

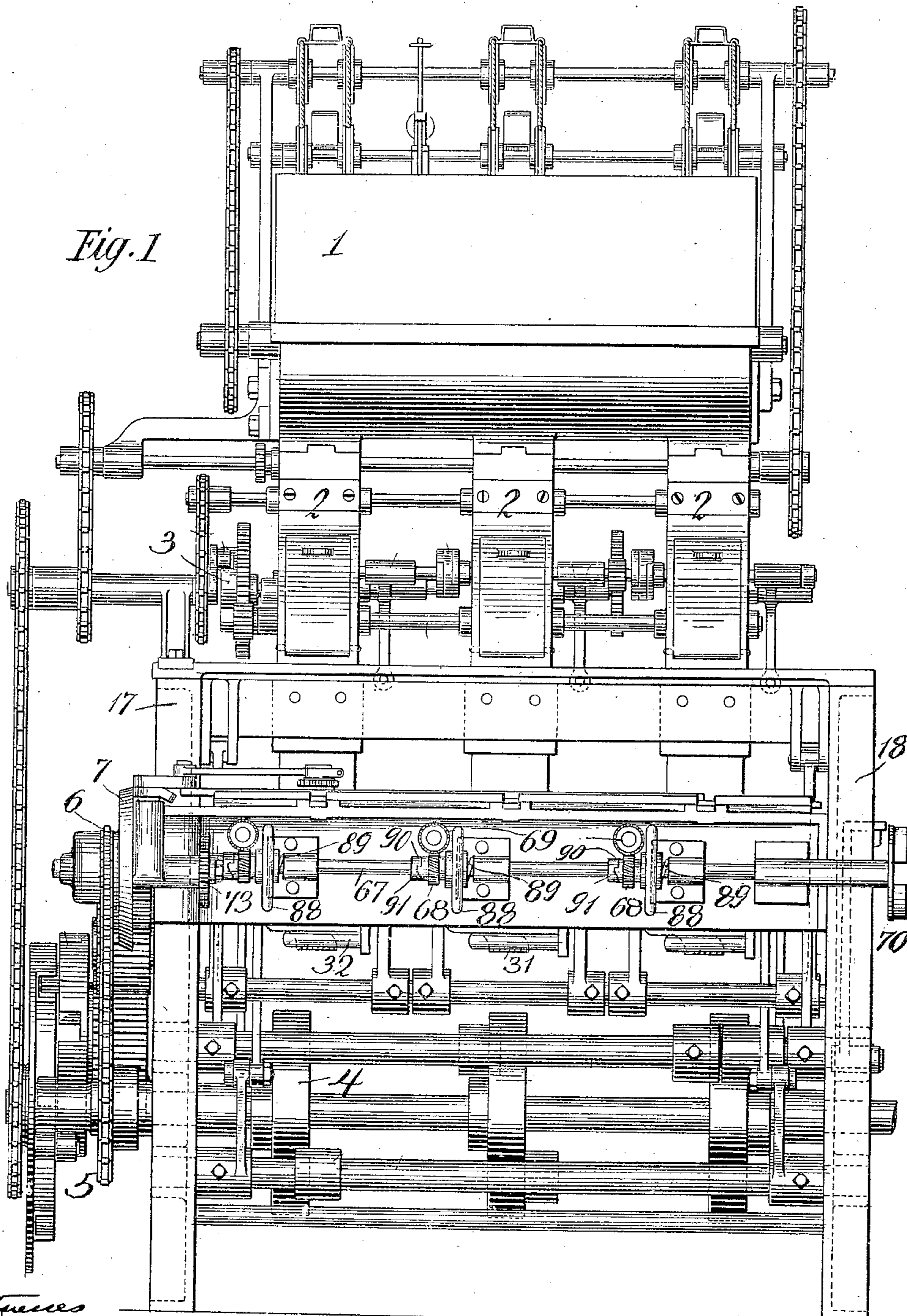
No. 877,827.

PATENTED JAN. 28, 1908.

H. BILGRAM.
CIGARETTE MACHINE.

APPLICATION FILED JAN. 14, 1907.

5 SHEETS—SHEET 1.



Witnesses
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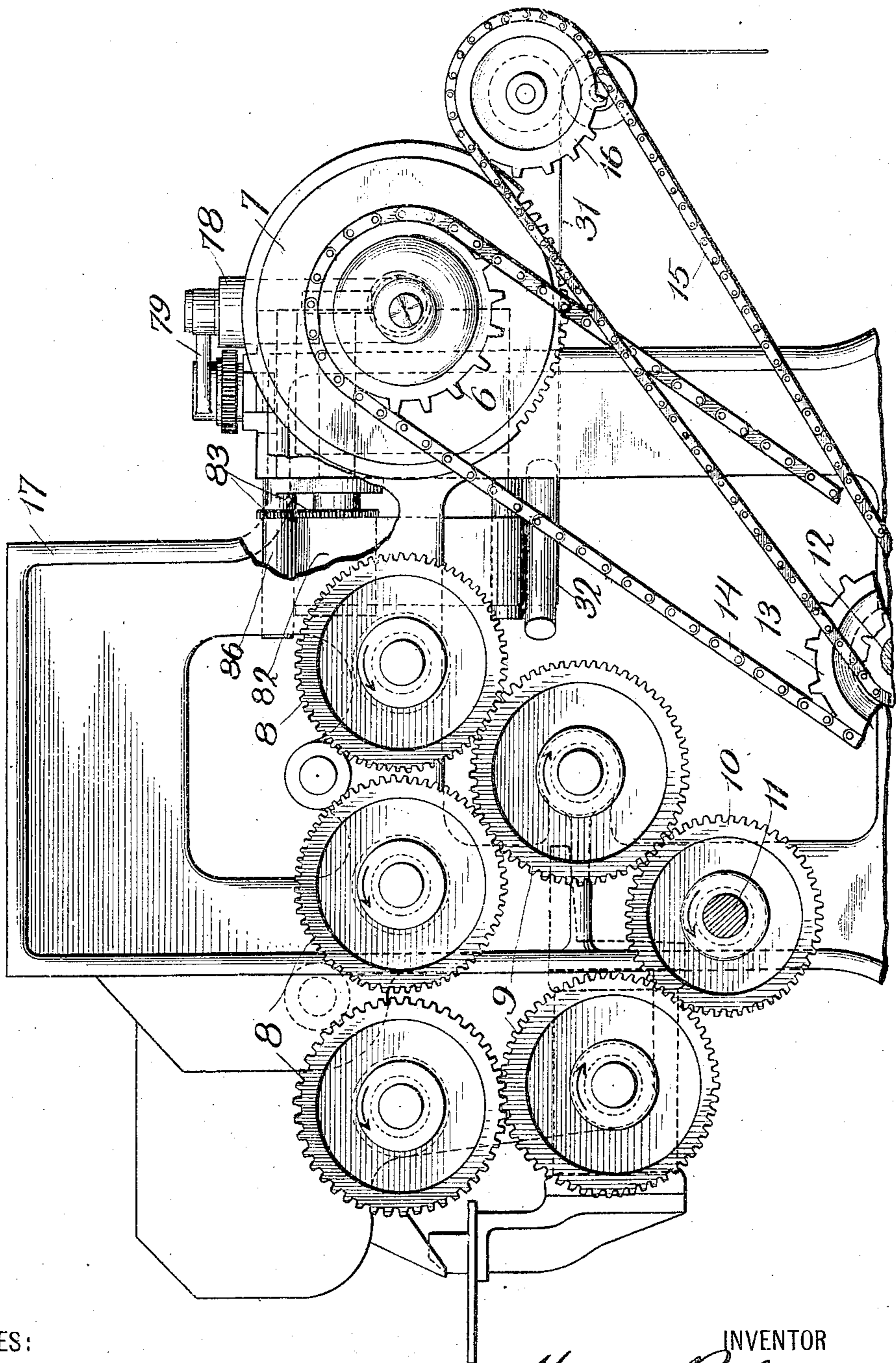


Fig. 2.

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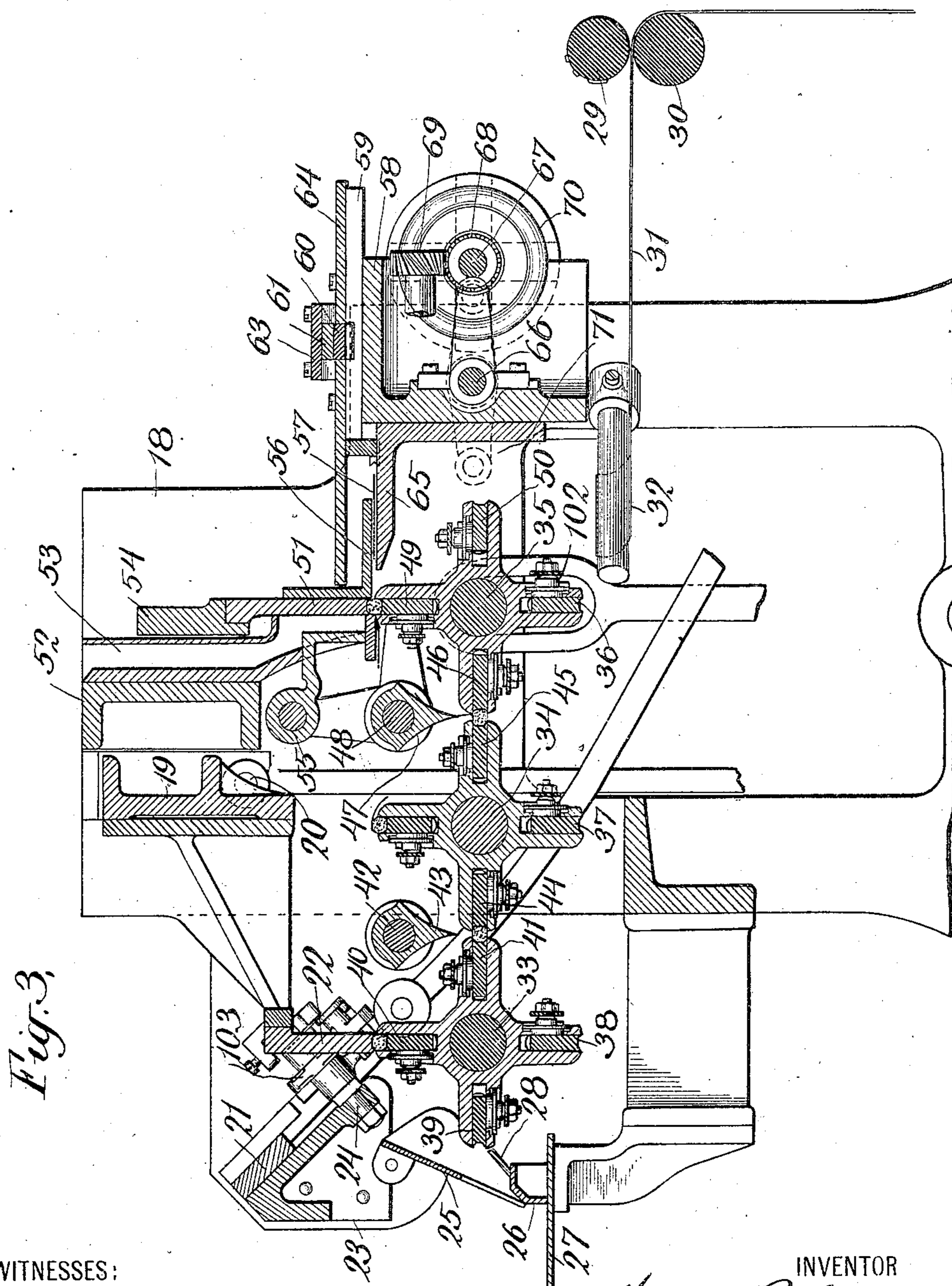


Fig. 3.

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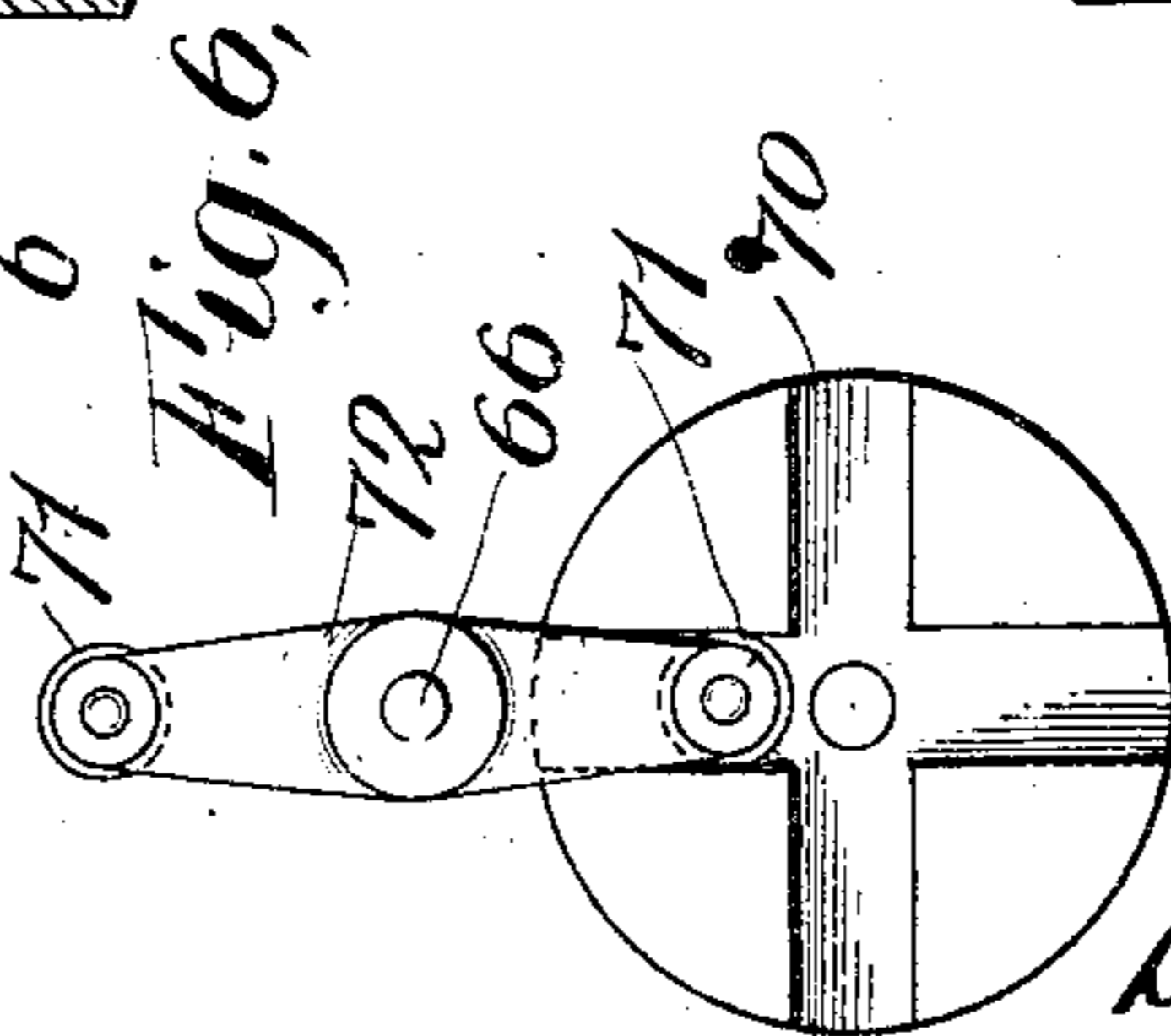
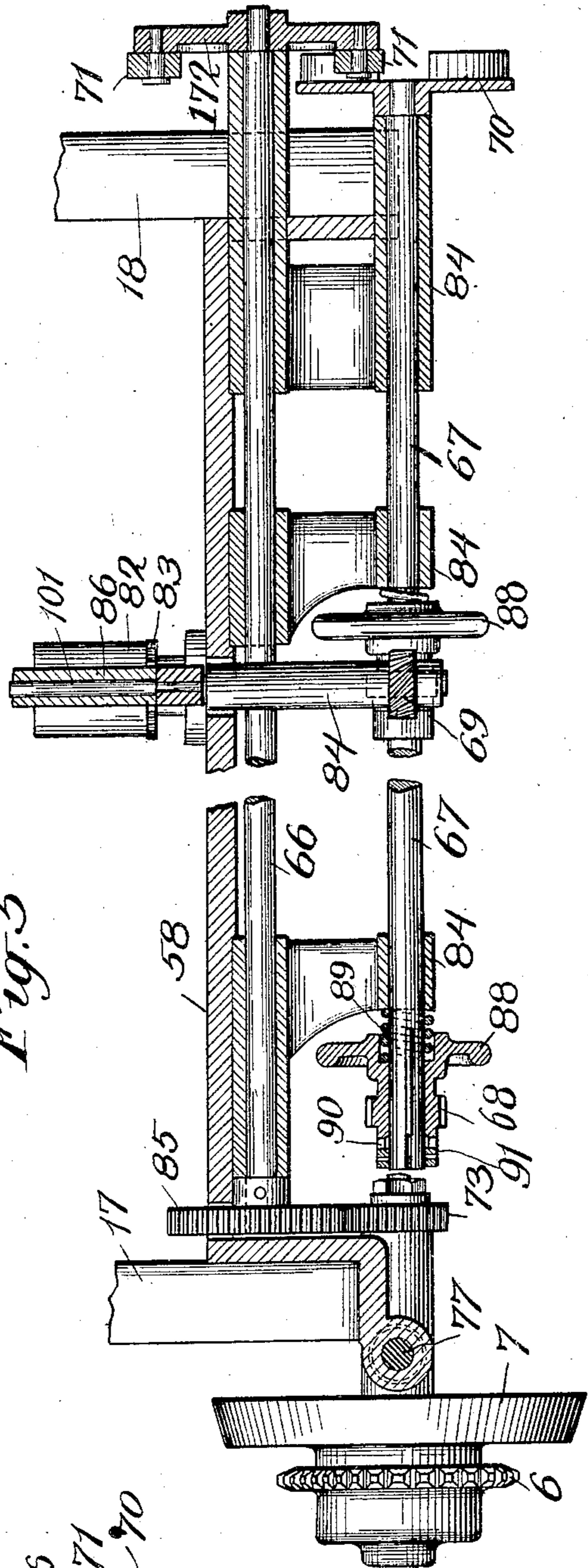
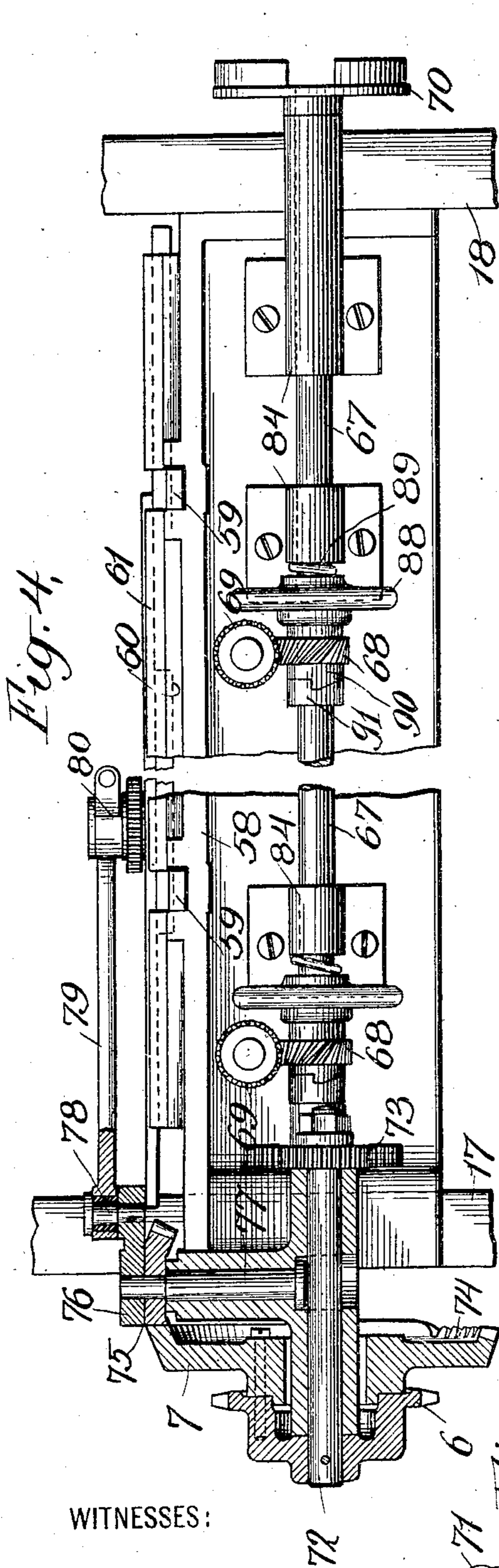
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5 SHEETS—SHEET 4.



WITNESSES:

Jessie B. Kay
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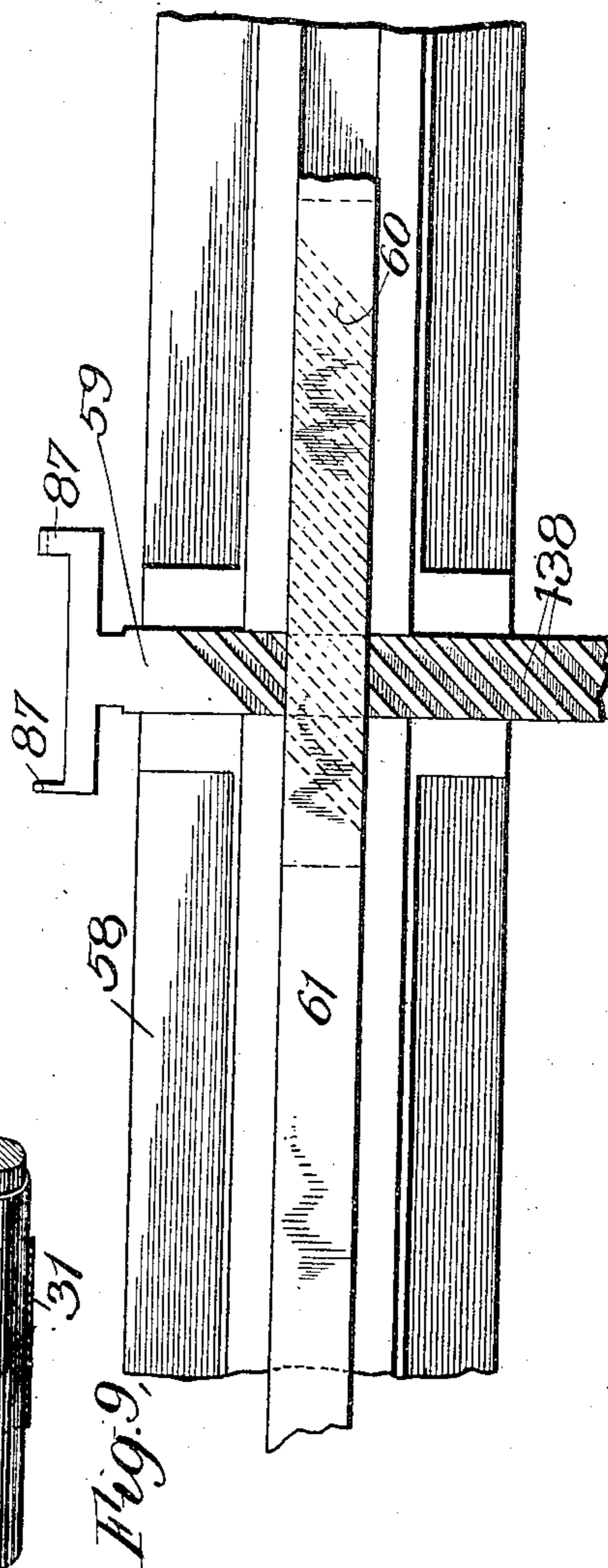
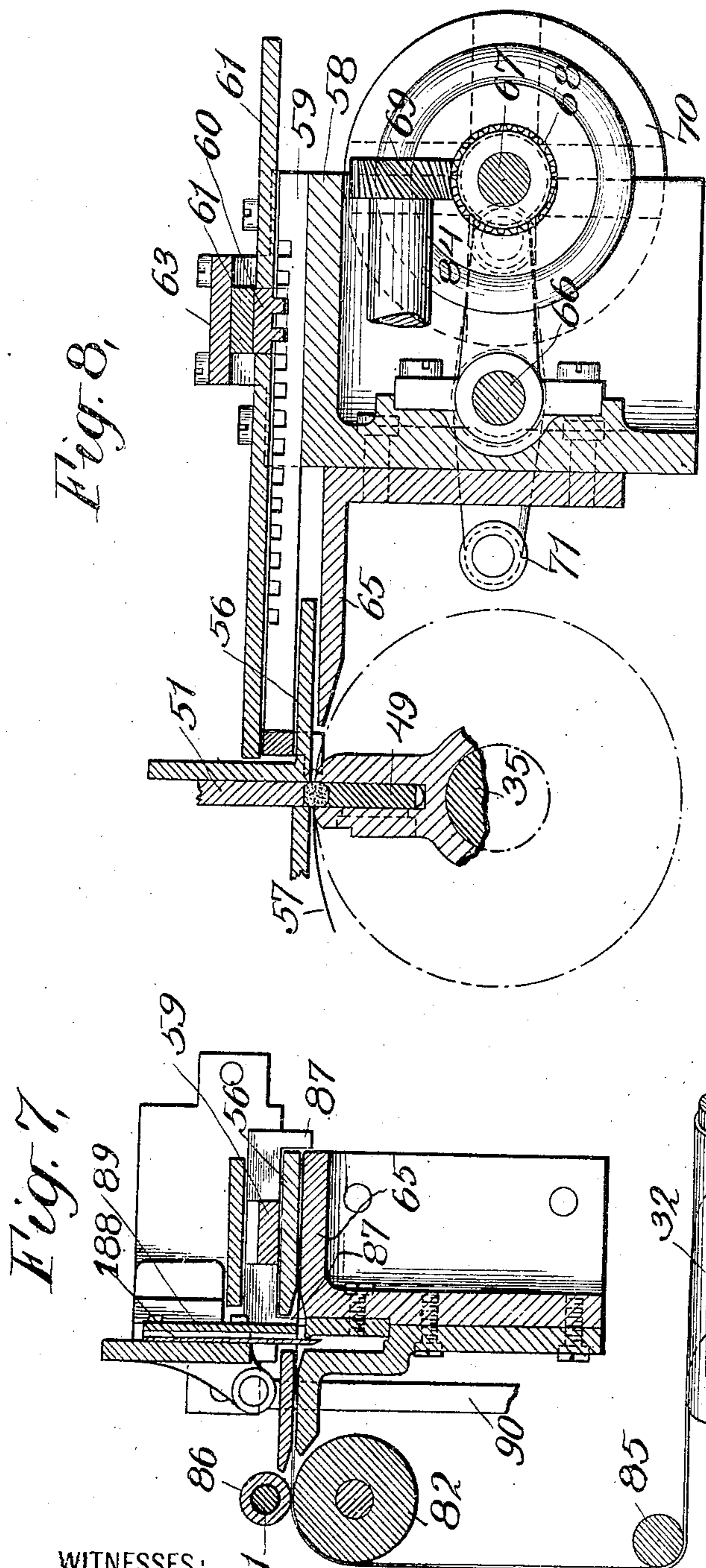
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5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

HUGO BILGRAM, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO COMAS CIGARETTE MACHINE COMPANY, OF BALTIMORE, MARYLAND, A CORPORATION OF VIRGINIA.

CIGARETTE-MACHINE.

No. 877,827.

Specification of Letters Patent.

Patented Jan. 28, 1908.

Application filed January 14, 1907. Serial No. 352,073.

To all whom it may concern:

Be it known that I, HUGO BILGRAM, a citizen of the United States, and resident of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Cigarette-Machines, of which the following is a specification, taken in connection with the accompanying drawings, forming part of the same.

This invention relates to cigarette machines and relates especially to machines for forming Spanish or tucked end cigarettes which are adapted to be re-rolled by the user. In the accompanying drawings showing an illustrative form of this invention, Figure 1 is a side elevation. Fig. 2 is an enlarged partial end view. Fig. 3 is a corresponding section. Fig. 4 is a partial side view showing the driving mechanism for the paper feed. Fig. 5 is a corresponding horizontal section. Fig. 6 is a detail showing the star wheel driving mechanism for the paper feeder. Fig. 7 is a section view taken longitudinally of the machine showing details of the paper feeder. Fig. 8 is a similar transverse detail section. Fig. 9 is a partial top view showing the means for oscillating the feeder.

This illustrative form of machine has a rigid frame composed of the two side pieces 17 and 18 connected firmly together by longitudinally extending members, including brackets, such as 52 and 58, in Fig. 3. On the upper part of this frame is the tobacco hopper 1 arranged to cooperate with suitable feeding mechanism 2, 3 to supply definite charges of tobacco at the proper intervals to the wrapping mechanism, as is well known in this art. As is indicated the machine is preferably provided with a plurality of tobacco feeding and wrapping devices which may be of identical construction and operated in unison from the same drive gear.

As indicated in Fig. 3 a series of mold wheels 33, 34 and 35 may be mounted and intermittently rotated in unison by the gears 8 secured to their shafts. These gears as indicated in Fig. 2 may be driven by the intermediate gears 9 from the drive gear 10 on shaft 11 so that all the mold wheels are periodically given a quarter rotation in the same direction so as to bring their molds into proper cooperation, the mold wheel 35 having the plungers 36, 46 49, 50, which are normally held in operative position by

spring pressed stops 102. The other molds are similarly constructed and operate to fold the wrapper around the charge of tobacco in conjunction with the folders 43, 47 mounted on the folder rods 42, 48, respectively. A charge of tobacco is periodically fed down the chute 53 falling in front of the gate 55. This gate is thereupon moved forward to bring the tobacco directly in the path of the inserter 51 as well as to compress it to some extent. This inserter is thereupon moved downward by the slide 54 forcing the tobacco and the paper wrapper beneath it into the mold, thus forcing the plunger 49 downward at the same time. Then as the mold wheel rotates this cigarette has the wrapper partly folded around it through engagement with the folder and this mold is brought into cooperation with the mold in the adjacent mold wheel 34. Thereupon the plungers are simultaneously moved to the left, transferring this partially folded cigarette to the mold wheel 34 and also similarly transferring a cigarette from this mold wheel to the mold wheel 33 forming folds in the wrapper in this way. The cigarette in the upper mold of the mold wheel 33 is engaged by the retainer 22 supported by a suitable bracket from the retainer slide 19 and the tuckers 103 mounted on the stud 24 are operated by the tucker slide 21 closing and securely holding the tucked wrapper ends in proper position, these parts being constructed and operating as described in the Bilgram Patent 506,412, October 10, 1893. The completed cigarettes are, of course, discharged from the mold wheel 33 when the horizontal plunger 39 is moved outward, the cigarettes moving along the inclined guide 28 and past the swinging flap 25 so as to be finally engaged by the discharger 26 and thereby fed along the table 27.

The paper feeding mechanism comprises the primary feed indicated in Fig. 3 as being composed of the cooperating printing and feed couple or rollers 29, 30 of any desired construction and material and supplied with ink in the well known manner, and which may be operated from the drive shaft through the sprocket 12, chain 15 and sprocket wheel 16 on one of these primary feed rolls. The line of feed of the wrapper strip 31 is transverse to the axes of the mold wheels on leaving the primary feed, but thereafter passes over the inclined turning

stud 32 as it changes its line of feed into a direction parallel to the axes of the mold wheels so that the strip is drawn in a substantially horizontal direction at right angles to its original line of feed as indicated in Figs. 3 and 7. Then after passing around the idler 85 the strip engages the intermittent secondary feed which may comprise the supply roll 82 and the cooperating grip roll 86 which may be loosely mounted upon its pin 101 so as to lightly grip the paper strip by its weight. The primary feed is a regular one uniformly drawing the paper strip in a positive manner from the roll and the requisite amount of paper for a wrapper is periodically fed forward by the intermittently acting supply roll which feeds the paper forward until all the slack has been taken up and thereupon the grip roll no longer engages the paper with sufficient force to feed it further but allows the supply roll and grip roll to slip with respect to the paper.

The sprocket wheel 6 may be operated by the chain 14 engaging the sprocket wheel 13 as indicated in Fig. 2 and this sprocket wheel 6, as is seen in Fig. 4, is fast on the sprocket shaft 72 so as to uniformly rotate the same.

In this way the sprocket shaft and connected gear 73 are uniformly rotated as well as the mutilated gear 7 rigidly attached to the sprocket 6 and which coöperates with a mutilated pinion 75. This pinion 75 is fast on the spindle 77 which also carries the crank 76 which is given an entire revolution each time the mutilated gear 7 rotates through one turn, there being a suitable period of rest between its intermittent movements. The pin 78 is secured in this crank 76 and engages one end of the link 79, the other end of which engages a stud 80 on the slide 61, reciprocatingly mounted in the bracket 58, this slide thus periodically receiving a forward and backward reciprocation. As indicated in Fig. 5 the gear 73 meshes with the gear 85 fast on the drum shaft 66 which carries at its other end the driver 172. This driver carries a plurality of rolls 71 mounted on suitable pins so as to engage the slots in the star wheel 70 secured to the supply shaft 67 so that this supply shaft receives an intermittent partial rotation through this star wheel driving mechanism illustrated in Fig. 6. The supply shaft carries a plurality of clutch members 91 with which the clutch members 90 coöperate and with which they are normally pressed into engagement by the springs 89 engaging the bearings 84. The sleeve carrying each of these clutch members 90 is provided with the skew gear 68 and with the clutch wheel 88. A corresponding skew gear 69 meshes with the gear 68 and thus drives the supply axle 84 with which the supply drum 82 is connected so as to rotate therewith. As seen in Fig. 5

the grip roll 86 is preferably loosely mounted on its pin 101 so as to have sufficient freedom of movement to lightly grip the paper by its weight, this roll being, if desired, positively driven at the same surface speed as the supply roll through the gears 83 on these rolls. It is, of course, evident that by withdrawing the clutch from engagement the supply roll may be manually rotated by turning the clutch wheel to the desired extent so as to manually adjust or set any one of these paper feeding devices, the clutch engaging in this instance every half revolution which corresponds to the amount of rotation of the supply shaft needed to feed a single wrapper. The inclined clutch members indicated allow the forward movement of the hand wheel without withdrawal.

As is indicated in Fig. 7, the paper is fed from the supply and grip rolls through a suitable throat and between the table 65 and the plate 56. After this feed has occurred the knife 188 is brought downward by the knife rod 90 severing the paper strip and if desired the guide 89 may be secured to this knife so as to come lightly down upon the end of the paper and hold it accurately in the proper feeding position. The feeder 59 operates above the table 65, the depending fingers 87 which may be provided with the inclined notches indicated in Fig. 8, moving on either side of the plate so as to properly engage the paper and feed the severed wrapper 57 into proper position above the mold wheel. The feeders receive a quick forward and backward movement at the proper times through the inclined teeth 138 formed upon them which are engaged by a cooperating rack 60 secured to the under side of the slide 61, this slide, as indicated in Fig. 3, being accurately guided in the bracket 58 and held down by the plate 63. In this way the wrapper strip is uniformly and accurately fed by the primary feeder from the large rolls in which it is commercially supplied; then the line of feed of this strip is turned transversely and the wrapper is fed upon the table by the intermittently acting loosely gripping supply roll which is somewhat overdriven, that is, which rotates somewhat more than is necessary to feed forward a wrapper length. The forward wrapper is severed by the knife and the feeder engages it and feeds it forward above the mold into which it is forced together with the superimposed tobacco charge by the inserter. Since the paper fibers or grain of the paper run longitudinally of the paper strip as these cigarette papers are commercially wound and supplied in rolls this feed mechanism so supplies the severed wrapper that the fiber of the paper is longitudinally arranged with respect to the cigarette or parallel to its axis so that when re-rolled and moistened to secure the wrapper in final position no

wrinkling or opening up of the seam is likely to take place, cigarettes made in this way being, of course, more desirable and satisfactory to the user than where the fiber of the paper runs circumferentially around the cigarette, that is, transversely to its axis.

Having thus described this invention in connection with an illustrative embodiment thereof, to the details of which it is not, of course, to be limited, what is claimed as new and what is desired to be secured by Letters Patent is set forth in the appended claims.

1. In cigarette machines, a support, a plurality of tobacco feeding and cigarette forming devices mounted thereon, each of said devices comprising a plurality of intermittently rotating mold wheels and means to force tobacco into said mold wheels, a primary paper feed to uniformly and positively feed a paper strip, an angularly disposed turning stud for said strip, intermittently acting loosely gripping rolls to feed said strip, a knife to sever the same into individual wrappers and an intermittently reciprocating feeder to engage and feed said severed wrappers into coöperation with said mold wheels.

2. In cigarette machines, a frame and a plurality of tobacco feeding and cigarette forming devices mounted on said frame, each of said devices comprising a plurality of mold wheels and primary paper feed rolls having substantially parallel axes, a turning stud to engage a paper strip from said rolls, an intermittently rotating lightly gripping supply roll to feed said paper strip, a table and plate to receive between them the end of said paper strip from said supply roll, means to sever a wrapper from the end of said strip and a reciprocating feeder above said plate formed with depending fingers on either side of said plate to engage and feed forward said wrapper into coöperation with said mold wheel.

3. In cigarette machines, tobacco feeding and cigarette forming devices, a sprocket shaft provided with a mutilated gear and with a gear to operate a drum shaft, a slide having inclined rack teeth, a mutilated pinion engaging said mutilated gear and connected to said slide, transversely arranged paper feeders provided with coöperating inclined teeth to be intermittently reciprocated by said slide, a supply shaft intermittently operated from said drum shaft, a plurality of lightly gripping supply rolls to feed paper strips operated by gearing from said supply shaft, said gearing comprising disengageable clutches, and means to manually operate one of said supply rolls.

4. In cigarette machines, tobacco feeding and cigarette forming devices, a sprocket shaft provided with a mutilated gear and with a gear to operate a drum shaft, a mutilated pinion engaging said mutilated gear,

a slide provided with inclined rack teeth, a crank and link connected to said slide and operated by said mutilated pinion, transversely arranged paper feeders provided with coöperating inclined teeth to be intermittently reciprocated by said slide, a supply shaft intermittently operated from said drum shaft, a plurality of lightly gripping supply rolls to feed paper strips and operated by gearing from said supply shaft, said gearing comprising a gear disengageably clutched to said supply shaft and a clutch wheel secured to said gear to manually and independently rotate each of said supply rolls.

5. In cigarette machines, a plurality of tobacco feeding and cigarette forming devices, paper feeding means for each of said cigarette forming devices comprising gripping paper feeders and gearing for said feeders comprising a clutch member for each and a common supply shaft on which said clutch members are mounted, a coöperating spring clutch member loose on said shaft and connected to each of said feeders, said clutch members having points of engagement spaced around said shaft in correspondence with the amount of movement of said shaft in feeding a single wrapper and means to manually operate each of said feeders when the corresponding clutch is disengaged.

6. In cigarette machines, a primary feed to feed a wrapper strip, a turning stud to change the line of feed of said strip, a loosely gripping intermittently acting secondary feed for said strip to feed the end of the same into the path of a knife, a knife to sever individual wrappers from the end of said strip and a feeder to feed said wrappers to a mold wheel.

7. In cigarette machines comprising mold wheels, means to feed a wrapper strip in a direction transverse to the axes of said mold wheels, turning means to turn the line of feed of said strip substantially parallel to the axes of said mold wheels and means to sever and feed wrappers from said strip to said mold wheels.

8. In cigarette machines, a frame and a plurality of tobacco feeding and cigarette forming devices mounted on said frame, each of said devices comprising a mold wheel and primary paper feed rolls having axes substantially parallel to the axes of said mold wheels, turning means to turn the line of feed of the wrapper strips passing through said feed rolls into a line substantially parallel to said mold wheel axes, and means to sever and feed individual wrappers from said strips to said mold wheels.

9. In cigarette machines, a frame and a plurality of tobacco feeding and cigarette forming devices mounted on said frame, each of said devices comprising a mold wheel and

means to feed a wrapper strip in a direction transverse to the axis of said mold wheel, means to turn the line of feed of said strip into a line substantially parallel with the axis
5 of said mold wheel, and means to sever and feed individual wrappers from said strip to said mold wheel.

10. In cigarette machines, a mold, a uniform primary wrapper feed to feed a wrapper
10 strip in a line transverse to the axis of said mold, means to turn the line of feed of said

strip into a line substantially parallel with the axis of said mold, an intermittently acting lightly gripping secondary feed engaging said strip to feed the same in the path of a
15 knife, a knife to sever individual wrappers from the end of said strip and means to feed said wrappers to said mold.

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