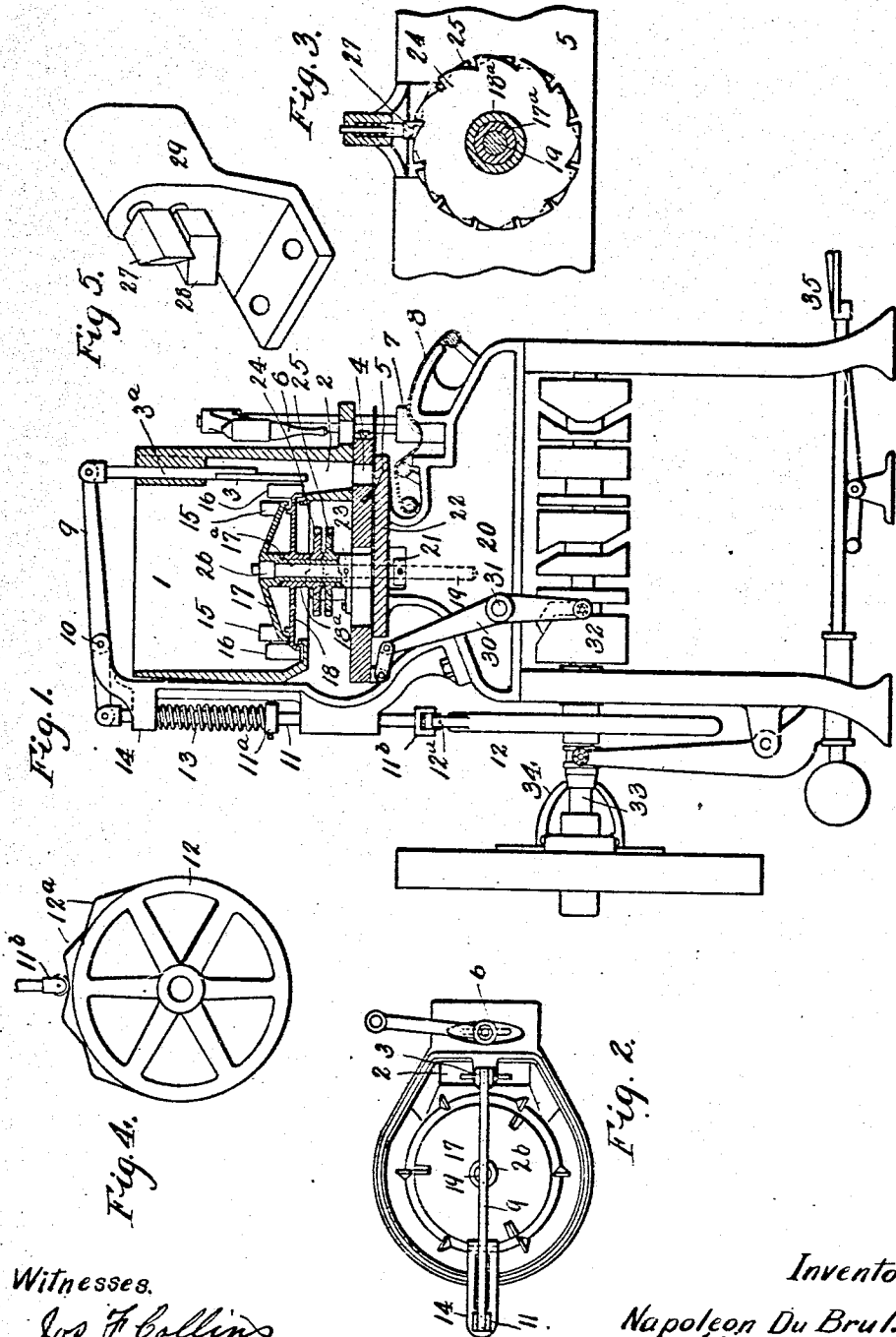


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CIGAR BUNCH MACHINE.
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946,663.

Patented Jan. 18, 1910.



Witnesses.

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UNITED STATES PATENT OFFICE

NAPOLÉON DU BRUL, OF CINCINNATI, OHIO.

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To all whom it may concern:

Be it known that I, NAPOLÉON DU BRUL, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Cigar-Bunch Machines, of which the following is a specification.

My invention relates to machines for producing the bunch, in cigar manufacture, and particularly to that portion of such machines by which short filler tobacco contained in a hopper, is forced by a plunger, through an opening in the bottom of the hopper, into a matrix which measures a charge of tobacco suitable in size and shape, to constitute the filler of a cigar and then advances said charge to a position from which it may be deposited by a second plunger, upon the apron which rolls it in the binder.

The present invention has for its objects, among others, to avoid breaking or reducing the tobacco; to insure feeding the larger and smaller portions of the tobacco alike; to insure a more constant and uniform delivery of the tobacco to the matrix; to greatly simplify the construction of the mechanism; and to render the feeding mechanism interchangeable with the feed mechanism of existing machines. These several objects are attained by imparting intermittent movement, step by step, to the means which advances the tobacco toward the discharge opening, thereby eliminating the agitation which breaks up the tobacco and which causes the coarse material to collect at the top and the finer material to settle to the bottom with consequent uniformity in the discharge of the tobacco; also by constructing the feeding means in the form of circular series of flights or wings to take more positive hold upon the short cut filler tobacco and upon the coarser and finer material alike, and move it toward the discharge opening, the flights or wings being caused to move in opposite directions, and the outer series being made to overlap the discharge opening, so that they bring tobacco from both sides toward the discharge opening and keep a large volume of tobacco above the latter; also by constructing the discharge opening in the form of a deep receptacle below the bottom of the hopper and above the matrix which is kept filled by the large volume of

tobacco constantly advanced by the flights or wings, and which therefore maintains a uniform condition of tobacco immediately above the matrix; also by constructing the plunger on simpler lines and with simpler operating mechanism and causing it to reciprocate in the pocket and force the tobacco into the shaping matrix; also by causing the step by step movement of the flights or wings to be developed from the reciprocating movement of the slide which carries the matrix.

My present invention will be fully set forth in the following description and its novel features pointed out in the appended claims, reference being had to the accompanying drawings in which,

Figure 1 is a side elevation of a cigar bunch machine having my improved tobacco-feeding mechanism embodied therein and shown in vertical section; Fig. 2 is a plan view of the tobacco feeding mechanism; Fig. 3 is a detail view of the reversely acting ratchets through which the opposite movements of the slide are transmitted, step by step, to the respective series of flights or wings; Fig. 4 is a detail view of the cam-wheel that raises the feed-plunger; Fig. 5 is a perspective view of the oppositely acting pawls and the bracket in which they are mounted.

1 represents a hopper into which is placed short filler tobacco and from which the tobacco is discharged through an opening 2 and forced by a vertically reciprocating feed plunger 3 into the shaping matrix 4 of a transverse slide 5, which forwards it to a position beneath a second plunger 6, by which it is deposited into the depression of a rolling apron 8, in a manner and for a purpose well known in the art.

Heretofore discharge opening 2 was merely an opening in the flat bottom of the hopper, but according to the present invention, said opening is in the form of a deep pocket below the bottom of the hopper and immediately over the inner position of matrix 4, and it maintains a constant supply and uniform condition of tobacco above said matrix. The plunger 3 is of simplified construction, being mounted upon the lever 9 fulcrumed at 10 and connected at its outer end with push rod 11 that receives, periodically, a series of upward thrusts from cams

12^a on a wheel 12, to develop a downward movement of the plunger 3, to force the tobacco downward toward the matrix, while said rod 11 is returned in each interim by a spring 13 confined between shoulder 11^a on the rod, and bracket 14 in which the rod is guided. Heretofore, shakers or agitators have been employed to cause the tobacco in the hopper to move toward the point of discharge, but these are objectionable in that they break up or reduce the tobacco and cause the coarser material to work to the top and the finer material to feed out first.

According to my present invention the tobacco is positively advanced toward the outlet without the aforesaid disadvantages by two oppositely moving circular series of flights or wings 15, 16, located at the bottom of the hopper and rotated step by step, while the bottom of the hopper, within such wings is conoidal in form to cause the tobacco to gravitate outward. The flights or wings of the outer series, pass partly over the pocket 2 and the latter is kept filled by the large volume of tobacco constantly forwarded by the wings. For structural considerations, the series of wings are mounted on disks 17, 18, respectively, of which the upper disk 17 provides the conical bottom of the hopper, and said disks are rotatably mounted and they receive a step by step rotation in opposite directions, through the following instrumentalities:

19 represents a vertical shaft rotatably supported in frame 20 of the machine and provided with a retaining collar 21. This shaft projects vertically beyond the bed 22 and at a point immediately above said bed is provided with a collar 23.

24, 25, represent two ratchet wheels with oppositely directed teeth, of which the lower ratchet wheel 25 is clutched to the collar 23 whereby it is adapted to impart rotation to said collar, while the upper ratchet wheel 24 is rotatable relatively to the ratchet wheel 25. Disk 18, which carries the outer series of wings 16, has a hub 18^a which is clutched to the ratchet wheel 24 and thus receives rotation from the latter. Disk 17, which carries the inner series of wings 15, is provided with a tubular shank 17^a which fits the shaft 19 and extends downwardly through the hub 18^a and the ratchet wheels 24, 25, and is clutched at its lower end to the collar 23, thus causing disk 17 with its wings to receive rotation imparted to collar 23 by ratchet wheel 25. Disk 17 is shouldered above the hub 18^a of disk 18 and is in turn held down relatively to the shaft 19 by means of a nut 26 screwed upon the upper end of the shaft and entering an enlargement in the bore of the shank. The parts are thus securely held in their proper relations, by means which permits the parts to be readily separated and re-assembled.

27, 28, represent two oppositely acting pawls which are mounted in a bracket 29 that is in turn secured to the slide 5 in such position to cause said pawls to co-act, respectively, with the ratchet wheels 24, 25, as the slide reciprocates them tangentially thereto.

Intermittent reciprocation is imparted to the slide 5 by any suitable known means, such for instance, as the lever 30 fulcrumed at 31 and having its lower end engaged by a cam 32 upon the main shaft 33. Said main shaft is provided with other cams designed to actuate other parts of the cigar bunch machine to which my present invention does not relate. A clutch 34 controlled by foot levers 35 serves to throw the machine into operation at the will of the operator.

The operation of the machine is as follows: Upon depressing the foot lever, the clutch 34 is thrown in and the shaft 33 makes a single revolution, during which the plunger 3 executes a series of strokes that feeds the tobacco downward through the pocket 2 and into the matrix 4; after which slide 5 moves forward with its measured and molded charge of tobacco, until matrix 4 containing said charge is brought beneath the plunger 6, when said plunger will be depressed and the charge of tobacco will be deposited in the pocket 7 of the apron 8, after which the slide 5 returns to its normal position in readiness to receive a new charge for the next bunch to be formed; during the forward movement of slide 5, the pawl 27 engages ratchet wheel 24 and rotates the latter, together with disk 18, and the outer series of wings 16, a distance corresponding to one tooth, while on a return movement of slide 5, pawl 28 engages the ratchet 25 and rotates the latter, together with the upper disk 17 and its wings 15, a distance corresponding to one tooth in a direction opposite to the rotation imparted to the disk 18 and its wings. These rotary movements imparted to the wings 15 and 16 tend to move the tobacco without agitating it and fill the space that has been left by the withdrawal of the preceding charge; the disk 17 which constitutes the main area of the bottom of the hopper, being conoidal in form, causes the tobacco to gravitate downwardly within reach of the wings. The filler is thus brought under the plunger 2 with the least possible movement; the tobacco is prevented from arching; the feed is uniform notwithstanding non-uniformity in the size of the tobacco parts, and reduction of the tobacco is avoided. A considerable space is left between the bed 22 and the hopper bottom which not only provides for the ratchets, but gives vertical dimension to the discharge pocket 2 and increases the efficiency of the plunger-action. The number of cams 12^a on wheel 12 is not important. Thrust rod 11 is preferably pro-

vided with a roller bearing 11^b for impingement on the wheel.

Having thus described my invention, what I claim, and desire to secure by Letters Patent is:—

1. In a cigar bunch machine a hopper, a matrix receiving measured charges of tobacco from the hopper, a plunger forcing the tobacco toward the matrix and an elongated pocket located between the hopper and matrix and registering with said matrix, confining the tobacco acted upon by the plunger.

2. In a cigar bunch machine, a hopper having an elongated vertical discharge pocket arranged to receive tobacco from said hopper, a plunger reciprocating in said pocket to feed tobacco therethrough and a slide reciprocating beneath the pocket, and having a matrix receiving measured charges of tobacco therefrom and normally registering with said pocket.

3. In a cigar bunch machine having a hopper constructed with a discharge opening, rotary feeding means in the hopper for advancing the tobacco toward the discharge opening, a plunger for assisting the discharge of tobacco through the discharge opening, means constantly rotating the feeding means, and independent means intermittently reciprocating the plunger consisting in the fulcrumed lever connected at one end to the plunger, the push rod connected to the other end of said lever, the spring moving said push rod in one direction, and the cam-wheel imparting intermittent impulses to said push rod in the other direction.

4. In a cigar bunch machine, a hopper for containing filler-tobacco, having a discharge opening, rotary feeding means for advancing the filler-tobacco toward the discharge opening, means for imparting rotary movement to the feeding means, a reciprocating plunger forcing the tobacco into the discharge opening, and independent means for reciprocating the plunger imparting a plurality of strokes thereto for each charge fed to the discharge opening.

5. In a cigar bunch machine a hopper for containing filler-tobacco, having a discharge opening and means for advancing the filler-tobacco therein consisting of a plurality of series of wings, and means imparting step by step movement to the respective series of wings in opposite directions.

6. In a cigar bunch machine, a hopper for containing filler-tobacco having a discharge opening and means for advancing the filler-tobacco therein consisting of two independent concentric circular series of wings and means moving said series of wings in opposite directions.

7. In a cigar bunch machine, a hopper for containing filler-tobacco having a discharge opening and means for advancing the filler-tobacco therein consisting of two independ-

ent concentric circular series of wings and means moving said series of wings in opposite directions intermittently.

8. In a cigar bunch machine, a hopper for containing filler-tobacco having a discharge opening and means for advancing the filler-tobacco therein consisting of two independent concentric circular series of wings and means moving said series of wings in opposite directions intermittently and with step by step movements.

9. In a cigar bunch machine a hopper having means for advancing the tobacco therein comprising superposed disks independently rotatable and respectively provided with wings, and means for rotating said disks in opposite directions consisting of ratchet wheels with oppositely presented teeth and oppositely presented pawls reciprocating tangentially to the ratchet wheels.

10. In a cigar bunch machine the combination of the hopper, the superposed disks in said hopper having peripheral wings for advancing the tobacco in the hopper, the shaft projecting vertically into the hopper upon which said disks are rotatably mounted, ratchet wheels mounted concentrically with said shaft, beneath the disks, in driving relation to the respective disks and having oppositely presented teeth, and oppositely acting pawls coöperating with the respective ratchet wheels mounted upon a part reciprocating relatively to the shaft.

11. In a cigar bunch machine the combination of the hopper, the shaft projecting vertically into the hopper, the collar on said shaft, an upper disk provided with wings, mounted upon said shaft and having a tubular shank clutched with the collar, a ratchet wheel also clutched with said collar, a second ratchet wheel rotatable relatively to the first, a lower disk clutched to the second ratchet wheel and provided with wings, and oppositely acting pawls coöperating with the respective ratchet wheels and suitably mounted upon a reciprocating part whereby they impart a step by step movement in the ratchet wheels.

12. In a cigar bunch machine the combination of a hopper, a matrix slide reciprocating beneath the hopper, the vertical shaft, the series of wings rotatable around said shaft, the ratchet wheel for imparting rotation to said wings and a pawl coöperating with the ratchet wheel, mounted upon the matrix slide whereby it is caused to reciprocate and impart rotation to the ratchet wheel and wings.

13. In a cigar bunch machine the combination of a hopper and matrix slide reciprocating beneath the hopper, the two series of wings rotatably mounted in the hopper, the independently rotatable ratchet wheels in driving relation to the respective series of wings, and a pair of oppositely act-

ing pawls coöperating with the respective ratchet wheels, mounted upon the matrix slide and thereby caused to reciprocate tangentially to the ratchet wheels and impart thereto step by step movements in opposite directions.

14. In a cigar bunch machine, a hopper for containing filler-tobacco having a discharge opening, a slide reciprocating intermittently beneath the hopper and having a matrix for receiving and conveying a charge of tobacco therefrom, an intermittently reciprocating plunger for advancing tobacco through the discharge opening, toward the matrix, executing its stroke while the latter is in receiving position, wings for advancing the tobacco to the discharge opening, and means imparting step by step movements to the wings, and causing such movements to take place contemporaneously with the movements of the slide.

15. In a cigar bunch machine, a hopper

for containing filler-tobacco having a discharge opening, a slide reciprocating intermittently beneath the hopper and having a matrix for receiving and conveying a charge of tobacco therefrom, an intermittently reciprocating plunger for advancing tobacco through the discharge opening toward the matrix, executing its stroke while the latter is in receiving position, two series of wings for advancing the tobacco to the discharge opening, and means imparting step by step movements to the respective series of wings, and causing such movements to respectively take place contemporaneously with the outward and inward movements of the slide.

The foregoing specification signed at Cincinnati Ohio this 20 day of June, 1908.

NAPOLEON DU BRUL.

In presence of—

H. WHYRICH,

F. BROERMAN.