Sept. 30, 1930. T. A. HORTON 1,776,856

CIGAR BUNCHING MACHINE

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Fig. 4.

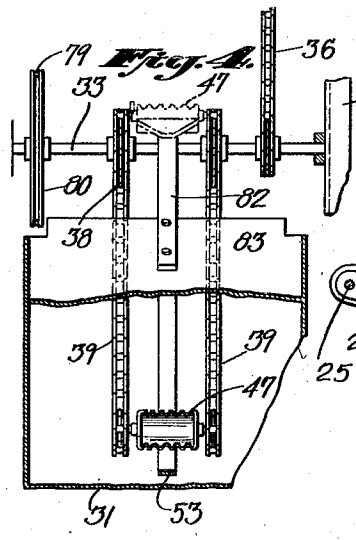


Fig. 2.

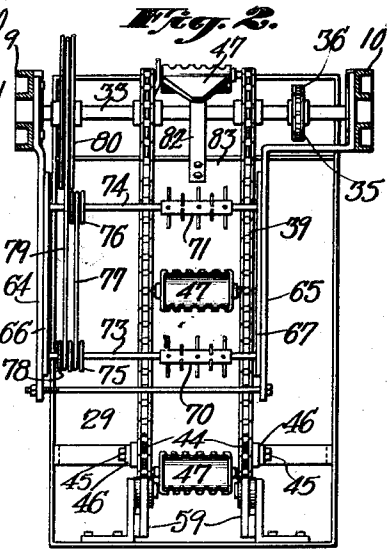


Fig. 1.

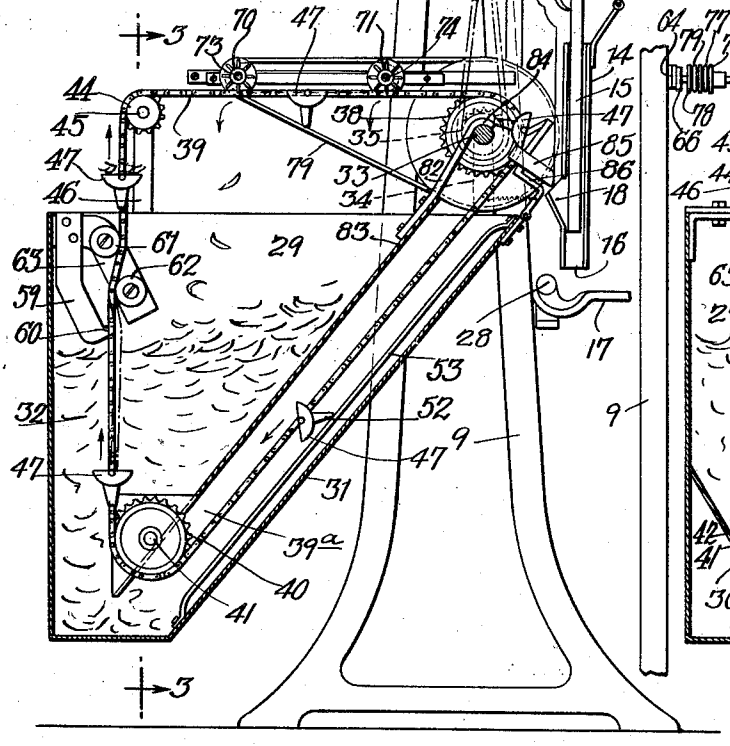
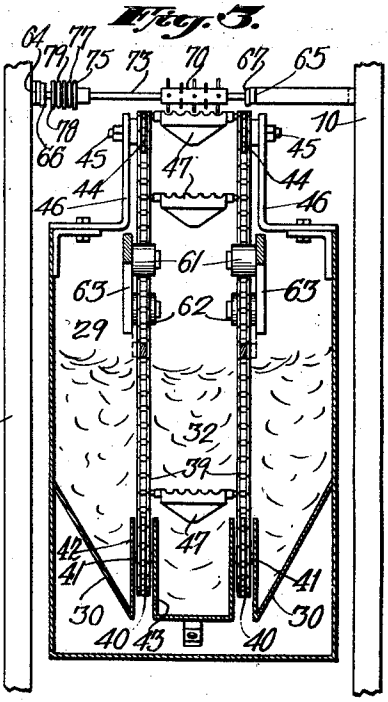


Fig. 3.



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CIGAR BUNCHING MACHINE

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Fig. 5.

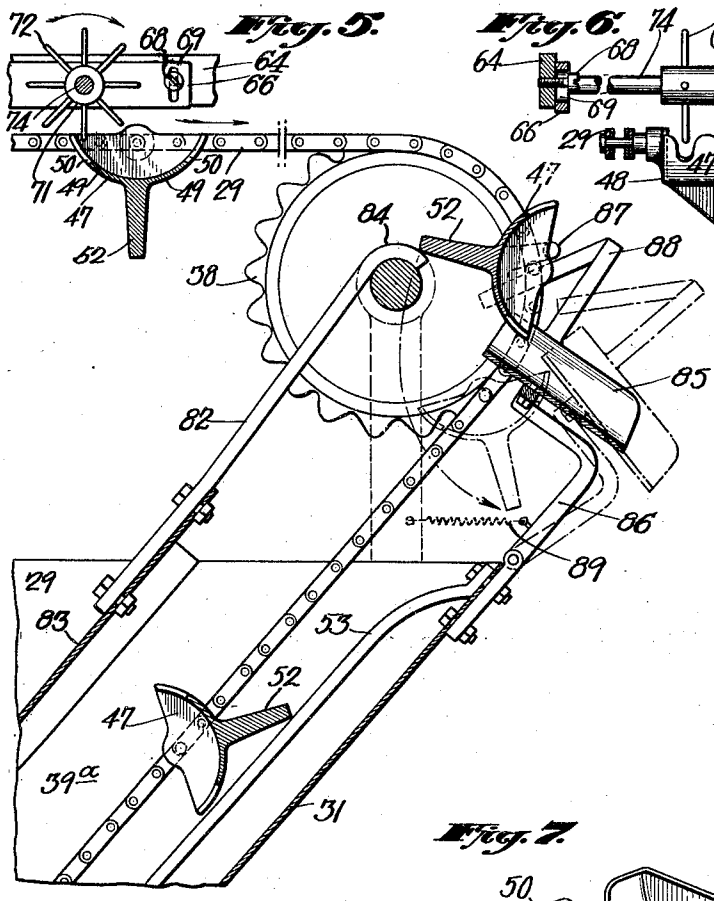


Fig. 6.

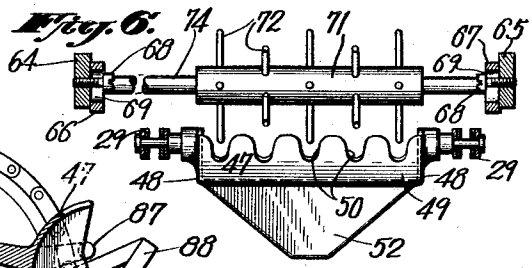


Fig. 8.

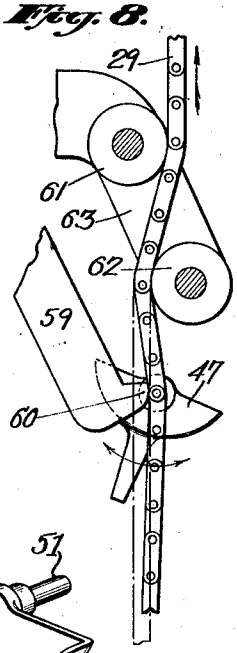
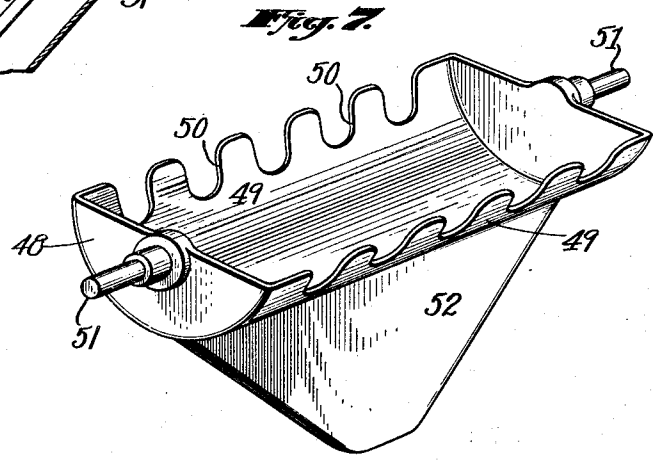


Fig. 7.



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UNITED STATES PATENT OFFICE

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CIGAR-BUNCHING MACHINE

Application filed May 17, 1928. Serial No. 278,383.

My invention relates to cigar-making machinery, and more particularly to an improved measuring attachment which will deliver the scrap filler for the bunching machines in predetermined quantities for the forming of the bunch. Heretofore in such cigar-making machinery it has been customary to utilize mechanically controlled weighing devices which thereafter feed a certain weight of tobacco to the bunching machine. Such mechanisms are undesirable in that the condition of the scrap tobacco, either wet or dry, ordinarily gives the heavier or lighter load, and hence the volume of the scrap so weighed necessarily varies with consequent variations in the size of the bunches and of the ultimate cigars.

The objects of my invention are, among other things, to provide an improved measuring attachment for the scrap tobacco in conjunction with the conveyor which will carry the tobacco to form the bunch from the source of tobacco supply and which will pick up and deliver a uniform mixture of large and small pieces from such scrap supply and thereafter feed such measured loads of a uniform size and volume to the scrap bunching machine. Such improved attachment is particularly designed for use with the so-called "Borgefeldt" scrap-bunching machines, and enables such "Borgefeldt" machines to produce with increased capacity since the scrap bunches fed to the machine come through with great uniformity and with more economical use of such scrap than other weighing mechanisms now in use in cigar factories.

A further feature of my invention is to produce a positive feed of this improved measuring attachment, irrespective of the size of the scrap, and to deliver a predetermined volume of scrap with a better and more uniformly distributed load and with a minimum of waste whereby the bunching machine may produce cigars of uniform size and quality at a greater speed than hitherto attainable.

My improved measuring attachment also embodies other novel features and advantages in connection with scrap-bunching machines whereby the operating parts delivering equal quantities of scrap to form the bunch are simplified and made more effective, and are otherwise better adapted for use, all of which will be hereinafter described and then particularly pointed out in the appended claims.

In the drawings, Fig. 1 is a vertical side elevation of a preferred embodiment of my attachment showing the conveyor with the several cups in operation, such attachment being operatively connected to the scrap-bunching machine;

Fig. 2 is a top plan view, partly in section, showing the driving pulleys for the conveyor arranged over the hopper;

Fig. 3 is a sectional end view on the line 3—3 of Fig. 1 showing the hopper and cup vibrating mechanism;

Fig. 4 is a fragmentary vertical section showing the driving shaft for the conveyor and sprockets;

Fig. 5 is an enlarged detail section showing the cups in various positions with surplus scrap being removed, another cup being dumped, while another cup is held in an inverted position by the guide track for reloading;

Fig. 6 is an enlarged detail of surplus scrap sweeper and cup;

Fig. 7 is an enlarged perspective of one of the weighted cups; and

Fig. 8 is an enlarged detail of the tripping lever for vibrating and settling the scrap in the loaded cup.

Similar numerals refer to similar parts throughout the several figures.

Referring to Figs. 1, 2 and 3, the side-frames 9 and 10 support the well-known devices in the "Borgefeldt" scrap-bunching machine shown in side elevation in Fig. 1. Journalled in the side-frames 9 and 10 is the drive shaft 11 having keyed thereto the cam 12 having two cam tracks formed therein which determine the coordinated relationship between the reciprocating funnel 14 slidably mounted on the bracket 13 and the movable plunger 15 telescoped within the funnel 14, the lower opening 16 of such funnel being disposed above the bunch rolling table 17 fastened to the side frames 9 and 10 (Fig. 1). On the inner side of the funnel 14 is the in-

clined open pocket 18 which receives the measured load of scrap tobacco from my attachment hereafter to be described. The funnel 14 is connected by the link 19 to the rock-arm 20 carrying the cam-roller 21 which rides in one of the cam-tracks of the cam 12. The plunger 15 is connected by the link 22 to the outer end of the lever 23 bolted to the rock-arm 24 mounted on the pivot bar 25 attached to the side-frames 9 and 10. Pinned to the lever 23 is the cam-roller 26 which is held in engagement with the cam 12 by the spring 27. The action of the funnel 14 and plunger 15 are co-related in that the funnel 14 is first lowered to the table 17 thereby allowing the scrap content of the pocket 18 to pass down through the funnel 14 into the pocket in the table 17; thereafter the plunger 15 is lowered through the funnel 14 to bear on the scrap on the table 17, and then the funnel 14 is lifted to its normal position shown in Fig. 1. The plunger 15 remains on top of the scrap until the roller 28 on the table 17 is advanced when the plunger 15 is lifted to its normal position for the next cycle.

Of itself the above-described mechanism is not new, but is well known in the "Borgefeldt" scrap-bunching machines. According to the present invention this mechanism is combined and co-related with my new and highly effective measuring and feeding attachment which will intermittently deliver predetermined quantities of scrap tobacco to the funnel pocket 18, and such attachment will now be described in detail.

Referring to Figs. 1, 2, 3 and 4, the open top hopper 29 having the inclined sides 30 and inclined bottom or wall 31 is suitably secured to the side-frames 9 and 10 in the position shown in Fig. 1 and contains scrap tobacco 32 as the source of supply. The power shaft 33 is journalled in standards 34 (only one being shown in Figs. 1 and 4) suitably fastened to the side frames 9 and 10. Keyed to the shaft 33 is the sprocket 35 driven by the chain 36 which passes around the sprocket 37 fastened to the drive shaft 11 (Fig. 1). Mounted on the shaft 33 are a pair of spaced-apart sprockets 38 around which pass the endless, looped conveyor chains 39 (Figs. 2 and 4), spaced-apart as shown in Figs. 2, 3 and 4; which are then passed through the tunnel 39ª arranged above the hopper wall 41 and around a pair of sprockets 40 mounted on the short shaft 41 journalled in the side flanges 42 and 43 of the bottom 31 (Fig. 3). The conveyor chains 39 then pass upwardly through the hopper 29, and around the pair of sprockets 44 mounted on the shaft 45 journalled in the upright standards 46 bolted to the hopper 29 as shown in Figs. 2 and 3. The conveyor chains 39 then make their horizontal run to the right in Figs. 1 and 5 to the sprockets 38 to complete their cycle in delivering the measured loads of scrap to the funnel pocket 18.

A plurality of measuring cups 47 (five being shown in Fig. 1) are pivotally attached to the conveyor chains 39 in spaced relationship, as shown in Figs. 6 and 7. Each cup 47 is elongated and trough-shaped (Fig. 7), with ends 48 and curved sides 49 and undulated top edges providing spaced-apart openings 50. Projecting from the ends 48 are the supporting studs 51 which are pivotally mounted in the links of the chains 39 as shown in Figs. 5, 6 and 8. Depending from the bottom of the cup 47 is the weighted lug 52 which normally maintains the cup 47 supported on the studs 51 in upright or loaded position through gravity (Figs. 1 and 5).

Means are provided to invert each cup 47 toward the left (Figs. 1, 4 and 5) as the chains 39 pass in their inclined path between the sprockets 38 to the sprockets 40 through the tunnel 39ª, which means may be widely varied in structure and operation. In the present embodiment the guide track 53 is bolted at the top and bottom of the inclined wall 31 of the hopper 29 in spaced relation with the chains 39 so that the cup lug 52 will bear on the track 53 and so hold the cup 47 in semi-inverted or tilted position as shown in the lower part of Fig. 5. When the cup 47 reaches the bottom of the hopper 29 and is relieved from the guide track 53 it rotates in a clockwise direction on the studs 51 and in so changing its position to the vertical scoops up its full quantity of scrap tobacco 32 contained in the bottom of the hopper 29.

As the cup 47 now loaded with scrap passes in its vertical flight from the bottom of the hopper 29 means are provided to vibrate or shake the cup to settle the scrap load as well as remove surplus tobacco, which means in the present embodiment are best shown in Figs. 1, 3 and 8. Fastened to the inner sides of the hopper 29 are the two stationary shaker arms 59 the tips 60 of which are adapted to engage successively the links of the conveyor chains 39 as the latter move upwardly. The cup 47 is thus shaken in both directions or vibrated as each link snaps over the arm tips 60 to the upper side of the arms 59 as shown by the arrow in Fig. 8, after which the chains 39 pass between the obliquely-disposed rollers 61 and 62 pinned to the brackets 63 secured to the hopper 29 as shown in Figs. 1 and 3. By this device the cups 47 are caused to rock slightly on their horizontally-disposed axes, and so settle the scrap contents in the cups 47 as they continue their upward flight as shown in Fig. 1.

When the cups 47 pass around the sprockets 44 and begin their horizontal run, they pass beneath a pair of revolving sweeping devices which are adjustable and are used to cut the contents of each cup to any desired level, thereby assuring equal quantities of tobacco in each cup. I have shown a pair of such sweepers, but one or several may be used to

advantage. Such final measuring devices to cut and trim the cup loads are best shown in Figs. 1–3, 5 and 6, and comprise the following mechanism: Bolted to the side frames 9 and 10 are the horizontal supports 64 and 65 to which are adjustably secured the bars 66 and 67 by means of the screws 68 moving in slots 69 (Fig. 5) formed in the bars 66 and 67 to provide a vertical adjustment to regulate the position of the sweeping devices to vary the measured cup loads.

Two sweepers 70 and 71 having radially projecting, spaced-apart spikes 72 to coact with the cup openings 50 (Fig. 6) are mounted on the cross-shafts 73 and 74 respectively, such shafts having pulleys 75 and 76 respectively over which passes the belt 77 whereby the sweepers 70 and 71 may be rotated in a clockwise direction in unison (Fig. 5). The outer shaft 73 carries the pulley 78 around which passes the driving belt 79 which is actuated by the belt 79 passing around the large pulley 80 (Figs. 1, 2 and 3), mounted on the power shaft 33. By these sweepers 70 and 71 revolving in a direction counter to the travel of the cups 47 (left to right in Figs. 1 and 5), any surplus scrap in the cup load is removed by the spikes 72 passing through the openings 50 (Fig. 6) and kicking off the top surplus which falls back into the hopper 29 (Fig. 1).

At the end of the horizontal run of the cups 47 toward the right, means are provided to dump or deliver the predetermined contents of the scrap tobacco in each cup into the open pocket 18 of the funnel 14 as hereinbefore described. In the present embodiment best shown in Figs. 1, 2, 4, and 5, the dumping bar 82 is fastened to the top of the plate 83 forming the inclined top of the tunnel 39ª midway between the conveyor chains 39 (Figs. 2 and 4), with its hooked upper end 84 bearing on the top of the power shaft 33. As each cup 47 ends its horizontal run over the shaft 33 (Fig. 5), the lug 52 engages the hooked end 84 (Figs. 1 and 5) to invert the cup 47 forwardly to empty its contents into the feeder chute 85 secured to the rock-arm 86 pivoted to the top of the hopper wall 31 whereby the chute 85 delivers the cup load into the open pocket 18 (Fig. 1) when the projecting pin 87 mounted on one of the sprockets 38 engages the inverted V-shaped lever 88 fastened to the side of the chute 85.

By this mechanism the sprocket 38 in its rotation presses the lever 88 from its full line position to that shown in dotted lines in Fig. 5 by which the cup contents are delivered into the funnel 14 of the scrap-bunching machine. The chute 85 then snaps back to its original position after the cup 47 has passed below same and swings into vertical position, and the pin 87 rides off the end of the lever 88 through the tension of the coil-spring 89 fastened to the rock-arm 86 and the standard 34 (Figs. 1 and 5). The cup 47 then is inverted toward its original scrap-scooping position as it passes down the tunnel 39ª with its lug 52 riding along the guide track 53, all as shown in detail in Fig. 5, and the cycle of operations is repeated through each of the cups 47 carried by the chains 39.

The construction of my improved attachment and its operation in automatically measuring and delivering scrap tobacco to the bunching machine having been described, it will not be necessary to set forth the general operation of the machine. According to my invention scrap tobacco of any size and condition may be advantageously measured in and delivered by the travelling cups 47. In the present instance I have illustrated and described a preferred embodiment of my improved attachment which has given satisfactory results in industrial use; however many changes may be made in the form and arrangement of the parts without departing from the scope of my invention or in any way sacrificing its chief advantages which have been hereinbefore enumerated.

I claim as my invention:

1. In a cigar bunching machine, an endless conveyor travelling through a tobacco supply, a series of spaced-apart cups pivoted to said conveyor, said cups having weighted lugs projecting downwardly from their bottoms for normally maintaining the latter in upright position, means independent of the conveyor engaging said lugs to invert said cups to load same from the tobacco supply, and other means independent of the conveyor to invert said cups to deliver each cup load to the machine, both said means being operable by the movement of the conveyor.

2. In a cigar bunching machine, an endless conveyor travelling through a tobacco supply, a series of spaced-apart cups pivoted to said conveyor, said cups having weighted lugs projecting downwardly from their bottoms for normally maintaining the latter in upright position, means independent of the conveyor engaging said lugs to invert said cups to load same from the tobacco supply, and other means independent of the conveyor to invert said cups in the opposite direction to deliver each cup load to the machine, both said means being operable by the movement of the conveyor.

3. In a cigar bunching machine, an endless linked chain conveyor travelling through a tobacco supply and having a tobacco container pivoted thereto, and means contacting with the links of the chain for vibrating the loaded container in motion on said conveyor.

4. In a cigar bunching machine, an endless linked chain conveyor travelling through a tobacco supply and having a tobacco container attached thereto, and a stationary arm engaging the successive links of said conveyor

for vibrating the loaded container while in motion on said conveyor.

5. In a cigar bunching machine, an endless linked chain conveyor travelling through a tobacco supply and having a series of cups pivoted thereto, and means successively engaging the links of the chain and operable by the continued movement of the conveyor to vibrate each cup when loaded with tobacco from said supply to remove surplus tobacco therefrom.

6. In a cigar bunching machine, an endless conveyor chain travelling through a tobacco supply and having a series of cups having undulated top edges pivoted thereto, and rotary sweeping devices coacting with the cup load through said undulated edges of the cups and revolving in a direction counter to the travel of said cups.

7. In a cigar bunching machine, an endless conveyor chain travelling through a tobacco supply and having a tobacco container attached thereto, a feed chute movable into the path of the container to receive the contents from the loaded container and deliver same to said machine, means to dump the loaded container into said chute, and means to actuate said chute in timed relation with the dumping of the container contents into said chute.

8. In a cigar bunching machine, an endless conveyor chain travelling through a tobacco supply and having a tobacco container attached thereto, a feed chute movable into the path of the container to receive the contents from the loaded container and deliver same to said machine, means to dump the loaded container into said chute, means to actuate said chute in timed relation with the dumping of the container contents into said chute, and means to restore said chute into receiving position after delivering the container contents to said machine.

9. In a cigar bunching machine, an endless conveyor chain travelling through a tobacco supply and having a series of cups pivoted thereto, means to successively invert said cups while passing through the tobacco supply to load same, means for thereafter vibrating each cup while in motion after leaving said supply, means coacting with the top edges of each cup to remove surplus tobacco therefrom, a feed chute movable into the path of the container to receive the contents from each loaded cup, means to invert each cup to deliver its contents to said chute, and means for thereafter actuating said chute to deliver the cup contents to said machine.

10. A measuring attachment for a cigar bunching machine comprising a scrap tobacco container having undulated top edges and mounted on a travelling conveyor chain, and adjustable means coacting with the openings between the container edges to remove a surplus quantity of the container load before delivering same to said machine.

11. A measuring attachment for a cigar bunching machine comprising a scrap tobacco-containing cup having undulated top edges, and a rotary sweeping device coacting with the cup load through the undulated edges to remove surplus from the top of said load.

12. In a cigar bunching machine, an endless linked chain conveyor travelling through a tobacco supply and having a tobacco container pivoted thereto, means contacting with the links of the chain for vibrating the loaded container in motion on said conveyor, and other means thereafter engaging said chain for rocking said container to a lesser degree than said vibrating means.

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