(No Model.) 2 Sheets—Sheet 1.

J. McCRODDEN.

PACKAGE FILLING MACHINE.

No. 261,941 Patented Aug. 1, 1882.

Figure 1.

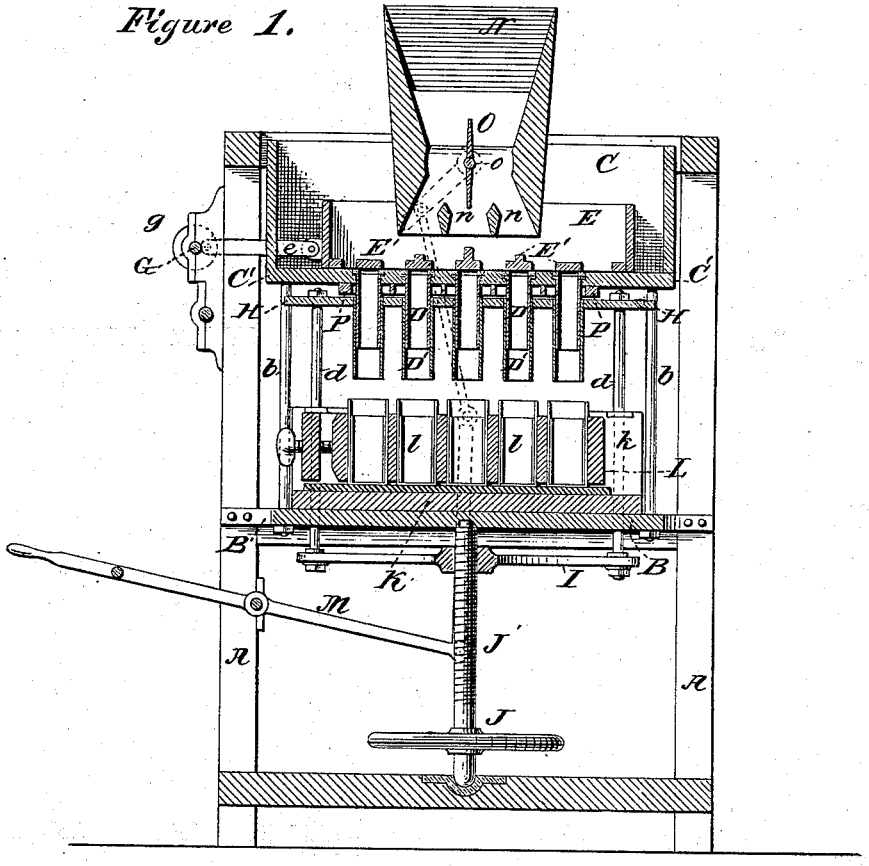
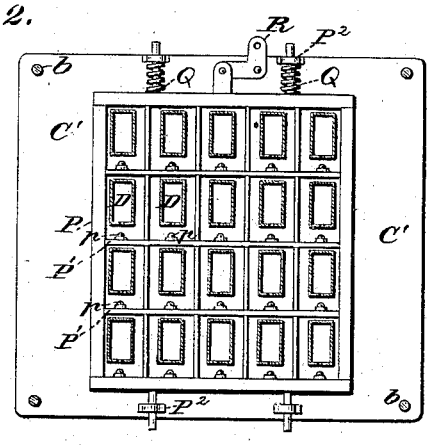


Figure 2.



Witnesses.
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Robt H. Duncan

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(No Model.) 2 Sheets—Sheet 2.

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Figure 3.

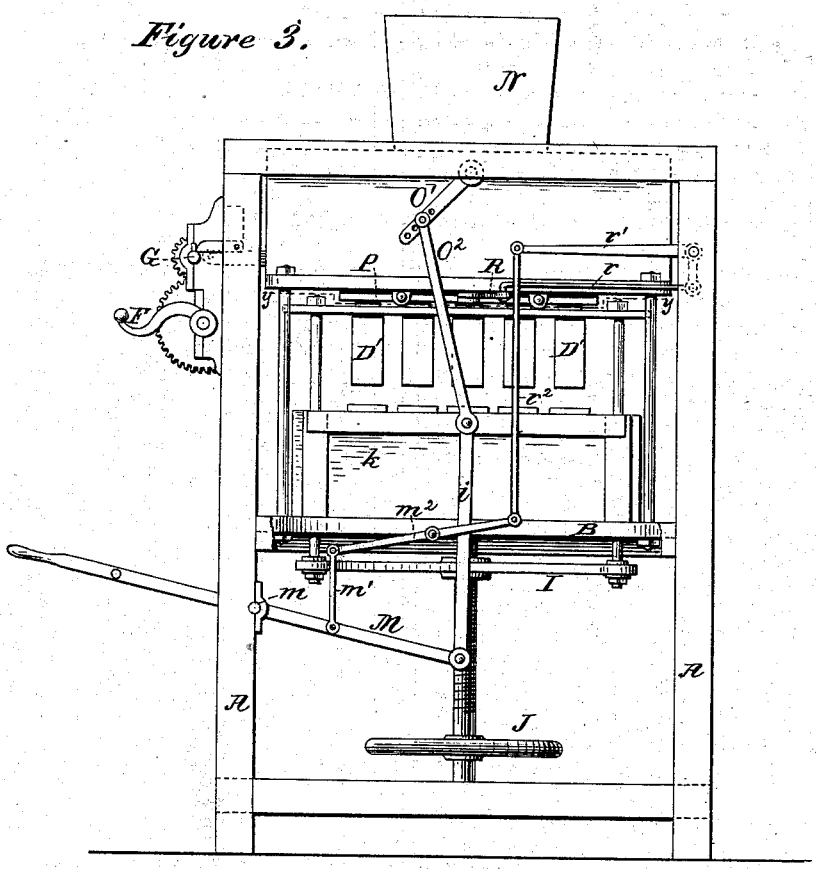
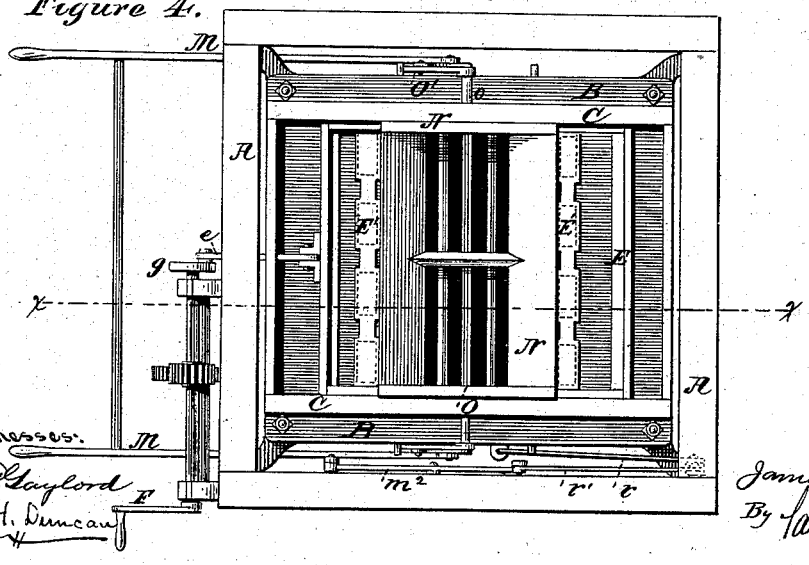


Figure 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES McCRODDEN, OF NEW YORK, N. Y.

PACKAGE-FILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 261,941, dated August 1, 1882.

Application filed June 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES McCRODDEN, of the city, county, and State of New York, have invented certain new and useful Improvements in Package-Filling Machines, the same being fully and clearly set forth in the following specification, reference being had to the accompanying drawings, forming a part of the same.

My invention relates to machines for automatically charging or filling packages with fine or powdered substances, and is particularly applicable to that form of package-filling machine patented to me by Letters Patent of the United States No. 225,940, issued March 30, 1880. In the use of such machine it has been found that the distributing-rack, when constructed with cross-bars of uniform height, would agitate the central portion of the mass of powder in the distributing-box the most and dash it to either end, which caused those measuring pockets or tubes which were nearest the ends of the box to fill more quickly than those at the center, and by the continued action of this rack, which vibrated till all of the pockets were filled, also causing the contents of the former to become more compressed, and hence to weigh more than those of the latter. A uniform distribution of the filling material to all of the pockets is, however, effected by means which include the first feature of my invention; and it consists of the use of a distributing-rack composed of cross-bars of different heights, which effectually prevent any tendency of the material upon the rack to accumulate at either end thereof, and insure an equal disposition of it over the rack.

The second feature of my invention is contained in a device for regulating the capacity of the measuring-pockets; and it consists in an upright screw-shaft operated by a hand-wheel, and a spider traveling upon such shaft and supporting the plate or frame that carries the movable sections of the telescopic measuring-tubes.

It is considered desirable to cut off the supply of the material fed into the machine at such times as the shaker or distributing-rack is in operation, to both relieve the shaker of undue weight and obviate any clogging or tamping of the filling-powder; and the third feature of my invention is embraced in mechanism designed to accomplish this end, which mechanism consists in a damper or gate located in the hopper or feed pipe near its mouth and connected with the bed that carries the packages to be filled by a crank-arm in such manner that when this bed is elevated to bring the packages into a position surrounding and closing the bottoms of the measuring-tubes said damper shall be closed.

It has also been found that as the filled packages are withdrawn from the tubes which measure their contents a partial vacuum is formed in these measures and causes the retention of more or less of the filling substance, which gradually loosens and falls by dribbling quantities for quite an interval afterward; and the fourth feature of my invention has for its object the provision of means to facilitate the emptying of these measures, and is represented by a series of valves or plugs so arranged and operated as to uncover vents in the walls of the measuring-tubes and admit air within such tubes as they discharge their contents, thus allowing the contents to fall quickly as a single mass into the receptacles below.

In the drawings, Figure 1 is a sectional view on the plane *x x*, Fig. 4. Fig. 2 is a cross-section on the plane *y y*, Fig. 3, looking upward. Fig. 3 is a side elevation, and Fig. 4 is a top or plan view, of my improved machine for filling packages.

Referring to these views in detail, the letter A represents the frame of the machine, to which is attached the bed-plate B, supporting through the medium of the rods *b b* the distributing-box C. Through the bottom C′ of this box are apertures, in which are inserted the upper sections, D, of the telescopic measuring-tubes D D′, over the mouths of which slide the cross-bars E′ of the shaker or distributing-rack E. This rack is vibrated from the hand-crank F, which has a gear-connection with the shaft G, bearing at one end the crank-pin disk *g*, to which and to one end of the rack E the pitman *e* is connected.

Suspended from the plate or frame H, and fitting upon the upper sections of the telescopic measuring-tubes, are the lower sections, D′, which, through the medium of this plate sup-

ported by rods *d d* from the spider I, running on the threaded shaft J′ of the hand-wheel J, have an up-and-down motion, whereby the capacity of the measuring-tubes is increased or diminished.

K is a movable bed, upon which rests the tray L, constructed to contain and properly support the packages *l* which are to be filled, and this tray is held in a position directly under the measuring-tubes by side strips, *k*, or other suitable guides or stops.

To each of the side strips, *k*, is pivoted the upper end of the connecting-bars *i*, the lower ends of which are pivotally connected to the inner ends of the hand-levers M, which have a fulcrum-bearing, *m*, on the frame A.

N is a hopper or the spout of a feed-pipe, extending down to just above the cross-bars of the distributing-rack. It has a damper or gate, O, to shut off and cross-bars *n n* to break up the material that it discharges into the distributing-box C. This damper is borne upon a shaft, *o*, carrying two crank-arms, O′, that are pivoted to the rods O^2, fastened to the center of the side strips, *k*, of the bed K.

Upon the under side of the base C′ of the distributing-box C is the frame P, supported by and having movement in ways P^2. To the cross-bars P′ of this frame are attached plugs *p*, of some yielding material like rubber, which are directly in front of vent-holes through the walls of the measuring-tubes D. Springs Q tend to keep the frame P, and hence these plugs, back and leave the vent-holes open, except at such times as power applied to the elbow-lever R shall draw the frame forward and close them. Such power is applied to the elbow-lever by the operation of the hand-levers M through the intermediate rod, *m′*, lever m^2, rod r^2, elbow-lever *r′*, and rod *r*.

The operation of the machine is as follows: The movable bed K is raised by bearing down upon the levers M till the bottoms of the empty packages *l* have come in contact with and closed the bottoms of the measuring-tubes D′ previous to their being filled, and during which this position of the parts is maintained by any suitable catch engaging with the bed-plate or hand-levers. The raising of the movable bed K has also turned the damper or gate in the hopper or supply-pipe to prevent any feed therefrom into the distributing-box during the filling of the measuring-tubes, the damper being located at such a height above the rack that the space in the pipe or hopper below it shall contain a quantity of powder a little in excess of what is needed for one charging of the measuring-tubes. The crank F is now turned, which, by causing the rack to vibrate, equally distributes the powder in the distributing-box to the various pockets or measuring-tubes till they are filled, and is stopped at such a point in its revolution as will bring the cross-bars of the shaker directly over the apertures through the bottom of the distributing-box which lead into the measuring-tubes. The bed carrying the tray and contained packages is now lowered, and the downward movement of the inner ends of the hand-levers M effects the opening of the vents in the walls of the measuring-tubes, which tubes, as the packages are drawn off them, freely discharge their contents into the packages. The return movement of the movable bed has also tipped the damper in the hopper and allowed the space below it to again fill. As each tray of filled packages passes from the machine other trays containing empty packages are supplied, so that the operation of the machine is practically continuous, and the whole action of the machine may be rendered automatic, if desired, by simple changes apparent to one skilled in their use.

What is claimed as new is—

1. In a package-filling machine, the combination of a distributing-box provided with discharging-apertures, and a rack composed of cross-bars of different heights, arranged to vibrate over and at suitable times to close such apertures, substantially as set forth.

2. In a package-filling machine, the combination of a distributing-box, a series of measuring-tubes composed of telescopic sections, which are attached respectively to said distributing-box and to an adjustable plate or frame, and a screw-shaft for supporting and adjusting said plate, whereby the capacity of said measuring-tubes is regulated, substantially as set forth.

3. In combination with the measuring-tubes of a package-filling machine, vent-holes arranged in the upper end of such tubes to facilitate the discharge of the contents thereof.

4. In combination with the measuring-tubes of a package-filling machine, plugs or valves arranged to open vent-holes in the walls of such tubes at the time when their contents are being discharged, substantially as described.

5. The combination, in a package-filling machine, of a distributing-box containing a vibrating rack, and a supply-pipe or hopper provided with a cut-off device arranged to close the mouth of such hopper previous to such rack being put in motion, substantially as above set forth and described.

JAMES McCRODDEN.

Witnesses:
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R. F. GAYLORD.