No. 844,188. PATENTED FEB. 12, 1907.

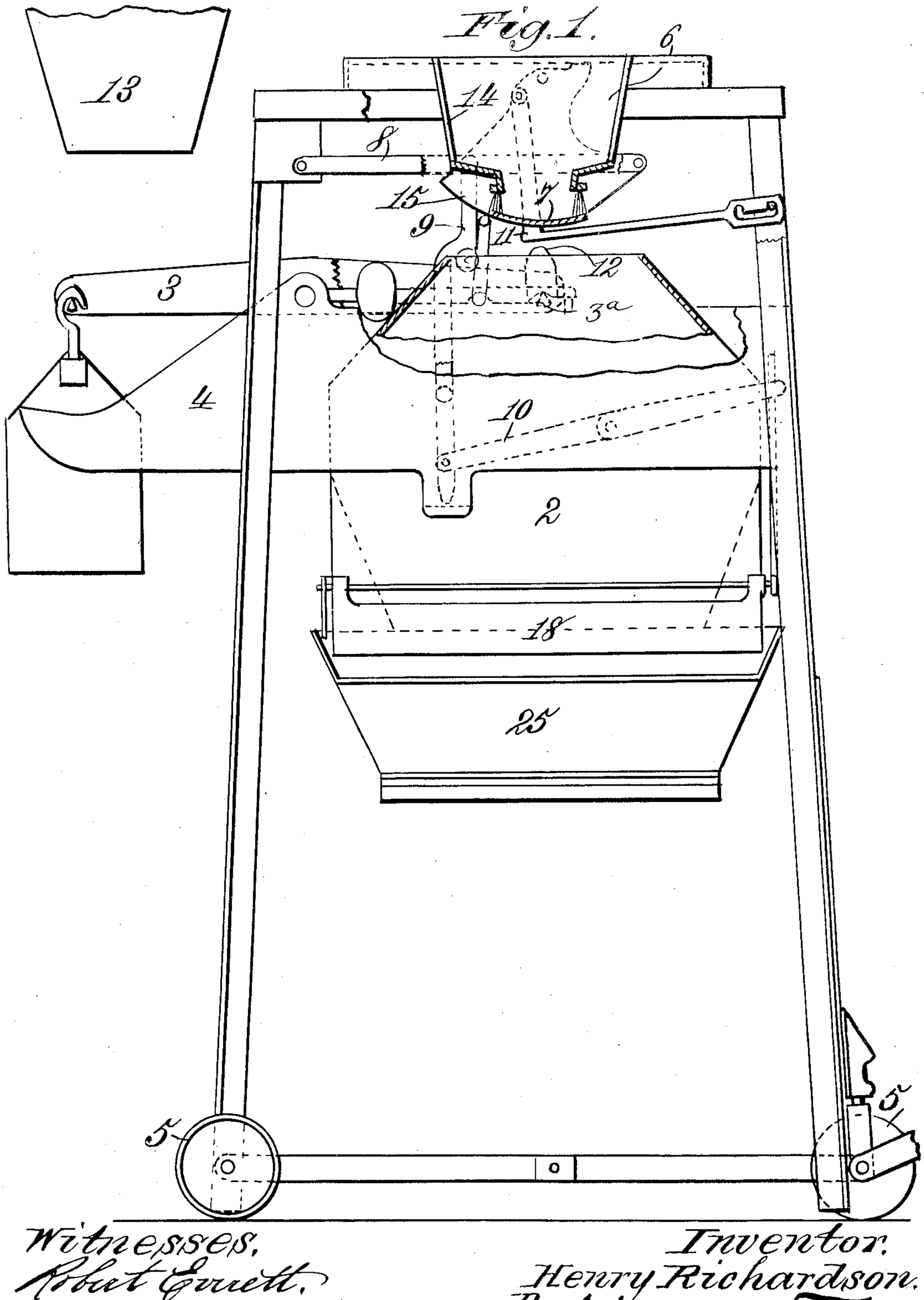
H. RICHARDSON.

AUTOMATIC WEIGHING MACHINE.

APPLICATION FILED NOV. 23, 1905.

3 SHEETS—SHEET 1.

Fig. 1.

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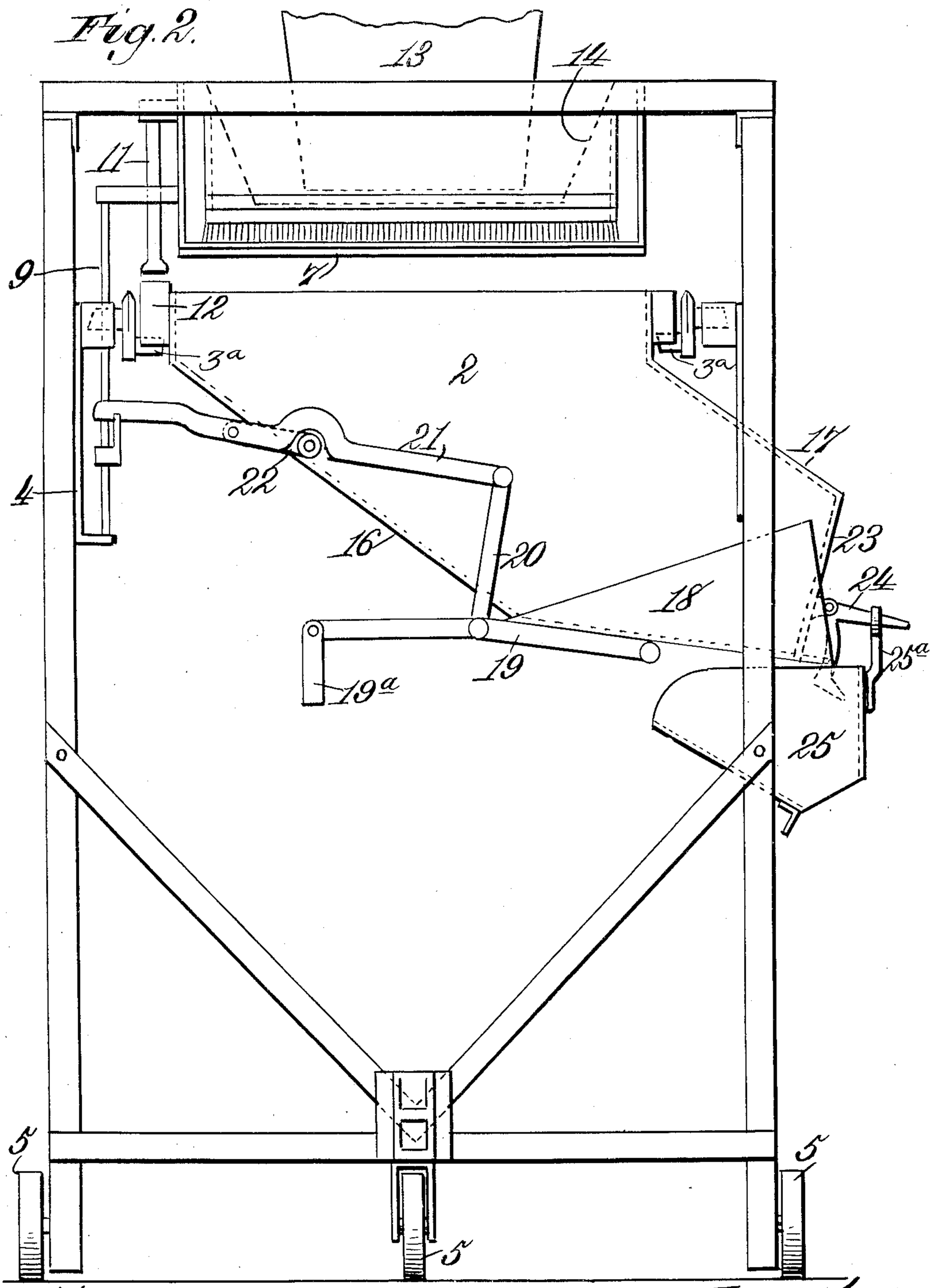
3 SHEETS—SHEET 2.

Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 3.

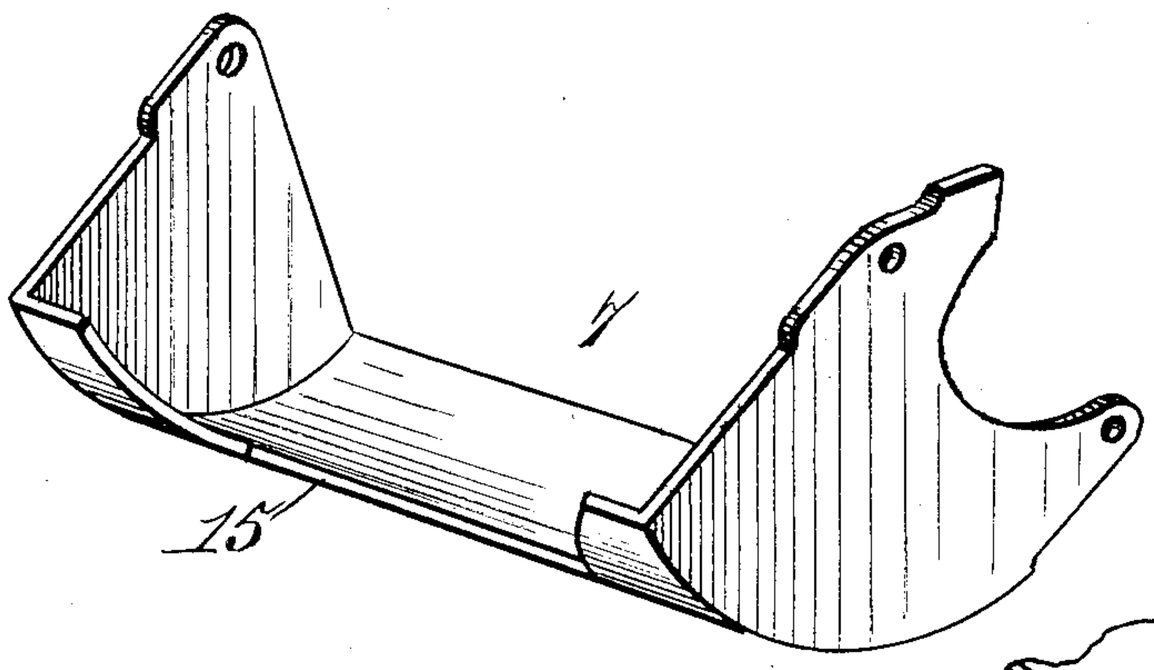



Fig. 6.

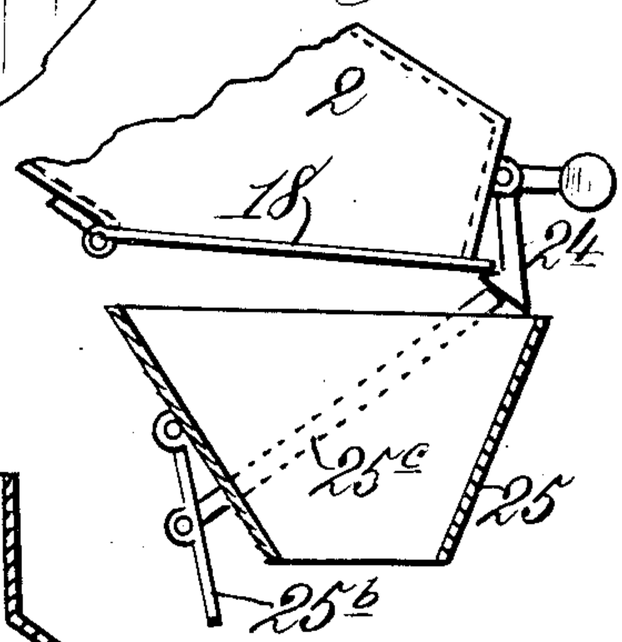



Fig. 4.

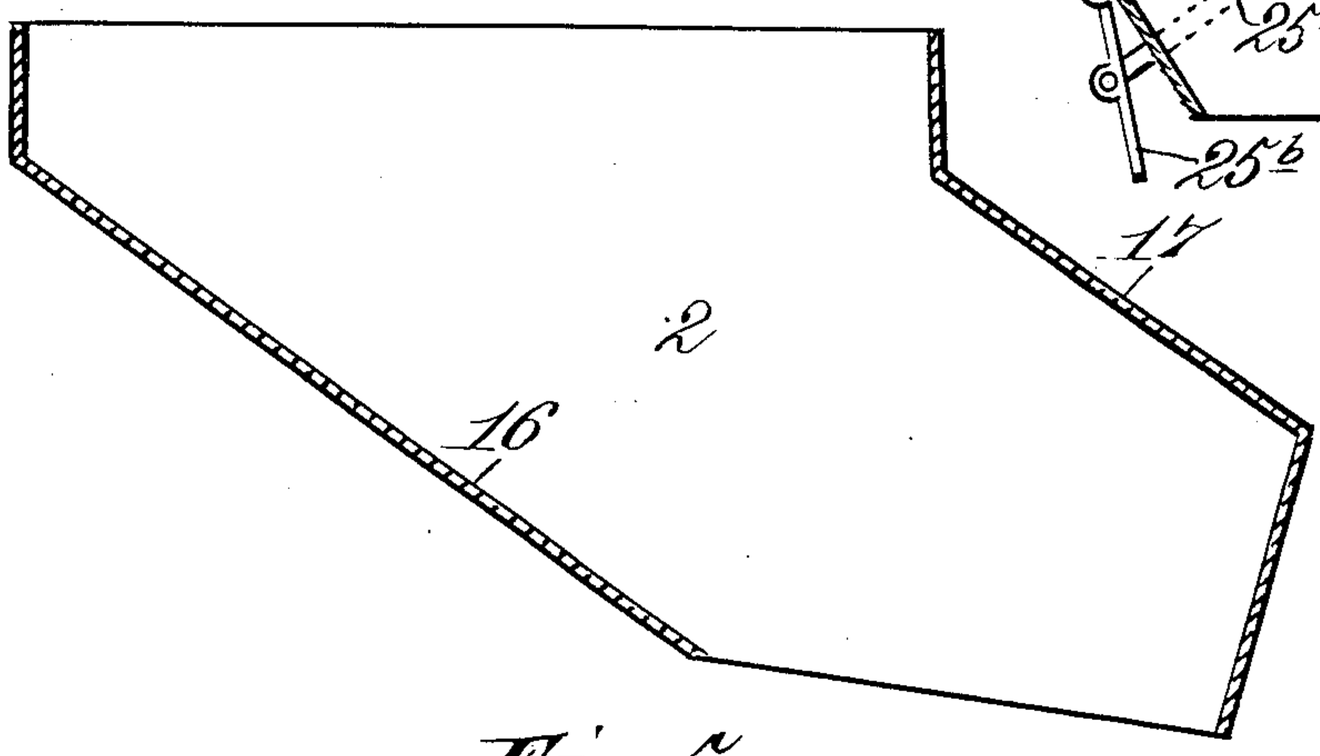
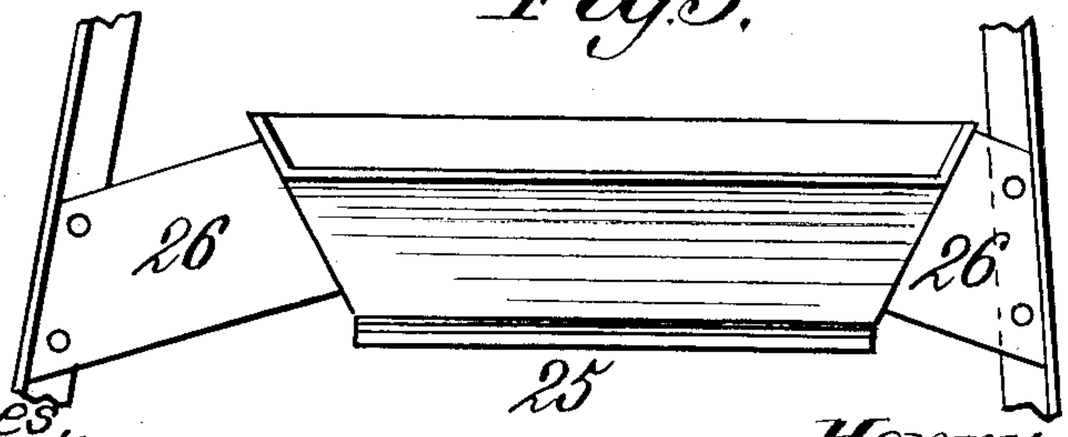



Fig. 5.

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# UNITED STATES PATENT OFFICE.

HENRY RICHARDSON, OF NEW YORK, N. Y.

## AUTOMATIC WEIGHING-MACHINE.

No. 844,188. Specification of Letters Patent. Patented Feb. 12, 1907.

Application filed November 23, 1905. Serial No. 288,740.

*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, in the county of New York and State of New York, have invented new and useful Improvements in Automatic Weighing-Machines, of which the following is a specification.

This invention relates to automatic weighing-machines, the object of the invention being to provide an effective apparatus of this character which is less in height than machines of corresponding type, by virtue of which I can successfully adapt the improved machine to conditions which are not possible with certain automatic weighing-machines with which I am familiar, and this I can accomplish without affecting the accuracy of the machine or its capacity.

In the drawings accompanying and forming a part of this specification I show certain simple forms of embodiment of invention which to enable those skilled in the art to practice said invention I will set forth in detail in the following description, while the novelty of the invention will be included in the claims succeeding said description.

In said drawings, Figure 1 is an elevation of a weighing-machine including my invention. Fig. 2 is a view of the machine as seen from right in Fig. 1. Fig. 3 is a perspective view of the supply-controlling valve. Fig. 4 is a detail view of the weighing bucket or hopper. Fig. 5 is a detail view of a modified construction. Fig. 6 is a sectional detail hereinafter more particularly described.

Like characters refer to like parts throughout the several views.

The present machine is of the same general type as that disclosed in Letters Patent No. 760,485, granted to me May 24, 1904. From what has been stated it is believed that it will be understood that I provide a machine which can be introduced and successfully operated in positions where the height at my disposal is not sufficient to permit of the operation of other kinds of weighing-scales. I effect a saving in height in the present case in two ways—one by the construction of a bucket or weighing-hopper of novel kind and the other by stream-supplying means of a novel kind, such stream-supplying means consisting, preferably, of a hopper and valve mechanism arranged to operate under the hopper whether the valve mechanism consists of one or more than one valve. I may use the two features in conjunction with each other or separately, and I will now set forth in detail the apparatus involving the same.

The weighing-machine involving the element-weighing mechanism is represented as consisting of a bucket or weighing-hopper, as 2, and a counterweighted scale-beam, as 3. The scale-beam 3 is fulcrumed upon the framework 4 and carries at its inner end the weighing bucket or hopper 2. I do not deem it necessary to go into detail of the mounting of the beam on the framework and the bucket on the beam, for these points may be as customary and as indicated, for example, in the Letters Patent to which I have heretofore alluded. The framework is shown as portable, for which purpose and to facilitate its movement from place to place it may be mounted upon wheels, as 5. The machine, like that of the Letters Patent, is adapted especially to bagging-work, it being adapted to weigh automatically predetermined charges, which are delivered into bags or other suitable receptacles, as will hereinafter appear. It is not essential, however, that the machine should be applied to such particular use.

Mounted upon the framework 4 of the machine at the top thereof is a supply-hopper, as 6, under which is arranged for swinging motion a valve, as 7. The valve 7 is shown as being of the pan type and is adapted when closed to occupy substantially a horizontal position under the outlet of the hopper 6. The valve 7 may be hung exactly as has been described in the previously-mentioned Letters Patent. To it and to the framework of the machine are connected companion links 8, the latter being jointed to each other and presenting a toggle which when straightened is adapted to lock the valve shut. Depending from the toggle is a rod 9, to which is jointed one end of a lever, as 10, fulcrumed on the framework 4. The opposite end of said lever 10 is adapted to engage a toggle connected with the discharge-valve or closer on the bucket 2 when the valve 7 is closed, so as to bring about the release of said discharge-valve or closer, as will hereinafter more particularly appear. Connected eccentrically with the valve 7 is a pendant 11, cooperative with a projection, as 12, on the bucket to control the closing of the valve 7 and to effect subsequently the opening of said valve substantially in the manner shown in the Letters Patent referred to. As to

these features I do not deem it necessary to go into detail, for they form no part of the present invention. As will be understood, they may be as disclosed in my Letters Patent aforesaid.

The material to be weighed is received from a stationary chute, as 13, under which the machine is bodily moved to effect the delivery of material from the chute to the hopper 6, from which it runs into the bucket or weighing-hopper 2, provided the valve 7 be open. The hopper 6 and the valve 7 are of such construction that I can move the weighing-machine bodily in such position as to have the chute 13 received within the hopper. This I accomplish by removing the rear wall of the hopper 6 and a portion of the rear side of the valve 7, the opening in the hopper being designated by 14 and the opening in the valve being designated by 15. The extent of these openings should be sufficient for the passage therethrough of the chute. From this it will be understood that instead, as heretofore, of having the chute located above the hopper I project the chute into the hopper, and in this way effect a saving in height of the machine. It should be understood, of course, that the rear of the framework of the machine is open for the passage of the chute. When it is desired to weigh material, the machine is rolled up to the chute. The movement is continued until the chute enters the hopper, which it can do by way of the registering openings 14 and 15, it being understood that when the valve is open the two openings are in register. When the chute 13 is centered in the hopper 6, this will indicate that the parts are in proper position for weighing.

The bucket or weighing-hopper 2 in the present case is mounted solely for rising-and-falling motion. I use this language to distinguish the bucket from that type which tilts or oscillates when effecting the discharge of a load. The bucket has opposite side walls 16 and 17, shown as sloping, for by sloping these walls I get a bucket of suitable capacity. The sloping of the walls may be secured in any desirable manner. In Fig. 4 the two walls are shown as being in parallelism. The upper open side of the bucket or weighing-hopper 2 is located under the delivery end of the spout or hopper 6, so that when the valve 7 is open a stream of material issuing from the hopper will enter the bucket and will initially fall upon the inclined or sloping wall 16, which distributes it at first in a uniform manner throughout the lower portion of the bucket, the uniform distribution of the downwardly-flowing mass being continued by the said inclined or sloping wall 16 while the load is being made up and until the load is completed, at which time, as will be understood, the valve 7 is promptly shut. The discharge-valve or closer for the bucket is designated by 18, and it is connected for swinging movement with the counterweighted rocking member 39, mounted upon the lower outside of the wall 16, and the weight 19ª serves to shut said discharge-valve or closer 18. From the rocking member 19 there extends upward the crank portion 20, to the upper end of which is connected one end of the rod or link 21. Connected with said rod or link between its ends is a crank 22, pivotally mounted upon the bucket and presenting with the link a locking-toggle. It will be assumed that the valve 7 has been shut on the completion of a load in the weighing-bucket or hopper 2 and that the toggle composed of the links 8 has been straightened. When this results, the rod 9 is thrust downward to effect the operation of the lever 10. When the lever 10 is operated by the downwardly-thrust rod 9, it strikes against the free or outer end of the link or rod 21, constituting, with the crank 22, a toggle, so as to break the latter and release the discharge-valve or closer 18, so that should the latter be not latched it can be opened by the weight of material resting upon it. The closer or discharge-valve when shut occupies an angular position of small pitch and when in such relation fits against the lower edge of the inclined wall 23, extending downward and inward from the outer end of the sloping wall 17.

I have shown as mounted upon the wall 23 a latch 24, of angular form and pivoted in place at its angle, the latch being adapted to automatically by the weight of its lower or shouldered working arm to engage under the closer or discharge-valve 18 when the latter is shut.

I have shown as carried upon the framing of the machine a pivoted sacking-spout, as 25, to which a bag can be connected or under which a bag can be placed to receive the contents from the bucket or hopper 2. The construction is such that when the bucket or weighing-hopper 2 is down, with a load therein, and when the sacking-spout 25 is swung forward it can engage the free arm or branch of the latch 24 to trip the latter and release the discharge-valve 18, whereby the mass of material in the bucket 2 can press said closer or discharge-valve open to permit the contents of the bucket to pass therefrom and into and through the sacking-spout and into a bag or equivalent receptacle under said spout. Instead of pivotally mounting the sacking-spout 25 I may, as shown in Fig. 5, carry it upon a spring-plate, as 26, and by the resiliency of the plate can swing the spout carried thereon in such way as to cause it to trip the latch 24.

For the purpose of tripping the latch 24 the spout 25 may carry a trip device, as 25ª. In Fig. 6 I show a modified form of tripping mechanism. In this figure the sacking-spout 25 carries a pivotally-mounted mem-

ber 25$^b$, to which is connected a trip device, as 25$^c$, coöperative directly with the latch 24. Normally the pivoted member 25$^b$ stands substantially in the position shown in said Fig. 6. When a sack is placed about the spout 25, the pivoted member 25$^b$ is drawn inward, thereby thrusting the tripping member or rod 25$^c$ against the latch 24 to disengage the latter from the discharge-controlling valve or closure 18. I have described the supply-chute as having an opening in or its rear wall as cut away or removed. In the drawings I have shown both the front and rear walls of the supply-chute as open or cut away. The bucket 2 in the present case depends from the scale-beam 3 and, as shown in Figs. 1 and 2, is supported only by two knife-edges on said scale-beam, such knife-edges being denoted by 3$^a$. The discharge-valve or closer 18 for the bucket has a swinging motion about an axis at right angles to the axis of motion of the scale-beam. In other words, by this construction the bucket is caused to discharge its load in a direction at right angles to the direction of movement of the beam, whereby I can secure the advantages hereinbefore pointed out.

What I claim is—

1. In a weighing-machine, the combination of a scale-beam, a weighing-bucket mounted upon the scale-beam solely for rising-and-falling motion and having opposite sloping walls, one of which initially receives a stream of material directed into the bucket, the other wall having at its lower end a depending wall separated from the companion sloping wall to provide an outlet for the discharge of material from the bucket, and a valve to close said outlet and to fit when closed substantially against said depending wall.

2. The combination of weighing mechanism including a bucket provided with a closer, and a latch for holding the closer shut, stream-supplying means for the bucket, and a sacking-spout under the bucket having means to trip the latch.

3. In a weighing-machine, the combination with a beam, a bucket supported by said beam, provided with a sloping wall and with an outlet for the delivery of a load of material from said bucket, an oscillatory valve on the bucket for controlling said outlet, the axis of motion of said valve being at right angles to the axis of motion of the beam, a latch to hold said valve shut, and a sacking-spout under the bucket, having means to trip said latch.

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

HENRY RICHARDSON.

Witnesses.
F. H. BAYLEY,
Miss J. A. ROBERTS.