

No. 675,607.

Patented June 4, 1901.

N. NELSON.

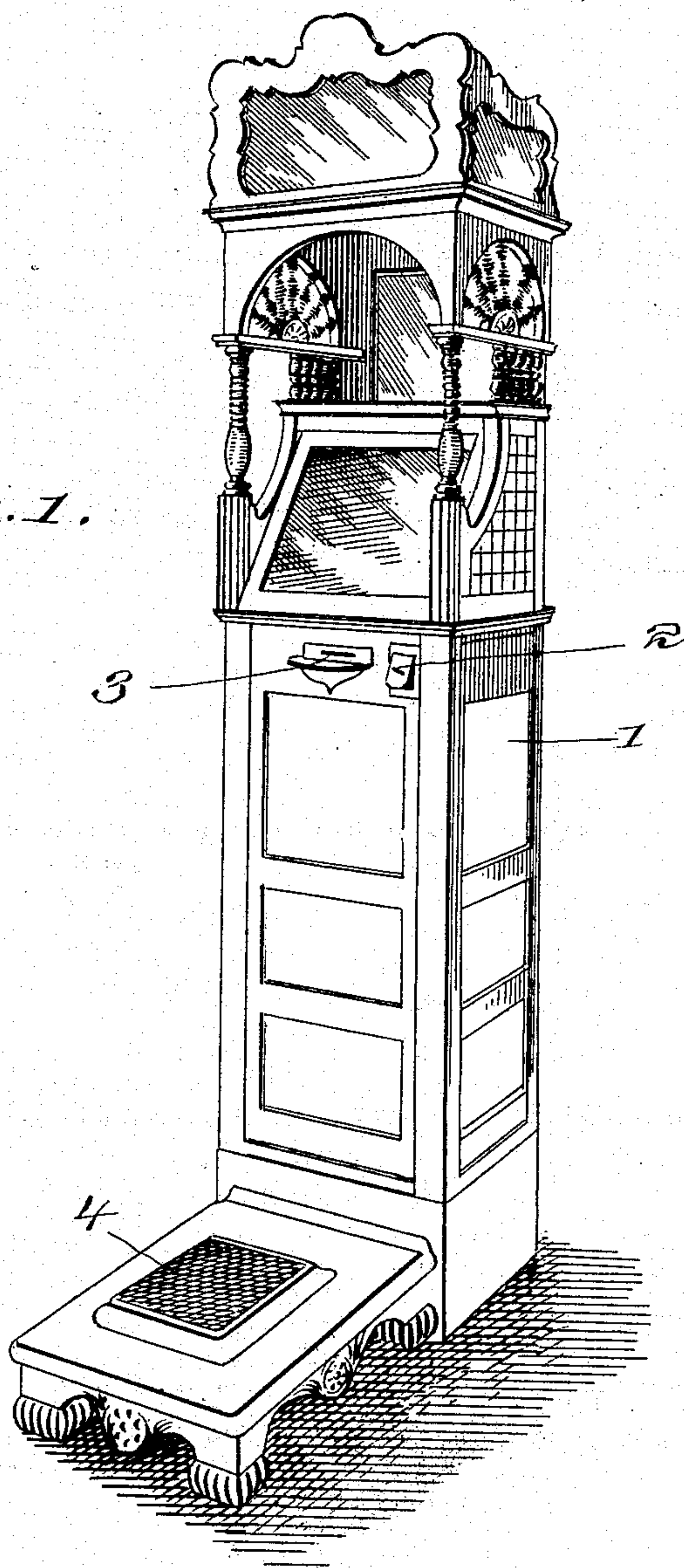
WEIGHING AND WEIGHT PRINTING MACHINE.

(No Model.)

(Application filed June 6, 1899.)

6 Sheets—Sheet 1.

Fig. 1.



WITNESSES:

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W. H. Humphrey

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BY *W. H. Humphrey*

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No. 675,607.

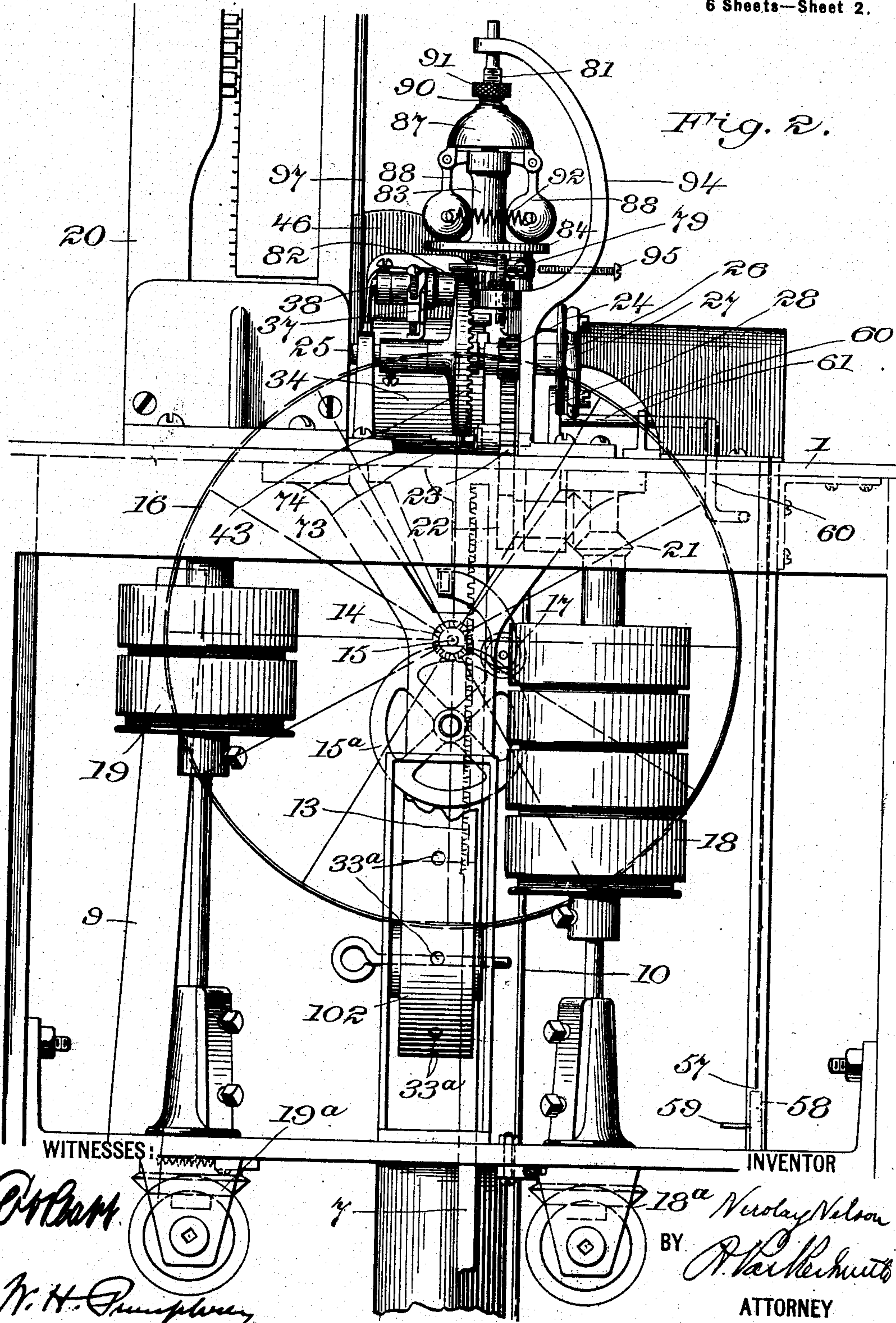
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6 Sheets—Sheet 3.

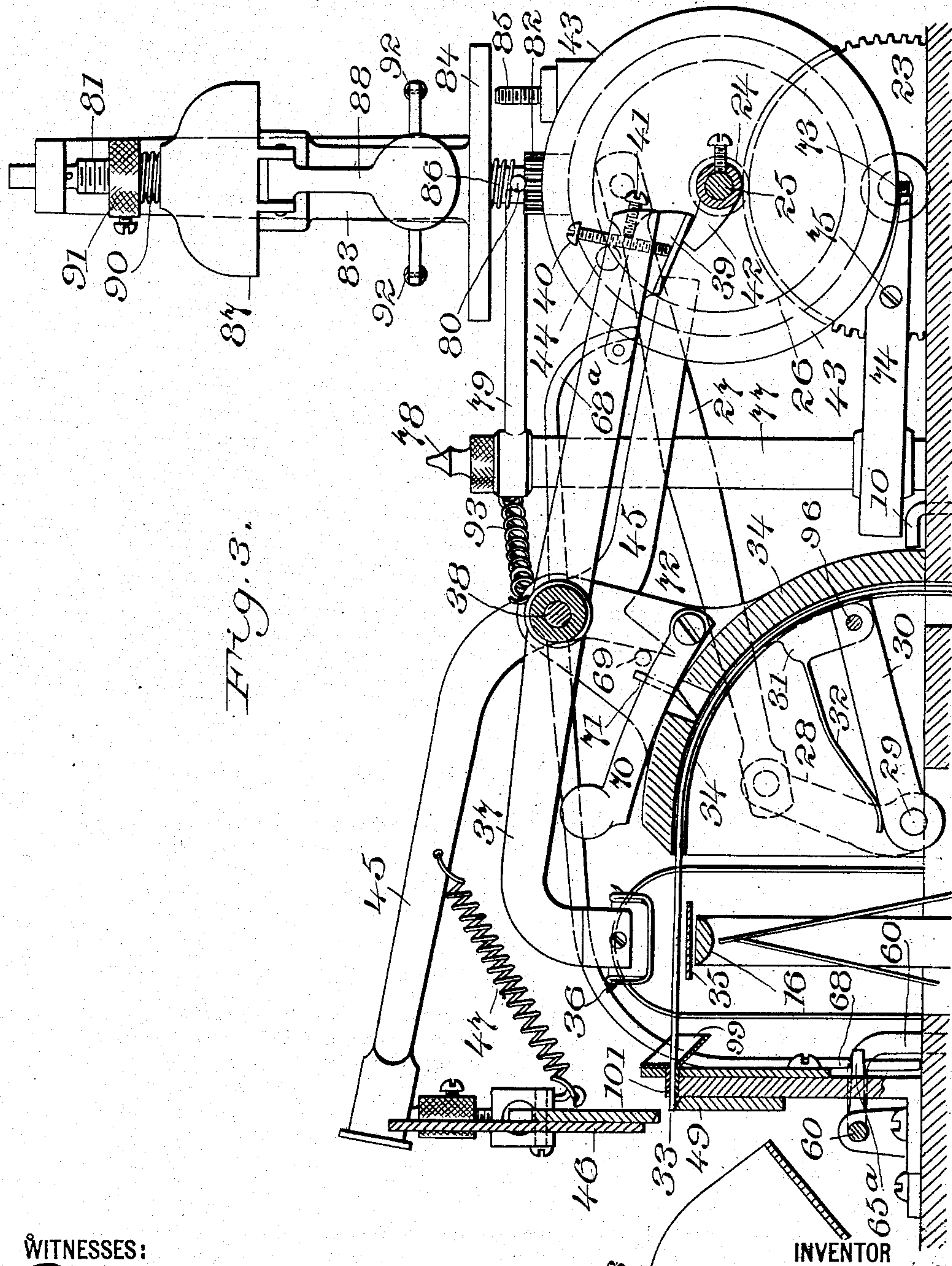


Fig. 3.

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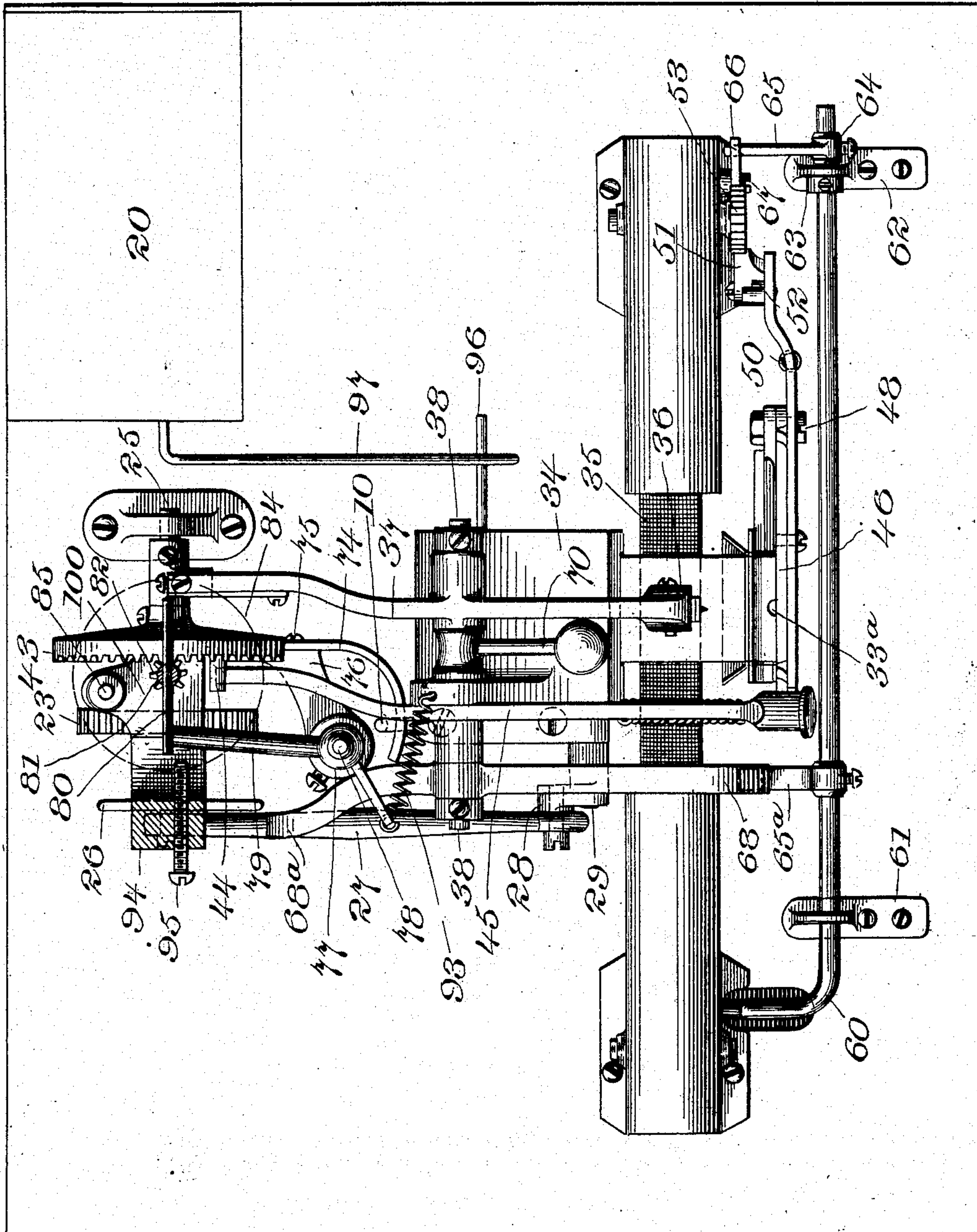
N. NELSON.

WEIGHING AND WEIGHT PRINTING MACHINE.

(Application filed June 6, 1899.)

(No Model.)

6 Sheets—Sheet 4.



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Fig. 4.

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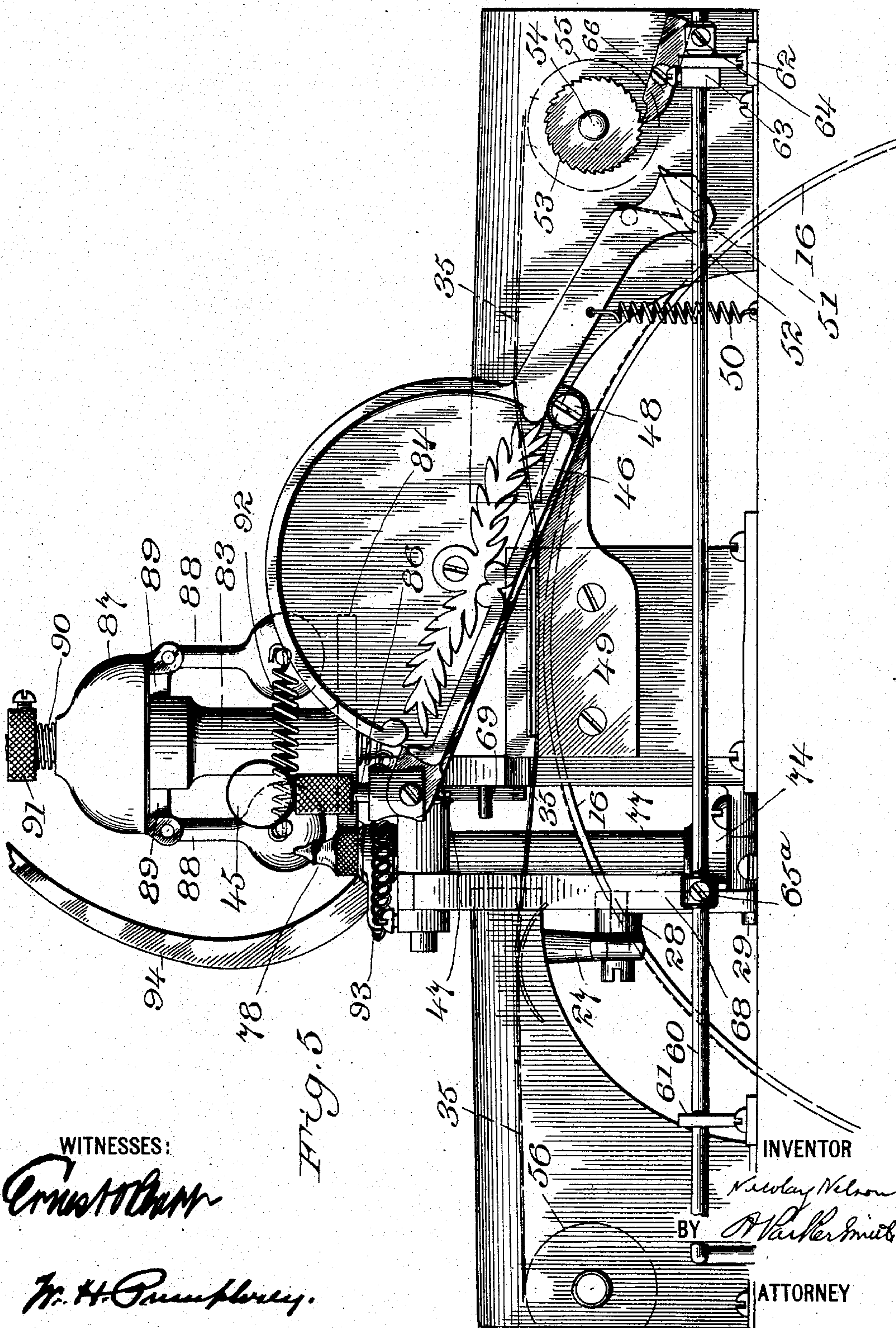
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WEIGHING AND WEIGHT PRINTING MACHINE.

(Application filed June 6, 1899.)

(No Model.)

6 Sheets—Sheet 5.



WITNESSES:

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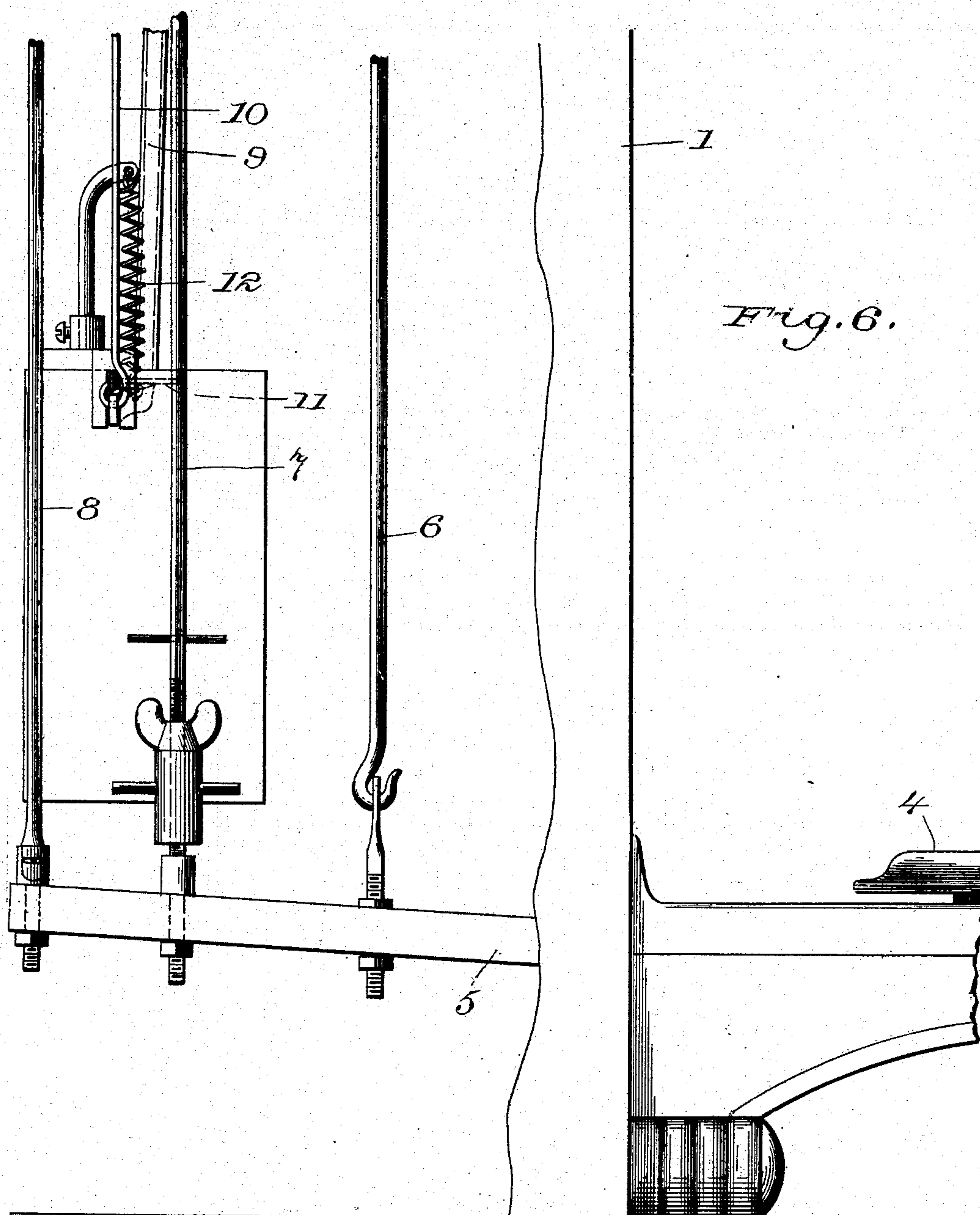
N. NELSON.

WEIGHING AND WEIGHT PRINTING MACHINE.

(Application filed June 6, 1899.)

(No Model.)

6 Sheets—Sheet 6.



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UNITED STATES PATENT OFFICE.

NICOLAY NELSON, OF WAUKEGAN, ILLINOIS, ASSIGNOR TO LE ROY W. BALDWIN, OF NEW YORK, N. Y.

WEIGHING AND WEIGHT-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 675,607, dated June 4, 1901.

Application filed June 6, 1899. Serial No. 719,564. (No model.)

To all whom it may concern:

Be it known that I, NICOLAY NELSON, a citizen of the United States of America, and a resident of Waukegan, county of Lake, State of Illinois, have invented certain new and useful Improvements in Automatic Weighing and Weight-Printing Machines, of which the following is a specification.

My invention relates generally to automatically-operated ticket printing, feeding, and cutting mechanism; and it more specifically consists of an improved automatic weighing and weight-printing machine designed to be operated by the introduction of a coin or in any other suitable manner.

The preferred form of apparatus embodying my invention is illustrated in the accompanying six sheets of drawings, in which—

Figure 1 is a perspective view of the exterior of the machine. Fig. 2 is a back view in elevation of the upper portion of the apparatus within the casing. Fig. 3 is a detail sectional view of the ticket printing, feeding, and cutting apparatus, taken on a plane at right angles to the plane of Fig. 2. Fig. 4 is a plan view of the same. Fig. 5 is a front elevation of the same. Fig. 6 is a detail view of the lower part of the interior, showing the scale-beam and connections.

Throughout the drawings like reference-figures refer to like parts.

An ornamental casing 1 is provided for the entire machine, in which are the slot 2 for the introduction of a coin and the slot and bowl 3 for the reception of the printed ticket when the same is ejected by the internal mechanism. An ordinary platform 4 is connected with the scale-beam 5, (see Fig. 6,) to which are connected the rod 6, extending upward to a scale-spring, (not shown,) and rod 7, extending up to a rack-rod 13, (see Fig. 2,) and a rod 8, extending up to a dash-pot. (Not shown.)

A trip-rod 10 is connected to the oscillating lever or pan 11, pivoted at the bottom of the coin-chute 9 and normally held up against the bottom of said coin-chute by the spring 12. When the coin drops down the chute 9 and strikes the lever 11, it forces up the trip-rod 10 in opposition to the spring 12 and sets the

mechanism hereinafter to be described into operation.

The rack 13 meshes with pinion 14 on a horizontal shaft 15, which carries the type-wheel 16. The shaft 15 is preferably allowed to rest upon several friction-wheels 15^a, one of which is shown in Fig. 2, for the reduction of friction, and the rack-rod 13 is guided and held in mesh with the pinion 14 by the idler 17.

A powerful spring-motor 18 is arranged to be wound up by the winding-gear 18^a, and a smaller less powerful spring-motor 19 is arranged to be wound up by the winding-gear 19^a. The spring-motor 19 operates the music-box 20 through connections not shown in detail, and the larger motor 18 operates the ticket printing, feeding, and cutting apparatus through the bevel-gearing 21, the pinion 22, the idler-gear 23, and the pinion 24 on the main driving-shaft 25 of the mechanism located in the upper part of the casing and shown in detail in Figs. 3, 4, and 5. This main driving-shaft has a crank-disk 26 mounted on one end, which is connected by the connecting-rod 27 with the crank 28 on the shaft 29 of the ticket-feeding apparatus. This ticket-feeding apparatus has an oscillating arm 30, carrying the feeding-finger 31, controlled by the spring 32, so as to press outwardly against the strip of tickets 33, which is guided by the curved guide 34. This strip of tickets is wound off the reel 102 in the lower part of the machine. (Shown in Fig. 2.) The ticket-strip has a series of holes 33^a between the adjacent blank ticket forms printed thereon, and the stop 71 on the weighted lever 70, pivoted to the main frame at 72, projects through an opening in the ticket-guide 34 and drops into these holes 33^a, thereby preventing any backward motion of the ticket-strip. The end of the ticket-strip is fed out over the adjustable type-wheel 16 and the ink-ribbon 35, between said type-wheel and the strip. An impression-block 36 is carried by a lever 37, pivoted to the main frame at 38 and having on its other end an adjustable face-plate 39, whose position can be nicely graduated by the set-screw 40, held in position by the locking-screw 41. The latter end of the lever 37 is operated by the rack-rod 13.

dial projection 42 on the main shaft 25, so as to force the impression-block 36 down upon the ticket-strip at the proper moment. On the main shaft 25 is carried the crown-gear 43, which has upon one face a projecting pin 44, arranged to strike the latter end of the knife-operating lever 45, also pivoted to the main frame at 38. The other end of said lever 45 is held down upon the oscillating knife 46 by means of the spring 47. This knife 46 is pivoted to the main frame at 48 and co-operates with the fixed knife-plate 49 to cut the ticket-strip projecting between them when the knife 46 is forced down in opposition to the spring 50. On the other end of the knife 46 is mounted a pawl 51, controlled by the spring 52 and coöperating with the ratchet-wheel 53 on the shaft 54 of the ink-ribbon drum 55. The ink-ribbon 35 runs to this drum over the pulley 56, and means are provided for putting the said ribbon under tension in opposition to the winding action of the drum 55—as, for instance, by means of the weight 58, attached to the outer end 57 of said ink-ribbon, which hangs down in the lower part of the casing. Said weight 58 is provided with a projection 59, coöperating with the oscillating crank-shaft 60, the crank end of which projects into the path of said projection 59. This shaft 60 is mounted in a series of bearings 61 62 and is caused to work stiffly in said bearings by means of the adjustable collars 63 64, which are arranged on either side of one of the bearings, as 62, and can be pressed against the same and then clamped to the shaft 60. The crank-shaft 60 carries the projecting arm 65, which comes under the locking-pawl 66, pivoted to the main frame at 67, and is adapted to engage the ratchet-wheel 53 and prevent backward rotation of the same whenever said pawl 66 is not tripped out of action by the lifting up of the projecting arm 65. 65^a is another projecting arm on the crank-shaft 60, which goes under the lever 68, also pivoted to the main frame at 38, and having its other end, 68^a, so located as to be struck by the connecting-rod 27 when at its uppermost position, as shown in Fig. 3.

A stop 69 is suitably located on the main frame to prevent the swinging up of the knife 46 and knife-lever 45 beyond the position shown in Figs. 3 and 5. Upon the crown-gear 43 or other suitable projection from the main shaft 25 is mounted a radial stop 73, which strikes against the outer end of the vertically-swinging trip-lever 74, pivoted at 75 to a side projection 76 from the vertically-oscillating sleeve 77, journaled on the vertically-pivoted shaft 78, set in the main frame. This trip-lever accordingly has two motions—a vertical oscillation on the center 75, which enables the outer end of said trip-lever to be tripped below the radial projection 73 on the main shaft, and a horizontal swinging action, together with its supporting-arm 76, about the

vertical pivot 78. From the upper end of the vertical sleeve 77 projects the swinging arm 79, whose outward motion is limited by the adjustable stop 95. In its inner position said swinging arm 79 is located in the path of the stop 80 on the vertical governor-shaft 81, to which motion is given by means of the pinion 82 meshing with the crown-gear 43. Mounted on the vertical shaft 81 and sliding endwise thereon is the sleeve 83, carrying the friction-disk 84 at its lower end. This friction-disk 84 may be forced into frictional contact with the stationary contact-point furnished by the adjustable screw 85, mounted in the main frame. Normally the friction-disk 84 is held out of contact with said fixed contact-point by means of the spring 86. A sliding collar 87 of any convenient form is also mounted on the shaft 81 and carries the governor-arms 88, pivoted to said collar 87. These governor-arms 88 have inwardly-extending projections 89 engaging the sliding sleeve 83. The spring 90, controlled by the adjustable collar 91 on the governor-shaft, tends to force the sliding collar 87 downward in addition to its weight and that of the governor-arms. A spring 92 tends to draw the governor-arms toward the center in opposition to centrifugal action. The upper end of the governor-shaft is journaled in the outwardly-projecting arm 94, and its lower end is journaled in the lug 100, fastened to the lower portion of said outwardly-projecting arm 94, as best shown in Fig. 2.

The spring 93 is attached at one end to the main frame and at the other to a projection from the vertically-oscillating sleeve 77 and normally tends to swing said oscillating sleeve in such a way as to force the swinging arm 79 out of engagement with the governor-stop 80. This tendency is opposed and overcome, however, by the pressure of the driving-shaft stop 73 against the trip-lever 74, such pressure being transmitted to the sleeve and producing a torsional action thereon through the side projection 76 of said sleeve, on which said trip-lever 74 is pivoted. A projection 96 from the end of the ticket-feeding mechanism 30 (see Fig. 4) engages a swinging lever 97 from the music-box and sets said music-box in operation through mechanism not herein illustrated or described.

A card-chute 98 (see Fig. 3) conducts the card cut off from the strip to the slide 3, through which it is presented to the customer, and the guide 99 (see Fig. 3) returns the outer end of the ticket-strip to the guide-slot 101 in case it is withdrawn from the same by the downward pressure of the impression-block 36.

The mode of operation of my invention is as follows: When a person gets upon the scale-platform 4, the scale-beam 5 adjusts itself to the proper position in opposition to the re-

sistance of the scale-spring (not shown) exerted through the rod 6, and this action adjusts the rack-rod 13 and adjustable type-wheel 16, so that the type representing the weight of the person comes under the impression-block 36. The customer then dropping a coin in the slot 2, said coin falls through the coin-chute 9, strikes the coin-lever 11, forces up the trip-rod 10, and the upper bent end of said trip-rod 10, Fig. 3, lifts up the trip-lever 74, so as to drop the other end of said lever below the radial stop 73 on the main shaft 25. This leaves the spring 93 free to act and causes the vertical sleeve 77 to oscillate upon its vertical shaft 78, swinging the arm 79 out of the path of the governor-stop 80. Under the action of the spring-motor 18 said driving-shaft 25 now revolves. Through the crown-gear 43 and pinion 82 rapid rotation is thereby given to the governor-shaft, and the centrifugal action of the governor-arms 43 forces the sleeve 83 and collar 87 apart in opposition to the springs 86 and 90 and forces the friction-disk 84 into contact with the fixed contact-point 85, thereby limiting the speed of rotation to a degree previously determined by location of the adjustable collar 91 on the governor-shaft and of the contact-point 85. At the end of one revolution of the driving-shaft 25 the radial stop 73 strikes the end of the trip-lever 74, which is continuously held up against the periphery of the crown-gear 43 by the overbalancing-weight of its other end after the trip-rod 10 has descended again to its normal position. The effort of the main shaft 25 to continue rotation of course forces the trip-lever and its supporting projection 76 back into their normal position, thus oscillating the vertical sleeve 77 in opposition to the spring 93 and forcing the swinging arm 79 back into the path of the governor-shaft 80, thus again locking the mechanism. During this rotation of the driving-shaft 25 the first operation is the pressing down of the impression-block 36 by reason of the fact of the radial projection 42 lifting the face-plate 39 and rear end of the impression-lever 37. This prints the weight of the person in the blank space left on the face of the ticket, constituting a portion of the ticket-strip 33, extending over the adjustable type-wheel 16 and ink-ribbon 35. When the impression-block has risen again, as the radial projection 42 goes out from under the face-plate 39, the crank-disk 26, which has been drawing back the connecting-rod 27 and lowering the feeding-arm 30, reaches the limit of its backward motion and begins to come forward. This lifts the feeding-arm 30, and the finger 31, engaging the ticket-strip 33, forces the same forward a distance equal to the length of a ticket, thus projecting the printed ticket through the guide-slot 101 beyond the knife 46. Finally, during the last portion of the revolution the pin 44 on the crown-gear comes under the rear end of the knife-lever

45 and forces down the knife 46, cutting off the printed ticket. The printed ticket falls down the chute 98 and appears through the slot 3 ready for the customer to pick up. The latter portion of the revolution has also withdrawn the feeding-arm 30 to its medium position, (shown in Fig. 3,) the catch 71 preventing any lack of movement of the ticket-strip, however. The downward motion of the knife 46 of course lifts up the pawl 51, which engages the ratchet-wheel 53 and turns the drum 55 through a fraction of a revolution sufficient to feed the ink-ribbon along in opposition to the pull of the weight 58, and always presents a fresh surface of the ink-ribbon to the type. The locking-pawl 66 prevents the ink-drum from unwinding when the knife-lever returns to the position shown in Fig. 5. When the ribbon is all wound up, the projection 59 on the weight 58 strikes the crank end of the crank-shaft 60 and lifts the same, thereby lifting the projecting arm 65 and tripping the locking-pawl 66, so that the weight 58 falls, unwinding the ribbon to its full extent. The pawl-tripping mechanism remains in this position until the next operation of the weighing-machine, when the connecting-rod 27 strikes the rear end 68^a of the lever 68 and forces down the forward end of said lever, which carries with it the projection 67^a from the crank-shaft 60 and returns said pawl-tripping mechanism to its original position, in which it does not interfere with the locking action of the pawl 66. The action of the ticket-feeding apparatus trips the music-box, which plays one tune and then stops.

The advantages of my invention consist in the rapidity and certainty of the above-described operations and in the compact nature of the mechanism, which is reduced to the fewest number of parts and is not liable to get out of adjustment.

Of course various changes could be made in the details of construction without departing from the spirit and scope of my invention so long as the relative arrangement of parts shown in the drawings or the principle of operation disclosed in the specification is preserved.

I do not herein claim the particular form of governor illustrated and described, as the same constitutes the subject-matter of a divisional application filed January 23, 1901, and serially numbered 44,404.

Having therefore described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. The combination of the weighing-scales, a type-carrier adjusted thereby, the impression-lever, feeding mechanism for a strip of tickets, the knife and a connecting and driving mechanism, whereby the two last elements are caused to operate after the ticket is printed.

2. The combination of the weighing-scales,

the type-wheel operated thereby, the impression-lever, feeding mechanism for a strip of tickets, the knife, and a connecting and driving mechanism whereby the three last-mentioned elements are operated consecutively, first to print, second to feed out and third to cut off a ticket.

3. The combination of the weighing-scales, the type-wheel operated thereby, the impression-lever, ticket-feeding mechanism, the knife and connecting and driving mechanism whereby the three last-mentioned elements are operated consecutively first to print, second to feed out and third to cut off a ticket, together with an automatically-operated stop for said driving mechanism.

4. The combination of the weighing-scales, the type-wheel operated thereby, the inking device cooperating with the type-wheel, the impression-lever, feeding mechanism for a strip of tickets, the knife, connecting and driving mechanism, whereby the three last-mentioned elements are operated first to print, second to feed out and third to cut off a ticket, together with a governor operatively connected to control the driving mechanism.

5. The combination of the weighing-scales, the type-wheel operated thereby, the impression-lever, feeding mechanism for a strip of tickets, the knife, and connecting and driving mechanism, whereby the three last-mentioned elements are operated first to print, second to feed out and third to cut off a ticket, together with the inking device cooperating with the type-wheel, and actuating mechanism for said inking device.

6. The combination of the weighing-scales, the type-wheel operated thereby, the impression-lever, feeding mechanism for a strip of tickets, the knife, and connecting and driving mechanism whereby the three last-mentioned elements are operated consecutively to print, feed out, and cut off a ticket, together with the ink-ribbon cooperating with the type-wheel and the ticket-strip, and automatic winding mechanism for said ink-ribbon and connections whereby the motion of the knife operates said winding mechanism.

7. The combination of the printing mechanism, the knife for cutting off the printed tickets, the ink-ribbon, the drum on which it is wound, mechanism whereby the movement of the knife winds up the drum, the locking-pawl for the drum, mechanism for putting the ribbon under tension in opposition to the winding up of the drum, and trip mechanism for said locking-pawl operated by the outer end of the ribbon.

8. The combination of the printing mechanism, the knife for cutting off the printed tickets, the ink-ribbon, the drum on which it is wound, mechanism whereby the movement of the knife winds up the drum, the locking-pawl for the drum, mechanism for putting the ribbon under tension in opposi-

tion to the winding up of the drum, and trip mechanism for said locking-pawl operated by the outer end of the ribbon, together with mechanism for feeding the ticket-strip, and means operated by said mechanism to positively throw said pawl-tripping mechanism out of operation.

9. The combination of the main driving-shaft, the adjustable type-wheel, feed mechanism for the ticket-strip operated from said main shaft, the impression-lever, and the radial projection on the main shaft, cooperating with the impression-lever, to oscillate the same prior to the forward motion of the ticket-feeding apparatus, the end of said impression-lever which is struck by the radial projection, being provided with an adjustable face-plate.

10. The combination of the main driving-shaft, the weighing mechanism and type-wheel operated by said weighing mechanism, the ticket-feeding apparatus operated from the main shaft, the impression-lever operated from the main shaft, the governor, the crown-gear on the main shaft gearing with and driving the governor-shaft, the ticket-cutting knife, the lever for operating said knife, and the stud on the crown-gear which operates said lever.

11. The combination of the main driving-shaft and motor therefor, the stop projection thereon, the governor-shaft driven from the driving-shaft, and at a higher speed, the stop projection on the governor-shaft, the swinging arm engaging the governor-stop, the trip-lever pivoted to the sleeve of said swinging arm or on an axis at right angles to the pivot of the swinging arm, said trip-lever being normally disposed in the path of the stop projection on the main shaft, a spring which normally tends to pull the swinging arm out of engagement with the governor-stop, and also to force the trip-lever against the stop on the main shaft, and means for momentarily slipping the trip-lever beyond the end of the stop projection on the main shaft, whereby one revolution of the main shaft is permitted, but further revolution checked by the swinging arm being forced back into engagement with the governor-stop by the reengagement of the trip-lever and the stop projection on the main shaft, together with the ticket-printing mechanism operated by said main driving-shaft.

12. The combination of the horizontal driving-shaft, the radial stop thereon, the vertical governor-shaft geared to the driving-shaft, the radial stop on the governor-shaft, the horizontally-swinging arm journaled on a fixed pivot-shaft and capable of intersecting the path of the governor-stop, a vertically-oscillating trip-lever pivoted on and to one side of the horizontally-swinging arm, and normally disposed in the path of the radial stop on the driving-shaft, a trip-rod which disengages said trip-lever by vertically oscillating.

lating it and so swinging it beyond the end
of the radial stop on the driving-shaft, and a
spring which tends to turn the horizontally-
swinging arm out of the path of the governor-
5 stop when the trip-lever is so disengaged, and
to hold the parts in such position until the
driving-shaft stop again strikes the trip-lever
and carries it and the horizontally-swinging
arm back into their original position and

thereby locks the mechanism, together with 10
the ticket-printing mechanism operated by
said horizontal driving-shaft.

Signed by me at Waukegan, Illinois, this
1st day of June, 1899.

NICOLAY NELSON.

Witnesses:

JAMES W. PETERSON,
GEORGE BROSIUS.