(No Model.) 4 Sheets—Sheet 1.

E. A. KITZMILLER.

CIGAR BUNCHING MACHINE.

No. 391,976. Patented Oct. 30, 1888.

Fig. 1.

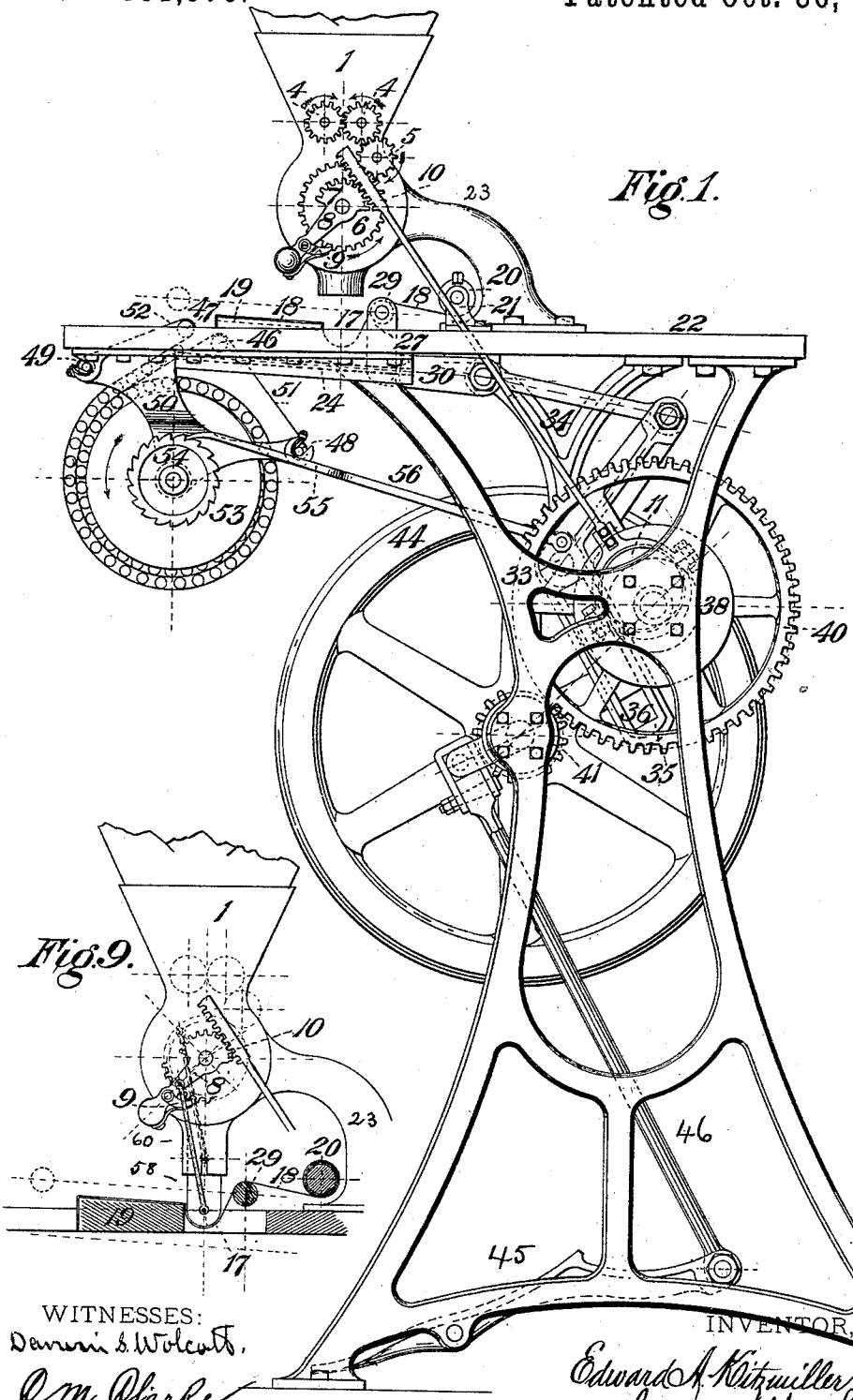


Fig. 9.

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E. A. KITZMILLER.

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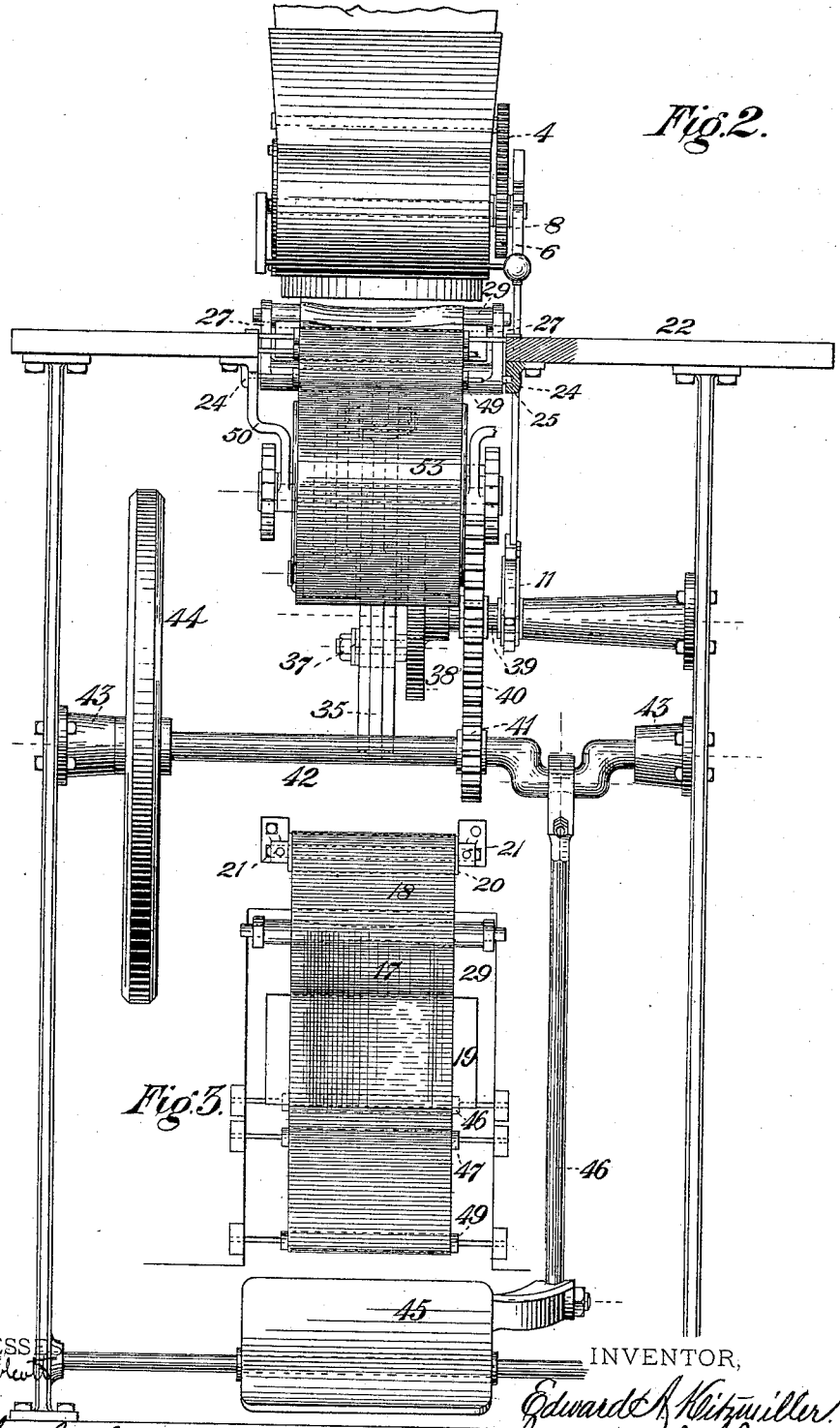


Fig. 2.

Fig. 3.

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E. A. KITZMILLER.

CIGAR BUNCHING MACHINE.

No. 391,976. Patented Oct. 30, 1888.

Fig. 4.

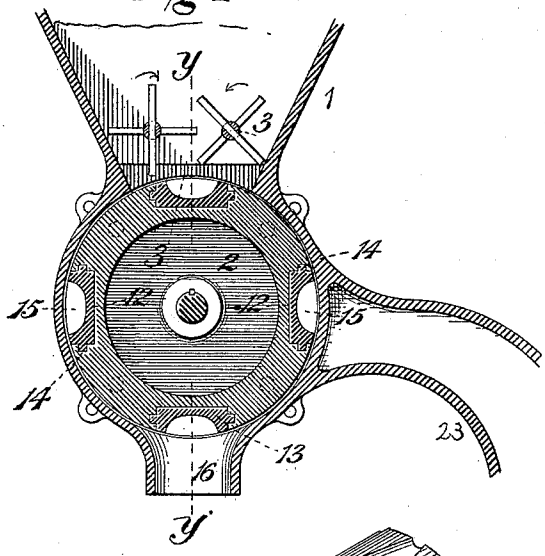


Fig. 5.

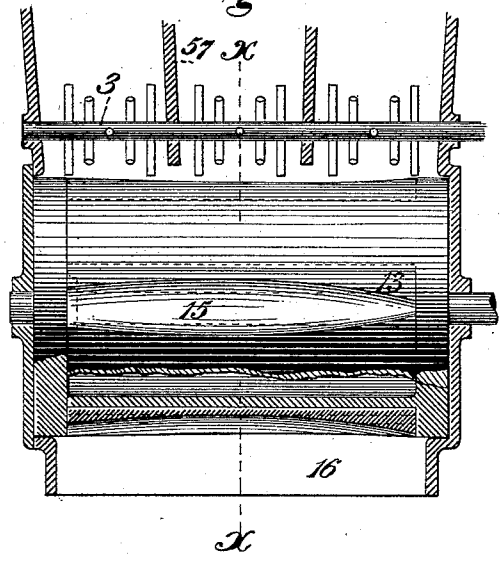


Fig. 6.

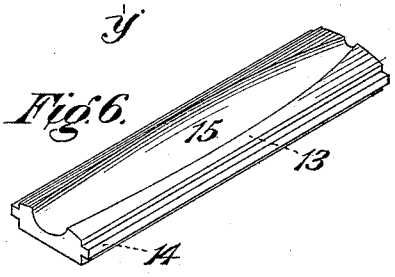


Fig. 10.

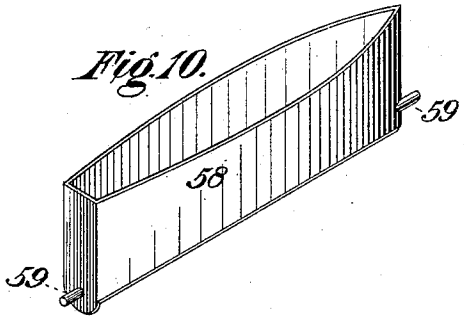


Fig. 7.

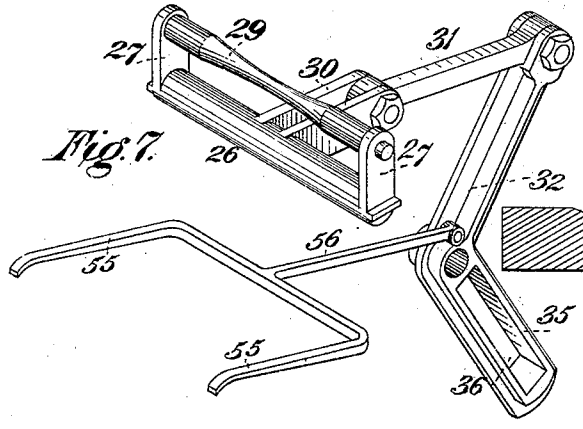
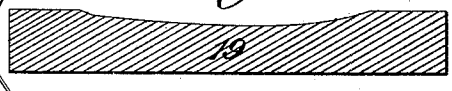


Fig. 8.



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(No Model.) 4 Sheets—Sheet 4.

E. A. KITZMILLER.

CIGAR BUNCHING MACHINE.

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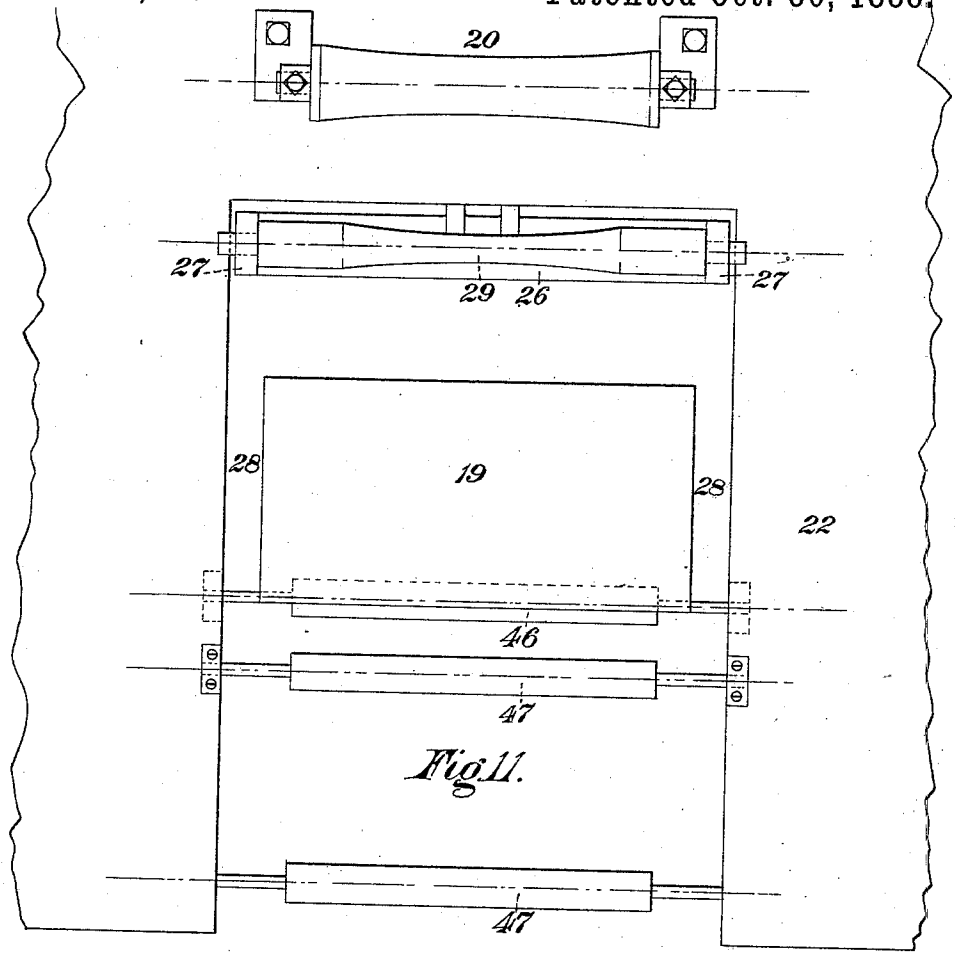


Fig. 11.

Fig. 13.

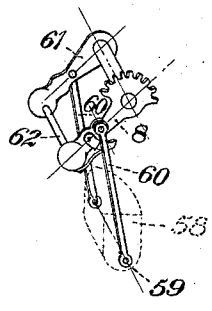
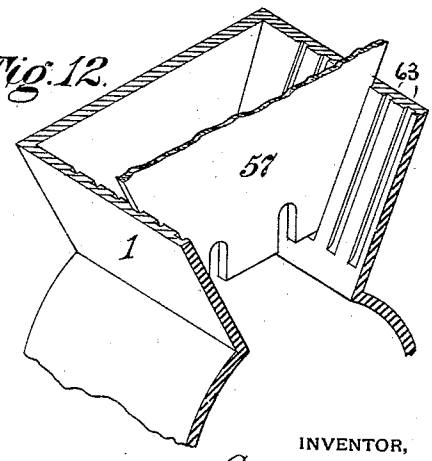


Fig. 12.



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UNITED STATES PATENT OFFICE.

EDWARD A. KITZMILLER, OF BRADDOCK, ASSIGNOR TO THE ECLIPSE CIGAR MACHINE COMPANY, (LIMITED,) OF PITTSBURG, PENNSYLVANIA.

CIGAR-BUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 391,976, dated October 30, 1888.

Application filed November 12, 1885. Serial No. 182,517. (No model.)

To all whom it may concern:

Be it known that I, EDWARD A. KITZMILLER, residing in Braddock township, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Cigar-Bunching Machines, of which improvements the following is a specification.

In the accompanying drawings, which make part of this specification, Figure 1 is a view in side elevation of my improved cigar-bunching machine. Fig. 2 is a front view of the same. Fig. 3 is a top plan view of the table, the feeding-hopper being removed. Fig. 4 is a sectional view of the feeding-hopper, the section being taken in the line *x x*, Fig. 5. Fig. 5 is a sectional view, the section being taken in the line *y y*, Fig. 4. Fig. 6 is a perspective view of a distributing-measure; Fig. 7, a detail view of the mechanism for operating the forming-roller and the receiving-spool. Fig. 8 is a transverse sectional view of the rolling or forming table. Fig. 9 is a view of a modified form of the feeding-hopper having a movable discharging-nozzle. Fig. 10 is a perspective view of the movable discharging-nozzle. Fig. 11 is a top plan view of the table, the hopper and bunching-apron being removed. Fig. 12 is a detail view of the feeding-hopper, showing the manner of securing and adjusting the transverse partitions within the hopper. Fig. 13 is a detail view of the mechanism for operating the movable discharging-nozzle.

It has heretofore been customary in the manufacture of "scrap-filler" cigars to distribute the filling evenly along the loop in the wrapping or binding apron, the filling being subsequently rolled into a cylindrical bunch inclosed in a suitable binder by the conjoint action of the apron, the forming-roller, and the table. To form this cylindrical bunch into cigar form—*i. e.*, tapering toward each end—it was necessary to compress said cylinder or bunch in suitably-formed molds, the effect of such shaping or molding being to compact the tobacco so tightly at the ends, the smaller end in particular, and thus prevent to a great extent the free burning of the cigar. It has been attempted to overcome the above objection by using a smaller quantity of filler than is necessary to fill out the bunch, so that when the bunch is compressed into cigar form the ends will not be packed too tightly to prevent the free smoking of the cigar; but this method is objectionable for the reason that as the large or middle portion of the cigar is not compressed it will smoke too freely.

The object of the invention herein is to provide for a regulated distribution of the filling along the loop of the apron in quantities proportional to the size of different parts of the completed cigar, and for the subsequent forming and binding of this proportionately-distributed filling into bunches having practically the form and relative proportions of a finished cigar; and to these ends my invention consists in the construction and combination of parts, substantially as hereinafter described and claimed.

The loose-tobacco filler is placed in the hopper 1, through which it descends onto the drum 2, mounted in a circular enlargement in the lower end of the hopper. In the hopper just above the drum are mounted shafts 3, provided with projecting fingers, which, rotating toward each other, serve to force the loose filler down onto the drum 2, thereby effecting a more rapid and perfect feed of the filler. The ends of the shafts 3, which project outside of the hopper, are provided with intermeshing pinions 4, one of which engages the idler 5, said idler being also in engagement with the gear-wheel 6 on the shaft of the drum 2. On the shaft of the drum is also loosely mounted the toothed segment 7, provided with the arm 8, on which is pivoted the spring-pawl 9, adapted to engage the teeth of the gear-wheel 6. The toothed segment intermeshes with the rack-bar 10, and said bar is reciprocated by the eccentric 11, as shown in Fig. 1.

A series of longitudinal grooves or recesses, 12, are formed in the periphery of the drum for the reception of the blocks 13, which are held in place by the ribs 14, formed on the sides of the blocks, engaging corresponding grooves in the walls of the recesses; or, in lieu of the ribs and grooves, the walls of the grooves may be undercut, the blocks being given a corresponding dovetail shape. The faces of these blocks 13 are provided with longitudi-

nal recesses 15, the capacity of the different parts of the recesses being proportioned to the quantity of filling necessary to form corresponding parts of the cigar to be made—*i. e.*, if a cigar of the usual form and shape, (tapering from the middle to the ends,) the middle portions of the recess are made of a capacity sufficient to form the middle portion of the completed cigar, the capacities of the ends of said recesses being relatively portioned to contain sufficient filling to form the corresponding ends of the cigar. The filling as it drops down the hopper fills one of the recesses 15. The drum is then rotated a quarter of a revolution, when the next succeeding recess is filled. By the next quarter-revolution of the drum the recess first filled is brought in line with the discharging mouth 16 of the hopper, and its contents are deposited onto the loop 17 of winding-apron 18 in the same proportional quantities as when contained within the recess 15. In order to preserve this regulated distribution of the filling in its passage from the recessed block, or, as I prefer to designate it, the "distributing-measure," to the loop in the apron, the discharging-mouth 16 of the hopper is made of a shape or contour corresponding to the shape of the cigar to be made.

The hopper 1 and the mechanism mounted therein are supported a suitable distance above the main table 22 by the bracket 23, formed integral with the hopper at one end, the opposite end being bolted to the table 22.

One end of the apron 18 is secured in any suitable manner to the forward end of the bunching-table 19, and, passing back over said table, its opposite end is attached to the roll 20, mounted in suitable bearings, 21, on the main table 22 of the machine. These bearings are provided with set-screws bearing at their ends upon the journals of the roll 20, which, in connection with the set-screws, serve to regulate the tension of the apron 18. The tension-roll 20 is so shaped as to impart the desired tension to the apron—*i. e.*, slack at such portion of its width as will bear during the wrapping operation on the largest part of the bunch.

On the under side of the table 22 are bolted the angle-bars 24, having one of their sides grooved for the reception of the lugs 25, projecting from the ends of the carrier 26. At the ends of this carrier are formed two arms, 27, projecting upwardly through slots 28 in the table 22 on each side of the bunching-table 19. In the upper ends of these arms 27 is journaled the bunching-roll 29, over which the apron 18 passes, as shown. The upper surfaces of the bunch-table 19 and the surface of the roll 29 are made to conform to the shape of the cigar to be formed—that is to say, the surface of both the table and roll are concave, as shown in Figs. 7 and 8. The carrier 26 is provided with two rearwardly-projecting arms, 30, which are connected by the link 31 to the bell-crank lever 32, as clearly shown in Figs. 1 and 7, said lever being pivotally mounted at its angle or bend on a pin, 33, secured in the bracket 34, depending from the table 22, as shown, Fig. 1. In the arm 35 of the lever 32 is formed a slot, 36, for the reception of the wrist-pin 37, projecting from the disk 38, secured to the shaft 39. On this shaft 39, which is journaled in a sleeve bolted to one of the standards of the machine, is keyed the gear-wheel 40, arranged to intermesh with the pinion 41 on the crank-shaft 42, also mounted in sleeves 43, bolted to the standards or supports of the table 22. This shaft, on which is mounted a fly-wheel, 44, is operated by a treadle, 45, connected to the crank-shaft in the usual manner by the rod 46; or, in lieu of the treadle, other suitable operating mechanism may be employed.

At the front end of the bunching-table 19 are located the guide-rolls 46 and 47, the roll 46 being arranged immediately under the front end of the bunching-table 19 and the roll 47 being arranged in front of said table at a distance therefrom equal or approximately equal to the diameter of the bunch to be formed.

On suitable reels, 48 and 49, mounted in bearing in the brackets 50, depending from the under side of the table 22, are wound the aprons 51 and 52. Said aprons, passing over the guide-rolls 46 and 47, are attached by one of their ends to the bobbin 53, also mounted in the brackets 50. On the projecting journals of the bobbin are keyed the ratchet-wheels 54, which are rotated by the gravity-pawls 55, said pawls being preferably formed integral with the bar 56, pivotally connected to the lever 32 a little above the pivotal point of said lever, as clearly shown in Fig. 7. Suitable springs are arranged to bear upon the journals of the reels 48 and 49, for the purpose of keeping the aprons at the proper tension.

In operating my machine the filler is placed in the hopper 1. It passes into the distributing-measure 13, and is by it deposited into the loop of the apron 18 in regulated proportions. Immediately after the filler has been deposited, as above described, the bunching-roller 29, which has hitherto supported one side of the loop 17, is moved forward onto and across the table 19, thus closing the loop and compacting and inclosing the filler in a suitable binder, which was previously arranged on the apron on the table 19. As the roller 29 passes beyond the forward end of the table, the bunch drops in between the aprons 51 and 52, passing over the guide-rollers. As the roller 29 moves forward, as above described, the eccentric 11 in its rotation pulls down the rack 10, thereby rotating the segment 7 and its arm 8, in order to permit the pawl to take a fresh engagement with the toothed wheel 6, and just as the roll 29 reaches the limit of its backward movement the eccentric will push the bar 10 up, so as to rotate the gear-wheel 6 and the drum 2, in order to bring the next distribut-

ing-measure in line with the discharging-mouth 16 of the hopper. As the roller 29 again moves forward to form a bunch the pawls 55 are pushed forward so as to rotate the bobbin 53, and thereby draw down the aprons 51 and 52, and with them the previously-deposited bunch, a distance equal at least to the diameter of the bunch previously formed, thus making room for the next bunch.

It is sometimes desirable to incorporate different grades or kinds of tobacco in a cigar, and for that purpose I arrange transverse partitions 57 in the hopper 1, said partitions fitting in grooves 63, formed in the sides of the hopper, extending from the top of the hopper down into close proximity to the drum 2, as shown in Fig. 5, thus dividing the hopper into as many compartments or chambers as desired. The relative location of these partitions will depend upon the proportional amounts of the various grades to be incorporated in the cigar.

In operating the machine as above described the loop in the apron is formed by the operator pushing down the apron between the rear end of the table 19 and the roll 29; but, in order to make the machine as nearly automatic in its operation as possible, a movable nozzle, 58, is arranged to slide up and down in the mouth 16 of the hopper 1. (See Fig. 9.) The ends of this nozzle 58, which is made of a shape corresponding to that of the bunch to be made, are provided with pins 59, said pins being connected by rods 60 to the arm 8 of the segment 7, and to an arm, 61, loosely mounted on the shaft of the drum 2 on the opposite side of the hopper, the arms 8 and 61 being connected and caused to move in unison by a rod, 62, as shown in Figs. 2 and 9. This movable nozzle will be moved down by the arm 8 as the segment 7 is rotated to bring a fresh distributing-measure in line with the mouth 16, and will thus not only depress the apron to form the loop 17, but will form a continuous passage of a form corresponding to the shape of the bunch to be formed from the drum to the apron. The mechanism operating the drum-hopper and roll 29 should be so arranged as to move the nozzle up just before the roll 29 is moved forward, and to move the nozzle down just after the roll 29 reaches the limit of its rearward movement and before the distributing-measure is brought into line with the mouth 16.

It will be observed that the various parts of the above-described machine are constructed and arranged to give the filler the form desired in the completed cigar and to preserve such form throughout all subsequent manipulations, thereby producing a cigar having a uniformly-packed filling and avoiding the necessary use of a forming-mold.

After a bobbin has been filled it can be removed, another substituted in lieu thereof, the bunches being retained in the bobbin until removed for wrapping.

One end of that portion of hopper in which the drum is mounted is made removable in order that the blocks 13 may be removed and others having different-shaped recesses may be placed therein. In lieu of forming the recesses 15 in the removable blocks 13, they may be formed in the face of the drum.

In using a hopper having a discharge mouth or nozzle adapted to effect a proportional distribution of the filler any suitably supply-regulator constructed to permit of the feeding of regular quantities of filler may be substituted for the recessed drum.

The machine above described is especially adapted for the manufacture of irregularly-shaped cigars, and by that term is meant cigars having a taper from one end to the other or from the middle to either or both ends.

No claim is made herein, broadly, for a drum having filler measuring and forming recesses therein of a shape or contour corresponding to that of the bunch to be formed.

I claim herein as my invention—

1. In a machine for forming cigar-bunches, a hopper having one or more transverse partitions, whereby different grades of filler may be fed to different parts of the bunch to be formed, in combination with mechanism for bunching and binding the filler, substantially as set forth.

2. In a machine for forming bunches for irregularly-shaped cigars, the combination of a hopper having a discharge-mouth of a shape or contour corresponding to that of the cigar to be formed, whereby a proportional distribution of the filler is effected, and a supply-regulator located in said hopper above the discharge-mouth, substantially as set forth.

3. In a machine for forming cigar-bunches, the combination of a hopper, a recessed drum mounted therein, oppositely-rotating fingers arranged to feed the filler into the recesses in the drum, and filler bunching and binding mechanism, substantially as set forth.

4. In a machine for forming cigar-bunches, the combination of a hopper having a movable discharge-nozzle, a supply-regulator located in the hopper, and a wrapping-apron, substantially as set forth.

5. In a machine for forming cigar-bunches, the combination of a hopper having a movable discharge-nozzle and a wrapping-apron, substantially as set forth.

In testimony whereof I have hereunto set my hand.

EDWARD A. KITZMILLER.

Witnesses:
DARWIN S. WOLCOTT,
R. H. WHITTLESEY.