A. H. CAIN.

HOSE BANDING TOOL.

APPLICATION FILED JUNE 5, 1913.

1,093,910. Patented Apr. 21, 1914.

Fig. 1.

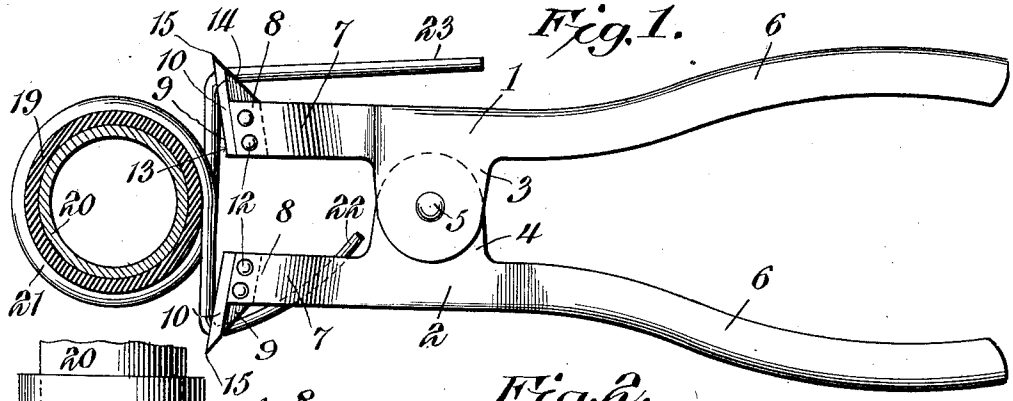


Fig. 2.

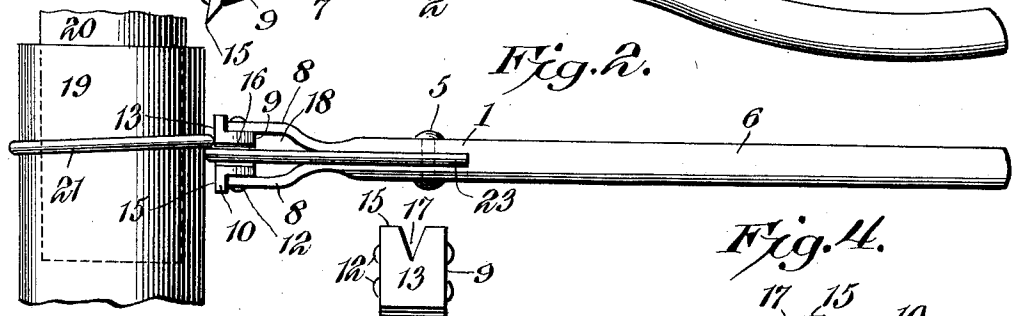


Fig. 3.

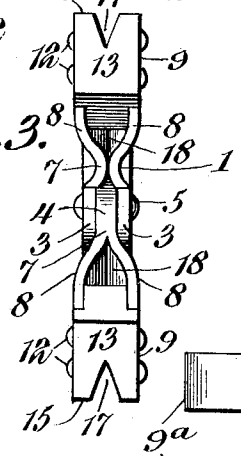


Fig. 4.

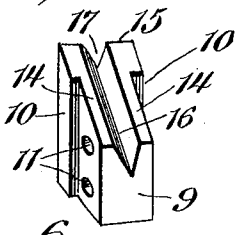


Fig. 5.

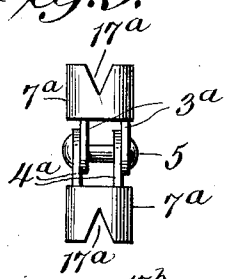


Fig. 6.

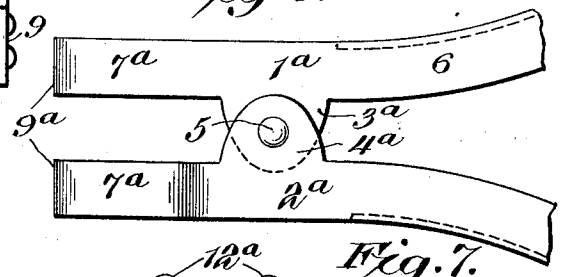


Fig. 8.

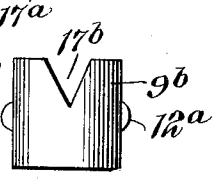
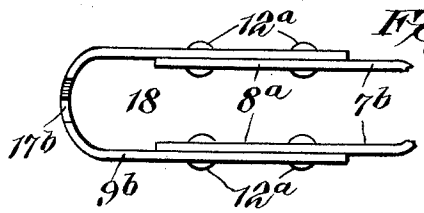


Fig. 7.



WITNESSES

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UNITED STATES PATENT OFFICE.

ALBERT HENLEY CAIN, OF ROODHOUSE, ILLINOIS.

HOSE-BANDING TOOL.

1,093,910. Specification of Letters Patent. Patented Apr. 21, 1914.

Application filed June 5, 1913. Serial No. 771,934.

To all whom it may concern:

Be it known that I, ALBERT HENLEY CAIN, a citizen of the United States, residing at Roodhouse, in the county of Greene and State of Illinois, have invented a new and useful Hose-Banding Tool, of which the following is a specification.

This invention has reference to improvements in tools for applying bands to hose for clamping the hose to some other structure, as a coupling, or a nozzle, or a pipe, and its object is to provide a simple and easily manipulated tool whereby the strand of wire may be caused to tightly encircle the hose, and may then be formed into a holding twist.

The invention comprises a tool formed of two members jointed together, corresponding ends of the two members constituting handles, and the other ends of the two members being formed to engage and hold the strand or piece of wire while being applied to the hose, provision being made for tightly gripping the wire and holding one end of the wire firmly in position during the operation of applying the band formed of the wire.

The invention will be best understood from a consideration of the following detailed description, taken in connection with the accompanying drawings forming a part of this specification with the further understanding that while the drawings show a practical form of the invention the latter is not confined to any strict conformity with the showing of the drawings but may be changed and modified so long as such changes and modifications mark no material departure from the salient features of the invention.

In the drawings:—Figure 1 is a face view of the tool of the present invention in operative relation to a hose and showing the latter in cross section. Fig. 2 is an edge view of the tool and hose of Fig. 1 as seen from above. Fig. 3 is an end view of the head portion of the tool. Fig. 4 is a perspective view of one of the wire engaging blocks or jaws at the head end of the tool. Fig. 5 is a face view of a tool embodying the invention but differing in some particulars from the form shown in Fig. 1. Fig. 6 is an end view of the head or jaw portion of the tool shown in Fig. 5. Fig. 7 is an edge view of one of the heads or jaws of the tool which may be constructed somewhat differently from the showing of Fig. 5. Fig. 8 is an end view of the jaw of Fig. 7.

Referring to Figs. 1, 2, 3 and 4, there are shown two members 1 and 2, which may be substantially alike, with wings 3 and 4, respectively, at an intermediate point and arranged to enter one between the others to be united by a pivot bolt or rivet 5 so that the two members 1 and 2 are joined after the manner of pliers. Each member 1 and 2 has a handle extension 6 on one side of the pivot and a head or jaw 7 on the other side of the pivot. While the members 1 and 2 may be constructed in any suitable manner, it is preferable to make them of sheet metal bent or stamped into appropriate shape, and the jaws 7 are expanded to form tongues 8 between which are lodged blocks 9 each formed with a side flange 10 against which the tongues 8 may abut, while the body portion of the block is embraced by the tongues, and through the block and the corresponding portion of the tongues are one or more holes 11 for the passage of a corresponding number of pivots 12. The blocks 9 are long enough to project laterally from the respective jaw 7 in a direction remote from the hinge connections 3 and 4 and the end faces 13 of the blocks, that is, the faces remote from the hinge connection are arranged at a suitable bevel to the length of the respective body member 1 or 2, while those edges of each block indicated at 14, and which because they are the most remote one from the other may be termed the outer edges, slope rather sharply toward the respective body member, so that the extremities of the blocks which are farthest separated one from the other are each in the form of a comparatively acute nose 15. From this nose along the center line of the face 14 there is produced a groove 16 which is shown as V-shape and quite deep. This groove opens into the face 13 there forming a V-shaped notch 17.

The structure shown in Figs. 1 to 4 is an operative and desirable structure, but may be simplified without sacrifice of certain advantages as will appear from the showing of Figs. 5 to 8. In such last-named structures there are body members 1^a and 2^a each formed with tongues or wings 3^a and 4^a, respectively, of substantially identical form, so that the two body members 1^a and 2^a may be made by a single set of dies, and the wings 3^a and 4^a will fit together in a manner to be traversed by a rivet or other pivot member 5 to form the hinge. The

body members have handle extensions 6, as in the structure shown in Fig. 1, and are continued to the other side of the pivot 5 in the form of jaws 7^a which may be made in one piece with the body members and terminate in an end portion 9^a formed with a notch 17^a, thus replacing the block 9 of the form shown in Fig. 1. It is not necessary that the jaws 7^a have the part provided with the notch 17^a in one piece therewith, for in the structure shown in Figs. 7 and 8 there is shown a jaw member 7^b having tongues 8^a and a U-shaped member 9^b formed with a notch 17^b and straddling the wings 8^a and secured thereto by rivets 12^a. The several examples of the different constructions which may be employed are sufficient to indicate the wide range of construction which may be followed, while still retaining the advantageous features of the invention. The wings 8 or 8^a and the sides of each jaw 7^a of the structure shown in Figs. 5 and 6 are so related that a passage 18 is defined between them, and this passage extends transversely of and completely through the respective jaw 7, or 7^a or 7^b, as the case may be and is also extended or enlarged lengthwise of the tool.

In the drawings there is indicated a section of hose 19, the showing being schematic without any attempt to illustrate structure, and the hose may be considered as such as is commonly employed for conducting liquids or steam. Entering one end of the section 19 of hose is a pipe 20 which may be considered as indicative of any suitable structure to which the hose is to be secured, so that the pipe 20 may represent a portion of a coupling, or of a nozzle or of ordinary pipe, to which it is desired to connect the hose.

The tool of the present invention is designed to utilize wire for the purpose of banding the hose, and in the drawings such wire is indicated at 21. The wire is assumed to be of appropriate gage and may or may not be cut into short lengths. The wire 21 is wound one or more times about the hose where the latter is entered by the pipe 20, so as to leave free ends 22, 23. The tool is so manipulated that the jaws 7 are caused to approach, this being accomplished by moving the handles 6 apart, since each member 1 and 2 is wholly on one side or the other of the hinge pivot 5. One free end of the wire, say, the end 22, is lodged in a notch 17 of a respective one of the blocks 9, or 17^a of a jaw end 9^a, or 17^b of the jaw end 9^b, as the case may be, and is also passed through the respective one of the passages 18, the enlarging of which lengthwise of the tool greatly facilitates both the introduction of the wire into and its removal from the passage because the latter is of much greater cross-sectional area than the wire. The other end 23 of the wire is lodged in the notch of the other jaw, the wire then being bent at a considerable angle. In the form shown in Fig. 1, the end 22 may be extended through the respective passage 18 toward the other head 7 because of the groove 16 in the bevel face 14. Now, by causing the handle ends 6 to approach the jaws 7 are moved one away from the other, the ends 22 and 23 of the wire being drawn in opposite directions with relation to the hose 19, thus drawing the wire tightly about the hose to any desired extent, the engagement of the wire ends in the V-shaped notches preventing the wire from slipping. When the loop of wire surrounding the hose has been drawn as tightly as desired, the tool is moved about its longitudinal axis which at this time may be substantially perpendicular to the longitudinal axis of the hose, and the ends of the wire are brought into side engagement and the wire is formed into one or more twists without loosening up on the binding of the wire on the hose, but the wire necessary to form the twists is provided by a lessening of the pressure upon the handle ends 6, thus allowing the jaws 7 to approach. The wire loop will, of course, hold its place after the wire has been twisted together, and then the end 23 may be bent out of the corresponding notch, whereupon the tool is easily moved to dislodge the wire end 22 from the corresponding notch and withdraw it from the corresponding passage 18. The ends of the wire may be twisted off by the act of binding the wire about the hose, or these ends may be afterward cut off by suitable cutting pliers.

The tool is of extremely simple structure and may follow the general lines shown in the drawings and when made of sheet metal, such as sheet steel bent into shape, the tool may be very cheaply constructed. Of course, the parts may be otherwise shaped than shown and may be constructed of other materials than sheet metal, but these are all structural details which depend upon contingencies of manufacture, and the cost of production, and do not in themselves effect the present invention, except that the structure of the present invention lends itself particularly to low cost of manufacture and therefore renders the invention particularly adapted to the class of work for which it is intended. In the forms shown it is advantageous to have the jaws as short as practicable in order that their movements may not be too great. Furthermore, the tool may be employed for other purposes than banding hose.

What is claimed is:—

1. A hose banding tool comprising two members hinged together and each formed at one end into a handle and at the other into a jaw portion, each jaw portion having

an engaging member formed with a notch located at a point remote from that of the other member and also having a face directed toward the handle portion and formed with a longitudinal groove, and said jaw portion between the grooved part of the engaging member and the hinge having a passage transversely therethrough enlarged lengthwise of the tool and connecting with the inner end of the longitudinal groove.

2. A tool for the purpose described, comprising two members hinged together and each located on its respective side of the hinge connection, each of the two members comprising a handle portion and a jaw portion, with the latter having a part extending away from the jaw portion of the other member and terminating in a nose laterally outstanding from the jaw portion and from thence on the outer side beveled toward the handle portion to which the jaw portion belongs, said beveled side being provided with a longitudinal groove opening through the nose to form a notch, and the jaw portion between the grooved part and the hinge having a passage transversely therethrough enlarged in the direction of the length of the tool, the groove having the end remote from the notch opening into said passage.

3. A tool for the purpose described, comprising two members hinged together, and each comprising a handle portion on one side of the hinge and a jaw portion on the other side of the hinge, each jaw portion having a part extended in a direction away from the other jaw portion and terminating in a nose and from thence on the side toward the hinge being beveled toward the respective jaw member, said beveled portion having a longitudinal groove therein opening through the nose to form a notch, and the jaw portion between the grooved part and the hinge having a passage therethrough in line with the groove, those parts of the terminal portion of the jaw remote from the hinge being inclined from the inner end toward the nose.

4. A tool for the purpose described, comprising two members, each formed of a handle portion and a jaw portion, and intermediately shaped to coact to form a hinge with both parts of each member on the same side of the hinge, the jaw end of each member being divided and expanded, and a block secured in the divided end of each jaw member, said block having the face remote from the hinge inclined outwardly and terminating in a nose and from thence beveled inwardly toward the jaw member, the beveled face being provided with a V-shaped groove opening through the nose to form a V-shaped notch and leading to the space between the two sides of the divided jaw member.

5. A hose banding tool comprising two members hinged together, each member having a jaw with a notch opening on that side of the jaw remote from the other jaw and each jaw having a passage extending transversely therethrough and enlarged in a direction lengthwise of the tool.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ALBERT HENLEY CAIN.

Witnesses:
J. R. McCONATHY,
J. V. HAWK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."