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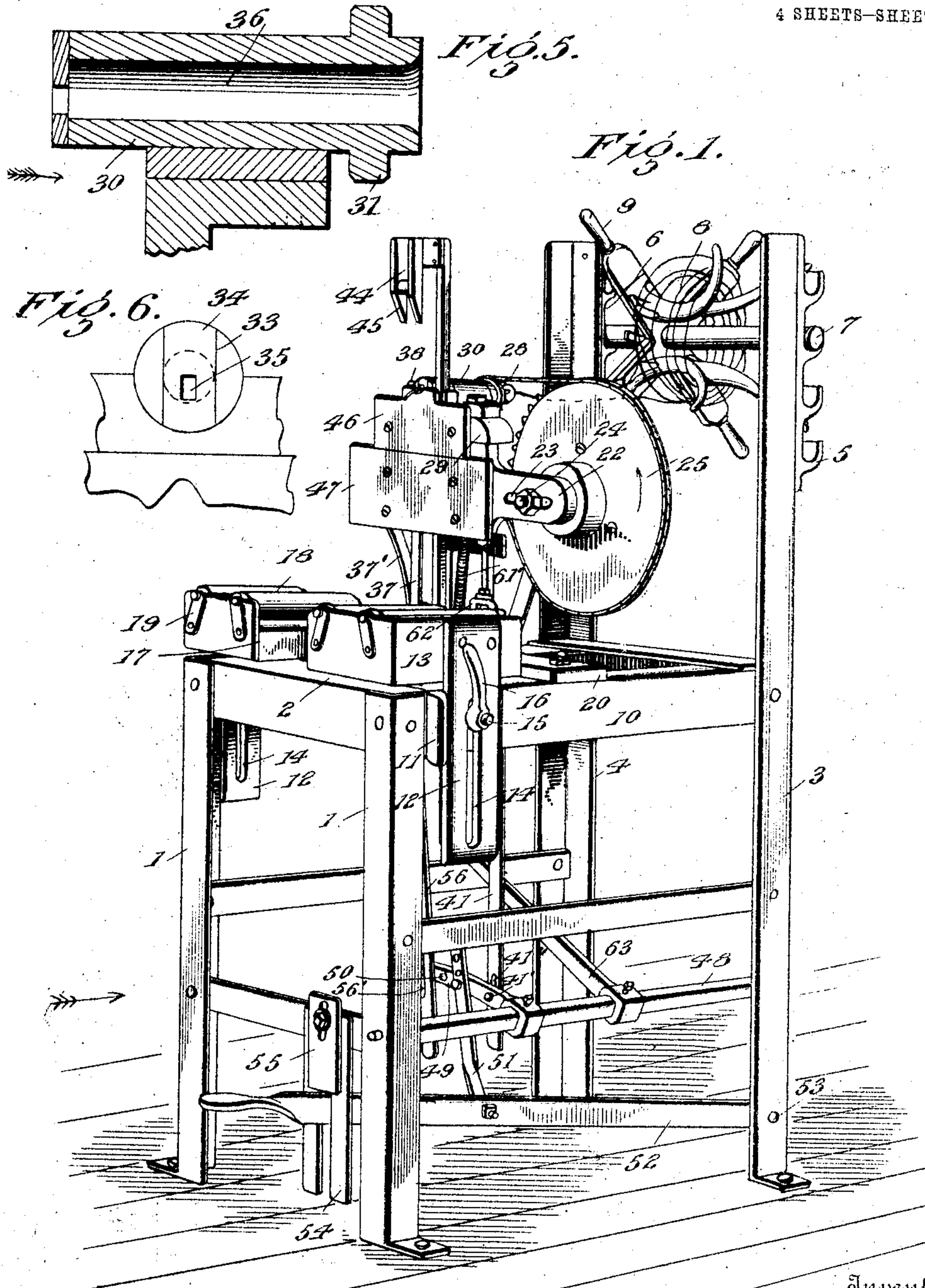
BUNDLE BINDING MACHINE.

APPLICATION FILED AUG. 31, 1910.

990,768.

Patented Apr. 25, 1911.

4 SHEETS—SHEET 1.



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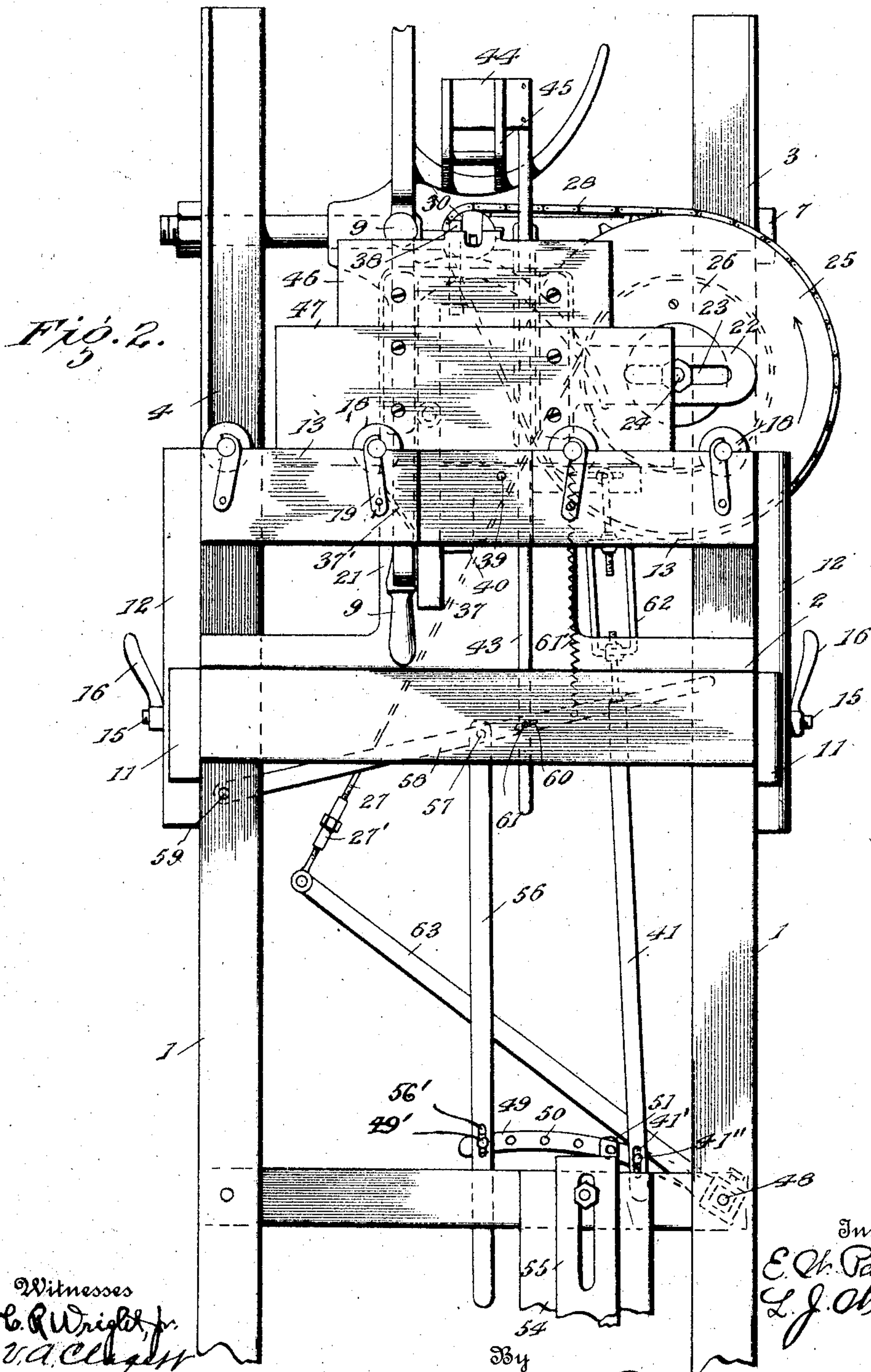
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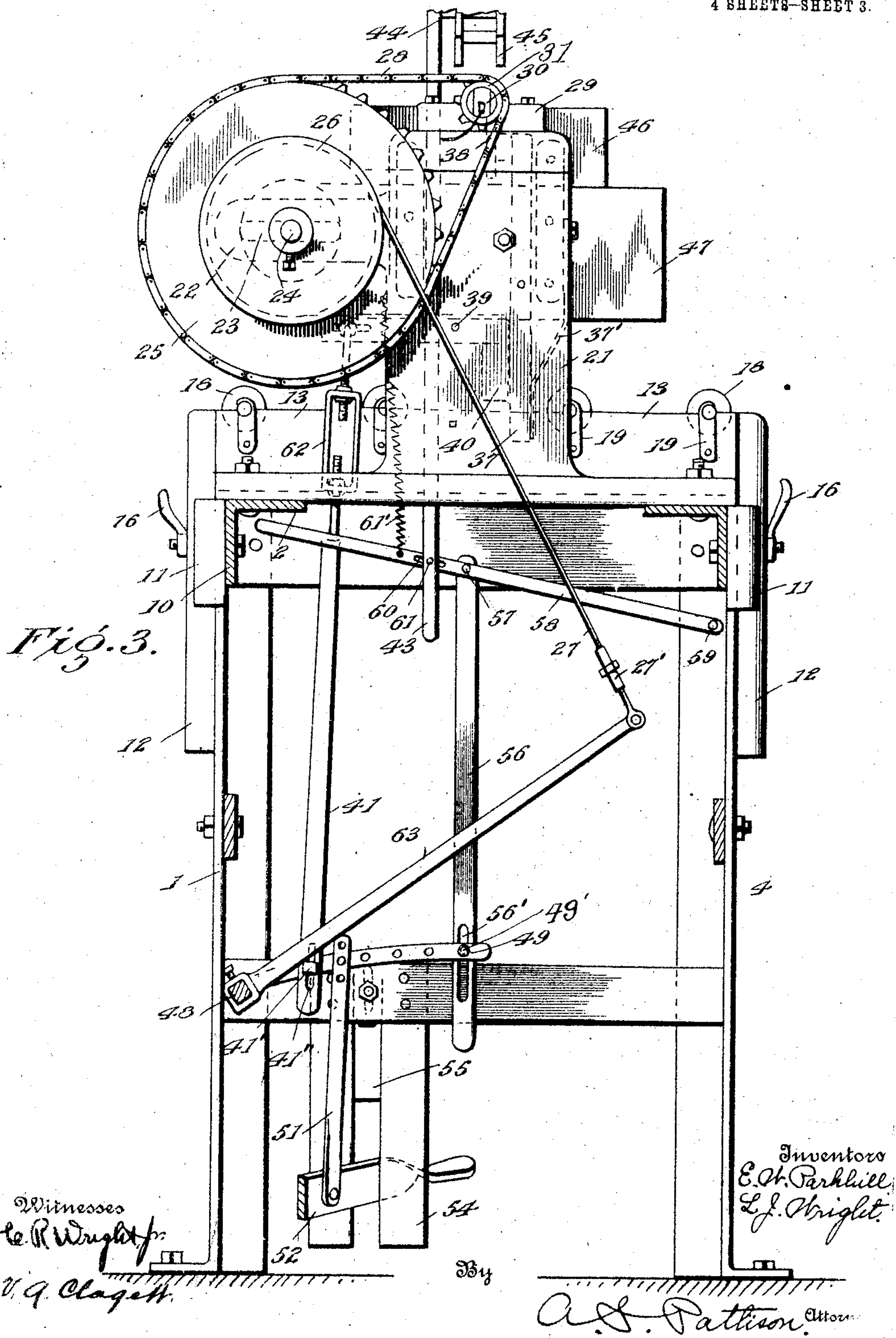
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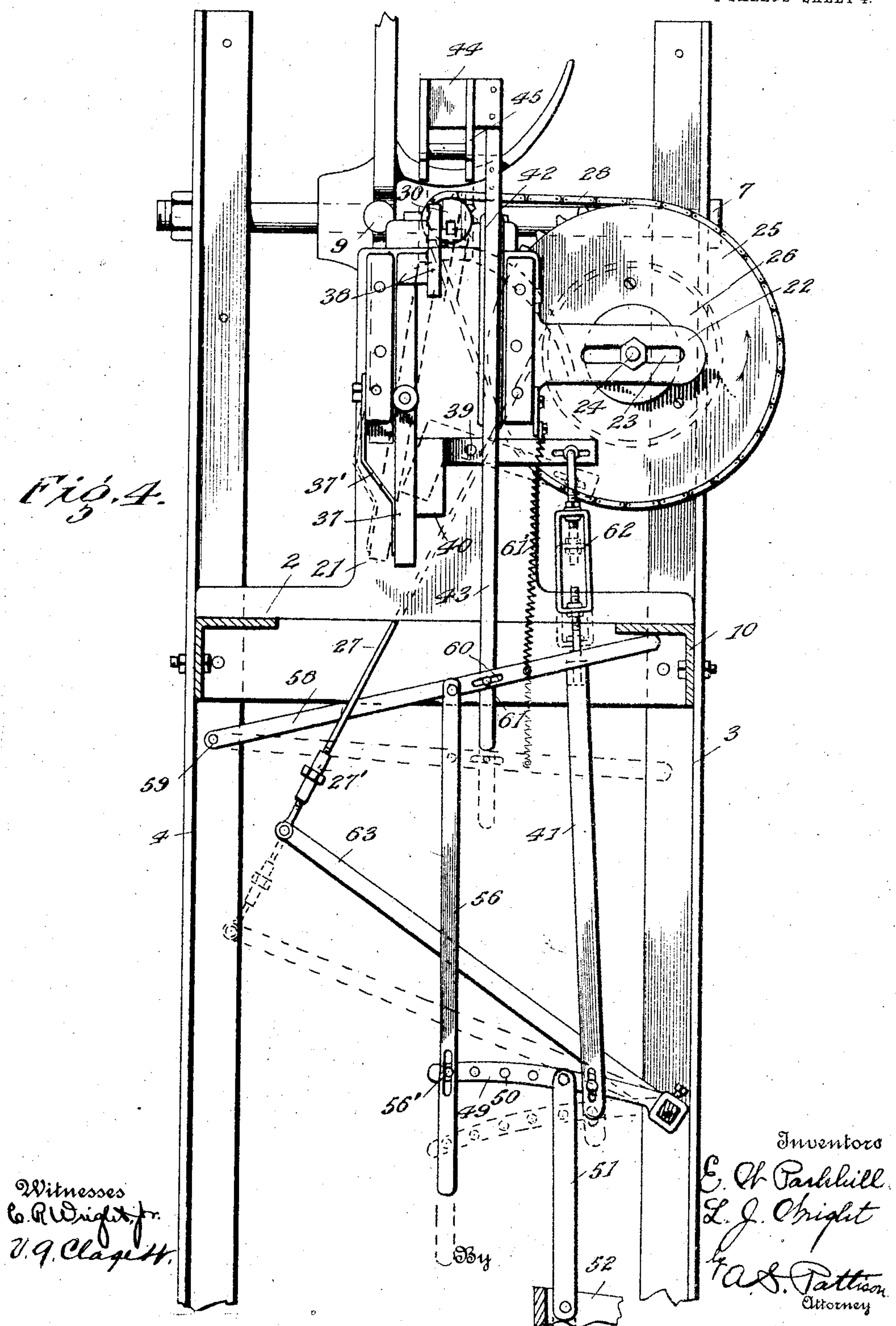
4 SHEETS—SHEET 3.



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4 SHEETS--SHEET 4.



UNITED STATES PATENT OFFICE.

EDWARD W. PARKHILL AND LOOMIS J. WRIGHT, OF BURLINGTON, VERMONT.

BUNDLE-BINDING MACHINE.

990,768.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Application filed August 31, 1910. Serial No. 579,888.

To all whom it may concern:

Be it known that we, EDWARD W. PARKHILL and LOOMIS J. WRIGHT, citizens of the United States, residing at Burlington, in the county of Chittenden and State of Vermont, have invented certain new and useful Improvements in Bundle-Binding Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

Our invention relates to improvements in bundle binding machines, and pertains more particularly to machines for binding bundles of laths, flooring or sheathing together.

The object of our invention is to provide a machine of this character in which the twisting of the binding wire, the cutting of the wire and the pressing of the twisted end of the wire against the bundle is accomplished by one operation of the treadle, thus leaving the hands free to remove the bound bundle and to place a new bundle thereon.

Another object of our invention is to provide a more simple, cheap and effective binding machine of this character having certain details of structure hereinafter fully set forth.

In the accompanying drawings—Figure 1 is a perspective view of our improved machine. Fig. 2 is an end view looking in the direction of the arrow Fig. 1. Fig. 3 is an end view looking in the opposite direction from Fig. 2. Fig. 4 is a transverse vertical sectional view showing the guide plate for the cutter and other mechanism removed. Fig. 5 is an enlarged vertical longitudinal sectional view of the twisting spindle, and Fig. 6 is an end view of Fig. 5, looking in the direction of the arrow.

Referring now to the drawings, 1 represents a rectangular vertically disposed frame made of angle bars and forming a flat table 2 at their upper ends. The rear vertical bars 3 and 4 extend some distance above the table 2 and are provided with notched bars 5 and 6 in which is journaled the spool carrying shaft 7. The spool 8 is formed in any desired manner, but preferably that shown, and is provided with handles 9, by means of which it is rotated for feeding the wire to the machine.

The sides 10 of the table 2, are provided with guide plates 11, between which are vertically movable plates 12, carried by the bundle supporting table 13. These plates 12 are provided with slots 14 through which extend bolts 15, carried by the table and screwed upon the bolts are thumb nuts 16, whereby the plates are firmly clamped against the sides 10 of the table in their adjusted position.

The plates, as heretofore stated, are carried by the bundle supporting table 13. This table 13 may be of any desired form, but preferably that shown in the drawings. The front wall of the table is cut away, as indicated at 17, to allow the binding wire to pass down below the upper face of the table so as to not interfere with the placing of a bundle of sheathing, or the like, thereon. The rear wall of the table is solid and forms the connecting means. The front and rear walls of the table 13 are provided with circular recesses in which are mounted the journals of the rollers 18. Pivoted to the front and rear walls of the table 13 are the members 19, which have segmental slots in their outer ends adapted to receive the end of the journal of the roller 18, whereby the roller is held upon the table 13, yet allowing them to be readily removed. The vertical adjustment of the work supporting table is very essential in order to bring the bundle to be bound up close to the tying spindle, as will be hereinafter more fully described.

The table 2, intermediate its front and rear edges, is provided with a transverse plate 20, which may be bolted or otherwise secured thereto. This plate 20 carries the binding or twisting mechanism, the cutting mechanism and what I will hereinafter term the "bending over member."

The plate 20, midway the sides of the table, is provided with an upwardly extending rigid arm 21. The upper end of said arm is provided with a horizontal member 22, having a slot 23 in which is mounted a shaft 24. The shaft 24 carries a sprocket wheel 25. The rear face of the sprocket wheel 25 carries a spring drum 26, upon which is wound the operating cable 27. The slot 23 allows of a horizontal adjustment of

the shaft 24 in the arm for tightening or loosening the sprocket chain 28 passing over the sprocket 25. The arm 21 has secured at its upper end a block 29, in which is rotatably mounted the twisting spindle 30. This spindle has at its outer end a sprocket wheel 31, in alinement with the sprocket wheel 25, and over which the chain 28 passes. By this structure it will be seen that the rotation of the sprocket 25 causes the spindle 30 to revolve and twist the wire, as will be hereinafter more fully described. The forward end of the spindle 30 has a dovetailed groove 33 therein, in which is removably mounted a plate 34. This plate has a slot 35 therein, which is eccentric to the bore 36 of the spindle.

Intermediately pivoted to the outer face of the arm 21 is a lever 37, which carries at its upper end a knife 38, which passes close to the outer end of the spindle and is adapted to sever the wire after the spindle has twisted the two wires together. Pivoted to the arm 21 adjacent the lower end of the lever 37, at 39, is an L-shaped member 40, bearing against the lower end of the lever 37. The outer end of the member 40 has connected thereto, the operating lever 41, which extends down and is connected indirectly to the treadle as will be hereinafter more fully described. The rocking of the L-shaped member 40 moves the lower end of the lever 37 over, causing the knife 38 to travel across the outer face of the spindle and sever the wire, as shown in dotted line in Fig. 4.

The two wires having been twisted together and severed, extend out at right angles to the bundle being bound, which is objectionable, as it prevents the bundles from lying close together and also makes the bundle very unhandy in handling. In order to force this twisted end of the wire down flat upon the bundle, we provide the arm 21 with a guide 42, in which is vertically movable a bar 43. The upper end of the bar has an arm 44 extending over the spindle and is provided with a double bifurcated member 45, which is adapted to pass down upon the twisted end of the wire and force it flat against the bundle. This bar 43 is connected to the treadle, as will be hereinafter described.

The intermediately pivoted lever 37 is normally held in the position shown in full lines Fig. 4, by a flat spring 37', which is compressed when the lever is moved into the position shown in dotted lines in Fig. 4. In order to protect the knife, the lever 37 and the member 40, we provide the plates 46 and 47, which are bolted to the arm 21, as is clearly shown in Fig. 2 of the drawings.

Rotatably mounted in the frame 1, is a rock-shaft 48, which is preferably of a rectangular form and having adjustably se-

cured thereon the inwardly extending arm 49. This arm is provided with a series of openings 50, by means of which the link 51 is connected thereto. The lower end of the link is pivotally connected to the treadle 52, the rear end of the treadle being pivotally connected to the frame 1, at 53, while the forward end of the treadle extends out beyond the front end of the frame 1. The frame 1 is provided with a guide 54 through which the forward end of the treadle passes, to insure a vertical movement of the treadle. In order to limit the upward movement of the treadle, we provide a vertically adjustable plate 55, as clearly shown in Fig. 1, of the drawings.

The outer end of the member 49 is provided with a bolt 49', which passes through an elongated slot 56' in the link 56, whereby the member 49 has a limited movement independent of the link 56. The upper end of the link 56 is pivotally connected at 57 to the lever 58. The lever 58 is pivoted to the frame 1, at 59, and has its outer end provided with a slot 60 through which a pin 61 passes carried by the bar 43. The lever 58 is normally held in its upward position by means of a coiled spring 61', as shown in Fig. 4. The arm 49 on the inside of the link connection 51 has the operating lever 41 pivotally connected thereto. The upper end of the lever 41 has a turn-buckle 62, by means of which the movement of the member 40 may be regulated.

Rigidly secured to the rock-shaft 48, is an outwardly extending arm 63, which has connected to its outer end the operating cable or belt 27. This belt has means 27' whereby the belt is lengthened or shortened.

The operation of our device is as follows: The wire is drawn through the eccentric 35 in the plate 34 of the spindle and drawn down within the center of the work-support 13. The proper number of sheathing, laths and the like are placed upon the table, the table having been previously adjusted to hold the proper number, so that the upper laths or sheathing will be close to the spindle 30. The free end of the wire is then inserted into the opening 35, the treadle 52 is then depressed, which through the link 51, rocks the rock-shaft 48, moving the arm 63 downwardly, as shown in dotted lines, Fig. 4, which, through the belt 27 mounted on the spring drum 26, oscillates the sprocket wheel 25 in the direction shown by the arrow on Fig. 1. The belt 28 carried by the sprocket 25, revolves the spindle 30, three or four revolutions and firmly twists the two ends of the wire together. The eccentric arrangement of the slot 35 also gives the twisted ends of the wire a slight revolution, which more tightly binds the wire around the bundle. The continued downward movement of the treadle brings the bolt 41' to

the lower end of the slot 41" of the member 41, and causes the member 40 to be rocked upon its pivot 39, which in turn rocks the member 37, causing the knife to travel across the face of the spindle and severing the wire. A still further downward movement of the treadle has caused the bolt 49 to reach the lower end of the slot 56', causing a downward movement of the member 56, which through the pivoted lever 58 draws the member 43 downwardly causing the bending-over member 45 to engage the twisted end of the wire and presses it upon the face of the bundle.

As will be seen the whole operation is performed by a single downward movement of the treadle. The pressure being released upon the treadle, the spring drum 26, together with the spring 61', will cause the treadle, the knife and the bending-over mechanism all to move backward to their normal positions. From this structure and arrangement of parts, it will be seen that the operator has free use of his hands to place the bundle on the table and to remove it when done.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. A bundle binding machine, comprising a support, a hollow spindle having an eccentric opening in one end into which the double wire passes, and means for rotating said spindle, whereby the ends of the wire are twisted together and the twisted end twisted on the bundle.

2. A bundle binding machine, comprising a frame, a rotatable twisting mechanism having an eccentric opening adapted to receive the ends of the wire whereby the ends of the wire are twisted together and the twisted end twisted on the bundle.

3. A bundle binding machine, comprising a support, a hollow spindle rotatably mounted on the support and having a rectangular opening at one end through which the wire passes and into which the free end of the wire is inserted, a pivoted knife working in conjunction with the spindle for severing the wire after it has been twisted by the spindle.

4. A bundle binding machine, comprising a support having an upwardly extending arm, a twisting, a cutting off and a bending-over mechanism operatively carried by said arm and a vertically movable bundle support adapted to be moved to or from the binding mechanism whereby the upper end of the bundle is adjacent to the binding mechanism.

5. A bundle binding machine, comprising a support, a horizontally arranged spindle through which the binding wire passes and into which the free end of the wire is inserted, means for rotating said spindle, an

intermediately pivoted knife adapted to travel across the outer face of the spindle to sever the wire; a downwardly movable bending-over mechanism adapted to bend the twisted end of the wire flat on the bundle after it has been severed; and a treadle operatively connected to each of the above named mechanisms to operate them in their regular order by a single downward movement thereof.

6. A bundle binding machine, comprising a support, a spindle rotatably mounted in the support, a sprocket wheel carried by the rear end of said spindle, a sprocket wheel carried by the support in alignment with the sprocket wheel carried by the spindle, a chain passing over the sprocket wheel, a spring drum connected to the sprocket wheel, a cable passing around said drum, a treadle carried by the lower end of the support, and an operative connection between the treadle and said cable, whereby the drum is oscillated to cause the rotation of the spindle through the arm of the sprocket chain.

7. A bundle binding machine comprising a rotatable spindle, means for rotating the same, a treadle for operating said rotating means, an intermediately pivoted knife adapted to travel across the end of the spindle to sever the wire after it has been twisted, means connected to the treadle for operating said knife, means for bending the twisted end of the wire flat on the bundle, and means connected to the treadle for operating the bending-over mechanism after the wire has been severed by the knife.

8. A bundle binding machine, comprising a support, a wire twisting spindle, a knife working in conjunction with the spindle for severing the wire, a bending-over mechanism, a rock-shaft mounted in the lower end of the support, a treadle operatively connected to the rock-shaft, an arm carried by the rock shaft and adapted to operate the spindle by a slight movement of the rock-shaft, a link operatively connected to the knife for operating the same by continued movement of the rock-shaft, and a connection between the rock-shaft and bending-over mechanism whereby the continued movement of the rock-shaft moves the same to bend the twisted end of the wire down flat upon the bundle.

9. A bundle binding machine, comprising a support, a bundle supporting table vertically adjustable on the support, rollers mounted in the upper face of said bundle supporting table, a wire twisting spindle rotatably mounted on the support, a knife for severing the wire adjacent the spindle, and means for bending over the twisted end of the wire after it has been severed.

10. A bundle binding machine, comprising a support, a vertically movable bundle supporting table carried by the support, a

wire twisting spindle rotatably mounted in the support above the bundle supporting table, a knife for severing the twisted end of the wire, a bending-over mechanism adapted to bend the twisted end of the wire flat on the bundle after it has been severed, and a foot treadle adapted to operate the spindle, the knife, and the bending-over mechanism in the order above named.

10 11. A bundle binding machine, comprising a support, a rotary wire twisting spindle, a horizontally pivoted knife adapted to sever the wire after it has been twisted, a
15 vertically movable bending-over mechanism adapted to bend the twisted end of the wire flat on the bundle after it has been severed, a rock-shaft mounted in the lower end of the support, an arm carried by the rock-shaft, a link connected to the arm intermediate its
20 end, a treadle pivoted to the support adjacent one end and having the link connected thereto intermediate its ends, a link pivoted to the arm carried by the rock-shaft intermediate the treadle connecting link in the rock-shaft and adapted to operate the knife, a
25 link having a pin and slot connection with the outer end of the arm carried by the rock-shaft, a lever pivoted at one end to the frame and having the link connected thereto, and a rod connected to the bending-over mechanism and pivotally connected to the lever, an arm rigidly carried by the rock-shaft, a sprocket wheel mounted in the upper end of the frame, a chain passing over said
35 sprocket wheel and over the sprocket wheel carried by the spindle, a spring drum carried by the side of the sprocket wheel and a cable connecting the last named arm carried by the rock shaft and passing around said
40 drum.

12. A bundle binding machine comprising a support, a hollow spindle rotatably mounted in the upper end of the support and having an eccentric annular opening in one end
45 through which the ends of the wire passes, substantially as shown and described.

13. A bundle binding machine, comprising a hollow spindle having a rectangular opening in one end eccentric to the bore of
50 the spindle and through which the two ends of the binding wire passes, substantially as shown and described.

14. A wire twisting machine, comprising a hollow spindle having a rectangular opening in one end eccentric to the bore of the spindle and through which the two ends of the binding wire passes, substantially as
55 shown and described.

15. A wire twisting machine comprising a hollow spindle, having a dove-tailed recess across one end, a plate removably secured in said dove-tailed recess and having a rectangular opening therein eccentric to the bore of the spindle.

65 16. A wire twisting machine, comprising

an elongated hollow spindle, means carried by one end of the spindle whereby the same may be rotated, the opposite end having a dove-tailed recess, a plate removably secured in said recess and an elongated opening eccentric to the bore of the spindle. 70

17. A wire twisting machine comprising a rotary elongated spindle having a central bore therethrough, the outer end of said bore being flared, the inner end of the spindle having a dove-tailed recess, the plate removably secured in the recess and having an elongated rectangular opening eccentric to the bore of the spindle and communicating therewith. 75 80

18. A bundle binding machine, comprising a horizontally rotating twisting spindle, a knife pivoted horizontally intermediate its ends and adapted to cooperate with the spindle for severing the wire, a spring engaging the knife and normally holding it away from the spindle, an intermediately pivoted L-shaped lever normally engaging the knife below its pivot and means operated by a treadle for rocking the L-shaped member, whereby the knife is moved upon its pivot to cause it to travel across the face of the spindle, substantially as shown and described. 85 90

19. A bundle binding machine comprising a horizontally arranged elongated hollow spindle, having an eccentric opening in one end, a reel rotatably mounted upon the support and feeding the wire through the hollow spindle out through the eccentric opening, a sprocket tooth carried by the rear end of the spindle, a sprocket wheel carried by the support in alinement with said sprocket wheel, a chain passing around the sprocket wheels, a spring drum secured to the sprocket wheel, a rock-shaft mounted in the lower end of the support, an arm carried by the rock-shaft, a cable secured to the arm and passing around the spring drum of the sprocket wheel, a vertically disposed knife pivoted intermediate its ends, a spring for normally holding the knife in its outward position, an L-shaped member intermediately pivoted to the support and engaging the knife below its pivot, a link connected to the outer end of said L-shaped member, an arm rigidly carried by the rock-shaft and having a pin and slot connection with the said link, a bending-over mechanism vertically adjustable in the support, a lever pivoted to the frame, and connected to the bending-over mechanism, a link connected to the lever intermediate its pivot and its connection with the bending-over mechanism, the lower end of said link having a pin and slot connection with the outer end of the rigid arm carried by the rock-shaft, a foot treadle pivoted at its rear end to the support and passing through a guide carried by the forward end of the support, means 95 100 105 110 115 120 125 130

for limiting the upward movement of said treadle, and a link connected to the treadle intermediate its ends and having its upper end pivotally connected to the rigid arm carried by the rock-shaft intermediate the two links connected thereto.

In testimony whereof we hereunto affix

our signatures in the presence of two witnesses.

EDWARD W. PARKHILL.
LOOMIS J. WRIGHT.

Witnesses:

CHARLES E. ALLEN,
JOHN W. O'NEILL.