

Dec. 25, 1923.

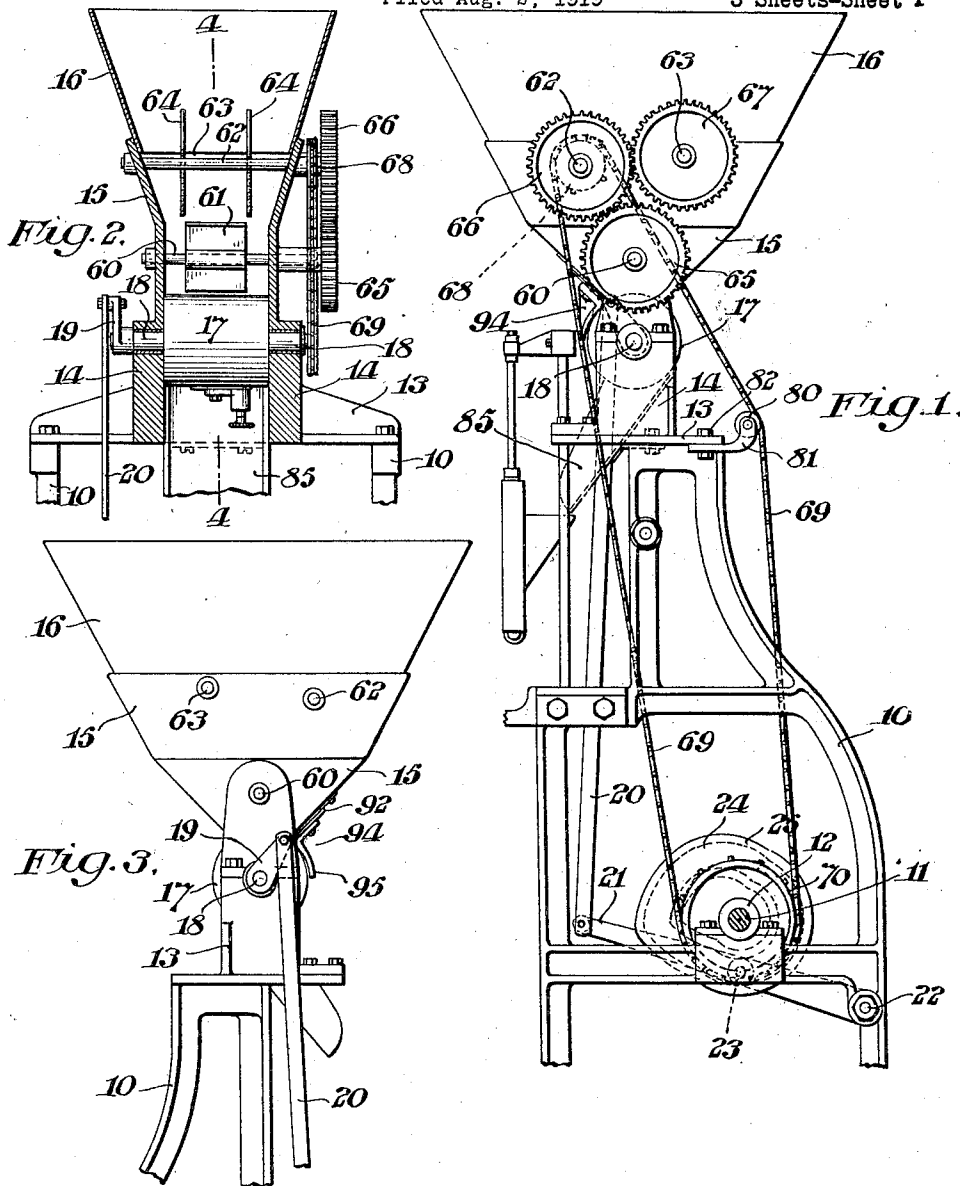
1,478,829

B. LIBERMAN ET AL.

CIGAR BUNCHING MACHINE

Filed Aug. 2, 1919

3 Sheets-Sheet 1



Inventors:
Bernard Liberman
Leon Liberman
William M. Reichart
By *Jas. C. Hobensmith*
Attorney.

Dec. 25, 1923.

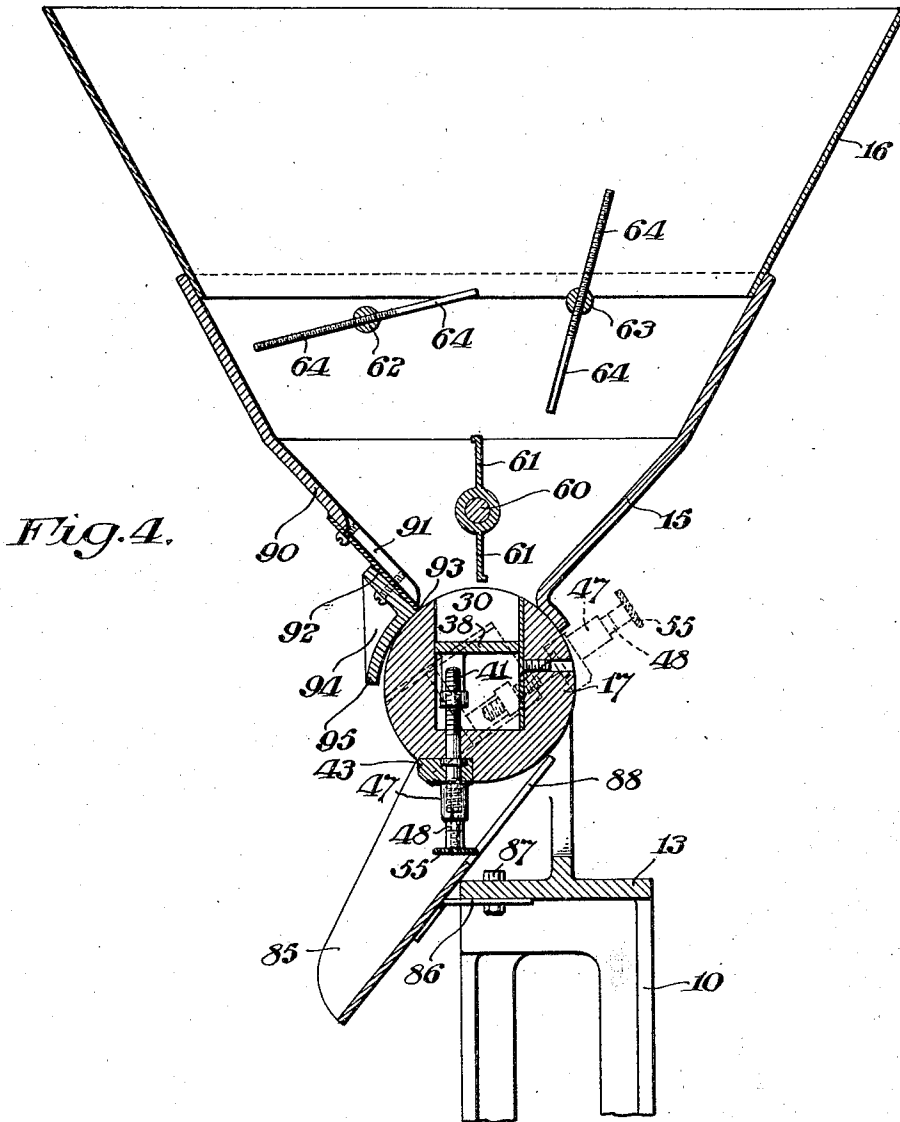
1,478,829

B. LIBERMAN ET AL

CIGAR BUNCHING MACHINE

Filed Aug. 2, 1919

3 Sheets-Sheet 2



Inventors:
Bernard Liberman
Leon Liberman
William M. Reichart
By Jas. C. Wobersmith
Attorney.

Dec. 25, 1923.

1,478,829

B. LIBERMAN ET AL

CIGAR BUNCHING MACHINE

Filed Aug. 2, 1919

3 Sheets-Sheet 3

Fig. 5.

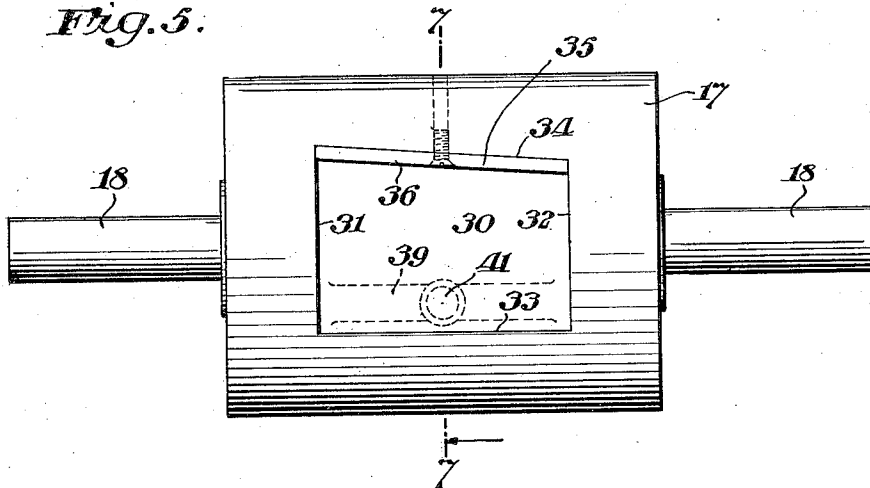


Fig. 6.

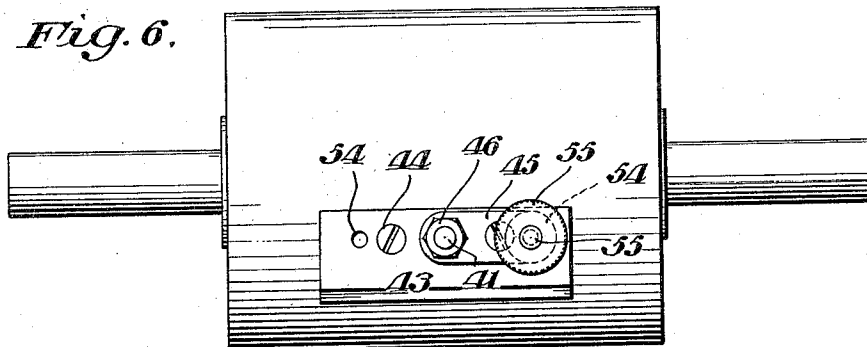


Fig. 8.

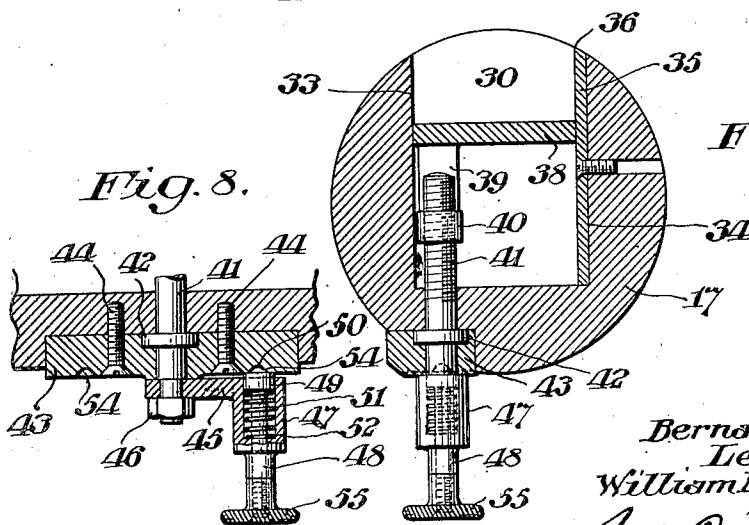


Fig. 7.

Inventors:
Bernard Liberman
Leon Liberman
William M. Reichart
By Jas. C. Wobensmith
Attorney.

UNITED STATES PATENT OFFICE.

BERNARD LIBERMAN, LEON LIBERMAN, AND WILLIAM M. REICHART, OF PHILADELPHIA, PENNSYLVANIA; SAID LEON LIBERMAN AND SAID REICHART ASSIGNORS TO SAID BERNARD LIBERMAN.

CIGAR-BUNCHING MACHINE.

Application filed August 2, 1919. Serial No. 314,999.

To all whom it may concern:

Be it known that we, BERNARD LIBERMAN, LEON LIBERMAN, and WILLIAM M. REICHART, all citizens of the United States, and all residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Cigar-Bunching Machines, of which the following is a specification.

Our invention relates to cigar bunching machines, that is to say, to machines in which a measured quantity of tobacco is rolled within a binder to form a cigar bunch which is subsequently made into a completed cigar by the addition of the usual wrapper in a subsequent operation. Our present invention relates more particularly to improved mechanism for measuring a certain quantity of scrap tobacco from a magazine or hopper and delivering the same to the bunch forming mechanism proper.

The principal object of our present invention is to provide improved mechanism for the above mentioned purpose, which is so constructed and arranged whereby scrap tobacco can be handled which is of a larger size than is usually worked in cigar bunching machines as at present constructed. A further object of our invention is to provide means whereby the quantity of the scrap delivered for each cigar may be easily and conveniently adjusted or varied without dismantling the machine. A further object of our invention is to provide improved means whereby the tobacco will pass from the magazine or hopper to the measuring pocket in a condition so that the quantity delivered for each cigar will be substantially uniform. A further object of our invention is to improve the details of construction of such machines to render the same more simple, efficient and certain in their action.

The nature and characteristic features of our invention will be more readily understood from the following description taken in connection with the accompanying drawings forming part hereof in which:

Figure 1 is a side elevation of a portion of a cigar bunching machine embodying the main features of our present invention;

Fig. 2 is a vertical central section of the upper portion of the structure shown in Fig. 1, the section being taken transversely thereto;

Fig. 3 is an elevational view of the other side of the machine, that is, the side opposite to that shown in Fig. 1;

Fig. 4 is an enlarged vertical section taken on the line 4-4 of Fig. 2;

Fig. 5 is an enlarged horizontal plan view of the feed roll detached;

Fig. 6 is an underneath plan view thereof;

Fig. 7 is a transverse section taken on the line 7-7 of Fig. 5; and

Fig. 8 is a sectional detail view of a portion of the mechanism for adjusting the capacity of the measuring pocket of the feed roll shown in detached detail in Figs. 5 to 7 inclusive.

Referring to the drawings, in the particular embodiment of our invention therein shown, the bunching machine proper is provided with side-frames 10 which form supports for the various parts thereof. A main shaft 11 is journaled in suitable pillow-blocks 12 which are mounted in the side-frames 10. The main shaft 11, it should be understood, preferably makes one complete revolution for each cigar bunch made by the machine as is a common practice in machines of this general type.

The side-frames 10 are connected at their uppermost extremities by means of a bracket 13 which is provided with vertical extensions 14 to which a housing or casing 15 is secured. This housing or casing 15 forms the lower portion of the magazine or hopper in which the supply of scrap tobacco is held, the other portion of the hopper comprising a flaring sheet-metal extension 16, the lower ends of which are secured to the housing or casing 15 in any suitable manner.

At the place of junction between the lower portion of the housing 15 and the upper portion of the vertical extensions 14 of the framework 13, and forming a closure for the bottom of the magazine or hopper, is a feed roll 17, the detail construction of which is shown in Figs. 5 to 8 of the drawings. The feed roll 17 is provided with extending journal studs 18 which are journaled in bearings formed between the housing 15 and the vertical extensions 14 of the bracket 13. To the outer end of one of the projecting journal studs 18, there is secured a crank 19 (see Figs. 2 and 3).

A connecting rod 20 is pivotally connected to the free end of the crank 19, and the other end of the connecting rod 20 is secured to the outer free end of a lever 21 which is pivoted at its other end as at 22 to a portion of one of the side-frames 10. The lever 21 is also provided with a cam roller 23 which is in engagement with a groove 24 of a cam 25 which is mounted on and rotates in unison with the main shaft 11. The cam groove 24 is of such shape or contour whereby the feed roll 17 will be periodically actuated at the proper time intervals to deliver the quantity of scrap contained therein, however, it should be noted that the cam groove 24 has a considerable portion thereof concentric with the axis of rotation of the shaft 11, so that the measuring pocket, which will be later described in detail, remains in communication with the interior of the magazine or hopper during a considerable portion of each cycle of operation of the machine.

Referring now more particularly to Figs. 5 to 8 of the drawings, the feed roll 17 is provided with a central cavity 30, the ends 31 and 32 of which are transverse to the axis of rotation, one side 33 of which is parallel to the axis of rotation, and the other side 34 of which is at a slight angle to the axis of rotation (see Fig. 5). To the side 34, which is at an angle to the axis of rotation, there is removably secured by means of the screw 35' a knife-blade 35, the cutting edge 36 of which co-acts with another knife which will be later described, but the purpose of the slight angular disposition of the side-wall 34 of the cavity 30 is to provide a shearing action for the knife-blade 35 in its co-action with the other knife-blade as will appear later. The upper portion of the cavity 30 as defined by the end walls 31 and 32, the side-wall 33 and the knife-blade 35 forms a measuring pocket into which a predetermined quantity of the scrap may fall from the magazine when said measuring pocket is in communication therewith.

The bottom of the measuring pocket is adjustably defined by a plate 38 which is provided with a depending bracket 39, having an enlarged portion 40 interiorly screw-threaded and engaged by a threaded bolt 41. The bolt 41 is journaled in the feed roll 17 in the portion thereof opposite the outlet of the cavity 30, and is provided with an enlarged portion or collar 42 which is seated in a complementary recess in a block 43 which is secured to the feed roll 17 by means of screws 44, the arrangement being such that while the bolt 41 may be freely rotated in its journal, it will however be restrained against longitudinal movement therein.

The outer end of the bolt 41 projects through the block 43 and a crank arm 45 is fixedly secured on the end thereof by means

of a nut 46, the crank arm 45 thus constituting a means for rotating the bolt 41. The outer end of the crank arm 45 is provided with an enlarged portion 47 in which a pin 48 is mounted with its axis parallel to the axis of rotation of the bolt 41. The pin 48 has an enlarged portion 49, which is provided with a projecting teat 50. A helical spring 51 surrounds the pin 48, being mounted in a cavity 52 in the enlarged portion 47 of crank arm 45, and this spring 51 serves to advance the enlarged portion 49 and effectually seat the teat 50 in one or the other of two recesses 54 provided in the block 43 at suitable locations. The outer end of the pin 48 is provided with a button 55 whereby the pin 48 may be arbitrarily retracted to free the teat 50 from engagement with the recesses 54. The foregoing arrangement is such that the bolt 41 may be rotated and locked in semi-circumferential positions, and on account of the engagement of the threaded portion of the bolt 41 with the enlarged portion 40 of bracket 39 carried by the base-plate 38 of the measuring pocket, said base-plate may be raised or lowered and locked in the desired position when the proper adjustment of the measuring pocket has thus been made.

Attention should now be directed to the particular construction and arrangement of the casing or housing 15 which constitutes the lower portion of the magazine or hopper. As before stated, the feed roll 17 constitutes a closure for the lower portion of the magazine or hopper. It should be noted that the end walls of the lower portion of the casing 15 extend vertically upwards a short distance above the feed roll 17 and also that for a short distance upwards, the front and rear walls of the casing 15 extend at an angle of about 45 degrees to the horizontal, and above this portion the side-walls extend flaring outward and the front and rear walls also flare, but to a greater extent at say, an angle of about 60 degrees to the horizontal. The object of the peculiar flaring arrangement of the hopper walls is to secure a delivery of the large and small particles of scrap to the pocket of the feed roll, evenly and uniformly mixed. This is because the smaller particles of scrap tend to shift through the larger particles and reach the pocket first, where the walls of the hopper are at a less angle to the perpendicular. Whereas, where the walls are more inclined, that is more nearly horizontal as they approach the feed roll, this tendency is counteracted, and the large and small particles are kept more together as they travel to the pocket of said feed roll. Within the lower portion of the casing or housing 15, there extends a horizontal shaft 60 which is journaled in the side walls of said casing 15. The shaft 60 carries wings or plates 61, oppositely disposed and ar-

5 ranged to rotate in unison with the shaft 60 in the lower portion of the magazine between the vertical side-walls thereof. Arranged above the shaft 60 and respectively to the front and rear thereof are horizontal shafts 62 and 63 which carry projecting pins or fingers 64.

10 The shaft 60 is provided on its outer end with a gear wheel 65 which meshes with a similar gear wheel 66 mounted on the outer end of shaft 62, and a gear wheel 67 mounted on the outer end of shaft 63 also meshes with gear wheel 66. Shaft 62 is provided with a sprocket wheel 68 which is engaged by a suitable driving chain 69 which extends down to and is driven by a sprocket wheel 70 mounted on the main shaft 11. The foregoing arrangement is such that as the main shaft 11 is rotated, the sprocket 70 rotating in unison therewith will drive the chain 69 which in turn will drive the sprocket 68 and thus rotate the shaft 62, and, through the medium of the gears 65, 66 and 67, will also rotate the shafts 60 and 63, and the ratio of the various sprockets and gears and the operation of the cam 24 actuating the feed roll, is such that the wings or plates 61, carried by a shaft 60 will occupy a vertical position, as shown in Fig. 4 of the drawings, when the feed roll first assumes the receiving position. By means of the above described mechanism the mass of the scrap tobacco contained within the lower portion of the magazine or hopper will be effectively disintegrated, and the same will be uniformly fed or permitted to drop into the measuring pocket formed in the cavity 30 of the feed roll 17. It should be noted in passing that the slack of the chain 69 may be taken up by means of an idler wheel 80 carried at the outer end of a bracket 81 which is adjustably secured by means of a bolt 82 to the bracket member 13 which connects the upper ends of the side-frames 10.

45 Arranged beneath the feed roll 17 is a sheet-metal chute 85 which serves to direct the measured portions of the tobacco, as the same are from time to time delivered by the feed roll, towards the bunching mechanism proper, the construction of which however forms no part of the present invention and therefore need not be further shown or described. The chute 85 is provided with a horizontally extending connecting arm or bracket which is adjustably secured to the under side of the bracket 13 by means of a bolt 87, and the chute 85 may be cut away at a portion thereof as at 88 to permit the passage of the projecting parts of the measuring pocket and adjusting mechanism as the feed roll 17 is oscillated in its journals periodically to receive a charge from the hopper and deliver the same to the chute 85.

65 The inclined front-wall 90 of the lower portion of the casing 15 is cut away as at 91,

forming an opening in said wall which is closed by means of a knife-blade 92, the cutting edge of which is flush with the cylindrical surface of the feed roll 17 and co-acts with the cutting edge 36 of the knife-blade 35 which is mounted in the measuring pocket of the feed roll 17. Secured on the outer face of the knife-blade 92 is a bracket 94, one portion of which is clamped or held against a portion of the knife-blade 92 and forms an effective reinforcement therefor. The bracket 94 also has a downwardly depending sector plate 95 which is arranged adjacent the cylindrical surface of the feed roll 17, but has its inner surface slightly eccentric with respect thereto, whereby the space between the sector plate 95 and the feed roll 17 progressively increases from the portion adjacent the knife 92 to the lower end thereof. The purpose of the sector plate 95 is to prevent the premature delivery of any portion of the tobacco contained within the measuring pocket of the feed roll 17 and the eccentric arrangement of the interior surface serves to prevent any wedging of stems or thick particles of the tobacco between the feed roll 17 and the sector plate 95, as it will be readily understood that the feed roll 17 rotates forward, on account of the constantly increasing space, any particles which may be wedged there between will readily free themselves.

The operation of the machine may now be readily understood. As before stated, the main shaft 11 makes one complete revolution for each cigar bunch which is made in the complete machine. As the shaft 11 rotates, the cam groove 24 is so shaped as to cause the lever 21 to be actuated, and thus, through the intermediary of the connecting rod 20 and lever 19, the feed roll 17 is rotated a portion of a revolution to cause the measuring pocket to assume with a definite dwell the receiving position, and then to pass from communication with the interior of the magazine or hopper and discharge the measured quantity of tobacco contained in said measuring pocket to the chute 85, from thence to be delivered to the bunching mechanism which, as before stated, forms no part of the present invention, and may be of any preferred construction.

The magazine or hopper which is formed by the casing or housing 15 and its sheet-metal extension 16 forms a reservoir within which the scrap tobacco is contained. It will be noted that the lower portion of this magazine is provided with a series of three transversely extending horizontal shafts, two of which, 62 and 63, lie in approximately the same plane and are provided with agitating fingers which serve to thoroughly disintegrate and shake up the mass of the scrap tobacco, as the same falls towards the feed roll at the lower part of

the magazine or hopper. It will also be noted that the shaft 60 is arranged beneath the shaft 62 and 63 and their agitating fingers, and that this shaft 60 is provided with wings or blades 61 which serve to insure the delivery of the previously disintegrated mass to the measuring pocket formed in the feed roll 17. It should also be noted that the means for driving the shaft 60 from the main shaft 11 is of a positive character, and the gear ratio and chain drive is so designed as to insure that the wings or members 61 carried by the shaft 60 assume a vertical position when the measuring pocket of the feed roll first assumes the position for receiving the scrap from the hopper as shown in Fig. 4, so that the wings or members will present a minimum of obstruction to the flow of scrap from the hopper to the pocket 30.

It should be understood that on account of differences in texture, atmospheric conditions, and different working characteristics of various sizes of scrap tobacco, it is difficult to determine in advance the size of the measuring pocket required which will deliver the proper quantity of tobacco for a particular size and shape of cigar bunch. It is therefore desirable that means be provided for easily and conveniently adjusting or varying the size of the measuring pocket without requiring any operation involving the dismantling of any portion of the machine, and which will permit the same to be done by a relatively inexpert operator. From the description hereinbefore set forth of the mechanism for regulating the size of the measuring pocket, the means of operating the same will be readily understood. By turning the crank arm 45 in the one direction or the other, accordingly as the size of the pocket is to be increased or decreased, the plate 38 will be raised or lowered, and the adjustment thus made will be maintained by the seating of the teat 50 in one or the other of the recesses 54 in the plate 43. It will be noted that this adjustment may be readily performed from time to time as deemed necessary from an inspection of the bunches which are formed in the bunching mechanism proper of the complete machine.

It will also be noted that as the feed roll 17 rotates, the cutting edge 36 of the knife 35 will co-act with the cutting edge 93 of the knife 92 which is secured in the front wall of the lower portion of the magazine or hopper, and that projecting particles of tobacco will thereby positively be severed. The sector plate 95 will prevent premature delivery of any portion of the tobacco contained within the measuring pocket, while the same is still in communication with the interior of the magazine or hopper. To prevent the wedging of any particles of tobacco between the surface of the feed roll 17 and the sector plate 95, the sector plate is so

arranged with respect to the surface of the feed roll 17 as to provide a space of constantly increasing width which will thus tend to prevent wedging or jamming of the tobacco therebetween.

It will be seen that there is thus provided an improved form of mechanism for measuring and delivering a predetermined quantity of tobacco in a cigar bunching machine in which the mass of the tobacco contained within the magazine or hopper will be permitted to enter the measuring pocket in a uniform disintegrated condition, that there is also provided means for conveniently and readily adjusting or varying the size of the measuring pocket to thereby insure the formation of cigar bunches which will be of uniform character, and that there are also provided certain refinements of mechanism which will render the machine simple, efficient and certain in its operation.

Having thus described the nature and characteristic features of our invention, what we claim as new and desire to secure by Letters Patent is:

1. In a cigar bunching machine, the combination of a feed roll, a hopper delivering thereto, the feed roll provided with a longitudinally extending pocket, a knife removably secured to one side of the pocket, having a cutting edge along the top margin of said side, and a cooperating knife secured to the hopper.

2. In a cigar bunching machine, the combination of a feed roll, a hopper delivering thereto, the feed roll provided with a longitudinally extending pocket, one longitudinally extending side wall of said pocket being inclined to the axis of the roll, means forming a knife edge along the top margin of said inclined side wall, and a cooperating knife secured to the hopper.

3. In a cigar bunching machine, the combination of a feed roll, a hopper delivering thereto, said hopper having a recess in its wall adjacent the feed roll, a knife secured to the hopper and closing said recess, the feed roll provided with a longitudinally extending pocket, and means forming a knife edge along the top margin of one of the longitudinally extending sides of the pocket for cooperating with the first mentioned knife.

4. In a cigar bunching machine, the combination of a feed roll, a hopper delivering thereto, a pair of horizontally arranged rotating shafts in said hopper provided with agitating fingers and means for actuating the shafts so that the fingers on each shaft will move downwardly toward the middle of the hopper and upwardly near the walls thereof.

5. In a cigar bunching machine, the combination of an oscillatory feed roll, a hopper delivering thereto, a rotating shaft hori-

zontally arranged in the hopper directly above the feed roll, having diametrically extending wing members secured thereto, and means for actuating the shaft and feed roll relatively so that the wings will assume the vertical position when the feed roll first assumes the receiving position.

6. In a cigar bunching machine, the combination of an oscillatory feed roll, a hopper delivering thereto, a rotating shaft horizontally arranged in the hopper directly above the feed roll, having diametrically extending wing members secured thereto, a pair of rotating agitating shafts provided with agitating fingers above the plane of the wing-shaft, and means for actuating the wing-shaft and feed roll relatively so that the wings will assume the vertical position when the feed roll first assumes the receiving position.

7. In a cigar bunching machine, the combination of an oscillatory feed roll, means for delivering material thereto, comprising a hopper and rotating agitating devices therein, means for oscillating the roll from the receiving position to the discharging position, comprising a rotating cam and connecting mechanism, and a common drive for said rotating elements, the cam formation

being such that the roll will have a definite dwell in the receiving position while the agitating devices continue to rotate.

8. In a cigar bunching machine, the combination of an oscillatory feed roll provided with a receiving pocket, a hopper delivering thereto, a rotating shaft horizontally arranged in the hopper directly above the feed roll, having diametrically extending members secured thereto, a pair of agitating shafts provided with agitating fingers mounted on the hopper above the plane of the first mentioned shaft and traveling in opposite directions, and actuating mechanism for said elements so synchronized that the feed roll shall have a dwell in the receiving position, the diametrically extending members shall assume the vertical position at the beginning of said dwell, and shall operate during the dwell to facilitate the delivery of scrap to said pocket, and the agitating devices shall have continuous operation.

In testimony whereof we have hereunto signed our names.

BERNARD LIBERMAN.
LEON LIBERMAN.
WILLIAM M. REICHART.