

(No Model.)

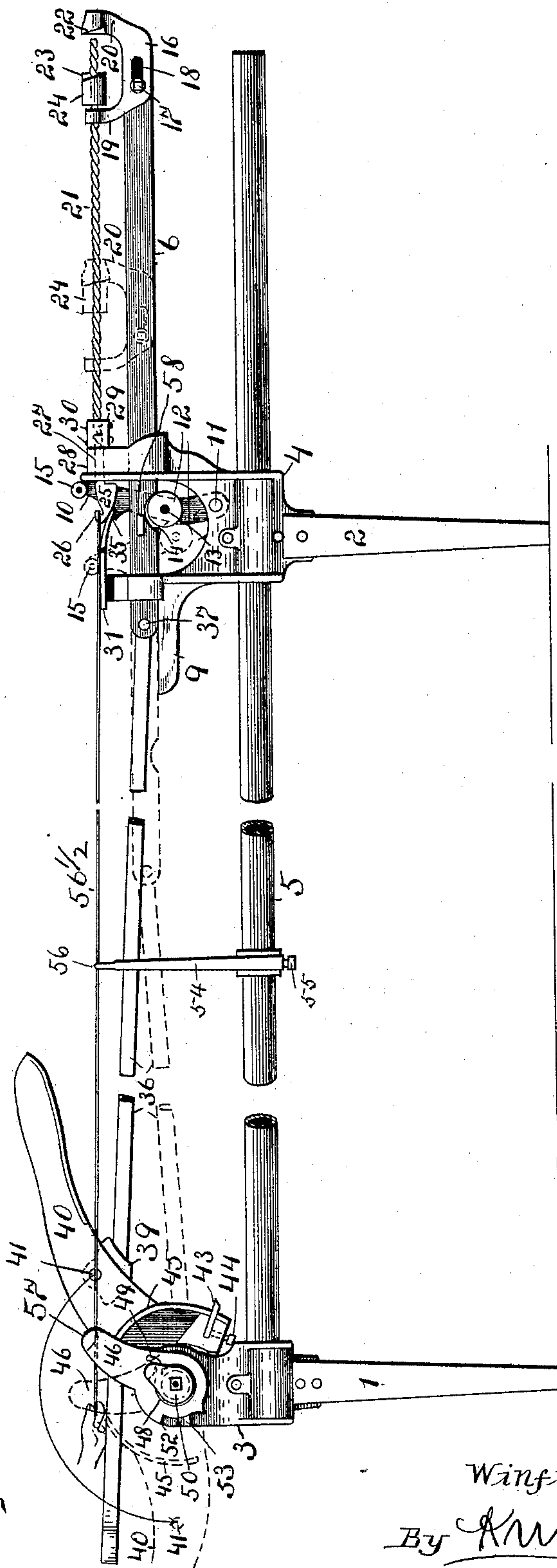
2 Sheets—Sheet 1.

W. S. LIVENGOOD.
BALE TIE MACHINE.

No. 468,667.

Patented Feb. 9, 1892.

Fig. I.



Witnesses:

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J. Cotton

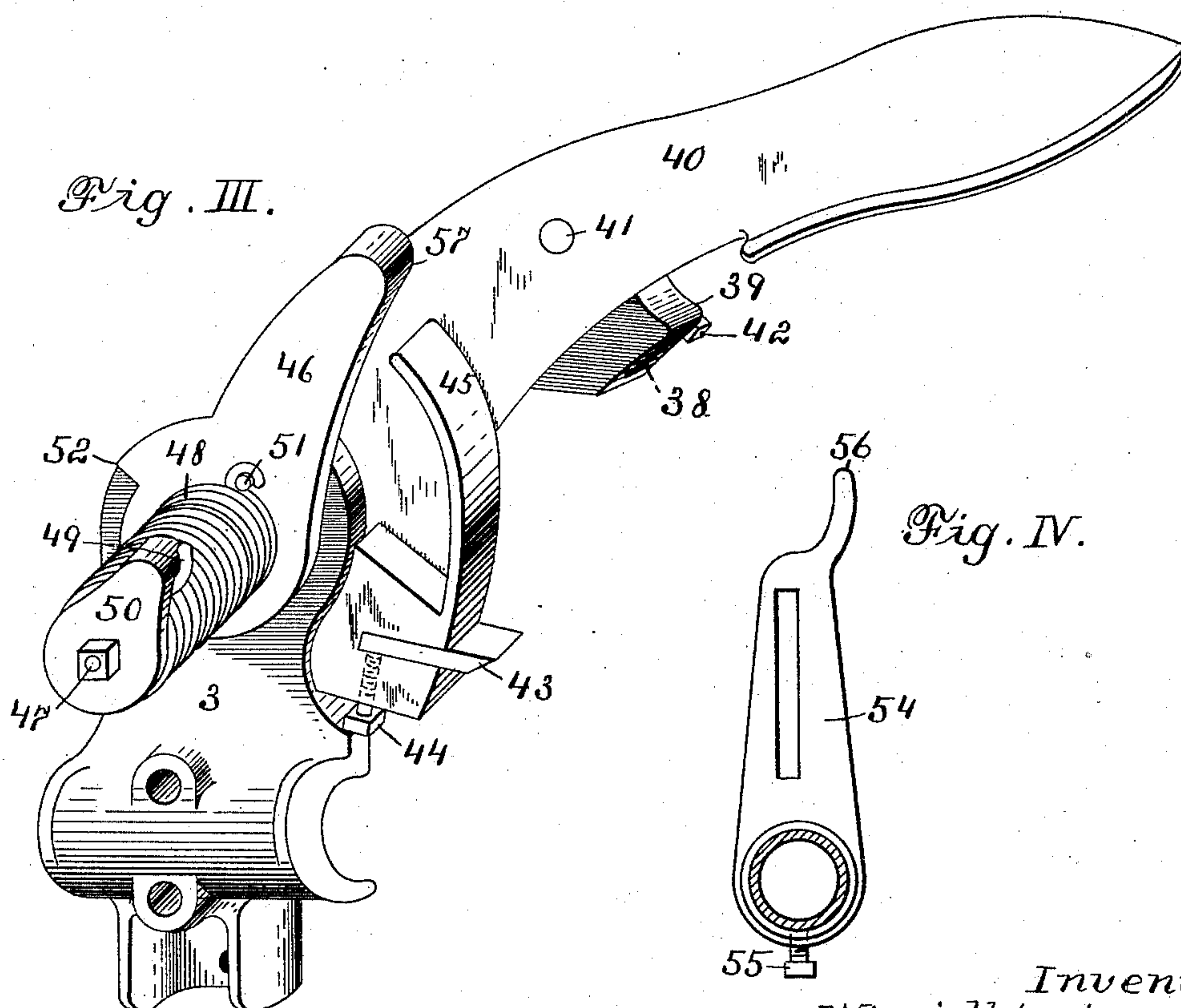
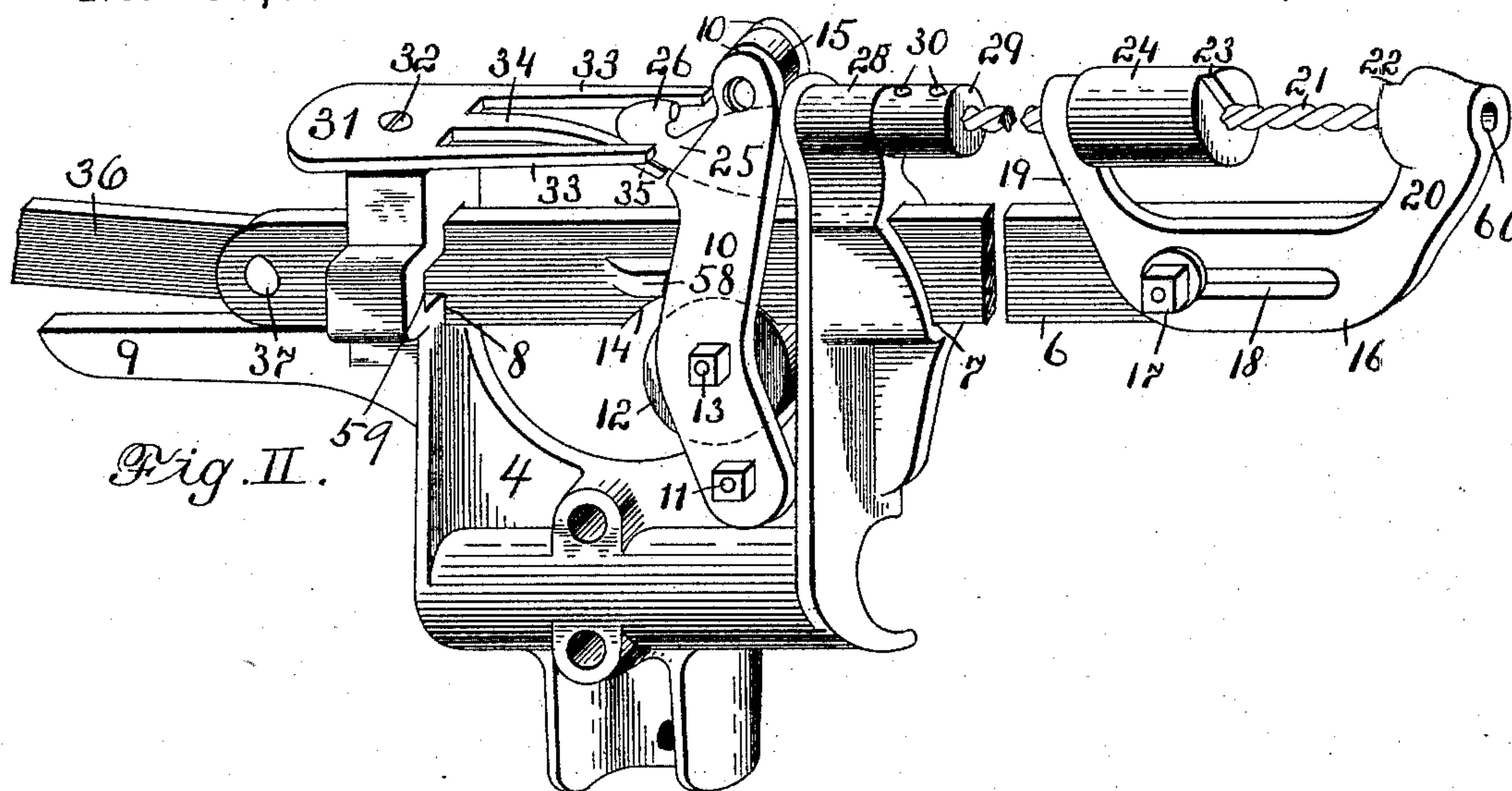
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

WINFIELD S. LIVENGOD, OF KANSAS CITY, MISSOURI, ASSIGNOR TO WALTER H. CHADBOURNE, JOHN A. DUNCAN, AND WILLIAM MASTERS, OF SAME PLACE.

BALE-TIE MACHINE.

SPECIFICATION forming part of Letters Patent No. 468,667, dated February 9, 1892.

Application filed November 25, 1890. Serial No. 372,634. (No model.)

To all whom it may concern:

Be it known that I, WINFIELD S. LIVENGOD, of Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Machines 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 features of novelty hereinafter described, and pointed out in the claims.

Figure I is a broken side elevation of my improved machine. Fig. II is an enlarged detail perspective showing the twister-head. Fig. III is an enlarged detail perspective showing the cutter-head. Fig. IV is an enlarged side elevation of the bracket for guiding the bale-tie as it is released from the machine.

Referring to the drawings, 1 and 2 represent the legs on which the device is supported.

3 represents the cutting-head of my improvement, which is secured to the legs 1.

4 represents the twisting-head, which is attached to the legs 2.

The heads 3 and 4 are suitably connected to each other, preferably by means of a section of gas-pipe 5. The head 4 may be secured to the pipe 5 at any desired point, according to the length of tie it is desired to make.

6 represents a reciprocating bar, which slides freely in openings 7 and 8 in the head 4.

9 represents a bracket on the head 4, which also forms a bearing for the bar 6 to travel on.

10 represents two arms connected together at top and bottom, leaving a space between the same for the passage of the bar 6. The arms 10 are pivoted at their lower ends to the head 4, as shown at 11.

12 represents a roller secured to the arms 10, as shown at 13.

14 represents an opening on the under side of the reciprocating bar 6 which conforms to the roller 12, said roller fitting into said opening.

15 represents a roller secured to the arms 10 near their upper ends.

16 represents a bracket adjustably secured to the bar 6 near its outer end, said bracket being secured by a bolt 17, working in a slot 18 in the bracket. The bracket 16 has arms or extensions 19 20, extending upward. The arm 19 supports the outer end of a screw-threaded rod 21 or twisting-worm, which passes loosely through an opening in the same. The upper end of the arm 20 is provided with a shoulder 22, which when the bracket is forced forward comes in contact with a like shoulder 23 on an internally-threaded sleeve 24, which may be forced along the screw-threaded rod 21, thus rotating the same.

25 represents a spear-shaped head, on the inner end of which is a hook 26. The shank 27 of the head 25 passes through and has bearing in a portion of the head 4, as shown at 28, said shank being secured to the inner end of the screw-threaded rod 21 by means of a sleeve 29 and bolts 30.

31 represents a plate secured to the head 4, as shown at 32.

On the plate 31 are two outer guide-prongs 33 and a central prong 34. The central prong 34 is depressed at its inner end, as shown at 35, in order to give sufficient room for the head 25 to rotate freely.

36 represents a rod or bar pivoted to the inner end of the reciprocating bar 6, as shown at 37. One end of the bar 36 passes through an opening 38 in a lug 39, said lug being secured to a lever 40, as shown at 41. The bar 36 is adjustably secured to the lug 39 by means of a set-screw 42. The lever 40 is suitably pivoted to the head 3 and has attached near its lower end a knife 43, adjustably secured by means of a set-screw 44.

45 represents a curved face on the lever 40, against which the wire is held as it is being cut by the knife 43.

46 represents an arm mounted loosely on a bolt 47, which is secured rigidly at one of its ends to the head 3.

48 represents a coiled spring on the bolt 47, the outer end of said spring being secured, as shown at 49, to a lug 50, which is rigidly secured to the outer end of the bolt 47, and the inner end of said spring being secured to a pin 51 on the movable arm 46.

52 represents a shoulder on the arm 46 and 53 a lug on the head 3, which limit the backward movement of said arm 46.

54 represents an adjustable bracket secured to the pipe 5 by means of a set-screw 55, said bracket having a curved finger 56, which prevents the bale-tie from falling on the wrong side of the machine after the same has been formed and released from the machine.

56½ represents the wire being formed into a bale-tie.

In operation, to form the loop one end of the wire is placed at right angles with the main portion of the same over the hook 26. (See Fig. II.) Then as the operator presses the lever 40 forward the bars 36 and 6 are drawn forward, the bar 6 pressing on the roller 12, thus throwing the arms 10 into the position shown in dotted lines in Fig. I, the roller 15 clamping the end of the wire 56½ down on the prong 34 in close conjunction with the main portion of the wire. At the time that the end of the wire is thus securely held the shoulder 22 on the bracket 16 will come in contact with the shoulder 23 on the internal screw-threaded sleeve 24, causing the same to travel along the screw-rod 21 and thus rotate the same, thus turning the head 25 and hook 26, thereby twisting that portion of the wire to the rear of the roller 15, forming a knot in the wire and leaving a loop on the end of the same where it passes over the hook 26. As the loop and knot are being formed on one end of the bale-tie and as the lever 40 is being pressed in the direction shown by the curved arrow in Fig. I, the knife 43 will come in contact with the other end of the wire 56½, pressing it against a projection 57 on the arm 46, thus firmly gripping the wire, the lever 40 being forced still farther forward, carrying the arm 46 along with it until the shoulder 52 comes in contact with the lug 53, thus stretching and straightening the wire, and as the shoulder 52 comes in contact with the lug 53 the resistance of the arm 46 will cause the knife 43 to sever the wire, thus completing the bale-tie. As the lever is being forced forward in forming the tie, a lug 58 on the bar 6 will pass into a recess 59 in the head 4, and the outer end of the threaded rod 21 will extend out through an opening 60 in the arm 20 of the bracket 16. Then as the lever is again pressed backward preparatory to forming a new tie the lug 58 will come in contact with one of the arms 10 and said arms will be carried back to the position shown in Fig. II, leaving the hook 26 projecting, ready to receive the end of a new tie. As the bar 6 and bracket 16 travel backward, the sleeve 24 will be forced along the screw-rod 21 by the arm 19 into the position shown in Fig. I, ready to form a new tie. When the arm 46 has been released from pressure of the knife 43, as the lever 40 is thrown backward the spring 48 will cause said arm 46 to move into the position shown in Fig. III, where it is held by its

periphery coming in contact with the lug 53. (See Fig. I.)

It will readily be seen that I can adjust my device to any length of bale-tie desired simply by moving the head 4 on the pipe 5 and adjusting the rod or bar 36 in its connection with the handle 40.

I claim as my invention—

1. In a machine for making bale-ties, the combination of a cutting device, a fixed support in which said cutting device is pivoted, a twisting device working in a fixed support and having a twisting-worm, and an adjustable operating connection between said twisting-worm and cutting device, whereby the cutting and twisting devices will operate simultaneously, substantially as set forth.

2. In a machine for making bale-ties, the combination of a twisting device working in a fixed support, a cutting device pivoted to a fixed support, and a rigid operating connection between the same, whereby they may be operated simultaneously, substantially as described, and for the purpose set forth.

3. In a machine for making bale-ties, the combination of a twisting device, a cutting device, and a rigid adjustable connection between the same, whereby they may be operated simultaneously, substantially as described, and for the purpose set forth.

4. In a machine for making bale-ties, the combination of the cutting-head 3, having a suitable cutting device mounted thereon, adjustable twisting-head 4, having a suitable twisting device thereon, a pipe 5 for connecting the heads, and an adjustable bar 36 for connecting the cutting device with the twisting device, substantially as described, and for the purpose set forth.

5. In a machine for making bale-ties, the combination of the head 3, lever 40, pivoted to the head, knife 43, adjustably secured to the lever, and a suitable bearing with which the knife comes in contact in order to sever the bale-tie pivoted coaxially with said knife and lever, substantially as described, and for the purpose set forth.

6. In a machine for making bale-ties, the combination of the head 3, lever 40, pivoted to the head, knife 43 on the head, curved face 45 on said lever, against which the wire is held, and an arm 46, pivoted coaxially with said lever and knife and having a projecting bearing with which the knife comes in contact in order to sever the bale-tie, substantially as described, and for the purpose set forth.

7. The combination of the head 3, lever 40, pivoted to the head, knife on said lever, arm 46, pivoted to said head, and an extension 57 on said arm, against which the knife presses the bale-tie and thus severs the same, the said arm 46 being independent of the lever carrying the knife, substantially as described, and for the purpose set forth.

8. The combination of the head 3, lever 40, pivoted to the head, knife on the lever, arm

46, pivoted to the head, and a spring for holding said arm in its normal position, the said arm 46 being independent of the lever carrying the knife, substantially as described, and for the purpose set forth.

9. The combination of the head 3, lever 40, pivoted to the head, knife on the lever, arm 46, pivoted to the head by a bolt 47, pin 51 on the arm 46, lug 50 on the bolt 47, and a spring 48 on the bolt 47, said spring engaging the lug 50 and the pin 51, thereby holding the arm 46 in its normal position, substantially as described, and for the purpose set forth.

10. The combination of the head 3, lever 40, pivoted to the head, knife on the lever, arm 46, pivoted to the head, spring for holding said arm in its normal position, shoulder 52 on said arm, and a lug 53, with which said shoulder comes in contact and thus limits the forward movement of said arm, substantially as described, and for the purpose set forth.

11. The combination of the lever 40, head to which said lever is pivoted, knife on said lever, arm 46, having a projection 57, lug 39, provided with an opening 38, and bar 36, having one of its ends adjustably secured in the lug 39 and having its opposite end pivoted to a wire-twisting device, substantially as described, and for the purpose set forth.

12. The combination of the head 4, reciprocating bar 6, working in said head, means for reciprocating said bar, screw-rod 21, having a hook on its inner end, and a threaded sleeve on said rod, having connection with said reciprocating bar for rotating the screw-rod, substantially as described, and for the purpose set forth.

13. The combination of the head 4, reciprocating bar 6, working in the head, means for reciprocating said bar, bracket 16 on the bar 6, arm 20 on the bracket, having a shoulder 22, screw-rod 21, hook 26 on the inner end of the screw-rod, internally-threaded sleeve 24 on the screw-rod, and a shoulder 23 on said screw-rod, with which the shoulder 22 on the arm 20 comes in contact, substantially as described, and for the purpose set forth.

14. The combination of the head 4, reciprocating bar 6, adjustable bracket 16, secured

to said bar by a slot-and-bolt connection, arms 19 and 20 on said bracket, shoulder 22 on arm 20, screw-rod 21, hook 26 on the inner end of said rod, internally-threaded sleeve 24 on said screw-rod, and a shoulder 23 on said sleeve, with which the shoulder 22 engages, substantially as described, and for the purpose set forth.

15. The combination of the head 4, reciprocating bar 6, arms 10, pivoted to said head and having connection with said bar 6, the twisting-hook, the plate 31, and a connection between the arms 10, adapted to press the wire against said plate, substantially as set forth.

16. The combination of the head 4, the reciprocating bar 6, having a recess 14 therein, arms 10, pivoted to the head, a roller on said arms adapted to fit into said recess, the plate 31, a connection between the arms adapted to press the wire against plate 31, and a twisting-hook, substantially as set forth.

17. The combination of the head 4, reciprocating bar 6, arms 10, plate 31, prongs 33 and 34 on said plate, and a roller 15 on said arms for clamping and holding a wire against the prong 34, substantially as described, and for the purpose set forth.

18. The combination of the head 4, reciprocating bar 6, arms 10, pivoted to the head 4, a lug 58 on the bar 6 for moving the arms 10 in a backward direction, a plate upon which said bars hold the wire, and twisting mechanism for twisting the wire while being so held, substantially as described, and for the purpose set forth.

19. The combination of the head 4, screw-rod 21, means for turning the same, head 25, hook 26 on the head 25, shank 27 on the head 25, and a sleeve 29 and bolts 30 for connecting the shank with the screw-rod 21, substantially as described, and for the purpose set forth.

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Witnesses:

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