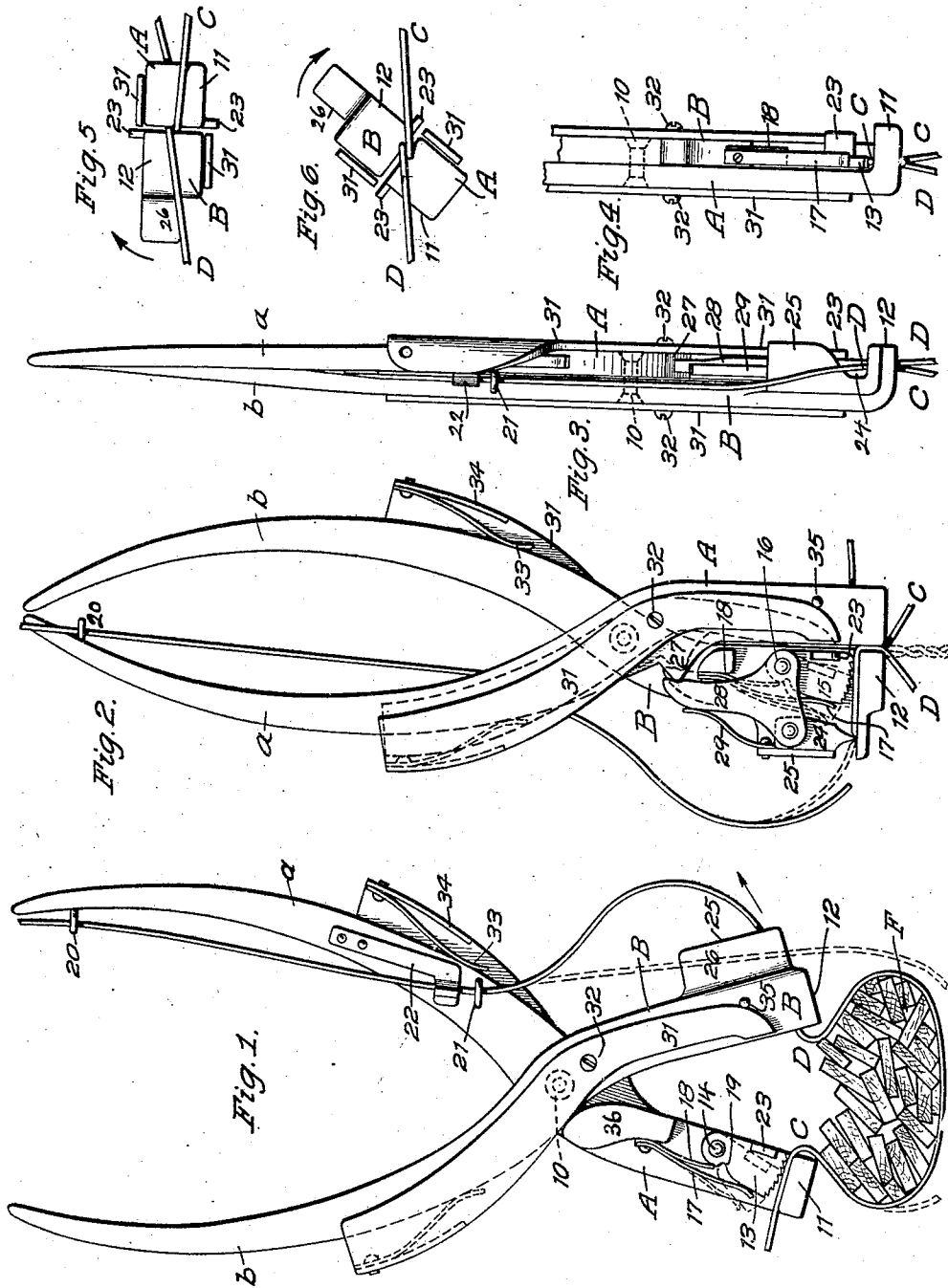


F. STEINKOENIG.
 WIRE TIE FORMING TOOL.
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1,304,620.

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Inventor:
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UNITED STATES PATENT OFFICE.

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WIRE-TIE-FORMING TOOL.

1,304,620.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FREDERICK STEINKOENIG, residing at Cincinnati, Hamilton county, State of Ohio, have invented a certain new and useful Wire-Tie-Forming Tool, of which the following is a clear, full, and exact description, attention being called to the drawing which accompanies this application and forms a part thereof.

This invention concerns a tool for forming wire ties used for tying packages, bundles, etc. and is intended particularly to serve for the purpose of forming the twisted joint whereby the two ends of the wire tie are to be connected to each other to close the tie.

The invention consists of the construction of the tool as described and pointed out in the claims and as illustrated in the accompanying drawing in which:

Figure 1. shows a side view of the tool as it appears at the beginning of its manipulation.

Fig. 2. shows the opposite side of the tool with the manipulation progressed to a point ready for starting formation of the twist.

Fig. 3. shows the tool as it appears when viewed from the right side as it is shown in Fig. 1 or from the left side as it is shown in Fig. 2.

Fig. 4. shows the tool as it appears when viewed from the left side in Fig. 1 or from the right side in Fig. 2.

Fig. 5. shows the lower end of the tool as it appears in Fig. 2.

Fig. 6. in a similar view shows the tool in a position with the manipulation progressed for the purpose of forming the twist.

The tool is of the plier type and consists of two lever handles, curved as shown and pivotally connected to each other between their ends.

Characters A and B designate the levers proper which at their free ends engage the wire and serve for twisting the same.

They are pivotally connected to each other at 10 and are extended beyond their pivotal connection where they form the complementary handles *a* and *b*.

Each lever is provided at its free end with a shoulder, numeral 11 designating the shoulder on lever A and numeral 12 designating the shoulder on lever B, said shoulders being on opposite sides of the tool and

projecting in opposite directions from the plane in which the lever handles move on each other in their pivotal manipulation.

A clamping dog 13 is hung to lever A above shoulder 11 by means of a pivot 14. A similar dog 15 is secured to lever B above shoulder 12 by means of a pivot 16.

Each of these dogs is provided with a serrated edge and actuated by a spring 17, whereby these dogs are pushed toward the shoulders above which they are positioned so as to cause them to engage the ends of the wire tie and to clamp them against said shoulders opposite them as shown in Figs. 1 and 2.

Normally however these dogs are above clamping position being held out of action by springs 18, 18 when bearing into notches 19, 19 on the dogs as shown in dotted lines in Fig. 1.

The wire used for the ties might be in pieces of given length for particular cases and to be affixed at their ends to the ends of levers A and B for closing the tie and for forming the twisted joint thereof.

A more practical way however is to take the wire from a reel supported at suitable height above the floor or a bench with the tool hanging to a part of unreeled wire.

For such purpose guides in form of eyelets 20 and 21 are provided on one of the lever handles and a clamping spring 22 is also provided under which the wire is passed and which bears with sufficient pressure against it, to prevent the tool from slipping off.

Under this arrangement the tool is used as follows:

Wire is pulled off the reel and through the tool until sufficient of it to form the tie is clear of the tool.

This stretch of wire is now passed around the bundle or package F to be tied as shown in dotted lines in Fig. 1 and the free end C of the wire is passed in over shoulder 11 as shown in Fig. 1 and dog 13 is pushed to the right by action on a thumb piece 23 on it whereby it is released from spring 18 and subjected to action of spring 17 which causes the serrated edge of the dog to impinge on the wire so as to clamp it against shoulder 11.

On account of lack of sufficient space, the

bundle is shown out of proportion and should appear larger.

The wire at D is now pulled up against bundle F and drawn over shoulder 12 on lever B and by action on it in the direction of the arrow (Fig. 1) as much of the slack as is possible to do by hand is taken out.

The wire is now held to the point to which it has been pulled by being attached to lever B, this being done by clamping the same against shoulder 12 by means of dog 15 above it as shown in Fig. 1, this dog being manipulated and held in a manner similar to the manipulation of dog 13 and by means of a similar thumb piece 23 on it.

While this is being done the tool is open, that is its levers are apart as shown in Fig. 1 so that when the tool is now closed as shown in Figs. 2 and 5, most or all of the slack still in the tie to be formed is taken out of the wire before the joint is made by twisting the wire portions C and D about each other as indicated in dotted lines in Fig. 2.

For the purpose of forming this twist, the tool is rotated, about itself as shown in Fig. 6 (note arrow) which shows the beginning of this part of the manipulation.

Preceding this twisting manipulation however and while the tool is being closed up as shown in Fig. 2 preparatory therefor, the wire beyond portion D which is to be one of the ends of the tie, is cut off by a cutter 24, thus severing the wire to be used for the tie from the reel wire, the latter springing away at the point of separation, note Fig. 2, said cutter moving against the wire and against a lateral extension of shoulder 12, it being also guided in its movement in a corner formed by a flange 25 and a lateral extension 26 of lever B.

This action of the cutter is produced by a cam 27 on lever A which, when the tool is being closed up as shown in Fig. 2, moves against the upper end of an angle lever 28 and forces the lower arm of the same which carries cutter 24 down against the wire.

This angle lever is pivoted to lever B and by preference pivot 16 which supports dog 15 is used for the purpose.

The co-acting members 27 and 28 are so arranged and shaped that the movement of the cutter for cutting is completed before the tool is entirely closed up.

When the tool is opened again as shown in Fig. 1, cam 27 tends to move away from the angle lever which is now moved in opposite direction by a spring 29 which may be attached to flange 25 and whereby the cutter is raised up from shoulder 12 so as to be out of the way when wire is to be passed in again for another tie.

After the twisted joint has been formed the tool is disengaged from the tied wire by releasing the wire ends C and D from the

dogs for which purpose these latter are pushed outward by action on thumb pieces 23 as shown in dotted lines in Figs. 1 and 2.

Ordinarily this cannot readily be done with the fingers because the wire ends stick rather tight between the dogs and the shoulders below them, the close engagement being due to the pull on the wire ends when the twist is being formed and which causes the serrated edges of the dogs to bite into the wire.

Therefore mechanical means are provided in the form of release levers 31, 31, one of which is pivotally mounted at 32 on the flat side of each lever handle.

The upper portions of these levers form handles and are held in position ready for operation by springs 33, 33 connected to flanges 34, 34 formed on these handles and positioned between these flanges on the handles and the edges of the lever handles.

The lower ends of these release levers terminate opposite the thumb pieces of the clamping dogs and normally occupy a position out of touch with them in which position they are held by springs 33, 33 and against stop pins 35, 35.

When the time comes for disengaging the tool from the completed wire tie, the hand which holds the tool simply grips also the upper ends of these release levers and by tightening the grip, said levers are compressed whereby their lower ends are caused to move against the thumb pieces as shown in dotted lines in Fig. 2 thereby releasing the dogs.

In either event this action on the dogs is of sufficient extent not to merely release them, but also to move them so that notches 19, 19 on them pass within action of springs 18, 18 permitting them to engage the dogs and to hold them thereby impositively out of the way so that the tool is always ready for insertion of the wire for the next tie to be formed.

A stop 36 is provided to limit the opening of the tool as shown in Fig. 1.

One of the bosses or projections provided on the levers as a means for attaching springs 17 and 18 which actuate the clamping dogs may also serve for this purpose.

Having described my invention I claim as new:

1. In a tool for forming wire ties, the combination of a pair of levers provided with handles and pivotally connected to each other between their ends, shoulders projecting from the free ends of these levers in opposite directions toward each other, and clamping dogs pivotally secured to opposite sides of said respective levers between said shoulders and the pivots of said levers, and adapted to co-act with said shoulders for the purpose of clamping the wire intended for the tie and to hold it while the tool is ro-

tated for the purpose of twisting the ends of the wire about each other to form a closing joint.

2. In a tool for forming wire ties, the combination of a pair of levers pivoted to each other intermediate of their ends, said levers having wire clamping means thereon at one of their ends, one of said levers provided with a cutting part arranged to cut the wire, a cutter lever pivoted to said last-named lever for operating said cutting part, the other of said levers provided with a part coacting with said cutter-lever for cutting said wire during the movement of said ends of said levers to cause coaction between said clamping means for clamping said wires.

3. In a tool for forming wire ties, the combination of a pair of levers pivoted to each other intermediate of their ends and provided with handles at one of their ends and coacting clamping shoulders at the other of their ends, a clamping jaw pivoted to each of said levers coacting with the shoulder thereon for clamping the wire by the pull of said wire, independent levers pivoted to the tool, said pivoted jaws and said last-named levers provided with co-acting shoulders, springs for normally causing separation between said shoulders, and said independent levers provided with handles nearer the pivot of said first-named levers than the handles of said first-named levers, and arranged whereby to move said independent levers independently of said first-named levers to release said clamping jaws from the wire prior to separating movement of said first-named levers.

4. In a tool for forming wire ties, the combination of a pair of levers pivoted to

each other intermediate of their ends and provided with handles at one of their ends and coacting clamping shoulders at the other of their ends, a clamping jaw pivoted to each of said levers coacting with the shoulder thereon for clamping the wire by the pull of said wire, spring means for closing said jaws, latching means for holding said pivoted clamping jaws normally in open relation, and means for placing said pivoted clamping jaws out of influence of said spring means and under influence of said latching means.

5. In a tool for forming wire ties, the combination of a pair of levers provided with handles and pivotally connected to each other between their ends, shoulders projecting from the free ends of these levers in opposite directions as shown, a spring-actuated clamping dog pivotally mounted upon each of said levers between the shoulder thereon and its pivotal point, said dogs adapted to co-act with said shoulders for the purpose of clamping the wire and to hold it until it is drawn tight and joined to complete the tie and a spring-actuated release lever mounted upon each of the levers mentioned, said last-named levers having handles between said first-named handles and said pivotal point of said first-named levers, each of said release levers adapted upon manipulation to act upon the clamping dog mounted upon the other one of said first-named levers for the purpose of disengaging said dogs from the wire ends to release them from the tool.

In testimony whereof I hereunto affix my signature.

FREDERICK STEINKOENIG.

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