

No. 863,105.

PATENTED AUG. 13, 1907.

A. SHEDLOCK.
FEEDING MECHANISM.

APPLICATION FILED MAR. 19, 1903.

3 SHEETS—SHEET 1.

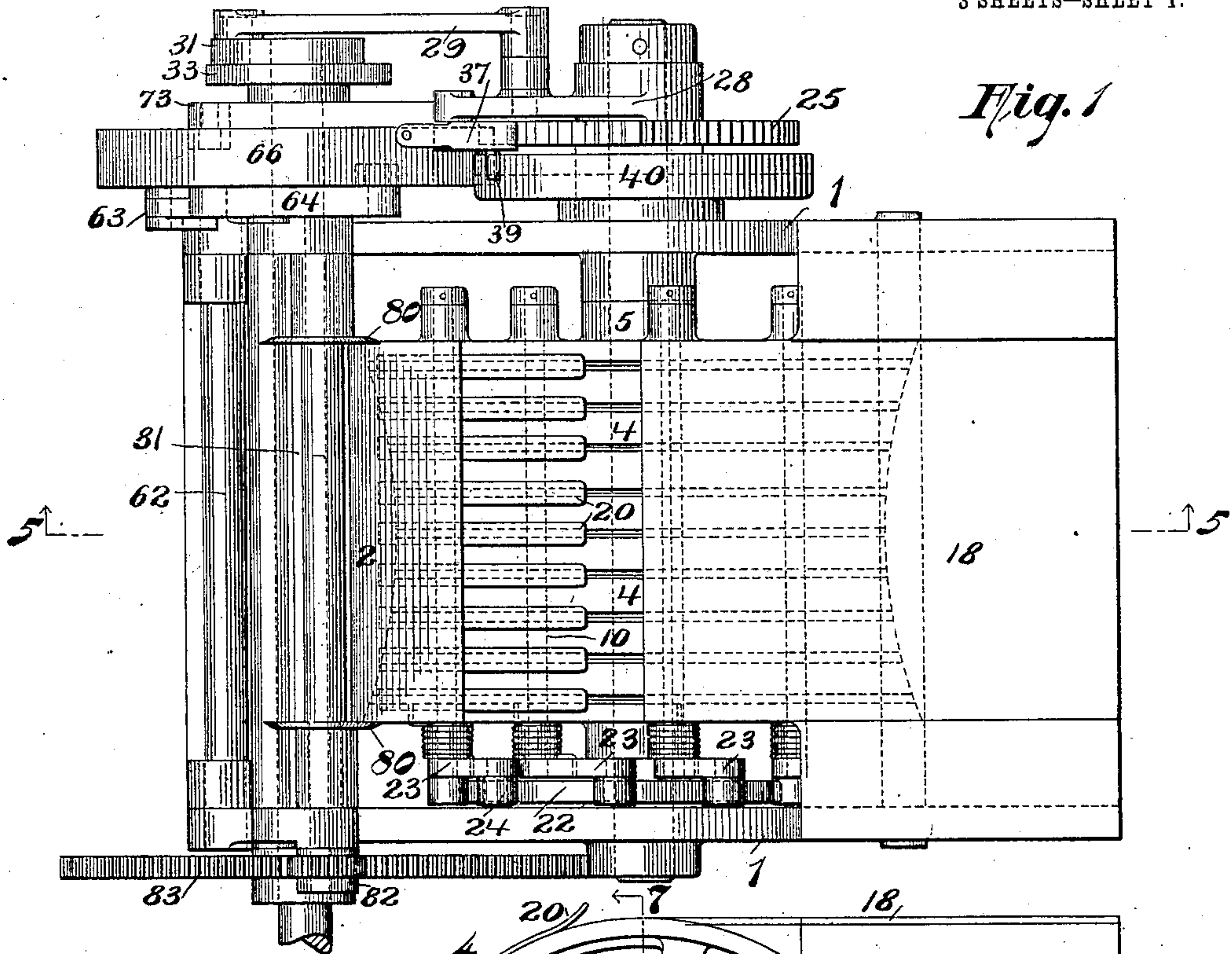
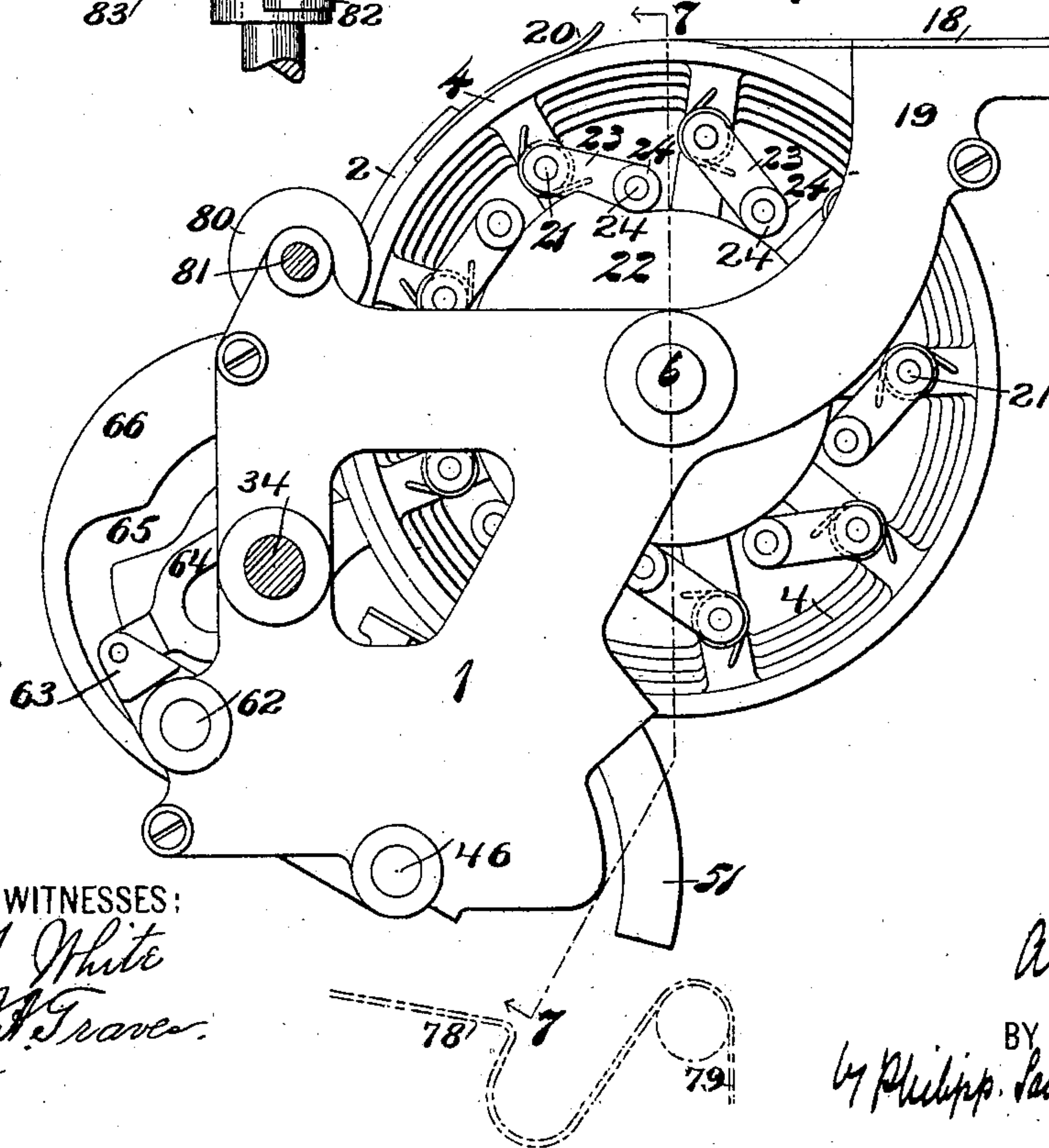


Fig. 2



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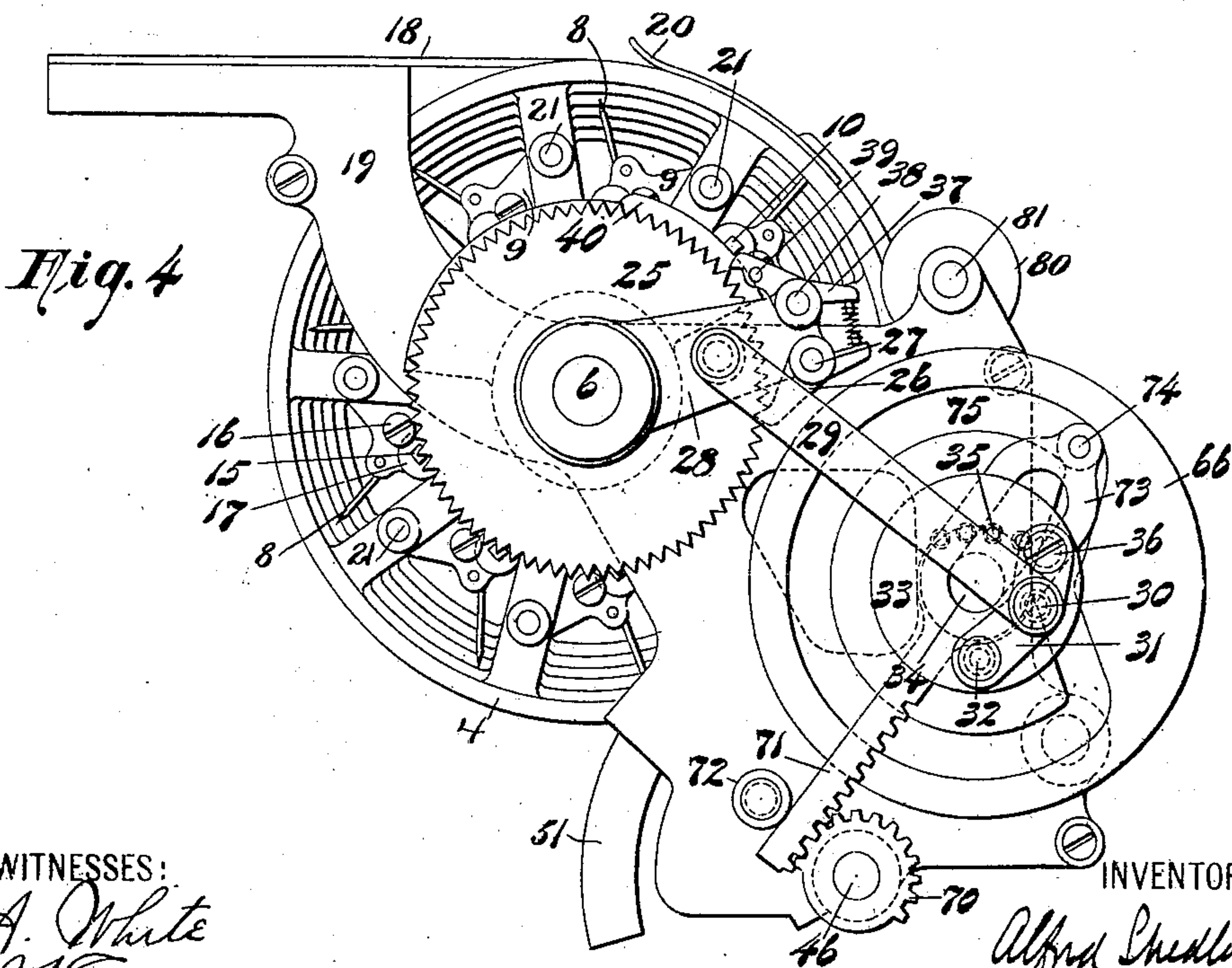
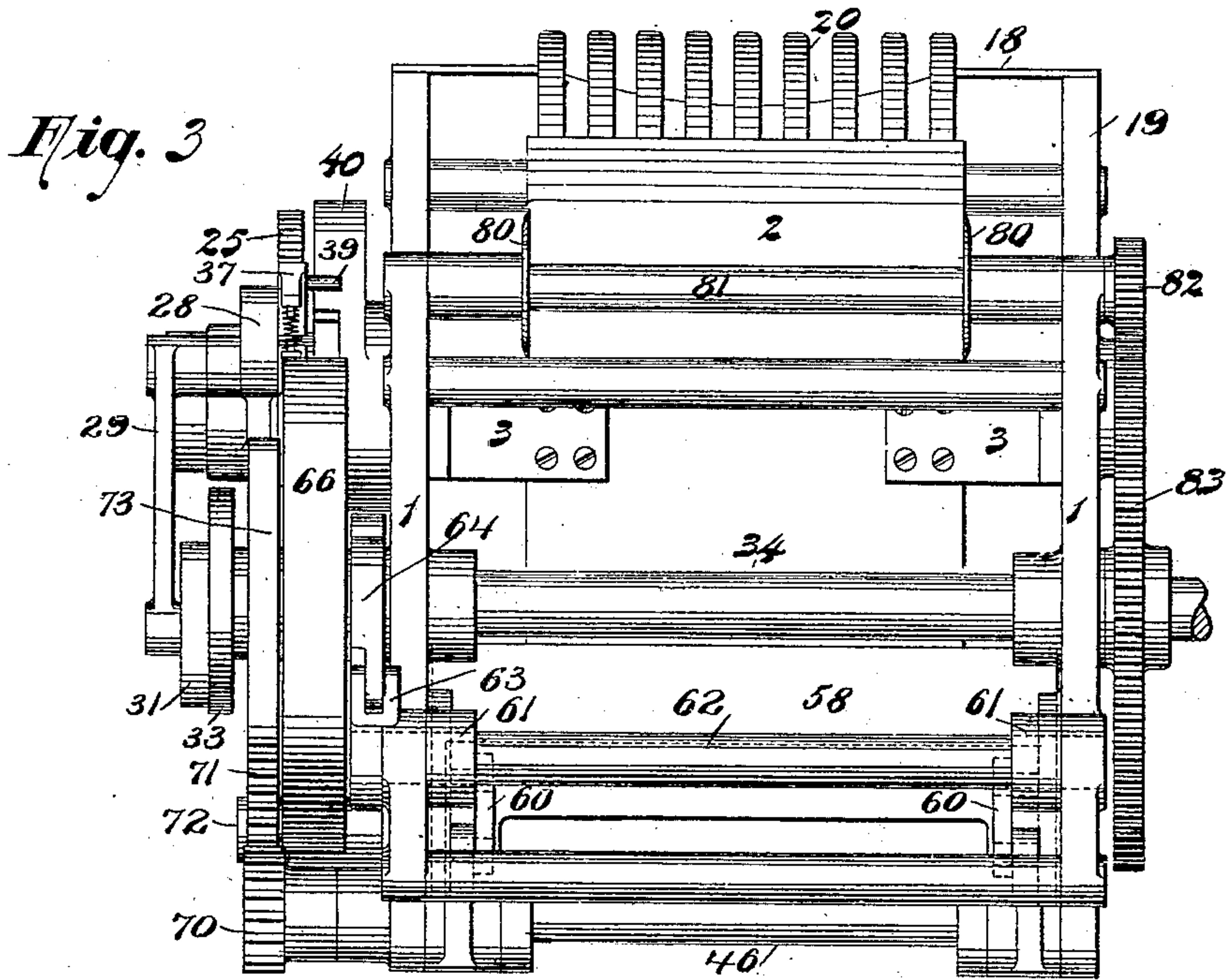
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 5

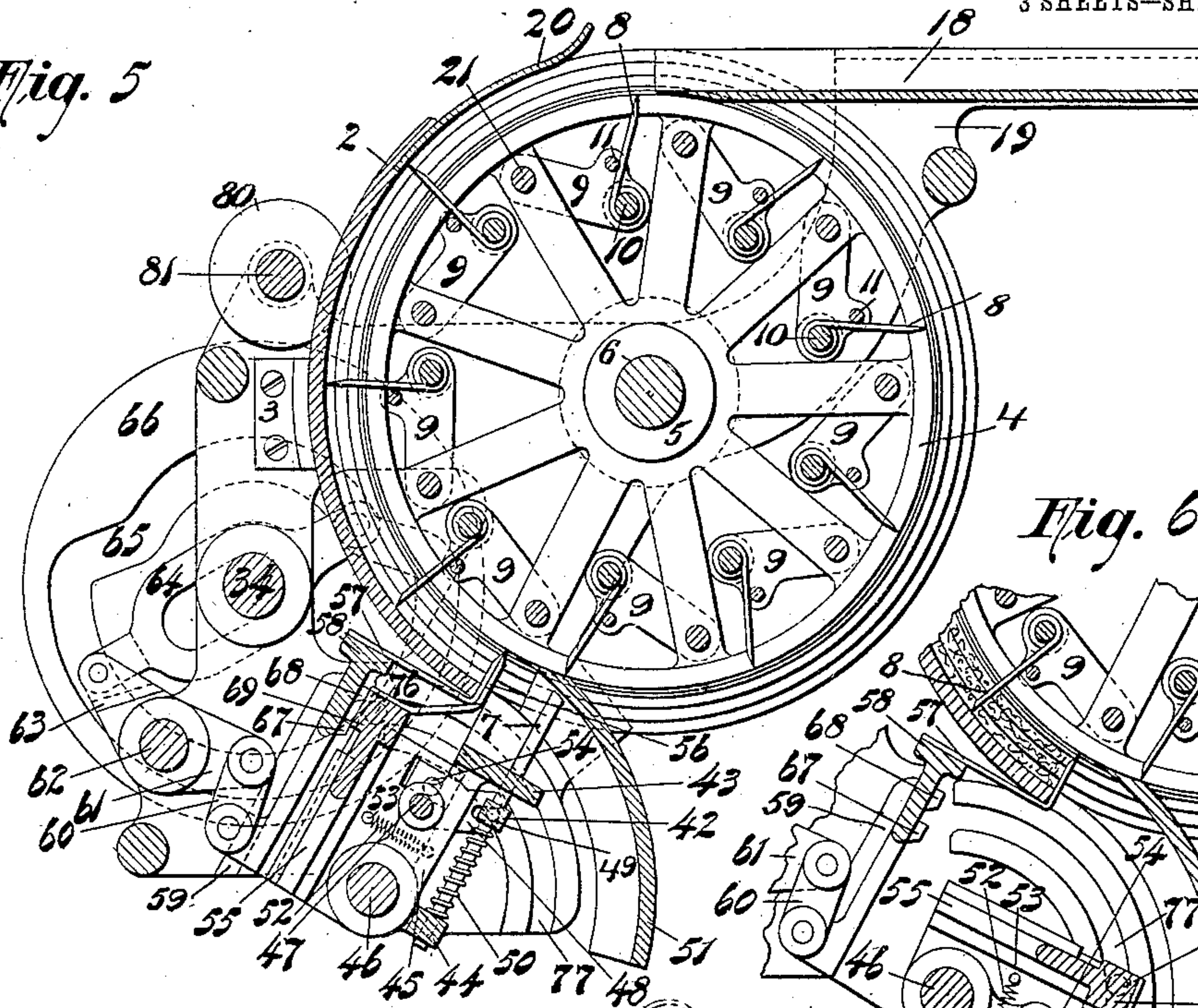


Fig. 6

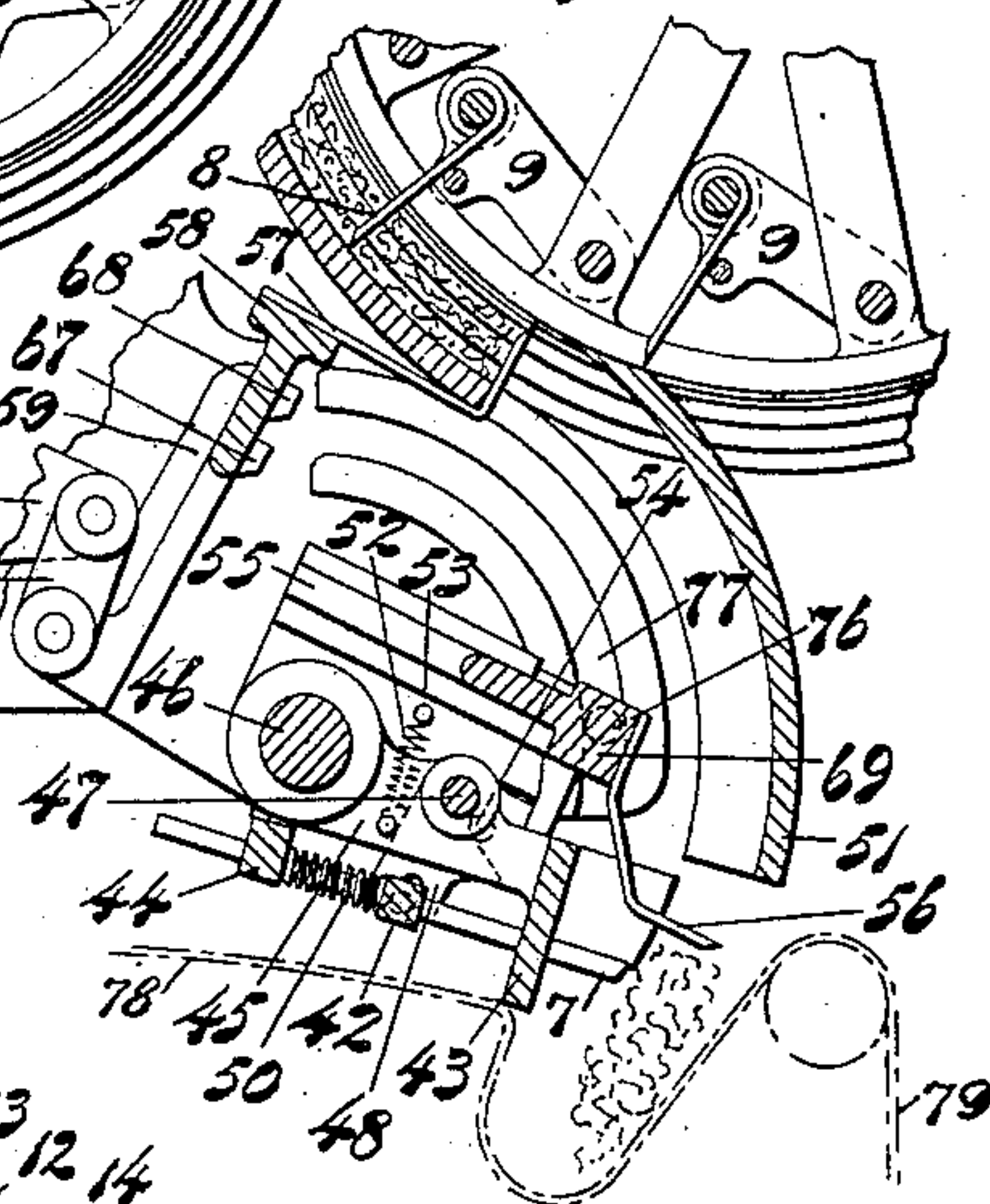
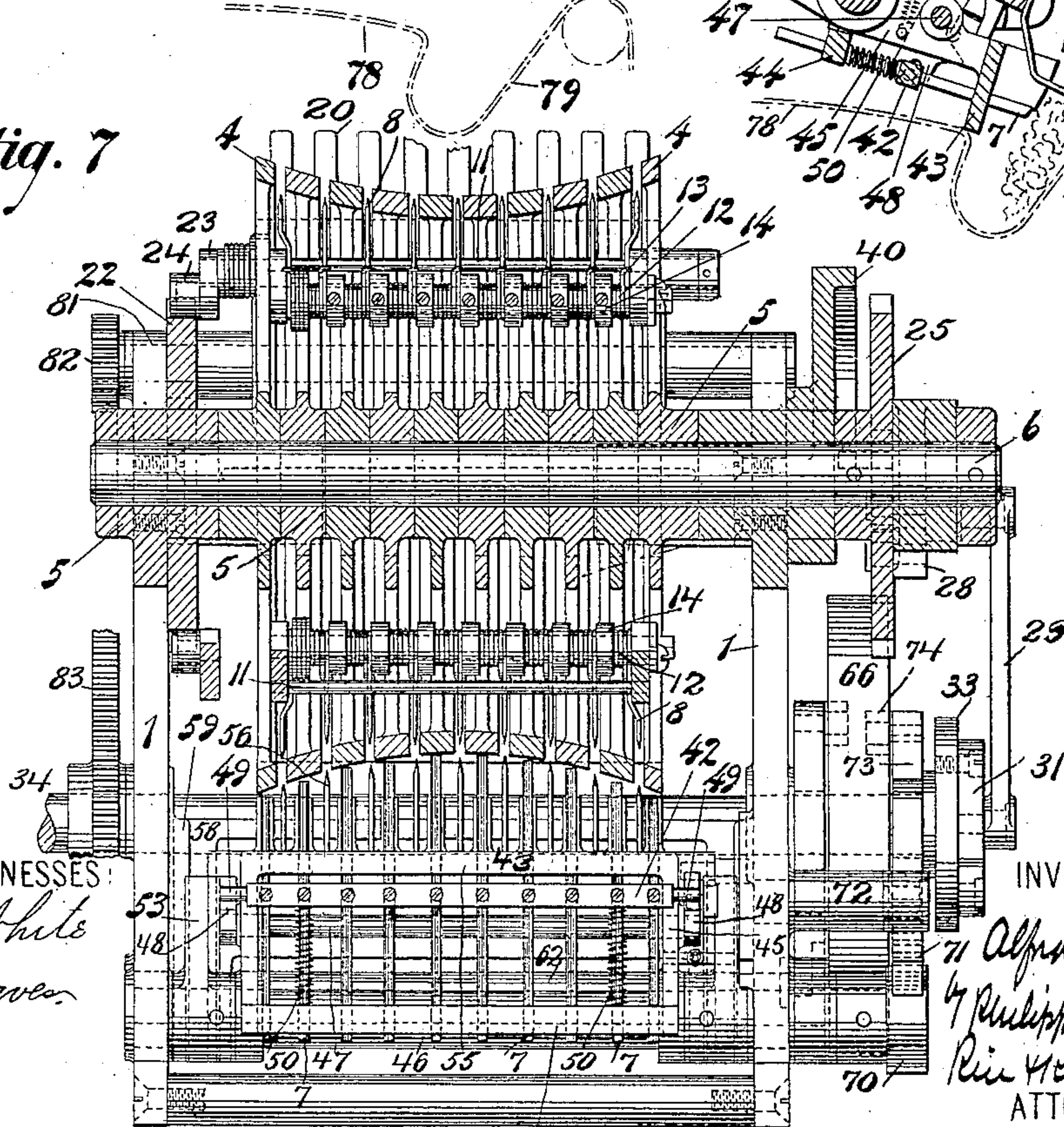


Fig. 7



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UNITED STATES PATENT OFFICE.

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FEEDING MECHANISM.

No. 863,105.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Application filed March 19, 1903. Serial No. 148,490.

To all whom it may concern:

Be it known that I, ALFRED SHEDLOCK, a citizen of the United States, residing at Jersey City, county of Hudson, and State of New Jersey, have invented certain new and useful Improvements in Feeding Mechanism, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in feeding mechanism, and has for one of its objects to produce an improved feeding device for advancing through a channel and compressing therein loose material, such, for instance, as the tobacco which is to form the filler of cigars.

A further object of the invention is to produce an improved feeding device for feeding loose material, such, for instance, as tobacco which is to form a filler for cigars, through a channel and compressing it in the channel, and also to give it a stirring or loosening movement in the channel in order that it may be evenly compacted.

A further object of the invention is to produce an improved device for removing successive charges of material from a mass which is fed through and compacted in a channel.

With these and other objects in view, the invention consists in certain constructions and in certain parts, improvements and combinations as will be hereinafter fully described and then specifically pointed out in the claims hereunto appended.

Referring to the drawings—Figure 1 illustrates a plan view of one form of mechanism embodying the invention. Fig. 2 is a side elevation of the construction shown in Fig. 1. Fig. 3 is an end elevation of the construction shown in Fig. 1. Fig. 4 is a side elevation illustrating the opposite side of the machine from that shown in Fig. 2. Fig. 5 is a section on the line 5—5 of Fig. 1. Fig. 6 is a detail view illustrating part of the construction shown in Fig. 5, but with the parts shown in a different position. Fig. 7 is a section on the line 7—7 of Fig. 2.

Referring to the drawings which illustrate a particular form of mechanism for carrying the invention into effect, 1 indicates a frame which may be of any suitable or desired construction and configuration.

In accordance with the present invention, the tobacco or other material to be fed and compacted, is forwarded through a channel. While this channel may be of any desired configuration and construction, as shown, one side thereof is formed by a stationary curved plate 2 mounted on brackets 3 which extend from the frame. The other side of the channel is formed by a series of drums 4, said drums being provided with hubs 5 which are fixed to a shaft 6 suitably supported in the frame of the machine.

When the machine is to be employed for feeding tobacco which is to form the filler for cigars, the drums will, in the preferred construction, vary in diameter as shown, and will have their rims disposed at an angle so that the side of the channel formed by the drums will correspond generally in contour with the shape of the cigars to be made. The drums will preferably also be spaced from each other so as to form interstices through which the feeding devices hereinafter described may be operated.

In order that the feeding devices may compact the material in the channel there is provided an abutment against which the material is forced as it is moved through the channel by the feeding devices. In the construction shown, this abutment consists of a series of fingers 7 which form a gate. The construction of this gate will be more fully described hereinafter.

The feeding devices by which the tobacco is forwarded through the channel may be varied widely in construction. They will, however, be so constructed as to be automatically disengaged from the material in the channel when the same has been compressed to a certain predetermined degree. In the preferred form of the construction and as shown, these feeding devices consist of a series of sets of fingers 8, the sets being arranged to successively engage the tobacco in the channel. These fingers may be variously mounted and operated.

As shown, the two outer drums 4 are provided with a series of pairs of arms 9 each of said arms serving to support a cross bar 10. Each set of fingers 8 is pivotally mounted on its carrying crossbar 10, the fingers being forced against stops 11, which are or may be mounted on the arms 9, by means of coiled springs 12, the ends 13 of said springs being hooked around the fingers. The opposite ends of the coiled springs are secured to collars 14 which are fast on the cross bars. Means are preferably provided for adjusting the tension of the springs. These means may be of any desired character, but as shown, the cross bars are made revoluble in their supporting arms and are provided with squared ends 15 (see Fig. 4) by which any bar may be turned to adjust the tension of all the springs on that bar. After the tension of the springs has been adjusted the bar is locked in position by means of a locking screw 16, the head of which overlaps a flange 17 carried by each bar.

The tobacco may be supplied to the feeding channel in any desired manner. As shown, there is provided a feeding table 18 which is supported on brackets 19 extending from the frame of the machine. In order to guide the tobacco in the channel, the end of the curved plate 2 is or may be provided with spring fingers 20, the ends of which are turned outwardly to form a flaring mouth for the channel. The means for causing the feeding fingers or other feeding devices to engage

the material in the channel and to give said fingers their feeding movements may be widely varied. In the construction which has been described, however, it will be seen that the outer drums which support the arms 9 form a carrier, the arms being pivoted to the carrier by means of shafts 21 which extend across the drums from side to side. The feeding movement of the fingers is produced by giving the drums which in the present construction constitute the carrier a rotating movement. The means by which this movement is effected will be hereinafter described.

In order that the feeding fingers may engage with the material in the channel, there is provided a cam 22 which is fast to the frame, the shaft 6 before referred to passing through it. Each of the shafts 21 is provided with an arm 23 which, as shown, carries a bowl 24 which runs on the periphery of the cam 22. This cam 22 is so shaped as to throw up the arms into engagement with the mass of material just after each set of pins in the rotation of the carrier clears the end of the feeding trough 18. As the carrier rotates, the sets of pins are successively caused by the cam 22 to engage the material in the channel, and feed it forward until it is forced against the abutment or gate 7. When the machine is first put into operation, the gate is left closed until the channel has become entirely filled by a compacted column or mass of material. It will be seen that as each set of pins approaches the gate, the pins are free to rock backwards against the stress of their holding springs so that they become disengaged from the material and can pass the gate although it is in closed position. When the channel has become filled with material in a compacted mass, the gate and the charge removing devices hereinafter to be described, are operated to remove successive charges of material from the channel. It will be seen, however, that each set of pins is free to become disengaged from the mass of material in the channel at any time, so that if the channel becomes filled, the pins will become disengaged whenever the mass of tobacco in the channel has become sufficiently compacted to offer sufficient resistance to overcome the stress of the springs by which the fingers are maintained in feeding position. It will be furthermore noticed that, because each of the fingers of each set is independently yieldingly mounted with respect to the other fingers of the set, certain of the fingers of any set may be disengaged from the mass while the other fingers remain in engagement therewith. By this construction, the mass of tobacco is compacted evenly, even though the tobacco is fed somewhat unevenly. In other words, if the tobacco in front of some of the fingers has reached the proper density, these fingers will be rocked backward against their springs and become disengaged from the mass, but the other fingers will continue to feed the tobacco forward, provided there are soft spots in front of them which should be filled with tobacco.

Under certain circumstances, it may be desirable to cause the feeding fingers or pins not only to feed the compacted tobacco forward, but to also loosen it up somewhat, in order that it may be evenly distributed in the channel and thus be sure to be evenly packed therein at the time when it is removed by the charge removing devices to be hereinafter described. The purpose of this is to insure that the charges removed by the charge

removing devices shall be of the same density. When it is desired to have the fingers effect this loosening function in addition to the compacting function, as may be the case when certain kinds of tobacco are being operated upon, this will be effected by giving the carrier intermittent forward and backward movements, the forward movements being of greater extent than the backward movements.

The operation of the pins or feeding fingers when the carrier is given the intermittent forward and backward movements above referred to is as follows: If on the forward movement, a given set of pins is forced by the density of the mass out of engagement with the tobacco, these pins will be dragged forward under the mass in the channel without producing any feeding movement. As the carrier reverses its movement, however, the points of the pins will catch in the mass of tobacco in the channel and the resistance of the tobacco behind the pins together with the stress of the springs will cause the pins to turn on their supporting rods and thus force them upward into the mass of tobacco. This action will continue until the pins are brought against the stops 11 before referred to, after which the pins will move the mass of tobacco in the channel backwards, thus loosening the tobacco up. As the forward movements of the carrier are greater in extent than the backward movements, it follows that the pins will, on the backward movement of the carrier, be forced into the mass of tobacco in the channel at points ahead of the points where they were disengaged from the mass, so that they tend to move back certain portions of the mass and thus keep the mass in a loose condition, so that it may be compacted evenly.

From the preceding description, it is apparent that the drums which constitute the carrier for the pins and which form one side of the feeding channel, may be given a movement which is always in the same direction, or it may be given an intermittent backward and forward movement. The mechanism by which the carrier is given the movements referred to may be of any desired description. As shown, the shaft 6 is provided with a ratchet wheel 25 which is fast thereon. This ratchet wheel is engaged by a pawl 26 which is pivoted at 27 on a pawl carrying arm 28 which is loosely supported on the shaft 6 before referred to. This pawl carrying arm 28 has secured to it an operating bar 29, said bar being pivoted at 30 to an arm 31, this arm being pivoted at 32 to a crank disk 33. This crank disk 33 is mounted on a shaft 34 which extends across the machine from side to side and which forms the main shaft of the machine, being driven by any suitable means, not shown. The disk 33 is provided with a series of perforations 35, any one of which may be engaged by a pin 36 which passes through a suitable opening in the arm 31. The arm 31, therefore, forms an adjustable crank by which the arm 28 may be given different degrees of throw. As shown, the pin 36 is in the outer hole of the series of holes 35, and therefore the pin 30 which secures the operating bar 29 to the arm 31 is in its furthest position from the center of the shaft 34. With this adjustment of the parts, therefore, the arm 28 will receive its greatest throw. Should it be desired to lessen the throw, the pin 36 will be removed and the arm 31 moved inward so as to bring the pin 30 nearer the center of the shaft.

The construction so far described will give the drums intermittent forward movements which may be varied in extent according to the adjustment of the adjustable crank 31. When, however, it is desired to give the drums both forward and backward movements for the reasons heretofore stated, the arm 28 is provided with a second pawl 37 which is pivoted at 38 to the arm 28. This pawl 37 is provided with a pin 39 which engages with an adjustable guard 40. This guard lies alongside the ratchet wheel 25 and is or may be secured to the frame in any suitable manner. The surface of the guard is, in the construction shown, as long as the longest stroke which can be given to the feed pawl 26, and when it is desired to give the drums a forward feeding movement only, the guard is so adjusted that the pin 39 on the pawl 38 always rest on the guard. In this position of the guard, as the pawl carrying arm moves forward and back, the pin 39 holds the pawl 38 out of engagement with the teeth of the ratchet so that no backward movement is given the drums. When, however, it is desired to give the drums both forward and backward movements, the guard 40 is moved forward or towards the pawl 26. With this adjustment of the guard, the pin 39 will slide off the end of the guard before the pawl carrying arm 28 has completed its backward movement and the pawl 38 will therefore fall into engagement with the ratchet and move the drums backward an amount which will depend entirely on the adjustment of the guard 40.

It has been heretofore stated that the tobacco or other material which is compacted in the channel and which is removed in successive compacted charges is forced by the feeding devices against an abutment or gate 7. This abutment or gate may be of any suitable construction, and although in the construction shown the gate coöperates with the means for separating successive charges from the mass of material in the channel, constructions are possible and within the invention in which the gate would not discharge this function. In the machine which is illustrated, the gate 7 consists of a series of bars which are tied together by means of a cross bar 42, the vertical bars of the gate being secured by screws, or in any other suitable manner, to this cross bar 42. The bars of the gate pass through perforations in upper and lower bridge pieces 43, 44, said bridge pieces serving to connect side pieces or frames 45, one on each side of the machine, these side frames being loosely pivoted on a shaft 46 which extends across the machine from side to side. Mounted in these frame pieces is a cross shaft 47 said shaft having forwardly extending arms 48 which engage pins 49 on the ends of the cross bar 42. Springs 50 which surround one or more of the bars 7 serve to hold these bars and the cross bar 42 up so that the ends of the bars are in close proximity to a curved guide 51, the purpose of which is to prevent the tobacco from falling out of the charge carrier as it is swung away from the channel. One of the frame pieces 45 is connected by a spring 52 to one of two side plates 53 which plates are fast on the shaft 46. These plates 53 carry pins 54 which bear against the arms 48 before referred to and which serve to operate these arms to depress the bars which form the gate 7 at the proper time.

The side plates 53 are provided with grooves or guide-ways in which moves a slide 55, said slide serving to

carry the tearing fingers 56 which act to separate the successive charges from the mass. In the preferred construction, these tearing fingers coöperate with the gate to carry the separated charges away from the channel and into the bite, when the machine is used for compressing filler tobacco, of the apron of a bunch machine, or other form of machine by which the bunch is to be made. While, furthermore, the tearing fingers form an efficient means for separating the charges of tobacco from the mass, it is to be understood that any other suitable construction may be used for this purpose.

In order that the tearing fingers may cleanly remove the charge, there are provided in the preferred construction certain holding fingers which operate to retain in the channel that portion of the compacted mass which is not to be removed by the tearing fingers. These holding fingers, which are marked 57, are mounted on a slide 58 which moves in ways 59 in the side frame of the machine. The lower end of this slide 58 is connected by means of a link 60 to arms 61 which are mounted on a rock shaft 62 suitably supported in the frame of the machine. This shaft 62 has an arm 63 extending from it and to this arm is pivoted an operating slide 64, this operating slide, as shown, having a slot in it which enables it to pass around and be supported by the main shaft 34. The end of this slide 64 carries a bowl which engages with a cam groove 65 in a cam disk 66 fast on the main shaft 34. The slide 58 has shoulders or lugs 67, 68 which are in position to engage a head 69 on the slide 55. This head 69 is the part of the slide 55 to which the fingers 56 are secured.

The shaft 46 may be operated in any suitable manner, but as shown is provided with a mutilated gear 70 which is in mesh with a rack 71, said rack being held up against the mutilated gear by means of a roller stud 72. This rack 71 forms the lower extension of a slotted slide 73, said slide being provided with a cam roll or bowl 74 which runs in a cam groove 75 which is formed in the cam disk 66 before referred to, this groove being on the opposite side of the disk from the groove 65. This part of the construction being as described and assuming that the parts are in the position shown in Fig. 5, the shaft 46 is rocked by means of its cam slide, rack and segmental gear. This moves the plates 53 in which the slide 55 is mounted which is the slide which carries the fingers 56. The arms 45 also move and these arms carry the gate bars 7 so that the charge of tobacco which is between the gate bars and the fingers 56 is carried downward, these fingers 56 serving to tear it away and separate it from the mass of compacted tobacco in the channel. As the side pieces 53 rock forward, a pin 76 engages a semi-circular groove 77 in the stationary side piece of the machine and holds the slide 55 in position during the rocking movement of the side pieces 53. As the pieces 53 rock downward, the bridge piece 43 which connects the side pieces 45, strikes a stop which in the present instance is the edge of a rolling table 78 over which the rolling apron 79 of a bunch machine passes. When the bridge piece 43 strikes the edge of this table 78, the movement of the frame pieces 45 is stopped, but the movement of the side plates 53 continues somewhat further, so that the pins 54 operate on the arms 48 and cause these arms to move downward against the stress of the springs 50, thus withdrawing the gate bars 7 so that the tobacco

can be readily discharged into the bite of the rolling apron.

After the tobacco has been discharged, the shaft 46 is rocked in the opposite direction, bringing the parts 5 back again into the position shown in Fig. 5. In this position it will be noticed that the pin 76 has passed out of the groove 77 and the head 69 is between the shoulders 67, 68 before referred to as being on the slide 58. The slide 58 is now pushed downward by means of 10 the link 60, the arm 61 and the shaft 62, this shaft being rocked through the connections before described from the cam 65. As the slide 58 moves downward, its upper shoulder 68 strikes the head 69 and this carries the fingers 56 and 57 down together so that they are 15 clear of the channel. As soon as the fingers 56, 57 are clear of the channel, the feeding fingers begin to forward the mass of tobacco and to compact it against the gate bars 7. After a sufficient amount of tobacco to form a charge has been compacted in the channel, the 20 slide 55 is moved up again, the shoulders 67 operating on the head 69 so that the fingers 56 and 57 move together into the position indicated in Fig. 5.

In order to insure that the column of material forwarded through the channel shall be of exactly the 25 right width to form bunches of the proper length, trimming devices are or may be provided to shear off any tobacco which may protrude from either end of the channel. In the construction shown, these trimming devices consist of rotating cutters 80 mounted on a 30 shaft 81 which extends across the machine from side to side. This shaft 81 is provided with a gear 82 which is in mesh with a large gear 83 on the main shaft 34 before described.

While the construction herein described and illustrated in the drawings constitutes a preferred embodiment of the invention, it will be understood that the invention is not to be limited to said construction, but that changes and variations may be made therein without departing from the invention.

40 What is claimed is:—

1. In a feeding device, the combination with a channel, of means for separating successive charges from a mass of material therein, means for forwarding and compressing the material in the channel said means being constructed 45 to be automatically disengaged from the material when the same has been compressed to a predetermined degree, and an abutment cooperating with said forwarding and compressing means, substantially as described.

2. In a feeding device, the combination with a channel, 50 of means for separating successive charges from a mass of material therein, a plurality of feeding devices for forwarding and compressing the material in the channel said devices being arranged to successively engage the material and to be disengaged therefrom when the material 55 has been compressed to a predetermined degree, and an abutment cooperating with said feeding devices, substantially as described.

3. In a feeding device, the combination with a channel, of means for separating successive charges from a mass 60 of material therein, a plurality of yieldingly mounted feeding and compressing devices for forwarding and compressing the material in the channel said devices being constructed to successively engage with the material and to be moved out of engagement therewith when the material 65 has been compressed to a predetermined degree, and an abutment cooperating with said devices, substantially as described.

4. In a feeding device, the combination with a channel, of means for separating successive charges from a mass 70 of material therein, a carrier, a plurality of feeding and compressing devices said devices being adapted to engage

and compress the material in the channel, means whereby said devices are adapted to move with respect to the channel and to be disengaged from the material when the material has been compressed to a predetermined degree, 75 and an abutment cooperating with said feeding devices, substantially as described.

5. In a feeding device, the combination with a curved channel, of means for separating successive charges from 80 a mass of material therein, a carrier, a set of independently mounted pivoted feeding and compressing fingers each finger being resiliently mounted with respect to the carrier, means for giving the carrier feeding movements in a curved path with respect to the channel, and an abutment 85 cooperating with the feeding and compressing fingers, substantially as described.

6. In a feeding device, the combination with a channel, of means for separating successive charges from a mass of material therein, a carrier, a plurality of sets of feeding 90 and compressing fingers the fingers of each set being yieldingly mounted with respect to each other, means for giving the carrier a feeding movement with respect to the channel, and an abutment cooperating with the feeding and compressing fingers, substantially as described.

7. In a feeding device, the combination with a channel, 95 of means for separating successive charges from a mass of material therein, a rotating carrier, a plurality of sets of feeding and compressing fingers the fingers of each set being yieldingly mounted with respect to each other, means for giving the carrier a feeding movement with 100 respect to the channel, and an abutment cooperating with the feeding and compressing fingers, substantially as described.

8. In a feeding device, the combination with a curved feeding channel, of means for separating successive 105 charges from a mass of material therein, a rotating carrier, a plurality of sets of feeding and compressing fingers the fingers of each set being yieldingly mounted with respect to each other, means for giving the carrier a feeding 110 movement with respect to the channel, and an abutment cooperating with the feeding and compressing fingers, substantially as described.

9. In a feeding device, the combination with a feeding channel, of means for separating successive charges from 115 a mass of material therein, a carrier, means for giving the carrier a feeding movement with respect to the channel, a plurality of supports, a set of feeding fingers carried by each support each set being composed of independently mounted fingers each of which is capacitated to move 120 about its support, whereby it may be disengaged from the material when the same has been compressed to a predetermined degree, and an abutment cooperating with said fingers, substantially as described.

10. In a feeding device, the combination with a feeding channel, of means for separating successive charges from 125 a mass of material therein, a rotating carrier, means for giving the carrier a feeding movement with respect to the channel, a plurality of supports, a set of feeding fingers carried by each support each set being composed of independently mounted fingers each of which is capacitated to 130 move about its support, whereby it may be disengaged from the material when the same has been compressed to a predetermined degree, and an abutment cooperating with said fingers, substantially as described.

11. In a feeding device, the combination with a curved 135 feeding channel, of means for separating successive charges from a mass of material therein, a rotating carrier, means for giving the carrier a feeding movement with respect to the channel, a plurality of supports, a set of feeding fingers carried by each support each set being composed of inde- 140 pendently mounted fingers each of which is capacitated to move about its support, whereby it may be disengaged from the material when the same has been compressed to a predetermined degree, and an abutment cooperating with said 145 fingers, substantially as described.

12. In a feeding device, the combination with a curved channel, of means for separating successive charges from 150 a mass of material therein, a rotating carrier, a plurality of supports mounted thereon, feeding pins on each support each pin being yieldingly mounted with respect to the support, whereby the pins are adapted to become disengaged

from the material when the same has been compressed to a predetermined degree, means for moving the supports to cause the pins to engage the material, and an abutment cooperating with said pins substantially as described.

13. In a feeding device, the combination with a curved channel, of means for separating successive charges from a mass of material therein, a rotating carrier, a plurality of supports pivoted on said carrier, feeding pins on each support each pin being yieldingly mounted with respect to the support, whereby the pins are adapted to become disengaged from the material when the same has been compressed to a predetermined degree, means for moving the supports to cause the pins to engage the material, and an abutment cooperating with said pins, substantially as described.

14. In a feeding device, the combination with a curved channel, of means for separating successive charges from a mass of material therein, a carrier, means for rotating the carrier, sets of arms mounted in the carrier, a cross bar for each set of arms, a plurality of pins yieldingly mounted with respect to each cross bar, a cam for operating the arms and cross bars to cause the pins to engage with the material to be forwarded, and an abutment coöperating with said pins, substantially as described.

25 15. In a feeding device, the combination with a channel, of means for separating successive charges from a mass of material therein, a carrier, a cross bar mounted therein, a set of fingers pivotally mounted on the cross bar, springs for holding the fingers in operative position, stops coöperating with the springs to position the fingers, means for
30 giving the carrier a feeding movement with respect to the channel, and an abutment coöperating with said fingers, substantially as described.

16. In a feeding device, the combination with a channel,
35 of means for separating successive changes from a mass of
material therein, a rotating carrier, a cross bar mounted
therein, a set of fingers pivotally mounted on the cross bar,
springs for holding the fingers in operative position, stops
coöperating with the springs to position the fingers, means
40 for giving the carrier a feeding movement with respect to
the channel, and an abutment coöperating with said fin-
gers, substantially as described.

17. In a feeding device, the combination with a curved channel, of means for separating successive charges from a mass of material therein, a rotating carrier, a cross bar mounted therein, a set of fingers pivotally mounted on the cross bar, springs for holding the fingers in operative position, stops coöperating with the springs to position the fingers, means for giving the carrier a feeding movement with respect to the channel, and an abutment coöperating with said fingers, substantially as described.

18. In a feeding device, the combination with a curved channel, of means for separating successive charges from a mass of material therein, a rotating carrier, a plurality of cross bars mounted therein, a plurality of fingers pivotally mounted on each cross bar, springs for holding the fingers in operative position, stops coöperating with the springs, and an abutment coöperating with said flanges, substantially as described.

60 19. In a feeding device, the combination with a channel,
of means for separating successive charges from a mass of
material therein, a carrier, sets of feeding fingers moved
thereby, said fingers being adapted to successively come
into engagement with the material in the channel, and
65 means for giving the carrier intermittent forward and
backward movements, the forward movements being of
greater extent than the backward movements, substantially
as described.

20. In a feeding device, the combination with a channel,
70 of means for separating successive charges from a mass of
material therein, a rotating carrier, sets of feeding fin-
gers moved thereby, said fingers being adapted to suc-
cessively come into engagement with the material in the
channel, and means for giving the carrier intermittent for-
75 ward and backward movements, the forward movements
being of greater extent than the backward movements,
substantially as described.

21. In a feeding device, the combination with a curved
channel, of means for separating successive charges from
80 a mass of material therein, a rotating carrier, sets of feed-

ing fingers moved thereby, said fingers being adapted to successively come into engagement with the material in the channel, and means for giving the carrier intermittent forward and backward movements, the forward movements being of greater extent than the backward movements, substantially as described.

22. In a feeding device, the combination with a channel, of means for separating successive charges from a mass of material therein, a carrier, a plurality of sets of feeding devices yieldingly mounted with respect to the carrier, means for giving the carrier intermittent forward and backward movements, the forward movements being greater in extent than the backward movements, and means for preventing the devices from yielding with respect to the carrier on the backward movements, substantially as described.

23. In a feeding device, the combination with a channel, of means for separating successive charges from a mass of material therein, a rotating carrier, a plurality of sets of feeding devices yieldingly mounted with respect to the carrier, means for giving the carrier intermittent forward and backward movements, the forward movements being greater in extent than the backward movements, and means for preventing the devices from yielding with respect to the carrier on the backward movements, substantially as described.

24. In a feeding device, the combination with a curved channel, of means for separating successive charges from a mass of material therein, a rotating carrier, a plurality of sets of feeding devices yielding mounted with respect to the carrier, means for giving the carrier intermittent forward and backward movements, the forward movements being greater in extent than the backward movements, and means for preventing the devices from yielding with respect to the carrier on the backward movements, substantially as described.

25. In a feeding device, the combination with a channel, of means for separating successive charges from a mass of material therein, a carrier, a plurality of sets of feeding fingers carried thereby, each set comprising a plurality of independently mounted yielding fingers, means for giving the carrier intermittent forward and backward movements, the forward movements being greater in extent than the backward movements, and means for preventing the fingers from yielding with respect to the carrier on the backward movements, substantially as described.

26. In a feeding device, the combination with a channel, of means for separating successive charges from a mass of material therein, a rotating carrier, a plurality of sets of feeding fingers carried thereby, each set comprising a plurality of independently mounted yielding fingers, means for giving the carrier intermittent forward and backward movements, the forward movements being greater in extent than the backward movements, and means for preventing the fingers from yielding with respect to the carrier on the backward movements, substantially as described.

27. In a feeding device, the combination with a curved channel, of means for separating successive charges from a mass of material therein, a rotating carrier, a plurality of sets of feeding fingers carried thereby, each set comprising a plurality of independently mounted yielding fingers, means for giving the carrier intermittent forward and backward movements, the forward movements being greater in extent than the backward movements, and means for preventing the fingers from yielding with respect to the carrier on the backward movements, substantially as described.

28. In a feeding device, the combination with a channel, of means for separating successive charges from a mass of material therein, a rotating carrier, cross bars mounted therein, a set of feeding fingers pivotally mounted on each cross bar, means for giving the carrier intermittent forward and backward movements the forward movements being greater in extent than the backward movements, springs against the stress of which the fingers may yield on the forward movements of the carrier, and stops cooperating with the springs for positioning the fingers and for preventing them from yielding on the backward movement of the carrier, substantially as described.

29. In a feeding device, the combination with a curved channel, of means for separating successive charges from a mass of material therein, a rotating carrier, cross bars mounted therein, a set of feeding fingers pivotally mounted on each cross bar, means for giving the carrier intermittent forward and backward movements the forward movements being greater in extent than the backward movements, springs against the stress of which the fingers may yield on the forward movements of the carrier, and stops cooperating with the springs for positioning the fingers and for preventing them from yielding on the backward movement of the carrier, substantially as described.

30. In a feeding device, the combination with a channel, of means for separating successive charges from a mass of material therein, a rotating carrier, a plurality of cross bars mounted therein, a plurality of feeding fingers pivotally mounted on each cross bar, means for giving the carrier intermittent forward and backward movements the forward movements being greater in extent than the backward movements, springs against the stress of which the fingers may yield on the forward movement of the carrier, stops cooperating with the springs for positioning the fingers and for preventing them from yielding on the backward movement of the carrier, and a cam for moving the fingers into engagement with the material in the channel, substantially as described.

31. In a feeding device, the combination with a curved channel, of means for separating successive charges from a mass of material therein, a rotating carrier, a plurality of cross bars mounted therein, a plurality of feeding fingers pivotally mounted on each cross bar, means for giving the carrier intermittent forward and backward movements the forward movements being greater in extent than the backward movements, springs against the stress of which the fingers may yield on the forward movement of the carrier,

stops cooperating with the springs for positioning the fingers and for preventing them from yielding on the backward movement of the carrier, and a cam for moving the fingers into engagement with the material in the channel, substantially as described.

32. In a feeding device, the combination with a feeding channel, of means for forwarding material therethrough, a gate, a set of holding fingers, a set of tearing fingers, and suitable operating mechanism, said mechanism serving to move the holding and tearing fingers into position, to thereafter move the gate and tearing fingers to deliver a charge, and after the delivery of the charge to return the gate into operative position and move the holding and tearing fingers out of the way of the material in the channel so that the same may be fed forward, substantially as described.

33. In a feeding device, the combination with a feeding channel, of means for forwarding material therethrough, a rocking carrier, a gate mounted therein, a set of spring fingers mounted thereon, a set of holding fingers, a slide on which said fingers are mounted, means whereby the slide causes the tearing fingers to move into and out of engagement with the material fed through the channel, and means for operating the rocking carrier and the slide so that the gate is first moved into position, then the tearing and holding fingers are moved out of the way to permit the material to be fed, and then moved back into engagement with the material after which the tearing fingers and the gate are operated, substantially as described.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses.

ALFRED SHEDLOCK.

Witnesses:

SYDNEY I. PRESCOTT,
GEO. H. SNYDER.