

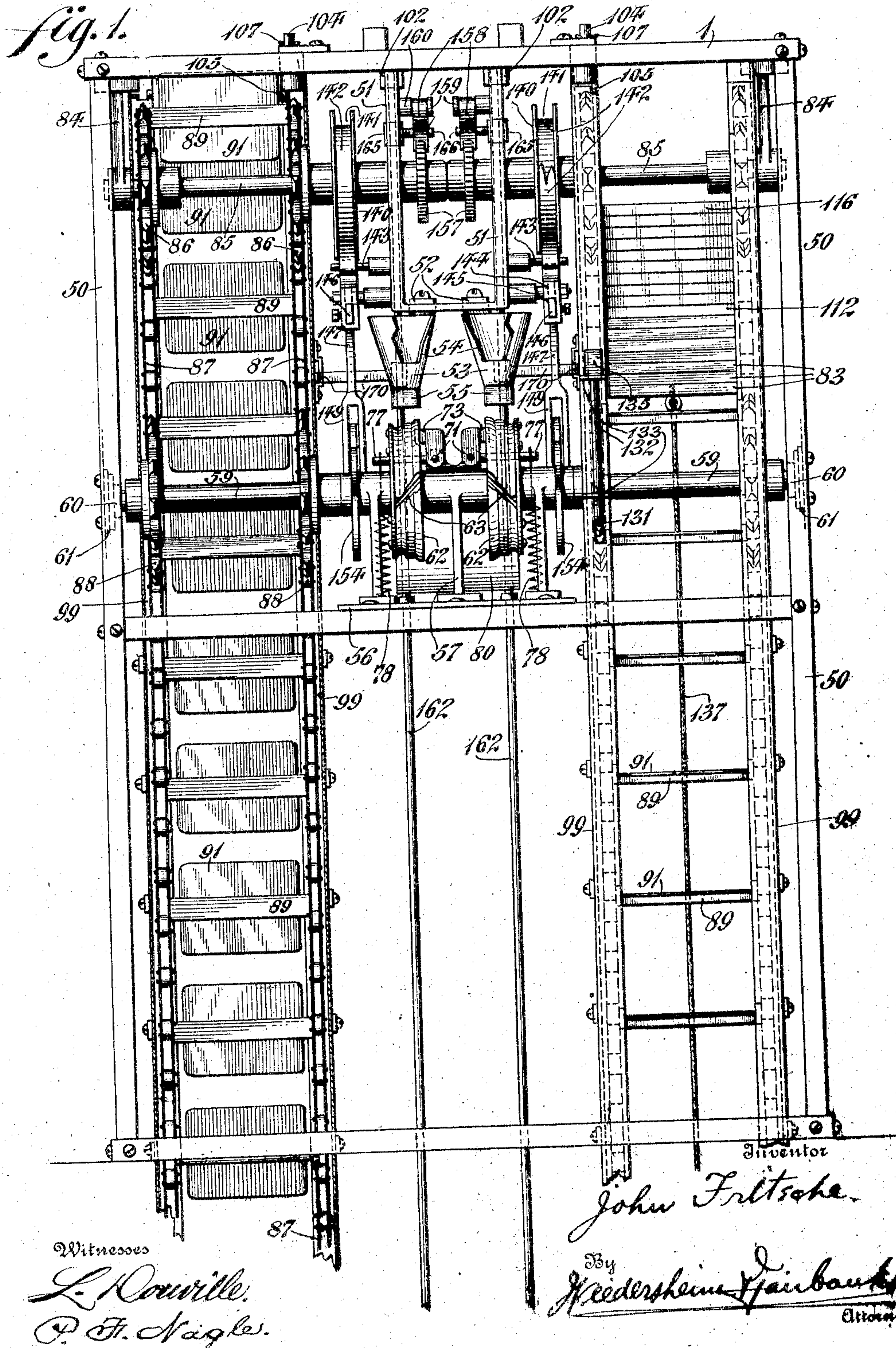
No. 864,526.

PATENTED AUG. 27, 1907.

J. FRITSCHÉ.
VENDING MACHINE.

APPLICATION FILED MAR. 3, 1906.

8 SHEETS—SHEET 1.



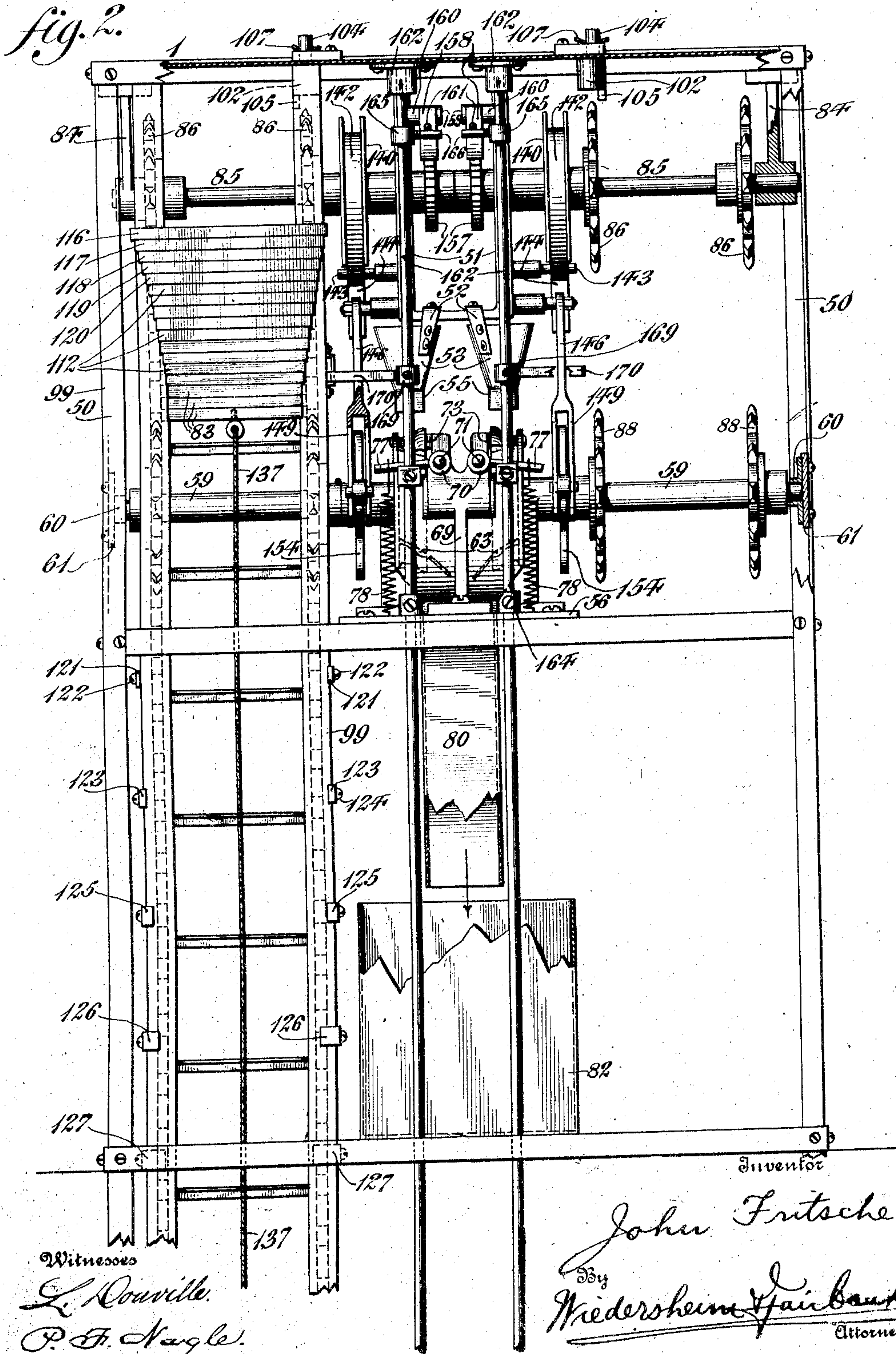
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8 SHEETS—SHEET 2.



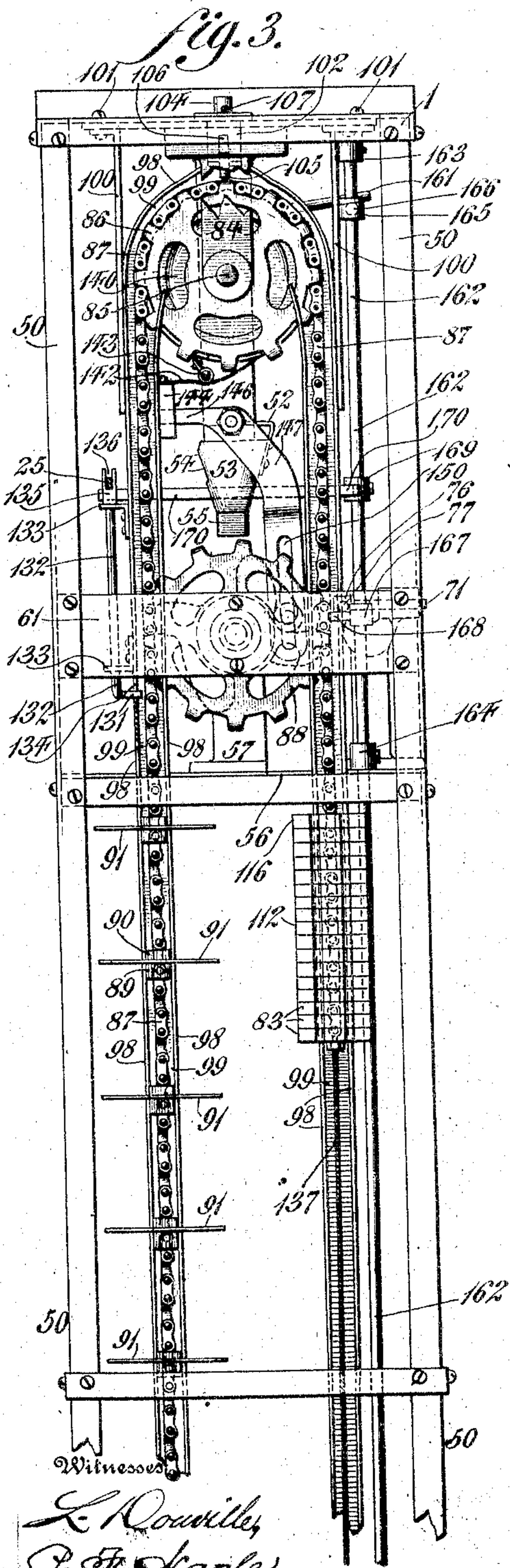
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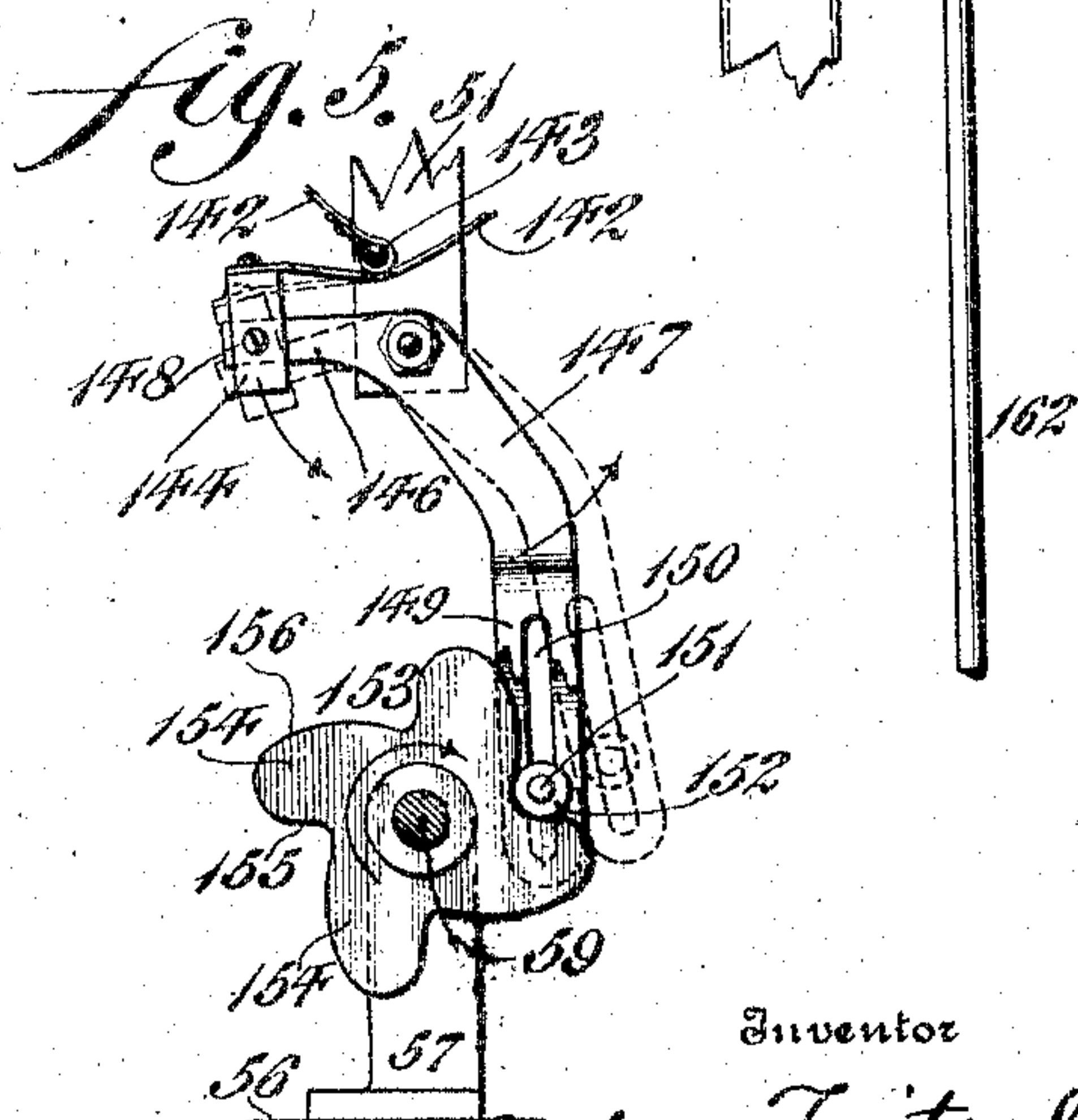
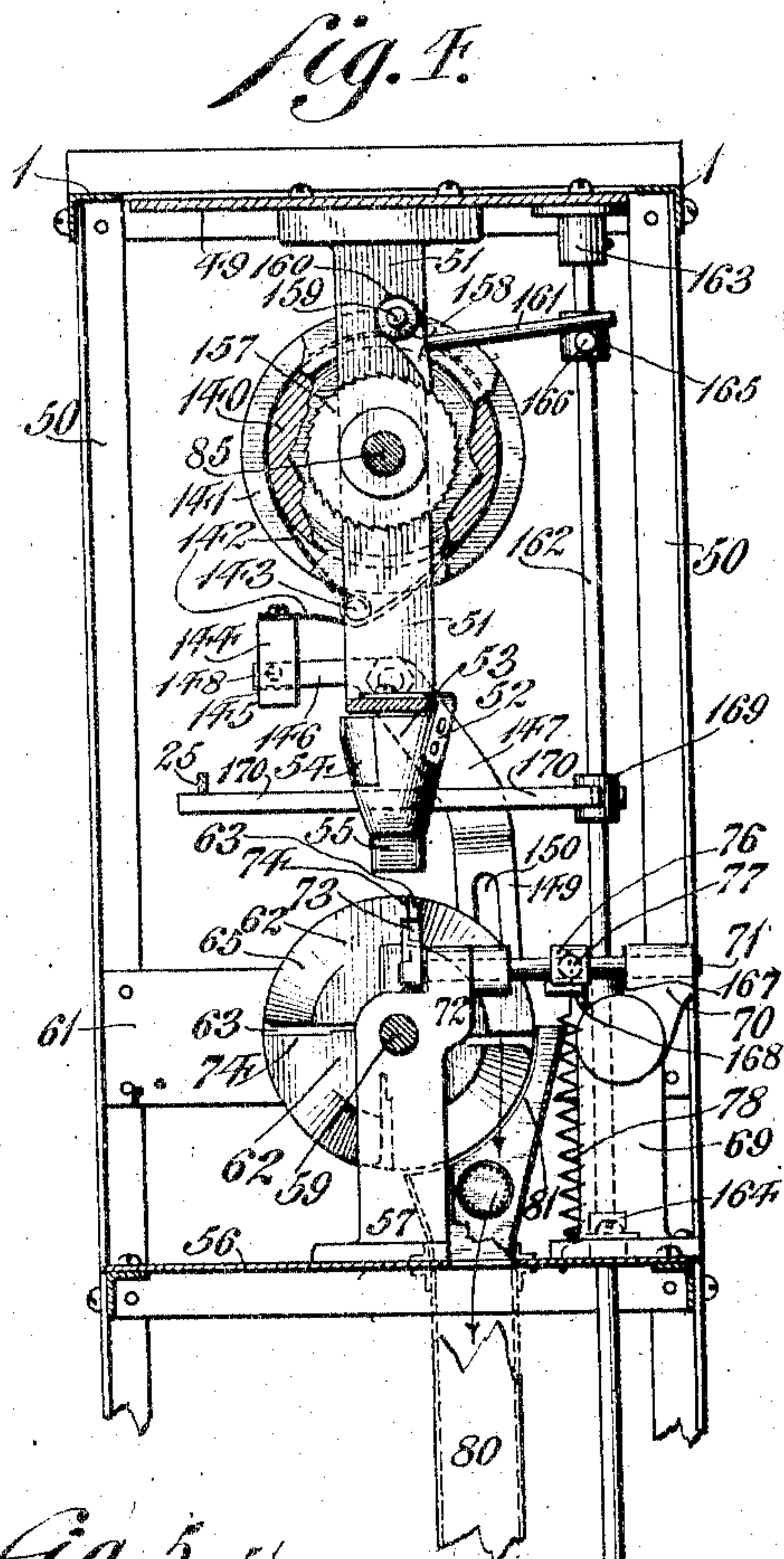
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8 SHEETS—SHEET 3.



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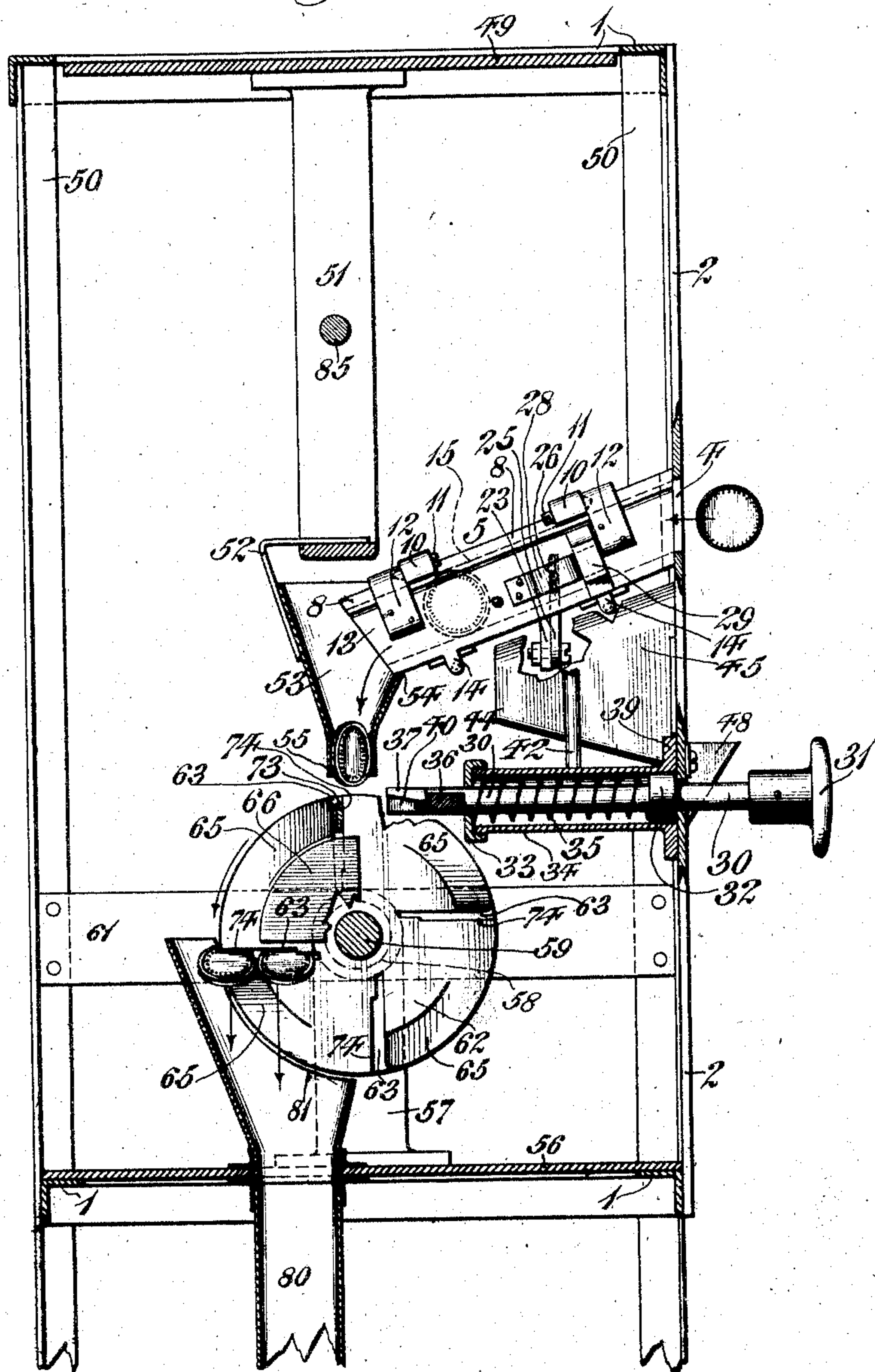
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8 SHEETS—SHEET 4.

fig. 6.



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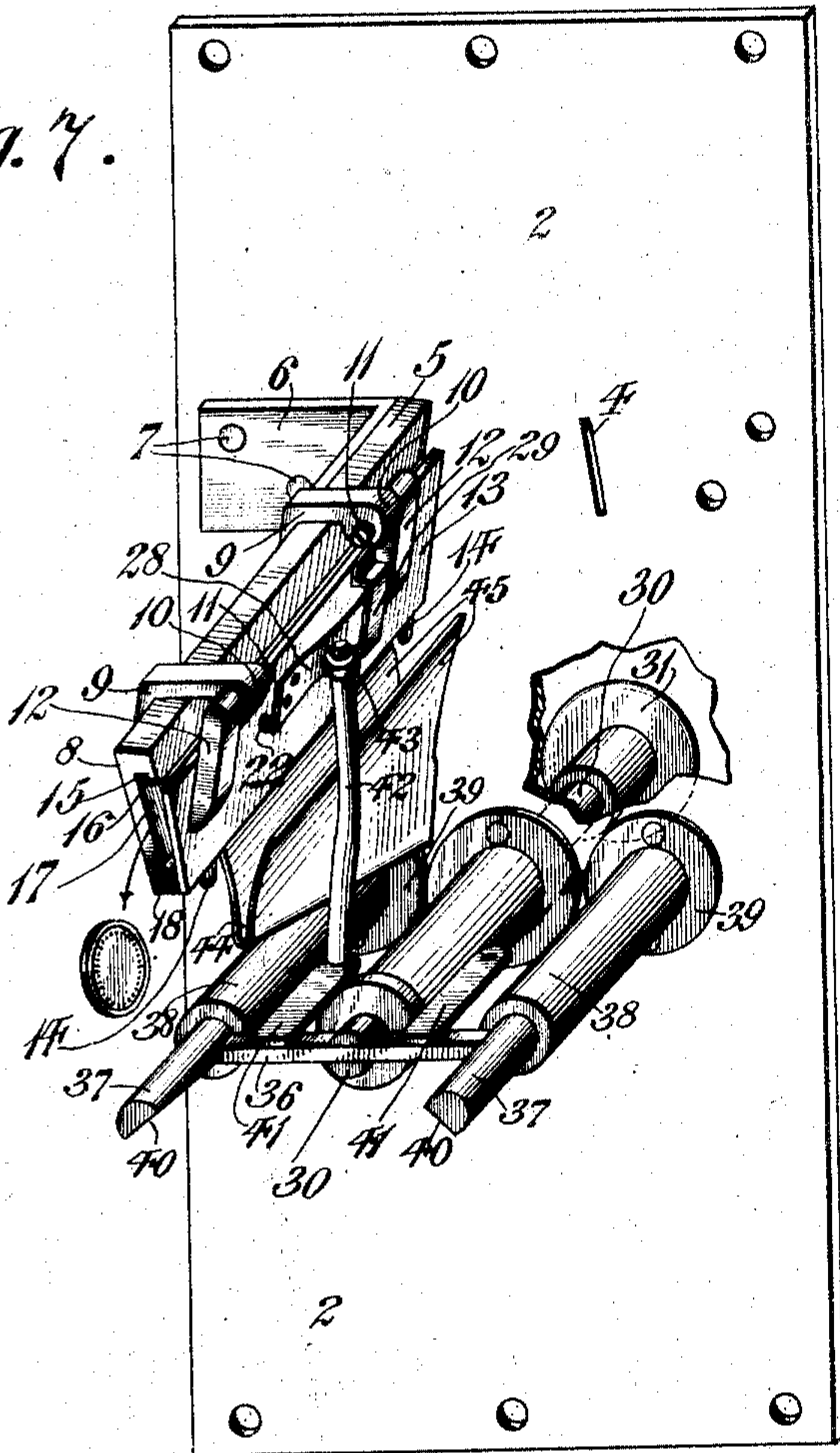
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8 SHEETS—SHEET 5.

Fig. 7.



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8 SHEETS—SHEET 6.

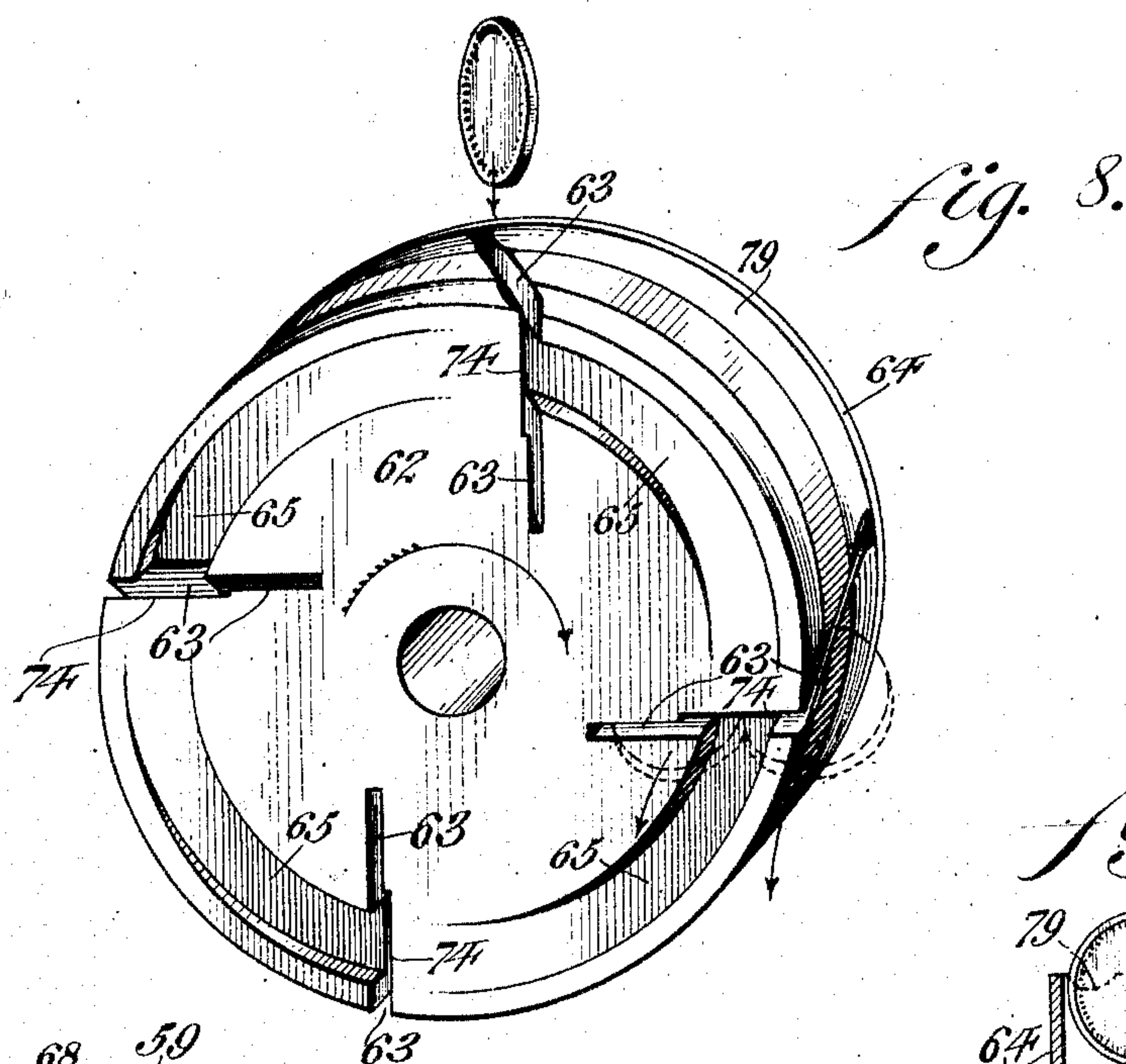


fig. 8.

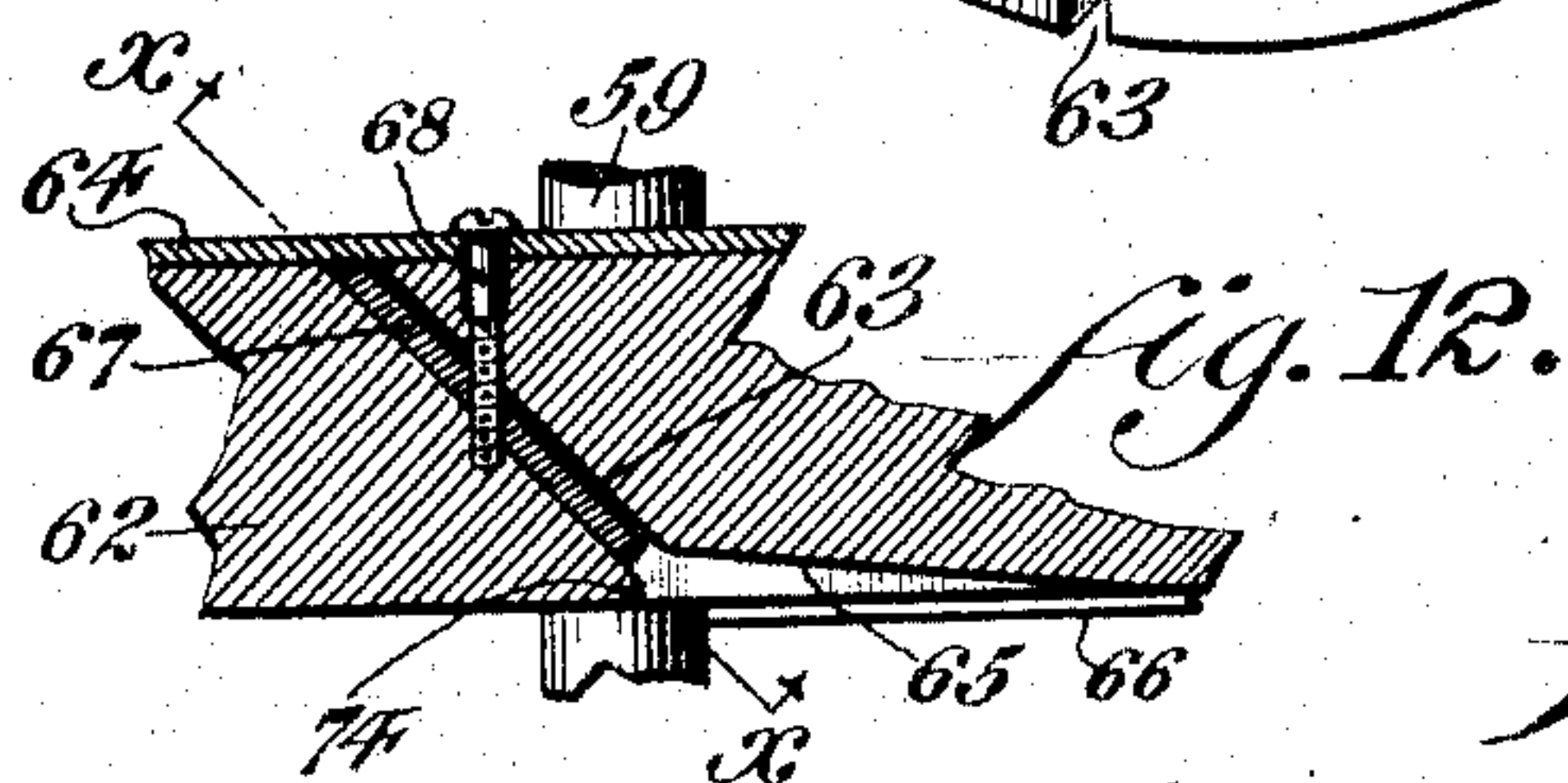


fig. 12.

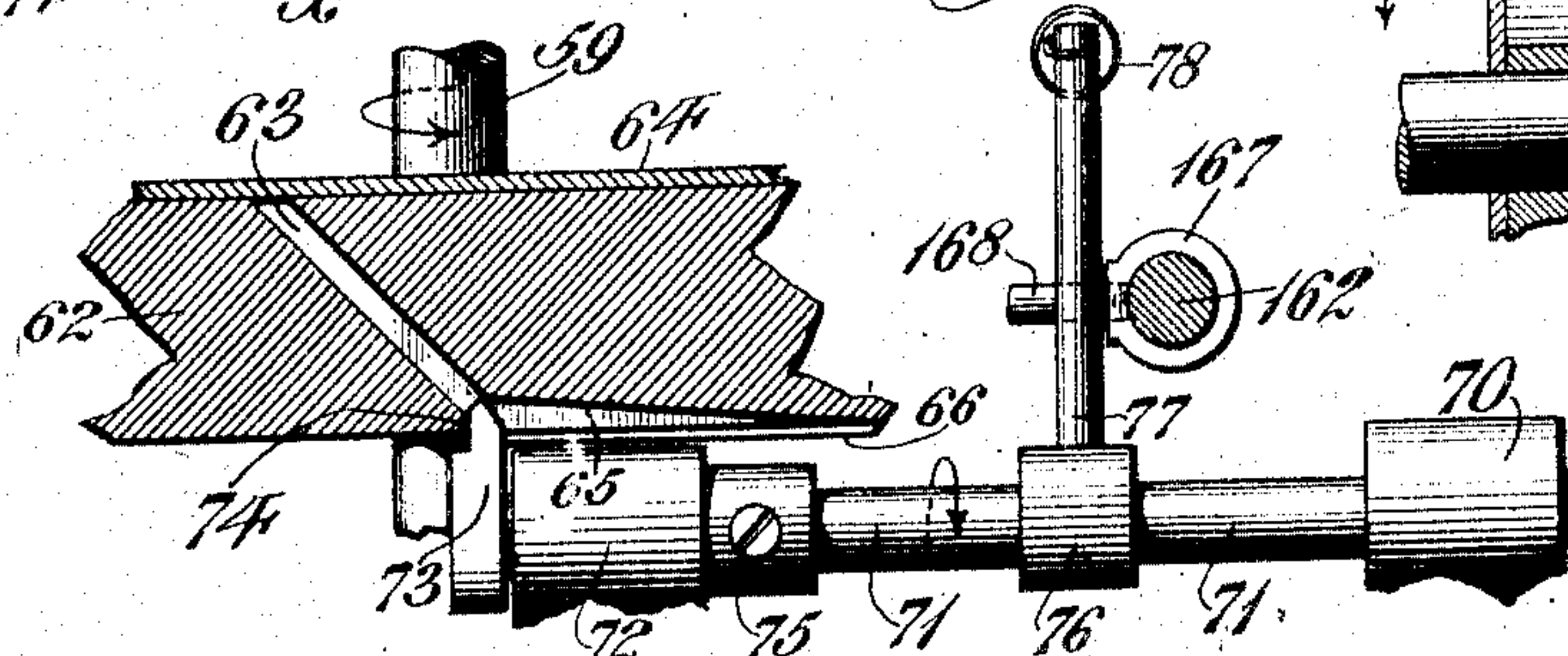


fig. 9.

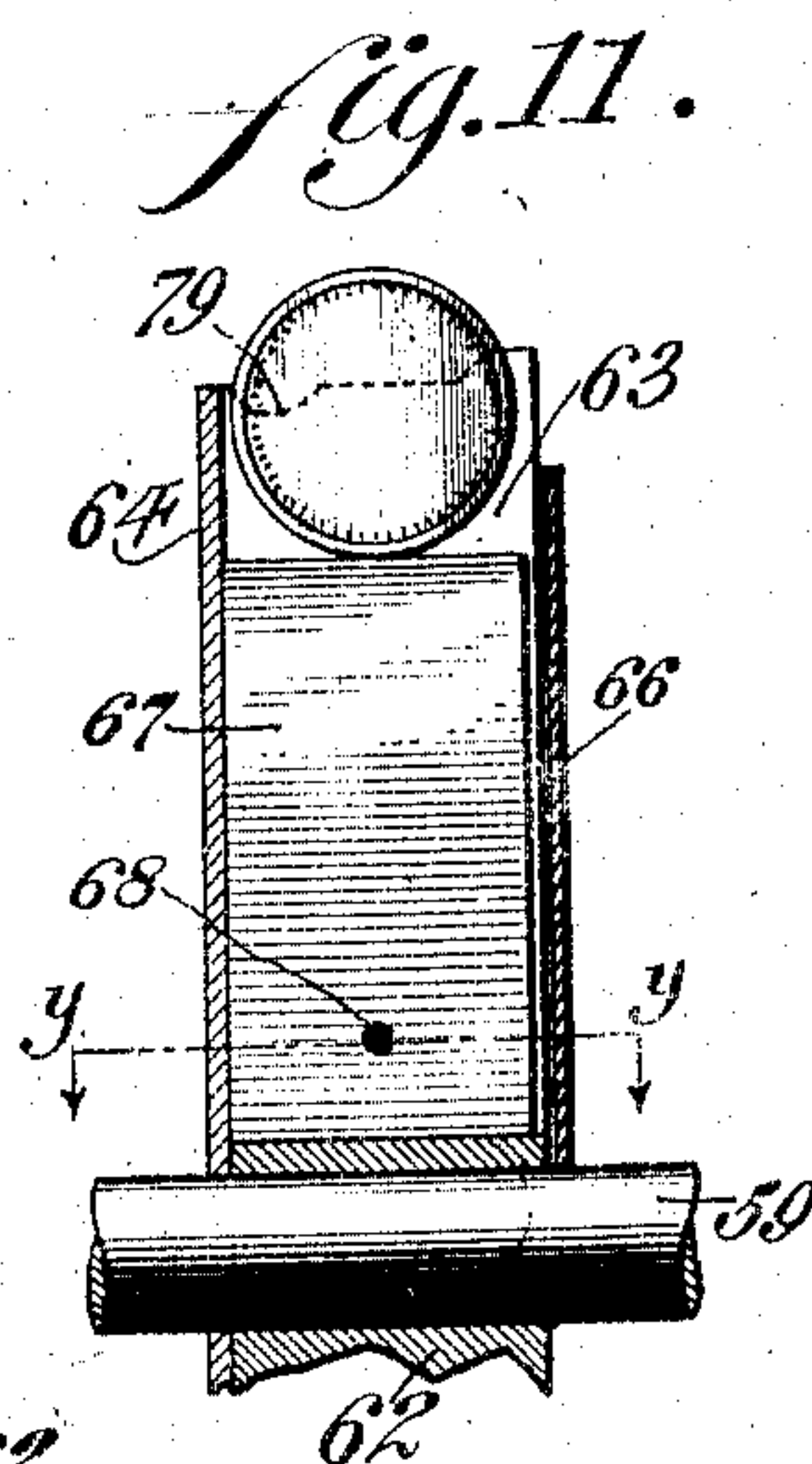


fig. 11.

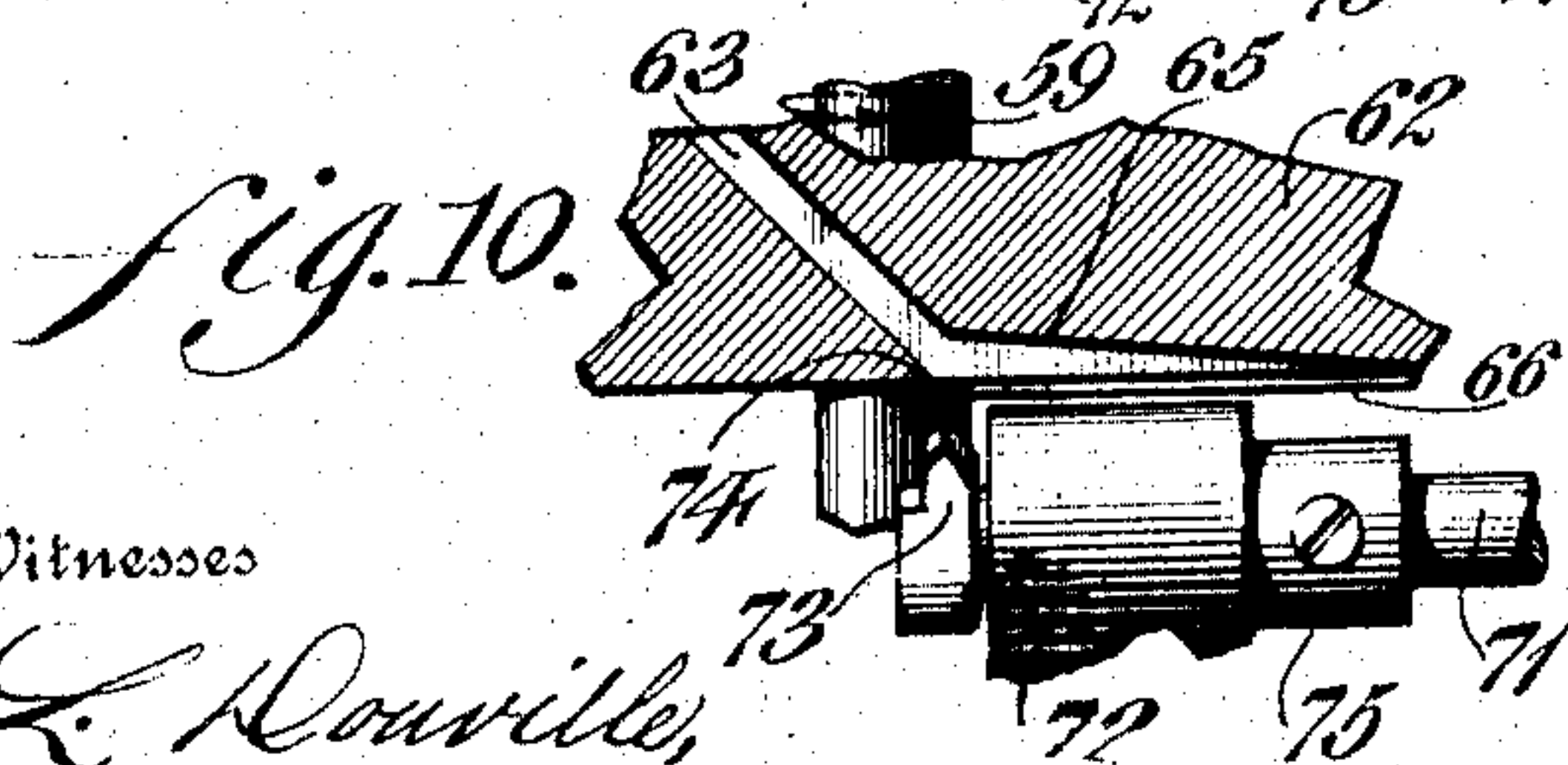


fig. 10.

Witnesses

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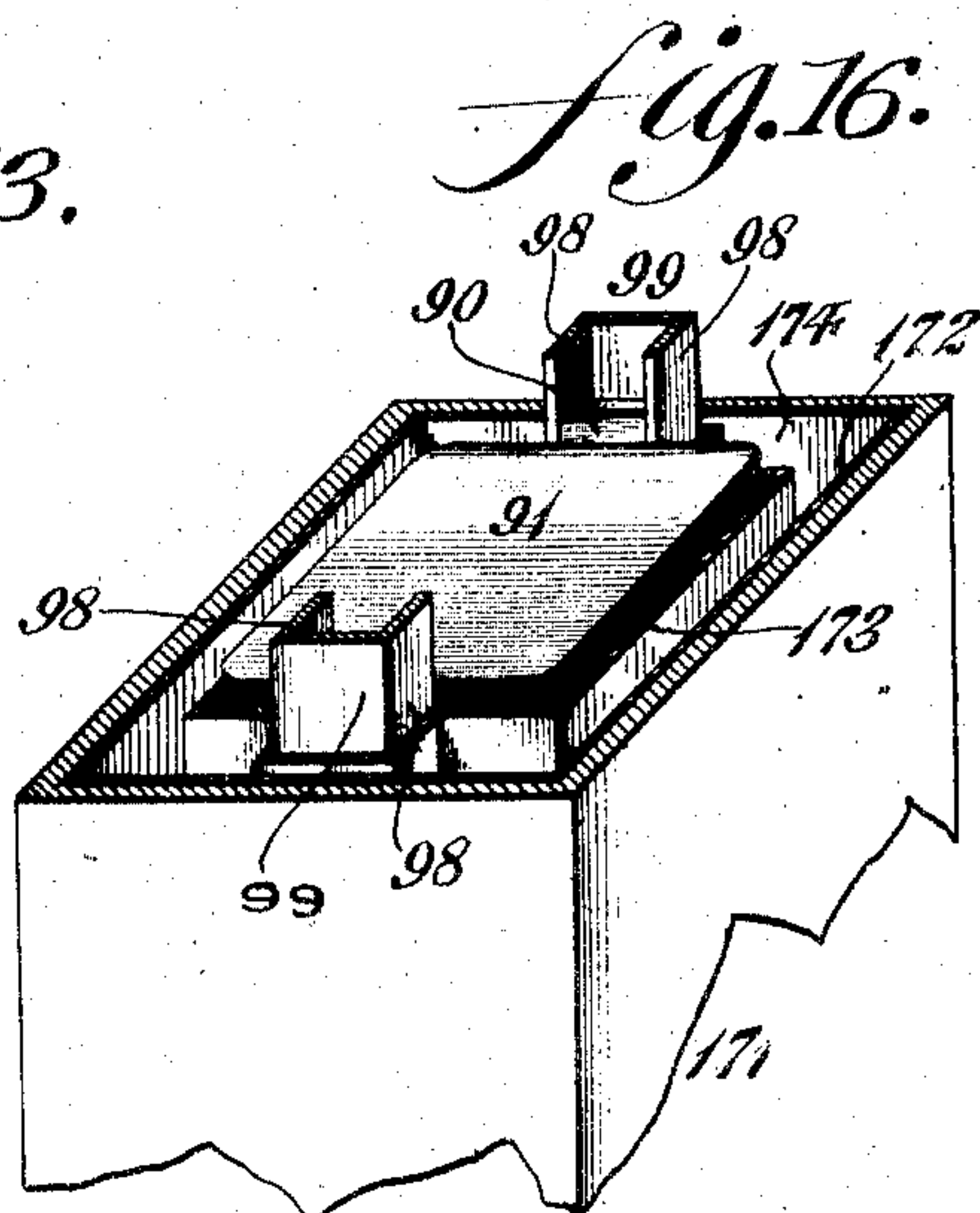
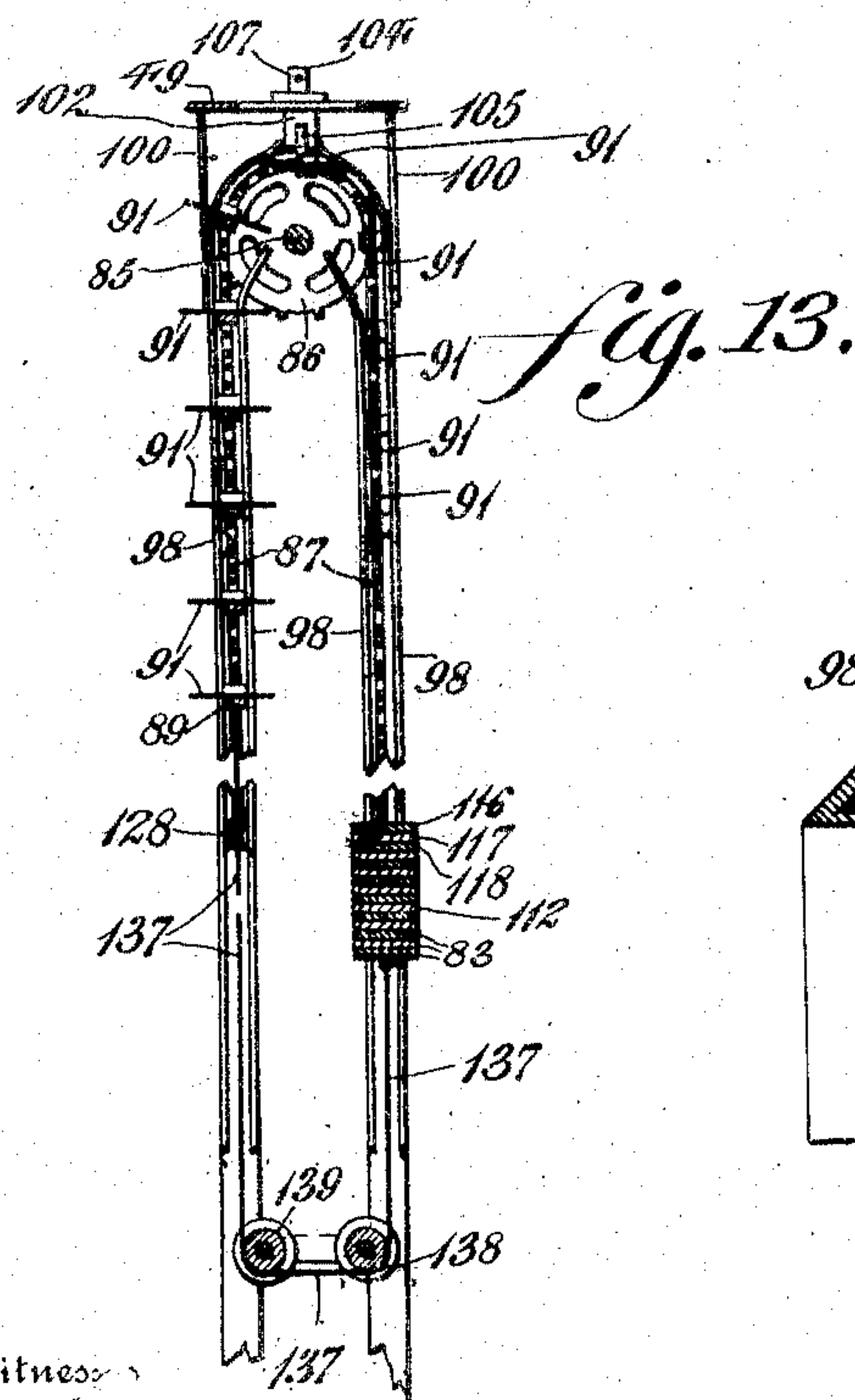
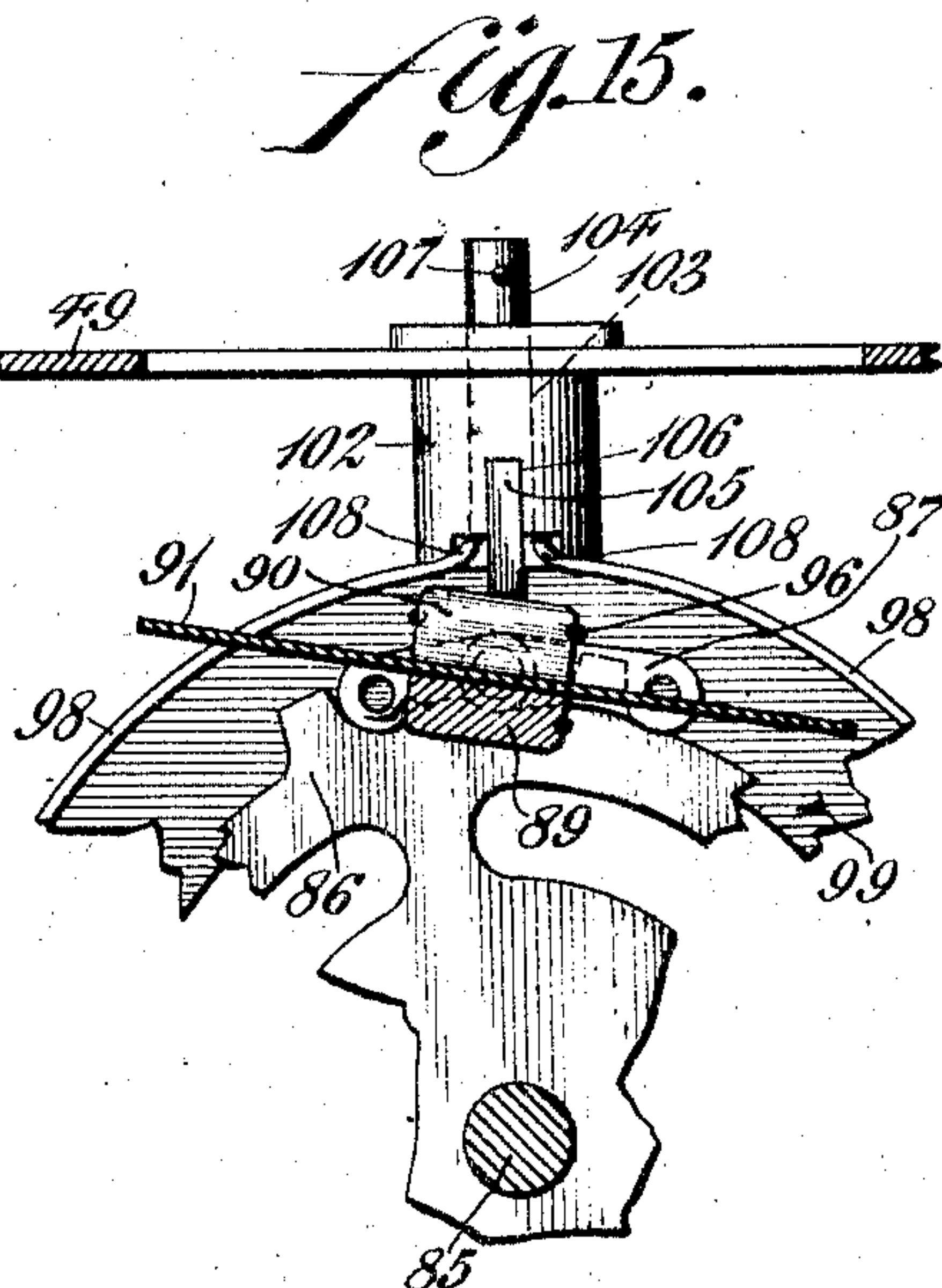
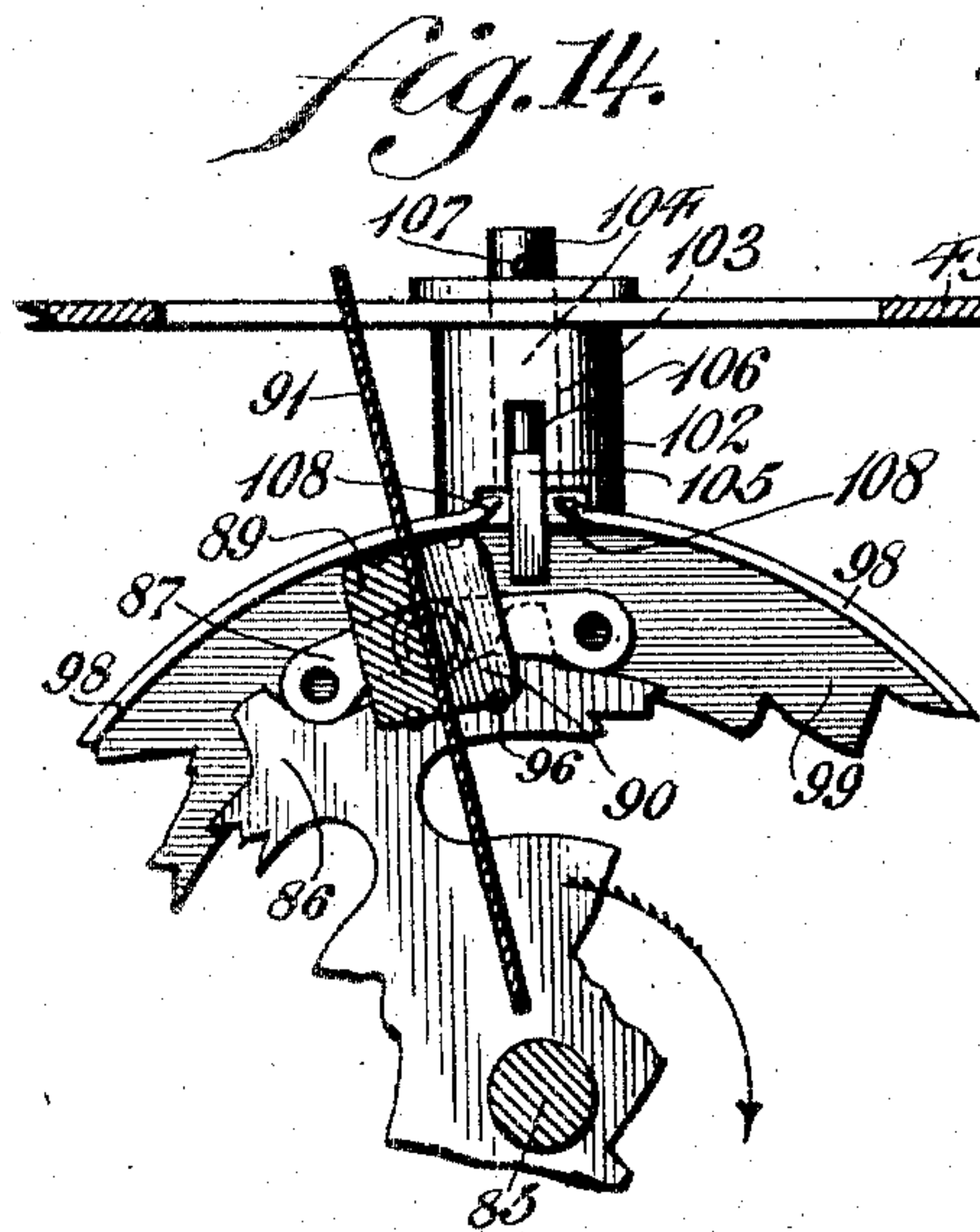
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APPLICATION FILED MAR. 3, 1906.

8 SHEETS—SHEET 7.



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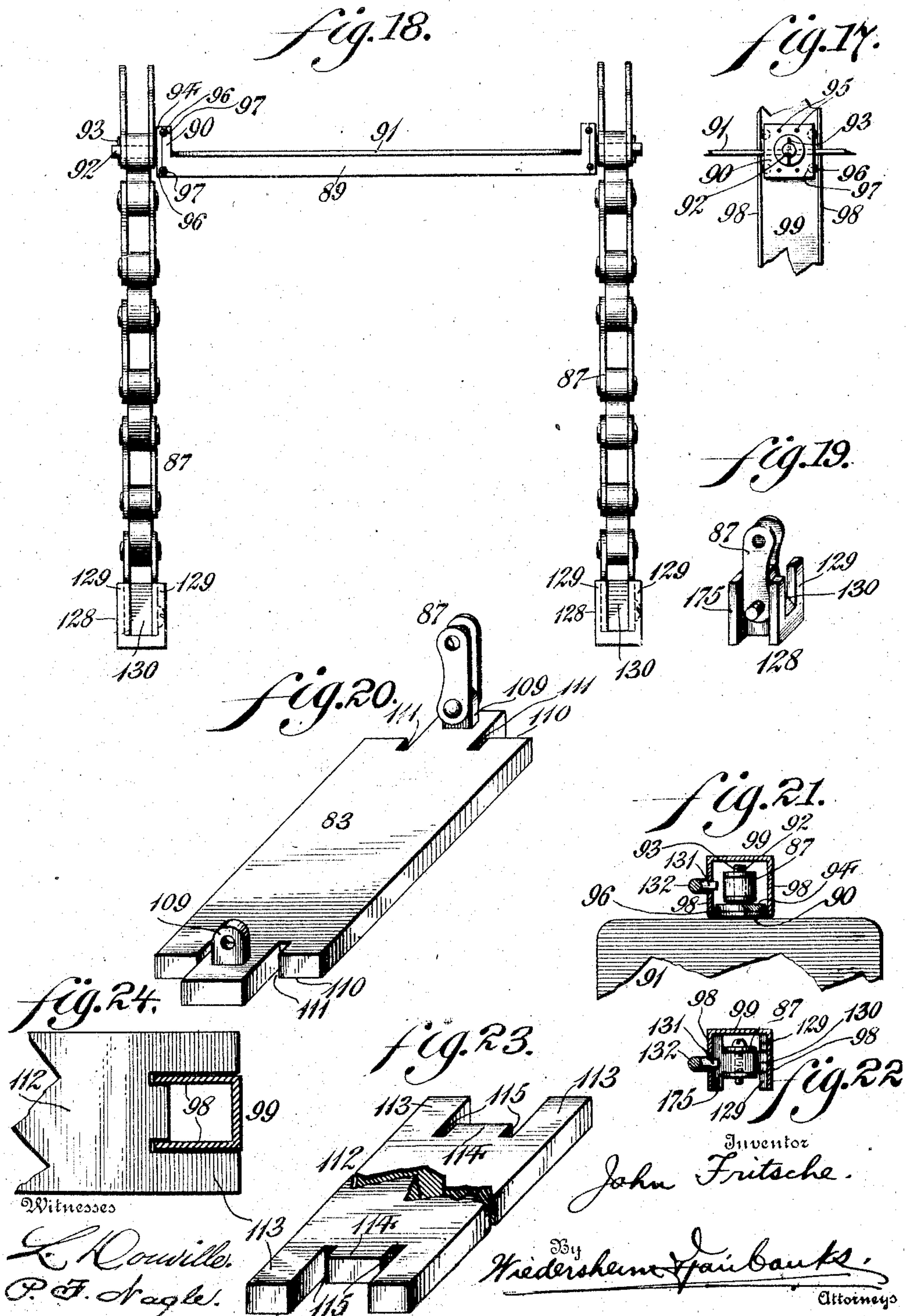
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VENDING MACHINE.

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8 SHEETS—SHEET 8.



UNITED STATES PATENT OFFICE.

JOHN FRITSCHÉ, OF PHILADELPHIA, PENNSYLVANIA.

VENDING-MACHINE.

No. 864,526.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed March 3, 1906. Serial No. 304,041.

To all whom it may concern:

Be it known that I, JOHN FRITSCHÉ, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Vending-Machine, of which the following is a specification.

My present invention relates to a coin controlled vending apparatus in which an article is delivered to a position accessible to the purchaser and in which the weight of the coin is immaterial.

My present invention although specially designed for the vending of articles of food, is not limited to the vending of the same but may be adapted for other purposes as well.

For the purpose of illustrating my invention I have shown one form of a machine, as this embodiment best illustrates the principle of my invention, although it is obvious that the principal instrumentalities of which my invention consists can be variously arranged and organized and in the accompanying drawings I have shown one embodiment thereof which I have found in practice to give very good and satisfactory results although it is to be understood that my invention is not limited to this specific arrangement and organization of these instrumentalities.

To the above ends my invention consists, broadly, of a novel construction of a delivery mechanism in which is employed a novel construction of a stop mechanism, novel means for causing the rotation of the sprocket wheel shafts, a novel construction of braking mechanism, novel means for equalizing the counterbalance of the carrying device, novel means for causing the carrying members to travel on one side of the machine in a substantially horizontal plane and on the other side of the machine in a plane inclined to the horizontal; a novel construction of stop mechanism for the main sprocket wheel shaft, all of said means co-acting at the proper time to produce the desired result.

It further consists of a novel construction of braking mechanism by means of which the rotation of the sprocket wheel shaft is gradually checked and novel means for actuating the braking mechanism, so that the tension thereof will be removed when the coin wheel is brought to a rest by the stop mechanism engaging therewith.

It further consists of a novel manner of securing the carrying members to the sprocket chains.

It further consists of a novel construction of a pawl adapted to co-act with the ends of the carrying members on the bar to which they are secured, whereby the plates are caused to assume a substantially horizontal position when moving on the front side of the machine, and a position inclined to the horizontal when they are moving on the opposite or rear side of the machine.

It further consists of a novel manner of automatically

removing an equalizing weight as the articles are removed from the carrying members so that the carrying mechanism is always accurately counterbalanced.

It further consists of a novel construction of sprocket chain guard or guide and novel means for overcoming the friction of the carrying members with respect thereto.

It further consists of stop mechanism for preventing any improper movement of the shaft on which the upper sprocket wheels and the braking mechanism are mounted.

It further consists of novel means actuated by the sprocket chain for preventing the actuating of the device by a coin or coins when the machine is empty.

It further consists of novel means for preventing the entrance of a coin to the coin wheel whenever the stop mechanism mounted on the upper shaft is actuated.

It further consists of a novel construction of a cooling device which may be employed and through which the carrying mechanism travels.

It further consists of a novel construction of counterbalancing and equalizing weights.

It further consists of novel means for adjusting the tension of the braking mechanism.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

Figure 1 represents a front elevation of a vending machine embodying my invention, having the outer casing and certain parts thereof removed for the sake of clearness of illustration. Fig. 2 represents a rear elevation of Fig. 1. Fig. 3 represents an end elevation of Fig. 1. Fig. 4 represents a sectional elevation of a portion of the machine. Fig. 5 represents a side elevation of a portion of the braking mechanism. Fig. 6 represents a sectional elevation of a portion of the machine showing the coin slots and the manner in which the coins pass to and from the coin wheel. Fig. 7 represents a perspective view of a portion of the machine. Fig. 8 represents a perspective view, on an enlarged scale, of the coin wheel. Fig. 9 represents a sectional view of the coin wheel and the stop therefor in operative position with respect thereto. Fig. 10 represents a sectional view of a portion of the coin wheel but showing the stop therefor as being out of engagement with said wheel. Fig. 11 represents a section on line $x-x$, Fig. 12 showing the manner in which the inclined slot in the coin wheel is adapted to receive and be operated by a single coin. Fig. 12 represents a sectional view on line $y-y$, Fig. 11. Fig. 13 represents a side elevation of a portion of the carrying mechanism. Fig. 14 represents, on an enlarged scale, a sectional view of a portion of the machine showing the manner in which the carrier plates are guided. Fig. 15 represents a sectional view similar to Fig. 14, showing the parts in a different relation to each other and the manner in which the position of the plates is changed. Fig. 16 represents a perspective

tive view of a cooling device which may be employed.
 Fig. 17 represents, in side elevation, a portion of the
 sprocket guide showing the manner in which the carry-
 ing members are guided therein and novel means for
 5 reducing the friction thereagainst. Fig. 18 represents a
 front elevation of the sprocket chain and certain of its
 adjuncts. Fig. 19 represents a perspective view of a
 portion of Fig. 18 showing the block carried by the
 sprocket chain. Fig. 20 represents a perspective view
 10 of one of the weights in detached position showing the
 manner in which the sprocket chain is secured thereto.
 Fig. 21 represents a plan view, partly in section, of a
 portion of the plate and certain of its adjuncts showing
 the manner in which the same is secured to the sprocket
 15 chain. Fig. 22 represents a sectional view of a portion
 of Fig. 19 and a member co-acting therewith. Fig. 23
 represents a perspective view of one of the weights em-
 ployed. Fig. 24 represents a plan view of a portion of
 a weight showing in addition, a portion of the sprocket
 20 guide in section.

Similar numerals of reference indicate corresponding parts in the figures

Referring to the drawings:—Referring first to Figs. 6 and 7 I will describe the coin chute and its adjuncts.

25 1 designates cross-rods or cross-bars of the frame to
 which is secured a front plate or casing member 2, by
 means of screws or equivalent devices 3.

4 designates slots or openings in the cover 2 through which the coins are passed by the intending purchaser.

30 5 designates a coin chute or slot into which the coin
 passes from the slot 4, said coin chute having secured
 thereto a bracket or angle arm 6, which is suitably fas-
 tened to the plate 2 by means of screws or equivalent
 devices 7. The coin chute 5 comprises a stationary
 35 member 8 to which the arms 9 are secured, said arms
 extending transversely across the top of the member 8
 and having at their outer ends lugs 10 to which are piv-
 oted by means of pins 11, the blocks 12 to which the
 plate 13 is suitably secured, said plate forming the other
 40 member of the coin chute. The plate 13 is pivoted with
 respect to the plate 8 in such a manner that its own
 weight will cause it to move outwardly from the plate 8
 and assume an open position.

14 designates lugs extending downwardly from the
 45 bottom of the plate 13. The plate 8 is recessed on the
 side contiguous the plate 13 and has near its upper edge
 a longitudinally extending groove 15 which forms a
 depending lip or flange 16. The inner face 17 of the
 plate 8 forms a substantially plane surface which has at
 50 its lower end an inwardly inclined or beveled face 18.

22 designates an adjustable stop carried by the plate 13

23 designates a plate or bracket suitably secured to
 the slotted member 8 and having a depending arm in
 which is fulcrumed a lever 25, one end of said lever
 55 being suitably deflected and having pivoted at its end
 a rod or pin 26 which is adapted to pass through an
 aperture in the fixed member 8 so as to serve as a stop
 for the coin when the machine is being filled.

28 designates a spring which, as best seen in Fig. 6,
 60 is secured at one end to the pivoted member 13, the
 other end of said spring being free, and surrounded by
 or engaging a stop 29 which is riveted to the plate 13 or
 otherwise secured thereto.

30 designates a rod having at its outer end a suitable
 65 handle 31, said rod extending through an aperture in

the plate 2, and having a shoulder 32 between which
 and the removable end 33 of the casing 34 is interposed
 a spring 35. The casing 34 is secured to the plate 2
 in any desired manner, and in the present instance I
 have shown the cap or end 33 as having threaded en- 70
 gagement with the end of the casing 34.

36 designates a cross-bar or plate which is suitably
 secured to the end of the rod 30, said bar 36 being also
 connected with the rods 37 which are guided in the
 sleeves 38, having the flanges 39 whereby the same may 75
 be readily secured in any desired manner to the plate
 2. The ends of the rods 37 are beveled as at 40, the
 purpose of which will hereinafter appear.

41 designates bars or plates carried by the cross-bar
 36, said bars 41 having secured thereto the rods or 80
 standards 42 which are provided at their upper end
 with rollers 43 which are preferably removably secured
 thereto.

44 designates a return chute having its sides 45 de-
 flected upwardly and outwardly, said chute being 85
 located directly under the coin chute 5 and being suit-
 ably secured to the front plate 2, the bottom wall of said
 chute 44 inclining downwardly towards the plate 2 so
 that when the coin falls therein it will be guided down-
 wardly and pass through the slot or opening in the 90
 plate 2 and be received in the groove or recess of the
 bracket or receiver 48, which is screwed, riveted or
 otherwise secured to the plate 2.

The operation of the coin thus far will be readily
 understood and is as follows:—The coin, if it has the 95
 proper dimensions, is placed by the intending pur-
 chaser in the slot 4 and since the pivoted member 13
 of the coin chute 5 is normally in operative position
 with respect to the member 8 by means of the roller
 43 engaging the spring 28, a substantially straight 100
 slot will be formed and the coin will pass directly
 through the slot formed between the members 8 and
 13, in the manner shown in Figs. 6 and 7. If a
 coin has been stopped in the slot by its engagement
 with the stop rod or pin 22, the same will fall into the 105
 inclined chute 44 and be returned to the receiver 48,
 as seen in Figs. 6 and 7, when the rods 37 move in-
 wardly, since the roller 43 will then move along the
 inclined face of the spring 28 and thus permit the plate
 13 to move outwardly away from the member 8, this 110
 action, as already explained, being due to the manner
 in which the plate 13 is pivoted with respect to the
 plate 8.

49 designates a plate at the top of the machine which
 is secured to the cross-rods or bar 1 and to the standards 115
 or uprights 50.

51 designates a bracket, carried by the top plate or
 member 49, and having secured thereto by means of a
 plate 52 a guide funnel 53, the upper end 54 of which is
 broken away so that the coin chute 5 may extend there- 120
 into, the lower end of said funnel 53 being pressed
 together or flattened so as to form a guide slot or pas-
 sage 55 slightly larger than the coin which is employed
 to actuate the machine.

56 designates a plate secured to the cross-rods 1 and 125
 having supported thereon standards 57 which carry at
 their upper end a journal or bearing 58 in which is
 mounted a shaft 59, the ends of said shaft being mounted
 in suitable journals 60 carried by the plate or bar 61
 suitably secured to the standards 50 of the frame. 130

The coin wheel.—62 designates a coin wheel mounted on the shaft 59.

63 designates angularly inclined slots in the coin wheel 62, the depth of these slots varying according to the number of coins which it is desired to employ in operating the machine, said wheel having a disk 64 screwed or otherwise secured to one side thereof, whereby the coins which are fed to the coin wheel may pass therefrom on one side only of said coin wheel. The upper edges of these slots are beveled in order that the coins will the more readily enter therein. The side opposite the disk 64 has inclined grooves 65 which terminate at the angularly inclined slots 63. In the present instance I have shown the coin wheels as having angularly inclined slots 63 adapted to receive and be actuated by two coins, although the number of coins which it is necessary to employ to actuate the machine may be varied, as desired, by varying the depth of the angularly inclined slots 63 of the coin wheel. In order to prevent the lower coin from immediately escaping from the slot 63 I employ a stationary guard 66 which is carried by the journal casing 58. The depth of the slots 63 may be varied as seen in Figs. 23 and 24 by inserting therein a plate 67 by means of a set screw 68.

It will be apparent that by varying the depth of the groove 63 and by the employment of plates of different lengths such as 67 therein, the coin wheels may be readily adapted to be actuated by either one, two, three, or more coins according to the requirements and conditions of the case.

69 designates a standard, best seen in Fig. 2, the upper end of which has journals 70, in which are mounted the rods or shaft 71, said shafts being also mounted in journals 72 carried by one of the standards 57.

73 designates a pawl fixed on the shaft 71 and adapted to move in the groove or recess 65 of the coin wheel 62 and engage the shoulder 74 formed by said slot and said recess, as best seen in Fig. 9. This shaft 71 is held in suitable relation to its bearing by means of a set collar 75 secured thereon in proximity to the bearing or journal 72.

76 designates a collar or block fixed on the shaft 71 and having an outwardly extending rod or arm 77 to which is secured a spring 78, the other end of said spring being secured to the supporting plate 56, whereby the pawl 73 fixed on the shaft 71 normally tends to engage the recess 65 in the coin wheel 62. The outer periphery of the coin wheel 62 is annularly recessed as seen at 79, in order that the actuating rod 37 may work therein without engaging the coin wheel and thus the distance between the end 55 of the coin chute and the coin wheel is lessened and said chute may be located nearer to the periphery of the coin wheel than would otherwise be the case if said annular recess or groove were omitted.

As seen in Fig. 6, the supporting plate 56 has a suitable aperture therethrough through which passes a coin chute 80, the upper end of said chute being funnel-shaped and cut away, as seen at 81, in order that the coins falling from the coin wheel will fall therein and descend therethrough into a coin receptacle 82, as seen in Fig. 2.

The operation of the coin wheel can now be readily understood and is as follows:—The coin entering the

coin slot 4 in the front plate 2 passes through the coin chute 5 and drops into the funnel-shaped chute 53, thence through the guiding passage or channel 55 at the lower end thereof, and falls into one of the angularly inclined slots 63 of the coin wheel 62, the first coin being prevented from escaping therefrom by reason of its contact with the guard 66. The second coin enters the machine in a similar manner and is directed by the guiding passage 55 into the same slot in which the other coin has been deposited, said coin resting above the first coin and the outer periphery thereof engaging the stop pawl 73 for the coin wheel, which is normally held in engagement with a shoulder 74 thereon by means of the spring 78. The intending purchaser now manually presses against the handle 31 of the rod 30 thus moving forwardly the rods 37 and the bevel end 40 of one of said rods 37 will engage the periphery of the upper coin and cause said coin to press the stop pawl 73 of the coin wheel out of engagement with the shoulder 74 and since there is always a tension tending to rotate the shaft 59, as soon as the pawl 73 is disengaged from the coin wheel, said shaft will turn and as the coin wheel is fixed thereon, said coin wheel will rotate in unison with the shaft until the stop pawl 73 engages another shoulder 74 of the coin wheel. The coins in the angularly inclined slot 63 will be carried downwardly and as said coin containing slot passes beyond or below the guard 66 the two coins will fall into the coin chute 80 and descend into the coin receiver 82.

Journalled in the bracket 51 and in hangers 84 carried by the top plate 49 or by the standards which form the frame of the machine, is a shaft 85 having fixedly mounted thereon the sprocket wheels 86 around which pass the sprocket chains 87, said chains also engaging with the sprocket wheels 88 mounted on the shaft 59 on which the coin wheels are also mounted.

89 designates a carrying bar having the upwardly deflected ends 90, said bar having screwed thereto or otherwise mounted thereon a carrying shelf or member 91.

92 designates a pivot pin, or rod, secured in position by means of a cotter pin or equivalent device 93, said pivot pin 92 having secured thereto at its inner end a polygonal shaped block 94 to which one end of the bar 89 is secured by any suitable means, such as pins or rivets 95.

96 designates balls located in recesses 97 formed between the blocks 94 and the ends of the bar 89 and, as seen in Figs. 29 and 33, these balls extend outwardly beyond the outer walls of the blocks 94 and the ends of the bar 96 so as to contact with the walls 98 of the sprocket guide 99, said guide being secured at its lower end in any suitable manner to the framework of the machine.

The upper ends of the sprocket guides 99 have secured thereto a bar or support 100 which is secured at its upper end to the top plate 49 by any suitable means, such as the screws 101 so that the sprocket guides, which in the present instance are four in number, are rigidly secured in place. The upper ends of the outer walls of the sprocket chain guides 100 are rounded so that the sides of the block 94 and the end of the bar 89 will be guided thereby, it being understood that the shelves 91 and the bars 89 to which they are secured are pivotally supported on the sprocket chain so that as a carrying

shelf is carried upwardly when it reaches the curved upper end of the sprocket chain guide it will appear, as seen in Fig. 14.

102 designates a block or bracket suitably secured to the top plate 49 and engaging the outer wall 98 of the sprocket guide 99, said casing having a suitable aperture 103 therethrough in which is mounted a rod 104 which carries at its lower end a stud or pawl 105, the rotation of which is prevented by its engagement with a recess 106 in said block 102. This stud or pawl 105 is normally in the position seen in Fig. 14, the weight of said stud causing it to be maintained in its lowermost position as seen in said figure and the downward movement thereof being limited by a suitable pin or equivalent device 107. The outer wall 98 of the guard 99 is deflected or bent upwardly, as seen at 108 so as to permit the polygonal-shaped block to be turned or partially rotated by the pawl 105 which extends through this upwardly extending portion 108. The end links on the sprocket chains 87 are pivoted to lugs 109 extending from the lowermost counterbalancing weight 83, said weight having portions thereof cut away, as seen at 110 and provided with the grooves or recesses 111 so that the walls 98 of the sprocket chain guide 99 may extend therein, as seen in Fig. 24. Supported on this bottom weight 83 are a plurality of counterbalancing weights which I have also designated 83.

112 designates equalizing weights having the projecting sides 113 and a centrally extending lug 114 between which and the sides 113 are the slots or recesses 115 in order that these counterbalancing weights will not interfere with the sprocket chain or the sprocket chain guide as will be readily apparent from the drawings. The number of weights 112 employed will depend upon the number of plates 91 which are carried by the sprocket chain.

In order to equalize the weight carried by the sprocket chain so that when the articles on the carrier members 91 are removed a weight substantially the same will be removed from the equalizing or counterbalancing device, I employ a series of weights 116, 117, 118, 119 and 120, the number of these weights depending upon the amount of the friction of the carrying mechanism and the coin actuating means therefor. Since in the present instance I have shown, as seen in Fig. 2, only five stops, I have deemed it unnecessary to designate with separate numerals all of the equalizing weights which I have shown, it being apparent that the number of equalizing weights employed would depend upon the conditions and requirements. In order to provide for the automatic removal of a weight, I provide for each equalizing weight, separate stops with which said weights engage and whereby they are automatically removed from the equalizing and counterbalancing means.

121 designates stops suitably secured to the guides 99 by means of screws or equivalent devices 122, said stops extending transversely of the guides 87 so that they are in the path of the top weight 116, whereby when the article carried by the first plate 91 is removed said weight 116 will engage the stops 121 and rest thereupon, it being understood that the stops 121 extend transversely to such a degree that they will be in the path of only the top weight 116.

123 designates stops secured to the guide 87 by the

screws or equivalent devices 124, said stops being in the path of the second weight 117, whereby when one or more plates 91, have had the article or articles carried thereby removed therefrom, the second weight 117 will be removed separate by the stops 123.

125, 126 and 127 designate stops similarly secured to the sprocket chain guide 87, said stops being so arranged that they will remove only a single weight, the stops 125 removing the weight 118, the stops 126 removing the weight 119 and the stops 127 removing the weight 120 and so on.

128 designates a shoe or block which is pivoted to the last link of the sprocket chain 87, the inner wall 129 of which is recessed, as seen at 130, in order that the shoe may approach nearer to the sprocket wheel 88.

The opposite wall 175 of the block 128 has a substantially straight upper edge which co-acts with the inwardly deflected end portion 131 of a rod 132 movably secured in suitable brackets 133, which latter are attached to the sprocket guide 99 in any suitable manner. As seen in Fig. 3 the guide 99 is slotted or recessed as at 134 in order that the end 131 may extend therethrough and be in the path of the side 175 of the shoe 128.

135 designates a block at the upper end of the rod 132, said block having a slot or recess 136 therein, in which the end of the lever arm 25 is adapted to be seated in order that when the stop 131 is in its lowermost position the stop rod or pin 26 is in such a position that when a coin of the proper dimensions is placed in the machine it will have a free passage through the coin slot unless the stop 131 has been raised by its engagement with the side 175 of the block 128 carried by the sprocket chain.

137 designates a flexible connection connected at one end to one of the bottom weights 83 and at its free end to the bar 89 of the lowermost carrying plate 91, said connection being preferably flexible and passing around rollers 138 and 139 which are suitably pivoted near the foundation of the machine in a special bracket therefor or to the guides or supporting standards of the machine.

The braking mechanism.—140 designates a braking wheel or block fixed on the shaft 85, said wheel having an annular groove 141 thereon in which is seated a metallic band or flat spring 142, one end of said spring being secured to a stud or pin 143 which is fastened to the stationary bracket 51, carried by the top plate 49, the other end of said band being secured in any suitable manner to a block 144 having an aperture 145 therethrough into which one end 146 of a lever 147 extends, said block being adjustably secured with respect to said lever by means of a set screw 148 extending through said block and engaging said lever. The lower end of the lever 147 is forked or provided with two depending arms 149 as seen in Fig. 5. These depending arms 149 are provided with longitudinally extending slots 150 in which the rod or axle 151 is adapted to move, said rod having mounted thereon a roller 152.

153 designates a cam or wiper wheel having a plurality of cams 154 thereon which are adapted to co-act with the roller 152 to actuate the braking mechanism. the number of said cams 154 depending upon the number of operative coin slots in the coin wheel.

Each of the cams 154 is provided on one side with a cam face 155 and on the opposite side with a cam face 156, it being understood as seen in Fig. 2, that the de-

pending arms 149 by which the roller 152 is movably carried will permit the cam wheel 153 to rotate therebetween.

Stop mechanism for the upper sprocket wheel and brake shaft.—157 designates a ratchet wheel mounted on the shaft 85 and with which a pawl 158 is adapted to co-act, said pawl being pivoted at 159 to a stud or lug 160 carried by the bracket 51.

161 designates a rod or arm extending rearwardly from the pawl 158. The pawl 158 is pivoted at such a point that its own weight will cause it to engage with the ratchet wheel 157 and thus prevent the improper rotation of the shaft 85.

162 designates a rod, the upper end of which is guided in a bearing 163 secured to the top plate 49, said rod passing through the supporting plate 56, the downward movement of said rod being limited by means of a set collar 164 secured thereto above the plate 56.

165 designates a collar mounted on the rod 162 by means of a threaded pin 166, said pin extending transversely of said rod to such an extent that it will engage the rod 161 connected with the pawl 158, when the rod 162 is raised.

167 designates a set collar or block adjustably mounted on the rod 162, said block having extending therefrom a stud or lug 168, said block being adjustably mounted on the rod 162 in such a manner that when the rod 162 is raised the lug 168 extending from the block 167 will engage the arm or rod 77 and thereby rock the shaft 71 and cause the pawl 73 to be removed from its engagement with a shoulder 74 of the coin wheel 62.

169 designates a set collar or block adjustably mounted on the rod 162, said block having extending therefrom, an arm or rod 170 which extends under the lever 25 which controls the coin chute 5 so that when the rod 162 is raised the arm 170 will engage the lever 25 and cause the pin 26 to be moved into the path of a coin passing through the coin chute 5 and thereby stop the coin so that when the handle 31 is actuated the coin will be returned to the intending purchaser. In practice the portion of the casing in front of the carrying mechanism is preferably constructed of glass or other transparent material in order that the goods or various articles of food, such as pies, sandwiches or the like carried thereby may be clearly seen by the intending purchaser.

In some cases it is desirable to employ in machines articles such as ices or ice cream, which must be kept in a cool condition in order to prevent their melting.

In order to overcome the defect which has been present in all of the prior machines with which I am acquainted, I employ an outer casing or box 171 which is provided with a suitable lining 172 there being also an internal casing 173 which closely engages the sprocket chain guides 99 and the walls 98 thereof, it thus being seen that the shelves or plates 91, on which the material is placed which it is desired to keep at a desired cool temperature, pass through the inner casing 173. The chamber 174 between the inner and outer casing may be filled or packed with any suitable cooling material such as ice or a brine may be employed such as is well known in the art.

The operation of the complete machine may now be readily understood and is as follows:—The intending

purchaser places one or more coins in the slot 4 at the front of the machine and if the coins are unimutilated and of the proper dimensions, the coin will rest on the V-shaped bottom of the slot formed between the members 8 and 13 of the coin chute 5 and will pass there- 70 through into the hopper or funnel 53 and thence to the lower flattened end 55 thereof. The coin will be guided in such a manner that it will fall from the passage 55 into one of the angular inclined slots 63 of the coin wheel 62, the depth of said slots varying accord- 75 ing to the number of coins which it is desired to employ. In the present instance the coin wheel is adapted to be actuated by two coins. The lower coin is prevented from escaping from the slot in which it has fallen by means of the stationary guard 66 the upper coin being 80 prevented from escaping from said slot by its engagement with the stop pawl 73, which, as seen in Fig. 9, rests against the shoulder 74 of the coin wheel 62 and closes the upper portion of the slot 63 in said wheel. The intending purchaser now presses on the handle 31 85 so as to move the same forwardly towards the machine. The beveled end 40 of one of the plungers 37 will engage the upper coin in the slot and cause the same to move outwardly and engage the pawl 73 and thus move said pawl 73 out of engagement with the shoulder 74, 90 it being noted that the end of the pawl 73 with which the coin engages is faced off or beveled so as to close in a very positive manner the upper end of the slot 63. The shaft 71 on which the pawl 73 is mounted is positively rotated or rocked against the tension of the spring 78 95 which tends to rock the shaft 71 in such a manner that the pawl 73 engages with a shoulder 74 of the coin wheel 62. As soon as this pawl 73 is removed from its engagement with a shoulder 74 the counterbalancing weights 83 will cause the sprocket chains 87 to rotate the shafts 100 85 and 59 in such a manner that the shelves or carrying members 91 will be raised and the counterbalancing weights and equalizing weights will be lowered, thus bringing a shelf 91 in proper position with respect to the delivery opening (not shown) in order that the article 105 carried by said shelf may be readily removed by the purchaser. As the coin wheel and the shaft on which it is mounted rotate, the cam wheel will be rotated therewith, in the direction indicated by the arrow in Fig. 5. The operative cam faces 156 co-acting with the 110 roller 152 will cause the depending arms 149 to move outwardly, the weight of the roller causing the same, at this time, to be seated at the lower end of the slots 150 in the depending arms 149 so that the lever 147 which is pivoted at a suitable point to the bracket or 115 support 51, will be turned on said pivot as indicated in dotted lines in Fig. 5 and the band 142 will more tightly engage the annular groove 141 in the brake wheel 140 which is fixed to the shaft 85, it being seen that owing to the construction of this cam face 156 the braking ac- 120 tion gradually increases and then gradually decreases until a shoulder 74 on the coin wheel 62 is in proximity to the stop pawl 73 at which time the roller 152 will move down the incline face 155 so that the tension of the brake will be removed at substantially the same time, or 125 a little before, the stop pawl 73 engages with the shoulder 74. The depending arms 149 are slotted in order to permit the cam-shaft to rotate in the opposite direction, it being seen that if the cam shaft 59 is rotating in the opposite direction, the roller 152 will be raised by its 130

engagement with the cam face 155 and if it were not for these slots 150 this rotation would not be permitted. As the counterbalancing and equalizing weights are lowered it will be apparent that the upper weight 116 will be removed by the studs 121 so that when the article carried by the upper shelf 91 has been removed from the machine a substantially equivalent weight such as 116 will be removed from the counterbalancing device so that immaterial of the number of articles which have been removed from the shelves 91 the machine will be equally counterbalanced at all times in proportion to the weight which is carried by the different shelves or plates 91, although it is apparent that in some cases where a large number of carrying members are employed an equalizing weight would be removed only after a plurality of carrying members had had the articles carried thereby removed therefrom. As the coin wheel rotates it is to be understood that the coins contained in a slot will be carried around therewith and after the coin containing slot passes the stationary guard 66 owing to the inclination of the slots the coins will fall therefrom into the coin chute 80 therebeneath and thence into the coin receptacle 82.

Referring now to Figs. 14 and 15 it will be apparent that the polygonal shaped block which is formed by the end of the bar 89 and the block 94 will be guided between the sides 98 of the sprocket chain guide 99 so that as the sprocket chain carries the said blocks around the sprocket wheel they will be guided by the outer wall or sides 98 of said guide. This will cause each plate and its adjuncts to assume a position such as is seen in Fig. 14, the top plate 49 being suitably recessed or deflected at this point if desired, so as to permit the passage of the members 91. The depending end 105 of the plunger 104 is in the path of this polygonal shaped block so that the plunger engages a side of the same and causes the block to rotate a quarter turn, as seen in Fig. 15, the ends 108 of the outer wall or side 98 of the guide being upwardly deflected so as to permit the partial rotation of this block. The plates or shelves are raised in substantially a horizontal position, but as soon as the article or articles carried thereby have been removed and the carrying member passes the pawl 105 the polygonal blocks will be turned on their pivots so that as said plates descend on the opposite side of the machine they will travel in a plane inclined to the horizontal and in the present instance they assume a substantially vertical position. This causes the carrying mechanism to take up much less space than if the carrying shelves ascended and descended in a substantially horizontal position. This feature reduces materially the width of the machine which it is necessary to employ. This is a marked advantage in cases where it is essential to economize the space as in places in which the machines must be placed back to back and the amount of space which it is necessary to employ for the vending machines is materially reduced. It is, of course, to be understood that the pawl 105 may be omitted when desired, in which case the shelves will travel on both sides of the machine in substantially the same plane.

In order to cause the return of a coin to the purchaser when it is placed in the machine and the machine is empty, I employ on the sprocket chain 86 a shoe or block 128 having a side 175 which is adapted to engage the end 131 of the rod 132 and owing to the recess 134 in

the wall 98 of the sprocket chain guide 99 as the block 128 travels upwardly it will raise the rod 132 and thereby the outer end of the lever arm 25 and cause the stop 26 to assume such a position that if a coin has been placed by the intending purchaser in the coin slot 4 the coin instead of passing through the coin chute 5, will strike said stop 26 so that, when the handle 31 is operated and the roller 43 moves down the inclined face of the spring 28, the pivoted member 13 of the coin chute will move outwardly, owing to its weight and the manner in which it is suspended, so that the coin or coins in the coin chute will drop into the return trough or chute and be deposited in the chamber 47 of the receiver 48 as will be apparent from the Figs. 6 and 7.

In order to permit the block 128 to approach nearer to the sprocket wheel 86 the side 129 contiguous thereto is recessed or cut away as seen at 130. In the present instance I have shown in Fig. 13 the lowermost weight at one end of the sprocket chain and the lowermost plate secured at the other end of said chain as being connected by a suitable rod, wire or other conductor in order that the same may be readily actuated by hand when it is desired to place the articles on the different shelves. In order to accomplish this the rod 162 is first raised by any suitable means, thus raising therewith the block 168 and the stud or lug extending from said block will engage the rod 77 carried by the block 76 which is mounted on the rod 71 and cause the said rod to be rocked so that the stop pawl 73 will be removed from its engagement with the shoulder 74 of the coin wheel 62, it being understood that during this operation the operator grasps the flexible connection 137 in order that any improper movement of the carrying mechanism and its adjuncts will be prevented. At substantially the same time the rod 166 carried by the set collar 165 will raise the arm 161 and cause the pawl 158 to be removed from its engagement with the ratchet wheel 157 so that the plates may be lowered as the sprocket chain is being actuated in order that the shelves may assume their initial position.

It will be seen that as the carrying shelves pass the depending pawl 105 one of the sides of the polygonal shaped block at the end of the bar 89 will engage said pawl and after passing said pawl the carrying member will assume the position as seen in Fig. 14 so that as the same moves downwardly it will be guided in the sprocket chain guide or guard and will assume its initial substantially horizontal position. At the same time as the carrying shelves are being lowered the weights which are supported upon the different stops which it is understood have been removed by the stops therefor, will be removed from their respective stops so that the counterbalancing and equalizing weights will assume their initial position, as seen in Fig. 2.

Simultaneously with the raising of the rod 162, the arm 170 will be raised and as this arm is located so as to engage the lever 25, said lever will be turned upon its pivotal point and the stop 26 will be moved inwardly into such a position that if the intending purchaser places a coin in the slot while the rod 162 is raised and the machine is being filled the stop 26 in the coin slot will absolutely prevent any coin from entering the coin wheel but said coin will be retained in said slot and when the handle 31 is actuated the pivoted member of the coin slot or chute will move outwardly and the coin

will drop into the return chute 44 and descend into the receptacle 48 so that the intending purchaser will have returned to him in a very positive manner the coin which he has placed in the machine while the machine was inoperative.

In so far as I am aware I am the first in the art to employ, in a device of this character, the combination of a conveyer or carrier having a counterbalancing device therefor and equalizing weights supported on the counterbalancing device and adapted to be automatically removed as the articles are removed from the conveyer or carrying members.

It will be apparent that owing to the stop rod or pin 26 and the manner of actuating the same that it will be impossible for an intending purchaser to place a coin in the machine when the same is empty or is being filled without said coin being returned to the outside of the casing of the vending machine to a position accessible to the intending purchaser.

It will be apparent that the coin wheel will be released only by the engagement of a coin with the stop mechanism for said wheel and that when the coin wheel has been released the speed of the sprocket chain and the shelves thereon will be checked as desired, by the braking mechanism. The coin wheel may be constructed with any desired number of slots 63 therein, the number of which would vary according to the number of shelves which it is desired to employ and the diameter of the coin wheel.

It will be further apparent that owing to the construction of the shelves and the manner in which they are secured to the sprocket chain and the novel means for turning them as they pass downwardly at the rear of the machine, that a very compact machine is produced and that the amount of space which the vending machine occupies is reduced to a minimum.

It will be further apparent that the material which is held upon the different shelves may be kept cool by means of the cooling device through which the shelves are adapted to pass and that a desired temperature in the chamber formed in the internal casing may be maintained.

It is also to be noted that the improper rotation of the upper sprocket wheel shaft is positively prevented by means of the stop mechanism therefor and improper rotation of the sprocket wheel shaft on which the coin wheel is mounted is positively prevented by means of the stop mechanism engaging therewith and the tension of the counterbalance and equalizing device. In the present instance I have shown the equalizing weights as adapted to be removed as each carrying shaft comes into a position accessible to the intending purchaser, but it is to be understood that the stops with which the separate equalizing weights co-act may be so arranged that an equalizing weight will be removed only after the articles carried by several carrying shelves have been removed.

I have deemed it unnecessary in the present instance to show in the drawings the outer casing of the machine since this may be constructed of any desired material and of any desired contour or form, although that portion which is in front of the carrying mechanism would preferably be of some transparent material in order that the articles which are carried by the carrying mechanism may be clearly seen by the intending purchaser.

It will be further apparent that owing to the guards for the sprocket chain the carrying members will be accurately guided and if the mechanism for partially rotating them is employed they will be guided in the same accurate and reliable manner after such rotation has taken place.

While I have spoken of the carrying members as moving on one side of the machine in a substantially horizontal plane it is to be understood that for certain purposes they may be inclined to the horizontal to a desired extent and still be within the scope of my invention.

From the above description it will be apparent that I have produced a novel and useful construction of a coin controlled vending machine which embodies the features of advantage enumerated as desirable in the statement of the invention and while I have illustrated and described the preferred embodiment of the same it is to be understood that it is susceptible of modification in various particulars without departing from the spirit and scope of the invention or sacrificing any of its advantages.

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

1. In a vending machine, a plurality of shafts having sprocket wheels thereon, a carrying mechanism mounted on said sprocket wheels, a brake wheel mounted on one of said shafts, a cam wheel mounted on the other of said shafts, means intermediate said wheel and said cam for retarding the rotation of said shafts, and a stop mechanism for said carrying mechanism.

2. In a vending machine, a frame, a plurality of shafts carried thereby, carrying mechanism actuated by said shafts, a counterbalance for said carrying mechanism, a friction brake mounted on one of said shafts, a cam mounted on the other of said shafts, means intermediate said brake and said cam for actuating the former, and means for equalizing the weight of said counterbalance as an article is removed from said carrying device.

3. In a vending machine, a frame, a plurality of shafts rotatably mounted thereon, carrying mechanism actuated by said shafts, a counterbalance therefor, means for equalizing the weight of said counterbalance as articles are removed from said carrying mechanism, braking mechanism on one of said shafts, means mounted on the other of said shafts for actuating said braking mechanism, and means for controlling the rotation of said shafts.

4. In a vending machine, a carrying mechanism, a plurality of shafts on which said mechanism is mounted, a wheel mounted on one of said shafts, a flexible friction connection engaging said wheel, one end of said connection being secured to a fixed portion of the machine, a lever to which the other end of said connection is secured, and means mounted on the other of said shafts adapted to actuate said lever.

5. In a vending machine, a carrying mechanism, a plurality of shafts on which the same is mounted, a stop mechanism for said shafts, a friction wheel mounted on one of said shafts, a friction connection engaging the periphery of said wheel, one end of said connection being secured to a fixed portion of the frame, a lever pivotally mounted, a bracket at one end thereof to which the other end of said friction connection is secured, a cam wheel mounted on the other of said shafts, and having a plurality of operative cam faces thereon, the other end of said lever having slotted arms depending therefrom, and a roller mounted in said slots and co-acting with said cam faces to actuate said friction connection.

6. In a vending machine, a cooling device, a carrying mechanism adapted to travel therethrough, a sectional counterbalance for said carrying mechanism, and means for automatically removing one of said sections when said carrying mechanism reaches predetermined positions.

7. In a vending machine, a carrying mechanism, a

counterbalancing device therefor, and means for equalizing the weight of said counterbalancing device as an article is removed from said carrying device.

8. In a vending machine, a carrying mechanism, shelves pivotally carried by said mechanism, a counterbalancing device therefor, and means for causing said shelves to move in a substantially horizontal position on one side of the machine and a position inclined to the horizontal on the opposite side thereof.

9. In a vending machine, a carrying mechanism comprising a plurality of carrying members, a counterbalancing device thereof, means for equalizing the weight of said counterbalancing device as the articles are removed from said carrying device, and means for causing said members to travel in substantially a horizontal plane on one side of the machine and a plane inclined to the horizontal on the opposite side of the machine.

10. In a vending machine, a carrying mechanism, a counterbalancing device therefor, means for equalizing the weight of said counterbalancing device as articles are removed from said carrying device, and braking means for said carrying mechanism.

11. In a vending machine, a shaft, sprocket chains actuated thereby, carrying members pivoted to said chains, a counterbalance for said members, and means for equalizing the weight of said counterbalance when an article is removed from a member.

12. In a vending machine, a shaft, sprocket chains actuated thereby, carrying members pivoted to said chains, a counterbalance for said members, means for equalizing the weight of said counterbalance when an article is removed from a member, means for causing said members to move in a horizontal plane on one side of the machine, and means for partially rotating said members to cause them to travel in a plane inclined to the horizontal on the other side of the machine.

13. In a vending machine, shafts, sprocket chains actuated thereby, carrying members pivoted to said sprocket chains, guides for said sprocket chains, means for overcoming the friction of said carrying members with respect thereto, and means for causing said members to move in a substantially horizontal plane on one side of the machine and in a plane inclined to the horizontal on the other side thereof.

14. In a vending machine, a carrying mechanism having a plurality of carrying members, a counterbalance therefor, and means for automatically equalizing the weight of said counterbalance as an article is removed from a member.

15. In a vending machine, a carrying mechanism having a plurality of carrying members, a counterbalance therefor, equalizing weights carried by said counterbalance, and means for automatically removing an equalizing weight as a carrying member is brought accessible to a purchaser.

16. In a vending machine, a carrying mechanism having a plurality of carrying members, a counterbalance for said mechanism, a plurality of equalizing weights carried by said counterbalance, a guard for said carrying mechanism, and separate stops for each equalizing weight on said guard and with which only their respective weight co-acts.

17. In a vending machine, a carrying mechanism, having a plurality of carrying members, a counterbalance for said mechanism, a plurality of equalizing weights carried by said counterbalance, a guard for said carrying mechanism, separate stops for each equalizing weight on said guard and with which only their respective weight co-acts, and means for causing said members to travel in a substantially horizontal plane on one side of the machine and in a plane inclined to the horizontal on the other side thereof.

18. In a vending machine, a carrying mechanism having a plurality of carrying members, a counterbalance for said mechanism, a plurality of equalizing weights carried by said counterbalance, a guard for said carrying mechanism, separate stops for each equalizing weight on said guard and with which only their respective weight co-acts,

means for causing said members to travel in a substantially horizontal plane on one side of the machine and in a plane inclined to the horizontal on the other side thereof, and a connection between the last carrying member and said counterbalance.

19. In a vending machine, a carrying mechanism, comprising a plurality of sprocket chains and means for actuating them, carrying members pivoted to said chains, each of said members having a polygonal shaped block at each end contiguous said chains, and means engaging said blocks for partially rotating said pivoted members.

20. In a vending machine, a carrying mechanism, comprising a plurality of sprocket chains and means for actuating them, carrying members pivoted to said chains, each of said members having a polygonal shaped block at each end contiguous said chains, means engaging said blocks for partially rotating said pivoted members, a counterbalance therefor, equalizing weights carried by said counterbalance, and means for automatically removing an equalizing weight as a member reaches a predetermined position.

21. In a vending machine, a carrying mechanism comprising a plurality of sprocket chains and means for actuating them and carrying members pivoted to said sprocket chains, guards for the latter having their outer sides apertured and the portions contiguous the apertures deflected outwardly, and a pawl located in one of said apertures with which the different members engage to partially rotate the latter.

22. In a vending machine, a carrying mechanism having a plurality of carrying members pivoted to sprocket chains, guides for said sprocket chains, a casing having a passage therethrough of larger diameter than said carrying members and surrounding said sprocket chain guides, an outer casing surrounding said inner casing, and cooling means located between said inner and outer casing.

23. In a vending machine, a carrying mechanism, a counterbalance therefor comprising a plurality of weights, each of said weights having side arms extending therefrom and a centrally located lug, there being grooves between said lug and said side arms, and guides for said carrying mechanism between which said weights are movable.

24. In a vending machine, a carrying mechanism, a counterbalance therefor, guides for said carrying mechanism, and equalizing weights carried by said counterbalance and partially surrounding said guides.

25. In a vending machine, a carrying mechanism, a braking mechanism therefor, a counterbalance for said carrying mechanism, equalizing weights carried by said counterbalance, guides for said carrying mechanism, and a plurality of means carried by said guides adapted to co-act with different equalizing weights.

26. In a vending machine, a carrying mechanism, a braking mechanism therefor, a counterbalance for said carrying mechanism, equalizing weights carried by said counterbalance, guides for said carrying mechanism, a plurality of means carried by said guides adapted to co-act with different equalizing weights, and ball bearings carried by said carrying mechanism and co-acting with said guides.

27. In a vending machine, a plurality of shafts, a carrying mechanism actuated thereby, a counterbalance for said carrying mechanism, a brake wheel mounted on one of said shafts, a stop mechanism for each of said shafts, a wiper wheel mounted on one of said shafts and having a plurality of cams, each of said cams having a plurality of cam faces, means co-acting with said brake wheel and with one of said cam faces to actuate said braking mechanism and co-acting with the other of said faces to release said braking mechanism.

28. In a vending machine, a carrying mechanism, a counterbalance therefor, and means for automatically equalizing the weight of said counterbalance.

29. In a vending machine, a carrying mechanism, a counterbalance therefor, means for equalizing the weight of said counterbalance, and a conductor connected with said carrying mechanism and said counterbalance.

30. In a vending machine, a carrying mechanism, a sectional counterbalance therefor, and means for automatically removing one of said sections for varying loads of said carrying mechanism.

31. In a vending machine, a carrying mechanism, a lever actuated thereby, and means actuated by said lever for rendering the machine inoperative.

32. In a vending machine, a carrying mechanism, a

block provided with a recess carried thereby, a lever movably mounted and having a deflected end coacting with said recess, and means actuated by said lever for rendering the machine inoperative.

- 5 33. In a vending machine, a carrying mechanism, a counterbalance therefor, means for automatically equalizing the weight of said counterbalance, a stop mechanism for said carrying mechanism, and means for manually releasing said stop mechanism.
- 10 34. In a delivery mechanism for vending machines, a plurality of carrying members, actuating means therefor, and means for automatically rotating said members to cause them to travel in different planes on opposite sides of the machine.
- 15 35. In a delivery mechanism, a plurality of carrying members, pivotally mounted, means for partially rotating said members as they move in a different direction, and devices for preventing the rotation of said members when not coacting with said means.
- 20 36. In a vending machine, a carrying mechanism, a stop mechanism for arresting the movement thereof in one direction, a second stop mechanism for arresting the movement thereof in a reverse direction, and means for manually actuating said stop mechanism.
- 25 37. In a vending machine, a carrying mechanism com-

prising polygonal shaped blocks, carrying members carried by said blocks, sprocket chains to which said blocks are pivoted, a pawl maintained by gravity in the path of said blocks and coacting therewith to partially rotate the latter, means for limiting the movement of said pawl, and 30 devices for causing said blocks to travel in predetermined planes.

38. In a vending machine, a carrying mechanism comprising polygonal shaped blocks, carrying members carried by said blocks, sprocket chains to which said blocks are 35 pivoted, a pawl maintained by gravity in the path of said blocks and coacting therewith to partially rotate the latter, means for limiting the movement of said pawl, means for preventing the rotation of said pawl, and devices for causing said blocks to travel in predetermined planes. 40

39. In a vending machine, a carrying mechanism, a braking mechanism therefor adapted to permit the travel of said carrying mechanism in a reverse direction, a counterbalance for said carrying mechanism, and means for equalizing the weight of said counterbalance for varying 45 loads of said carrying mechanism.

JOHN FRITSCHÉ.

Witnesses:

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