To all whom it may concern:

Be it known that I, Paschall W. Smith, a citizen of the United States, and a resident of Seattle, county of King, and State of Washington, have invented certain new and useful Improvements in Wire-Working Tools, of which the following is a specification.

This invention relates to wire working tools, and has for its principal object, to provide a tool of this character which may be applied to one end of a roll of wire, and by means of which suitable lengths of the wire may be fed beyond the cutting jaws of the tool, the length so fed wrapped about the intersection of two rods (such for example as rods commonly used in the reinforcement of concrete), and the wire then tied and cut off by the tool.

Other objects will appear as the invention is more fully described in the following specification, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings, Figure 1 is a plan view substantially in central longitudinal section, with parts broken away. Fig. 2 is an edge wise view of Fig. 1, looking in the direction of the arrow. Fig. 3 is a view of the cutting end of the device partly in section. Fig. 4 is a fragmentary view of two intersecting rods, showing the wire after it has been looped around the rods and its ends twisted together and cut off.

Referring now more particularly to the drawings, reference numeral 1 designates one of the members of the device, and 2 designates the other member. These two members are of the form as plainly shown in Fig. 1, and are pivotally joined to each other by the bolt 3, so that the two members have a scissors-like action. The extreme right hand ends of both the said members are preferably circular in cross section, so as to form more conveniently shaped handles.

Both of the said members are hollow, as shown. Passing through the member 2, in the direction of its length, is the wire 4, one end of which is rolled or wound upon a spool, or coil, in the usual manner. The free end of the wire is led in through the opening 5, in the member 2, and thence along the interior of the said member, and passed between the lower end of the shoe 6 which is pivoted, at 7, to the small carriage 8, slidably mounted on the rod 9, which is fixed to the stud 10, projecting from the member 2. Between the said carriage and the stud 10 is the helical spring 11 which constantly urges the carriage toward the free end of the rod 9. The Shank of the shoe 6 is slotted, as shown, and through the said slot projects the pin 12, which is rigid with the member 1, so that when the right hand end, or handle, of the member 1 is moved away from the member 2, about the pivot 3, the toothed face of the shoe 6 is caused to grip the wire 4 and draw the same forward, and when the member 1 is returned to its position as shown in Fig. 2, the said shoe rides freely back along the wire 4, to its normal position. In this manner a quantity of the wire 4 equal in length to the movement of the shoe 6, may be fed out through the opening as shown through the screw cap 13 in the member 2, and, when the members 1 and 2 are closed, the end of the wire enters the corresponding central opening in the similar cap 14 in the member 1.

Adjacent the central opening in the cap 13 is the cutting jaw 15, which may be held in place by the block 16, or in any other approved manner.

Pivoted to the member 2, at 17, is the lever 18, the free end of which has a cutting edge, as shown, which cooperates with the cutting member 15. The opposite end of the said lever may be held in the position shown in Fig. 1, by means of the spring 20. Beneath the inner end of the said lever is one end of the trigger 21, pivoted at 22 to the member 2. The opposite end of the said trigger is pivoted at 22 to one end of the curved link 23, which extends around through the member 2, and is pivotally connected, at 24, to the shorter end of the bell-crank lever 25, pivoted upon the bolt 3, so that by pressing inwardly upon the free end of the lever the cutting edge of the lever 18 is caused to descend toward the cutting jaw 15 to cut off the wire when desired.

Adjacent the central opening through the cap 14, in the member 1, is the toothed block 26, which is firmly secured to the said member; and cooperating with the said block is one end of the toothed trigger 27, pivoted, at 28, to the member 1, the spring 29 holding the said trigger in its normal or gripping position.

Beneath the longer end of the trigger 27 is one end of the lever 30, pivoted at 31 to the member 1, and to whose shorter end is
pivotally connected one end of the link 32, the opposite end of which link is similarly connected, at 33, to the shorter end of the lever 34. By means of this arrangement of the parts mentioned, it is clear that, when the wire is projected through the central opening in the cap 13, as above fully described, the end of the wire so projected may be firmly gripped between the toothed block 26 and the toothed end of the lever 27, and that the pressing inward of the free end of the lever 34 will regulate the opening between the said block and the toothed end of the lever 27.

The operation of the device is as follows:—The handle ends of the members 1 and 2 are moved apart about their pivot 3, which, of course, causes their opposite ends to move apart correspondingly and causes the end of the wire 4 to project through the central opening of the cap 13, as already fully explained; the intersecting rods 33, or other such members to be tied, are placed between the now spread apart curved ends of the members 1 and 2, so that the joint of the intersecting rods which is about to be tied is in about the location indicated at A in Fig. 1; the said members are now returned to their positions as seen in the drawings, which causes the projecting end of the wire to be caught between the block 26 and the lever 27, as already explained; the curved ends of the members 1 and 2 are now again moved apart, which, of course draws a considerable length of wire through the member 2, it being kept in mind that, during the operation last described, the end of the wire 4 is caught between the lever 27 and the block 26 of the member 1 and there-

force moves with that member as it swings about its pivot 3, and that meanwhile the wire is free to slip through the other member. The operator now draws the device toward himself and in to the position as indicated by the dotted outline in Fig. 1; the device is then turned about its longitudinal axis one or more turns which twist the wire 4 firmly around the joint to be tied, as plainly seen in Fig. 4, and after which the wire is cut off, as also plainly seen in that figure.

While I have shown a particular form of embodiment of my invention, I am aware that many minor changes therein will readily suggest themselves to others skilled in the art without departing from the spirit and scope of my invention, and I, therefore, desire to avoid being limited to the exact embodiment hereinabove described and shown in the accompanying drawings.

Having described my invention, what I claim as new, and desire to protect by Letters Patent, is:

1. The combination in a wire working tool, of a pair of hollow members connected to each other in scissors-like relation, means for automatically feeding the wire along one of said members when they are being opened with respect to each other, means on the other member for gripping one end of the wire when the members are closed with respect to each other, and means on one of the members for cutting off the wire.

2. The combination in a wire working tool, of a pair of hollow members connected to each other in scissors-like relation, one of said members being adapted to receive the wire from a wire supply, means within the last-mentioned member which grips the wire as the members are being opened with respect to each other, and which rides freely along the wire when the said members are being moved in the opposite direction, whereby an end of the wire is fed beyond the end of that member, means within the other member for gripping the projected end of the wire when the members are closed, a pair of cutting jaws within one of said members which is adapted to cut the wire, a lever pivoted upon the pivot pin of the said members, and connections between the said lever and one of the said jaws.

3. The combination in a wire working tool, of a pair of hollow members connected to each other in scissors-like relation, each of said members being substantially semicircular at approximately one of the respective ends, so as to surround a joint to be tied when the said members are closed with respect to each other, a wire gripping device within one of the said members which is adapted to cause the feed of the wire when the said members are being opened with respect to each other, means within the other member which grips an end of the wire when the said members are closed and which holds that end of the wire against movement with the other member, so that when the said members are again opened a further feed of the wire occurs, and means upon one of the said members for cutting off the wire.

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Witnesses:

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