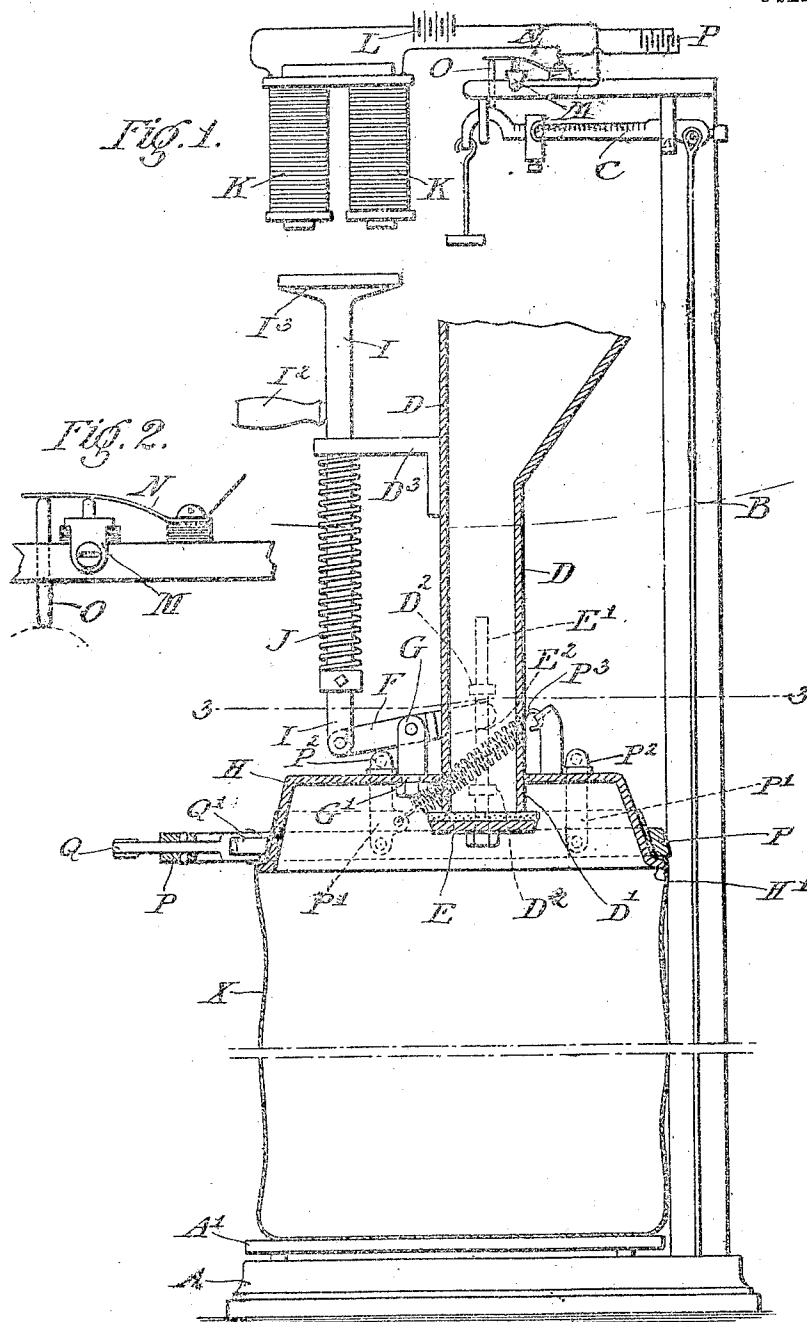


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APPLICATION FILED FEB. 14, 1910.

1,013,380.

Patented Jan. 2, 1912.

2 SHEETS—SHEET 1.



WITNESSES
Stewart
A. Williams

INVENTOR
William R. Dunn
BY
Francis O. Chambers
his ATTORNEY.

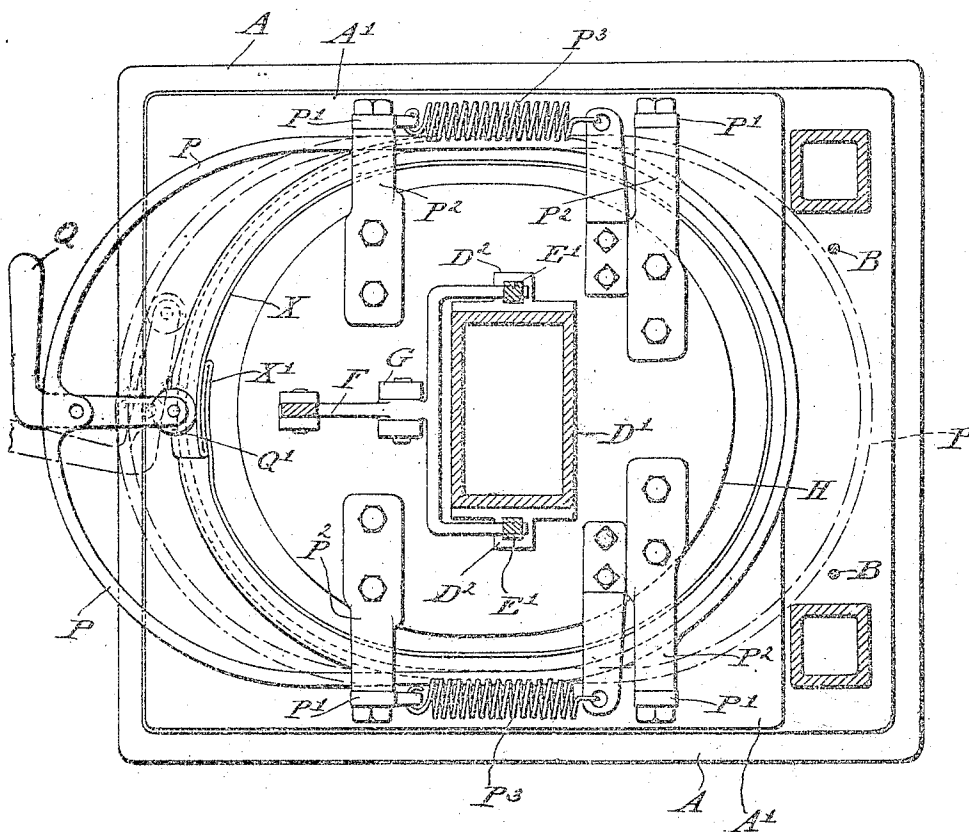
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Fig. 3



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UNITED STATES PATENT OFFICE

WILLIAM R. DUNN, OF EASTON, PENNSYLVANIA.

ELECTRICALLY-CONTROLLED BAG FILLING AND WEIGHING DEVICE.

1,013,380.

Specification of Letters Patent.

Patented Jan. 2, 1912.

Application filed February 14, 1910. Serial No. 543,711.

To all whom it may concern:

Be it known that I, WILLIAM R. DUNN, a citizen of the United States of America, residing in Easton, in the county of Northampton, in the State of Pennsylvania, have invented a certain new and useful Improvement in Electrically-Controlled Bag Filling and Weighing Devices, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

The object of the present invention is to provide an improved device for rapidly filling bags or like receptacles, one after another, each with a definite and predetermined weight of a freely flowing material such as hydraulic cement.

My improved device is simple in construction and reliable in operation under the severe conditions of operation experienced in filling bags with a material like hydraulic cement having a high specific gravity and flowing very freely, and which is put up in bags or packages of substantial size. The invention is not limited to use under such conditions, however, but is well adapted for general use in filling bags or like receptacles with predetermined amounts of readily flowing material.

The various novel features of construction and arrangement which characterizes my present invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, however, and the advantages possessed by it, reference should be had to the accompanying drawings and descriptive matter in which I have illustrated and described one of the forms in which my invention may be embodied.

Of the drawings, Figure 1 is an elevation, partly broken away and in section, of a device especially adapted for filling bags with hydraulic cement or the like material. Fig. 2 is an elevation, on a larger scale than Fig. 1, illustrating certain details of construction, and Fig. 3 is a sectional plan on the line 3-3 of Fig. 1.

In the drawings, A represents the scale on which the material is weighed, A' the platform of the scale, B the scale rod, and C the scale beam. Above the scale platform is located the delivery chute D having a vertical depending nozzle portion D' terminating at a suitable distance above the scale platform

A'. The escape of the material to be packaged from the nozzle D is controlled by a gate or disk like valve E, the double stems E' of which extend through, and are guided by, bearings D² carried externally by the nozzle D'. The valve E is controlled by a lever F bifurcated to straddle the nozzle D' and having the inner end of each fork received in a slot E² in the corresponding stem E'. The lever F is journaled in a yoke G carried by a bracket G' secured to a stationary bag supporting member H which surrounds the lower end of the nozzle D'. To the outer end of the lever F is pivotally connected the lower end of the vertically movable rod I. The latter passes through and is guided by a bracket D³ secured to the chute D. A spring J coiled about the rod I and bearing at its upper end against the bracket D² and at its lower end against a collar I' secured to the rod I, supplements the action of gravity in tending to hold the gate or valve E against the lower end of the nozzle D' to thereby close the latter.

A handle I² serves as a means for readily lifting the rod I to lower the valve E and open the lower end of the chute nozzle D'.

To hold the gate or valve open while a bag or the like is being filled, means are provided which comprises an armature I³ carried by the upper end of the rod I, and an electromagnet K. The latter is supported in a suitable position so that when the rod I and armature I³ are moved into the dotted line position of Fig. 1, the electromagnet when suitably energized will hold the armature and rod up against the force normally pulling them down.

The energization of the electromagnet K is controlled by the scale beam C in any suitable manner. As shown, the circuit connections between the electromagnet and the source of current conventionally indicated as a battery L, includes a switch comprising a stationary platinum point contact M and a spring contact N. A sliding rod O is acted upon by the beam C, when the latter lifts, to move the contact N out of engagement with the contact M thereby opening the energizing circuit of the electromagnet K. Means, as a condenser P, in shunt to the contacts M and N, are provided to prevent injurious sparking between those contacts when they are separated to deenergize the electromagnet K.

As shown, the bag holder member H is of an inverted pan shape with an external shoulder H' at its lower end. To secure the bag being filled in place an elongated clamping ring P is provided. The ring P is supported by swinging links P' hung from arms P² carried by the upper end of the bag holder member H. A spring P³ normally tends to hold the member P in the position shown in dotted lines in Fig. 3. In putting a bag X in place, the bag is first drawn snugly about the holder H and the loose material folded on itself as indicated at K'. A tensioned lever Q, pivoted to the member P at one end, is swung into the position shown in Fig. 1, and in full lines in Fig. 3. The cam roll Q' carried by the lever Q then acts against the periphery of the holder H to force the front end of the member P away from, and the back end of the holder into engagement with, the holder H. The bag, thus clamped against the holder H at the rear by the ring P and at the front by the roll Q', is held securely in place until the lever Q is swung into the dotted line position of Fig. 3.

The bag-holding mechanism disclosed, while novel with me, is not claimed herein, but is claimed in my co-pending application Serial Number 563,390, filed May 25th, 1910.

In operation, the bag X, or like receptacle, is first put in place on the scale platform with its upper end supported by the bag support H, as described, the valve E being then closed. The rod I is then raised by the handle I² to open the valve E and to bring the armature I³ into the effective field of the electromagnet K.

It will be understood that normally the electromagnet K is energized, but that in the closed position of the valve E the armature I³ is too remote from the electromagnet K to be appreciably acted upon by the latter. The electromagnet K and the armature I³ are so designed, however, that when the parts are in the dotted line position the rod I is held up, by the magnetic attraction between the electromagnet and the armature, against the action of gravity and the action of the spring J. When the valve E opens, the material to be packaged, which may be continuously fed into the upper end of the chute D at the proper rate, then begins to flow into the bag through the opened lower end of the nozzle D'. When the proper weight of material is passed into the bag the scale beam O lifts, and through the pin or rod C causes the spring contact N to be lifted out of engagement with the contact point M to thereby deenergize the electromagnet K. As soon as the electromagnet K is deenergized the rod I drops under the action of gravity and the spring K to thereby lift the valve E into the closed position.

When the material being packaged is a substance like hydraulic cement, which has a high specific gravity and flows almost as freely as water, the force tending to move the valve into the closed position, whether produced by an unbalancing of the parts, or by a spring, or by a combination of such or like means, should be substantial to insure a quick and positive closure of the valve.

It will be apparent to those skilled in the art that one attendant may advantageously in some cases operate several bag filling and weighing devices of the character described, as with the bag holding device described bags may be quickly put in place and removed.

It will be apparent to those skilled in the art that the form of apparatus disclosed is simple and relatively inexpensive to construct and is highly reliable in operation. It is very free from liability to get out of order under the conditions of operation which may be severe.

While, in accordance with the provision of the statutes, I have herein described and illustrated the best form of my invention now known to me, it will be apparent to those skilled in the art that changes may be made in the form of the apparatus disclosed without departing from the spirit of my invention, and I do not wish my claims hereinafter made to be limited to the particular form of apparatus disclosed more than is made necessary by the state of the art.

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

1. In a receptacle filling and weighing device, the combination of a scale for supporting and weighing a receptacle to be filled, a delivery chute adapted to discharge into a receptacle supported by said scale, a movable loaded valve mechanism controlling, and tending to close, said chute, said mechanism including a valve, a lever for moving said valve, a sliding rod connected to said lever, a stationary electromagnet, an armature connected to said rod and moved thereby when the valve is open into, and when the valve is closed out of, a position in which the magnetic attraction between the electromagnet and the armature is sufficient to hold the valve open, and means controlled by the weighing scale for deenergizing the electromagnet when the weight on the scale reaches a predetermined amount.

2. In a receptacle filling and weighing device, the combination of a platform scale for supporting and weighing a receptacle to be filled, a delivery chute having a depending discharge nozzle located above the platform of said scale, a valve for opening

and closing the lower end of said nozzle, a lever for moving said valve, a sliding rod pivotally connected to said lever, a spring acting on the rod in a direction to close the valve, a stationary electromagnet, an armature connected to said rod and movable when the valve is open into, and when the valve is closed out of, a position in which the magnetic attraction between said elec-

tromagnet and said armature is sufficient to hold the valve open, and means controlled by the weighing scale for deenergizing the electromagnet when the weight on the scale platform reaches a predetermined amount.

WILLIAM R. DUNN.

Witnesses:

HARRY G. SEIP,
ORRIN SERFASS.