

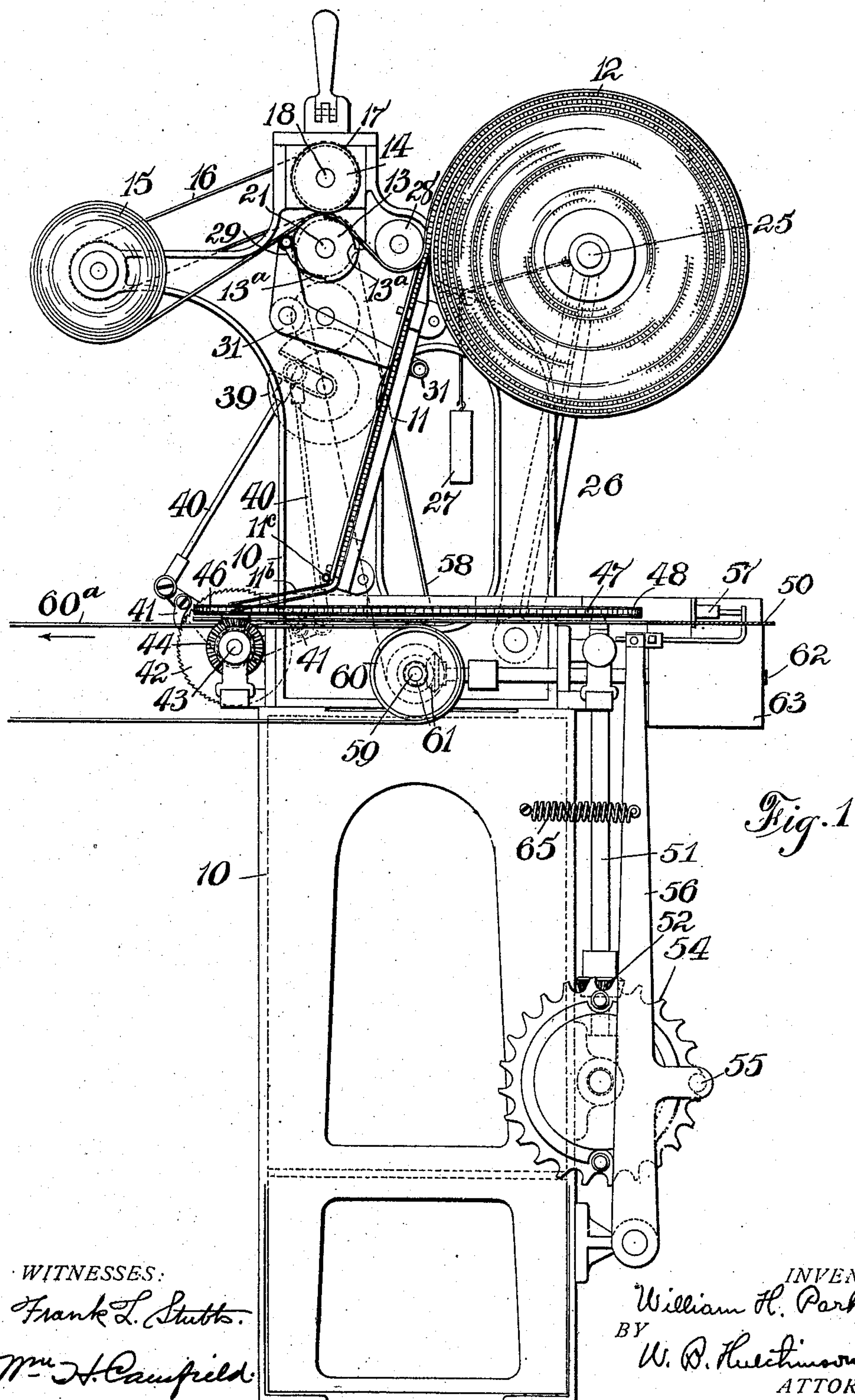
No. 806,487.

PATENTED DEC. 5, 1905.

W. H. PARKER.
MACHINE FOR BOXING MATCHES.

APPLICATION FILED DEC. 3, 1904

2 SHEETS—SHEET 1.



WITNESSES:

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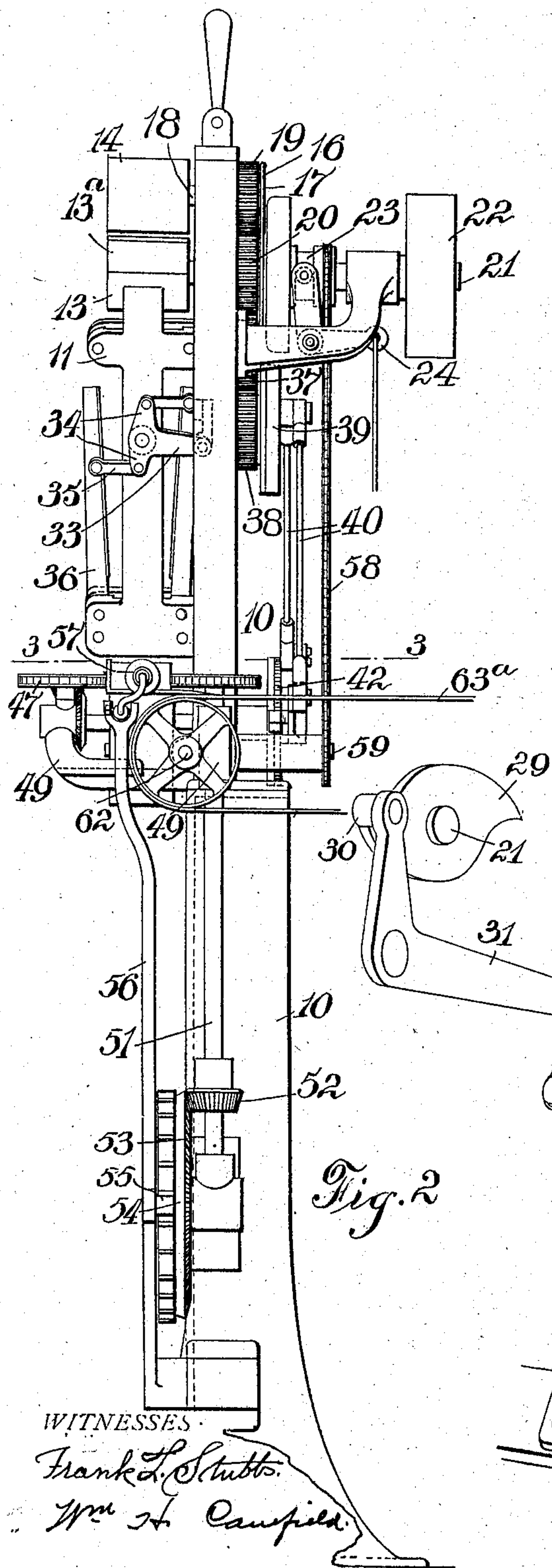


Fig. 2

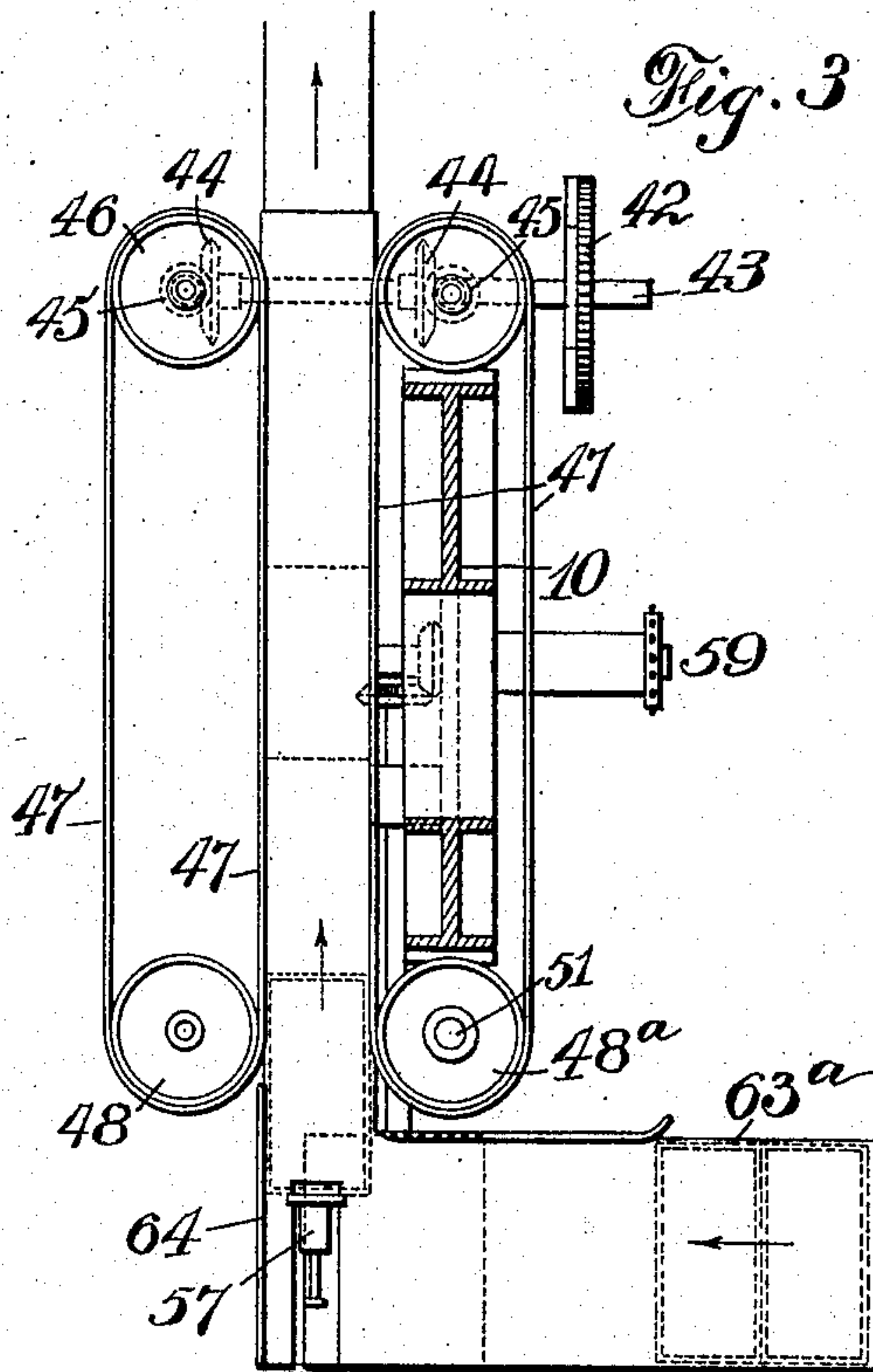


Fig. 3

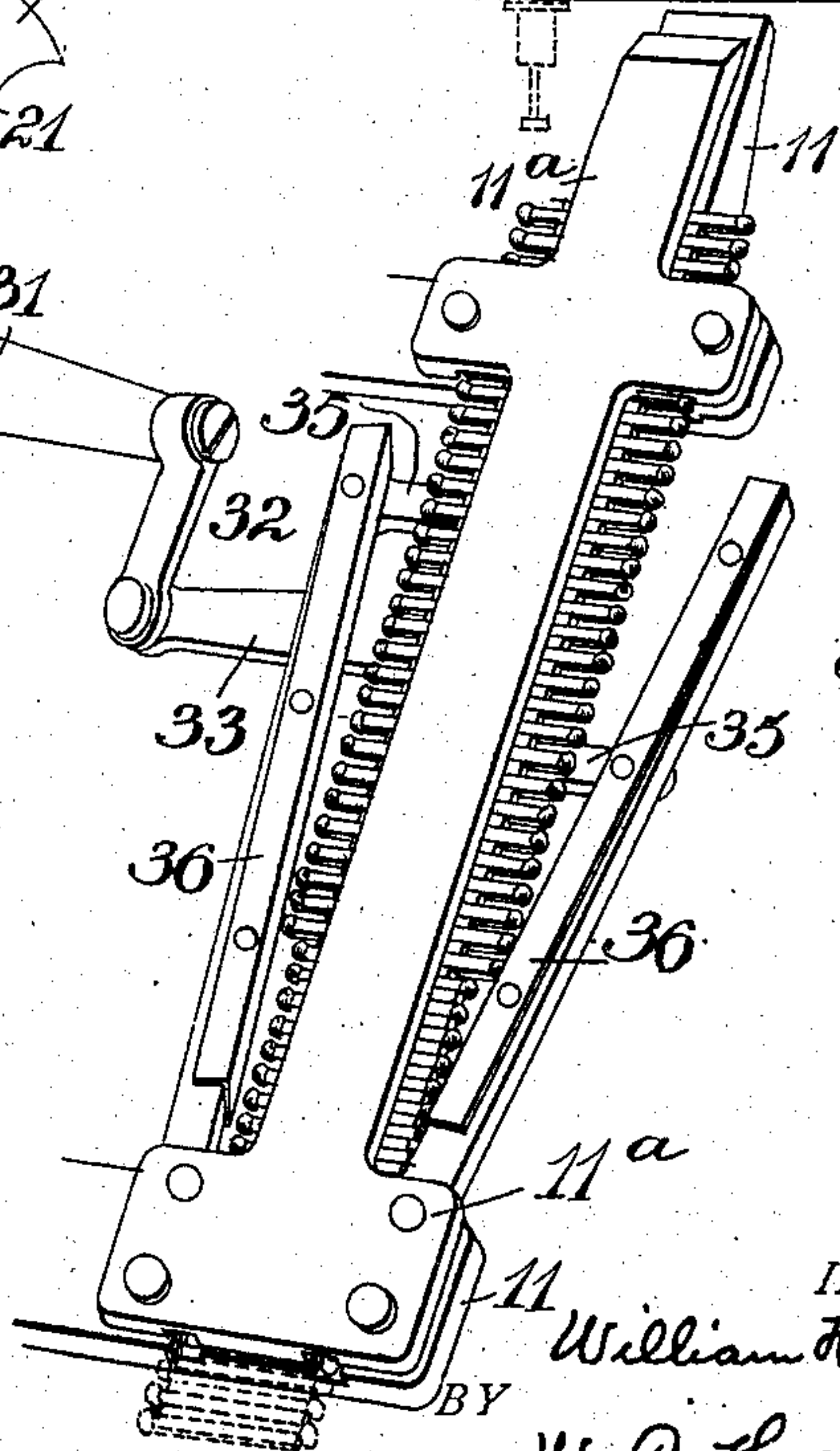


Fig. 4

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MACHINE FOR BOXING MATCHES.

No. 806,487.

Specification of Letters Patent.

Patented Dec. 5, 1905.

Application filed December 3, 1904. Serial No. 235,310.

To all whom it may concern:

Be it known that I, WILLIAM H. PARKER, of Passaic, in the county of Passaic and State of New Jersey, have invented a new and Improved Machine for Boxing Matches, of which the following is a full, clear, and exact description.

This invention relates to a machine for releasing matches from a coil in which they have been previously placed and delivering them through a chute into the boxes which move along the bottom of the chute. The machine is also designed to move the matches in a web—that is, in close juxtaposition and arranged with their headed ends alternating on opposite sides of the chute—and to feed the matches through the chute intermittently and while they are at rest sliding them lengthwise of one another to reduce the width of the web to the width of the boxes to receive the matches.

My invention also embodies a novel carrier and guide for the boxes while passing under the chute and also provides a supply of boxes that is not liable to have any gaps.

The machine is illustrated in the accompanying drawings, in which—

Figure 1 is a side view. Fig. 2 is an end view with the coil of matches removed, so as not to hide the mechanism of the chute. Fig. 3 is a section on line 3-3 of Fig. 2, and Fig. 4 is a perspective view of the mechanism for narrowing the web of matches in the chute.

The machine consists of a frame 10, the upper part of which provides bearings for the shafts of the pulleys and other movable parts, and secured thereto is a chute 11, which receives the matches from the coil 12, the coil being unwound by the passage of the tape between the pulleys 13 and 14 and the tape in turn being wound upon the roll 15, operated by the chain or rope 16, which passes over a pulley 17 on the shaft 18. The chute 11 has at the bottom an extension 11^b, which extends rearward at an angle to the chute 11 and is hinged, as shown at 11^c. The object of this extension is to deliver the matches at all times to the lowest part of the box, and as a box feeds forward and becomes filled the pressure of the box lifts the extension 11^b, and the latter, rising and falling with the filling of the box, causes the splints to be delivered, as

stated, at the lowest point and in a suant manner.

The shaft 18 is operated by the gears 19 and 20, the gear 20 being arranged on the drive-shaft 21, which is provided with the usual pulley 22 and a friction-clutch 23, that regulates the starting and stopping of the machine by means of the lever 24. The coil 12 is supported on a shaft 25, arranged on the pivotal arm 26, and a weight 27, running over a stud on the frame 10, tends to always hold the periphery of the coil up against the roller 28, which is arranged alongside the upper edge of the chute 11. The pulley 13 is cut away, as at 13^a, to provide a slip at these points, so that the tape will not be pulled and the coil will not be revolved, the roll 15 having a suitable friction arrangement, with just enough grip to roll up the tape when it is fed by the pulleys 13 and 14, but not enough to pull it when the cut-away portions 13^a come around adjacent to the pulley 14. It will be understood that this causes an intermittent feeding of the matches from the coil into the chute.

On the same shaft 21 with the pulley 13 is arranged a cam 29, that is shown more plainly in Fig. 4. The cam-surface operates a roller 30 on the bell-crank 31 and by means of a connecting-link 32 operates an arm 33 of a crank, which is pivoted on the back of the chute 11 and which has a pair of right-angle arms 34, as will be seen more particularly in Fig. 2. These arms 34, by means of the connecting-links 35, tend to move the pivoted arms 36. The arms 34 have their bearings between the plates 11 and 11^a of the chute, and the cam is so placed on the shaft that it operates the arms 36 when the matches are at rest. The matches when they are fed from the coil have been arranged with considerable of their length exposed or projecting beyond the two adjacent matches on either side, so as to prevent the composition from running together when they are dipped. In this shape they are too wide to enter the boxes without hitting the side edges, and these arms 36 move them in and reduce the width of the web of matches passing down the chute so that they will fit into the boxes. This will be evident from Fig. 4, where I show a portion of the web of matches of the width as it comes from the coil

and down below, emerging from the chute, a web of matches after they have been slid together.

A train of gears 37 and 38 operate a shaft 5 carrying a disk 39, and a pair of levers 40, operating the pawls 41, give a continuous motion to the ratchet 42, which in turn transmits it to a shaft 43. This shaft is provided with a pair of miter-gears 44, which operate the gears 45, and in this way a pair of sprockets 46, by means of the chains 47, operates the sprockets 48 48^a. The sprockets 46, 48, and 48^a are supported in the bearings 49, which are telescopically or slidably arranged so as to draw the pairs of sprockets toward or from one another to fit the different sizes of the match-boxes. The sprocket-chains 47 are adapted to engage the boxes on the sides and feed them through the machine with a steady slow motion, the boxes resting on a platform 50 while in transit through the machine. The sprocket 48^a turns the shaft 51, which runs down through its bearing 49 and by means of a pair of miter-gears 52 and 53 operates the cam-wheel 54, this cam-wheel having serrations or teeth on its surface, the spaces between them receiving a roller 55 on the lever 56. This gives a slow reciprocating motion to the end of the lever 56 on which is arranged a plunger 57, that feeds the boxes between the chains 47 and starts them in the path toward the bottom of the chute.

A sprocket-chain 58 passes from the clutch 23 and operates, by means of the shaft 59, a pulley 60 and by the gearing 61 and the shaft 62 a pulley 63. Belts 60^a and 63^a run over the pulleys 60 and 63, respectively, and by reason of having a continuous motion and a faster motion than the sprocket-chains 47 give a continuous supply of boxes. The belt 63^a is supplied with the empty boxes, and in Fig. 3 I show an arrow indicating the travel of the boxes sidewise until they are fed against the preceding box just entering the space between the chains 47. When the plunger 57 is drawn back, the belt 63^a feeds the next box up against the partition 64, and on the release of the lever 56 the spring 65 operates the lever, consequently the plunger 57, and throws the next succeeding box between the sprocket-chains. After the boxes are filled and passed out of control of the chains 47 they drop on the belt 60^a, which, traveling at a higher speed than the boxes, carries the filled boxes out of the way. It will thus be seen that I provide a supply of boxes that are not apt to have any gaps on account of the speed of the belts 63^a and 60 being much greater than the speed of the sprocket-chains 47. I have also provided a feed for the matches through the chute that is intermittent, and while the column of matches is halted the act of sliding them together is accomplished without igniting any of them, as there is not apt to be any friction or rubbing of the heads of the matches.

It will be noticed that the sprocket-chains 47 not only serve as a means of carrying forward the boxes to be filled, but they act as guides, moving at the same rate of speed as the boxes and adapted to hold the boxes in proper alinement and without hitch or friction. It will be obvious, too, that other traveling guides might be substituted for the sprocket-chains without affecting the principle of the invention.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A machine for boxing matches, comprising means for unwinding a coil of matches, a chute open at the sides arranged to receive the matches from the coil, and arms arranged to swing on opposite sides of the chute to engage the matches and move them edgewise in the chute.

2. A machine for boxing matches, comprising means for intermittently unwinding a coil of matches, a chute open at the sides to receive the matches, and arms arranged to swing on the sides of the chute to engage the matches and move them lengthwise on one another in the chute while the matches are at rest.

3. A machine for boxing matches, comprising a means for intermittently unwinding a coil of matches, an open-sided match-chute arranged to receive the matches, means on the sides of the chute to engage the matches while the coil-feeding mechanism is at rest to move the matches lengthwise of one another to reduce the width of the column of matches, and means for conveying boxes beneath the chute.

4. A machine for boxing matches, comprising means for intermittently unwinding a coil of matches, an open-sided match-chute, means for engaging the edges of the matches while the coil-operating means is at rest, means for conveying boxes beneath the chute, and means for feeding boxes to the box-conveying mechanism.

5. A machine of the kind described, comprising a box-chute having a stationary bottom, sprocket-chains forming the sides of the box-chute and adapted to engage the sides of the boxes, a plunger operating to force the boxes between the chains at predetermined intervals, and a guide-chute arranged to feed the matches to the boxes.

6. A machine of the kind described, comprising a chute adapted to receive and convey matches to its lower end, a pair of sprocket-chains arranged to form the sides of the box-chute and convey the boxes beneath the match-chute, a transverse belt on the receiving end of the box-chute and a plunger arranged to force a box from the transverse belt to the box-chute at predetermined intervals.

7. In a machine of the kind described, the combination with the match-discharging chute, and means for carrying boxes beneath the chute, of traveling guides moving at the

same rate of speed as the boxes and along opposite sides thereof.

5 8. In a machine of the kind described, the combination with the match-discharging chute, of parallel traveling guides moving beneath the chute and constructed to guide and carry forward a series of match-boxes.

10 9. In a machine of the kind described, the combination with a box-carrying belt, of traveling guides arranged above and near opposite sides of the said belt, the said guides running at less speed than the belt and constructed to carry match-boxes between them, and means for discharging matches into the boxes.

15 10. The combination with box-carrying

means, of a hinged guide-chute adapted to lie loosely in the box, and means for feeding matches into and through the chute.

11. In a machine of the kind described, the combination with box-carrying means, of an open-sided guide-chute arranged above the box-carrying means, and an extension-chute hinged to the first chute and constructed to have its free end enter the boxes as they pass beneath it. 20

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