

R. R. KARICH.
CIGARETTE TIPPING MACHINE.
APPLICATION FILED OCT. 12, 1910.

991,514.

Patented May 9, 1911.

4 SHEETS—SHEET 1.

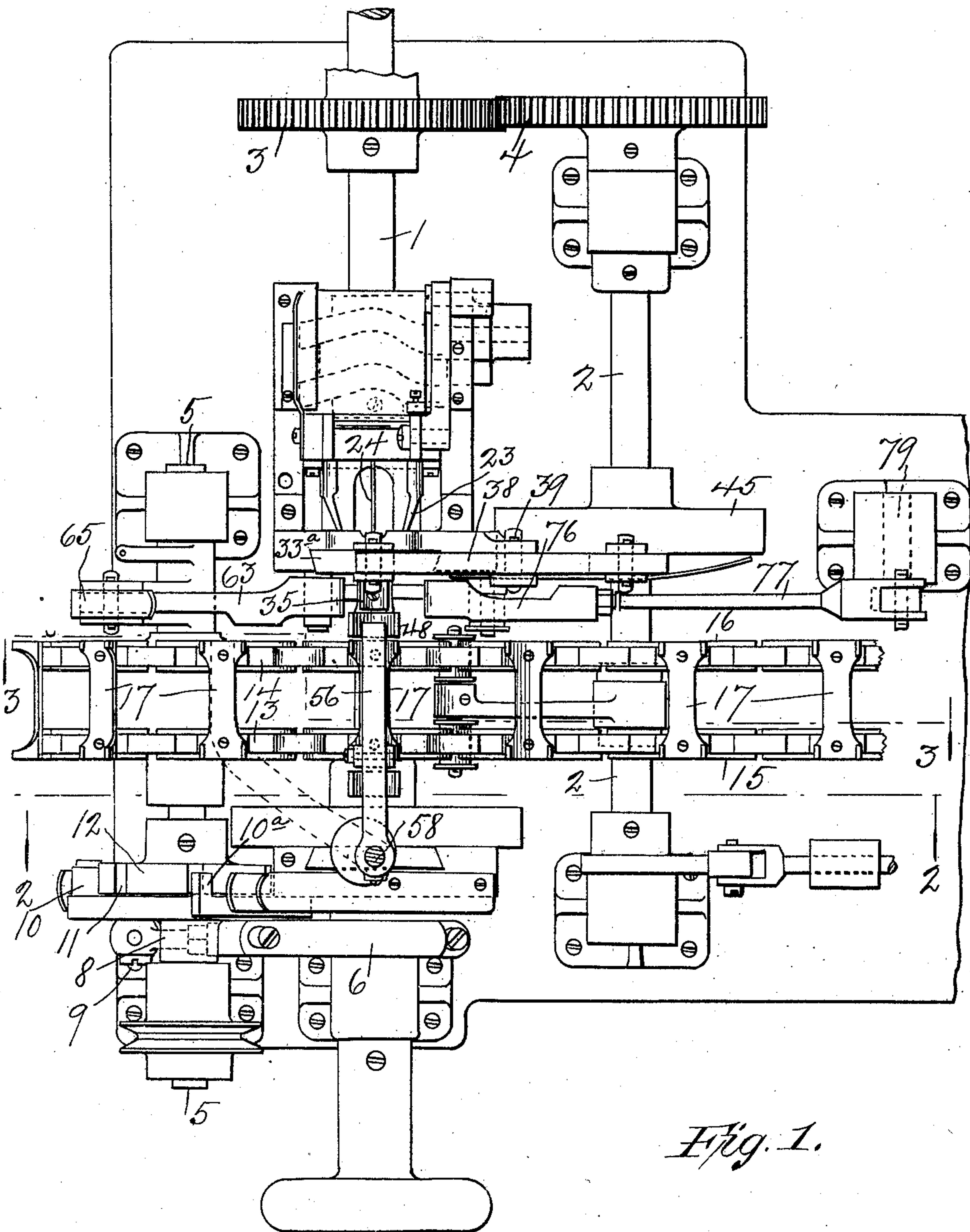


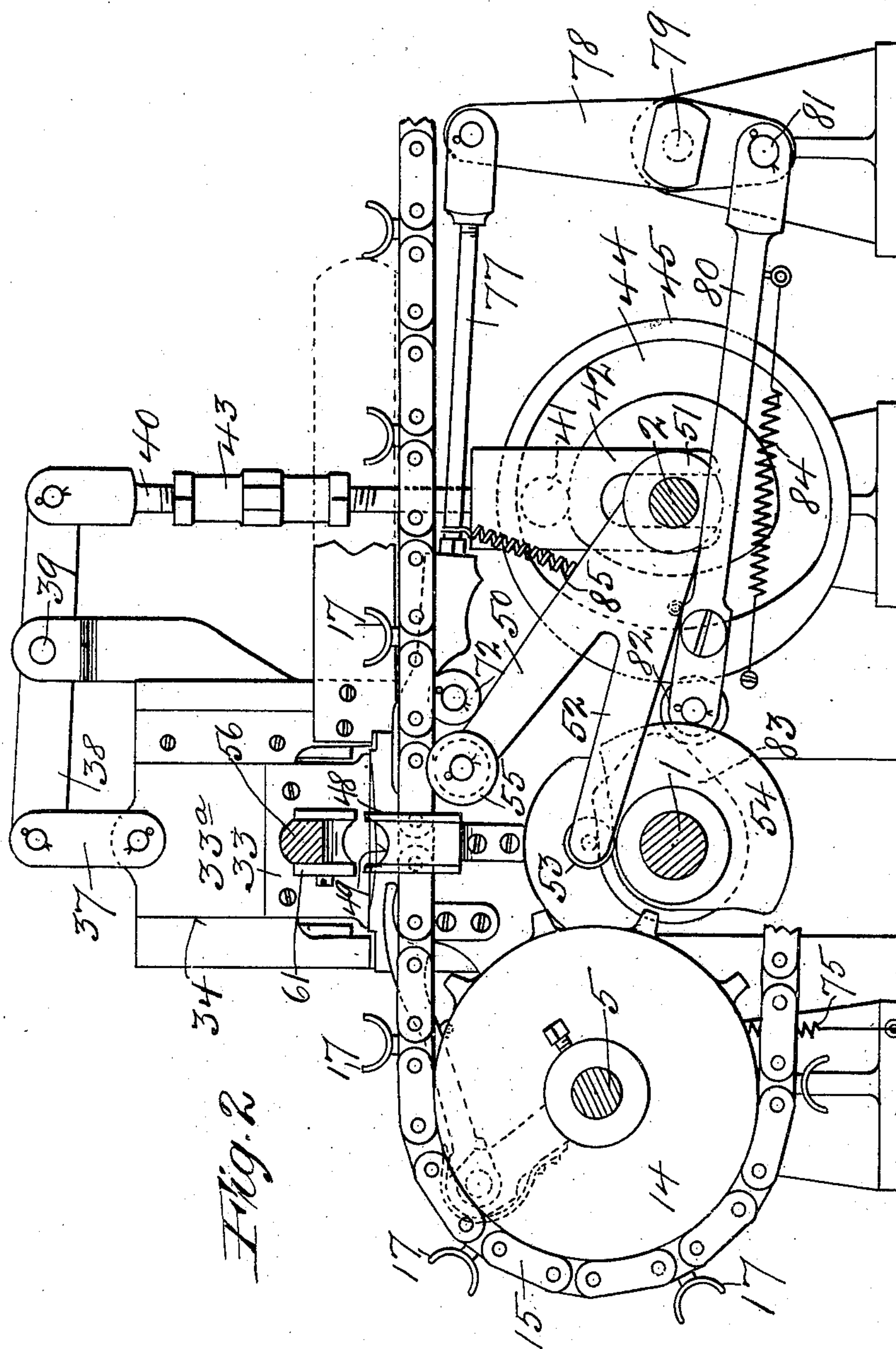
Fig. 1.

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4 SHEETS—SHEET 2.



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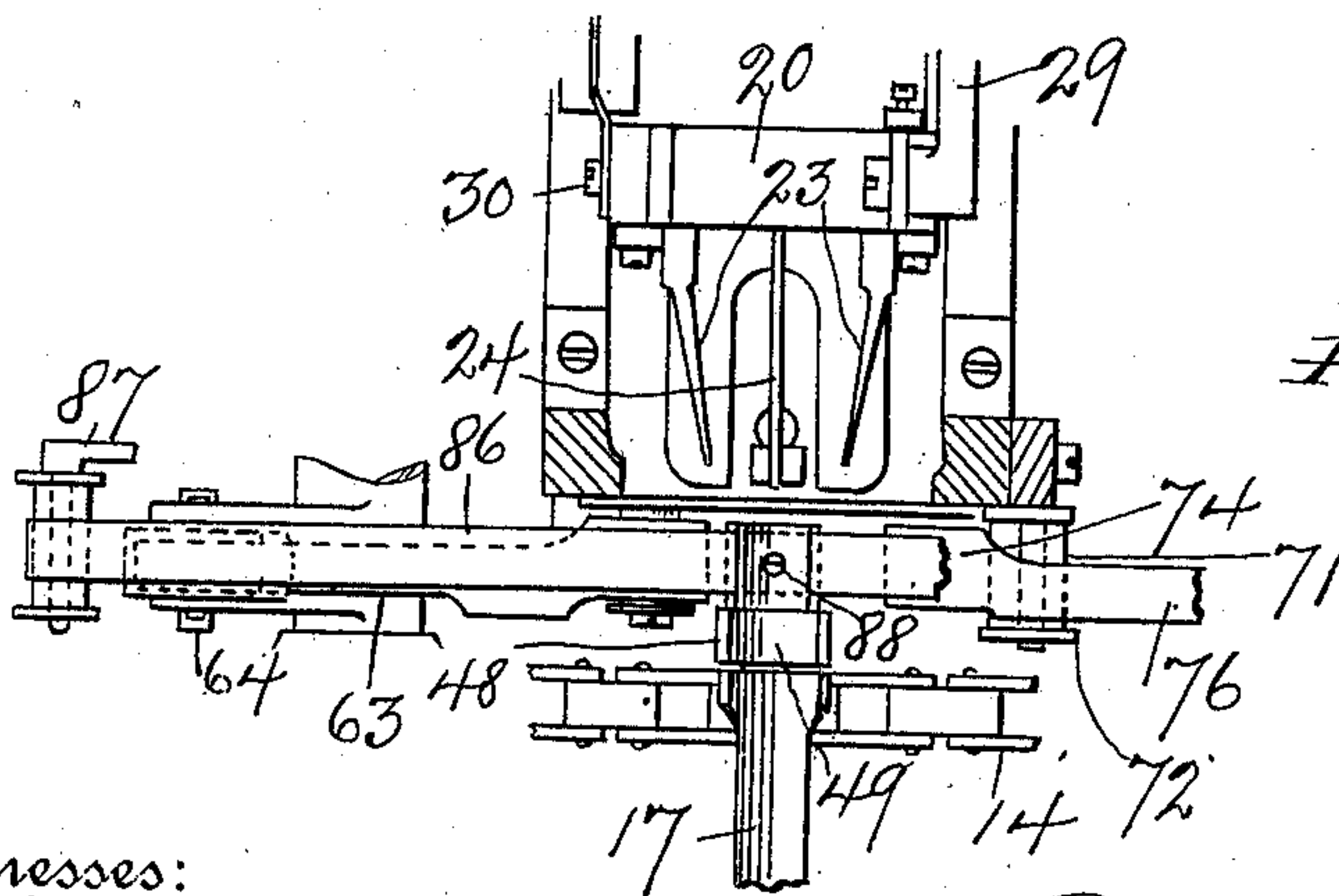
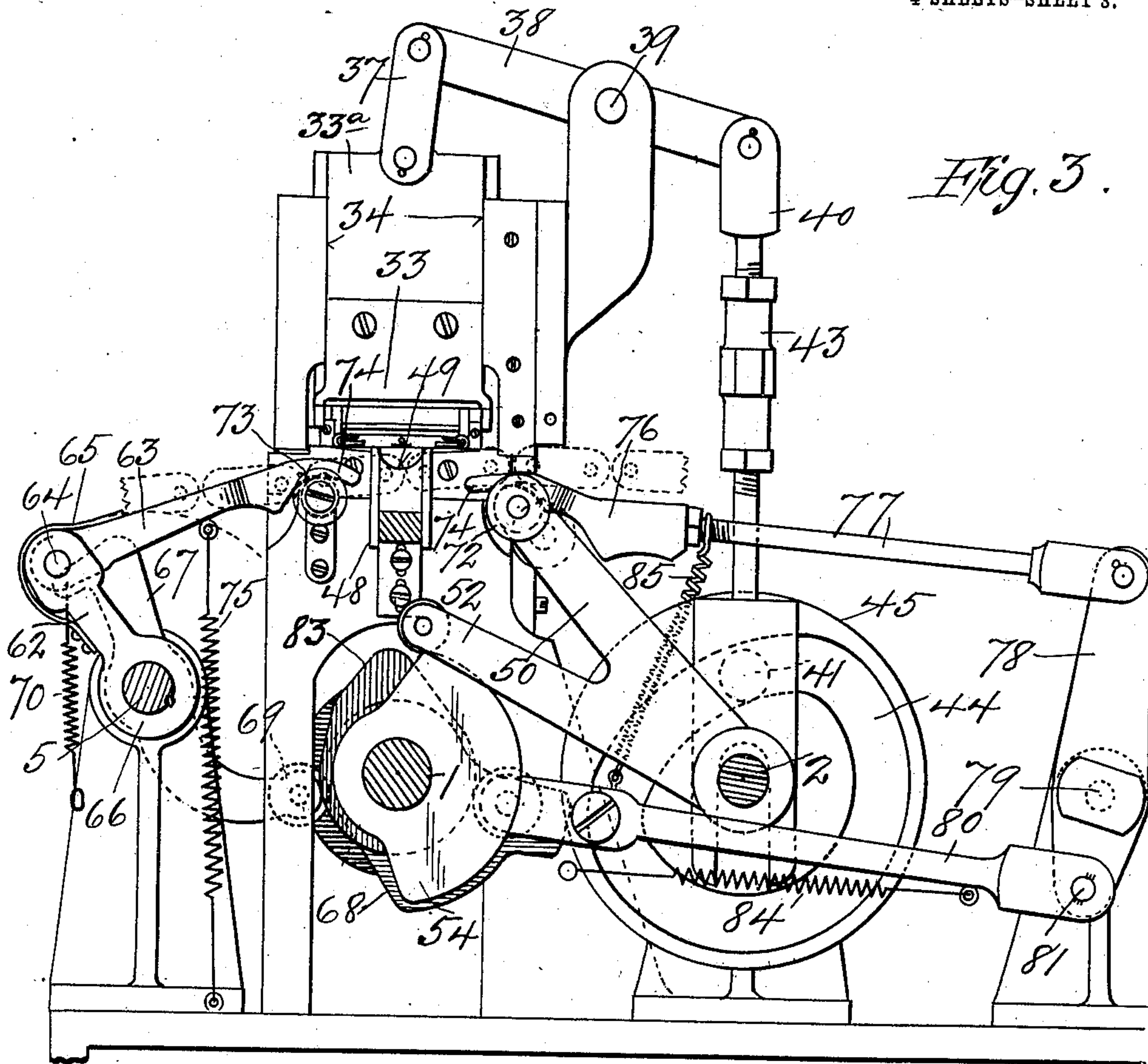
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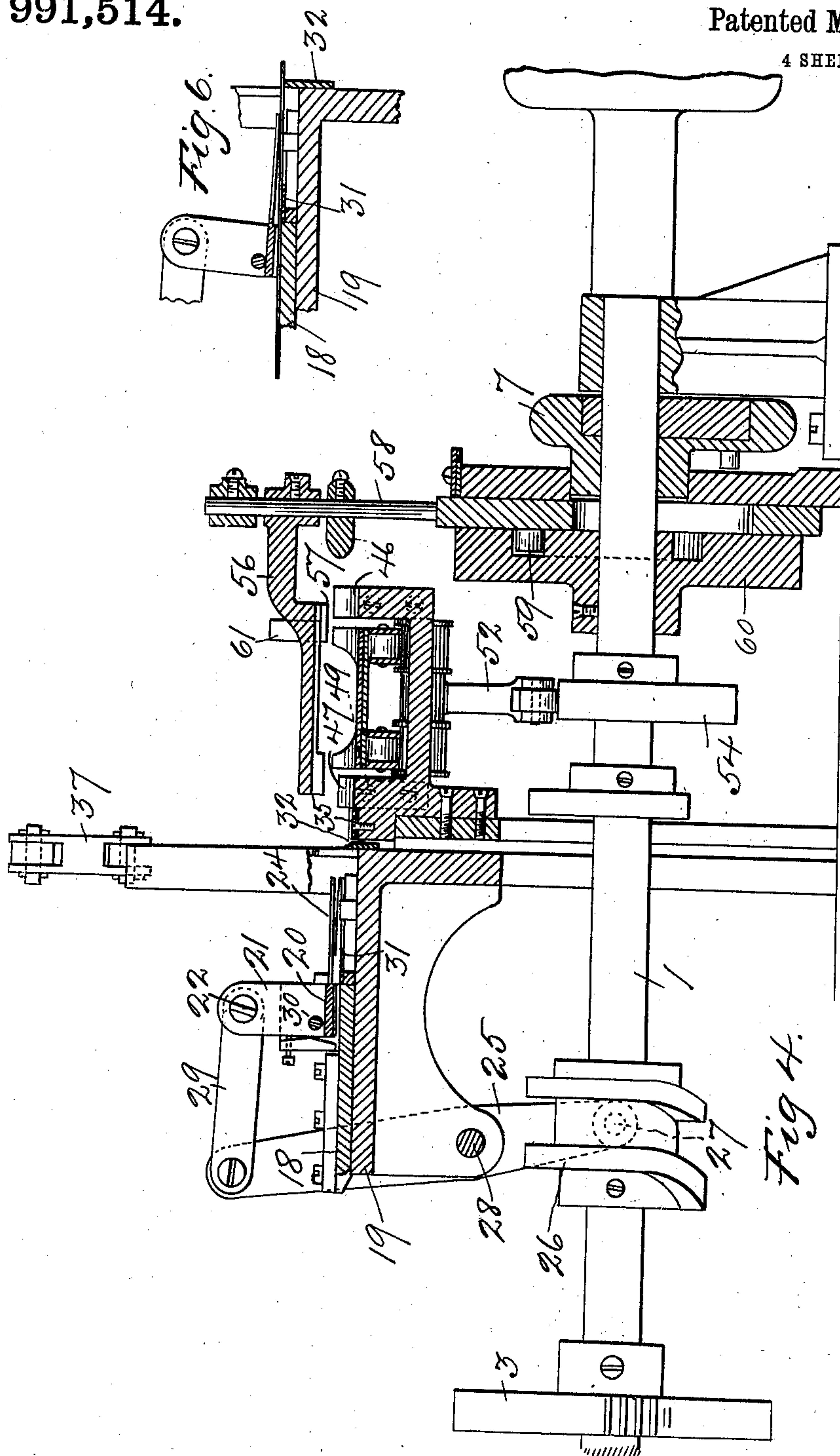
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

RUDOLF R. KARICH, OF NEW YORK, N. Y., ASSIGNOR TO BOUCHER CORK AND MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

CIGARETTE-TIPPING MACHINE.

991,514.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed October 12, 1910. Serial No. 586,609.

To all whom it may concern:

Be it known that I, RUDOLF R. KARICH, who has declared his intention of becoming a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Cigarette-Tipping Machines, of which the following is a specification.

The present invention relates to improvements in cigarette tipping machines of the class known as individual tippers. The object of such machines is to apply to the end of the cigarettes as they are individually brought into a tipping position, a piece of cork or other material which will form a suitable mouthpiece for the cigarette. While the operation of placing the cork mouthpiece on the cigarettes when done by hand is not complex, nevertheless it has been found very difficult to construct a machine which will rapidly and evenly apply the tips to the cigarettes, as the same must be done very accurately to meet the demands of the trade. Owing to the delicacy of the cigarettes themselves, the tips which are applied and the effect of climatic conditions thereon much difficulty has been experienced in constructing a successful machine which will accurately tip without much waste. A machine for this purpose has been devised and is shown in certain U. S. Letters Patent Numbers 933359, dated September 7, 1909, and 970011, dated September 13, 1910, to which cross reference will be made in this case and the object of the present invention is to carry the machine of those patents to a higher state of perfection, though the present improvements are not necessarily limited to use in the machine referred to. Since applicant prefers to utilize the present improvements in a machine of the general character shown in said patents, the present drawings omit some of the parts of the complete machine, and the complete machine can be fully understood by considering the present invention in connection with said U. S. Patents.

The present invention relates to improvements in the means for feeding the cork strip in a position to be severed and applied to the cigarette, to the knife which severs the piece of tipping material from the strip,

and the coöperation of the former with the latter means, to the shape of the pocket which supports the cigarettes in a position to receive the tip; to the fingers which wrap the tip about the cigarette and to the action of the carrier which conveys the cigarettes to and from the tipping position.

A full description of the preferred form of the invention will appear hereinafter.

In the drawings forming a part of this application, Figure 1 is a plan view of my invention, Fig. 2 is a longitudinal section thereof, taken on the line 2—2 of Fig. 1, Fig. 3 is a similar view taken on the line 3—3 of Fig. 1, Fig. 4 is a cross section, Fig. 5 is an enlarged plan of parts of the mechanism, and Fig. 6 is an enlarged section of the cork feeding plate.

Many of the parts of the machine herein are the same as in the said Letters Patent and a review of those patents will be helpful to an understanding of the present machine.

In the present machine cigarettes are individually fed from a hopper upon an endless carrier, which is shown formed of parallel chains which travel over sprockets arranged at opposite ends of the machine; and this carrier is adapted to present the cigarettes successively to a position for receiving the tip, where they are held stationary while receiving the tip and to present the cigarettes successively the carrier is moved intermittently. While the cigarettes are being carried to the tipping position they are properly positioned on the carrier by guides such as in said patents. The tipping material is fed from a long strip in a direction longitudinally of the cigarettes as they are presented for tipping by an intermittent feeding device, is cut, and the severed piece is wrapped about the end of the cigarette.

In the drawings the shaft 1, which is the main shaft of the machine is shown supported upon a suitable standard, from the base of the machine. This shaft is operated continuously by any suitable power and from the shaft another shaft 2, mounted parallel therewith is operated through the gears 3 and 4. From the shaft 2 the knife and the lever for raising the carrier are operated. From the shaft 1, another shaft 5 is intermittently operated through a strap 6 which engages about an eccentric 7 on the shaft 1 and the strap 6 is connected by a rod 8 with

a dog carrying arm 9, the dog 10 engaging in the grooves 11 of the wheel 12 on shaft 5. Upon each revolution of the shaft 1 the eccentric causes the shaft 5 to partially
 5 revolve and then stop for a period, corresponding to the time necessary to apply the tip to the end of a cigarette. A spring pressed catch holds the wheel 12 from following the dog 10 in its return movement.
 10 The shaft 5 carries a pair of sprockets 13 and 14 which are spaced apart a sufficient distance to engage the chains 15 and 16 forming a flexible carrier for carrying the cigarettes to and from the tipping device.
 15 The chains 15 and 16 are flexible and are provided with transversely disposed pockets 17 to receive and convey the cigarettes. The chains are shown traveling around on the sprockets 13 and 14 and they travel over
 20 another pair of sprockets at the other end of the machine the same as in the patents referred to herein and for simplicity the last mentioned sprockets are omitted from the present drawings. The cigarettes are
 25 supplied singly to the pockets 17 and transversely of the carrier, preferably by the same means as that shown in said patents. The carrier thus supplied with the cigarettes and intermittently advanced by the intermittent
 30 revolution of the shaft 5 advances the cigarettes successively to and from the tipping position.

The tipping material is supplied in the form of a continuous strip, usually a very
 35 thin cork, which is supplied on a bobbin suitably mounted and applied with paste as it is fed off, the same as in the said patents. The strip of tipping material after being pasted, travels over a reciprocating plate 18,
 40 which is suitably guided on a platform 19 and near the forward end of the plate it passes under a rocking gripping plate 20 and thence over the plate 18 and between it and the side guiding fingers 23 and releasing
 45 finger 24 from whence it is passed between the knife blades and over the tipping plate. The reciprocation of the plate 18 and also the rocking of the gripping plate 20 are accomplished by means operated from the
 50 shaft 1. There is a lever 25 having a roller 27 on its lower end which engages with and is operated by the cam 26 on shaft 1; and this lever fulcrums at 28. The upper end of the lever is connected by a link 29 with a
 55 plate 21, there being two plates 21, between which the gripping plate 20 is secured and the whole rocks on a pin 30, which is preferably placed near the rear edges of the plates 21, so that when rocked, the plate 20
 60 on its forward edge, will grip the cork against the plate 18 and cause the cork to be fed forward a predetermined amount at each operation. The forward portion 31, of the plate 18 and the fingers 23 are adapted to
 65 be advanced between the knife blades and

over the tip supporting plate, instead of feeding from the rear of the knife blades, thus insuring the delivery of the forward end of the tipping material over the tip supporting plate. For this purpose the tipper
 70 and knife blades 33 and 32 are adapted to be separated by the movement of the upper knife upwardly in the guiding ways 34, sufficient to permit the ends of the plate 31 and the holding fingers 23 to be advanced
 75 between the blades of the knife and over the tip supporting plate 35, where the tip is deposited. As in the patents referred to herein the cork or tipping material is provided with paste, the same means being pre-
 80 ferred as in the said patents and the paste appears on the upper surface of the tipping material as it is fed over the tipping plate.

It has been found that the cutting knife
 85 which contacts with the pasted side of the tipping material has a tendency to drag the cork out of position, thereby causing inaccurate positioning of the cork for the cigarettes and causing the cork tip to be inaccurately applied to the cigarette. To avoid
 90 this the upper knife blade 33 is made movable, which is the knife blade that engages with the pasted side of the cork and in order to prevent the cork from following the knife
 95 and becoming displaced there is provided a movable finger 36 which is preferably connected with the plate 20 and therefore swings therewith at each rocking operation of the
 100 latter. When the cutting knife has been moved down and it has severed the piece of tipping material which has been advanced over the plate 35, if, when the knife is again
 105 raised the tipping strip, owing to the presence of the paste, tends to follow the knife and adhere to it, the finger 36, being positively rocked with the plate 20, will press
 110 down on the tipping material near the knife and separate the tipping material from the knife, without disturbing the position of the cork with relation to the feeding means and the supporting plate. By attaching this finger to the plate 20 it is rocked therewith and is made a part of the feeding mechanism.
 115 Through the mechanism set forth the cork or other tipping material is fed over the plate 35, in a direction longitudinally of the cork and of the cigarettes as they are presented in their position for receiving their
 120 tips. It will be understood that the feed of the cork at each operation of the feeding mechanism is uniform and corresponds with the length of the tip to be applied to the cigarettes and when placed upon the plate 35 it
 125 extends over the lower knife blade 32 a predetermined amount and is ready to be severed from the strip to form a piece of suitable size for the tip. The lower knife is preferably stationary, while the upper knife
 130 is reciprocated to cooperate with the lower

blade in severing the cork. The upper blade is guided in a vertical direction by the guides 34 and is adapted to be operated by a lever action from the shaft 2. On a bracket the lever 38 is fulcrumed at 39 and this lever is connected through a link 37 with the plate 33^a which carries the upper knife blade. The other end of the lever 38 is connected by a rod 40 having a turnbuckle 43, with a block 42, which is bifurcated at its lower end and surrounds the shaft 2, by which latter it is guided; and on this block there is a roller 41 which travels in a cam groove 44 of the cam 45 on the shaft 2. At each revolution of the shaft 2 the cam 45 moves the rod 40 up and down and through the lever 38 the upper knife blade is reciprocated. The limit of movement, or rather the adjustment of the knife action is taken care of through the adjustment of the turnbuckle 43. When the cork strip is severed by the knife action the severed piece which is to form the tip for the next cigarette is left resting on the plate 35 ready to be applied about the cigarette by the action of the retractable fingers.

When the cigarettes are supplied to the movable carrier they are conveyed in the pockets on the carrier to a position over the tipping plate 35 and as they approach the tipping plate the carrier, being flexible, is raised sufficient to carry the cigarettes over a pair of holding pockets which are positioned where they will support the ends of the cigarette during the application of the tip and when the cigarette has been tipped the carrier is again raised to carry the cigarette which has been tipped out of the holding pocket and to carry a new cigarette thereto, the object being to have the cigarette supported on an independent pocket during the tipping operation rather than on the carrier, which, being flexible, is subject to movement. The stationary supporting pocket consists of the grooved members 46 and 47, disposed in line with the tipping plate 35 and between which the flexible carrier is adapted to travel, the cigarettes on the carrier extending laterally beyond the limits of the carrier and therefore over the supporting plate. The plates 46 and 47 are grooved to conform to the shape of the cigarettes being tipped, usually of oval shape, but on each side of these grooves is a plate 48, forming a vertical side running up from the groove 49 and these plates 48 are adjustable, in that they may be placed more or less apart by placing thin pieces of blocking between the plate 48 and the block 46 or 47 as the case may be, the screws 49^a being removed for this purpose. By adjusting this distance between the plates 48 the support may be made suitable for cigarettes of different width and by having the straight side formed by the plates 48 the cigarettes are accurately

guided to their resting position and are held against lateral displacement during the tipping operation by a stationary part.

For raising and lowering the carrier near the holding plates 46 and 47 there is provided a lever which operates under the carrier by a cam moved from the shaft 2. There is a two armed lever having a journal socket 51 which surrounds the shaft 2 and the arm 52 of this lever has a roller 53 which engages with a cam 54 on the shaft 1, the lever fulcruming from the shaft 2. The other arm 50 of this lever is provided with two rollers 55 which contact with the under side of the chains forming the flexible carrier and at each revolution of the shaft 1 the rollers 55 acting on the under side of the carrier raise the carrier near the tipping position so that the cigarette in the holder 17 approaching the blocks 46, 47, is raised sufficiently to carry the cigarette held therein over the tops of the plates 48 and upon the lowering of the roller 53 on its cam the lever rocks downwardly and the cigarette is deposited in the pocket 46, 47, which is a stationary part of the machine and form a support for the cigarette at each end. When the carrier moves downwardly it leaves the cigarette supported entirely by the pockets 46, 47, and the cigarette is not affected by any movement of the carrier while the tip is being placed and the cigarette is not crushed against the carrier. In order to hold the cigarette upon the pocket there is provided an engaging finger which is also provided with means for depressing the carrier at this point in case it does not move down sufficiently to carry out the above purposes. The finger 56 for this purpose is carried upon a rod 58 which is moved up and down by the action of a groove cam 60 on the main shaft 1 acting on the bowl 59 and the finger is disposed so as to extend over the pocket 46, 47, and is grooved at each end to conform to the shape of the cigarette. On this finger are two adjustable plates 61 which are positioned so as to engage the upper edge of the cigarette pocket 17 and on the downward movement of the finger 56 the carrier is forced down far enough to insure the releasing of the cigarette from the carrier and its support on the stationary pocket. When the cigarette is presented in the pocket 46, 47, its end projects over the tip supporting plate 35 and is ready to have the severed tip applied about its end. The fingers for applying the tip about the cigarette have been improved so that their movement is as nearly in a direct line as possible, rather than on the arc of a small circle and they are so guided in their lateral position as to reduce the liability of the fingers to displace the tip or apply it other than evenly on the end of the cigarette. The device for this is as fol-

lows; To the left in Fig. 3 there is shown an arm 62 fulcruming from the shaft 5 on a journal pocket 66, and to the upper end of this arm is fulcrumed at the point 64, a tip applying finger 63, which is pressed downwardly by the spring 65 and the disposition of this finger 63 is such that it moves almost in a direct line, only retracting about the thickness of a cigarette. On the journal pocket 66 of this arm 62 there is carried an arm 67 on the lower end of which is a roller 69 that engages against the cam 68 on the shaft 1 and the upper end of the arm 67 has a spring 70 which tends to hold the roller 69 in contact with its cam. Near the cigarette holding pocket there is secured a roller 71 which serves the double purpose of forcing the end of the tipping finger 63 upwardly and over the cigarette and of guiding the finger laterally. The roller 71 is provided with flanges 72 which straddle the finger 63. The end of the finger 63 is provided with a curved portion 73 which rides on the roller 71 and it is so shaped that it will cause the finger end 74 to travel up and over the end of the cigarette as it is held in the tipping position and then ride slightly downwardly and the return action of the finger is reverse, that is, the finger first rises slightly from the cigarette and then moves away and downwardly from the cigarette so that the tip is not dragged from the cigarette upon the return movement of the finger. The finger 63 is pulled downwardly and in contact with the roller 71 by the action of the spring 75 which insures a close contact between the finger and the roller 71 and the guiding flanges 72 of the roller prevent any lateral play of the finger during the movement of the latter in the application of the tip end about the cigarette and therefore prevents inaccuracy in the application of the tip. There is another finger for engaging the tip from the opposite side of the cigarette which operates similar to the last mentioned finger, but after the same and it applies the opposite end of the tip about the cigarette. This finger 76 is guided by a roller 71 having flanges 72, similar to the other finger and the shape of the curved part 73 is such as to give the finger 76 the same movement as the finger 73. The finger 76 is on an arm or rod 77 which extends rearwardly and is fulcrumed at some distance to a lever 78, rocking from a stationary fulcrum support 79, whereby there is little chance for play in the movement of the finger 76 and the movement of the finger is almost in a direct line. To the lower end of the lever 78 is fulcrumed at 81 a rod 80, which passes under the knife 2 and has on its forward end a roller 82 which engages with a cam 83 on the shaft 1.

It is preferable that the lever 78 be longer above than below the fulcrum so that the rod

80 will have a slight movement. There is a spring 84 which is connected with the rod 80 and with a stationary part of the machine and tends to pull the rod 80 toward the cam 83 to retain its roller in contact therewith. Between the rods 77 and 80 there is also connected a spring 85 which tends to retain the finger 76 in contact with the roller 71 and make the movement of the rod 77 and the rod 80 more even and smooth and noiseless.

In Fig. 5 there is shown a flexible band or belt 86 which is fastened to the plate 35 by a screw 88 and which passes over the ends of the tipping fingers and is secured at each end to spring operated arms 87 which tend to keep the tape taut over the tipping fingers. This part of the device is not more fully shown and described as it is the same and is intended to operate the same and for the same purpose as the corresponding band in the patent referred to, No. 933,359. It is entirely omitted in some of the views of the present drawings for clearness.

The operation of the device will be readily understood from the foregoing description. The cigarettes are deposited singly into the pockets 17 from a hopper in the same manner as in the patents set forth or in any other manner and the carrier is moved at each operation of the machine a distance equal to the distance between two of the pockets 17 and then it remains stationary long enough for the tip to be applied to a cigarette. As each pocket 17 approaches the tipping position the cigarette held therein with its end projecting beyond the carrier, the cigarette comes over the plate 35 and is there held during the tipping operation. As the carrier carries the cigarette to the plate 35 the lever 50, 52, raises the carrier slightly to carry the cigarette over the edges of the grooved blocks 46 and 47, when the carrier is again lowered by the roller 53 riding down on its cam and the cigarette is deposited on the pockets 46, 47, which support it at each end. To insure the disengagement of the carrier from the cigarette during the tipping the plate 61 on the pressing finger 56 contacts with the holders 17 and when the finger 56 moves down it presses the carrier out of contact with the cigarette, leaving the latter supported by the blocks 46 and 47. The finger 56, engaging the cigarette holds the latter in position during the tipping operation. When the cigarette is about to be advanced to the tipping position, the cork or other strip of tipping material is fed forward by the action of the feeding mechanism. The lever 25 is rocked by its cam 26, and through the link 29 the plate 20 is rocked on its fulcrum 30 until the forward edge engages the tipping material between it and the plate 18, and at the same time the pin 36 is positively moved

and it will cause the cork to be disengaged from the upper knife as the same has a tendency to follow it because of the paste. The plate 18, and the gripping plate 20 will now be advanced and will carry the cork strip over the plate 35, and in doing so the plate end 31 will be advanced through the knives and insure the proper delivery of the cork end over the plate. The plate 18 will then retract and the upper knife will be depressed by the action of the cam 45 through the rod 40, the lever 38 and the link 37, and the cork strip will be severed leaving a piece deposited on the plate 35 of sufficient size to form a tip for a cigarette. The cigarette now being advanced over the plate 35 as described and being held thereon by the finger 56 the tip is ready to be wrapped about the end of the projecting cigarette. The roller 69 of the arm 67 will be moved by the cam 68, and as a result the arm 62 will be rocked. The finger 63, rocking with the arm 62 will be caused to move upwardly from a position normally below the path of the cigarette and it will carry the edge of the tip about one side of the cigarette. The shape of the part 73 which engages against the roller 71 is such as to cause the end 74 to rise over the cigarette and then when it is at about the extreme of its movement ride slightly down and press the tip end on the cigarette. After which the end 74 will first slightly rise from the cigarette and then move away, avoiding any tendency to drag the tip which has been partially applied on the cigarette and the finger 63 will come to rest below the path of the cigarettes. In moving up and away the finger 63 will be held against side movement by the flanges of the roller 71, so that the engagement with the tip and cigarette will be accurate. When the finger 63 has been retracted the finger 76 is moved in a similar manner and its roller 71 guides the same in a manner similar to the first finger. In this case the rod 80 is rocked by the cam 83, which in turn rocks the lever 78 and this in turn rocks the rod 77 on which the finger 76 is carried. The finger 76 rises about the cigarette similar to the finger 63 and carries the other end of the tip about the cigarette from the opposite side and causes it to slightly overlap the first end. The finger 76 is then retracted and the cigarette is completely tipped. The lever 50, 52, will now be again rocked and the carrier will also be advanced one station and a new cigarette will be advanced to the tipping position as the tipped one is lifted off the blocks 46, 47, by the rising carrier and carried away to be discharged.

From the foregoing it will be apparent that the construction of an individual tipping machine has been carried to a higher state of perfection and the parts work ac-

curately and with less play, with greater accuracy and less liability of causing defective tips to be applied.

Having described my invention what I claim is;

1. In a cigarette tipping machine the combination of means for successively presenting cigarettes over a plate for tipping, a tipping plate, cutting members near said plate, and means for intermittently feeding tipping material over said plate and between the cutting members, comprising a reciprocating plate, and a rocking plate above the same adapted to grip the tipping material, and an engaging finger carried by the rocking plate, and means adapted to rock the rocking plate and finger and reciprocate said plates, whereby said plates will grip and advance the tipping material between the cutting members and over said tipping plate, and whereby said finger will pass between the cutting members when the tipping material is advanced.

2. In a cigarette tipping machine the combination of means for successively presenting cigarettes to a position for tipping, a tip supporting plate, and means for intermittently feeding tipping material over said plate, means for severing a piece from the tipping material, and retractable fingers normally lying below the path of the cigarettes as they are moved to and from the tipping position and adapted to wrap the ends of the severed tip about the cigarette, means for moving said fingers, and rollers with which said fingers engage to guide the fingers about the cigarette, said rollers having flanges for guiding the said fingers laterally.

3. In a cigarette tipping machine the combination of means for successively presenting cigarettes to a position for tipping, means for intermittently feeding tipping material to be applied to the cigarette, retractable fingers for wrapping the ends of the tips about the cigarettes, and means for operating the fingers, and rollers adapted to guide the tipping fingers in relation to the cigarette, said finger having cam surfaces for engaging said rollers which are so shaped as to cause the ends of said fingers to rise about the cigarette, carrying the tipping material therewith to a position above the cigarette and then press slightly down thereon and to retract by a reversal of said movement.

4. In a cigarette tipping machine the combination of means for successively presenting cigarettes to a position for tipping, means for intermittently feeding tipping material to be applied to the cigarette, a retractable tip applying finger for wrapping the tip on the cigarette, a rod carrying said finger, a lever fulcrumed to a stationary support, an operating shaft having a cam,

a rod on said lever engaging the cam, a roller for guiding said tipping finger in relation to the cigarette, and a spring for retaining the finger in contact with said roller.

5 5. In a cigarette tipping machine the combination of means for successively presenting cigarettes to a position for tipping, means for intermittently feeding tipping material to be applied to the cigarettes, a retractable tip applying finger for wrapping the
10 tip on the cigarette, a rod carrying said finger, a lever fulcrumed to a stationary support, an operating shaft having a cam, a rod on said lever engaging the cam, said lever being longer above than below the fulcrum, a spring between said rods, and a
15 roller for guiding said tipping finger in relation to the cigarette.

6. In a cigarette tipping machine an endless flexible carrier for presenting cigarettes to a position for tipping, means for intermittently moving the carrier whereby it will remain stationary during the tipping operation, stationary means for supporting
20 the cigarettes in their tipping position, means for feeding and applying tipping material to the cigarettes, and means for raising and lowering the flexible carrier whereby the cigarettes will be deposited on the
25 said stationary support during the tipping operation and then taken by the carrier.

7. In a cigarette tipping machine the combination of an endless flexible carrier for presenting cigarettes to a position for tipping, means for intermittently moving the carrier whereby it will remain stationary
35 during the tipping operation, a stationary pocket for supporting the cigarettes at each end while in their tipping position, means for feeding and applying tipping material to the cigarettes, a lever adapted to raise the flexible carrier near the stationary support-

ing pocket to deposit a cigarette thereon, and a cam for operating said lever.

8. In a cigarette tipping machine the combination of an endless flexible carrier for presenting cigarettes to a position for tipping, means for intermittently moving the carrier whereby it will remain stationary during the tipping operation, a stationary
45 pocket for supporting the cigarettes at each end while in their tipping position, means for feeding and applying tipping material to the cigarettes, a lever adapted to raise the flexible carrier near the stationary support-
50 ing pocket to deposit a cigarette thereon, and a cam for operating said lever, a movable finger adapted to retain the cigarettes on the pocket during the tipping operation, and means movable with the said finger and
55 adapted to engage the carrier to insure the disengagement of the carrier from the cigarette while the latter is in the tipping position.

9. In a cigarette tipping machine an endless flexible carrier adapted to present cigarettes to a tipping position, means for feeding and applying tipping material to the cigarettes when presented, a stationary
65 holder for supporting the cigarettes during the tipping, having a groove to conform to the shape of the cigarette and vertical guides at each side of the groove, means for moving the flexible carrier intermittently to present the cigarettes to the stationary holder,
70 and means for intermittently raising the carrier to deposit the cigarettes in the supporting pocket.

Signed at the city, county and State of New York, this 6th day of October, 1910. 80

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