

(No Model.)

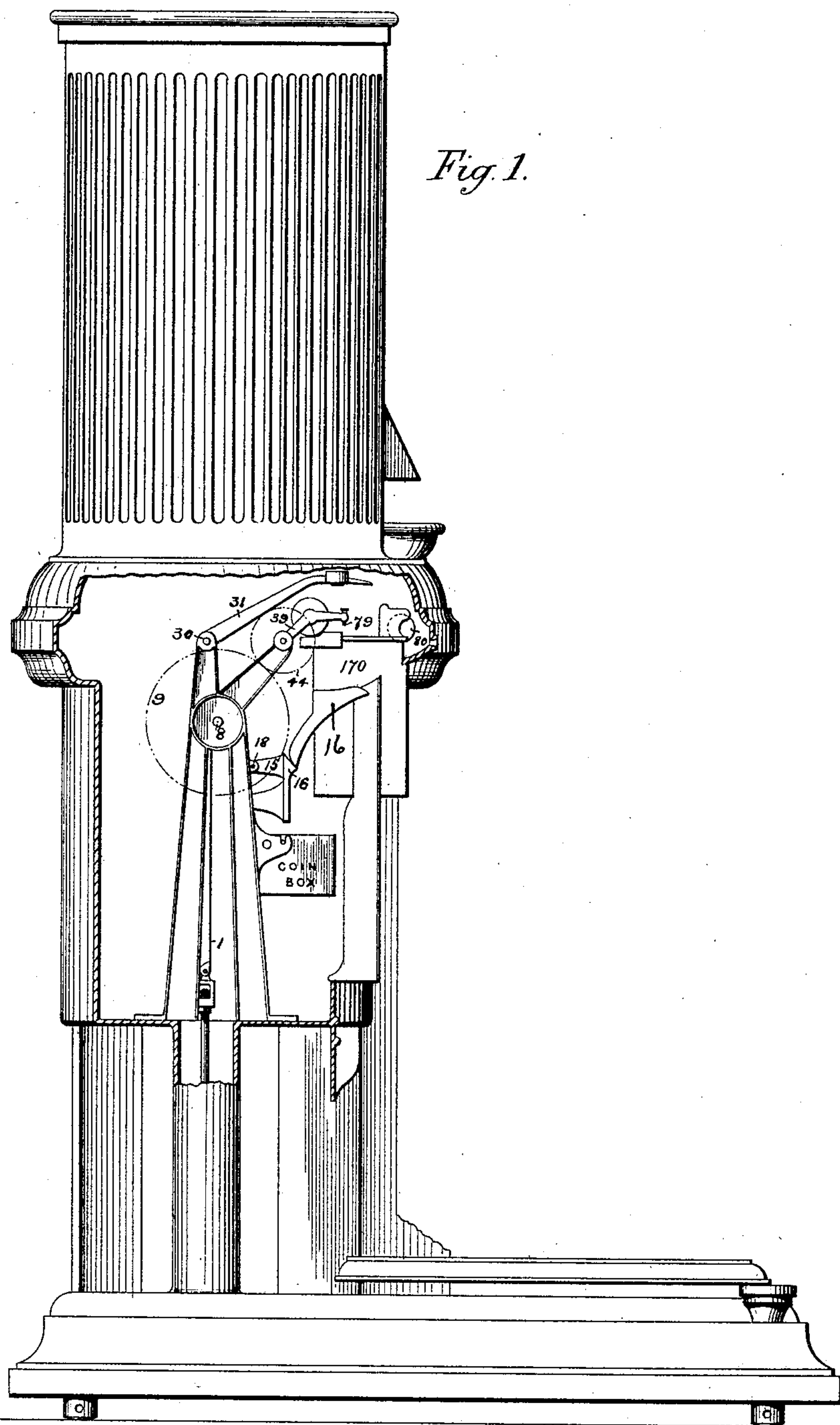
11 Sheets—Sheet 1.

E. G. HOFFMANN.

COIN CONTROLLED TICKET PRINTING WEIGHING MACHINE.

No. 415,294.

Patented Nov. 19, 1889.



Witnesses.
W. S. McArthur,
S. S. Johnson

Inventor.
Ernst G. Hoffmann.
By Foster & Freeman
Attorneys.

(No Model.)

11 Sheets—Sheet 2.

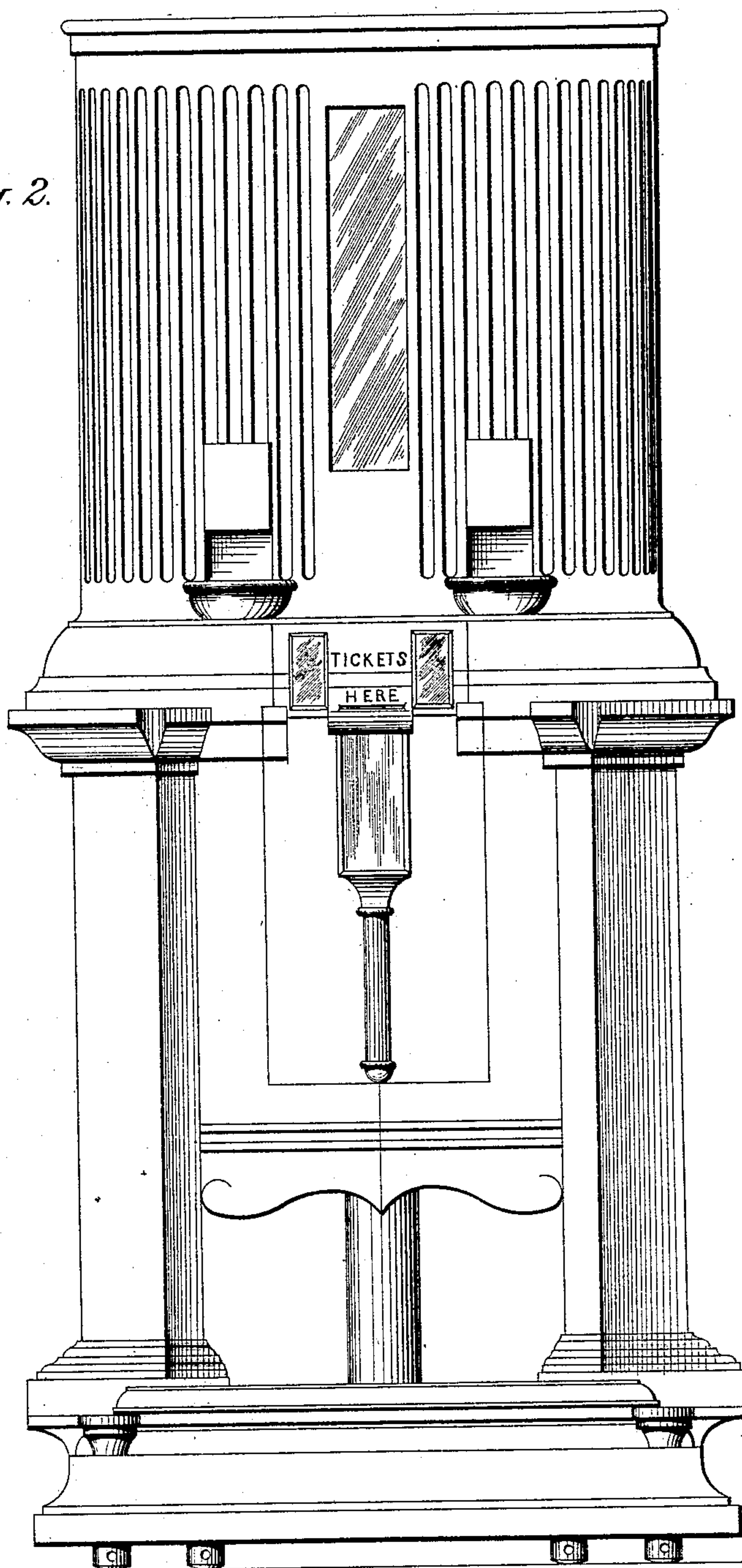
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Fig. 2.



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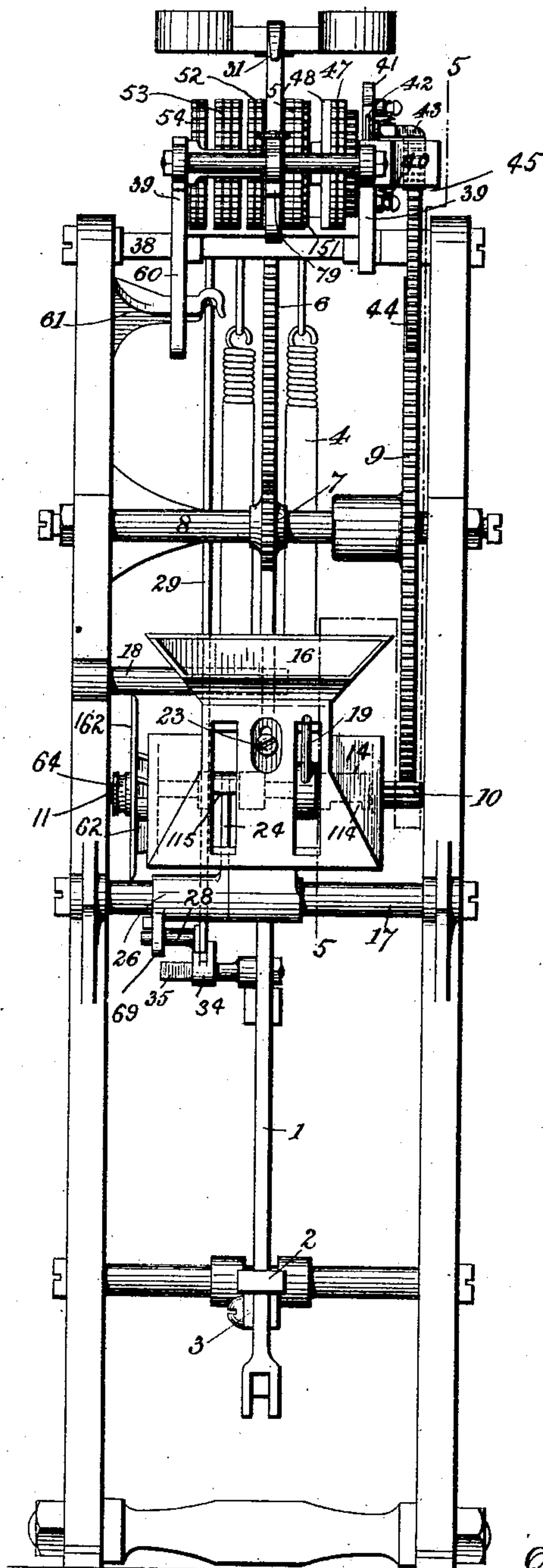
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Fig. 3.



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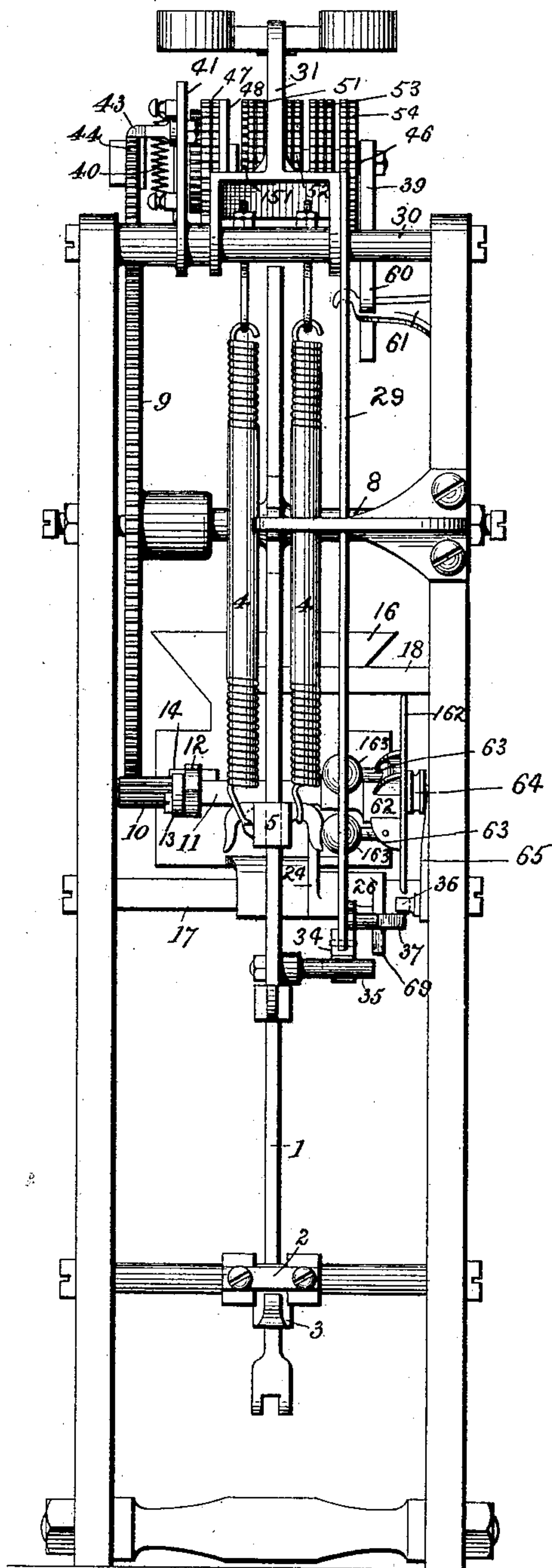
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Fig. 4.



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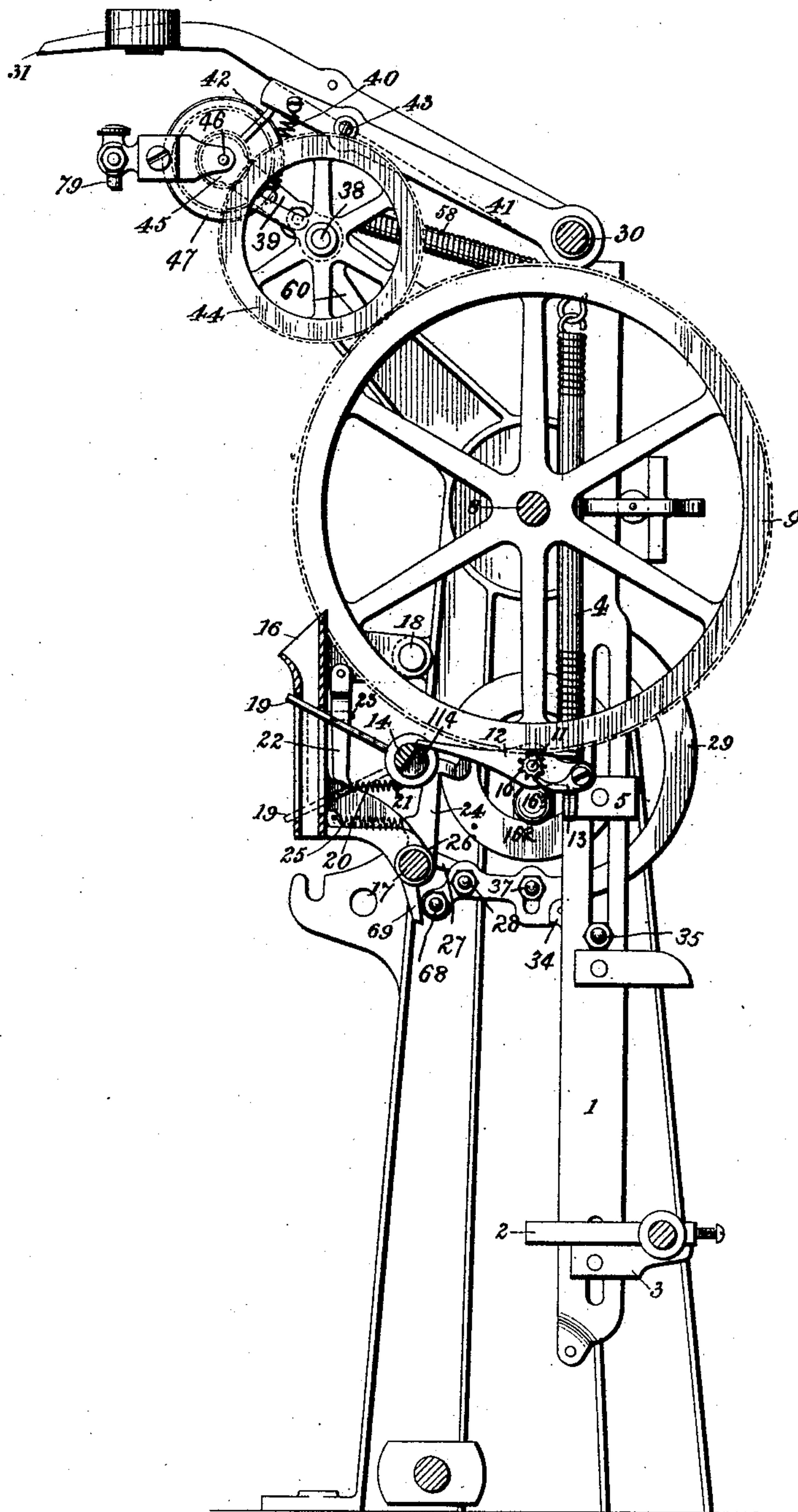
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Fig. 5.



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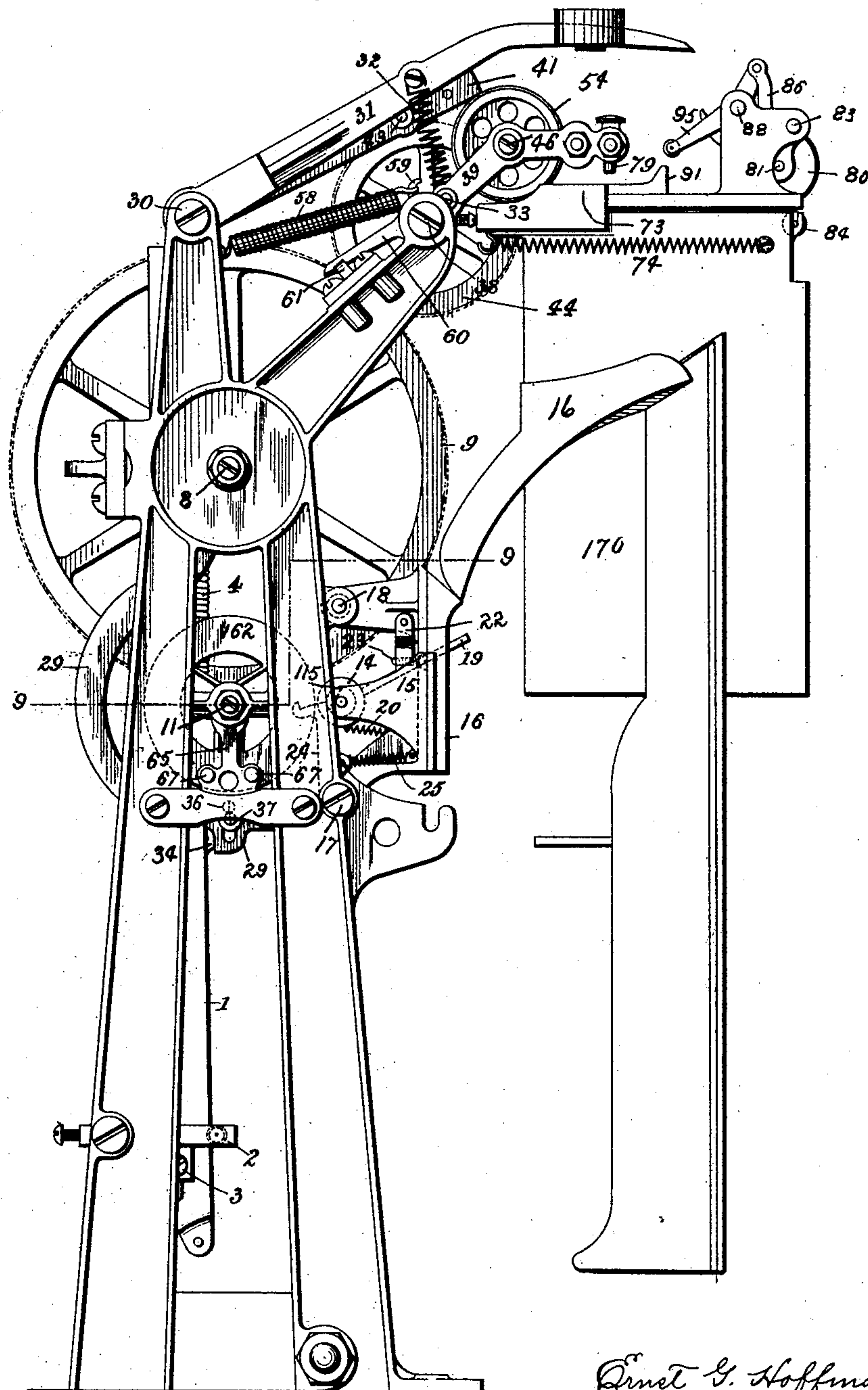
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Fig. 6.



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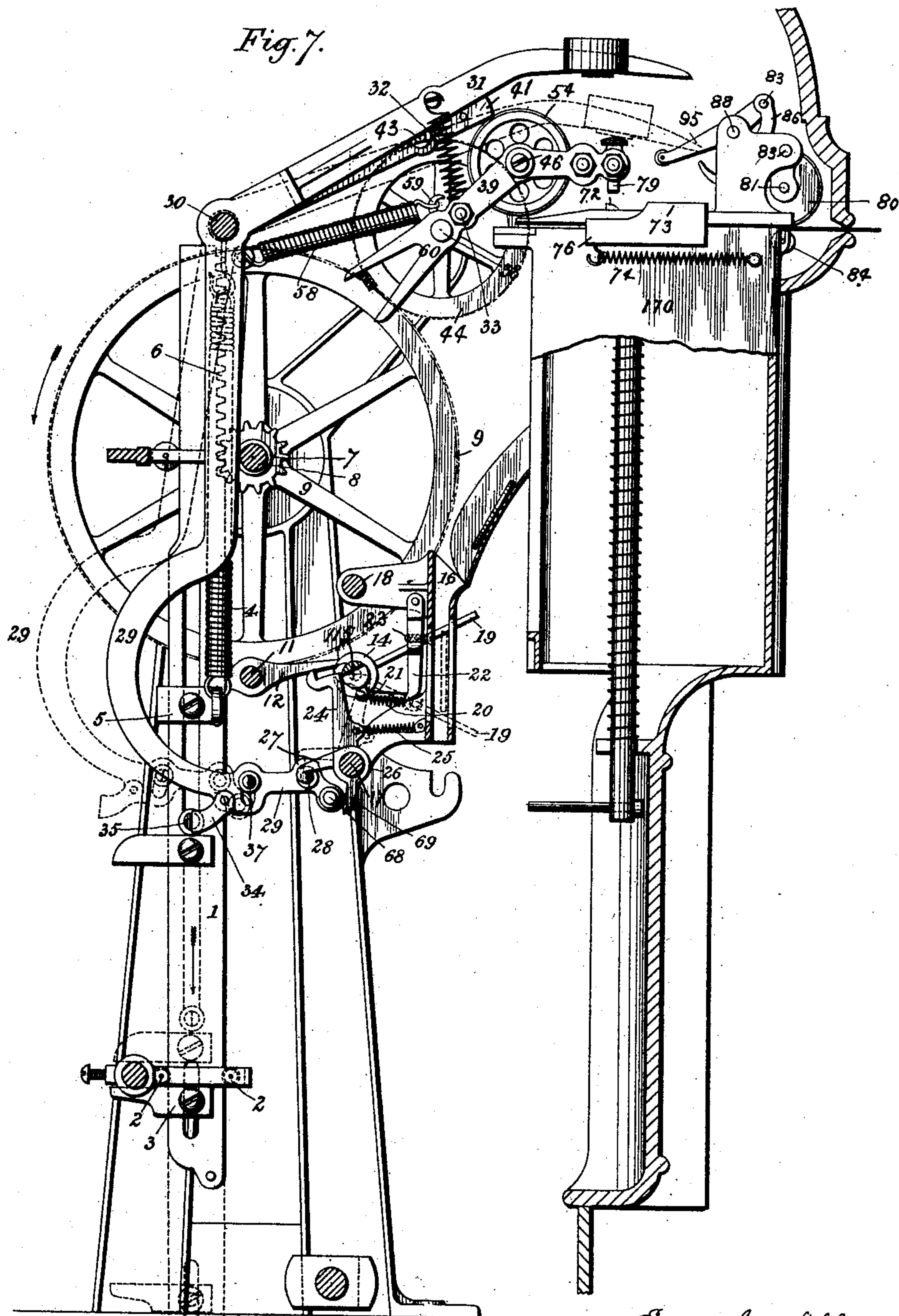
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(No Model.)

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COIN CONTROLLED TICKET PRINTING WEIGHING MACHINE.
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Fig. 8.

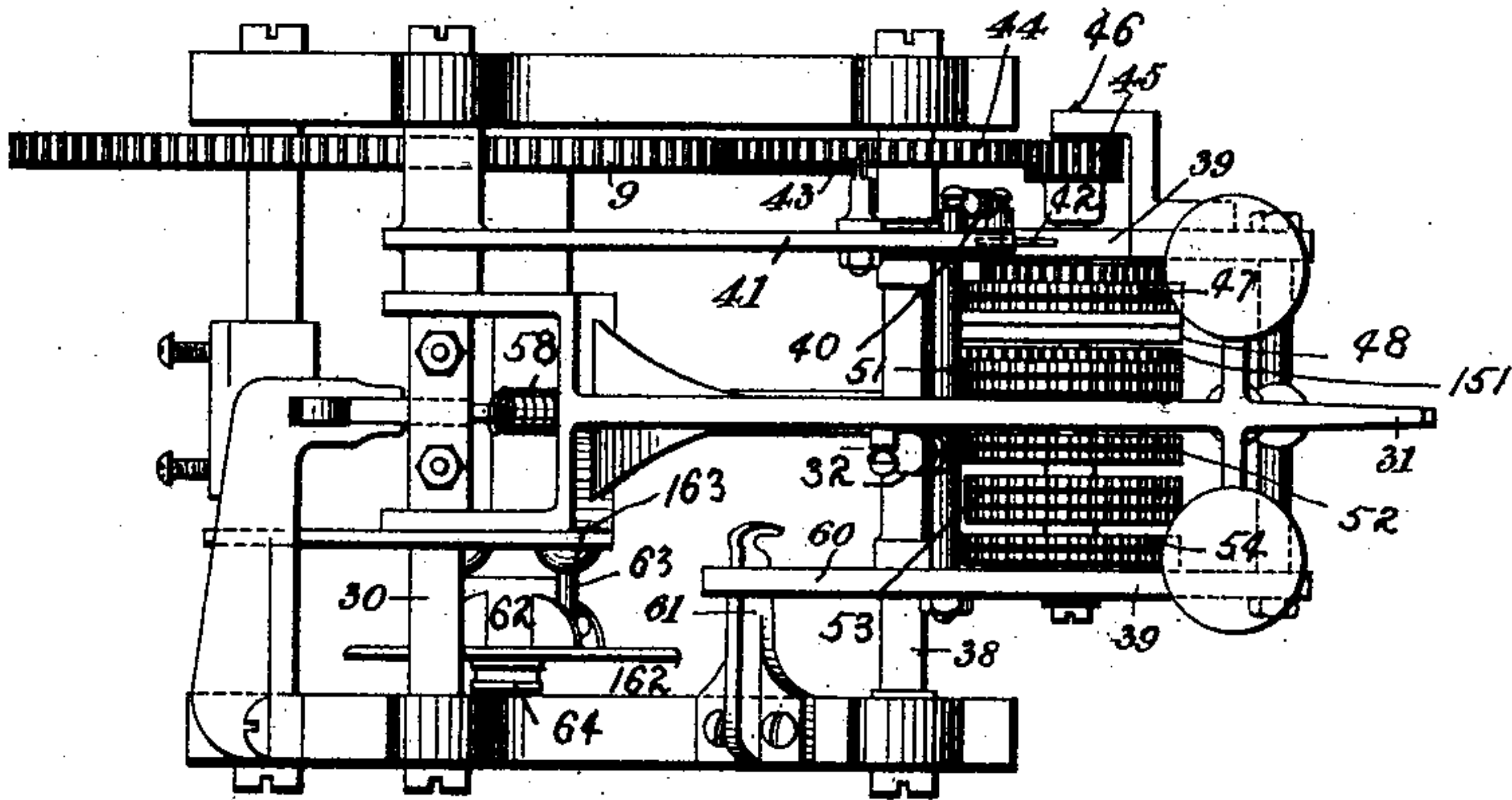


Fig. 9.

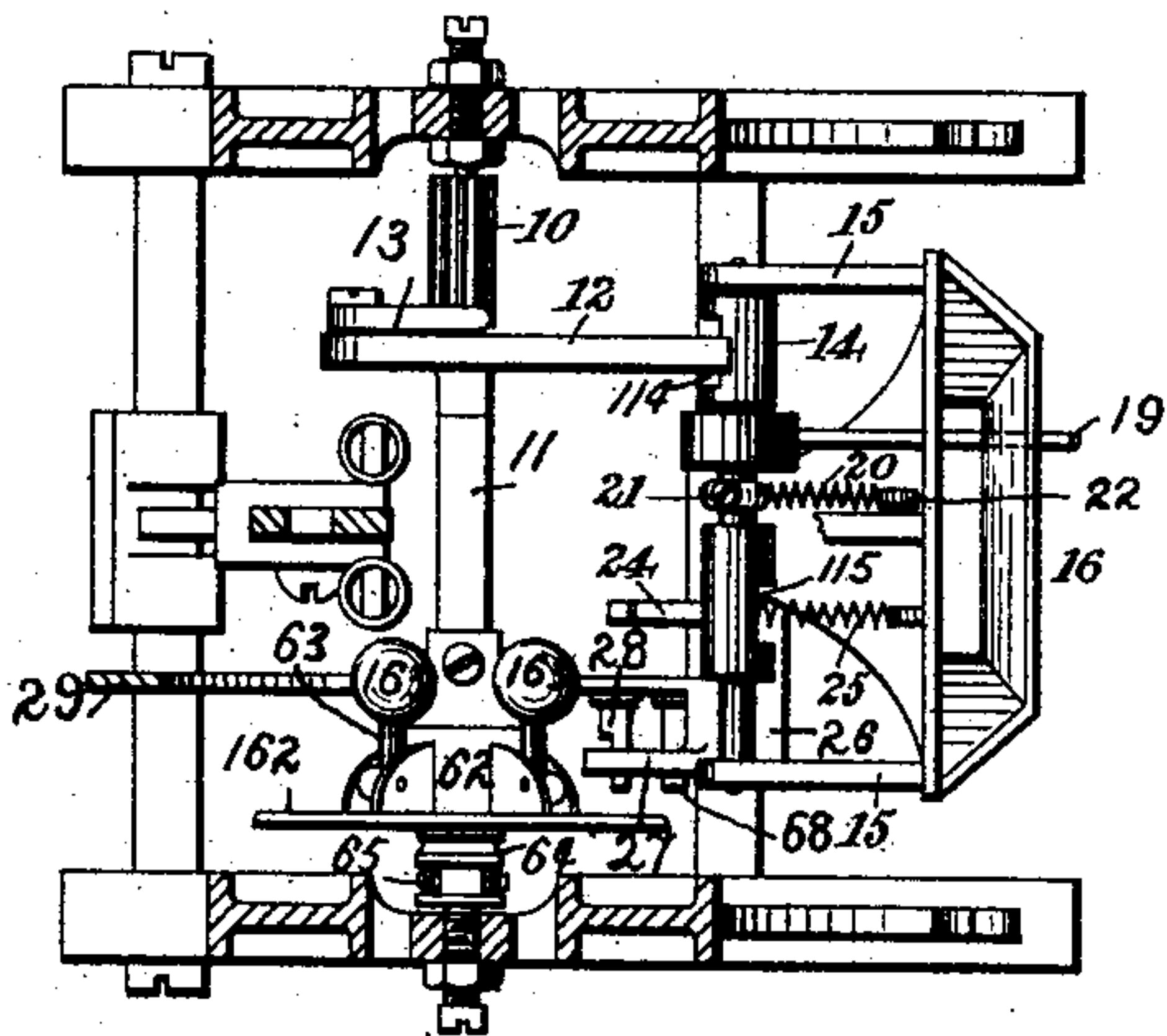
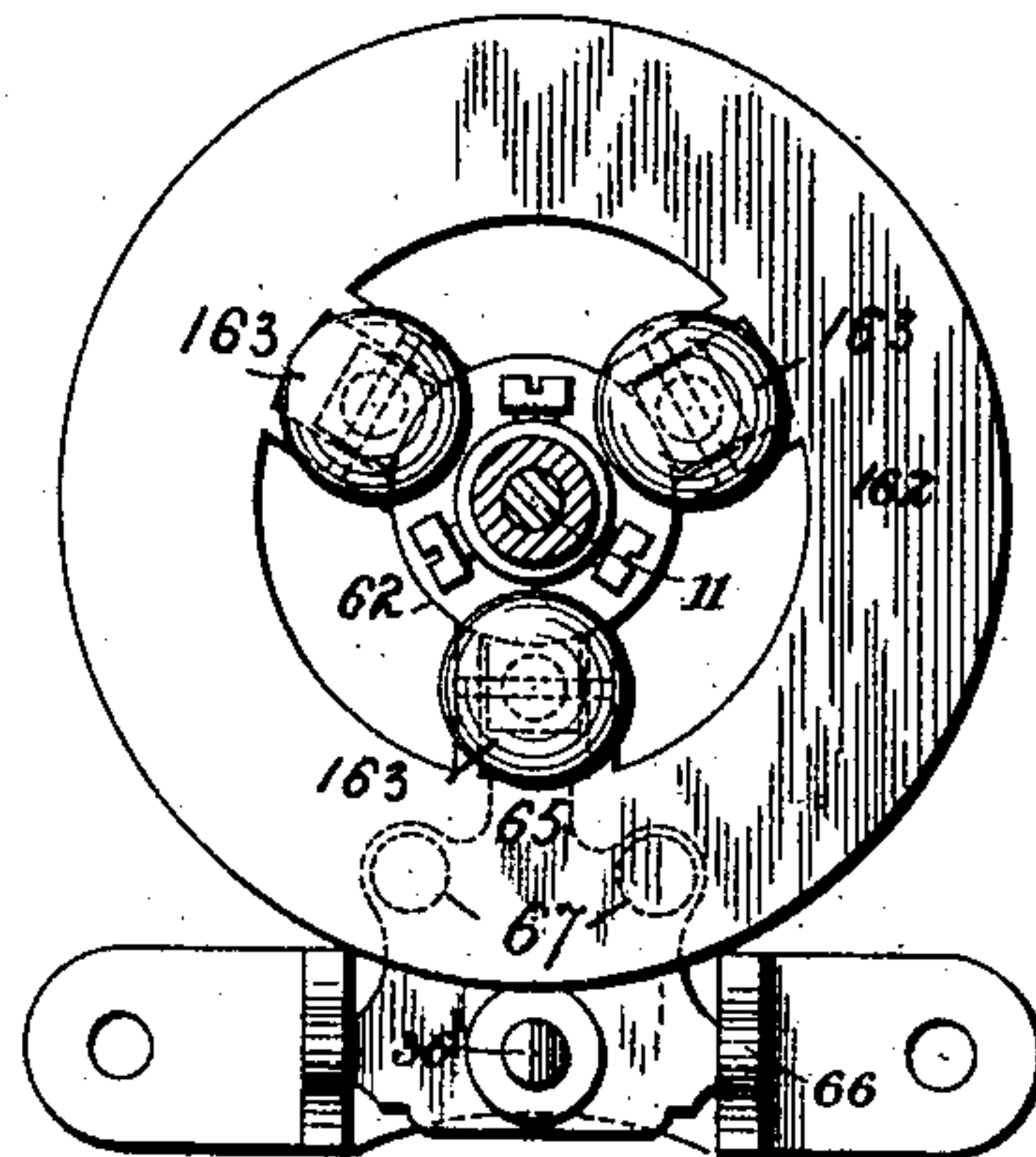


Fig. 12.



Witnesses.
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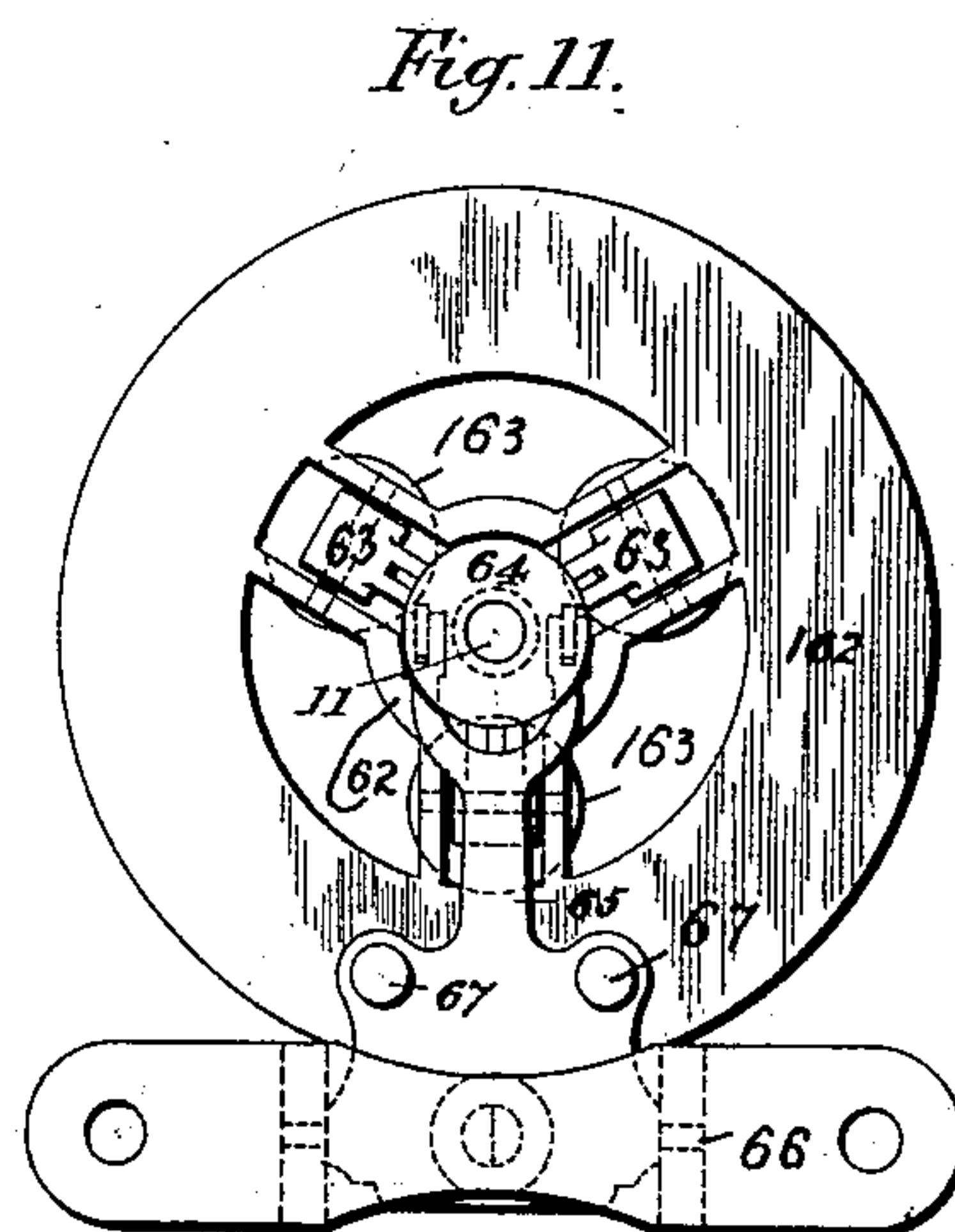
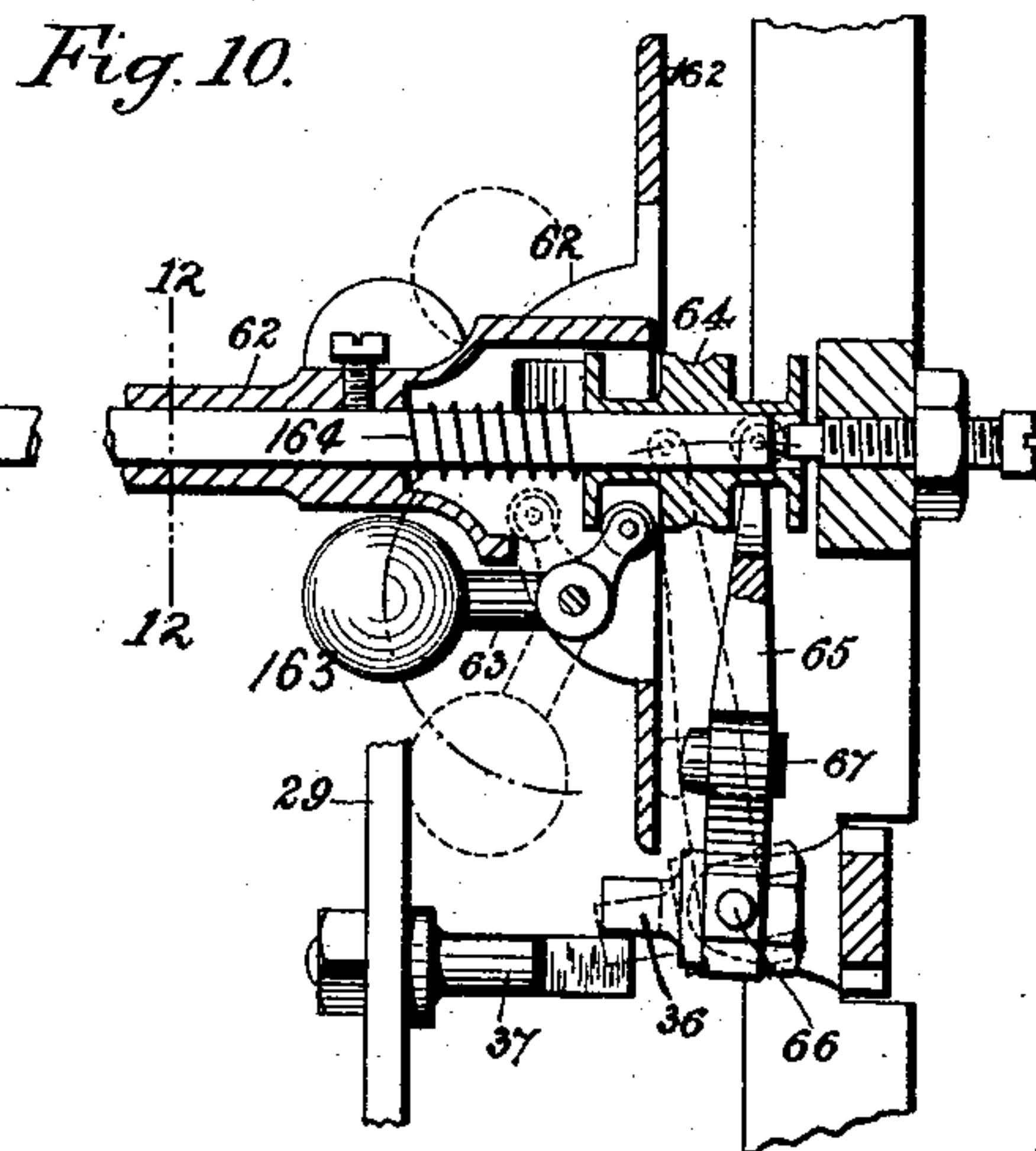
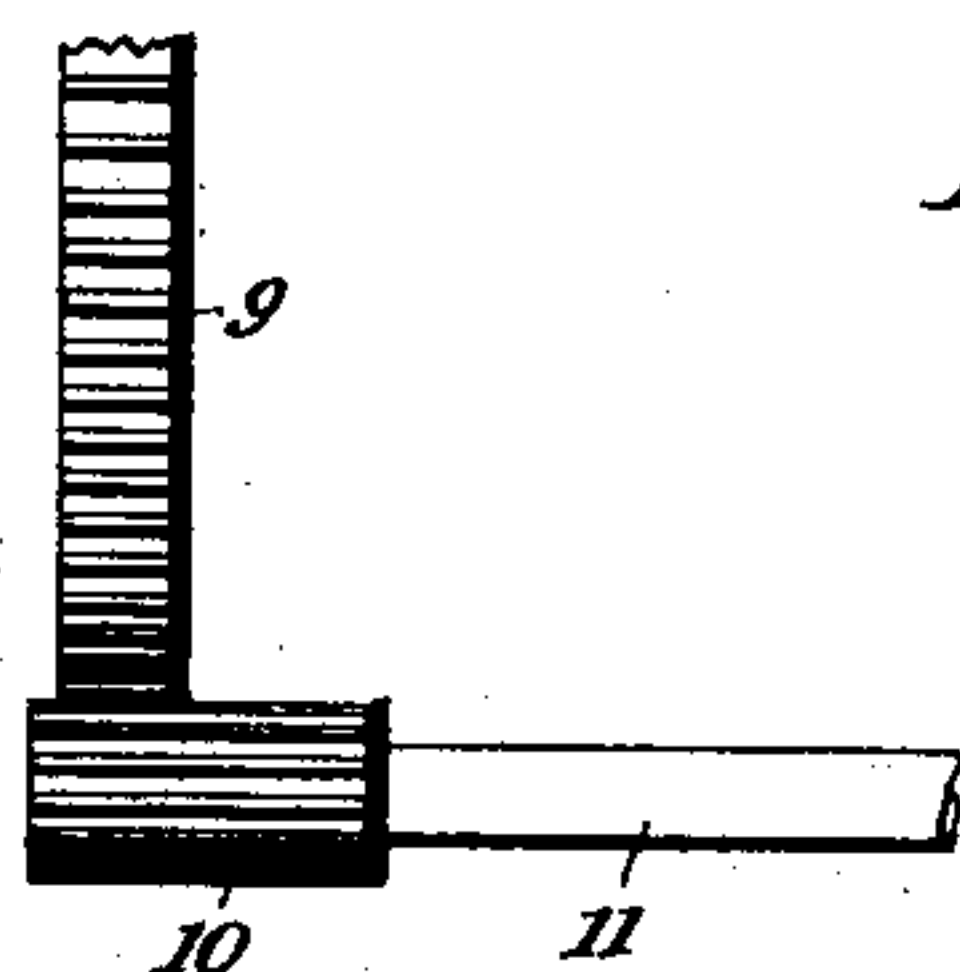
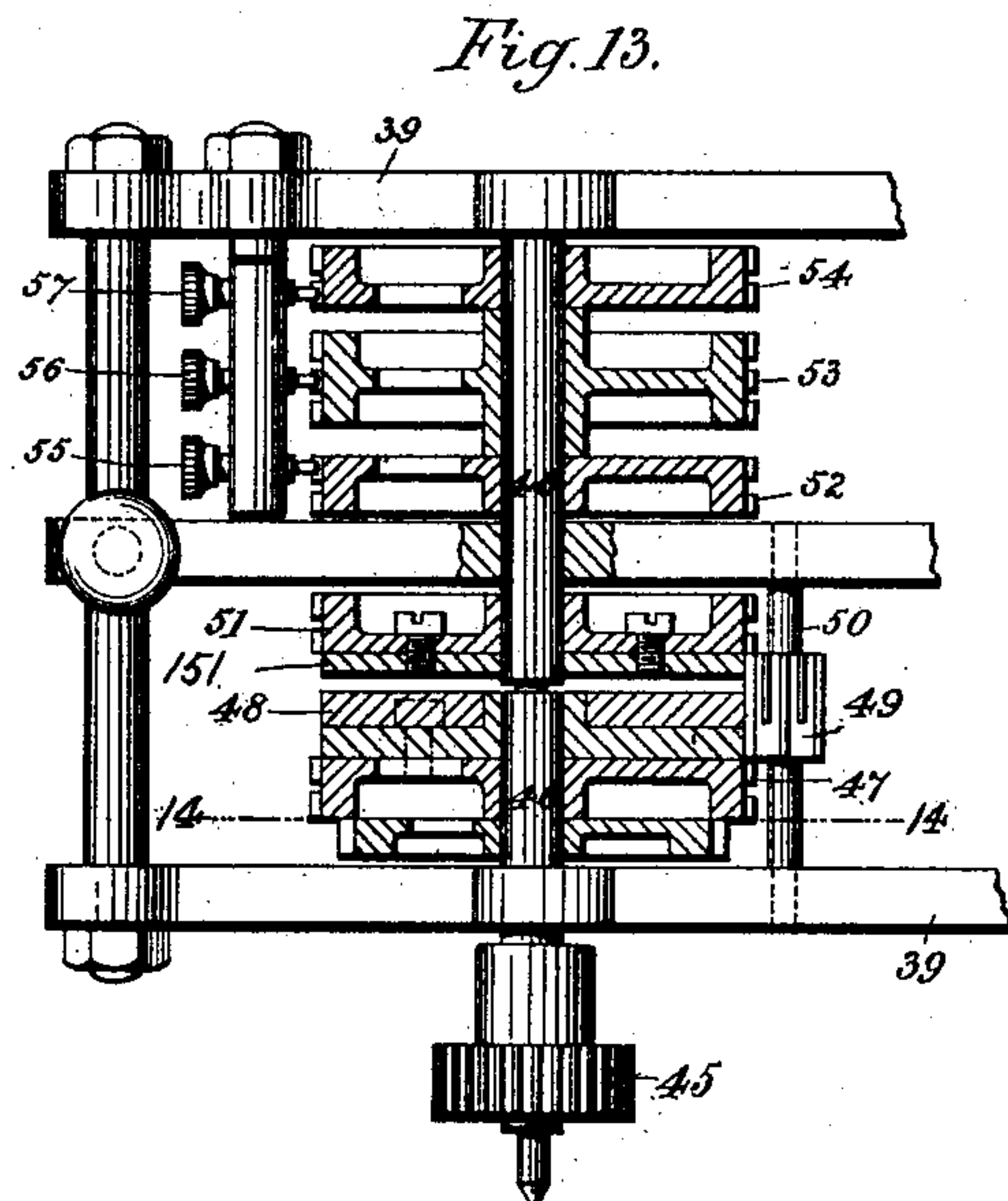
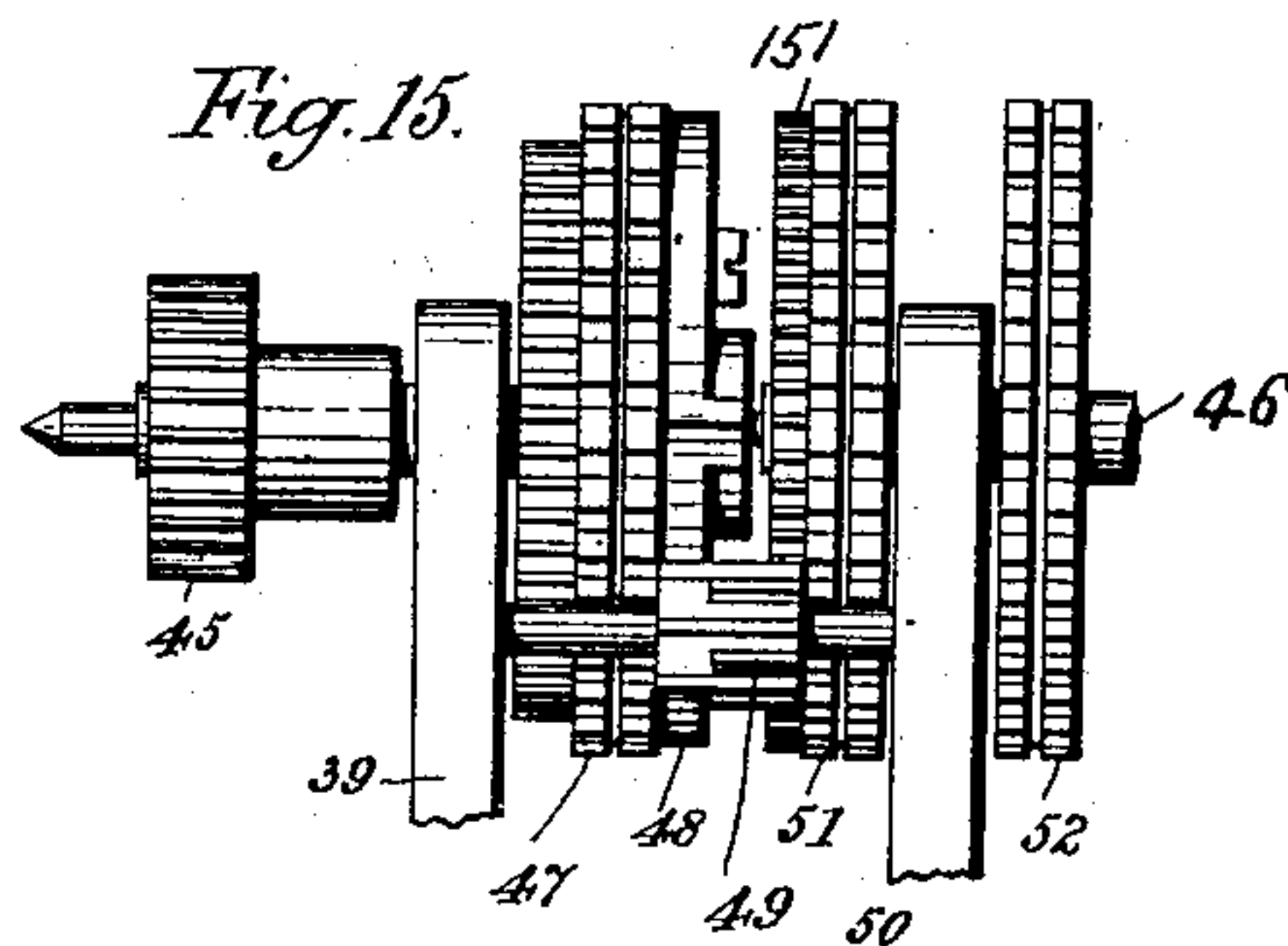
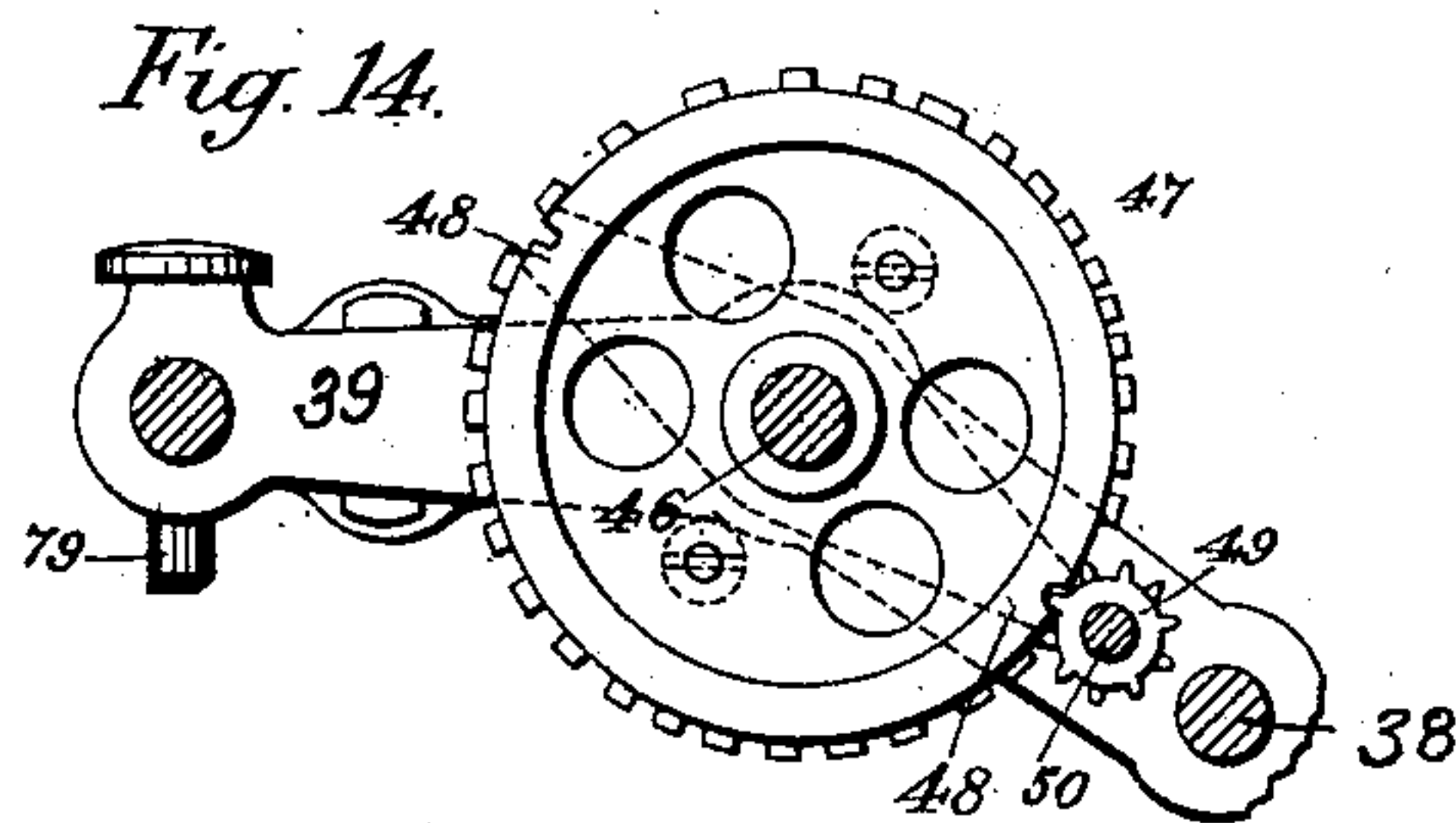
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Fig. 16.

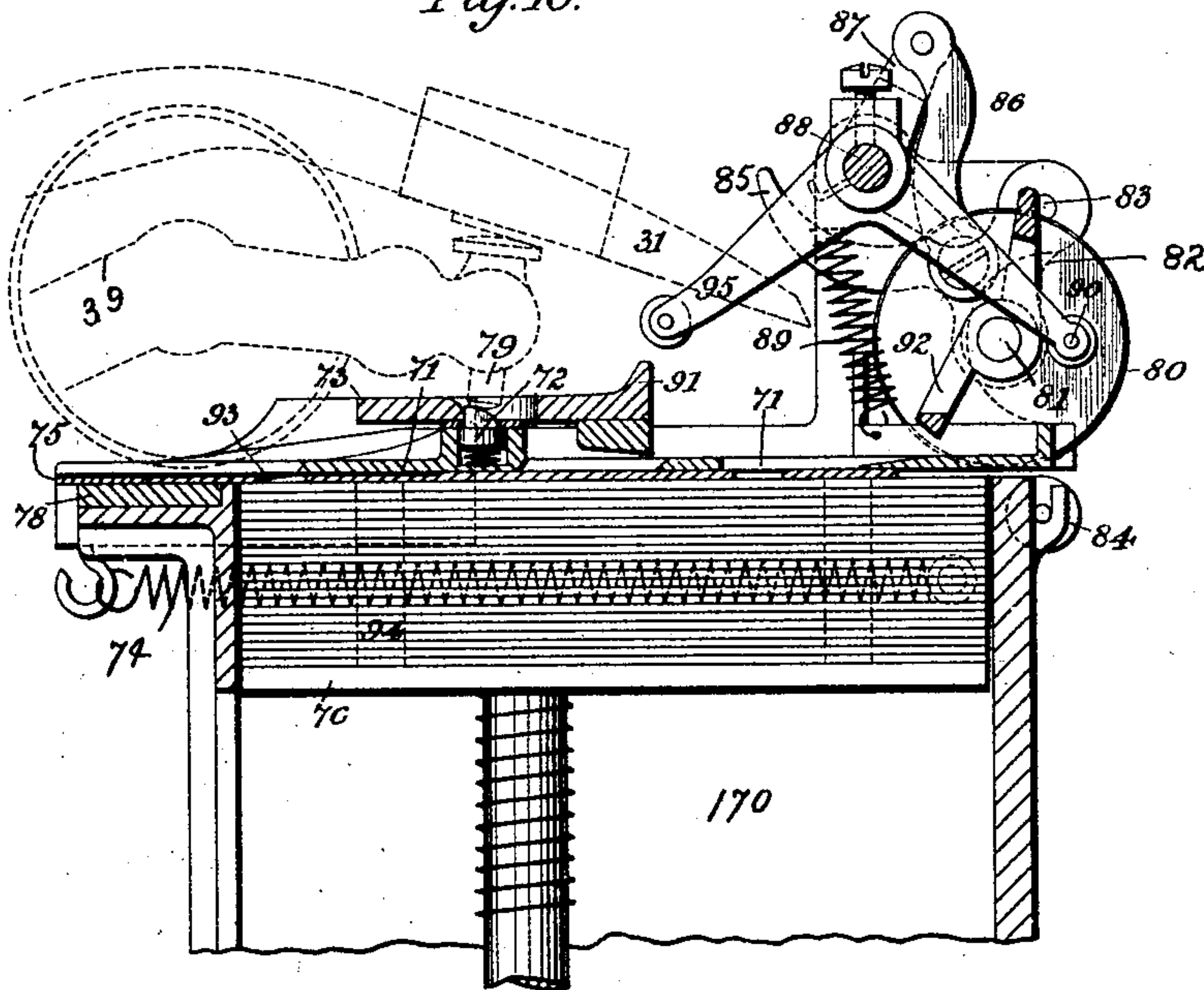
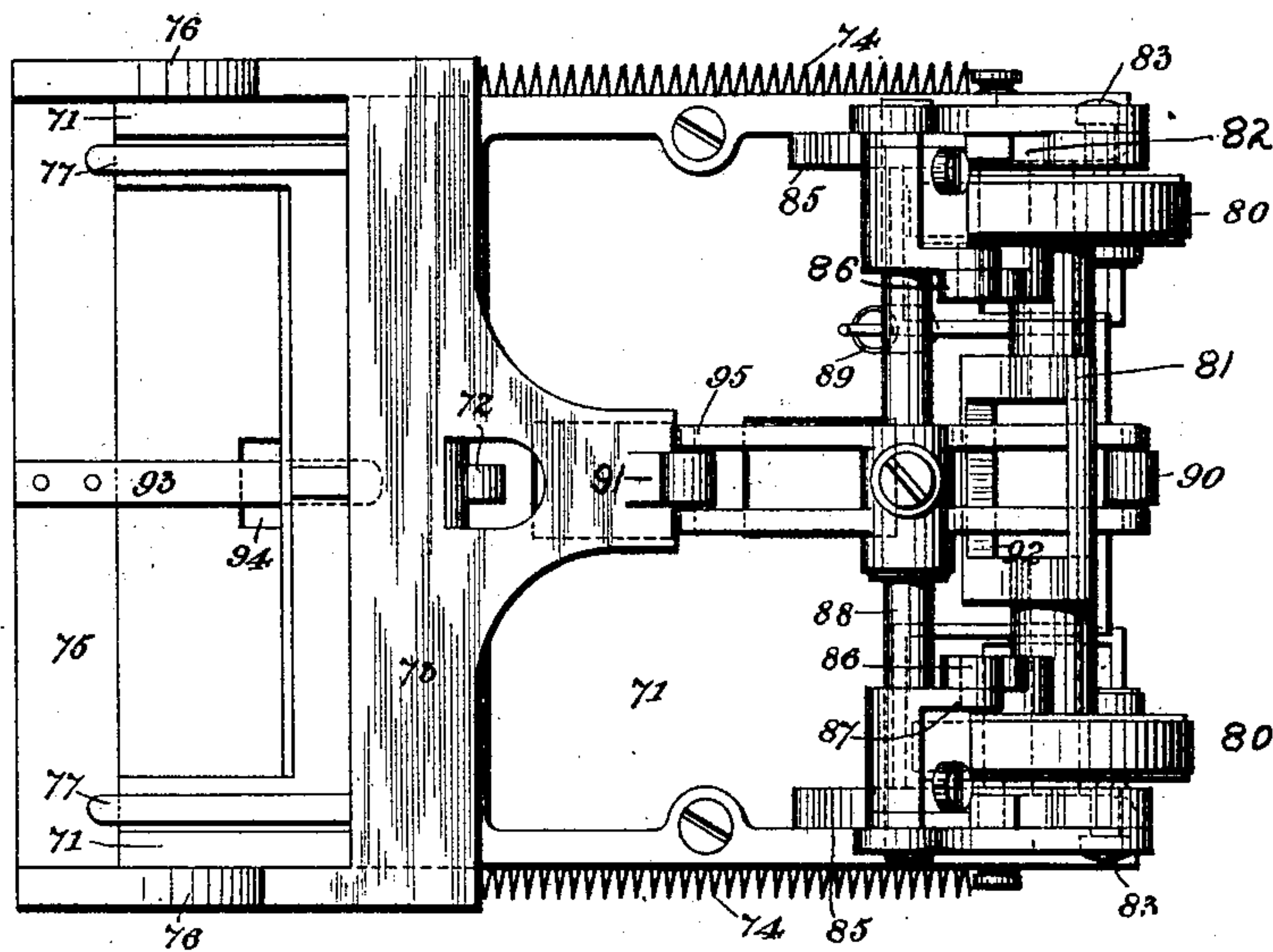


Fig. 19.



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Fig. 17.

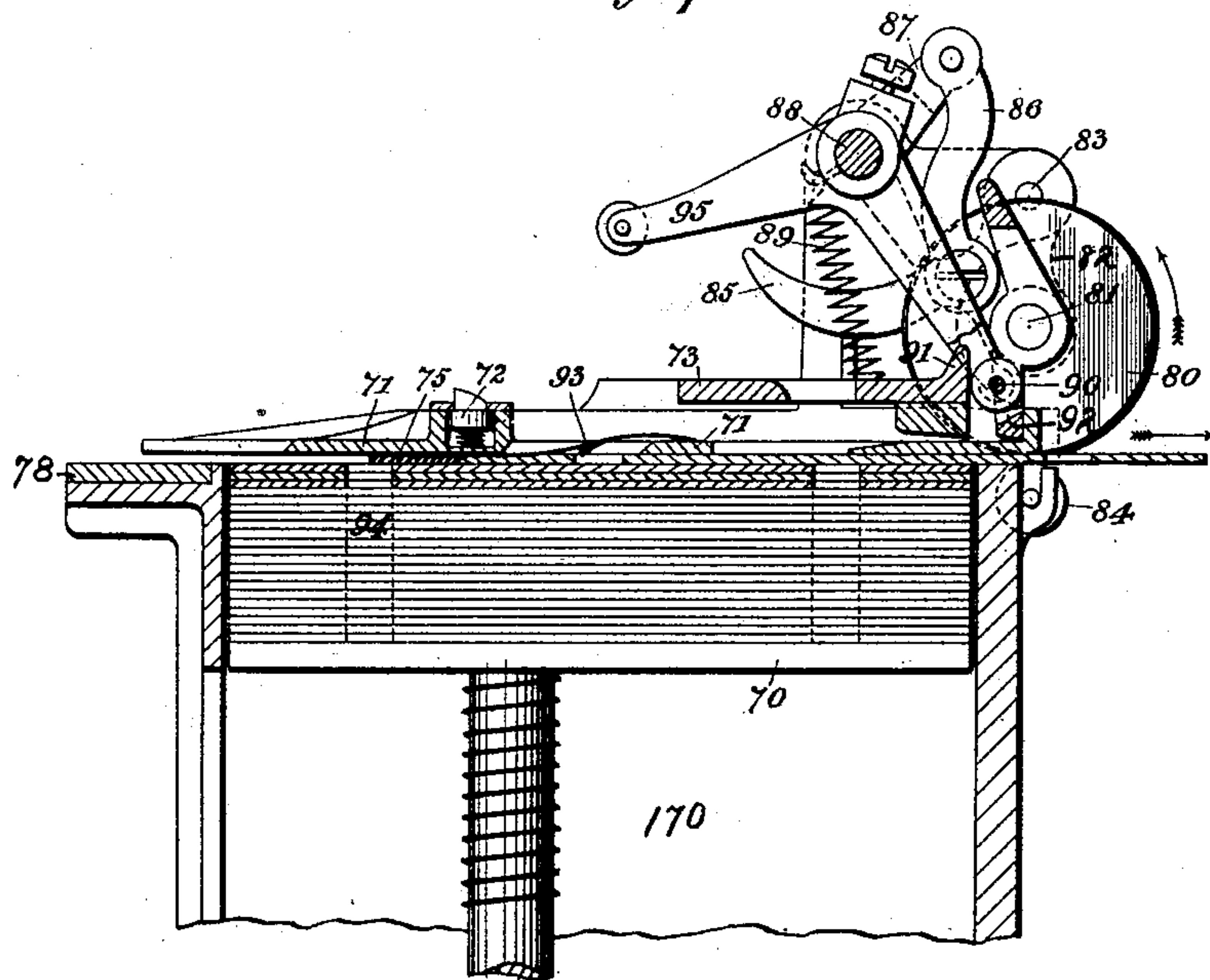
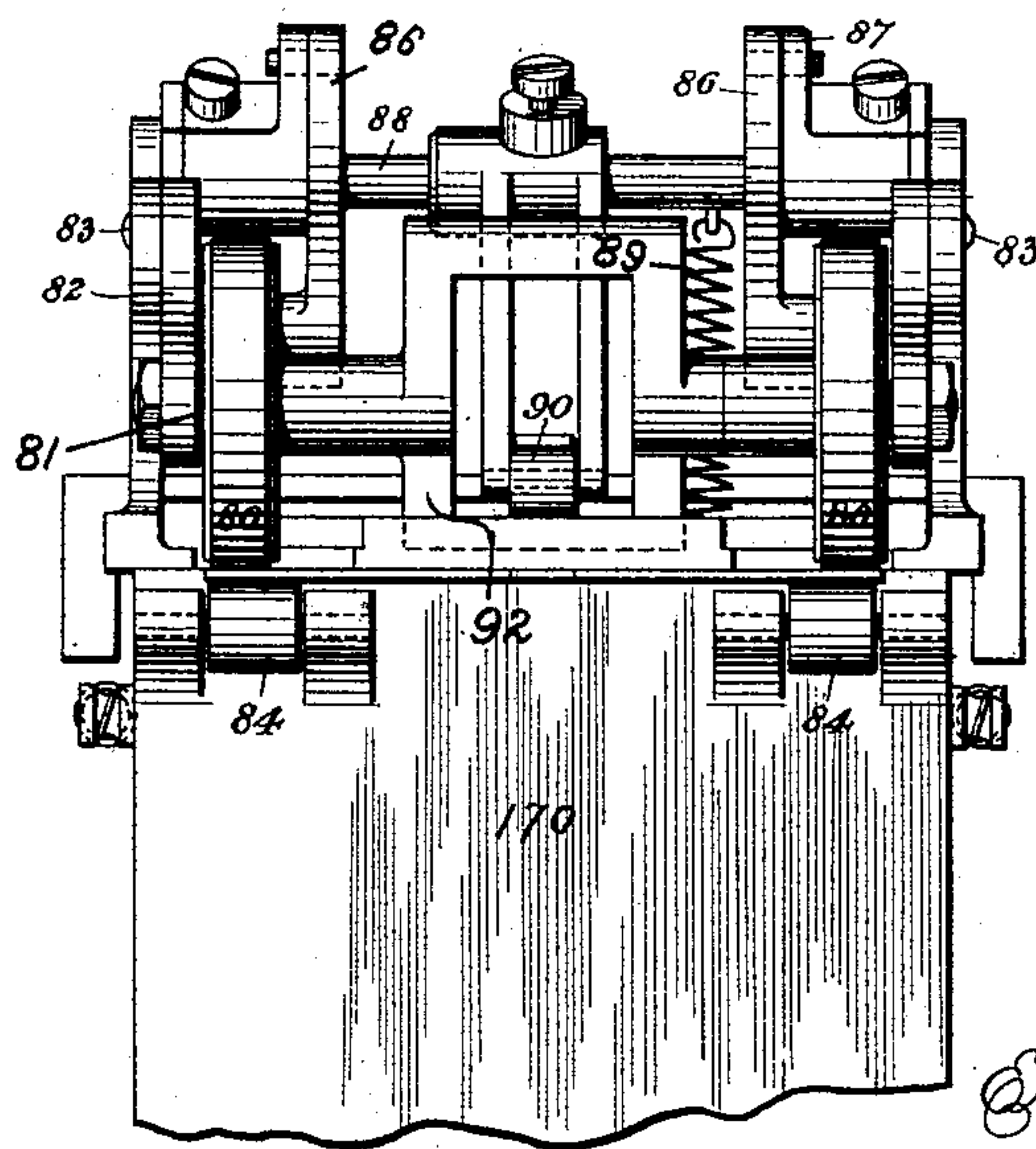


Fig. 18.



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UNITED STATES PATENT OFFICE.

ERNST GUSTAV HOFFMANN, OF NEW SOUTHGATE, COUNTY OF MIDDLESEX,
ENGLAND.

COIN-CONTROLLED TICKET-PRINTING WEIGHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 415,294, dated November 19, 1889.

Application filed April 17, 1889. Serial No. 307,569. (No model.)

To all whom it may concern:

Be it known that I, ERNST GUSTAV HOFFMANN, a subject of the German Emperor, residing at New Southgate, in the county of Middlesex, England, have invented a certain new and useful Improvement in Coin-Controlled Ticket-Printing Weighing-Machines, of which the following is a specification.

The object of my invention is to produce a machine which will be entirely automatic in its action—that is to say, the weight of the person or load upon the platform of the same will, upon the insertion of a coin of predetermined value, operate or release the ticket or slip printing mechanism and deliver the printed record of weight from some convenient point.

In order that my invention may be clearly understood, reference is made to the accompanying drawings, which form part of this specification, and in which—

Figure 1 represents a side elevation, partly in section, of the weighing apparatus in conjunction with an automatic delivery-box. Fig. 2 represents a front view of the same. Fig. 3 represents a front view of the weighing and-printing mechanism detached from the case and on a larger scale. Fig. 4 is a rear view of the same. Fig. 5 is a section on the line 5 5, Fig. 3. Fig. 6 is a side elevation taken from the left-hand side of Fig. 3, the ticket-box being also shown. Fig. 7 is a like view with the outer standard and governor removed. Fig. 8 is a top plan view of the devices shown in Fig. 6, the ticket-box and rollers being omitted. Fig. 9 is a section on line 9 9 of Fig. 6. Fig. 10 is a longitudinal section, on a larger scale, of the governor. Fig. 11 is an end elevation, looking to the left, the governor being shown in full. Fig. 12 is a sectional view on the line 12 12 of Fig. 10, looking to the right. Fig. 13 is a plan view of the shaft carrying the printing-wheels, which are shown in section. Fig. 14 is a section on the line 14 14, Fig. 13. Fig. 15 is a rear elevation of several of the printing-wheels. Fig. 16 is a detached view of the ticket-delivery apparatus, the parts being in the position in which the ticket is printed. Fig. 17 shows the position of the parts shown

in Fig. 16 as the ticket is being delivered. Fig. 18 is a front view of the devices shown in Fig. 17; and Fig. 19, a plan of the ticket-delivering devices shown in Fig. 16, the printing-wheels being omitted.

The operation of weighing will be first described, with the movement of the various parts.

The rod 1, which is attached to the platform-levers in the usual way, passes through suitable guides 2, its upward play being limited by a stop 3, adjustably secured to the rod 1. Rod 1 is connected to the weighing-springs 4 in any convenient manner, but preferably by an adjustable connection 5, by means of which the desired tension can be placed upon the springs and the platform and connected parts be balanced. Said rod also carries a rack 6, gearing into a pinion 7, mounted on a shaft 8, which also carries a gear-wheel 9, gearing in turn into a pinion 10 on the governor-shaft 11.

Loosely mounted on the shaft 11 is a finger 12, which rests upon a shaft 14, and carries a spring-actuated pawl 13, which engages with the pinion 10, so as to prevent the finger 12 from being turned up and back, except the shaft 11 be also turned, and conversely preventing the pinion 10, gear-wheel 9, shaft 8, pinion 7, rack 6, and rod 1 from being moved, so as to effect a weighing operation so long as said finger 12 rests on the shaft 14, which is shown as being carried by the side brackets 15, Fig. 9, of the coin-chute 16, said coin-chute being carried by shafts 17 and 18. Attached to and projecting from the shaft 14 is a pin 19, which passes through a slot in the coin-chute 16 at such a distance from the sides thereof that when said pin 19 is in its highest position a coin of the predetermined size and weight cannot pass down the chute without carrying said pin down with it to the position indicated by dotted lines in Figs. 5 and 7, at which point the chute is cut away at one side, as shown in Figs. 5 and 7, so that the coin can escape therefrom.

In order to keep the pin 19 normally up and to regulate the amount of weight which will be necessary to depress it, a spring 20 is attached to a short lever 21, carried by the

shaft 14, the other end of said spring being attached to a lever 22, through which passes an adjusting-screw 23, the head of which finds a bearing in the back plate of the coin-chute.

5 When the pin 19 is depressed by the passing of the coin, the finger 12 is free to be moved downward, the slotted portion 114 of the shaft 14 being presented to the line of its travel, as indicated by dotted lines in Fig. 5, and at the

10 same time a second slotted portion 115 of the shaft is brought opposite to a finger 24, carried by a sleeve 26, loosely mounted upon a shaft 17, as indicated in dotted lines in Fig. 7, when the spring 25, attached thereto and

15 to the back of the coin-chute, draws said finger in, locking the shaft 14 from further movement, and at the same time turning the sleeve 26 so that the hook 27 becomes detached from the pin 28, carried by the curved

20 arm 29, which, being pivoted on the shaft 30 and attached to the arm 31, is acted on by a spring 32, (attached to the arm 31 and the shaft 33,) which draws it backward until the pivoted projection 34 comes in contact with

25 the pin 35, carried by the rod 1, assuming that the coin has been placed in the machine without any weight being placed on the scales or platform. If a weight be then placed on the platform, or if it be placed there first and

30 the coin then inserted, the pin 35 will of course be carried down with rod 1; but the rapid rotation of the shaft 11 and of the governor (the construction of which is hereinafter described) brings a pin 36, operated by

35 the governor, into the path of a pin 37, carried by the arm 29, which is held so long as said governor is revolving, or, in other words, until the downward travel of the rod 1 ceases, owing to the weight on the platform being

40 balanced by the springs 4, at which point the parts come to rest, the governor-balls 163 close in, and the pin 36 releases the arm 29, permitting the arm 31 to fall, which it does, at the same time forcing down the frame 39,

45 carrying the printing-rollers, which frame is pivoted on the shaft 38, and acts in a manner hereinafter set forth.

Attached to the frame 39 is one end of a spring 40, the other end being secured to a

50 lever 41, pivoted on the shaft 30, the tendency of said spring being to draw down the lever 41 and keep the projection 42, carried by the lever 41, resting on the frame 39. When the said frame 39 is in its normal or

55 raised position, being so held by the spring 58, the lever 41 is so raised that the catch 43, carried thereby, is out of contact with the gear 44, and thereby allows it to turn; but when the frame is forced down by the arm 31 the

60 catch 43 engages with the gear 44 and prevents it turning, thereby holding the gear 45 on the rotary portion of the two-part shaft 46, on which the printing-wheel 47 is mounted.

As will be seen on the drawings, the gear 9

65 drives the gear 44, which in turn drives the gear 45, which, being secured to the movable

part of the shaft 46, causes it to rotate, and with it the wheel 47, which is keyed on said shaft, and in the present case may be taken as being the "pound-wheel," bearing on its

70 face type indicating from one to fourteen pounds weight. (Here intended to be twice repeated around the periphery.) Said wheel carries a mutilated rim or gear 48, which, as each fourteen pounds is indicated, engages

75 with a pinion 49 on the shaft 50 and turns it one step. Said pinion 49 also engages with a gear 151 on the face of wheel 51, which is here represented as being the "stone-printing wheel," and which is loosely mounted on the

80 fixed part of the shaft 46, the arrangement being such that as each fourteen pounds is passed one stone is indicated on the wheel 51, and on the weight being removed from the platform the turning of the gear causes

85 both wheels to return to zero. It will be evident that the gear may be equally well adapted for the decimal system, where the total weight is indicated solely in pounds, kilograms, or the like.

90

The wheels 52, 53, and 54 are loose upon the fixed part of the shaft 46, and are intended to indicate the day, the month, and the year, and these may be set daily and secured by set-screws 55, 56, and 57, or driven

95 by clock-work, if so desired, in a manner analogous to that of a calendar-clock.

The spring 58, being attached to a pin on the shaft 30 and a hook 59 on the frame 39, always tends to keep said frame in its raised

100 position, the upward and downward play being limited by a forked arm 60, which is part of the frame 39 and embraces a pin 61, projecting from the main frame.

Referring more particularly to Figs. 10, 11,

105 and 12, which illustrate in detail the governor, 62 indicates the governor-shell, which is secured to the shaft 11. Pivoted in the said shell are the arms 63, carrying the governor-balls 163, the rear ends of which rest in a

110 groove or recess in the sleeve 64, which is loose upon shaft 11 and capable of longitudinal movement thereon against the action of the spring 164, carried in the shell 62, the arrangement being such that as the governor

115 revolves and the arms 63 are thrown out by centrifugal force the sleeve 64 is drawn in, carrying in the forked arm 65, which is pivoted at 66, and embraces a second recess in said sleeve. The arm 65 carries or forms a

120 friction-brake by bringing the points or rubbing-blocks 67 into contact with the disk-face 162 of the shell 62, and when the arms 63 are expanded also brings the pin 36, mounted on said arm, into the path of the pin 37 on the

125 arm 29, as previously described.

The resetting of the machine after a coin has passed through the chute will be best understood by reference to Fig. 7, in which the dotted lines indicate the position of the finger

130 19 and the arms 29 and 31 prior to resetting, and from this it will be evident that if the

outer end of the arm 31 be raised the arm 29 will travel in until the pin 68 comes in contact with an arm 69, attached to the sleeve 26, which is turned, thereby withdrawing the finger 24 from the shaft 14 and permitting the spring 20 to turn said shaft and raise the finger 19, while the hook 27 engages with the pin 28 on the arm 29, as shown in full lines in Fig. 7.

The lifting of the outer end of the arm 31 is effected by the withdrawal from the machine of the printed ticket in a manner now to be described, reference being made more particularly to Figs. 16 to 19, although the general outlines of the ticket-box and delivery mechanism are indicated in Figs. 6 and 7.

The tickets are arranged in a box or receptacle 170, and are carried on a pressure-table 70, which keeps the ticket next in order pressed against the top plate 71, which carries a spring-catch 72, adapted to normally hold the sliding plate 73, which, when released from said catch, is drawn forward by the springs 74, to which it is connected by the side arms 76, carrying between them the ticket-pushing plate 75, which passes beneath a portion of the top plate 71, as most clearly shown in Fig. 17, where a ticket is shown ready for delivery.

An inking-ribbon may be stretched across the inner end of the top plate 71, and held in position by the springs 77, beneath which is the bed 78, upon which the ticket rests while being printed.

The cycle of operations is as follows, starting with the parts in the position indicated in Fig. 16: A coin passing down the chute 16 releases the finger 12 and hook 27, and the rod 1 descends until the weight is counterbalanced, when the parts come to rest. The governor-arms 63 return to their closed position, and the pin 36, which had been in the path of the pin 37, is raised, releasing the arms 29 and 31. The latter, falling, presses down the frame 39. The gear 44 is locked by the pin 43 as the indicated weight on the wheels 47 and 51, with the date on the wheels 52 53 54, is impressed on the card, while the projection 79 on the frame 39 strikes the catch 72 and releases the plate 73, which is drawn forward, carrying the printed ticket into the position shown in Fig. 17. At the same time the nose end 91 of the delivery-plate strikes the frame 92, carrying forward the shaft 81, to which the said frame is secured, and which is supported by the bell-crank lever 82 85, pivoted at 83, until further forward movement is prevented by the arms 85 coming in contact with a stop on the casing or top plate. The wheels 80, (two of them being shown,) which are loosely mounted on the shaft 81, are carried forward therewith, and, owing to the bell-crank 82, are also caused to descend and grip the card firmly between the said wheels 80 and the rollers 84. As the wheels are unable to go farther forward, the friction, as the card is drawn out by

the person who deposited the coin, causes them to rotate in the direction indicated by the arrow in Fig. 17. This movement draws down the crank-arms 86, attached to said wheels, and by the lever 87, with the shaft 88, which is caused to make a partial rotation against the action of the spring 89, attached to the shaft and to the top plate. Secured to the shaft 88 is a bell-crank lever 90 95, the forward end 90 of which comes in contact with the end 91 of the delivery-plate 73, which, as the ticket is drawn out, is forced back until it has passed over and been caught by the catch 72, (a small flat spring attached to the pushing-plate 75,) and provided with a catch 93, engaging with a perforation 94 of the card or ticket next in order, and drawing it back over the bed-plate 78, ready for being printed. At the same time the rear end 95 of the bell-crank has come in contact with and raised the arm 31, and consequently the arm 29 has reset the coin and weighing mechanism, while, the ticket being entirely withdrawn, there ceases to be any friction on the wheels 80, and consequently the spring 89 resets the parts so that they are in the position indicated in Fig. 16.

The weighing-machine constructed as before described may be used alone or in conjunction with any of the automatic vending apparatuses now in vogue, all that is essential being that the coin should travel from the coin-chute of one machine to that of the other.

What I claim is—

1. In a coin-controlled ticket-printing and weighing machine, the combination, with the weighing-rod, of a governor operated by the movement of the said weighing-rod, the printing devices set by the movement of the weighing-rod, a swinging frame or arm by which the printing devices are operated, and a movable stop operated by the governor and arranged to be projected into the path of a portion of the said swinging frame or arm during the movement of the weighing devices and the governor, substantially as set forth.

2. In a coin-controlled ticket-printing and weighing machine, the combination, with the weighing-rod, of the governor operated by the movement of the weighing-rod, the printing devices set by the weighing mechanism, a frame or arm for operating the printing devices, a catch holding the frame or arm which operates the printing devices until released by the deposit of a coin, and a movable stop operated by the governor and arranged to be projected into the path of some portion of the said frame or arm during the movement of the weighing-rod, substantially as set forth.

3. In a coin-controlled ticket-printing and weighing machine, the combination, with the weighing mechanism, of the printing devices set by the weighing mechanism, the swinging frame or arm by which the printing devices are made to operate, a shaft actuated by the deposit of the coin, and a lock for the weigh-

ing mechanism, and a catch for holding the frame or arm which operates the printing devices, both governed by the said shaft, substantially as set forth.

5 4. In a coin-controlled ticket-printing and weighing machine, the combination, with the weighing mechanism, of the printing devices set by the weighing mechanism, the swinging frame or arm by which the printing devices
10 are made to operate, a shaft actuated by the deposit of the coin, a lock for the weighing mechanism, and a catch for holding the said frame or arm, both governed by the said shaft, and means for resetting the parts in
15 their locked positions after the operation of the printing device, substantially as set forth.

5. In a coin-controlled ticket-printing and weighing machine, the combination, with the weighing mechanism, of the printing devices
20 set by the weighing mechanism, the swinging frame or arm by which the printing devices are made to operate, a shaft 14, operated upon by a spring and adapted to be actuated by the deposit of the coin against the force of
25 said spring, a lock for the weighing mechanism and a catch for holding the said frame or arm, both governed by the shaft 14, a lock for the shaft 14 after it has been moved by the deposit of a coin, and means carried by
30 the said swinging frame or arm for releasing the lock for the shaft 14 after the printing devices have operated, substantially as set forth.

6. In a coin-controlled ticket-printing and
35 weighing machine, the combination, with the weighing mechanism, of the printing devices set by the weighing mechanism, the swinging frame or arm by which the printing devices are made to operate, a governor operated by
40 the movement of the printing devices, a shaft operated by the deposit of a coin, a lock for the weighing mechanism and a catch for holding the said frame or arm, both governed by the said shaft, and a movable stop operated by
45 the governor and arranged to be projected into the path of the said frame or arm during the movement of the weighing devices, substantially as set forth.

7. In a coin-controlled ticket-printing and
50 weighing machine, the combination, with the weighing-rod, of a shaft 8, connected with the said rod to be rotated thereby, the printing devices consisting of one or more wheels operated from the shaft 8, a swinging frame in
55 which the said printing devices are mounted, a swinging arm or frame which operates the frame carrying the printing devices, a shaft actuated by the deposit of a coin, a lock for the weighing-rod and the shaft 8, and a catch
60 for holding the frame or arm which operates the printing devices, and a lock operated by the last said frame for holding the printing-wheels, substantially as set forth.

8. In a coin-controlled ticket-printing and
65 weighing machine, the combination of the weighing devices, the printing-wheels, the

gear-train which sets the printing-wheels operated from the weighing devices, a rocking frame in which the printing-wheels are mounted, a swinging arm or frame for operating the
70 said rocking frame, and a lever provided with a catch adapted to engage with and lock the said gear-train and connected with the said rocking frame, whereby when the latter is
75 operated the lever is moved and the gear-train locked during the printing operation, substantially as set forth.

9. In a coin-controlled ticket-printing and weighing machine, the combination, with the weighing devices, the printing-wheels set by
80 the weighing devices, and a rocking frame in which the printing-wheels are mounted, of a receptacle for the tickets to be printed, a spring-operated slide which delivers the tickets, and a spring-catch for holding the said
85 slide in its retracted position and adapted to be moved by the said rocking frame to release the slide in order to automatically deliver the ticket after it is printed, substantially as set forth.

10. In a coin-controlled ticket-printing and weighing machine, the combination, with the weighing devices, the printing devices set by
90 the weighing devices, and a rocking frame in which the printing devices are mounted, of a swinging arm or frame for moving the said frame to cause the printing operation, a ticket-delivering slide, and a lever operated
95 upon the delivery of the ticket for moving the said swinging arm or frame away from the said rocking frame, substantially as set forth.

11. In a coin-controlled ticket-printing and weighing machine, the combination of the weighing devices, the printing devices set by
105 the weighing devices, a swinging arm or frame which operates them, a ticket-delivering slide, a two-armed lever adapted both to move the said swinging arm or frame and the said slide to the positions they occupy before the print-
110 ing operation, and means for moving the said two-armed lever as the ticket is being drawn from the machine, substantially as set forth.

12. In a coin-controlled ticket-printing and weighing machine, the combination of the
115 weighing mechanism, the printing devices set by the weighing mechanism, a swinging arm or frame for operating the printing devices, a spring-actuated slide which delivers the tickets, a two-armed lever arranged to return
120 the said swinging arm or frame and the said slide to the positions they occupy before the printing operations, a pressure-roller bearing upon the ticket after it has been advanced by the slide, and a connection between the
125 said roller and the two-armed lever, whereby the lever is moved as the roller is turned by the act of finally withdrawing the ticket from the machine, substantially as set forth.

13. In a coin-controlled ticket-printing and
130 weighing device, the combination of the weighing devices, the printing devices which

are set by the movement of the weighing devices, a governor operated by the movement of the weighing devices, a swinging arm or frame whose movements are controlled by the deposit of a coin, and which operates to cause the printing devices to operate, a stop operated by the governor and projected into the path of some portion of the said swinging arm or frame to prevent its operation until the weighing devices have ceased to move, a ticket-delivering slide, a lever which returns the said swinging arm or frame and the said

slide to their normal positions, and a pressure-roller, beneath which the ticket passes, connected to operate the said lever, whereby it is operated as the ticket is withdrawn from the machine, substantially as set forth. 15

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

ERNST GUSTAV HOFFMANN.

Witnesses:

PHILIP M. JUSTICE,
ALLEN P. JONES.