

No. 744,420.

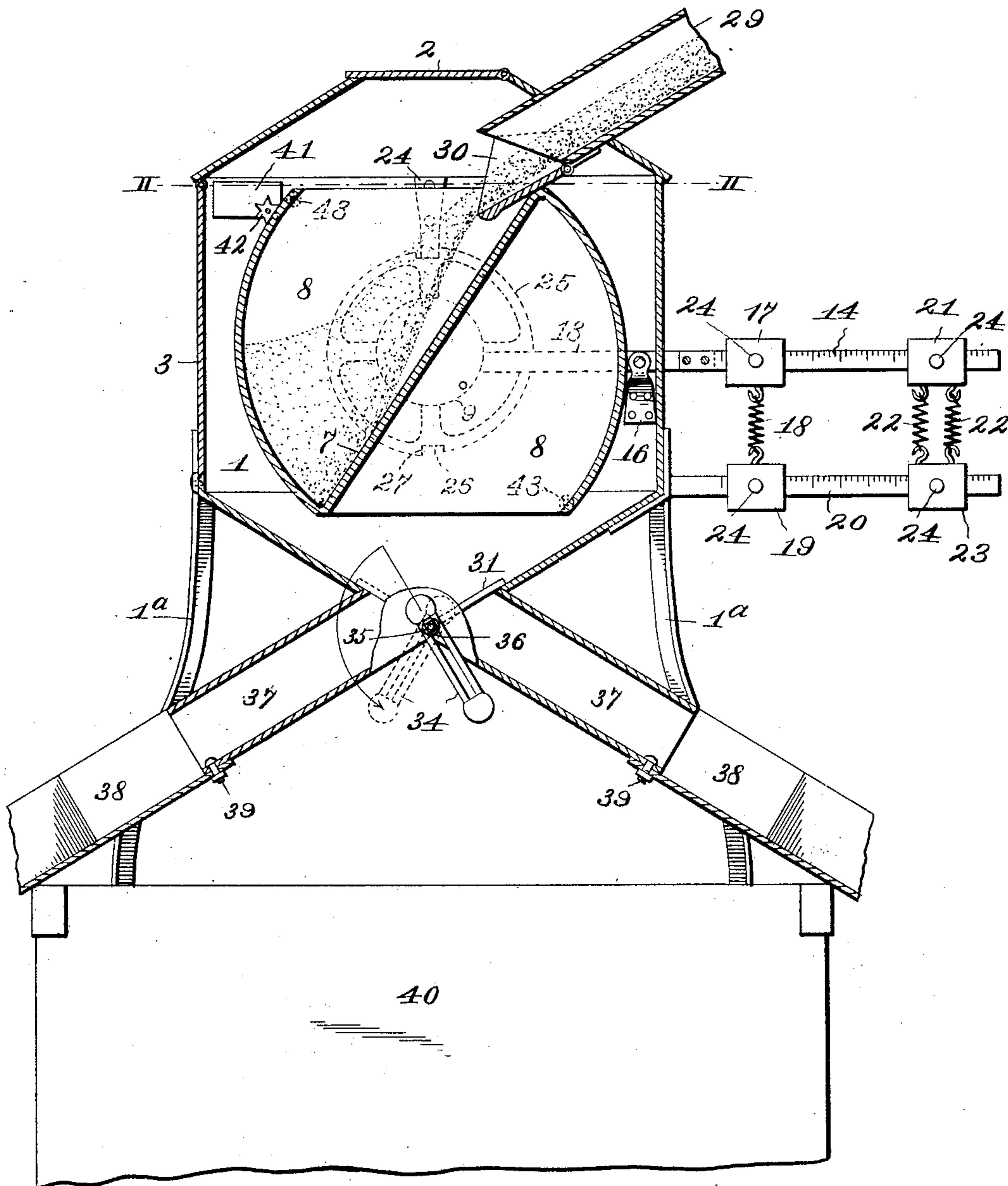
PATENTED NOV. 17, 1903.

M. L. SMAIL.
WEIGHING MACHINE.
APPLICATION FILED OCT. 13, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

Amos A. Smith
H. C. Rodgers.

Inventor:

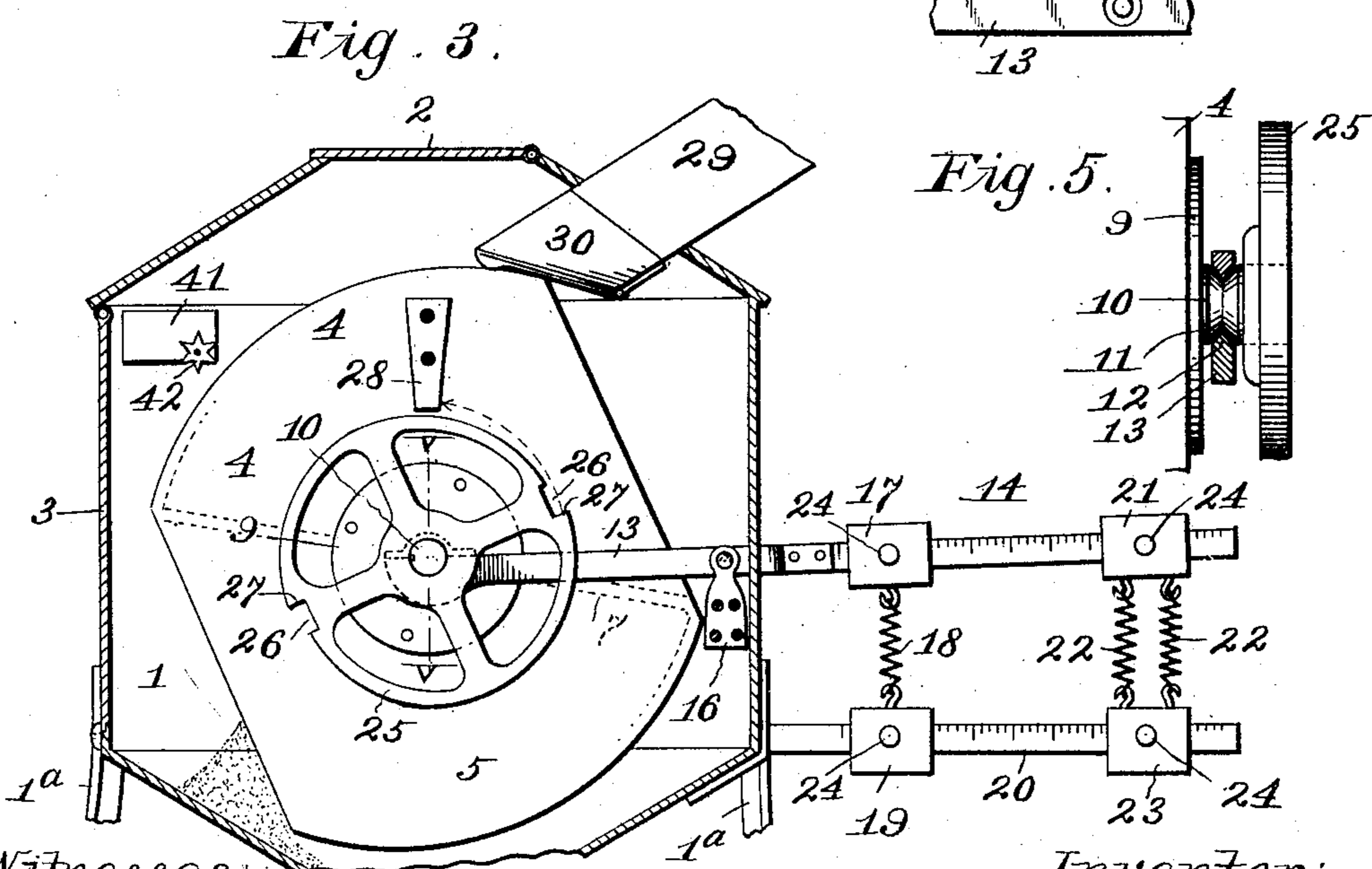
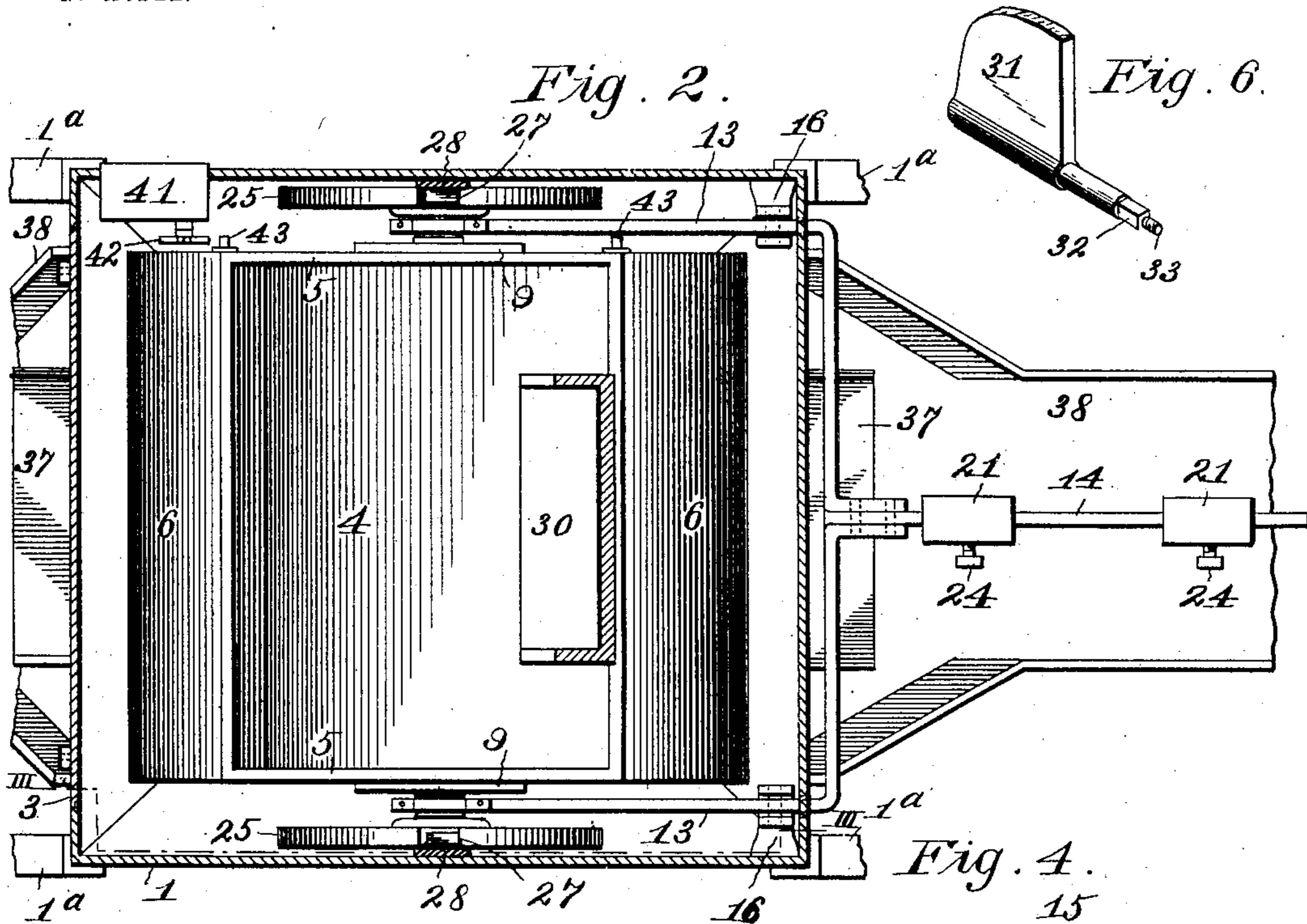
Madison L. Smail.
By F. G. Fischer
att'y.

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APPLICATION FILED OCT. 13, 1902.

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2 SHEETS—SHEET 2.



Witnesses:

Wm. Arthur
H. C. Rodgers

Inventor:

Madison L. Smail.
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UNITED STATES PATENT OFFICE.

MADISON L. SMAIL, OF MEDFORD, OKLAHOMA TERRITORY.

WEIGHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 744,420, dated November 17, 1903.

Application filed October 13, 1902. Serial No. 127,194. (No model.)

To all whom it may concern:

Be it known that I, MADISON L. SMAIL, a citizen of the United States, residing at Medford, in the county of Grant and Territory of Oklahoma, have invented certain new and useful Improvements in Weighing-Machines, of which the following is a specification.

My invention relates to improvements in grain-weighing machines; and my object is to produce a simple machine of this character for use in connection with separators, grain-elevators, and other places where grain is handled in large quantities.

By the use of my machine large quantities of grain can be quickly and accurately weighed, and after the poises have been properly set it requires no further attention, as it is otherwise automatic in its action.

The invention may be said to consist in the novel arrangement and combination of parts, and in order that it may be fully understood reference will now be made to the accompanying drawings, in which—

Figure 1 represents a vertical sectional view of the weighing-machine in position to receive the grain. Fig. 2 is a horizontal sectional view of the same, taken on line II II of Fig. 1. Fig. 3 is a vertical sectional view of the housing, taken on line III III of Fig. 2, showing the hopper in a dumping position. Fig. 4 is a broken detail view of the weighing-beam supported by one of the knife-edge bearings. Fig. 5 is an enlarged vertical section taken on line V V of Fig. 3, showing one of the knife-edge bearings for supporting the hopper. Fig. 6 is a broken detail perspective of the lower valve with counterbalance removed.

In constructing my machine I employ a housing 1, which is heptagonal in vertical section and is supported on four legs 1^a. Said housing has a hinged top 2 and a hinged front 3 in order that access may be had to the interior mechanism. Centrally located within said housing is a rotatable hopper 4, consisting of vertical side walls 5, eccentric front and rear walls 6, and an oblique bottom 7, connecting the low radius of the front wall to the low radius of the rear wall and forming two compartments 8, which alternately receive the grain. The side walls 5 are provided with rigidly-secured centrally-located

flanges 9, having trunnions 10, provided with V-shaped peripheral grooves 11 to receive knife-edge bearings 12 on the forked terminals 13 of a weighing-beam 14. Said weighing-beam is fulcrumed upon knife-edge bearings 15, secured in the upper ends of brackets 16, which latter are secured to the side walls of the housing. The weight of the empty hopper and parts secured thereto is counterbalanced by a poise 17, slidably mounted upon the rear end of the weighing-beam, and a coil-spring 18, secured at its opposite ends to poise 17 and an adjustable block 19, which latter is slidably mounted upon a stationary graduated beam 20, secured to the housing vertically below beam 14.

The weight of the grain in the hopper is determined by a poise 21, slidably mounted upon the graduated end of the weighing-beam in the rear of poise 17, and a pair of coil-springs 22, secured at their opposite ends to poise 21, and an adjustable block 23, slidably mounted upon beam 20. After the poises and adjustable blocks have been properly set they are secured against accidental movement by set-screws 24, passing through and adapted to contact with their respective beams.

The hopper is held in position to receive the grain by two disks 25, rigidly secured to the outer ends of trunnions 11 and provided with oppositely-disposed notches 26, the rear shoulders 27 of which are slightly higher than the forward sides in order to contact with the lower terminals of stops 28, secured to the side walls of the housing.

Grain is fed to the hopper through a supply-spout 29, the lower end of which enters the upper portion of the housing and is provided with a hinged inlet-valve 30, the free end of which, when open, rests against the oblique bottom of the hopper. When the hopper has received sufficient grain to overbalance poise 21 and the retractive force of springs 22, it is depressed by its load until the uppermost shoulders 27 are disengaged from stops 28. Thus released the hopper is rapidly revolved by the load, which is in advance of the center of gravity of its pivotal point, and after the grain has been discharged the hopper is reelevated by poise 21 and springs 22, so the opposite shoulders 27 will

contact with the stops, check the rotary hopper, and hold it in position for another charge. When the hopper starts to revolve, the upper end of its oblique bottom raises valve 30, and as the eccentric rear side 6 comes into contact with said valve the upward movement of the latter is thereby continued until the lower opening in spout 29 is closed against any further discharge of grain and held closed until the opposite compartment in the hopper is in position to receive a charge. The discharge of the grain from the housing is controlled by an outlet-valve 31, provided with a stem 32, having a rectangular end 33 to receive a counterbalance-weight 34, slidably secured thereon by a nut and washer 35 36, respectively. Stem 32 is journaled in the housing at the junction of the bottoms of two discharge-spouts 37, having diverging lower ends, to which are secured flaring-mouthed spouts 38 by means of pivots 39. By thus pivoting spouts 38 their lower ends may be swung laterally, so as to discharge the grain at any convenient point, and when the weighing-machine is mounted upon the top of a separator 40 the grain may be discharged upon either side of the latter by manipulating the outlet-valve 31.

In order that a record of the quantity of grain passing through my machine may be kept, I provide a suitable register 41, provided with a star-wheel 42, having its points arranged in the path of two pins 43, arranged diagonally on one of the side walls of the hopper, so that at each half-revolution of the latter one of said pins will contact with the star-wheel and rotate it the distance of one point.

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

1. In a weighing-machine, a housing, a weigh-beam pivoted thereto, a hopper journaled on said weigh-beam, a poise on said weigh-beam, a stationary beam secured to the housing, a block adjustably secured upon said stationary beam, and a spring suitably secured at its opposite ends to the poise and the block, substantially as described.

2. In a weighing-machine, a housing, a weigh-beam pivoted thereto, a hopper journaled on the weigh-beam, a poise on the weigh-beam to assist in counterbalancing the weight of the hopper, a stationary beam secured to the housing, a block adjustably mounted thereon, a spring suitably secured at its opposite ends to the block and the poise, another poise on the weigh-beam to assist in determining the load in the hopper, another block adjustably mounted upon the stationary beam, and a spring suitably secured at its opposite ends to said poise and the block, substantially as described.

3. In a weighing-machine, a housing, a weigh-beam pivoted thereto provided with inner forked terminals, a poise mounted upon the weigh-beam, a hopper journaled in said terminals, a stationary beam secured to the housing, a block adjustably mounted thereon, and a spring secured at its opposite ends to the poise and the block, substantially as described.

4. In a weighing-machine, a housing, a weigh-beam pivoted thereto provided with inner forked terminals, a poise mounted upon the weigh-beam, a hopper, trunnions secured to the opposite sides thereof and journaled in the forked terminals, notched disks secured to the outer ends of the trunnions, a stationary beam secured to the housing, a block adjustably mounted thereon, and springs secured at their opposite ends to the poise and the block, substantially as described.

5. In a weighing-machine, a suitable housing, a valve-controlled inlet-spout secured thereto, outlet-spouts leading from the housing, a weigh-beam pivoted to the housing, a hopper journaled on the inner terminals of the weigh-beam and adapted to control the inlet-valve, a stationary beam secured to the housing, a poise on the weigh-beam, a block adjustably mounted upon the stationary beam, and a spring secured at its opposite ends to the poise and the block, substantially as described.

6. In a weighing-machine, a suitable housing, a weigh-beam pivoted therein, a hopper journaled on the weigh-beam, a poise adjustably located on the weigh-beam to assist in determining the load in the hopper, a stationary beam secured to the housing near the weigh-beam, a block adjustably located thereon, and springs secured at their opposite ends to the block and the poise, substantially as described.

7. In a weighing-machine, a suitable housing, swiveled spouts leading therefrom, a valve pivoted at the junction of the spouts and provided with an outwardly-projecting stem having a rectangular outer end, and a counterbalance-weight slidably secured upon said rectangular end, for the purpose set forth and described.

8. In a weighing-machine, a weigh-beam, a poise adjustably mounted thereon, a stationary beam, a block adjustably mounted thereon, and a resilient connection interposed between the poise and the block, substantially as described.

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

MADISON L. SMAIL.

Witnesses:

THOMAS M. RILEY,
WINFIELD S. PERRIN.