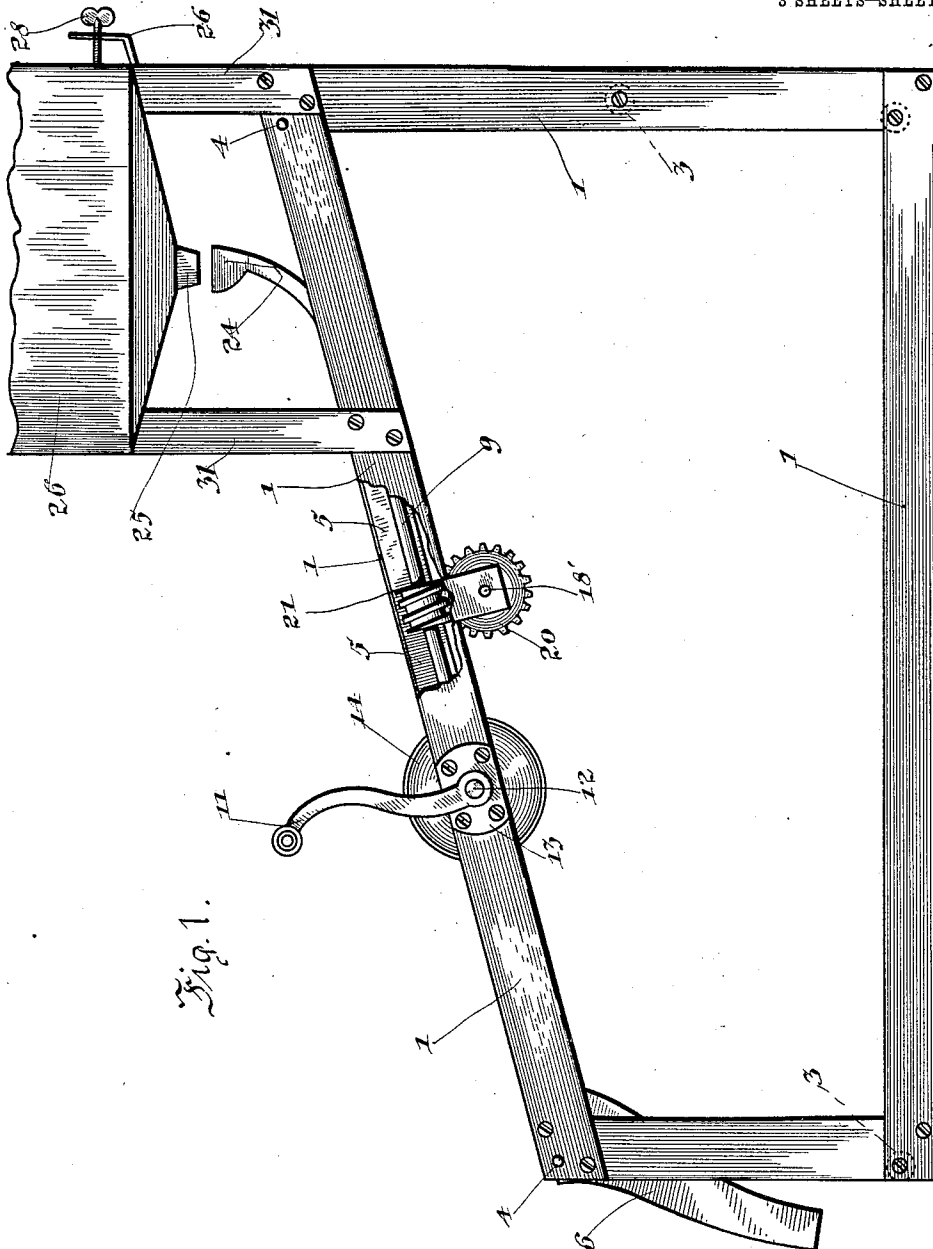


C. GOULDING.
PILL AND TABLET COUNTING MACHINE.
APPLICATION FILED SEPT. 20, 1911.

1,042,785.

Patented Oct. 29, 1912.

3 SHEETS-SHEET 1.



Witnesses
W. E. Smith
B. G. Richards

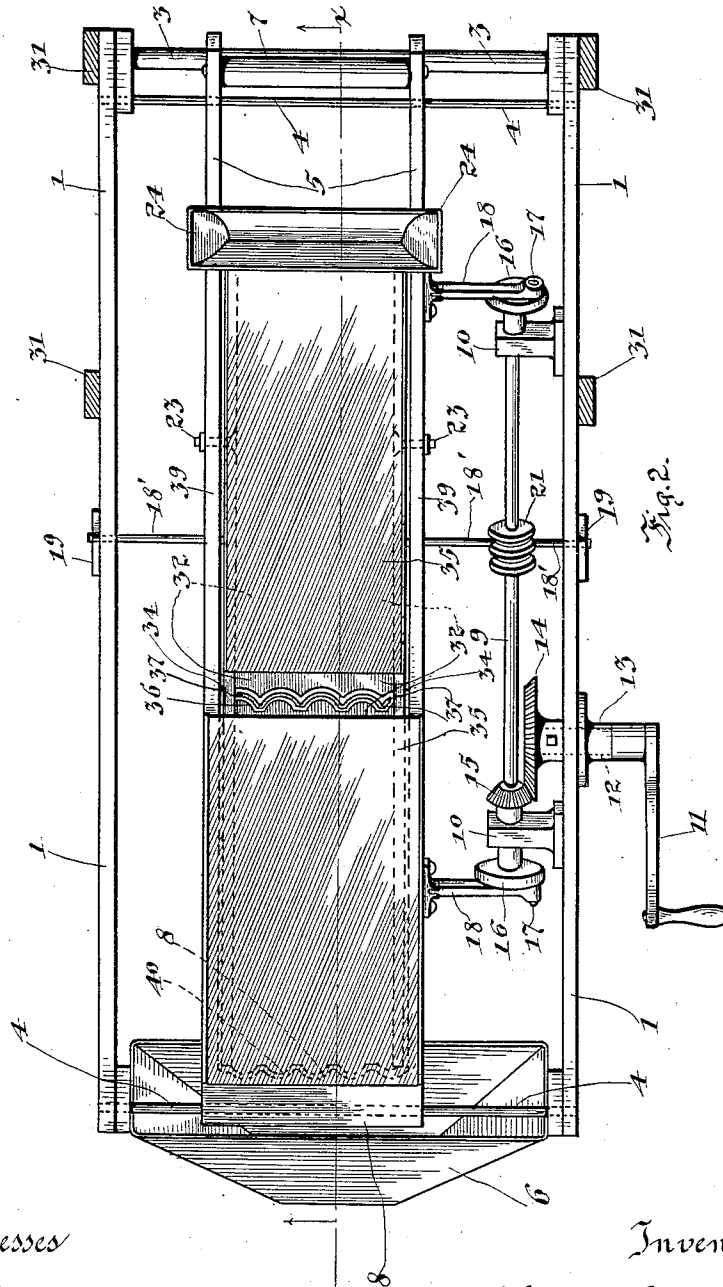
Inventor
Charles Goulding
by Joshua H. Potts
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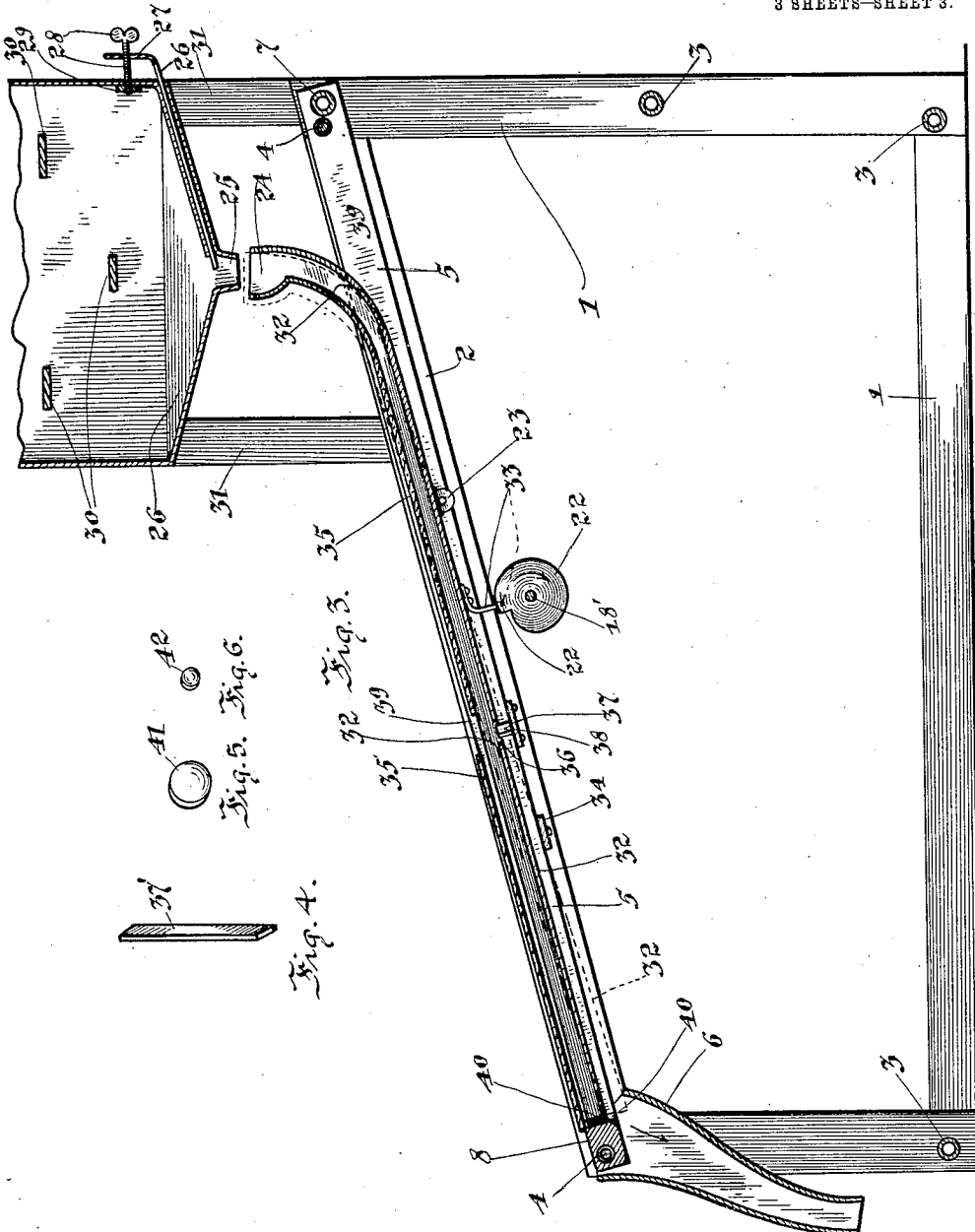
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3 SHEETS—SHEET 3.



Witnesses
W. L. Smith
B. G. Richards

Inventor
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UNITED STATES PATENT OFFICE.

CHARLES GOULDING, OF CHICAGO, ILLINOIS.

PILL AND TABLET COUNTING MACHINE.

1,042,785.

Specification of Letters Patent.

Patented Oct. 29, 1912.

Application filed September 20, 1911. Serial No. 650,426.

To all whom it may concern:

Be it known that I, CHARLES GOULDING, a subject of the King of Great Britain, and a resident of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Pill and Tablet Counting Machines, of which the following is a specification.

My invention relates to improvements in pill and tablet counting machines, the object being to provide a machine of this character which shall be simple of construction and efficient in operation.

The invention consists in the combinations and arrangements of parts hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings forming a part of this specification, and in which,

Figure 1 is a side elevation of a counting machine embodying my invention, Fig. 2 is a top plan view of the machine, Fig. 3 is a vertical longitudinal section of the machine taken on line *x—x* of Fig. 2, Fig. 4 is a detail perspective view showing a modified form of partition employed in the machine, and Figs. 5 and 6 are perspective views of a tablet and pill respectively.

The preferred form of construction as illustrated in the accompanying drawings comprises a frame 1 having top members 2 which are inclined longitudinally as shown in Fig. 1. The sides of the frame 1 are held in rigid relation by means of transversely disposed tubes 3 which are secured by means of screws as clearly illustrated. Extending transversely of the frame 1 and connecting the ends of the inclined members 2 is a pair of cylindrical rods 4 on which is mounted to reciprocate transversely a chute carrying frame 5 the ends of which are provided with apertures to receive the rods 4 as illustrated in Fig. 3. The chute carrying frame 5 is sufficiently narrow to permit of the desired reciprocation thereof between the inclined top members 2, this feature being clear by references to Fig. 2. At one end of the frame 1 and extending between the sides thereof is a delivery hopper 6 the receiving end of which being of sufficient area to provide clearance for the reciprocation of the frame 5. The longitudinal side members of the frame 5 are secured together in rigid relation by means of a transversely extending tube 7 at one end and a bar 8 at the other

end, one edge of which is corrugated as indicated by dotted lines in Fig. 2. The corrugated edge of the bar 8 serves as a stop for limiting the downward movement of tablets as will be described hereinafter. In order to reciprocate the chute carrying frame 5 transversely a longitudinally extending shaft 9 is journaled adjacent to one of the members 2 by means of inwardly extending bearings 10. This shaft is driven or rotated by means of a handle crank 11 carried by a transversely extending stub shaft 12 which is journaled in a bearing block 13 projecting laterally from one of the top members 2. At the inner end of the shaft 12 a driving bevel gear 14 is secured, and meshing therewith is a driven pinion 15 carried by the shaft 9. From this construction it is clear that when the handle crank 11 is manually rotated the shaft 9 will be rotated also and at an increased speed. Provided at each end of the shaft 9, or those portions thereof which project from the bearings 10, is a crank disk 16, each having a crank pin 17. The rotary motion of the crank pins 17 reciprocate the frame 5 by means of connecting rods 18 which are in parallelism in all positions thereof. A cam shaft 18' extends across the frame 1 and is journaled in depending bearings 19 which are arranged in rigid relation with the frame members 2 as indicated in Fig. 2. The cam shaft 18' is driven by means of a worm wheel 20 which meshes with a driving worm 21 carried by the shaft 9 and disposed above said worm wheel as illustrated in Fig. 1. The cam 22 carried by the shaft 18' is disposed beneath the chute carrying frame 5 as shown in Fig. 3. This cam is a single throw cam, the main portion of the periphery of which is circular in form. A chute is fulcrumed to the chute carrying frame 5 by means of laterally extending pins 23 the same being arranged in the vicinity of the cam 22 and somewhat apart from the center of the chute. The receiving opening 24 of the chute is disposed somewhat above the plane thereof and arranged under the delivery orifice 25 of the hopper 26, the size of the orifice 25 being regulated by means of a slidable plate 26 which is provided with an upwardly turned portion 27 on the exterior end thereof. A manually operable screw 28 is screwed into the portion 27 and swiveled at the point 29 in one side of the hopper 26. From this construction it is clear that when the screw

28 is turned in one direction that the orifice 25 will be made smaller, and that when the screw is turned in the other direction the size of the orifice will be increased.

5 Provided in the hopper 26 adjacent to the lower end thereof is a plurality of transversely extending plates 30 which are so disposed and spaced apart as to retard the downward flow of tablets or pills contained
10 therein. The hopper 26 is disposed above one end of the frame 1 and secured in rigid relation thereto by means of a plurality of vertical standards 31, these being broken away in Fig. 2 for clearance of illustration.
15 Secured beneath the bottom 32 of the chute and arranged directly over the cam 22 is a downwardly extending dog 33 the lower end of which is adapted to travel on the periphery of said cam as illustrated in Fig. 3.
20 From this construction it is apparent that the lower or heavier end of the chute which is disposed in a plane approximately identical with that of the chute carrying frame 5 is supported by means of the cam 22 since
25 the dog 33 is always maintained in contact with the periphery thereof. The chute will remain immovable until that portion of the cam 22 which is depressed on the periphery thereof comes into registration with the dog
30 33, whereupon the lower end of said chute will fall into the dotted line position as shown in Fig. 3. This falling or oscillation of the chute is limited by means of a transversely arranged plate 34 which is secured
35 to each side member of the chute carrying frame 5. The tablets or pills passing through the chute are visible through transparent covers 35 which extend from the curved portion or opening of said chute to
40 the lower end thereof with the exception of an opening approximately midway of the chute. Disposed below this opening and formed in the bottom of the chute is a transversely extending slot 36 into which is
45 adapted to project an upwardly extending corrugated stop or partition 37 which extends vertically from a transversely extending metal plate 38 disposed under the side members 39 of the chute as illustrated in
50 Fig. 2. The partition 37 is preferably corrugated as stated when the machine is employed for counting tablets, but a modified form 37' is preferably used, as shown in detail in Fig. 4, when pills are counted, the
55 necessity for positioning means for the latter not being essential due to the small diameter thereof. The chute extends from the receiving opening 24 to adjacent the bar 8, the end 40 of said chute adjacent said bar
60 being corrugated to conform with the corrugations of said bar as indicated by dotted lines in Fig. 2. The end 40 of the chute is disposed over the opening of the hopper 6 so that when depressed into the dotted line
65 position tablets or pills will be discharged

into said hopper and thence into a suitable receptacle, not shown. In Figs. 5 and 6 a tablet 41 and pill 42 are shown, respectively.

The operation of the machine is as follows: Assuming that the chute is in the normal position or coincident with the plane of the chute carrying frame 5 as shown in Fig. 3, then tablets supplied to the hopper 26 will move downwardly by gravity through the orifice 25 into the receiving opening 24 and along the entire length of the chute until stopped by the stop bar 8 at the lower end of said chute. In order to facilitate the downward movement of the tablets the chute is agitated by transverse reciprocations caused by turning the handle crank 8. After that portion of the chute between the bar 8 and partition 37 has been filled with tablets the dog 33 will be in a position to drop onto the cam 22 as will be clear by reference to Fig. 3 which shows the direction of movement of said cam. Upon the dropping or oscillation of the chute into the dotted line position the partition 37 will be projected across the space in the chute and thus prevent further downward movement of the tablets contained therein. Simultaneously with this action the tablets contained within the chute below the partition 37 will be discharged into the hopper 36 and thence into a receptacle. The conformation of the cam 22 is such as to give ample time for the discharge of tablets below the partition 37, whereupon the chute will be moved to its normal position as shown in Fig. 2, thus permitting the portion of said chute below the partition 37 to be again filled with tablets, it being seen that when said chute is moved to the full line position that the partition 37 ceases to interfere with the downward movement of the tablets. The portion of the chute between the partition 37 and the lower end thereof is adapted to contain a known number of tablets, consequently it is only necessary to count the number of discharges of the tablets in order to be informed of the number thereof passing through the machine. The object of the transparent cover of the chute is to be assured that the same is properly filled with tablets during the operation thereof. The object of the corrugations of the partition 37 and bar 8 is to facilitate the automatic arrangement or placing of the tablets when the chute is being filled, it being unnecessary as aforesaid to provide corrugations when pills are being counted. During the reciprocatory movement of the chute carrying frame 5 which is designed to properly agitate and facilitate the movement of tablets within the chute, the receiving opening 24 of said chute must be always under the discharge orifice 25, consequently the length of said opening is made somewhat greater than the length of said

orifice, this feature not being shown, but will be readily understood by those skilled in the art.

The pill and tablet counting machine as set forth is simple of construction, symmetrical of design and efficient in operation, and while the same is shown to be manually operated, it is apparent that power may be employed if so desired.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

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

1. In a machine of the class described, a frame, a downwardly inclined chute mounted to oscillate in said frame, means for oscillating said chute at intervals, a stop arranged substantially midway of said chute, a second stop arranged at the discharge end of said chute, said stops being adapted to be rendered operative alternately by the oscillations of the chute, substantially as described.

2. In a machine of the class described, a frame having a hopper mounted thereon at one end thereof, an oscillatory chute inclined downwardly from the delivery orifice of said hopper, means disposed under said chute for oscillating the same at intervals, a stop arranged substantially midway of said chute, a second stop arranged at the discharge end of said chute, said stops being adapted to be rendered operative alternately by the oscillations of the chute, and means for regulating the size of the orifice of said hopper, substantially as described.

3. In a machine of the class described, an elevated hopper, an oscillatory chute the receiving end of which is disposed under the discharge orifice of said hopper, means arranged under said chute for oscillating the same at intervals, a stop arranged substantially midway of said chute and adapted to be operative therein at intervals, and a second stop arranged adjacent the delivery end of said chute and adapted to be operative when said first mentioned stop is inoperative, said stops being alternately rendered operative and inoperative by the oscillations of the chute, substantially as described.

4. In a machine of the class described, an elevated hopper having a discharge orifice at the lower end thereof, a chute the receiving end of which is disposed under said orifice of said hopper, said chute being pivoted intermediate the ends thereof, a cam

disposed under said chute and adapted to oscillate the same, a stop adapted to project into said chute at intervals, and a second stop provided at the delivery end of said chute and adapted to be operative during the time that said first mentioned stop is inoperative, said stops being alternately rendered operative and inoperative by the oscillations of the chute, substantially as described.

5. In a machine of the class described, a frame having an elevated hopper mounted thereon at one end thereof, a variable discharge orifice provided at the lower end of said hopper, an oscillatory inclined chute the receiving end of which is disposed under said discharge orifice, a rotatable cam arranged under said chute in the vicinity of the fulcrum thereof and adapted to oscillate the same at intervals, there being a transverse slot provided adjacent to the center of said chute, a stop adapted to project through said slot in said chute and to be rendered operative therein at intervals, and a second stop arranged at the discharge end of said chute and adapted to be rendered operative during the time that said first mentioned stop is inoperative, the operativeness of said stops being controlled by said cam, said stops being alternately rendered operative and inoperative by the oscillations of the chute, substantially as described.

6. In a machine of the class described, a frame having a hopper mounted thereabove at one end thereof, the top members of said frame being inclined downwardly from adjacent said hopper, a transversely movable chute carrying frame disposed in the same plane as said inclined members, means for actuating said frame, an oscillatory chute having approximately the same inclination as said chute carrying frame and pivoted thereto, a rotatable cam provided under said chute and adapted to oscillate the same at intervals, the receiving end of said chute being arranged under the discharge orifice of said hopper, and a pair of stops arranged respectively adjacent the center of said chute and at the discharge end thereof, the action of said stops being controlled by said cam, said stops being alternately rendered operative and inoperative by the oscillations of the chute, substantially as described.

7. In a machine of the class described, a frame having longitudinally inclined top members, a chute carrying frame arranged in the same plane as said top members and adapted to be reciprocated transversely, means for reciprocating said chute carrying frame, an oscillatory chute provided in said chute carrying frame, a hopper formed in rigid connection with said first mentioned frame and provided with a delivery orifice arranged above the receiving end of said chute, a cam disposed below said chute and

adapted to oscillate the same at intervals, there being a transverse slot provided midway of the bottom of said chute, a transversely extending stop adapted to project through said slot and to be rendered operative in and by the oscillations of said chute at intervals, a second stop arranged adjacent the discharge end of said chute and adapted to be rendered operative by the oscillations of said chute during the time of inoperativeness of said first mentioned stop, and means for regulating the size of said hopper orifice, substantially as described.

8. In a machine of the class described, a frame having a hopper mounted thereabove at one end thereof, longitudinal frame members disposed below said hopper and inclined downwardly therefrom, a transversely movable chute carrying frame disposed in the same plane as said inclined members and adapted to reciprocate therebetween, means for actuating said chute carrying frame, a chute mounted in said chute carrying frame and adapted to oscillate in a vertical plane, the receiving end of said chute being disposed under the discharge orifice of said hopper, a single throw rotatable cam disposed under said chute adjacent the fulcrum thereof, a downward projection provided on the under side of said chute and adapted to cooperate with said cam for oscillating said chute at intervals, there being a transversely disposed slot provided in the bottom of said chute adjacent the center thereof, a transversely extending partition adapted to project through said slot at intervals, and a stop provided adjacent the discharge end of said chute, said stop and said partition being adapted to operate once during a revolution of said cam and by means of the oscillations of said chute, substantially as described.

9. In a machine of the class described, a frame having an elevated hopper provided at one end thereof, transverse retarding bars provided in said hopper, means for regulating the discharge orifice of said hopper, the top members of said frame being inclined downwardly from adjacent said hopper, a chute carrying frame arranged in the same plane as said top members and adapted to reciprocate therebetween, means for reciprocating said frame, an oscillatory chute disposed substantially in the same plane as said chute carrying frame and fulcrumed thereto, a rotatable cam disposed beneath said chute and adapted to oscillate the same at intervals, there being a transverse slot disposed adjacent the center of the bottom of said chute, a transverse partition in rigid connection with said chute carrying frame and adapted to project through said slot at intervals, a stop provided adjacent the lower end of said chute and adapted to cooperate

therewith at intervals, the time of operation of said partition and said stop being alternate and in synchronism with said cam, and means for limiting the oscillations of said chute, said stops being alternately rendered operative and inoperative by the oscillations of the chute, substantially as described.

10. In a machine of the class described, a frame having longitudinally inclined top members, a hopper disposed above said top members at one end thereof, a slide provided at the lower end of said hopper and adapted to regulate the size of the orifice thereof, retarding bars arranged transversely in said hopper above the orifice thereof, a pair of transversely arranged rods provided at the respective ends of said top members, a chute carrying frame adapted to reciprocate transversely on said rods, means for reciprocating said chute carrying frame, a chute fulcrumed to said chute carrying frame and adapted to oscillate in a vertical plane, the receiving end of said chute being disposed under the discharge opening of said hopper, a rotatable cam arranged in operative relation with said means for reciprocating said chute carrying frame and adapted to oscillate said chute, there being a transversely disposed slot in the bottom of said chute adjacent the center thereof, an upwardly extending partition formed in rigid connection with said chute carrying frame and adapted to project through said slot into said chute at intervals as the chute oscillates, a stop provided on said chute carrying frame for limiting the oscillations of said chute, a stop provided in said chute carrying frame and disposed adjacent the lower or discharge end of said chute, said stop being rendered operative through the oscillation of said chute during the time that said partition is inoperative in said chute, and a transparent cover on said chute, substantially as described.

11. In a machine of the class described, a frame the top members of which are inclined longitudinally, a hopper secured to said frame above the highest end thereof, there being a discharge orifice in the lower end of said hopper, a pair of transversely extending cylindrical rods provided at the ends of said top members, a transversely movable chute carrying frame mounted to reciprocate on said rods, an oscillatory chute fulcrumed to said chute carrying frame the receiving end of which is disposed under the discharge orifice of said hopper, stopping means provided adjacent the center of said chute and at the discharge end thereof and adapted to operate alternately through the oscillation of the chute, a cam disposed under said chute and adapted to oscillate the same at intervals, and means for reciprocating said chute carrying frame compris-

ing a longitudinally extending shaft, crank
pins arranged at each end of said shaft, con-
necting rods extending from said crank pins
to the sides of said chute carrying frame, a
5 handle crank arranged in bevel gear connec-
tion with said shaft and adapted to rotate
the latter, a worm mounted upon said shaft,
a worm wheel meshing with said worm, and
a transversely disposed shaft carrying said

worm wheel and said cam, substantially as 10
described.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

CHARLES GOULDING.

Witnesses:

JOSHUA R. H. POTTS,
HELEN F. LILLIS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
