

H. RICHARDSON.

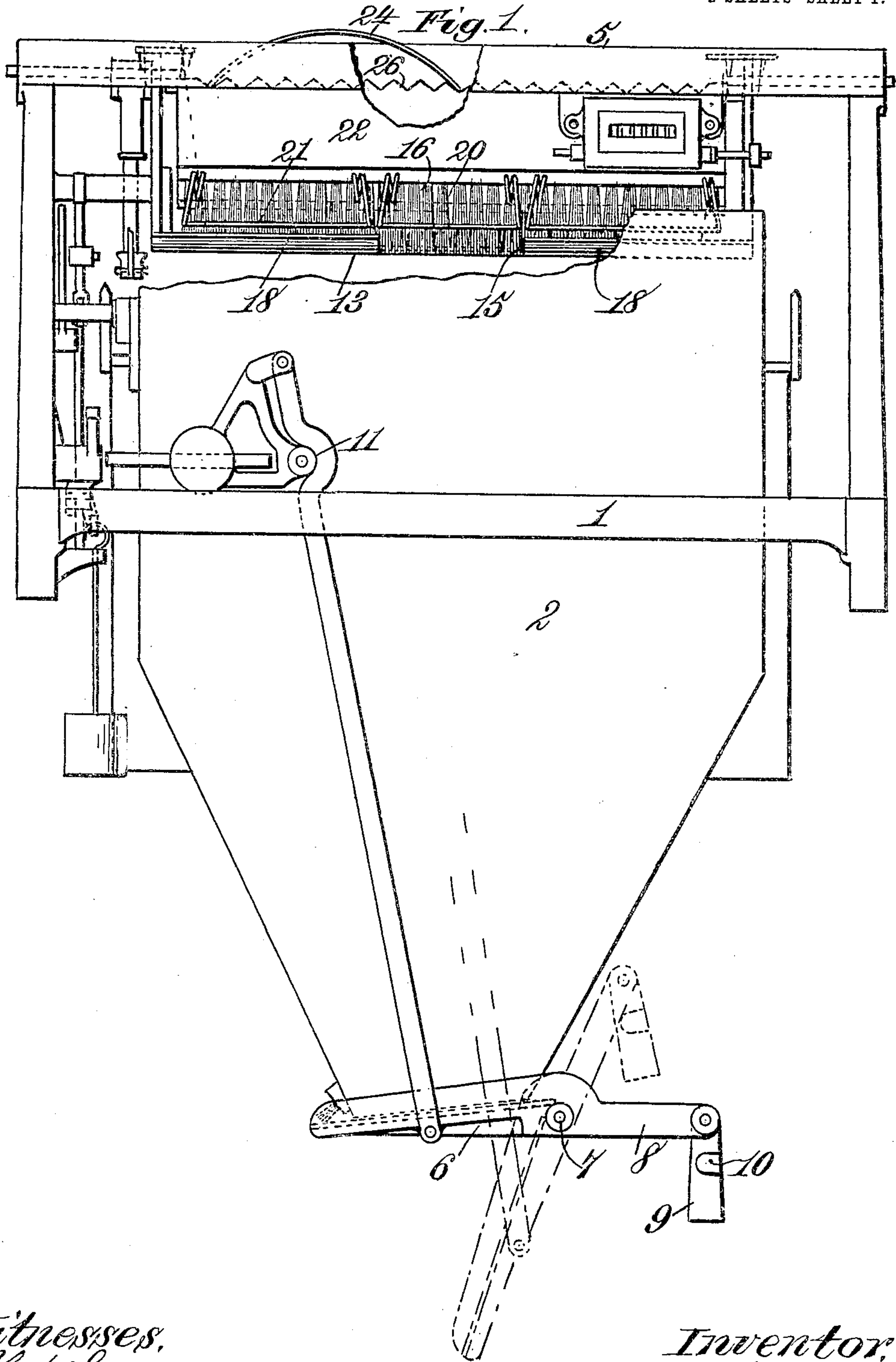
WEIGHING MACHINE.

APPLICATION FILED AUG. 19, 1909.

962,919.

Patented June 28, 1910.

2 SHEETS—SHEET 1.



Witnesses,
Robert Emmett,
J. B. Kender

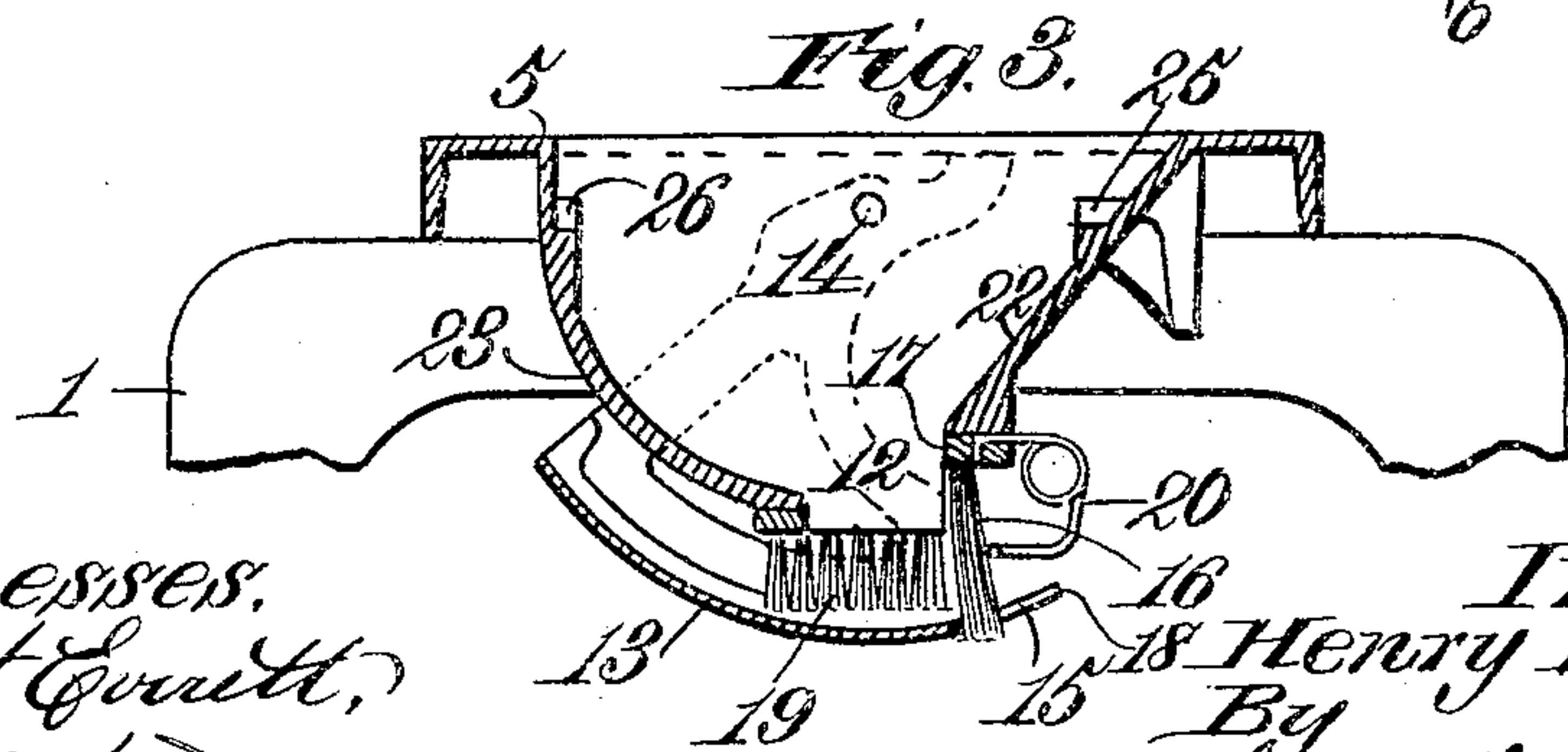
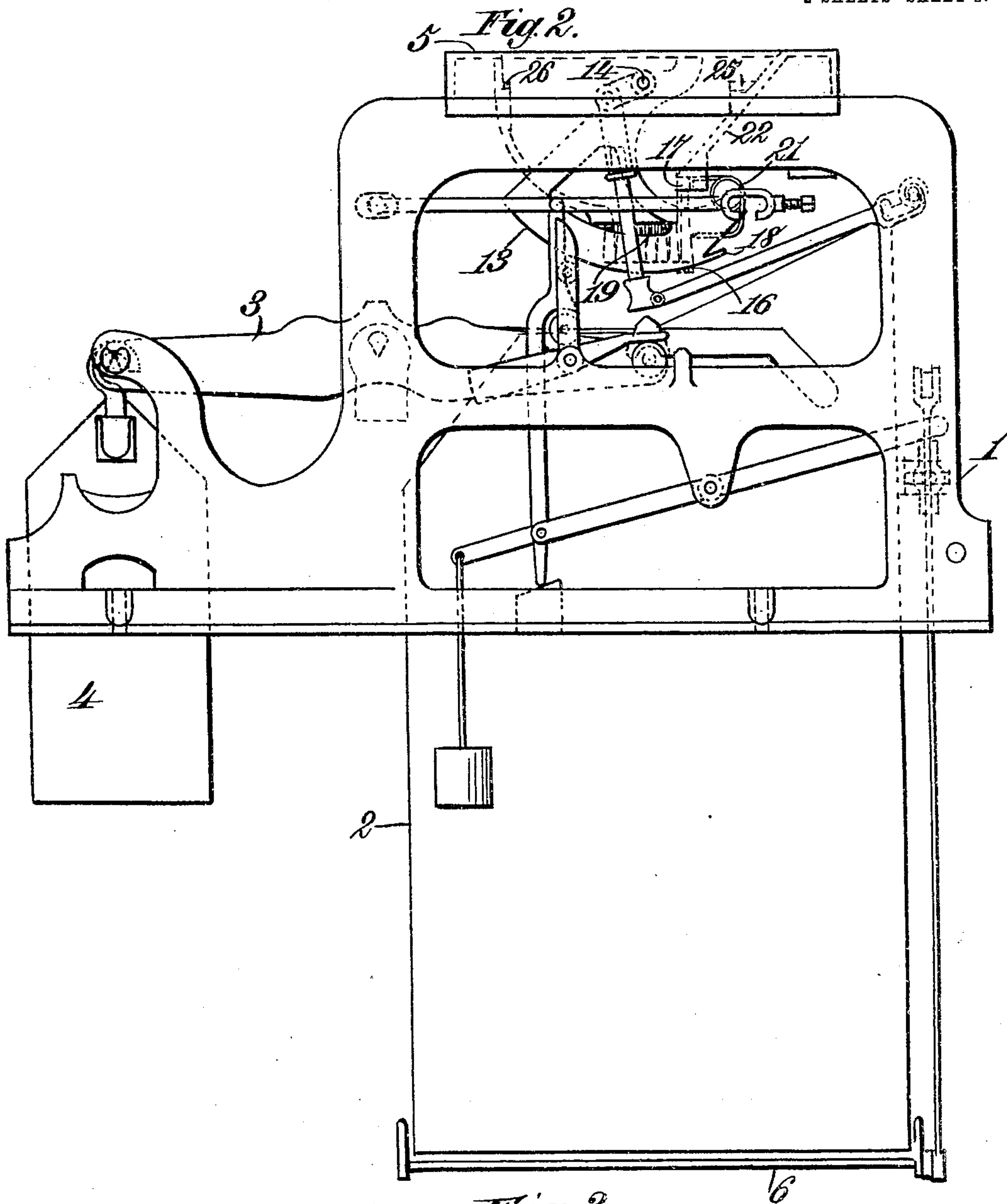
Inventor,
Henry Richardson,
By
James L. Norris
Att'y.

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WEIGHING MACHINE.
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2 SHEETS—SHEET 2.



Witnesses.
Robert Everett,
[Signature]

Inventor:
Henry Richardson,
By *[Signature]* James L. Norris
Atty.

UNITED STATES PATENT OFFICE.

HENRY RICHARDSON, OF NEW YORK, N. Y.

WEIGHING-MACHINE.

962,919.

Specification of Letters Patent. Patented June 28, 1910.

Application filed August 19, 1909. Serial No. 513,702.

To all whom it may concern:

Be it known that I, HENRY RICHARDSON, a subject of the King of Great Britain, residing at New York city, New York, have
5 invented certain new and useful Improvements in Weighing-Machines, of which the following is a specification.

My present invention relates to improvements in weighing machines and more particularly to the class adapted for use in handling granular materials, and it has for its object primarily to provide an improved feed chute through which the material flows to the scale controlled cut-off gate, the chute being of
15 such a shape and construction that the material is caused to flow evenly and uniformly to the cut-off gate and at the same time the latter is relieved of any undue pressure which might tend to interfere with its opening or closing movements.

Another object of the invention is to provide a weighing machine of this class whereby grain and similar materials may be handled without liability of foreign substances
25 contained in the grain becoming jammed between the cut-off gate and the outlet of the chute during the closing of the gate, the relatively large space being provided in the present instance between the cut-off gate and
30 the chute, and the flow of material is interrupted upon the closing of the gate by a brush which is yieldable so as to provide for any foreign matter which would otherwise prevent closing of the gate, and the relatively long bristles of the brush are reinforced whereby the brush will be sufficiently
35 stiff to withstand the pressure of the material acting thereon.

Further objects of the invention are to
40 provide a baffle plate and an improved mounting therefor whereby the baffle plate may be readily placed in different positions within the feed chute so as to properly control the flow of material to the gate and to
45 provide an improved counterweight for the discharge door of the weigh hopper, the counterweight being so constructed that it will have an increased leverage tending to close the door when the latter reaches or
50 approaches a vertical or fully opened position.

To this and other ends the invention consists in certain improvements and combinations and arrangements of parts, all as will

hereinafter be more fully described, the novel features being pointed out more particularly in the claims at the end of the specification.

In the accompanying drawings: Figure 1 represents a front elevation of a weighing machine constructed in accordance with the present invention. Fig. 2 is a side elevation of the machine as shown in Fig. 1, and Fig. 3 is a detail sectional view of the feed chute, the cut-off gate and the brush for interrupting the flow of the material after the gate
65 has closed.

Similar parts are represented by the same reference characters in the several views.

In the accompanying drawings, I have
70 shown certain specific embodiments of the present invention and the invention is shown and will be hereinafter described generally as applied to weighing machines of the type covered by certain of my prior patents of
75 which Letters Patent No. 760,485 granted to me on May 24, 1904 may be taken as an example. It will be understood, however, that the invention is not limited in this application to weighing machines of this specific type and it will also be understood that the specific constructions shown in the drawings are given as examples, as certain changes and modifications may be made in applying the invention to the best advantage
85 according to the circumstances of each particular case.

In the present instance the weighing machine comprises generally a main frame 1, a weigh hopper 2 which is supported by a
90 weigh beam 3, the latter being balanced by a counterpoise 4, and above the weigh hopper is mounted a feed chute 5 which may be connected to receive the grain or other material and discharge the same into the weigh
95 hopper wherein it is weighed in predetermined charges and dumped into appropriate receptacles. The bottom of the weigh hopper is provided with a door 6 which is preferably pivoted to the hopper at one side of
100 the opening, as at 7, and this door has an arm 8 which is prolonged beyond the pivot 7 and carries a counterweight 9, the counterweight being pivoted to the extended arm of the door. In the present instance, this door,
105 when in approximately a horizontal position, closes the bottom of the weigh hopper in which position the counterweight 9 will

hang in a vertical position. The counterweight, however, has a lug, as 10, thereon which is arranged in the plane of the arm 8, and as the door assumes a nearly vertical position in opening, this lug on the counterweight will engage the rearwardly prolonged arm of the door and the counterweight will be thereby tilted, the effect being that the leverage of the counterweight upon the door is increased so that a quick closing of the door will be effected, the necessity of using a relatively heavy counterweight being thereby avoided.

The door is opened or released, as usual, after the weigh hopper has received the full charge of material and has settled, a toggle lock 11 being shown in the present instance similar to that employed for instance in Letters Patent, No. 760485 granted to me May 24, 1904, this toggle being tripped or unlocked by a part of the weighing mechanism.

In the present embodiment of the invention I have shown a feed chute which is of a shape that adapts it particularly for use in the handling of grain and other granular material whereby trash and other foreign materials contained in the grain may pass through the weighing machine without obstructing the feed controlling or cut-off gate. In the construction shown, the feed chute 5 has an outlet 12 which is controlled by a segmental cut-off gate 13, the latter being mounted to swing about an axis 14, and the forward edge of the gate is provided with a recessed portion 15 which, when the gate is in a nearly closed position, forms a dribble feed. In order to avoid the catching of the trash between the edge of the gate and the bottom of the feed chute, a relatively large space is provided between them, and the flow of material is controlled and cut off by the gate in conjunction with a brush which extends between the hopper and feed gate and closes the space when the cut-off gate is in closed position. In the present instance a brush 16 is shown having relatively long bristles which preferably project slightly below the bottom of the feed gate and these bristles are secured to a strip 17, which latter is fastened to the forward lower edge of the feed chute. When the feed gate is in opened position, the brush does not obstruct the flow of material from the chute into the weigh hopper. However, as the gate swings toward closed position, the lips 18 which project beyond the central recessed portion will first engage the brush and thereby reduce the feed from a full flow to a dribble feed, the material flowing at this time into the weigh hopper only through the space left between the notched portion of the gate and the middle portion of the brush. A further movement of the gate toward closed position will finally close the dribble feed.

In order to avoid leakage of the material at the sides of the feed gate, I have shown a supplemental brush 19 which extends at each side of the outlet 12 in the feed hopper. Owing to the length of the bristles of the brush 15, it is desirable or necessary to reinforce the brush so that it may withstand the pressure of the material acting thereon when the feed gate is closed, although it is capable of yielding so as to accommodate any trash or other foreign substances that might be contained in the grain or material and would otherwise become jammed between the feed gate and the chute. In the present instance I have shown relatively simple and efficient reinforcing means which acts independently upon the middle portion of the brush which controls the dribble feed and the end portions of the brush which control the full flow of the feed. The reinforcing means in the present instance consists of resilient wire of appropriate strength, the ends of which are preferably fastened to the strip 17 while its middle portion is substantially straight and engages that portion of the brush opposite to the side on which the material acts, the attaching arms of each reinforcing device being preferably formed with one or more convolutions or bends so as to increase the resilience and range of movement of the brush. In the instance shown I have provided a central reinforcing device 20 and a pair of independently operative reinforcing devices 21 which act upon those portions of the brush at opposite sides of the center. In the present instance I have shown also a feed hopper of an improved form whereby an even or uniform flow of the material through the hopper and through the chute and through the feed gate is insured. For this purpose the forward wall 22 of the chute is straight and inclined directly toward the outlet 12, while the rear wall 23 is curved so that its lower portion approaches the horizontal as it reaches the outlet. By curving the rear wall of the feed chute in this manner it is capable of supporting and retarding the speed of movement of the grain or material before it reaches the feed gate whereby undue pressure on the brush at the forward edge of the gate is avoided. In order to further control the flow of the material through the feed gate, I also provide a baffle 24 which is preferably in the form of a bowed plate and I also provide means for supporting the baffle at different positions with respect to the width of the feed chute whereby the pressure of the material may be evenly distributed throughout the length of the brush. In the present instance I have shown the forward and rear walls of the chute as provided with oppositely arranged and parallel racks 25 and 26, these racks having notches or recesses of angular form whereby the

ends of the bowed baffle plate may rest in any two pairs of recesses. By adjusting the baffle along the racks, the flow of the material into the feed chute may be readily controlled.

I claim as my invention:

1. In a weighing machine, the combination of a weigh hopper and a feed chute having an inclined front wall and a curved rear wall located below the level of and directed forwardly toward the lower edge of said front wall.

2. In a weighing machine of the class described, the combination of a weigh hopper and feed chute having a straight front wall inclined toward the chute outlet and a curved rear wall directed forwardly and located below the level of the lower edge of said front wall, and a cut-off gate mounted to move forwardly in closing.

3. In a weighing machine, the combination of a weigh hopper, a feed chute having an inclined front wall and a curved rear wall, a cut-off gate cooperative with the chute, and a yieldable brush rigidly secured to the forward edge of the chute outlet and cooperative with the gate to control and cut off the flow of material from the chute and into the weigh hopper.

4. In a weighing machine, the combination of a weigh hopper, a feed chute, a gate cooperative with the chute for controlling and cutting off the flow of material from the chute into the weigh hopper, a brush interposed between the feed chute and gate and operative to control the flow of material from the chute, and means for reinforcing the said brush.

5. In a weighing machine, the combination of a weigh hopper, a feed chute, a gate for controlling and cutting off the flow of material therefrom, a brush interposed between the chute and gate and means for reinforcing said brush to sustain the pressure of the material acting thereon, different portions of said brush being independently yieldable.

6. In a weighing machine, the combination of a weigh hopper, a feed chute, a gate movable to control and cut off the flow of material therefrom, a brush interposed between the forward edges of the chute and gate, and a plurality of independently oper-

ative reinforcing devices for yieldably retaining the brush in operative position.

7. In a weighing machine, a feed chute provided with a controlling and cut-off gate, a baffle for controlling the flow of material into the chute, and means for supporting the baffle in different positions within the chute.

8. In a weighing machine, a feed chute provided with a controlling and cut-off gate, a pair of recessed racks arranged in parallel relation within the chute, and a baffle arranged to be supported by said racks in different position with respect to the chute.

9. In a weighing machine, a feed chute provided with a controlling and cut-off gate, a pair of parallel recessed racks arranged between the front and rear walls of the chute, and a bowed baffle plate having its ends adapted to interchangeably engage different recesses in said racks whereby the baffle plate may be supported in different positions with reference to the chute.

10. In a weighing machine, the combination of a weigh hopper, means for supplying material thereto, a door for controlling the discharge of the material from said hopper, a counterweight pivotally connected to said door, and means for increasing the counterbalancing effect of the counterweight with respect to the door when the door reaches a predetermined position in its opening movement.

11. In a weighing machine, the combination of a weigh hopper having an outlet, a pivoted door for controlling the discharge of material through said outlet and provided with an arm, and a counterweight pivotally suspended from said arm and having a lug arranged to cooperate with said arm to tilt the counterweight and thereby increase its counterbalancing effect when the door reaches a predetermined position in its opening movement.

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

HENRY RICHARDSON.

Witnesses:

S. G. MURRAY,

J. P. CLIFFORD.