O. E. HERMANN & E. C. DE WITT.

TABLET PACKAGING MACHINE.

APPLICATION FILED APR. 6, 1911.

1,095,277.

Patented May 5, 1914.

2 SHEETS—SHEET 1.

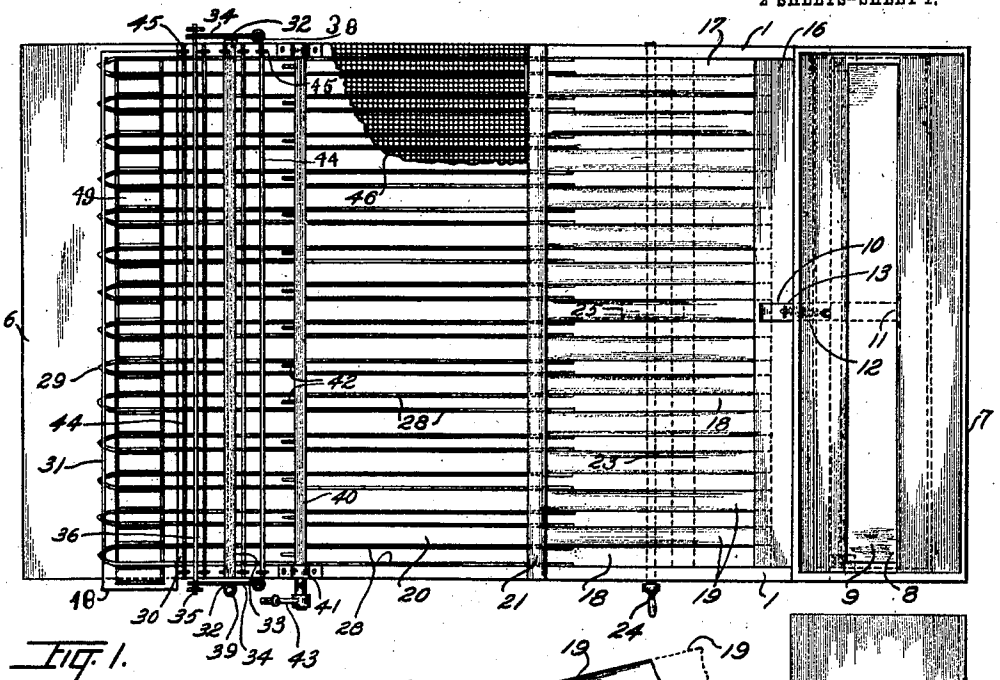


Fig. 1.

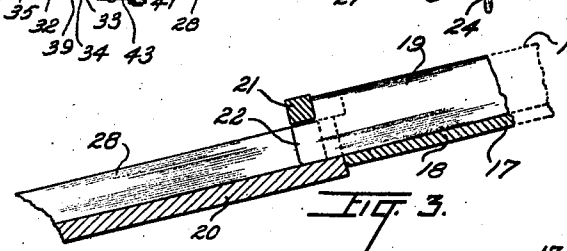


Fig. 3.

Fig. 2.

WITNESSES:

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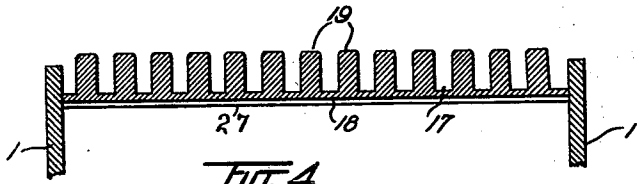


Fig. 4.

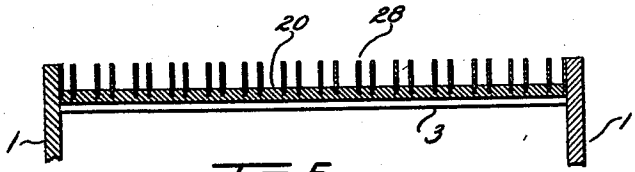


Fig. 5.

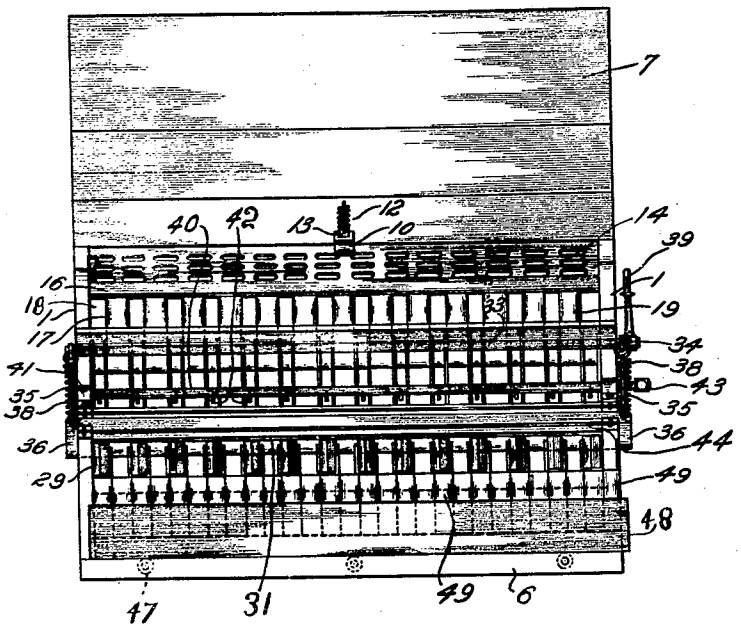


Fig. 6.

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UNITED STATES PATENT OFFICE.

OTTO E. HERMANN AND ELDEN C. DE WITT, OF CHICAGO, ILLINOIS.

TABLET-PACKAGING MACHINE.

1,095,277. Specification of Letters Patent. Patented May 5, 1914.

Application filed April 6, 1911. Serial No. 619,254.

To all whom it may concern:

Be it known that we, OTTO E. HERMANN and ELDEN C. DE WITT, citizens of the United States, and residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Tablet-Packaging Machines, of which the following is a full and complete specification.

The main objects of this invention are to provide a tablet packaging machine which is adapted to accurately separate from a mass of tablets a plurality of groups of tablets, each having a given number, and place them in cartons or other packages; to provide a tablet packaging machine which is adapted to separate out all of the small fragments which may have broken from the tablets; to provide a device adapted to simultaneously fill a large number of packages with an equal number of tablets in each package; to provide improved mechanism adapted to separate the flow of tablets from the hopper into a plurality of streams or courses, each leading to a package; to provide improved mechanism adapted to stop the flow of each stream after the number of tablets necessary to fill a package has passed below the same; and to provide a cheap, simple and easily operable device adapted to perform its work with great rapidity.

A specific embodiment of said invention is illustrated in the accompanying drawings, in which:

Figure 1 is a top plan view of a tablet packaging machine embodied in this invention, with the protecting screen for the chutes broken away. Fig. 2 is a side elevation of the machine. Fig. 3 is an enlarged fragmentary section of the chutes and agitator. Fig. 4 is a section of the agitator taken on line 4—4 of Fig. 2. Fig. 5 is a section of the chutes taken on line 5—5 of Fig. 2. Fig. 6 is a front elevation of the machine.

In the construction shown, the main frame comprises side members 1 which incline downwardly from the rear, and are connected together near their upper edges by transverse beams 2, 3 and 4. The frame is provided with a bottom 5 which extends forwardly of the side members to provide a platform 6 on which the packages are supported when being filled.

Mounted on the rear of the frame is a hopper 7 into which the tablets are placed in bulk. The hopper is provided with an opening 8 near its bottom, which opening is controlled by a downwardly opening trap door 9 which is hinged at its forward margin to the front wall of the hopper beneath said opening. A push rod 10 is slidably mounted in the front wall of the hopper beneath said door, and is secured to a lug 11 on the rear margin of the door. A spring 12 is secured at one end to the front of the hopper and at its other end is secured to an ear 13 on the rod and acts normally to force the rod inwardly and hold the door in closed position.

A separating screen 14 is secured at its rear margin to a cleat 15 on the rear of the frame slightly below the door 9. Said screen inclines downwardly and forwardly between the side members 1, and its forward portion 16 is unperforated and rests on the rear edge of the agitator 17. The agitator comprises a base or board 18 on which are a plurality of ribs 19 which extend longitudinally of the machine and are rounded on their upper edges. Said ribs are spaced just far enough apart to permit the tablets to pass therebetween edgewise in single file. The rear ends of the ribs 19 are beveled downwardly and rearwardly and the front end of the screen rests thereon. The rear portion of the agitator rests upon the beam 4, and at its forward edge the ribs 19 project beyond the base board 18 and rest on the base board 20 for the chutes. A bar 21 is rigidly secured on the side members 1 and overlaps the projecting ends 22 of the ribs 19, which ribs are reduced in height to extend beneath said bar. The base board 18 abuts against the base board 20 to provide an unbroken surface from the agitator to the chutes.

A shaft 23 is journaled in the side members 1 beneath the central portion of the agitator, and is provided at one end with a crank 24. Rigidly secured on said shaft about midway between the side members 1 is a cam wheel 25 which is provided with a plurality of cam teats 26. Said teats 26 are abrupt on one face, and incline gradually on the other, and are adapted to engage a cleat 27 on the bottom of the agitator. When the crank 24 is turned in a direction for the cam teats to approach the cleat 27 from their inclined sides, said teats will raise the rear end of the agitator off from the

beam 4 and drop it back onto said beam when the teat passes from beneath the cleat, thereby causing said rear end to vibrate vertically. When the crank is turned in the opposite direction the abrupt sides of the teats engage the front side of said cleat and force the agitator rearwardly. Gravity causes the agitator to move forwardly to normal position after the teat has passed the cleat. The agitator may therefore be given a forward and rearward reciprocating motion, or a vibratory motion as desired.

The chutes 28 are formed of strips of sheet metal which are bent centrally to bring the two ends or halves thereof into parallel relation and relatively close to each other. Said ends or halves are inserted edgewise into grooves in the base plate 20, as shown more clearly in Figs. 1 and 5. They also project at their rear ends into the front ends of the grooves or channels in the agitator, so that tablets passing down from said channels will enter the chutes. The forward ends 29 of the chutes are wedge shaped and project horizontally beyond the front edge 30 of the base board 20. The forward ends 29 of said chutes are rigidly connected together by means of a rod 31 which holds them in unvarying relation to each other.

Standards 32 are rigidly secured on the side members 1, near the front ends thereof, and a shaft 33 is journaled in the upper ends of said standards. Cross arms 34 are secured on said shaft 33, and connected to the forward ends thereof are links 35 which are secured at their lower ends to a vertically slidable gate 36, which is slidably mounted in slots 37 in the side members. The base board 20 and the chutes 28 are cut transversely in alinement with the slots 37 to permit the gate to work therethrough. Springs 38 connect the rear ends of said cross arms with the side members 1 and act to normally hold the gate 36 in elevated position to close the chutes at the front edge of the base board 20. A lever 39 is secured on one end of the shaft 33 and provides means for rotating the shaft to drop the gate beneath the chutes so that the tablets may pass into the packages.

At a distance to the rear of the gate 36 is a stop shaft 40 which is journaled in suitable bearings 41 on the side members 1. Said shaft 40 is provided with a plurality of stop fingers 42 which normally project forwardly and downwardly into the chutes 28. A weighted lever or handle 43 is carried on one end of the shaft and acts to normally hold the fingers down in the chutes to stop the flow of the tablets therepast. Said fingers are so disposed with respect to the gate 36 that the desired number of tablets to be placed in a package may be contained in the chutes between the fingers and the gate.

Extending across the chutes forwardly of the stop shaft 40 are a plurality of rods 44 which are secured in place by staples 45 in the side members 1, and are adapted to prevent the tablets from jumping out of the lower ends of the chutes. Above the shaft 40 the chutes are covered with a screen 46 to prevent the tablets from jumping out.

The platform 6 is provided with rollers 47, and a tray 48 is adapted to rest thereon and contain the packages 49 to be filled. The chutes 28 are arranged a distance apart, due to the thickness of the ribs 19, and where small packages are used, as shown in the drawings, the discharge ends of the chutes cover alternate packages, and when those packages are filled the tray is withdrawn and moved endwise sufficiently to bring the empty packages beneath the chutes, when the tray is again moved rearwardly to filling position. A drawer or other receptacle 50 is supported on a shelf 51 beneath the screen 14 in position to catch the small fragments of tablets which pass through the screen.

The operation of the construction shown is as follows: A quantity of tablets, which are disk shaped, are placed in the hopper 7 and when the trap door 9 is opened a quantity of them will fall onto the screen 14. The crank 24 is then turned in either direction and the cam 25 causes the agitator to vibrate. The vibrator causes the screen 14 to vibrate and shake the dust and small particles of tablets into the drawer 50, and causes the tablets to slide down onto the rear end of the agitator. As the tablets pass from the screen the ribs 19 cause them to turn up edgewise in the channels 18, and the inclination of the vibrator causes the tablets to roll down into and fill the chutes 28. During this operation the gate 36 remains up or closed, and the stop fingers 42 are raised to permit the tablets to pass down to the gate. When the chutes are full the stop fingers are lowered to prevent the tablets above them from moving downwardly, and then the gate is lowered to permit the tablets below the fingers to pass down into the cartons or packages. The gate is then permitted to return to normal position under the action of the springs 38 and other packages are shifted beneath the ends of the chutes. The stop fingers are then again raised to permit the desired quantity of tablets to pass down to the gate and the gate is lifted as before. It is therefore evident that the chutes may be kept filled with tablets and that the desired number of tablets may be quickly separated in the chutes and delivered to the packages.

While but one specific embodiment of the invention has been shown and described it will be understood that many of the details of the construction shown may be varied or omitted without departing from the scope of the claims.

We claim:

1. A tablet packaging machine, comprising a frame embracing side members and an inclined base member extending therebetween, said base member being provided with a plurality of laterally spaced upright strips, the alternate spaces therebetween forming chutes, a movably mounted inclined agitator at the rear of, in alinement with and forming an extension of said base member, said agitator being provided with a plurality of laterally spaced upright ribs forming grooves severally in communication with said chutes, a screen located at the rear of and having its forward edge in contact with said agitator, said screen being adapted to have vibratory movement imparted thereto in the vibration of said agitator, means having operative connection with said agitator for imparting a vibratory movement thereto, and a gate located at the forward ends of said chutes for controlling the discharge of tablets therefrom.

2. A tablet packaging machine, comprising a frame embracing side members and an inclined base member extending therebetween, said base member being provided with a plurality of laterally spaced, upright strips of metal, the spaces therebetween forming chutes; the forward ends of the strips forming each chute projecting beyond the forward end of said base member and connected with each other for closing the forward end of the chute, an agitator located at the rear of and forming an extension of said base member and provided with a plurality of laterally spaced, upright ribs forming grooves severally in communication with said chutes, means adapted to deliver the tablets to said agitator, and said agitator being adapted to turn the tablets on edge and deliver them in edgewise position and in rows to said chutes, means having operative connection with said agitator acting to impart a vibratory movement thereto, and means at the lower ends of the chutes adapted to permit a given number of tablets to flow from each chute.

3. A tablet packaging machine, comprising a frame embracing side members and an inclined base member extending therebetween, said base member being provided with a plurality of laterally spaced chutes, each chute being formed by bending a strip of metal centrally upon itself and applied to said base member with each half of said folded strip of metal laterally spaced and set on edge on said base member, the folded end of said strip being at the forward end of said base member and closing the forward end of the chute, and means adapted to receive the tablets in mass, turn them on edge and deliver them in edgewise position and in rows to said chutes.

4. A tablet packaging machine, comprising a frame embracing side members and an inclined base member extending therebetween, said base member being provided with a plurality of laterally spaced strips, the alternate spaces therebetween forming chutes, a movably mounted agitator located at the rear of said base member and being provided with a plurality of laterally spaced ribs forming grooves severally in communication with said chutes; the forward ends of said ribs extending beyond the forward end of said agitator and projecting into the spaces between said chutes, and the rearward ends of said ribs being beveled, a hopper located above and at the rear of said agitator, a screen located below said hopper and having its forward end resting on the beveled ends of said ribs and adapted to have vibratory movement imparted thereto in the vibration of said agitator, means having operative connection with said agitator for imparting a vibratory movement thereto, and a gate at the lower ends of said chutes.

5. A tablet packaging machine, comprising a frame embracing side members and an inclined base member extending therebetween, said base member being provided with a plurality of laterally spaced strips, the alternate spaces therebetween forming chutes; the forward ends of the strips of each chute being horizontally arranged, connected together and extending beyond the forward end of said base member, a movably mounted, inclined agitator located at the rear of and forming an extension of said base member and provided with a plurality of laterally spaced ribs forming grooves severally in communication with said chutes, a hopper located at the rear of said agitator, a screen located below said hopper and having its forward end resting on said agitator, means having operative connection with said agitator for imparting a vibratory movement thereto, and a gate located at the forward ends of said chutes.

In witness whereof we have hereunto subscribed our names in the presence of two witnesses.

OTTO E. HERMANN.
ELDEN C. DE WITT.

Witnesses for Otto E. Hermann:
C. E. MILLAR,
RUPERT J. BARRY.

Witnesses for Elden C. De Witt:
C. A. CHURCH,
JOHN T. HORN.