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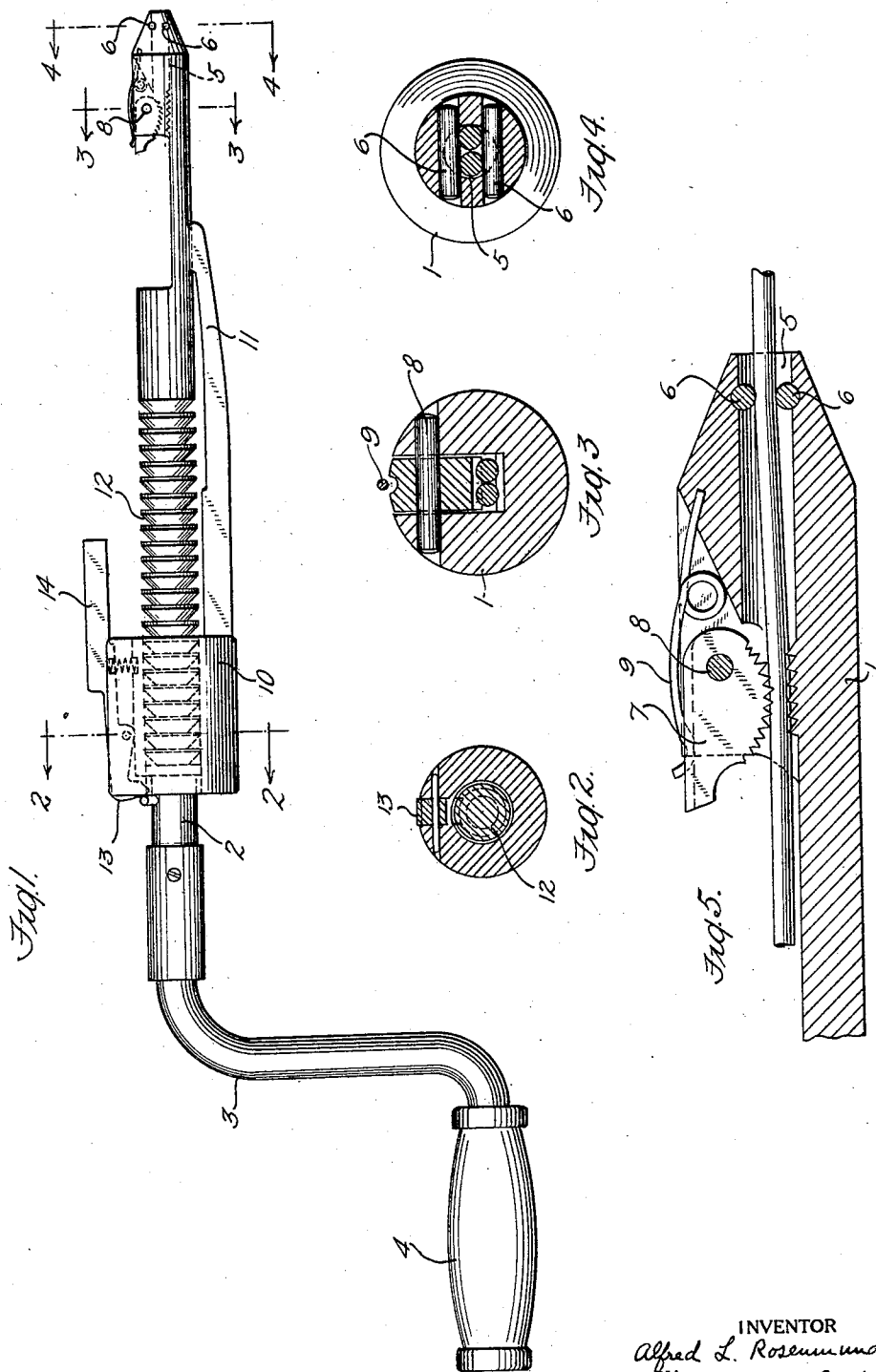
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1,832,324

WIRE JOINING TOOL AND METHOD

Filed Sept. 21, 1929

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

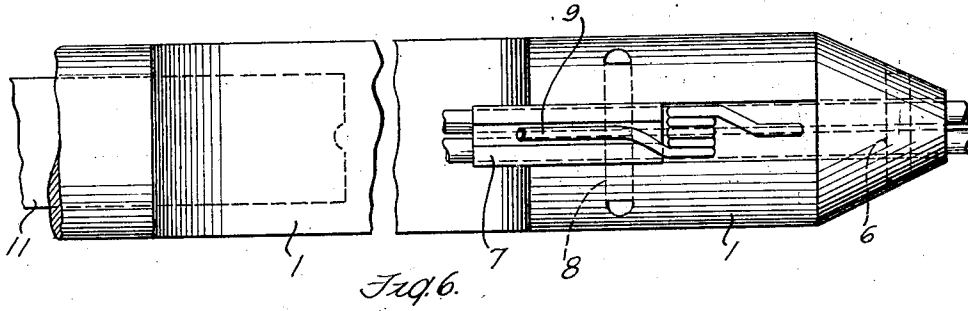
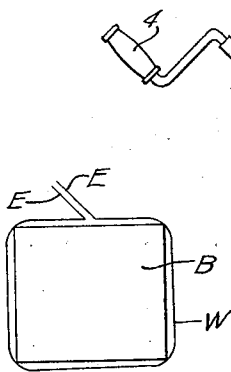
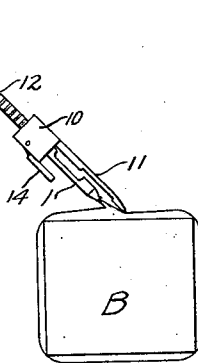


Fig. 8

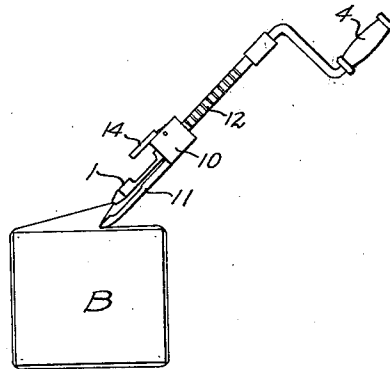


Fig. 9

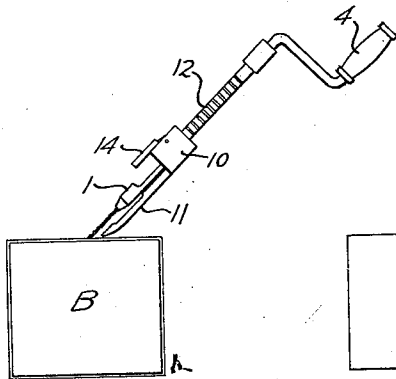


Fig. 10

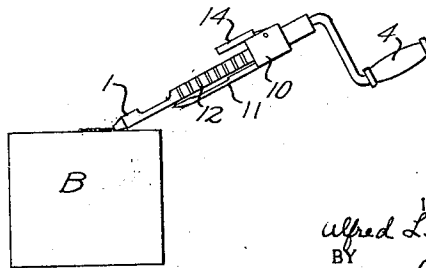


Fig. 11.

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WIRE JOINING TOOL AND METHOD

Application filed September 21, 1929. Serial No. 394,149.

This invention relates to wire joining and particularly to tools for joining the ends of wires about boxes, bales, bundles, packages and the like.

5 Among other objects the invention is intended to provide an efficient and inexpensive tool for tensioning a wire binding about a box, bale, bundle, package or the like, and intertwisting the ends of the wire; and particularly to provide a readily operable hand tool of the type referred to.

Another object is to provide an efficient method of joining wires.

In the drawings:

15 Fig. 1 is a side elevation of a hand tool embodying the invention.

Fig. 2 is a sectional view taken on the line 2-2 of Fig. 1.

20 Fig. 3 is an enlarged sectional view taken on the line 3-3 of Fig. 1.

Fig. 4 is an enlarged section view taken on the line 4-4 of Fig. 1.

Fig. 5 is an enlarged vertical section of the nose of the tool.

25 Fig. 6 is an enlarged top plan view of the nose of the tool.

30 Figs. 7, 8, 9, 10 and 11 are diagrammatic views showing how the tool is employed to tension the wire about a box and intertwist the ends of the wire.

Fig. 12 is an enlarged view of a twist produced by the tool.

35 The illustrative tool comprises wire gripping, tensioning and twisting devices adapted to grip the ends of a box or package encircling wire, tension the wire about the box or package, and intertwist the ends of the wire.

40 The wire gripping and twisting devices are located in the nose of the tool, which is identified in the drawings by the reference numeral 1. The nose 1 is formed on the end of a twisting rod 2 which is rigidly affixed to a brace 3 provided with a handle 4.

45 The nose 1 is provided with a bore 5 large enough to receive the two wire ends to be

gripped and intertwisted. Near its outer extremity the nose is provided with two wire twisting pins 6, extending crosswise the bore and spaced apart a distance slightly in excess of the diameter of one wire so that the two wire ends are held side by side between the pins 6.

50 A short distance back of the pins 6 the nose 1 is slotted at one side to receive a wire gripping device 7, which in the illustrative tool takes the form of a rounded knurled plate 7 eccentrically pivoted on a pin 8 to permit the ready insertion of the wire ends into the bore 5 and past the plate 7 while resisting withdrawal of the wire ends. Plate 7 is preferably pressed downward by a spring 9 and the surface of the bore 5 beneath plate 7 is preferably knurled to cooperate with the knurled surface of the plate 7 in retaining the wires in the bore. The pivotal arrangement of the plate 7 is such that the plate is easily raised by the incoming wire ends but is drawn tightly downward against the wires when the wires are moved in the opposite direction.

65 Thus it will be seen that provision is made to receive in the nose of the tool two wire ends and to hold them against withdrawal during the wire tensioning and twisting operations now to be described.

70 Rotatably and slidably mounted on the rod 2 is a cylindrical member 10 carrying an arm 11 lying adjacent to and parallel with the rod 2. As the arm 11 functions to tension the wire binding in the manner hereinafter described it will be referred to as the tensioning arm. The length of arm 11 is such that by adjustment of cylindrical member 10 lengthwise rod 2 the end of arm 11 may terminate short of or extend beyond the nose of the tool. To facilitate adjustment of the member 10 and arm 11 lengthwise the rod 2, the rod is provided with circular ratchet teeth 12, which cooperate with a spring pressed pawl 13 carried by the member 10; the arrangement being such that member 10 and 80 90

arm 11 may be readily moved toward the nose of the tool, while movement in the opposite direction is prevented by engagement of pawl 13 with ratchet teeth 12. Pawl 13 is provided with a handle 14 which, when pressed downward, raises pawl 13 out of engagement with teeth 12 and permits member 10 and arm 11 to be retracted from the nose of the tool.

The manner of operating the tool is best shown in Figs. 7 to 11 inclusive. In Fig. 7 is shown a box B loosely encircled by a binding wire W, the ends E of which are to be gripped and intertwisted by the tool. With the arm 11 retracted, the ends E are inserted in the bore 5 between the pins 6 and under the plate 7. With the tool held in the position shown in Fig. 8, the tensioning arm 11 is advanced beyond the end of the nose 1 and into contact with the body of the wire W. The tool is then swung in an arc about the extremity of arm 11 as the pivot point to the position shown in Fig. 9. During this movement the ends E of the wire are firmly held by the plate 7 against withdrawal from the nose of the tool and the movement of the nose about the pivot point provided by the extremity of the arm 11 tensions the binding about the box. The brace 3 is then rotated a number of times to intertwist the wire ends between the box and the nose of the tool, the pins 6 functioning to grip the wire ends during rotation of the ends of the tool. After the wire ends have been intertwisted between the box and the nose of the tool, member 10 and arm 11 are retracted by pressing the handle 14 of pawl 13. The tool is then lowered to the position shown in Fig. 11 and brace 3 is again rotated a number of times to tighten and complete the joinder of the wire ends. The additional rotations of the ends of the wire when in the position shown in Fig. 11 draws one of the body wires wholly or partially over the intertwisted ends, as shown in Fig. 12, and causes the pins 6 to sever or ring off the wire ends at the point where they are gripped by the pins 6. This twisting action is described in detail in my copending application Serial No. 357,431, filed April 23, 1929, reference to which is hereby made.

Among other advantages the invention provides an efficient and inexpensive tool for tensioning and joining wires about boxes, packages, bundles and the like, and an efficient method for joining the ends of package encircling binders.

I claim:

1. In a tool for joining the ends of a package binder the combination of a rotatable member to grip and twist the ends of a package wire, and means to tension the binder about the package prior to the twisting operation comprising a tensioning arm to engage the wire a distance from the gripping

point and about the end of which arm the tool may pivot; whereby movement of the gripping and twisting member about the end of the tensioning arm as a center will tension the wire about the package, and rotation of the gripping and twisting member will intertwist the wire ends between the point of gripping and the package.

2. In a tool for joining the ends of a package binder the combination of a gripping member to grip the ends of a package binder, and means to tension the binder about the package prior to the twisting operation comprising a tensioning arm to engage and hold the binder a distance from the gripping member, whereby movement of the gripping member about the point of engagement as a center will tension the binder about the package.

3. In a tool for joining the ends of a package binder the combination of a rod provided near its extremity with devices for gripping the ends of a package binder, and a tensioning arm adjustable lengthwise said rod to engage the binder at variable distances from the gripping devices.

4. In a tool for joining the ends of a package binder the combination of a rotatable rod provided near its extremity with devices for gripping the ends of a package binder, and a tensioning arm adjustable lengthwise said rod to engage the binder at variable distances from the gripping devices, said rod being rotatable independently of said arm.

5. In a tool for joining the ends of a package binder the combination of a rod provided near its extremity with devices for gripping the ends of a package binder, and means to tension the binder about the package prior to the twisting operation comprising a tensioning arm extending beyond the extremity of said rod to engage the binder a distance from the gripping devices.

6. In a tool for joining the ends of a package binder the combination of a rotatable rod provided near its extremity with devices for gripping the ends of a package binder, and means to tension the binder about the package prior to the twisting operation comprising a tensioning arm extending beyond the extremity of said rod to engage the binder a distance from the gripping devices, said rod being rotatable independently of said arm.

7. The method of joining the ends of a package binder which is characterized by gripping the binder ends adjacent the package, engaging the body of the wire a distance from the gripping point, swinging the gripped ends about the engaging point as a center to tension the wire about the package, and intertwisting the gripping ends between the gripping and engaging points.

8. The method of joining the ends of a package binder which is characterized by gripping the binder ends adjacent the pack-

age, holding the body of the binder against movement at a point spaced from the gripping point, swinging the gripped ends about the holding point as a center to tension the binder about the package, and intertwisting the binder ends between the gripping and holding points.

In testimony whereof, I have signed my name to this specification this 9th day of September, 1929.

ALFRED L. ROSENMUND.