March 12, 1929. W. F. GRUPE 1,705,012

CIGARETTE MAKING MACHINE

Filed Oct. 15, 1919 2 Sheets-Sheet 1

Fig 1

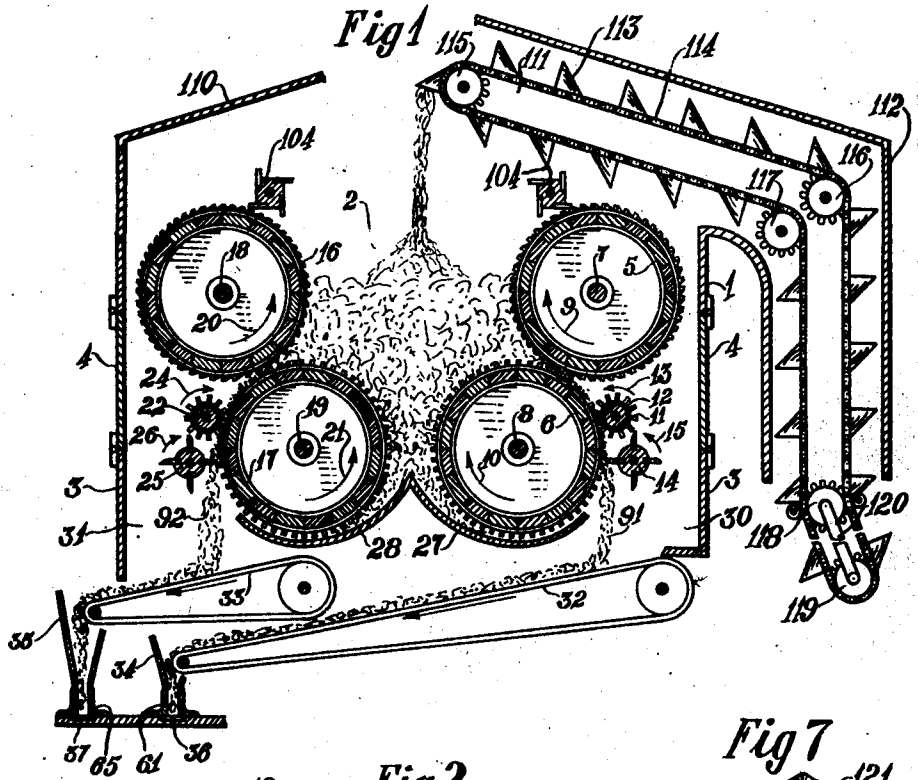


Fig 2

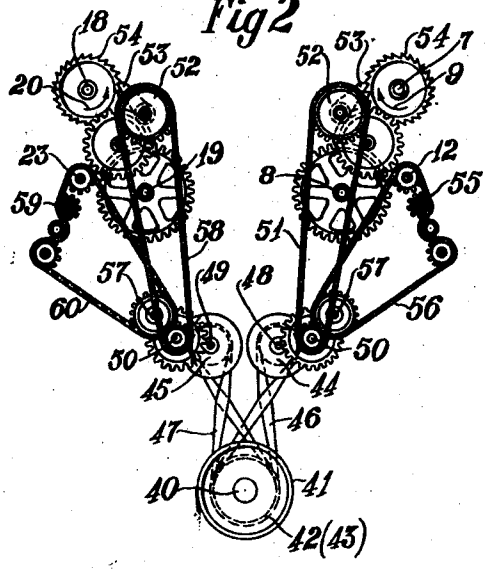


Fig 7



William F. Grupe INVENTOR

BY

Henry J. Lucke

His ATTORNEY

March 12, 1929. W. F. GRUPE 1,705,012

CIGARETTE MAKING MACHINE

Filed Oct. 15. 1919 2 Sheets-Sheet 2

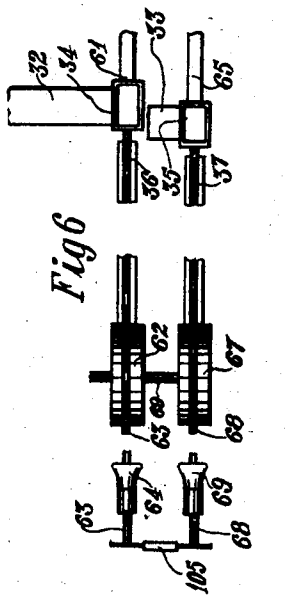


Fig 6

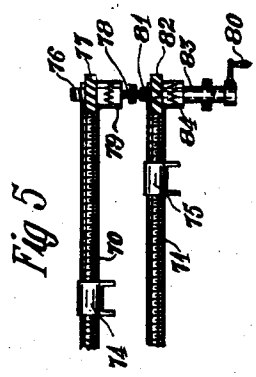


Fig 5

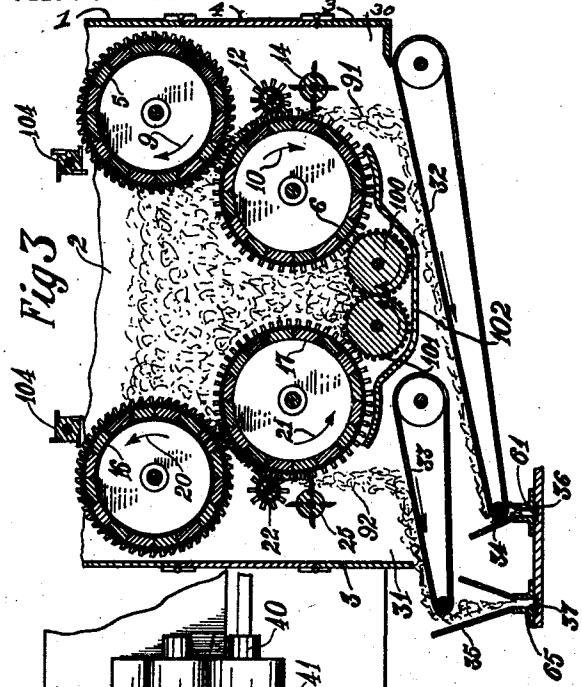


Fig 3

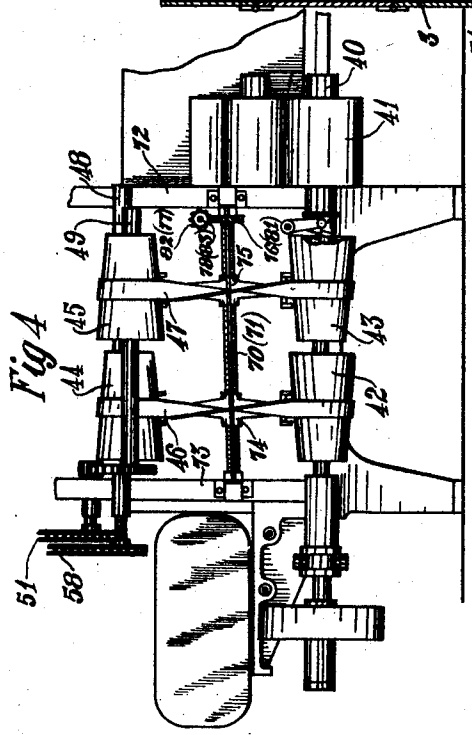


Fig 4

William F. Grupe INVENTOR

BY

Henry J. Lucke

His ATTORNEY

Patented Mar. 12, 1929. 1,705,012

UNITED STATES PATENT OFFICE.

WILLIAM F. GRUPE, OF HUDSON HEIGHTS, NEW JERSEY, ASSIGNOR TO ENDLESS BELT CORPORATION, INC., A CORPORATION OF NEW YORK.

CIGARETTE-MAKING MACHINE.

Application filed October 15, 1919. Serial No. 330,689.

This invention relates to new and useful improvements in cigarette making machines.

An object of the invention is the provision of new and useful arrangement in cigarette making machines for increasing the output per machine. Such new arrangement is attained without material increase in the overall dimensions of the machine and without substantial increase in the number of parts requiring separate supervision, whereby the output per operator is also increased.

In the most preferred forms of the invention the machine is provided with a plurality of rod forming mechanisms, say two, positioned side by side, each separately operating in the functions of forming the respective cigarette rods, including the feeding of the paper strips, common means for severing the respective rods to form the individual cigarettes and a common hopper constructed and arranged to feed substantially like mixture of tobacco to the respective paper strips.

The invention comprises further common means for regulating the speeds of delivery of the carded tobacco to the respective cigarette rods forming mechanisms, combined with independently adjusting means for regulating the respective speeds of travel and delivery of the formed cigarette rods.

A further feature of the invention resides in the construction of the hopper for attaining an improved feeding of the charged tobacco, whereby "air gaps" and other conditions of irregular feeding of the tobacco to the carding rolls are precluded. In the preferred forms of my hopper, the effective capacity of the hopper is increased without substantial increase in the exterior dimensions of the hopper even with the use of a plurality of rod forming mechanisms.

In the most preferred form of hoppers embodying my invention, the agitation of the tobacco is attained by maintaining the complete charge or tobacco in uniform agitation.

Further features and objects of the invention will be more fully understood from the following description and accompanying drawings, in which

Fig. 1 is a diagrammatic vertical sectional view taken centrally through a tobacco feed hopper and delivery chute embodying my invention;

Fig. 2 is a detail front elevation of the driving mechanism connecting the main drive shaft with the respective shafts of the rolls of the carding mechanism;

Fig. 3 is a vertical sectional elevation of a hopper of modified form embodying my invention;

Fig. 4 is a detail side elevation of the variable control mechanism;

Fig. 5 is a detail plan view of the threaded shafts and shipper arms and adjusting devices for regulating the speeds of the shafts controlling the respective sets of carding wheels;

Fig. 6 is a top plan diagrammatic view of two sets of cigarette forming mechanisms in the employment of my invention; and Fig. 7 is a detail perspective view.

Referring to Fig. 1, the hopper 1 comprises a pair of oppositely disposed lateral frames or castings 2, 2, (one only being shown) and may also comprise the oppositely disposed side frames 3, 3, the latter embodying the hinge doors 4, 4, as usual.

Within the hopper 1 is disposed the coacting set of carding rolls 5, 6, suitably mounted on the respective shafts 7, 8, suitably journaled in bearings mounted in the opposite frames 2, 2 and driven through interconnecting gearing by the main or auxiliary shaft of the cigarette making machine proper, as will be understood, said carding roll 5 being driven in one direction, as indicated by the arrow 9 and the carding roll 6 being driven in the similar direction, as indicated by the arrow 10. Such set of coacting rolls 5, 6, is provided with the pin roll 11 mounted on its separate shaft 12 driven by suitable gearing in the direction of the arrow 13. The coacting paddle wheel 14 is suitably mounted on a separate shaft and driven in the direction of the arrow 15.

Within the hopper 1 is also provided the set of carding rolls 16, 17, mounted on the respective shafts 18, 19, and driven in a similar manner by suitable gearing in the relatively opposite direction as indicated by the respective arrows 20, 21. The coacting pin wheel 22 is mounted on its shaft 23 and driven in the direction of the arrow 24; similarly the paddle wheel 25 is mounted on a suitable shaft and driven in the direction of the arrow 26.

The bottom of the hopper, in the form shown in Fig. 1, comprises the arcuate plates 27, 28 in suitable relation with the respective lowermost carding wheels 6, 7, and construct-

ed to perform the objects set forth more particularly hereinafter.

The hopper 1 is provided with the discharge openings 30, 31, with which are associated the delivery aprons 32, 33 respectively.

In the particular embodiment shown in Fig. 1, the plurality of sets of carding rolls function to deliver to a plurality of feeds corresponding in number to the delivery aprons, 32, 33 and in this instance the feeds 34, 35, of approved type, are two in number and are arranged to deliver the tobacco to the tube belts 36, 37, for the production simultaneously of two cigarette rods. Such tube belts 36, 37 are each of the usual construction and driven by suitable actuating devices in coaction with the corresponding number of the usual forming shoes whereby the respective strips of paper and the tobacco fed thereon are simultaneously formed into the cigarette rods, which are cut by any approved severing means into the individual cigarettes. In a similar manner, my improved hopper is adapted for the use of a number of discharging aprons greater than two in coaction with a corresponding number of tube belts for the simultaneous production of a corresponding number of cigarette rods.

In Fig. 2, I have shown a suitable arrangement for driving the shafts of the aforesaid carding rolls and associated devices, this figure being diagrammatic for the purpose of simplifying the number of parts illustrated. The main shaft of the cigarette machine is indicated at 40, provided with the pulley 41. Fixed to the main shaft 40, see also Fig. 4, are the cone pulleys 42, 43, coacting respectively with the oppositely arranged cone pulleys 44, 45, by means of the belts 46, 47. The cone pulley 44 is fixed on the countershaft 48 controlling generally the drive of the set of carding rolls and associated devices shown to the right in Fig. 1, whereas the cone pulley 45 is fixed on the countershaft 49 controlling generally the drive of the set of carding rolls and associated devices shown to the left in Fig. 1.

Specifically, the shaft 50 is driven from the countershaft 48 by suitable gearing, driving in turn by means of the chain 51 the sprocket gear 52, actuating the pawl 53 in the usual manner and intermittently driving the shaft 7 of the pin roll 5 by the ratchet teeth 54. Such sprocket gear 52 drives the shaft 8 of the carding roll 6 by the suitable gearing as indicated. The shaft 12 of the pin wheel 13 and the shaft 55 of the paddle wheel 14 are driven by the chain 56, driven by the sprocket 57, driven through suitable gearing by the shaft 50, as indicated.

In a similar manner, the shaft 18 of the carding roll 16 is controlled by the counter shaft 49 through the chain 58 and associated sprocket gear and gearing by the shaft 50^a, thereby in turn driving the shaft 19 of the carding roll 17. Similarly, the shaft 23 of the pin wheel 22 and the shaft 59 of the paddle wheel 25 are controlled by the countershaft 49 through the chain 60 and associated sprocket wheels and gearing as indicated.

Thus, upon drive of the main shaft 40 in clockwise direction, as viewed in Figs. 1 and 2, the shaft of the carding wheel 5 is rotated in the direction of the arrow 9, its associated carding wheel 6 rotated in the direction of the arrow 10, of the one set, and of the other set the carding wheel 16 is rotated in the direction of the arrow 20 and the carding wheel 17 in the direction of the arrow 21, their other associated parts being rotated in proper relative directions.

Referring to Figs. 1 and 3, the carded tobacco fed to the belt 32 is delivered through the chute 34 onto the strip of paper 61, fed from the usual reel onto the tube belt 36 driven by the large pulley 62, see Fig. 6, and usual associated rollers, tension devices and the like in coaction with the usual encasing mechanism for forming the cigarette rod 63, such rod 63 being delivered into the receiver 64 and severed by suitable cut-off mechanism of approved type and arrangement for severing the cigarette rod 63 into individual cigarettes. Similarly, the tobacco fed by the apron 33, see Figs. 1 and 3 to the delivery tube 35 is charged upon the strip of paper 65, fed and controlled by the tube belt 37 driven by the large pulley 67, in coaction with suitable guide rollers and tension devices, in cooperation with a suitable rod forming mechanism, to produce the cigarette rod 68, delivered to the receiving tube 69, coacting with any approved cut-off mechanism for severing the cigarette rod into individual cigarettes.

As is set forth hereinafter, under conditions of equal speed of production or delivery of the respective cigarette rods 63, 68, a common cut-off mechanism comprising the rotary knife 105, as indicated in Fig. 6, may be employed for jointly and simultaneously severing the cigarette rods 63, 68. It will be understood, however, that separate cut-off mechanisms may be provided for severing the respective cigarette rods, such cut-off mechanisms being separately controlled by the respective shafts controlling the respective tube belts or controlling the respective sets of carding wheels and delivery mechanisms of the hopper.

In Figs. 4 and 5, I have shown means for regulating the relative speeds of the respective sets of carding wheels and associated devices for respectively controlling the feed of carded tobacco in the forming of the respective cigarette rods. Such means comprises the threaded rods 70, 71, suitably journaled in the end frames 72, 73, the threaded rod 70 carrying the shipper arm 74 controlling the position of the crossed belt 46 relative to the lower cone

pulley 42 and the upper cone pulley 44. Similarly, the threaded rod 71 is provided with the shipper arm 75 for controlling the crossed belt 48 relative to its lower cone pulley 43 and its upper cone pulley 45. The threaded rod 70 is provided at one end with the worm wheel 76 meshing with the transverse worm wheel 77 mounted on the regulating rod 78 provided with the connecting and disconnecting clutch 79. The regulating rod 78 is controlled by its regulating crank arm 80. Similarly, the threaded rod 71 is provided with the worm wheel 81 meshing with the transverse worm wheel 82 carried by the regulating rod 83 to which the crank arm 80 is also fixed. The regulating rod 83 is provided with the connecting and disconnecting clutch 84. For simplicity of arrangement, the regulating rod 83 is shown hollow and receiving interiorly the regulating rod 78, the regulating rod 78 passing loosely through a central opening in the worm wheel 82.

In Fig. 6, the driving pulleys 62, 67 of the respective tube belts 36, 37, are shown mounted on and driven by the common shaft 69^a, with separate releasing spring clutches.

Normally, the clutches 79, 84 of the regulating rods 78, 83 respectively are in connecting position, whereby upon turning the regulating crank 80, the threaded rods 70, 71 are adjusted by rotation in like directions, thereby shifting to like extents and in the same directions the shipper arms 74, 75, and therewith the crossed belts 46, 47, relative to the sets of like cone pulleys 42, 44, and 43 45, thus simultaneously adjusting the speeds of the respective shafts 48, 49 and thereby controlling to like degree the respective speeds of the respective sets of carding wheels for the two tobacco feeding devices. Upon desiring to adjust the belt 46 without disturbing the adjustment of the belt 47, the clutch 79 controlling the shipper arm 74 of the belt 46 is moved to open position, while the clutch 84 is left in its normal closed position and upon turning the crank arm 80 the threaded rod 71 and its shipper arm 75 are moved to the desired adjusted position. Similarly the belt 46 may be adjusted without disturbing the adjustment of the belt 47 by moving the clutch 84 to its disconnecting position and turning the crank arm 80 as desired.

In the modified form of hopper shown in Fig. 3, a plurality of delivery aprons 32, 33, is employed similar to the arrangement shown in Fig. 1 and the agitation is further improved by the provision of pin or corrugated rolls 100, 101, extending from the one side frame 2 to the opposite side frame 2 and in closely proximate relation to one another and to the lower carding wheels 6, 17, in lieu of the arcuate plates 27, 28 of the arrangement shown in Fig. 1. The shafts of the rollers 100, 101, are driven by suitable gearing from the respective counter shafts 48, 49, similar to the gearing shown in Fig. 2, for like rotating parts in the hopper. In such arrangement, as appears in Fig. 3, such pin or corrugated rolls 100, 101, preferably disposed between the tobacco collecting rolls 6, 17, serve to feed tobacco to the tobacco collecting rolls 6, 17, and respectively in directions of tobacco feeding towards said tobacco collecting rolls, 6, 17. The provision of such feeding rolls 100, 101, is particularly advantageous in precluding the accumulation of tobacco "shorts" in the lower portion of the hopper. Also, by reason of the opposite directions of rotation of the feeding means 100, 101, as shown by the indicating arrows and respectively the same as the directions of rotation of the tobacco collecting rolls 6, 17, the portion of the tobacco charge disposed between said tobacco collecting rolls 6, 17, is subjected to a circulatory movement tending to prevent any voids between the tobacco collecting rolls, and thereby subserving to maintain a substantially uniform pressure of the tobacco charge on the tobacco collecting rolls 6, 17.

The respective upper, intermittently rotated carding rolls 5, 6, may be provided with the usual wipers 104 as indicated in Figs. 1 and 3.

With respect to the several forms of my hopper generally, it will be noted that the charge of tobacco positioned between the continuously operated and intermittently operated rolls of the respective sets is subjected to forces of agitation of varying amount and of varying period at any given location within the hopper and further modified in variation of direction of such forces for the different locations within the hopper. Thus, as the charge of tobacco progresses through the hopper, it is effectively agitated to break up lumps of felted masses, to preclude the condition of air pockets and otherwise treat the charge of tobacco to mechanical operations to provide uniform delivery by the respective sets of carding rolls of streams of tobacco of substantially uniform amount and density.

Such improved feeding to the respective sets of carding rolls is even maintained under the condition of partial charge within the hopper, by reason of the maintenance of contact of such partial charge of tobacco with the respective lower carding rolls 6, 17 by reason of the relatively close proximity of the carding rolls 16, 17, as indicated in Figs. 1 and 3.

From the above it will be clear that my invention enables the employment of two or more sets of tube belts and associated cigarette rod forming devices for the simultaneous production of a plurality of cigarette rods, without materially enlarging the overall dimensions of the cigarette making machine and without materially increasing the duties of inspection and supervision of the operator and thereby increasing the output per operator as well as per machine.

It will also be apparent that by the use of the control of the delivery of tobacco to the respective rod forming mechanisms, the delivery of the respective rods may be made uniform, thereby enabling common and single actuating mechanism for driving the respectice tube belts and permitting the employment of common cut-off mechanism for severing the respective rods into individual cigarettes.

Preferably, the hopper is enclosed as a whole in sealing relation with the atmosphere and provided with automatic charging means similarly in sealing relation with the atmosphere to retain the moisture and treating substances for conditioning the tobacco. I have discovered that such sealing from the atmosphere prevents evaporation of the liquid content of the inherent and added moisture of the tobacco and of the treating substances.

The automatic conveyor or charging means is particularly useful in multiple rod-forming machines and enables the effective over-all dimensions of the hopper to be reduced and at the same time delivering sufficient tobacco to a single hopper to feed the plurality of rod-forming mechanisms. Preferably, such automatic conveyor is driven in common by the carding mechanism of the hopper and synchronized relative to the rate of charging and the rate of feeding of the carded tobacco from the hopper to the rod-forming mechanisms respectively.

In the particular embodiment shown in Fig. 1, the hopper 1 is provided with the chute 112 enclosing the automatic conveyor 111 arranged to discharge the tobacco substantially centrally of the interior of the hopper, such automatic conveyor 111 being encased within the sealed chute 112 extending sufficiently close to the floor on which the wagons or baskets containing the tobacco to be charged are placed, while practically excluding access of the air interiorly of the chute 112. The conveyor 111 embodies buckets 113 suitably pivotally mounted on the conveyor chain 114, the latter passing over the central set of sprocket gears 115, and the intermediate set of sprocket wheels 116, 117. The lower portion of the conveyor 111 is preferably arranged to be flexed to accommodate for varying positions of the wagon or basket, and to drop automatically under gravity as the pile of tobacco is reduced in the wagon or basket. As one form of arrangement, the set of sprocket wheels 118 are provided, suitably pivotally hung from the sides of the chute 112, or other support, by any suitable means such as bearings for the shaft of the set of sprocket wheels 118 and connected to the lowermost sprocket wheels 119 by means of the opposite links 120. Each bucket 113 is preferably provided with forwardly positioned and forwardly projecting teeth 121 for raking up the tobacco from the wagon or basket into the bucket portion proper of each bucket 113.

Whereas I have described my invention by reference to specific forms thereof, it will be understood that many changes and modifications may be made without departing from the spirit of the invention, as defined by the appended claims.

I claim:

1. In a cigarette machine, hopper means; a plurality of sets of carding devices; carded tobacco collecting means for each set of carding devices; a tube belt for each carded tobacco collecting means; and common means for driving said carding devices including means for separately regulating the operation of said carding devices respectively by said common driving means.

2. In a cigarette machine, a hopper; a plurality of sets of carding devices disposed jointly in said hopper; carded tobacco collecting means for each set of carding devices; a tube belt for each carded tobacco collecting means; common means for operating said tube belts; and common means for driving said carding devices in synchronism with said tube-belt operating means including means for separately regulating the operation of said carding devices respectively by said common driving means.

3. In a cigarette machine, a hopper; a plurality of sets of carding devices disposed jointly in said hopper; carded tobacco collecting means for each set of carding devices; cigarette rod forming means including a tube belt for each carded tobacco collecting means; common means for operating said tube belts; and common means for driving said carding devices including means for jointly regulating said plurality of sets of carding devices and further including means for separately regulating the operation of said carding devices respectively by said common driving means.

4. In a cigarette making machine, a hopper; two sets of carding devices disposed respectively toward opposite sides interiorly of said hopper, each set including a carding roll and a pin roll; the space intermediate said sets of carding devices being free from obstruction for the reception of tobacco; means for rotatably mounting said carding rolls within said hopper; means for rotatably mounting said pin rolls respectively on a side of its carding roll opposite from the center of said hopper, whereby to locate said pin rolls in a region not traversed by the charge of tobacco; collecting means for one of said sets of carding devices, separate collecting means for the other of said sets of carding devices; a tube belt coacting with said first-named collecting means and a separate tube belt coacting with said second-named collecting means.

5. In a cigarette making machine, a hopper, a set of carding devices disposed toward one side of said hopper said carding devices being arranged respectively below one another in a direction extending toward the center of the interior of said hopper; a second set of carding devices being disposed toward the opposite side of said hopper, the carding devices of said second set being arranged toward the center of the interior of said hopper; the upper portion of the central interior of said hopper being free from obstruction and for the reception of tobacco; a pin roll coacting with said first-named set of carding devices and disposed on a side of a carding device of said first-named set adjacent said first-named side of the hopper; a second pin roll coacting with said second-named set of carding devices and disposed on a side of a carding device of said second-named set adjacent said second-named side of said hopper; means for collecting the carded tobacco delivered from said first-named set of carding devices and delivering the same exterior of said hopper; separate means for collecting the carded tobacco from said second-named set of carding devices and delivering the same exterior of said hopper; a tube belt coacting with said first-named collecting means and a separate tube belt coacting with said second-named collecting means.

6. In a cigarette machine, hopper means; a plurality of sets of carding devices; carded tobacco collecting means for each set of carding devices; cigarette rod forming means including a tube belt for each carded tobacco collecting means; severing means for said plurality of said cigarette rod forming means; and common means for driving said carding devices including means for separately regulating the operation of said carding devices respectively by said common driving means.

7. In a cigarette machine, a hopper; a plurality of sets of carding devices disposed jointly in said hopper; carded tobacco collecting means for each set of carding devices; cigarette rod forming means including a tube belt for each carded tobacco collecting means; severing means for said plurality of said cigarette rod forming means; common means for operating said tube belts; and common means for driving said carding devices including means for separately regulating the operation of said carding devices respectively by said common driving means.

8. In a multiple cigarette making machine, a hopper; multiple carding mechanism jointly disposed in said hopper; a plurality of cigarette rod forming mechanisms, each mechanism including an individual tube belt; a plurality of transferring means for transferring carded tobacco from said multiple carding mechanism to said tube belts respectively and means for controlling said multiple carding mechanism to thereby regulate in common the delivery of carded tobacco to said plurality of cigarette rod forming mechanisms and for regulating the delivery of carded tobacco to said plurality of cigarette rod forming mechanisms respectively relatively to one another.

9. In a multiple cigarette making machine, hopper means; a plurality of carding mechanisms for said hopper means; an individual cigarette rod forming mechanism for each carding mechanism, each rod forming mechanism including an individual tube belt; an individual carded tobacco transferring means for transferring carded tobacco from its carding mechanism to its tube belt; severing means for said plurality of cigarette rod forming mechanisms; and common means for operating said carding mechanisms, said tube belts and said severing means, said common operating means including individually controlled operating means for said carding mechanisms respectively.

10. In a multiple cigarette making machine, hopper means; multiple carding mechanism disposed in said hopper means; a plurality of cigarette rod forming mechanisms, each mechanism including an individual tube belt; a plurality of transferring means for transferring carded tobacco from said multiple carding mechanism to said tube belts respectively; common severing means for said plurality of cigarette rod forming mechanism, common means for driving said multiple carding mechanism, said tube belts and said common severing means and means for regulating the operation of said multiple carding mechanism to thereby regulate in common the delivery of carded tobacco to said plurality of cigarette rod forming mechanisms.

11. A cigarette making machine comprising a plurality of cigarette rod forming mechanisms, hopper means, carding mechanism disposed in said hopper means, a plurality of means for transferring carded tobacco from said hopper to said plurality of cigarette rod forming mechanisms respectively and common means for driving said cigarette rod forming mechanisms, said carding mechanism and said plurality of carded tobacco transferring means, said common driving means including means for varying the delivery of carded tobacco from said hopper respectively to said plurality of carded tobacco transferring means.

12. A cigarette making machine comprising a plurality of cigarette rod forming mechanisms, hopper means, carding mechanism disposed in said hopper means, a plurality of means for transferring carded tobacco from said hopper to said plurality of cigarette rod forming mechanisms respectively and common means for driving said cigarette rod forming mechanisms, said card-

ing mechanism and said plurality of carded tobacco transferring means, said common driving means including means for varying the rate of operation of said carding mechanism relative to the rate of operation of said plurality of cigarette rod forming mechanisms.

13. In a multiple cigarette making machine, hopper means, a plurality of carding mechanisms jointly disposed in said hopper means, each carding mechanism including a pin roll for accumulating tobacco thereon; movable means disposed in said hopper means for feeding tobacco to said tobacco collecting pin rolls respectively; carded tobacco transferring means respectively for said carding mechanisms; and common means for operating said carding mechanisms, said carded tobacco transferring means and said movable means including individually controlled operating means for said carding mechanisms respectively.

14. In a multiple cigarette making machine, hopper means, a plurality of carding mechanisms jointly disposed in said hopper means, each carding mechanism including a pin roll for accumulating tobacco thereon; movable means disposed in said hopper means between said tobacco collecting pin rolls for feeding tobacco to said tobacco collecting pin rolls respectively; carded tobacco transferring means respectively for said carding mechanisms; and common means for operating said carding mechanisms, said carded tobacco transferring means and said movable means including individually controlled operating means for said carding mechanisms respectively.

15. In a multiple cigarette making machine, hopper means, a plurality of carding mechanisms jointly disposed in said hopper means, each carding mechanism including a pin roll for accumulating tobacco thereon; movable means disposed in a lower portion of said hopper means for feeding tobacco to said tobacco collecting pin rolls respectively; carded tobacco transferring means respectively for said carding mechanisms; and common means for operating said carding mechanisms, said carded tobacco transferring means and said movable means including individually controlled operating means for said carding mechanisms respectively.

16. In a multiple cigarette making machine, hopper means, a plurality of carding mechanisms jointly disposed in said hopper means, each carding mechanism including a pin roll for accumulating tobacco thereon; movable means disposed in said hopper means for feeding tobacco to and in directions towards said tobacco collecting pin rolls respectively; carded tobacco transferring means respectively for said carding mechanisms; and common means for operating said carding mechanisms, said carded tobacco transferring means and said movable means including individually controlled operating means for said carding mechanisms respectively.

17. In a multiple cigarette making machine, hopper means, a plurality of carding mechanisms jointly disposed in said hopper means, each carding mechanism including a pin roll for accumulating tobacco thereon; movable means disposed in a lower portion of said hopper means between said tobacco collecting pin rolls for feeding tobacco to and in directions towards said tobacco collecting pin rolls respectively; carded tobacco transferring means respectively for said carding mechanisms; and common means for operating said carding mechanisms, said carded tobacco transferring means and said movable means including individually controlled operating means for said carding mechanisms respectively.

In testimony whereof I have signed this specification this 11th day of October, 1919.

WILLIAM F. GRUPE.