

(No Model.)

E. W. SPEAR.
WEIGHING MACHINE.

No. 479,852.

Patented Aug. 2, 1892.

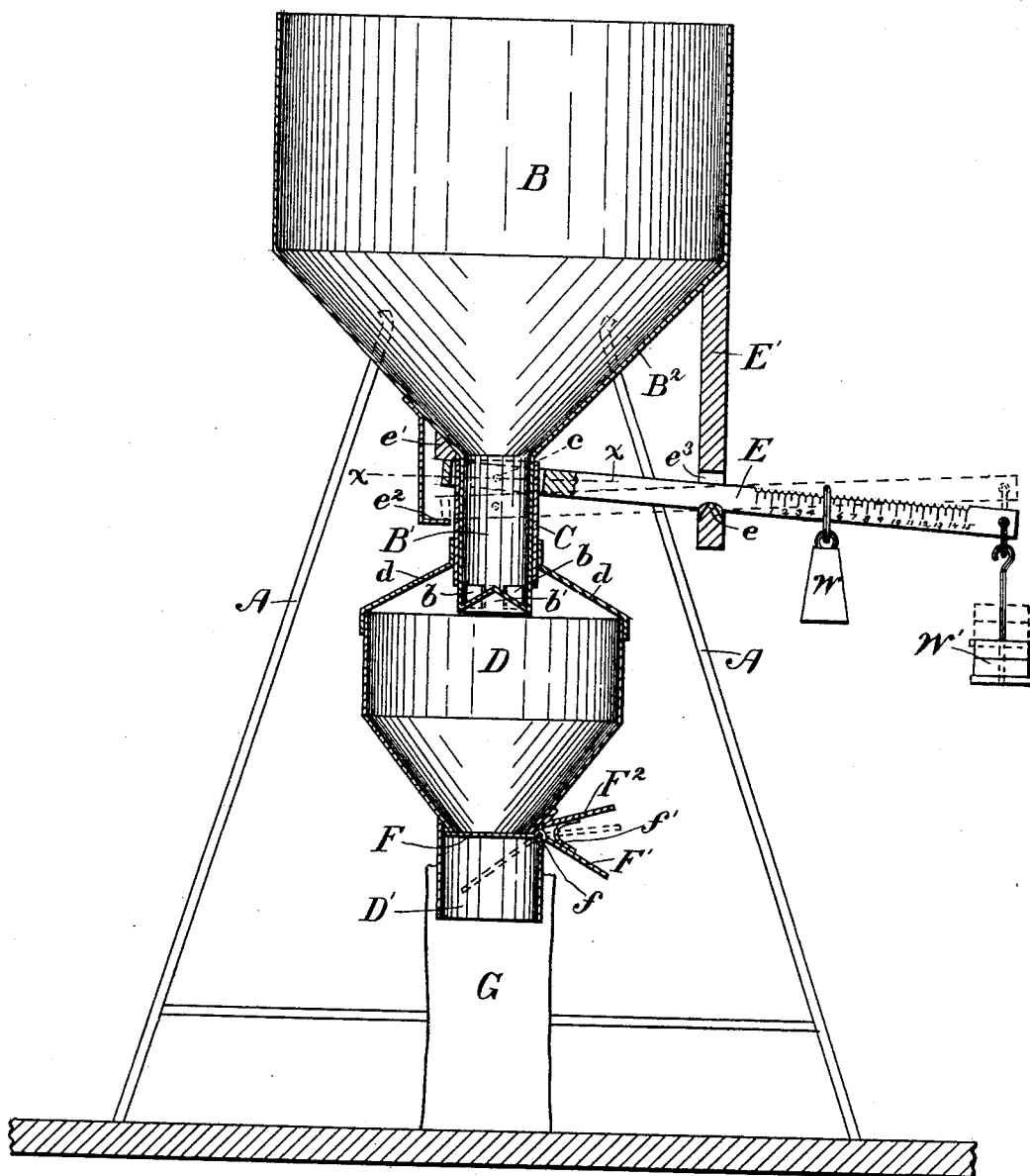


Fig. 1.

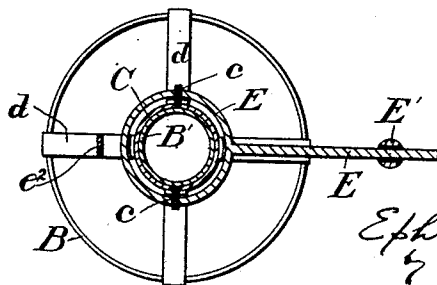


Fig. 2.

Witnesses
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UNITED STATES PATENT OFFICE.

EPHRIAM W. SPEAR, OF BOSTON, MASSACHUSETTS.

WEIGHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 479,852, dated August 2, 1892.

Application filed December 7, 1891. Serial No. 414,213. (No model.)

To all whom it may concern:

Be it known that I, EPHRIAM W. SPEAR, a citizen of the United States, residing at Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Weighing-Machines, of which the following is a full specification.

My invention consists of an improved machine for automatically weighing a given quantity of sugar, grain, or other material, my object being to enable the operator to weigh out and do up in parcels the sugar, &c., in much quicker time than would be possible with the ordinary scales. To this end the mass of the material to be drawn on is contained in a suitably-supported supply-receptacle, and from a spout at the bottom it flows out through a number of openings into a second movable receptacle hung below the first from a sleeve movable over said openings, said sleeve and movable receptacle being suitably held up and connected to the supply-receptacle by a weighted scale-beam or by springs, the construction and arrangement being such that when the desired quantity of the material to be weighed has flowed from the supply-receptacle to the movable receptacle beneath it the weight of the movable receptacle with the material therein will cause the movable sleeve with which it is connected to slide down over the openings and cover the same, thereby preventing any further flow of the material.

The details of the construction are as hereinafter described.

Referring to the accompanying drawings, Figure 1 shows in vertical section my improved machine, the section being taken through the center thereof; and Fig. 2 is a horizontal section in the plane of $x x$, Fig. 1.

B is the supply-receptacle, mounted on a light frame, preferably a tripod A A. The lower portion of this receptacle is preferably funnel-shaped, having the conical portion B² and the cylindrical spout B'. This spout is closed at the bottom, but is provided with a number of holes or openings b near the bottom thereof. The bottom of the spout may

be flat, if desired; but I prefer to have it cone-shaped, as at b' .

C is a sleeve, which fits over the cylindrical spout B', being movable thereon and of such a length that when said sleeve is in its uppermost position the bottom of the sleeve will not cover the openings b .

D is a smaller receptacle connected with the sleeve C in any desired manner, as by strips d , and centrally hung beneath the spout B' in such a position that the material flowing out of the openings b is caught in the receptacle D. At the bottom of this second or movable receptacle is a hinged shutter F, operated by a handle F' on the outside of the receptacle, said shutter being pivoted at f .

F² is a stationary stop on the receptacle D, between which stop and the handle F' is interposed the spring f' , in such a manner as to normally hold the shutter in a closed position.

D' is a delivery-spout at the bottom of the movable receptacle D.

E is a scale-beam pivotally connected near one end with the sleeve C, as at $c c$, on either side thereof. (See Fig. 2.) The beam E passes through a slot e^3 in the support E', which is connected with the receptacle E and has the edge or bearing e , upon which the scale-beam is fulcrumed. $e' e^2$ are stops which determine, respectively, the upper and lower limit of motion of the scale-beam. The outer portion of the scale-beam is properly graduated and has one or more weights W W' properly mounted thereon to weigh any desired quantity of material, the operation of the machine being as follows:

The supply-receptacle B contains a large quantity of the material to be weighed out, and the weight W is set at proper position on the beam to weigh the desired quantity—as, for example, five pounds. The movable receptacle D being empty both, the sleeve C and the said receptacle D will be at their highest point with the inner end of the scale-beam resting against the stop e' and the holes b uncovered. The material will flow out of the supply-receptacle B, through the openings b , into the movable receptacle D, and continue

to flow until five pounds have collected in said movable receptacle, when its weight will overbalance the weight or weights on the scale-beam, causing the movable receptacle and
 5 with it the sleeve C to drop till the inner end of the scale-beam rests on the stop e^2 , with the result that the sleeve covers the openings b and cuts off the flow automatically. A bag G is placed under the spout of the receptacle D,
 10 and by opening the shutter F' the contents of the receptacle D are dumped into the bag. The receptacle, being relieved of its load, at once rises and the sleeve C uncovers the openings b again, causing five pounds more of the
 15 material to be weighed out.

It will thus be seen that when it is desired to put up a large number of packages of any material this machine saves much time by reason of the fact that while one package is
 20 being sealed or done up the material is being automatically weighed out with which to fill the next, and soon. When once the given quantity of the material is deposited in the movable receptacle D, the machine will remain at
 25 rest until it is removed therefrom, when it will at once begin work again.

By shifting the weight W the machine may be set to weigh out any desired quantity. By so placing the weight W as to allow the empty
 30 vessel D to overbalance the beam and weight the machine may be kept at rest ready for use at any time.

I do not limit myself to any particular form of shutter at the bottom of the movable receptacle D, as any dumping device may be
 35 employed.

Instead of employing a beam with weights, the movable receptacle D may be connected with the stationary receptacle B by one or
 40 more springs of such stiffness that when a given quantity of the material had flowed into the movable receptacle the spring or springs would be stretched sufficiently to cause the sleeve C to cut off the openings b , the springs
 45 thus acting as an equivalent of the scale-beam with weights. In fact, any yielding connection between the two receptacles may be employed, such that the movable receptacle when empty will be in its uppermost position, but
 50 when filled with a requisite quantity of the material to be weighed will drop, carrying with it the sleeve which closes the outlet-openings.

Any form of outlet to the upper or stationary receptacle may be employed, and instead

of a sleeve I may use a valve of any kind operated by the movable receptacle to open or
 55 close said outlet.

I claim—

1. In an automatic weighing-machine, a stationary receptacle provided with a spout having a suitable outlet, in combination with a movable receptacle having yielding connection with said stationary receptacle and a sleeve connected with said movable receptacle, said sleeve being movable over said spout
 60 to open and close said outlet, substantially as described.

2. In an automatic weighing-machine, a stationary receptacle having a spout closed at the bottom, but provided with openings around its
 70 sides, in combination with a movable receptacle, a sleeve connected thereto and movable over said spout, and a weight-operated scale-beam fulcrumed to a connection of the stationary receptacle and connected to said
 75 sleeve, all arranged and operating substantially as and for the purposes described.

3. In an automatic weighing-machine, a stationary receptacle B, provided with the spout B', closed at the bottom, but having openings
 80 b around the sides thereof, in combination with the sleeve C, movable over said spout, the receptacle D, hung from said sleeve and movable therewith, the weight-operated graduated scale-beam E, fulcrumed at e to a connection of the stationary receptacle and pivoted at c to said sleeve, and stops e' e^2 , limiting the motion of said scale-beam, substantially as described.

4. In an automatic weighing-machine, a stationary receptacle having a spout closed at the bottom, but provided with a series of openings around the sides thereof, in combination with a sleeve movable over said spout, a second receptacle hung from said sleeve and
 95 movable therewith, said movable receptacle being provided with a suitable dumping device at the bottom, and a weight-operated scale-beam fulcrumed to a connection of said stationary receptacle and connected to said
 100 sleeve, substantially as described.

In witness whereof I have hereunto set my hand.

EPHRIAM W. SPEAR.

Witnesses:

WM. B. H. DOWSE,
 ALBERT E. LEACH.