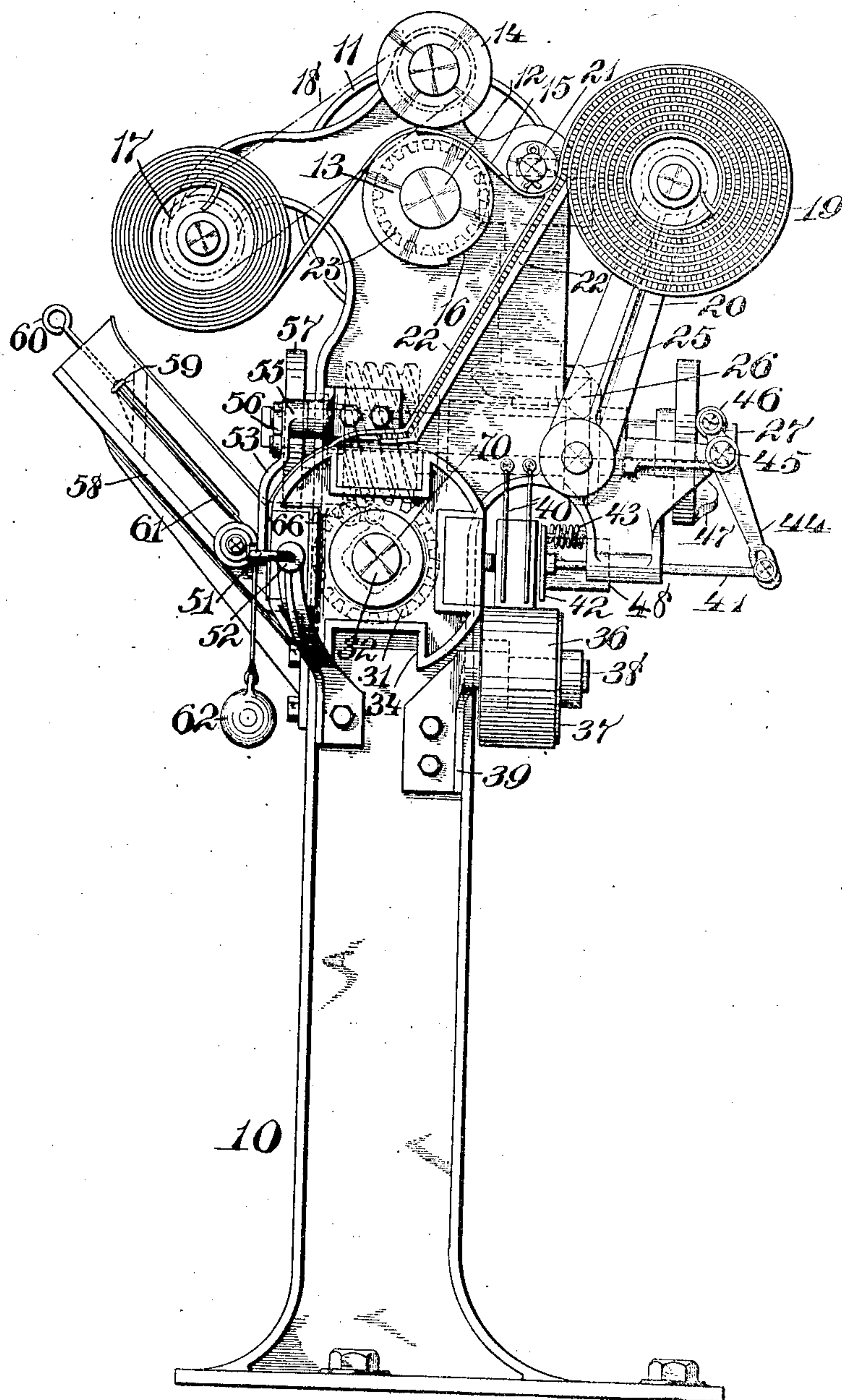


No. 892,545.

PATENTED JULY 7, 1908.

W. H. PARKER.
MATCH BOXING MACHINE.
APPLICATION FILED OCT. 23, 1906.

3 SHEETS—SHEET 1.



WITNESSES:

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Fig. 1

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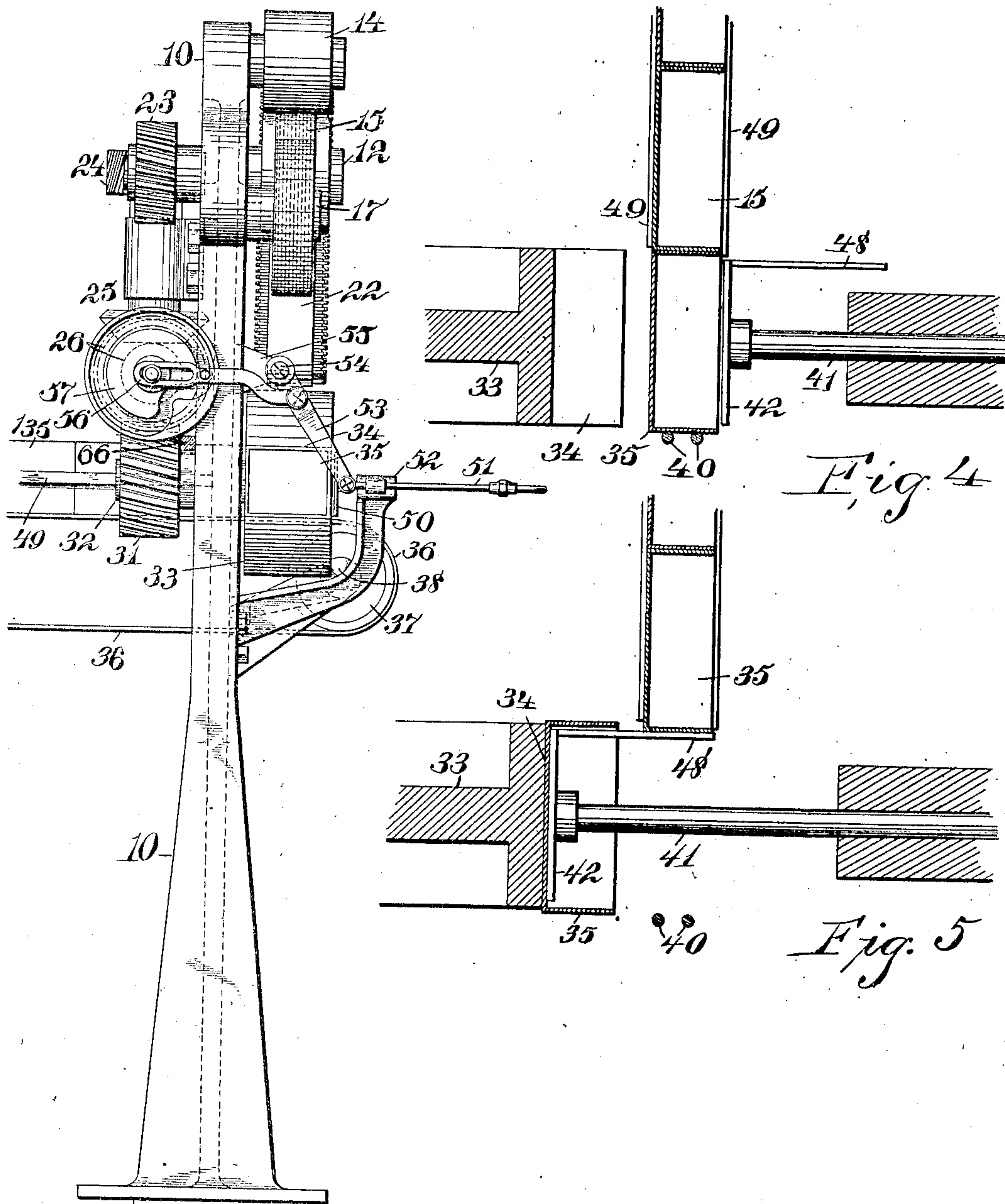


Fig. 2.

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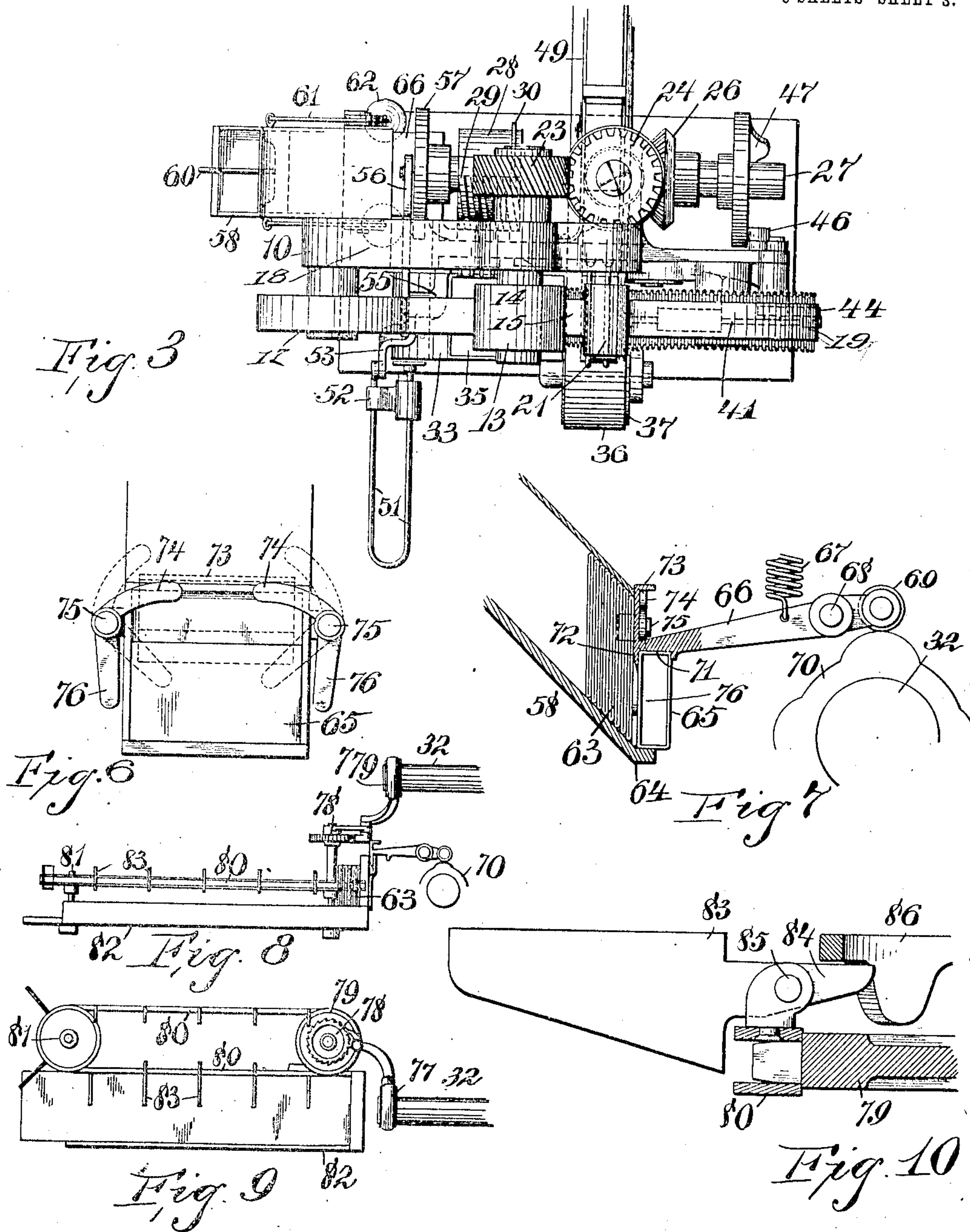
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

WILLIAM H. PARKER, OF PASSAIC, NEW JERSEY, ASSIGNOR TO DIXIE MATCH COMPANY, OF MEMPHIS, TENNESSEE, A CORPORATION OF NEW JERSEY.

MATCH-BOXING MACHINE.

No. 892,545.

Specification of Letters Patent.

Patented July 7, 1908.

Application filed October 23, 1906. Serial No. 340,195.

To all whom it may concern:

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

My invention relates to improvements in machines for boxing matches, and more particularly to machines which are adapted for use in connection with match coils in which the matches are held side by side and bound together by a webbing or belt.

The object of my invention is to produce a machine of this character in which the matches are fed evenly and nicely into the match trays, in which the tubes can be fed in folded and compact shape to a point adjacent to the filled match trays, and in which the tubes are opened, the filled trays inserted in them, and the filled boxes discharged ready for packing.

The invention is illustrated in the accompanying drawings, in which

Figure 1 is a side view of the machine. Fig. 2 is an end view with the chutes supplying the tubes removed from the machine. Fig. 3 is a top view of the machine complete. Figs. 4 and 5 are two views illustrating the mechanism for inserting the trays to receive the matches into the tray holder. Fig. 6 is a face view of the bottom of the chute which delivers the tubes, and Fig. 7 is a vertical section of the same, showing the device that opens the tubes in succession. Fig. 8 is a side view of a modified form of feeding device for the tubes, and Fig. 9 is a top view of the same. Fig. 10 is a view illustrating one of the details shown in Figs. 8 and 9, which is a clip for pressing on the tubes to feed them to the front of the chute, and a mechanism for lifting the clip out of engagement with the chute.

In the drawings 10 illustrates the frame of the machine, and the machine is driven by a suitably placed pulley 11 on the shaft 12. On this shaft is arranged a roll 13, and above it is installed another roll 14, these rolls being arranged to propel a tape 15 which passes between them. The roll 13 is cut away, as at 16, so that the roll will slip at this point and thus make the pulling on the tape intermittent. A coiling device 17 is installed on the machine and is driven by a suitable transmission device 18. The other end of the tape 15 is incorporated in a roll 19,

and closely embraces a series of matches, this roll 19 being secured on a pivoted arm 20. A roll 21 presses down on the tape 15 at a point where the matches emerge from the coil into the chute or guide way 22.

On the back of the machine and secured on the shaft 12, is a gear wheel 23 which meshes with the gear wheel 24, which is mounted on a shaft, the other end of which operates a miter-gear 25 in mesh with a second miter-gear 26, serving to operate the horizontal shaft 27. Suitably disposed, on this shaft 27, is a power wheel 28 which has the spiral teeth 29 arranged around a part of its surface, the balance of the surface of the wheel being provided with a fin or straight tooth 30 which is shown more particularly in Fig. 3. This wheel 28 is in mesh with a gear wheel 31 on the shaft 32, and when the shaft 27 rotates continuously, the shaft 32 is given an intermittent motion and is then locked by means of the tooth 30 until the spiral gears 29 are again in mesh with the wheel 31, when another partial rotation of the shaft 32 is caused. On the shaft 32 is arranged a tray carrier 33 which is furnished, in its periphery, with the recesses 34 for holding the trays 35. These trays are fed to the machine on a belt 36 revolving on one end around a pulley 37 turning on the shaft 38, which is mounted on the bracket 39 which is secured to the machine. The rotation of this belt is continuous from any source of power, and is fast enough to supply boxes faster than they are needed so as to insure a supply. These boxes ride up against a pair of rods 40 which are secured to the machine, as shown in Figs. 1 and 4, thus resting opposite the tray holder. A bar 41 actuates a plunger 42 which is normally held back by a spring 43, and the outer end of the bar 41 is operated by a lever 44 pivoted at 45, on the machine, this shaft 45 having another short lever, the end of which is supplied with a roller 46 engaging the cam 47. This mechanism is so regulated that when the tray holder is at rest and locked in place, the cam 47 operates, through the intervening mechanism, the plunger 42, which plunger snaps the tray in front of it into place in one of the cut away portions 34, this being shown more particularly in Fig. 5. A shield 48 is affixed to the plunger 42 to hold back the set of trays on the belt 36 until the plunger is again withdrawn, and then the next tray 35 is carried, by the belt 36, up

against the rods 40. The trays are guided, when on this belt 36, by suitably disposed guides 49. The tray thus inserted is carried around, on the next quarter rotation of the tray carrier 33, and held underneath the end of the chute 22, the match feeding mechanism being then put in motion to feed the box. As the matches cease to emerge from the chute, the tray holder is advanced another short turn, and the filled box is carried around in front of the plunger 50. This plunger acts to eject the box from the tray holder, and is mounted on the U-shaped rod 51 sliding in the bearings 52, and slid in these bearings by means of the lever 53 pivoted at 54, in the bearing 55. A bar 56 is hinged to the rod 53, on one end, and is supplied with the roller that runs in a cam-groove in the cam 57, thus throwing the plunger forward at a predetermined interval, which will be when the tray holder is at rest.

It will thus be seen that the distance that the tray is carried, in the machine, is very slight, and it takes up very little room and requires a small amount of power. The machine is provided with a means for supplying and holding tubes to receive the trays aforesaid, and these tubes are fed in a chute 58 that is provided with a plunger 59, and a means, as 60, for manually operating and withdrawing the plunger 59 against the action through the cords 61 of the weights 62. The action of the weights serves to force the folded tubes down toward the bottom of the chute, as shown in Fig. 7. The trays 63 are thus caused to lie flat against one another, and the bottom tray is, at the proper time, pressed down from the top onto the platform 64 to assume the position shown as at 65. It is held in this position by the end of the lever 66, which is normally withdrawn by a spring 67, is pivoted at 68, and has a roller 69 that is operated, every quarter turn, by the cam 70 on the shaft 32, this cam lying between the frame of the machine and the wheel 31. The free end of the lever 66 has a recess 71 to receive the tube, and a narrowed portion 72 to pass between adjacent boxes to separate the next succeeding box, and the wall of this portion 72 acts to retard the succeeding tubes while the free end of the lever is down, as in Fig. 7. When the lever is down, in this position, the lip 73, on the top thereof, engages the inner ends 74 of the levers which are pivoted at 75 and have the lower arms 76, allowing the lowest tube to be grasped and opened. When the cam 70 allows the spring 67 to pull back the free end of the lever 66, the upper surface of the lever 66 engages the lower edge of the arms 74, and these levers are made to assume the position shown in dotted outline in Fig. 6, so that when the free end of the lever 66 is up, but one tube has been allowed to emerge far enough to be grasped, at the next descent of the pointed

portion 72. This mechanism is, of course, so regulated that this opening of the tube takes place immediately before the ejecting of a tray, from the tray holder, and when the lever 66 rises up, the filled and closed box drops off the shelf 64. Thus the trays are inserted in the machine, filled with matches, placed in their tubes, and then are ready for packing. In lieu of the feeding, by means of the weights 62, I may provide the feed shown in Figs. 8 and 9, where a suitable eccentric or mechanism 77 is secured to the end of the shaft 32, and this mechanism serves to operate a pawl and ratchet movement 78 on the same shaft with the sprocket wheel 79, over which passes a chain 80, this chain 80 also passing around a sprocket wheel 81, and this chain forming one side or wall of a chute 82. Clips 83 are provided on the chain, these clips projecting out into the chute 82 to positively feed the folded tubes toward the end of the chute. These clips 83 must be lifted out of the way, and out of engagement with the tubes when near the end of the chute, and I prefer to mount these clips 83 as shown in Fig. 10, that is pivot them as shown at 85, and securing them with an inner and shorter end 84, forming a lip which comes in engagement with the cam surface 86, this cam being so disposed as to cause the end of the clip 83 to rise and clear the free end of the lever 66.

I, of course, wish to be understood, as not limiting myself to these methods of feeding and inserting a steady supply of tubes for the trays, as this can be done in a number of ways, and the above described are simply cited as some ways of doing it.

Having thus described my invention, what I claim is:—

1. A machine of the kind described comprising a chute for the passage of the matches, said chute being arranged to hold the matches side by side and in a thin layer, a carrier for the trays arranged below the chute, a second chute arranged to feed folded tubes to a point to one side of the aforesaid carrier, means for opening the tubes and holding them opposite the filled trays, and means for discharging the trays laterally from the carrier into the tubes.

2. A match boxing machine, comprising a chute arranged to deliver matches in a thin layer, a carrier adapted to carry trays below the chute, a second chute arranged to deliver folded tubes to a point at one side of the carrier, a device to severally engage the tubes, open them, and hold them opposite the filled trays, and mechanism for pushing the trays laterally into said tubes.

3. A match boxing machine, comprising a guide chute for matches, arranged to hold them in parallel relation, a tray carrier adapted to move the trays below the chute, a tube chute arranged to deliver folded tubes to a point adjacent to the carrier, a swinging

lever moving opposite the discharge end of the tube chute and adapted to severally engage the tubes, open them, and hold them opposite the trays, and means for pushing the trays from the carrier into the tubes.

4. A match boxing machine comprising a match chute to deliver matches in parallel relation, a tray carrier arranged to carry trays below the match chute, a tube chute to deliver to a point at one side of the carrier and adapted to feed folded tubes, a device to separate a tube from the following tubes, means for opening the tube so separated, and means for pushing a filled tray laterally from a carrier into the opened tube.

5. The combination with the carrier and means for filling trays therein, of the tube chute to deliver folded trays adjacent to the carrier, swinging arms on the sides of the

chute adapted to enter between the front tube and the next following tube, means for actuating the arms and opening the separated tube, and means for discharging a filled tray into the tube so opened.

6. The combination with a carrier and means for filling trays therein, of the tube chute adapted to convey folded tubes to a point near the carrier, and a swinging lever having its free end shaped to engage the front tube of the tube series, separate it from the following tubes, open the tube, and hold it in position to receive a tray discharged from the carrier.

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Witnesses:

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FRANK F. GROFF.