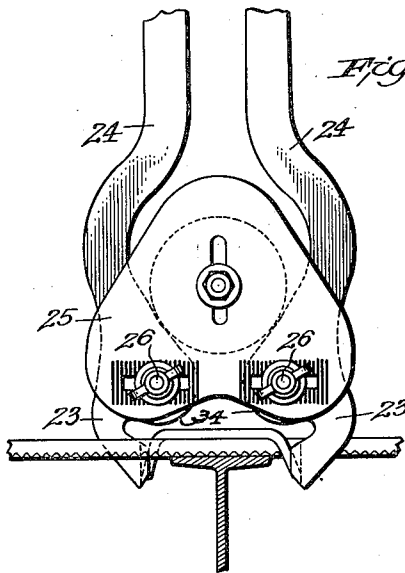


Fig. 7.

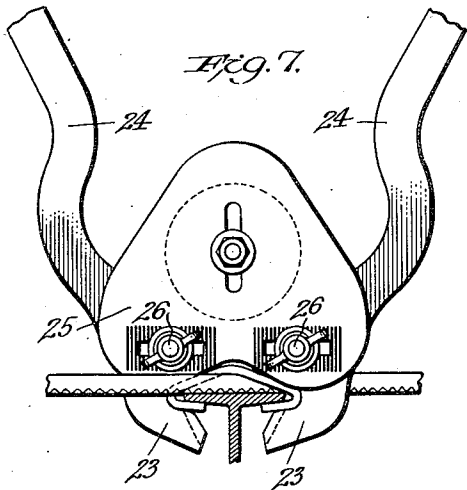
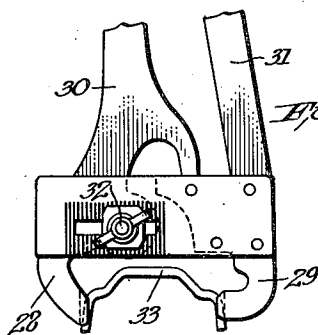


Fig. 8.



Inventor

John W. Free,

By Emory, Booth, Jolley & Warner

Attorneys

UNITED STATES PATENT OFFICE.

JOHN W. FREE, OF WOODLAWN BOROUGH, PENNSYLVANIA, ASSIGNOR TO JONES & LAUGHLIN STEEL CORPORATION, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

TIE-WIRE INSERTING AND CRIMPING TOOL.

Application filed May 28, 1926. Serial No. 112,317.

This invention relates to tools for placing and crimping tie wires, for attaching reinforcement for concrete slabs, expanded metal lathing or centering material of sheet like form, to metal beams or studs, and aims to lessen the time required for placing and crimping the tie wires and to improve the strength and security of the fastening.

The invention comprises a hand tool of the pivoted jaw type having two jaws preferably adjustable and adapted to receive a tie wire, and if necessary to punch through the material to insert the ends of the wire in position to be crimped under the edges of the adjacent flange of a beam or stud, as hereinafter described.

In the accompanying drawings, wherein various types of implement are shown in order to illustrate the invention,

Fig. 1 is a side view of a crimping tool ready to receive a tie wire for inserting it in place in the structure;

Fig. 2 is a fragmentary view of the tool and tie wire after inserting the ends of the latter through the sheet material ready for crimping them under the edges of the flanges of a supporting beam;

Fig. 3 is a view similar to Fig. 2 showing the tie crimped in place;

Fig. 4 is an enlarged cross-section through the tool on the line 4-4 in Fig. 1;

Figs. 5, 6 and 7 are fragmentary views similar to Figs. 1, 2 and 3 showing a modified form of crimping tool; and

Fig. 8 is a fragmentary view similar to Fig. 1 showing a modification of the jaws to receive a special form of tie wire for securing battens or strips used for supporting plasterboard or other wall or ceiling material.

In the form of crimping tool shown in Figs. 1 to 4, inclusive, there are two jaws 10, 11, which are mounted on the ends of suitable handle or lever members 12, 13, the movable jaw 10 being on the pivoted lever 12 and the stationary jaw 11 being on the fixed lever 13. The jaws are pointed, so as more readily to penetrate the sheet like lathing or centering material, and are provided with lengthwise grooves 14 on their inner sides to receive the ends of the shallow U-shaped tie wires 15, so that the latter may be grasped between the jaws and thereby forced through the material without difficulty. The

jaws are hook shaped forming recesses on their inner sides to assist in bending the ends of the wire to engage under the edges of the adjacent flange when brought towards each other by separating the handles 12, 13.

The jaws are pivotally secured together by means of an adjustable pivot bolt 16 (see Fig. 4) which is transversely arranged in alining slots 17 in the side plates 18 secured to the stationary handle member 13. The bolt is provided with a bushing 19, which is disposed in the space between the side plates 18, and the movable handle member 12 is pivoted on the bushing, being somewhat thinner than the length of the bushing so that the latter may be tightly clamped between the side plates by the securing bolt 16 without clamping the movable handle member. A stop 20 on the movable lever is adapted to engage a convenient portion of the stationary lever or side plates to prevent the two levers from being brought too near together to hold the jaws parallel.

Suitable means may be provided for holding the bolt in adjusted position, that illustrated consisting of a washer 21 and thumb nut 22, the inner side of the washer being serrated to engage parallel grooves on the outer side of the adjacent side plate 18. The head of the bolt 16 may conveniently be formed with a rib or key fitting in the adjacent slot to hold the bolt against rotation.

In the use of the device illustrated in Figs. 1 to 4, inclusive, the jaws are adjusted to span the width of the supporting beam or stud in the closest position of the levers, and a tie member 15 is inserted in the grooves between the jaws. The jaws, carrying the tie wire, may then be forced straight through the sheet material by means of the handles, the points of penetration being selected to straddle the adjacent flange of the support, as shown in Fig. 2. By separating the handles, the movable jaw is forced under the flange to crimp the adjacent end of the tie wire under it and to draw the crimping tool and fixed jaw toward the beam and hook the fixed jaw under the opposite edge of the flange, thereby crimping both ends of the tie wire under the opposite edges of the flange, as shown in Fig. 3, the recesses in the jaws being shaped to embrace the tie

wire and flange with this end in view. The hub portion 34 of the movable jaw and corresponding inner shoulder 35 of the fixed jaw act during this operation to force the body or bight of the tie tightly against the sheet material to make a firm fastening. The crimping tool may readily be disengaged and withdrawn by bringing the handles together.

10 In the form of device illustrated in Figs. 5, 6 and 7, both jaws 23 are movable, being carried on levers 24 pivoted between the side plates 25 by means of adjustable bolts 26. An adjustable stop 27 is provided for preventing the handles from being brought too close together. The stop 27 also centers the side plates 25 and brings the two jaws 23 in line with each other when the handles are brought against the stop. The stop 27 and pivot bolts 26 may be adjusted in the slots in the side plates so as to cause the jaws to be parallel and the proper distance apart when the handles are together for any size of beam likely to be encountered in the type of construction for which the invention is particularly intended.

The device having one immovable handle and stationary jaw (shown in Figs. 1 to 4, inclusive) is susceptible of use in locations near walls and obstructions where the type having two movable jaws (shown in Figs. 5, 6 and 7) could not be used because of lack of room for movement of one of the handle members.

35 The modified form of tool shown in Fig. 8 has a movable jaw 28 and a fixed jaw 29 mounted on movable and stationary handle members 30, 31, similarly to the tool shown in Figs. 1 to 4, inclusive, and is likewise provided with a pivot bolt 32 or other means for adjusting the width of the space between the jaws. The tie wire 33 is of a special form adapted to the material with which it is to be used, and the jaws are not pointed, as it is not necessary to punch through the sheet material with this type of construction.

It is obvious that the tools illustrating the

invention may be considerably modified for special purposes, and the invention is not restricted to the illustrative forms shown.

What I claim and desire to secure by Letters Patent is as follows:

1. A tool for positioning tie-wires through expanded metal lathing or supporting material, and crimping them to flanged supports, comprising a pair of relatively movable, normally parallel jaw members, at least one of which is pivotally supported with respect to the other, means for adjustably positioning the jaw members toward or from each other whereby to accommodate tie-wires of various size, said pivoted jaw member being formed with a cam portion in the region of its hub, merging into a recess between the cam portion and end of the jaw, whereby as the jaw members are contracted the tie-wire will be forced tightly against the lathing or material by the cam portion and the ends thereof crimped under the flanges of the support.

2. A tool for positioning tie wires through expanded metal lathing or penetrable supporting material and crimping them to flanged supports, comprising a pair of relatively movable jaw members having pointed ends and tie wire receiving grooves in their jaw faces, said jaw members being connected by an adjustable pivot whereby the distance between the jaws may be adjusted to accommodate tie wires of various sizes, handles for said jaws normally extending parallel to each other for inserting the tie wire and being separable to cause the jaws to approach each other, said jaws each having an inner cam portion at its end adjacent to the pivot and an outer cam portion adjacent to the jaw face and a recess between said cam portions, whereby as the handles are separated the tie wire will be forced tightly against the lathing or material and the ends thereof crimped under the flanged support by said cam portions.

In testimony whereof, I have signed my name to this specification.

JOHN W. FREE.