

No. 742,377.

PATENTED OCT. 27, 1903.

J. W. & A. M. AYERS.
 TABLET FEEDING MACHINE.
 APPLICATION FILED JAN. 3, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

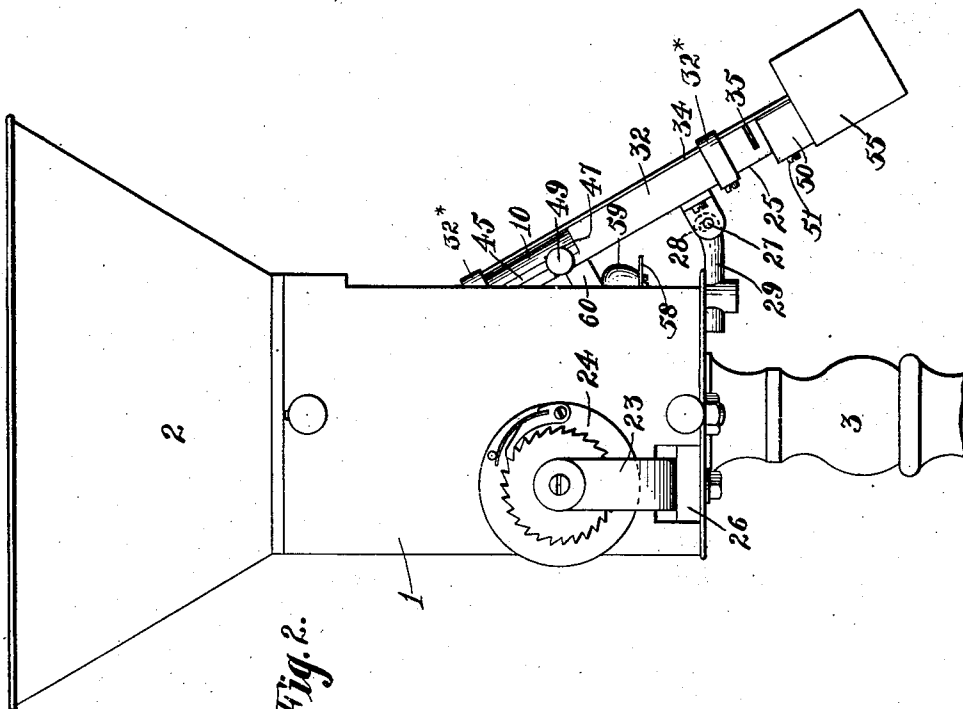


Fig. 2.

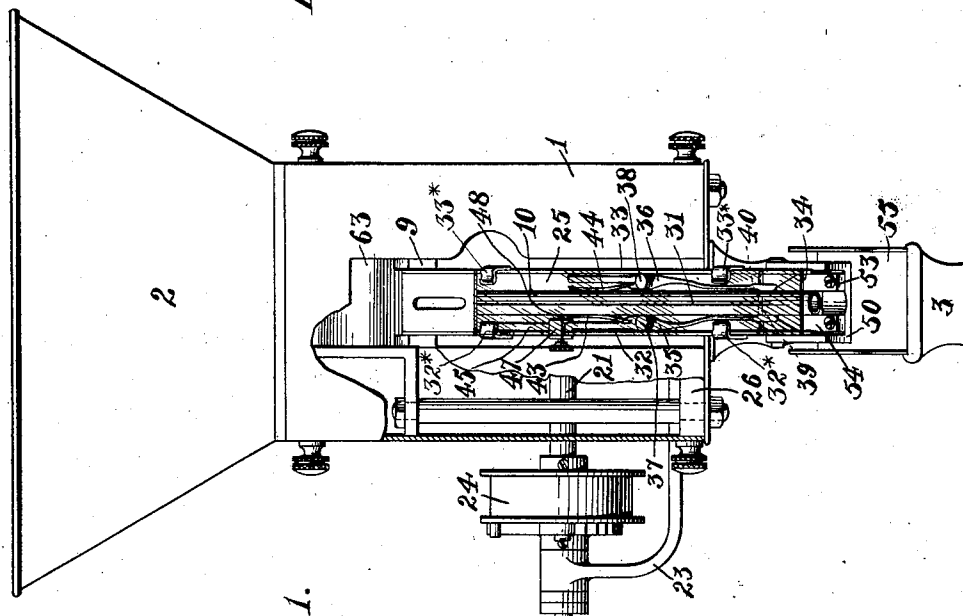


Fig. 1.

Witnesses:

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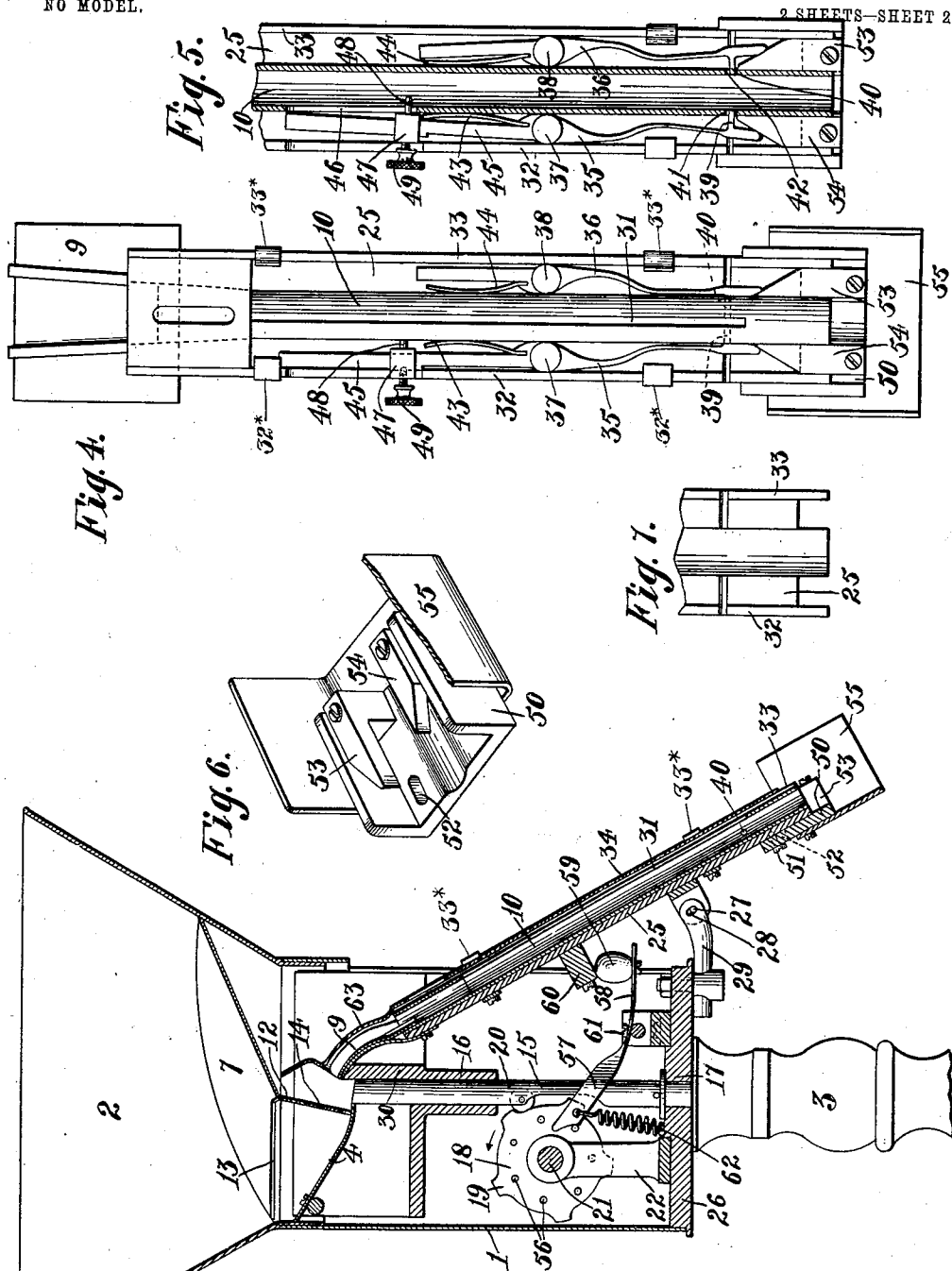
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TABLET FEEDING MACHINE.

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NO MODEL.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JOHN W. AYERS AND ALBERT M. AYERS, OF NEW YORK, N. Y.

TABLET-FEEDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 742,377, dated October 27, 1903.

Application filed January 3, 1903. Serial No. 137,652. (No model.)

To all whom it may concern:

Be it known that we, JOHN W. AYERS and ALBERT M. AYERS, citizens of the United States, and residents of the borough of Brooklyn, in the city and State of New York, have invented a new and useful Tablet-Feeding Machine, of which the following is a specification.

This invention relates to a tablet-feeding machine, and has for its object to provide a machine in which a predetermined number of tablets may be fed to a box or bottle, as may be desired, and in which all liability of the tablets becoming choked or cramped during the feeding thereof is obviated.

A further object is to provide certain improvements in the construction, form, and arrangement of the several parts whereby a very simple and effective mechanism is provided for producing the above-mentioned results.

A practical embodiment of this invention is represented in the accompanying drawings, in which—

Figure 1 is a view of the machine in front elevation, a portion of the casing being broken away to show the interior construction thereof. Fig. 2 is a view of the machine in side elevation. Fig. 3 is a vertical central section from the front to rear through the machine. Fig. 4 is an enlarged front view of the measuring-chute, the parts being shown in the position which they assume with the mouth of the chute closed and the measuring-separator withdrawn. Fig. 5 is a longitudinal transverse section through a portion of the chute, the parts being in the position which they assume when the mouth of the chute is open and the separator is inserted into the chute. Fig. 6 is a view in perspective of the sliding cam for controlling the delivery of the tablets to the box or bottle, a portion of the guard being broken away to more clearly illustrate the parts, and Fig. 7 is a detail view of the lower end of the chute-support.

The machine herein shown is provided with a casing 1, surmounted by a suitable hopper 2 for receiving in bulk the tablets to be delivered. The casing and hopper are supported by any suitable means—such, for instance, as a post or upright 3. The bottom of the hopper is provided with an upper in-

cline 7, having an opening 13 therethrough, and a lower incline 4 beneath the opening for directing the tablets to the top of the vertically-reciprocating feed-bar 15, where the tablets may be raised by the bar into position to slide down the guide 9 of the chute 10, as will be more fully set forth. A partition 12 is located adjacent to the front wall of the opening 13 in the hopper through which the tablets fall onto the incline 4, which partition is provided with a yielding extension 14, of sheet-rubber or other suitable material, beneath which the tablets pass to the part of the hopper over the feed-bar.

The means which we employ for feeding the tablets from the hopper to the chute is constructed and operated as follows: A feed-bar 15 is mounted to reciprocate vertically in upper and lower bearings 16 and 17 within the casing 1, the upper end of the said bar being fitted to lift the tablets from the bottom of the hopper into position to fall into the chute 10. This bar 15 is reciprocated by a cam-wheel 18, provided with a plurality of abutments 19, which engage a stud or roller 20, carried by the bar. This cam-wheel 18 is fixed to rotate with a shaft 21, mounted in suitable bearings in brackets 22 23, secured within the casing 1. The bracket 23 extends to the exterior of the casing 1, and the shaft 21 may be provided with any suitable driving mechanism—such, for instance, as a clutch driving-pulley 24, mounted on the shaft exterior to the said casing.

The tablet-chute support is denoted by 25, which support is loosely secured to the bottom 26 of the casing 1 by a pin-and-slot connection 27 28, with the free end of a bracket 29 secured to the said bottom 26 of the casing. This chute-support 25 is supported in a diagonal position because of the chute-guide 9, which is fixed to the chute-support, resting upon a stop or partition 30 within the casing 1 adjacent to the mouth 8 of the agitator 4.

The tablet-chute 10 is open at both ends and is secured to the support 25, with its upper end in position to receive the tablets as they leave the hopper. This chute is of tubular form and shaped in cross-section to correspond with the shape of the tablets when viewed in plan. A slit 31 may be provided, which extends along the front of the chute 10 for the

purpose of disclosing the tablets within the chute.

The chute-support 25 extends a considerable distance beyond the opposite sides of the chute and is provided with forwardly-extended sides 32 33, extended outwardly to a point substantially in alinement with the front of the chute. The said support may be inclosed, if so desired, by a transparent pane 34, secured along the front edges of the sides 32 33 of the chute-support by clips 32* 33*.

The tablets are delivered in predetermined quantities from the chute 10 by the following means: Spring-actuated rocking levers 35 36 are hinged to the support 25 at 37 38, and the free ends of these rocking levers are provided with inwardly-extended arms 39 40, which are arranged to open and close the chute by passing through side slots or openings 41 42 therein. These levers 35 36 are provided with springs 43 44, tending to hold the arms 39 and 40 at the limits of their inward movements within the chute 10, the lower portions of the levers being fitted to yield slightly under pressure because the levers are made of spring metal. One of these levers, in the present instance 35, is provided with an adjustable separator, carried by its upward extension 45 in position to enter the chute through a vertically-elongated slot 46 when the arms 39 40 of the levers are swung out of the chute, and vice versa. In the present instance this adjustable separator comprises a block 47, fitted to slide along the extension 45 of the lever 35, which block is provided with an inwardly-extended pin 48, arranged to be swung into and out of the chute, and a set-screw 49 for clamping the separator at different points along the extension 45 of the said lever. A sliding cam-plate 50 has a pin-and-slot connection 51 52 with the lower end of the chute-support 25, which cam-plate is provided with two cams 53 54, which engage the free ends of the levers 35 36 for swinging the arms 39 40 thereof out of the chute when the cam-plate 50 is forced upwardly. A suitable guard 55 is secured to the cam-plate 50 for receiving the mouth of a bottle or box (not shown herein) when being filled.

The chute 10 is agitated for shaking the tablets into their proper position by the following means: The cam-wheel 18 is provided with a plurality of studs 56, which successively engage one arm 57 of a spring-actuated hammer, the other arm 58 of which is provided with a weight 59, fitted to strike beneath an inward projection 60, carried by the chute-support 25. This hammer is pivoted at 61 on a suitable support secured to the bottom 26 of the casing 1. A strong spring 62 extends between the arm 57 of the hammer and the bottom 26 of the casing, tending to throw the weighted head 59 of the hammer upwardly. A protecting-plate 63 is located within the casing in front of the guide 9 for

insuring the passage of the tablets from the hopper into the chute 10.

The operation of this machine is as follows: The tablets are placed in bulk within the hopper 2. The shaft 21 may be continuously or intermittently rotated. As the shaft is rotated it will cause the bar 15 to reciprocate vertically, thus lifting some of the tablets into position to drop one by one into the chute. The protecting-plate 63, which covers the front of the guide 9, directs the tablets into the chute as they are fed from the hopper. The tablets as they fall will be held within the chute by the arms 39 and 40 of the rocking levers 35 36. To cause the tablets to settle into their proper horizontal positions with respect to the chute, the chute is also agitated by the operation of the hammer, the said hammer being operated by the rotary movement of the shaft 21. The loose connection 27 28 between the chute-support 25 and the casing permits a slight longitudinal reciprocating movement of the chute by reason of the stroke of the hammer. The separator carried by the rocking lever 35 is adjusted for dividing off a predetermined number of tablets. When it is desired to fill a box or bottle, the mouth of the same is inserted within the guard 55, and the cam-plate 50, with its cams, is forced upwardly. This movement will withdraw the arms 39 and 40 and force the pin 48 into the chute against the edge of one of the tablets at a predetermined point in the chute. This will permit all of the tablets below the pin 48 of the separator to drop into the interior of the said box or bottle to be filled. The pin 48 will be caused to engage the edge of its tablet before the arms 39 and 40 are entirely withdrawn, and the further withdrawal of the arms under the influence of the cams 53 54 is permitted because the levers 35 36, which carry the arms, are made of spring metal. This will absolutely insure the delivery of the predetermined number of tablets. When the box or bottle is withdrawn, the parts will immediately resume their normal position, and the lower portion of the chute will again be filled.

The machine constructed and operated as above described insures the proper delivery of tablets having oval faces, which tablets it has heretofore been practically impossible to feed by mechanical means because of their liability to become cramped within the machine. Furthermore, the number of tablets to be fed to the box or bottle may be accurately regulated by the use of the separator hereinbefore described.

It is evident that changes might be resorted to in the form, construction, and arrangement of the several parts without departing from the spirit and scope of our invention. Hence we do not wish to limit ourselves strictly to the structure herein set forth; but

What we claim is—

1. A tablet-feeding machine comprising a hopper for containing the tablets in bulk, a delivery-chute for receiving the tablets one by one therefrom and means for agitating the tablets within the chute for alining them comprising a rotary cam-shaft and a trip-hammer operated thereby.

2. A tablet-feeding machine comprising a hopper for containing the tablets in bulk, a delivery-chute for receiving the tablets one by one therefrom and means for feeding the tablets to the chute and agitating the tablets within the chute comprising a rotary cam-shaft, a vertically-reciprocating bar and a trip-hammer.

3. A tablet-feeding machine comprising a hopper for containing the tablets in bulk, a suitable support for the hopper, a chute for receiving and delivering the tablets, loosely connected to the support and means for imparting a slight reciprocating movement to the chute for alining the tablets therein.

4. In a tablet-feeding machine, a delivery-chute, a support therefor, means for feeding tablets to the chute and means for delivering a predetermined number of tablets comprising rocking levers of yielding material hinged to the support having inwardly-extended arms at their lower ends arranged to open and close the delivery ends of the chute, an upward extension of one of the levers and an adjustable separator carried by the extension arranged to engage the edge of a tablet within the chute as the arms are forced apart for

permitting the release of the tablets below the said separator.

5. In a tablet-feeding machine, a delivery-chute, a support therefor, means for feeding tablets to the chute and means for delivering a predetermined number of tablets comprising rocking levers of yielding material having inwardly-extended arms at their lower ends arranged to open and close the delivery end of the chute, an upward extension of one of the levers, a separator arranged to engage the edge of a tablet within the chute as the arms are forced apart and a sliding plate having cams thereon engaging the levers for controlling the movements of the said arms.

6. In a tablet-feeding machine, a hopper, a delivery-chute for receiving the tablets therefrom and a vertically-reciprocating bar for feeding the tablets in small quantities from the hopper to the chute, the said hopper having a bottom formed of an incline having an opening therethrough and a second incline beneath the said opening for directing the tablets to a point above the vertically-reciprocating bar.

In testimony that we claim the foregoing as our invention we have signed our names, in presence of two witnesses, this 24th day of December, 1902.

JOHN W. AYERS.
ALBERT M. AYERS.

Witnesses:

FREDK. HAYNES,
GEORGE BARRY, Jr.