

(No Model.)

2 Sheets—Sheet 1.

W. S. LIVENGOOD.  
BALE TIE MACHINE.

No. 486,615.

Patented Nov. 22, 1892.

Fig. I.

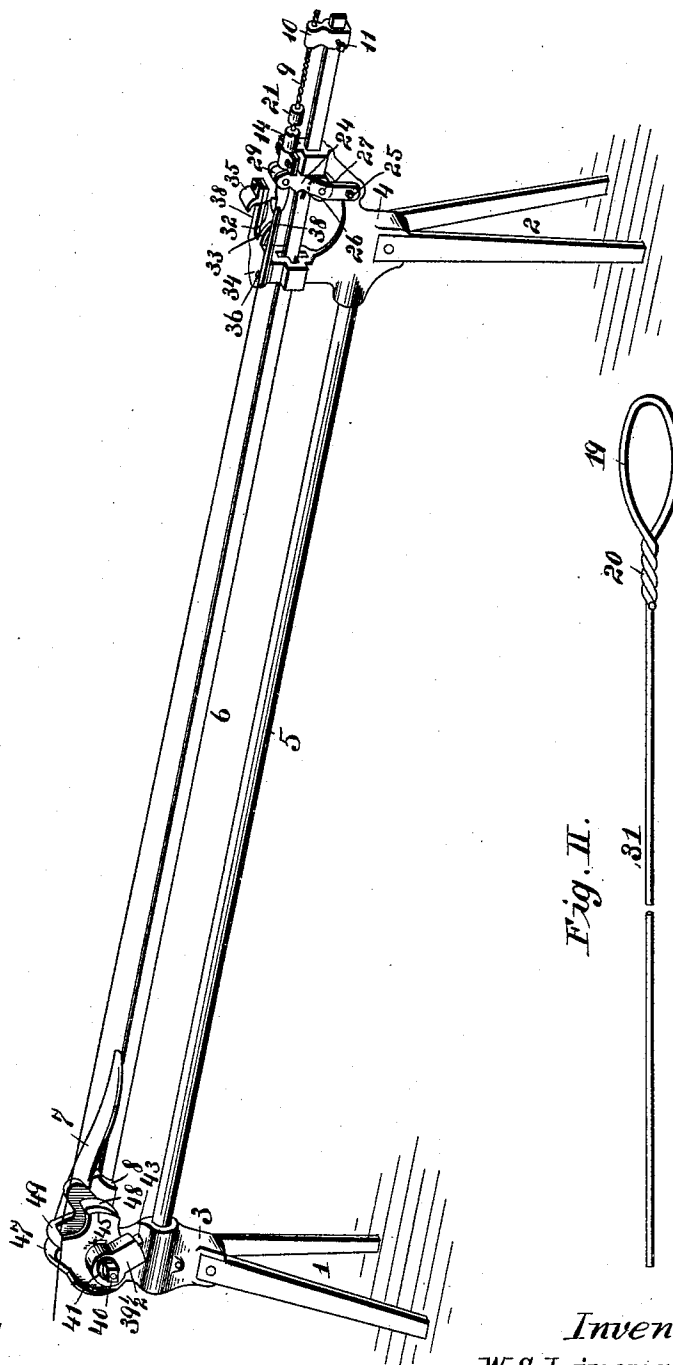
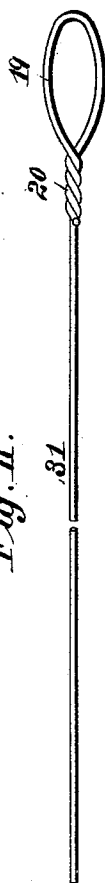


Fig. II.



Witnesses:  
J. G. Fischer  
Geo. E. Cune.

Inventor:  
W. S. Livengood  
By *Wm. H. Brown*  
Atty's.

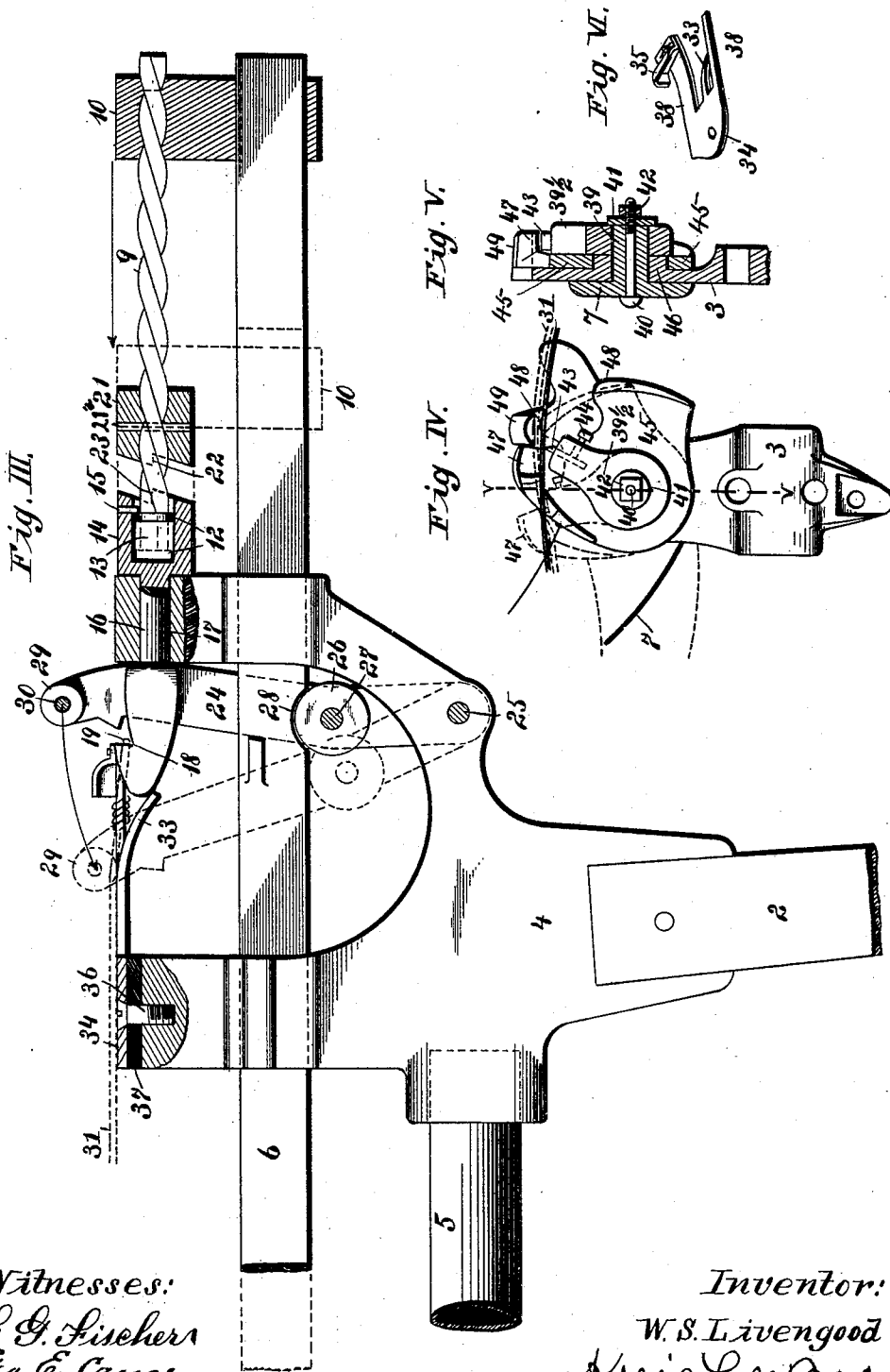
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Witnesses:  
F. G. Fischer  
Geo. E. Crane

Inventor:  
W. S. Livengood  
By *Knicker Bros.*  
Atty.

# UNITED STATES PATENT OFFICE.

WINFIELD S. LIVENGODD, OF KANSAS CITY, MISSOURI, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE MIDLAND MANUFACTURING COMPANY, OF SAME PLACE.

## BALE-TIE MACHINE.

SPECIFICATION forming part of Letters Patent No. 486,615, dated November 22, 1892.

Application filed January 12, 1892. Serial No. 417,817. (No model.)

*To all whom it may concern:*

Be it known that I, WINFIELD S. LIVENGODD, of Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in a Machine for Making Bale-Ties, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improved device for making wire bale-ties; and my invention consists in certain features of novelty hereinafter described, and pointed out in the claims.

Figure I is a perspective of my improved device. Fig. II represents the finished product or bale-tie. Fig. III is an enlarged detail view of the twisting-head. Fig. IV is an enlarged view of the wire holding and cutting head. Fig. V is a section taken on line V V, Fig. IV. Fig. VI is an enlarged perspective of the wire-holding device.

Referring to the drawings, 1 2 represent the legs for supporting the device.

3 4 represent heads secured to said legs, and to which in turn the various parts of the device are attached. The heads 3 4 are connected to each other by a pipe or rod 5.

6 represents a reciprocating bar having bearings in the head 4 and being secured at its forward end to a lever 7, as shown at 8.

9 represents a screw-threaded rod supported by the head 4 at its inner end and at its outer end by an adjustable internal threaded bracket 10, said bracket being adjustably secured to the reciprocating bar 6 by means of a set-screw 11. The inner end of the screw-threaded rod 9 is provided with a flange 12, which passes into a central opening 13 in a hub 14 and is held from withdrawal in said hub by means of a pin 15. The hub 14 is an integral part of a shaft 16, journaled in the head 4, as shown at 17 and having on its opposite end a hook 18, over which the loop 19 is formed before the twist 20 is made.

As the reciprocating bar 6 is drawn forward by means of the lever 7 the rod 9 will

be advanced without rotation by means of the bracket 10 until the flange 12 on the inner end of said rod strikes against the bottom of opening 13, as shown in dotted lines in Fig. III, whereupon the shoulder 22 on the head 21, rigidly attached to the rod 9 by the pin 21<sup>a</sup>, is ready to engage with the corresponding shoulder 23 on the hub 14. The further advancement of the bracket 10 will cause the screw-threaded rod 9 to rotate, which through the engaging shoulders 22 and 23 rotates the hub 14, and also the twister 18, thus forming the twist in the loop and completing one end of the tie.

As the reciprocating bar 6 is drawn forward by the lever, as stated, arms 24, pivoted to the head 4 at 25, are moved forward from the position shown in full lines, Fig. III, to the position shown in dotted lines of said figure. These arms are moved forward by means of a roller 26, journaled to said arms at 27, engaging in a recess 28 in the reciprocating bar 6, said arms being provided at their upper ends with a roller 29, supported by a shaft 30, with which the upper ends of the arms are connected. As said arms are thrown forward they come in contact with the body of the wire 31 on one side of the hook 18 and on the opposite side with the end of the wire, as shown at 32, Fig. I, forcing the end of the wire forward on a downwardly-curved tongue 33 of a plate 34, the end of the wire and the body of the same at this time being in close contact with each other, and as the hook 18 is at this time revolved by the screw-rod 9 the loop will be formed.

Secured to one arm of the plate 34 is a hood 35 for retaining the end of the wire until the arms 24 are thrown forward. The plate 34 is secured to the head 4, as shown at 36, and has beneath its surface a portion of rubber or other yielding material, as shown at 37, in order to avoid jar and strain at the time the wire is clamped down onto said plate 34. After the loop is formed and the reciprocating bar 6 is thrown backward by the lever 7, thus reversing the movement of bracket 10 and unlocking the engaging shoulders, the

sleeve 21 and screw-rod 9 will freely rotate and return to their original position without affecting the twister 18, or to the position shown in the full lines, Fig. III, preparatory to forming a twist in the following tie, the pin 15 limiting the backward movement of said screw-rod.

It will be seen that by moving the bracket 10 on the reciprocating bar 6 the twist may be formed at an earlier or later period, thus making a shorter or longer tie, as may be desired.

38 represents guiding-fingers on the plate 34 for the purpose of guiding the arms 24.

The lever 7 has at its lower end a spindle 39, which passes through the head 3, as shown in Fig. V, and is supported thereby. The outer end of the spindle is made square, on which is secured a knife-supporting arm 39½, and consequently whenever the knife is operated the knife-supporting arm 39½ must be moved along with the same.

40 represents a bolt, which passes through the spindle and secures the parts just described to each other.

41 42 represent a washer and nut on the end of said bolt.

43 represents a knife adjustably secured to the arm 39½ by means of a set-screw 44.

45 represents a circular-shaped plate journaled on a collar 46 on the head 3, said plate being free to rotate a short distance on said collar. The plate 45 is provided with projections 47 48, with which the wire comes in contact at the proper time.

49 represents a projection on the head 3, against which the projection 48 clamps the wire as the lever is operated.

At the time the twist is being formed, as heretofore described, the lever 7 will force the arm 39½ around until the knife 43 comes in contact with the wire and presses it against the projection 47 on the plate 45, (see Fig. IV,) the plate being thus forced around with the lever and arm 39½ until the projection 48 comes in contact with the wire and clamps it against the projection 49 on the head 3, at which time the plate 45 is prevented from further rotation, and the resistance will cause the knife to sever the wire.

It is well-known that in ordinary bale-tie machines when the wire is severed by the knife the strain being suddenly released the wire will fly a short distance and buckle or kink, thereby making such wires more difficult to handle than if they were to remain straight. By the use of my device this objection is overcome, as before the knife severs the wire the projection 48 clamps the wire against the projection 49 and holds it securely until the same is severed, the bale-tie coming out in its completed state perfectly straight.

I claim as my invention—

1. In a machine for making bale-ties, the

combination of a twisting device, a cutting device having a projection 47, and a suitable operating connection between the same, said cutting device having a clamp in connection therewith for holding the severed wire, said clamp consisting of a fixed projection 49 and a movable projection 48, connected with said projection 47, substantially as and for the purpose set forth.

2. In a machine for making bale-ties, the combination of the head 3, lever 7, arm 39½, attached to the lever, adjustable knife secured to said arm, movable projections 47 and 48, operated by the lever, and a suitable projection 49, against which the wire is clamped by the combined action of projections 47 and 48, substantially as described, and for the purpose set forth.

3. In a machine for making bale-ties, the combination of the head 3, the lever 7, having a spindle 39 journaled in the head, arm 39½, secured to the spindle, knife 43, adjustably secured to the arm 39½, plate 45, journaled on the head 3, projections 47 and 48 on the plate 45, and projection 49 on the head 3, substantially as set forth.

4. In a machine for making bale-ties, the combination of the heads 3 and 4, suitable operating connection between the same, cutting device on the head 3, twisting device on the head 4, plate 34 and rubber 37 on the head 4, and a hood 35 on said plate for receiving the end of the wire, substantially as described.

5. In a machine for making bale-ties, the combination, with the twisting device and the cutting device, of a clamp for holding the wire after it is severed, a lever for operating said clamp and cutting device, and the operating-rod 6, having connection with said lever and twisting device, substantially as described, and for the purpose set forth.

6. In a machine for making bale-ties, the combination of a cutting device, a twisting device, means for connecting the same, a hook over which a loop is formed, a clamp for retaining said loop in its position, a hub in connection with said hook, having an opening, a screw-threaded rod having one end secured in the opening in said hub, and means for rotating said screw-threaded rod, substantially as and for the purpose set forth.

7. In a machine for making bale-ties, the combination of a cutting-head, a twisting-head, means for connecting said heads, a hook over which a loop is formed, a hub on said hook, a movable screw-rod in connection therewith, a movable internally-threaded sleeve on said screw-rod, and a movable clamp secured to the connecting means between said heads for operating said screw-rod, substantially as set forth.

8. In a machine for making bale-ties, the combination of a cutting-head, a twisting-

head, reciprocating bar 6 for connecting said heads, a hook 18, a hub 14, secured to said hook, a screw-rod 9, having a flange 12 secured in an opening in said hub 14, a movable sleeve 21, having a shoulder which engages with a corresponding shoulder on the hub 14, and an adjustable internally-threaded clamp 10, secured to the reciprocating bar 6 | for operating said screw-rod and rotating said hook, substantially as and for the purpose set forth.

WINFIELD S. LIVENGOD.

Witnesses:

JAS. E. KNIGHT,  
FRANCIS A. LEACH.