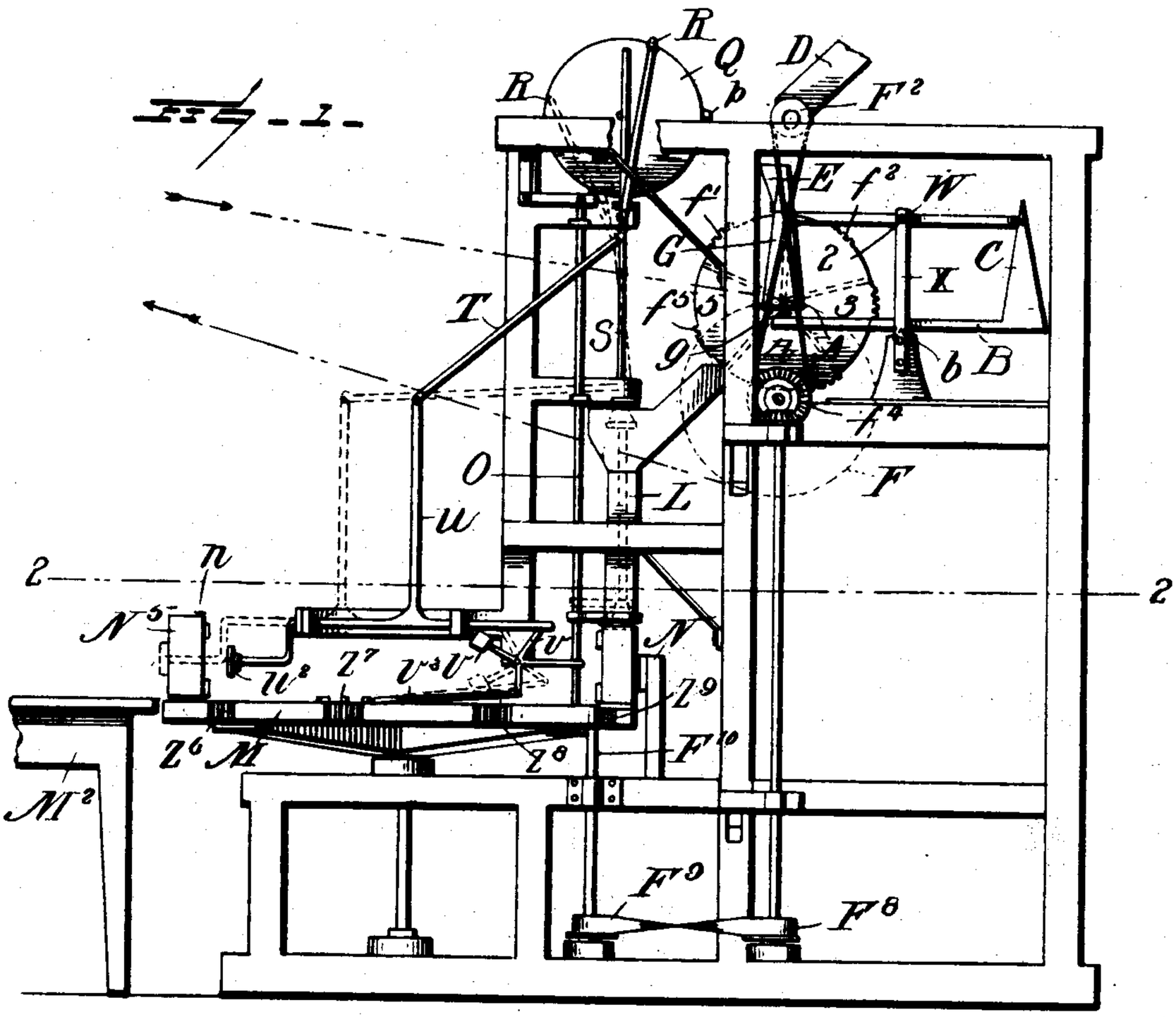
No. 684,595. Patented Oct. 15, 1901.

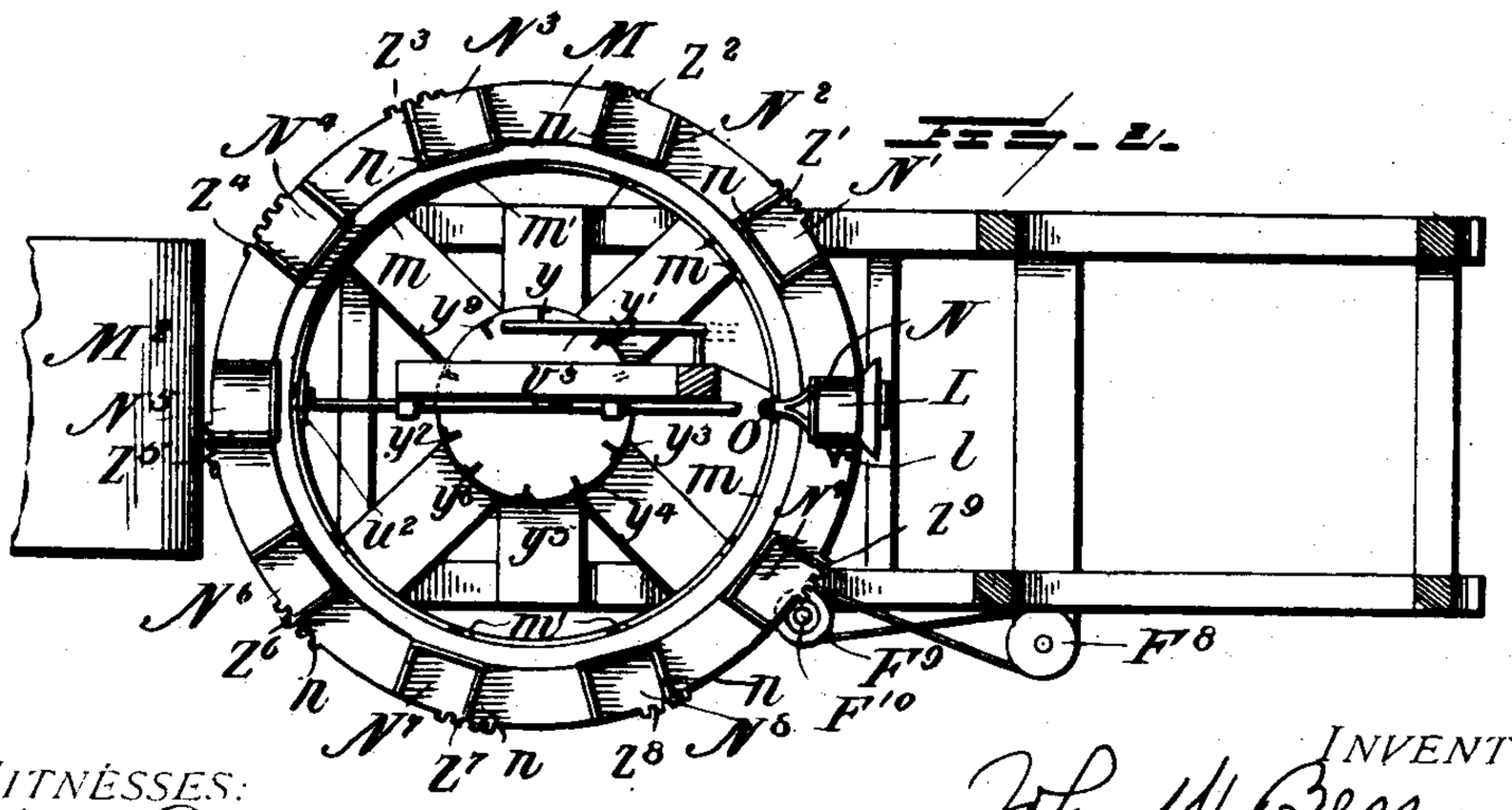
J. W. BERRY.

# AUTOMATIC WEIGHING AND PACKING MACHINE.

(Application filed Jan. 11, 1901.)

(No Model.) 2 Sheets—Sheet 1.




WITNESSES:
Wm. F. Doyle.
A. L. Hough

INVENTOR
John W. Berry,
BY Franklin H. Hough
Attorney

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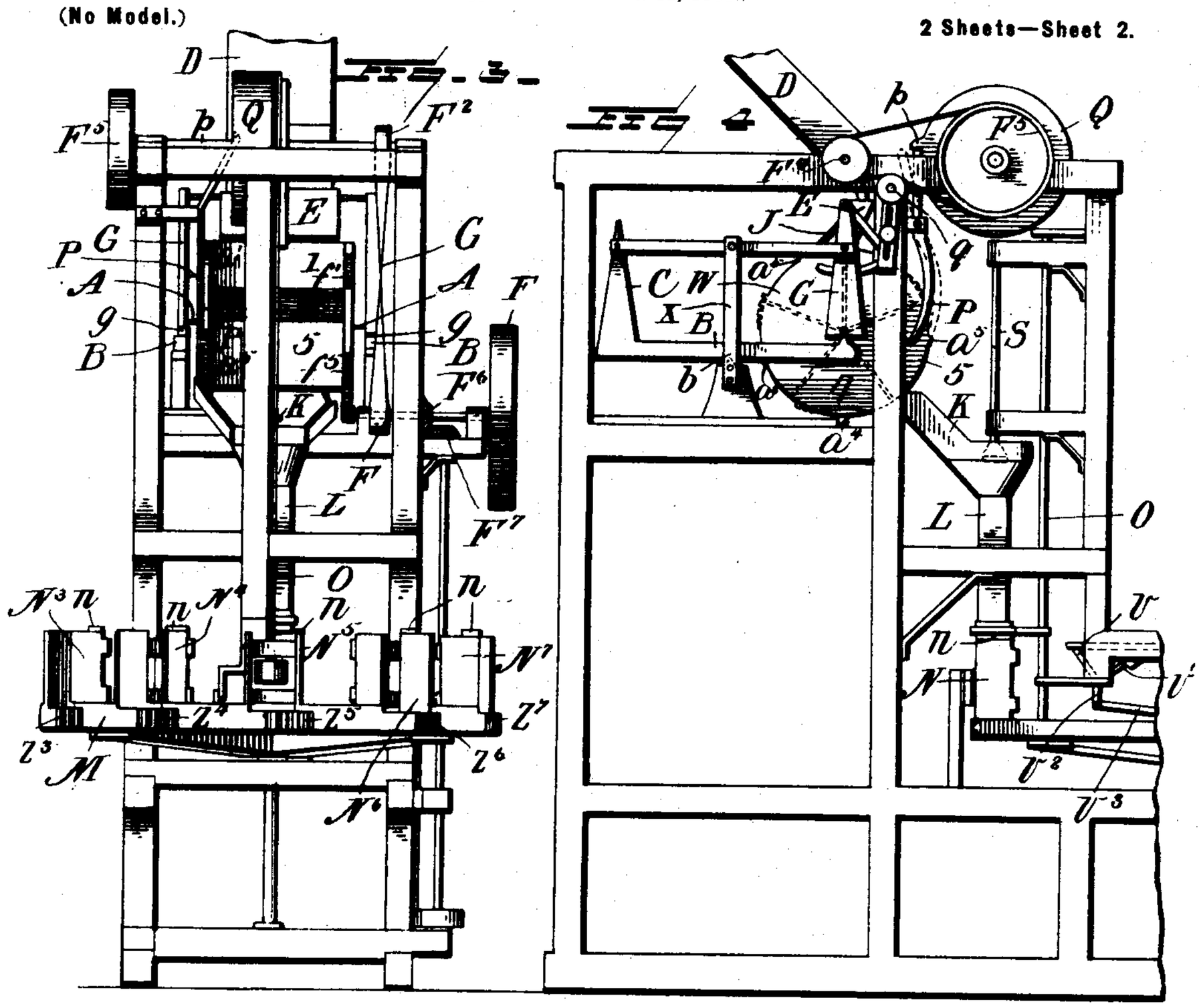


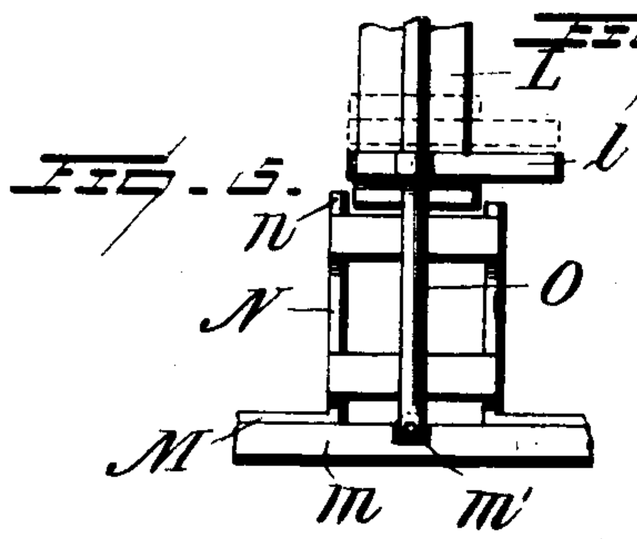


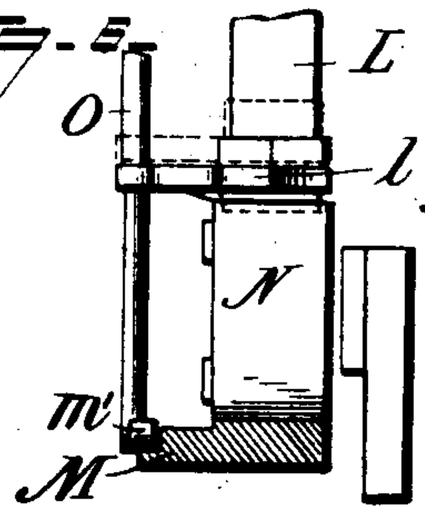


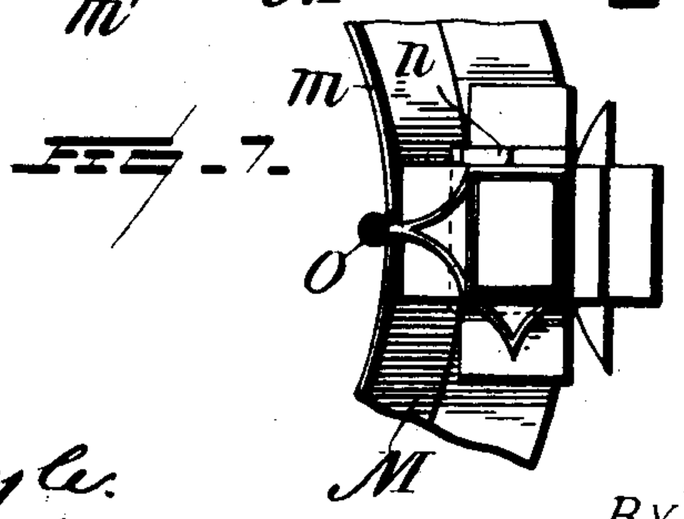


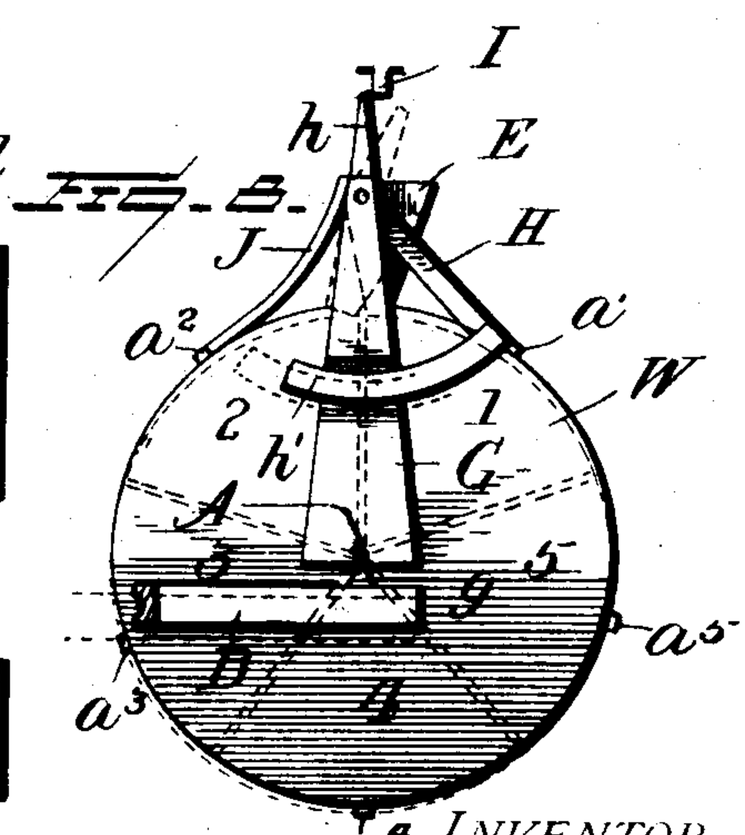


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Wm. F. Doyle.
A. L. Hough

INVENTOR
John W. Berry,
BY Franklin N. Hough
Attorney

# UNITED STATES PATENT OFFICE.

JOHN W. BERRY, OF TACOMA, WASHINGTON, ASSIGNOR TO THE TACOMA AUTOMATIC SCALES COMPANY, OF SAME PLACE.

## AUTOMATIC WEIGHING AND PACKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 684,595, dated October 15, 1901.

Application filed January 11, 1901. Serial No. 42,922. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN W. BERRY, a citizen of the United States, residing at 613 North Oakes street, in the city of Tacoma, county of Pierce, and State of Washington, have invented certain new and useful Improvements in Automatic Weighing and Packing Machines, of which the following is a specification.

My invention pertains to devices for weighing and packing articles of merchandise preparatory to trade and commerce.

It further pertains to improvements to my automatic weighing-machines, for which Letters Patent were granted to me on the 20th day of November, 1900, No. 661,945, and on which a second patent was granted to me on the 1st day of January, 1901, No. 665,361.

The objects of my improvement are, first, to weigh articles of merchandise preparatory to putting them in packages, and, second, to deliver and pack the said articles into the packages so that each will be of a uniform weight and volume and said packages being made ready to be sealed and boxed for shipment. I attain these objects by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a right side elevation of my invention, a number of the package-frames being omitted to show the operating mechanism of the turn-table. Fig. 2 is a plan section at line 2 2, showing a top view of the turn-table. Fig. 3 is a front end view of my invention, and Fig. 4 is a partial left side elevation of the same. Fig. 5 is an enlarged view of one of the package-frames looking from the center of the turn-table and shows the adjustable end of the filling sleeve or chute. Fig. 6 is a side view of Fig. 5, and Fig. 7 is a top view of the same and illustrates the manner in which the folding flaps of the packing-case are held clear of the filling sleeve or chute. Fig. 8 is an enlarged side view of the weighing-wheel and illustrates an improved automatic means for operating the same.

Similar letters and figures refer to similar parts in the several views.

My invention comprises a wide weighing-wheel W, constructed with a multiple of triangular-shaped buckets, as described in the specifications of my former patents. The manner of mounting and the automatic operating mechanism are simplified and improved as follows: The wheel is mounted on the axle A between two upright supports G G. The upright supports are each centered on wedge-shaped bearings $g$ $g$ of the beams B B. The beams rest on wedge-shaped fulcrums $b$ $b$ at their centers and are provided with a counter-weight-box C, centered at an equal distance from $b$ $b$, as are $g$ $g$. The box is made wedge-shaped, so dust will not accumulate thereon and affect its weight. One side has a door, and sufficient weights are placed therein to equally balance G G and the mechanism supported thereon, thus forming a steelyard for weighing articles in the buckets of the wheel W. Two rigid upright arms X X, to which C and G G are pivotally anchored, hold all in perfect poise for accurate weighing. I then place in box C a weight equal to that I desire to weigh in the buckets of W and I have a perfect scale for weighing articles in uniform quantities. The articles to be weighed are delivered to the weighing-machine through the chute D and the automatic swinging chute E, the latter being pivotally supported by and between G G. On one arm of the pivotal support of E is rigidly attached a peculiarly-shaped lever-arm H, which governs automatically the movements of the wheel W and the chute E. During the filling of a bucket, as 1, of W, the upper arm $h$ of H engages the fixed bearing I and holds E in a position to discharge into bucket 1 of the weighing-wheel W. The lower end of H is in a position to engage the small nib $a'$ should the wheel W attempt to turn backward, and the spring J engages the nib $a^2$ and prevents the wheel turning forward or to the right. (See Figs. 4 and 8.) When the required amount of substance to be weighed is deposited in bucket 1, the weight tips the wheel end of the beam B down until the upper arm $h$ drops below I. The weight of the chute E and the arm H causes the mouth of E to promptly swing back over bucket 2 and discharge therein. The end $h'$ of the curved extension of H strikes, like a hammer, the

lower end of the spring J and lifts it over the nib $a^2$, all of which is indicated by broken lines in Fig. 8. The wheel W is thus free to turn forward, as it promptly does, on account of the load in bucket 1. In turning forward the nib $a^2$ comes in contact with and rides against the under side of H, and by the time bucket 1 is empty the upper arm $h$ is back of L, when the wheel end of the beam tips up and all is again in position as first described, with bucket 2 being filled as was bucket 1. This operation may continue indefinitely, each bucket of the wheel W being filled in turn.

My machine is designed to be operated as a whole by mechanical power transmitted by belt to the friction-wheel F. On the shaft of F is a friction F′, connected by belt with $F^2$, which operates a feed device in the chute D, that regulates the discharge into the weighing-wheel. The weight of a loaded bucket in the wheel W has a tendency to turn the wheel suddenly and discharge its entire load in bulk and choke the chute leading to the case or bag in which it is to be packed. To prevent this, I provide a friction or gear wheel $F^3$, which engages sections of friction or gearing $f'$ $f^5$, attached to the rim of the side of W, and turns the same steadily without jar or jolt and slowly empties the buckets in turn into the packing-chute. It is to be observed that each section of friction on emptying a bucket passes out of gear with $F^3$, leaving W free and clear for accurate weighing.

My packing device comprises a round turn-table M, pivotally mounted on a shaft at its center. This table is made with a multiple of upright frames N to $N^9$, each made of a form and size to hold a case or bag, into which the article being weighed is to be packed. As shown in the drawings, they are designed to hold a paper box or case to be filled at one end. A flat hook $n$ is fixed on top of the forward side of each frame and one flap of the paper case is slipped under this hook, and is thus held down so as to pass freely under the sleeve L of the filling-chute K. (See Figs. 3, 5, and 7.) The inner edge of the rim of the turn-table is provided with a metal rim or track M, fastened thereto. This track supports an upright staff O, which carries a telescope extension of the sleeve L. The roller-foot of this staff when resting on the track holds the staff and extension up, so that the frame containing a packing-case will pass freely under it. As the frame reaches the center of the sleeve the roller-foot drops into a notch $m'$, centrally located in the track back of each frame, and thus holds the table in a fixed position as the case in each frame is being filled and packed. (See Figs. 5, 6, and 7.) The arms attached to O and supporting the sleeve extension, after encircling the same, come together at their ends, forming a curved point $l$, designed to spread and bend the flaps of the paper packing-case, so that they will pass freely under and at the sides of the packing-sleeve. As indicated in the drawings, the frame is in position for a case to be filled and packed. A bucket of the weighing-wheel being emptied slowly into the chute K, the substance runs down into the sleeve L and into the case in the frame N. Looking at Fig. 4, it will be seen that as the bucket in W finished emptying the nib $a^5$, riding against the curved lever-arm P, having a roller-bearing at its upper end, causes the nib $p$ to be set free, and the wheel Q is allowed to revolve. The wheel is driven by friction-wheels $F^4$ and $F^5$, connected by belt lightly adjusted by means of tension-pulley $q$. This is a mechanical means to which I am not limited, however, for I reserve the right to use gearing with any number of cogs omitted on $F^5$, if desired. Now, looking at Fig. 1, it will be seen that Q in revolving operates a crank and shaft R, connected with an upright shaft S, sliding in guides centered above the packing-sleeve L. The lower end of this shaft has a flat foot to fit the sleeve and is pushed down the sleeve to the top of the frame N, as shown in broken lines, and packs the substance compactly into the case located therein. On the crank-shaft is a projecting nib $r$, which on its upward movement, as seen at $R^2$, engages the end of a lever-arm $o$, attached to the top of O at $r^2$, and lifts O out of the notch $m'$ and the extension-sleeve supported thereon clear of the packing-frame, thus setting the turn-table free. Attached to the sliding upright shaft S is a connecting-bar T, one end being attached to an upright arm $u$ of the sliding shaft U. As S is pushed down this connecting-bar T pushes the sliding shaft U to the left, as indicated by the broken lines. This sliding bar having a flat shoe $u^2$ on its end pushes the filled case from the frame $N^5$ onto the work-table $M^2$, where it is sealed for shipment. On its return movement the sliding bar runs endwise against and slides over the small lever-arm $v$, having a counterweighted arm $v'$. The lever-arm has a counter-arm $v^2$, with a push-rod $v^3$ attached thereto. The point of this push-rod inserts itself in the small angle-irons $y$ $y^9$ in turn and starts the table to revolve after being set free by the lifting of the shaft O. The thrust of the push-rod revolves the turn-table until the sections of friction or gearing $z$ $z^9$ engage with the friction or gear wheel $F^{10}$, by which the turn-table is steadily revolved without jar or jolt until the case-frames N $N^9$ are in turn made to stand directly under the sleeve L and held stationary by the foot of O dropping into the notches $m'$ in their respective turns. The empty cases to be filled are slipped into the frames as they revolve from the work-table $M^2$ to the filling-sleeve L. It will be observed that the friction $F^{10}$ is operated by power transmitted from F through the bevel-gears $F^6$ $F^7$ and the frictions $F^8$ $F^9$.

My machine as herein described may be

run continuously and will do the work for which it is designed and attain the objects for which it was invented. I do not limit myself to dimensions or proportions nor to any special application of the mechanical means of applying and transmitting forces now commonly used; but I reserve the right to vary the application of said means to obtain results in the most practical and economical manner. The framework on which my machine is operated is to be constructed in the most practical manner consistent with the weight and strains required.

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

1. In a weighing and packing apparatus, a balanced compartment-cylinder, lugs about the latter, a flexible member fixed at one end with its free end resting normally in the path of said lugs to prevent the cylinder from rotating in but one direction, a swinging arm adapted to engage one of said lugs to prevent the cylinder from rotating in the opposite direction, a projection of said arm serving to strike against said flexible member, and raise the free end thereof out of the path of said lugs as the cylinder tilts down, as set forth.

2. In a measuring and weighing apparatus, the balanced beams, the uprights and compartment-cylinder mounted thereon, lugs on the circumference of said cylinder, a shaft journaled in said uprights, a swinging spout and lug-engaging arm secured to said shaft, a flexible member held with its free end in the path of said lugs and designed to prevent the cylinder from rotating in one direction, means for holding said arm in the path of said lugs to prevent the cylinder from rotating in the opposite direction, said arm designed to swing out of the path of said lugs as the cylinder tilts down, and a projection of the arm adapted to strike against the free end of the flexible member to clear it from the lugs, whereby said cylinder may rotate freely, as set forth.

3. In combination with the balanced compartment-cylinder, with lugs thereon, a packing-plunger, a wheel for driving said plunger, a sliding friction-belt about said wheel, a pivotal lever designed to engage and hold said wheel from rotation until the cylinder compartment-wheel tilts down and commences to rotate, whereby one of said lugs will strike said lever and throw it out of engagement with the plunger-driving wheel, as set forth.

4. In an automatic weighing and packing apparatus, the balanced beams and compartment-cylinder mounted thereon, lugs about said cylinder, a rotary shaft and plunger-operating wheel mounted thereon, and driving-pulley with sliding frictional belt connections with said wheel, a pivoted lever, one end of which engages a lug on the plunger-operating wheel to hold the same stationary, while the weighing is being done, the opposite end of said lever adapted to be struck by a lug on the cylinder as the latter rotates, which releases the upper end of the lever from said wheel, as set forth.

5. In an automatic weighing and packing apparatus, the combination with the balanced compartment-cylinder, the plunger and wheel operating same, a sliding friction-belt passing about said wheel, the pivoted lever actuated by said cylinder for preventing said wheel from rotating while material is being weighed, the package-holding turn-table, and the rod Q and link pivoted thereto, the rod R pivoted to said wheel and to the plunger, a lug $r$ on said rod R, adapted to strike against the end of said link to raise the rod Q, the ejector and guide therefor, and pivoted link connections between said ejector and said plunger, as set forth.

6. In combination with the compartment weighing-cylinder, the plunger and wheel operating said plunger, means actuated by said cylinder for holding said wheel from rotation while material is being weighed, a package-holding turn-table, a series of frictional segments spaced apart about its circumference, a friction-pulley and shaft for driving same, a vertically-movable rod having an antifriction-roller at its lower end designed to engage in notches in said turn-table to hold the latter stationary while a package is being filled.

7. In combination with the weighing-cylinder, the plunger, the wheel for operating same, the pivoted lever adapted to hold said wheel from rotation while material is being weighed in said cylinder, lugs on the cylinder which actuate the lever as said cylinder rotates the turn-table, the frictional segments spaced apart about the circumference of the turn-table, the friction-roller which contacts therewith, means for driving said roller and wheel, the horizontally-movable ejector and guide-block in which it works, and a pivoted link connection between the plunger and said ejector, as set forth.

8. In combination with the turn-table having the frictional segments spaced apart about its circumference, the friction-wheel designed to contact with said segments, the plunger, the ejector and connections between same and the plunger, a weighted lever actuated by the ejector for imparting an intermittent rotary movement to the turn-table, as set forth.

9. In combination with the turn-table having a series of angle-irons thereon, a pivoted angle-lever with weighted arm, a link pivoted at one end to said lever, and its free end designed to kick against said angle-irons to rotate the turn-table, a horizontally-movable ejector which contacts with and tilts said weighted lever, and means for operating the ejector, as set forth.

10. In combination with the turn-table having a series of notches about its circumference, a vertically-movable rod having an antifriction-roller at its lower end and adapted to en-

ter said notches to hold the table stationary, a plunger, a wheel Q, a crank-shaft R pivotally connecting said wheel Q with the plunger, a lug *r* on said crank-shaft, the lever to which said rod is connected, disposed in the path of said lug, whereby said antifriction-roller is lifted out of said notches, and the frictional mechanism for rotating the turn-table, as set forth.

11. In combination with the turn-table, and means for rotating same, the package-holding compartments thereon, the rod O with flap-holding arms thereon, adapted to be held adjacent to the upper end of a package-holding compartment, as a package is being filled, as set forth.

12. In combination with the turn-table, the package-holding compartments thereon, a flap-holder secured to the upper end of each compartment, the rod O, the strap secured thereto, and bent to form flap-holders, as set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

JNO. W. BERRY.

Witnesses:
G. W. BULLARD,
A. N. FITCH.