No. 735,890. PATENTED AUG. 11, 1903.

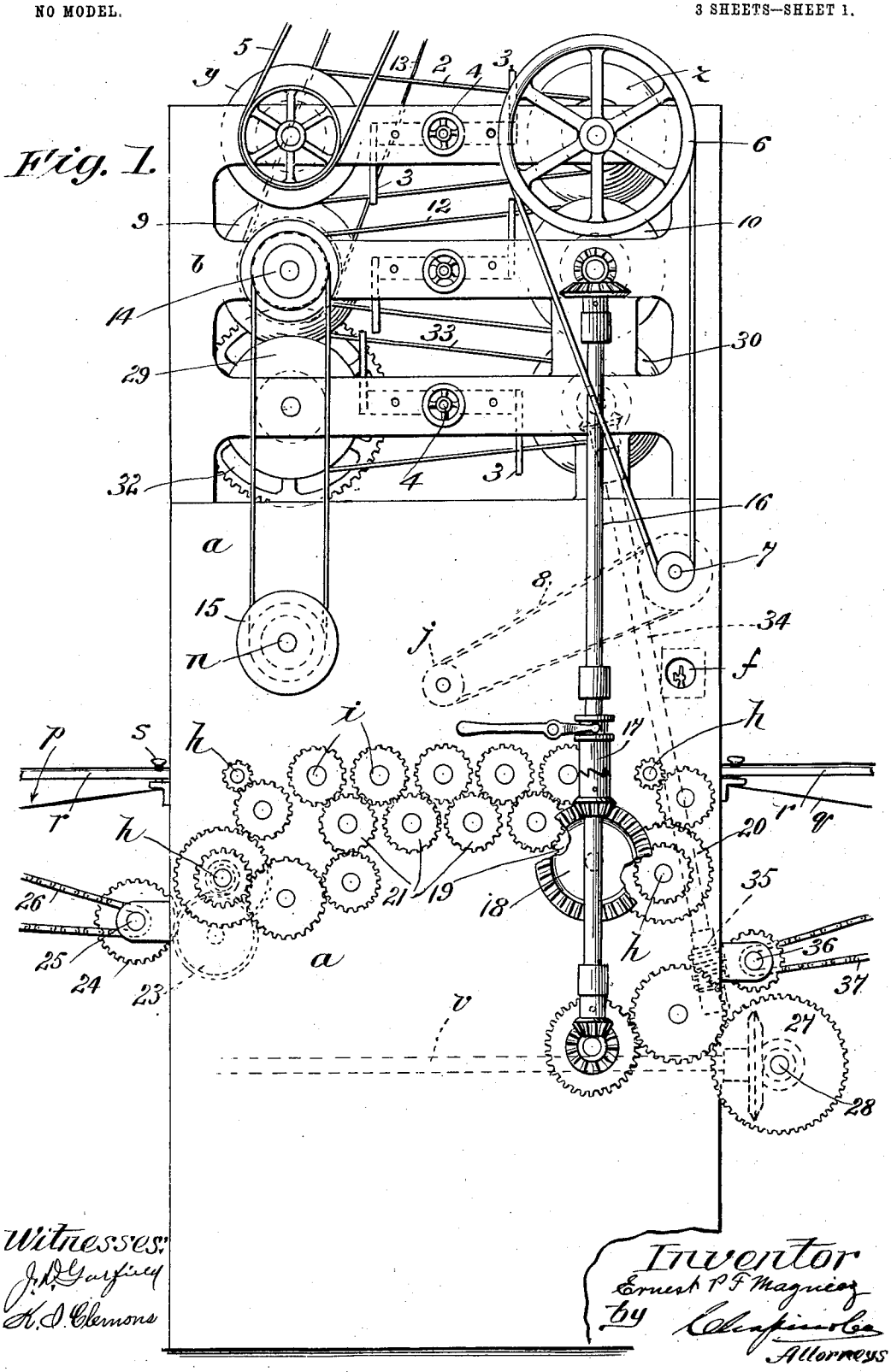
E. P. F. MAGNIEZ.

MACHINE FOR MANUFACTURING CHOCOLATE.

APPLICATION FILED MAY 19, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.



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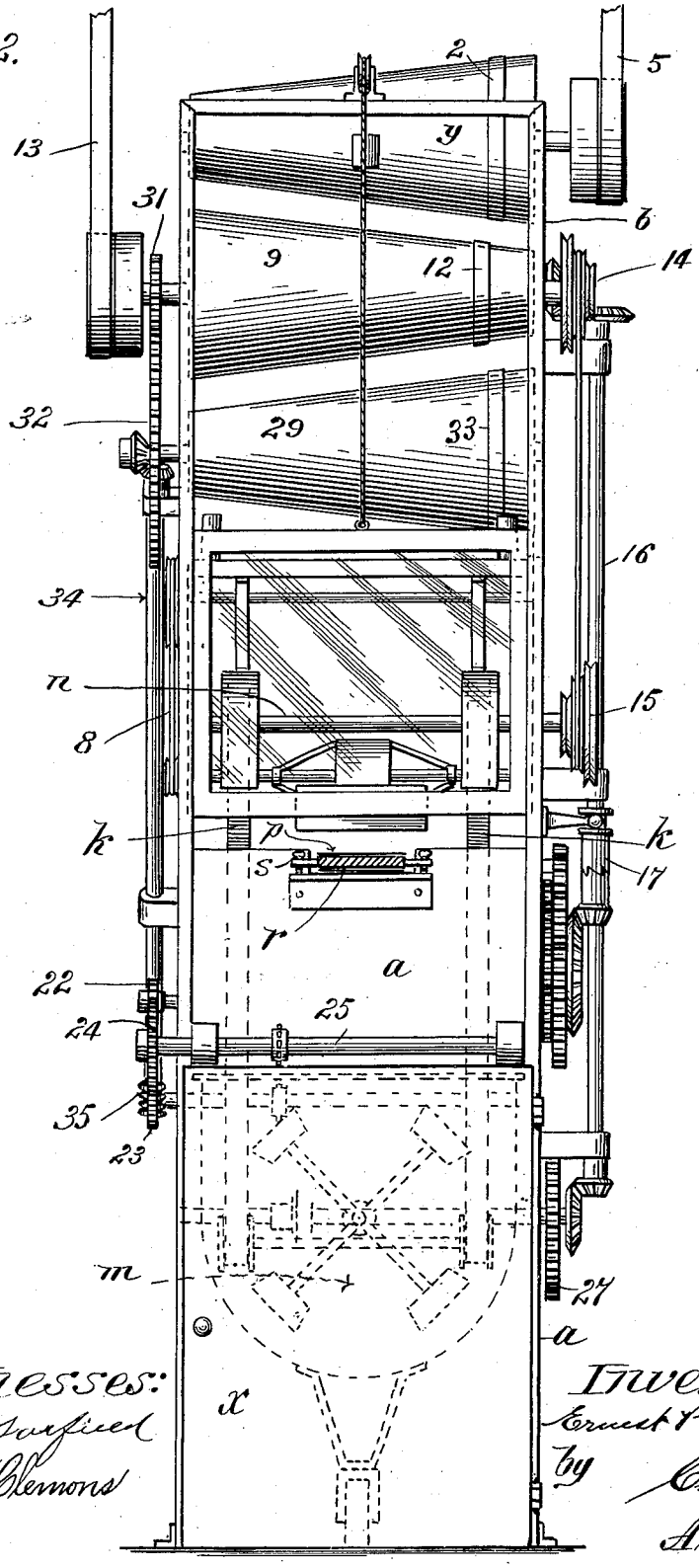
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NO. MODEL. 3 SHEETS—SHEET 2.

Fig. 2.



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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 4.

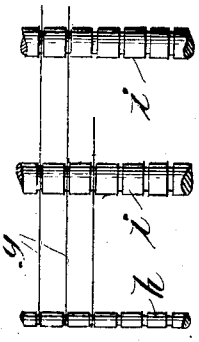


Fig. 3.

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No. 735,890. Patented August 11, 1903.

UNITED STATES PATENT OFFICE.

ERNEST PAUL FREDERIC MAGNIEZ, OF AMIENS, FRANCE, ASSIGNOR TO ALFRED HENRI SAVY, OF PARIS, FRANCE.

MACHINE FOR MANUFACTURING CHOCOLATE.

SPECIFICATION forming part of Letters Patent No. 735,890, dated August 11, 1903.

Application filed May 19, 1902. Serial No. 108,071. (No model.)

To all whom it may concern.

Be it known that I, ERNEST PAUL FREDERIC MAGNIEZ, machinist, a citizen of the Republic of France, residing at Amiens, France, have invented new and useful Improvements in Machines for Manufacturing Chocolate, of which the following is a specification.

This machine relates to machines for coating confectionery, nuts, and similar articles with chocolate, and is in the nature of an improvement in the construction for which Letters Patent of the United States were granted to me on August 13, 1901, under No. 680,489.

The object of the present invention lies in the provision of means whereby the speed of the various moving parts of the construction embodied in my said prior Letters Patent may be regulated and in minor improvements of the machine generally whereby its operation on a commercial scale is more easily and economically effected, all as fully set forth in the following specification and pointed out in the claims forming a part thereof.

It has been developed in practice that in order to insure the coating of the blanks in the proper manner and to produce goods having the right color and gloss the chocolate must be applied to said blanks at a proper temperature and that a certain regulation of the temperature of the atmosphere in which such application is made must also be provided for to produce the best results, and to that end the above-referred-to improvements in my prior patented machine have been devised, all of which are clearly illustrated in the drawings and described in the accompanying specification.

In the drawings forming part of this application, Figure 1 is a side elevation of a confectionery-coating machine embodying my improvements. Fig. 2 is a front end elevation of the same. Fig. 3 is a sectional side elevation of a part of the machine and showing the feeding and delivery aprons. Fig. 4 is a plan view of a portion of the blank-conveying devices located between the feed and delivery aprons.

Referring now to the drawings, it may be pointed out that in its general principles the machine is similar to my said prior construction in the means provided for conveying the blanks through the machine and in the means for drenching them with the liquid chocolate.

Referring to the drawings, *a* indicates a box-like structure within which the coating of the blanks may be effected, and mounted on this structure *a* is a suitable framework (indicated by *b*) for supporting the various driving mechanisms. The structure *a* completely incloses a space which contains the mechanism whereby the confections are conveyed through the machine under a flowing stream of liquid chocolate and various heating and cooling devices, all as fully hereinafter described. The feeding and delivery ends of this structure *a* are provided with vertically-sliding glass doors *c*, which preferably are counterbalanced by suitable weights, to the end that they may be quickly adjusted to permit the confections to pass thereunder, or which may be raised to give access to the interior of the structure *a*, and through which the operation of the devices within said structure may be watched.

In my said prior patent no means were provided for maintaining a constant temperature in the presence of which the drenching and the primary cooling of the confections could be effected. The necessity for an approximately close regulation of the temperature, however, led to the construction of the structure *a*, just described. To provide means whereby a given temperature may be maintained, or approximately so, within said structure *a*, I provide therein a source of heat. Any desirable means may be resorted to for artificially increasing the temperature in the structure *a* to the desired degree, and a very satisfactory device for this purpose is that shown in the drawings, which consists in locating a metal box *d* therein, into which a gas-burner (shown in dotted lines in said box) may be introduced, and providing said box with a flue *e*, extending therefrom to the atmosphere, which flue may be given such length within the structure as will, by the radiation of the heat therein contained, impart to said structure the necessary temperature. Communicating with this metal box *d* is another flue (shown in dotted lines in Fig. 3, indicated by *f*, and shown in full lines in Fig. 1) which may lead to the atmosphere to supply the requisite air-cur-

rents to the box *d*. By the regulation of the gas-flame the temperature within the structure may be controlled with ease.

In my said prior patent the conveyer-apron on which the confections were drenched with chocolate mixture was some textile material, preferably, but in the drawings forming part of this application I have shown cords *g*, mounted on suitable rotating shafts *h*, which cords lie in slightly-separated relations and parallel one with the other and travel through the inclosed structure *a* from one end nearly to the other, as shown in Fig. 3. The shafts *h* are grooved, as shown in Fig. 4, to maintain the proper relative position of the cords *g*, which are referred to in my said prior patent as means for conveying the blanks to the machine instead of the aprons. Between the two upper shafts *h* supporting-rolls *i*, extending transversely to the line of movement of the cords, are provided, whereby the latter are maintained in a horizontal position, the grooves in the shafts and rolls being of such depth that the upper peripheries of the shafts and rolls lie practically in the same plane as that of the cords *g*. Therefore, as the blanks move along, carried by the cords and receiving a coating of chocolate, these rolls, which also become coated during the operation of the machine, serve to spread the chocolate on the under side of the confection, and at the same time serve to prevent an undue deposit of the chocolate mixture on said under side. Said mixture, when first applied, being relatively limpid, tends to accumulate at the base or on the under side of the confections.

As in my said prior patent, I provide a fan (indicated by *j*) for directing a current of air against the confections after the latter have been coated, whereby said coating may be more quickly hardened.

The devices for drenching the confections with chocolate shown herein are similar to the means shown in my aforesaid prior patent and form no part of this invention. Said means consist of two flexible belts *k*, located one on each side of the conveyers, as shown in Fig. 2, which belts at their lower ends run over pulleys on a short length of shafting, which hangs in the chocolate-kettle *m* and by its weight maintains suitable tension on said belts, the upper ends of which pass over pulleys on the shaft *n*, extending through the side of the machine. The chocolate adheres to this belt and is scraped off as the belts pass over the shaft *n* and runs into a trough *o*, in which there is a slit at the bottom regulable by a slide, through which slit a thin stream of liquid chocolate is constantly flowing, which stream extends entirely across the conveyer devices and by the movement of which confections are moved slowly under said stream of coating material. One end of said conveyer devices is provided with a feed-belt *p* and the opposite end with a similar belt *q*. On this belt *p* an operative places some confections to be coated and these are carried by the movement of the belt to the conveyer devices within the structure *a*, consisting of the cords *g*, as stated, which in turn deliver these confections onto the belt *q*, on which they are carried to the packing-table, having been in transit thoroughly cooled. Said feed-belt *p* may be of any textile or other flexible material, enameled or not, but the delivery apron or belt *q* is preferably of enameled textile material, to the end that the chocolate may not adhere to it. Means are provided for swinging both of these aprons or belts up out of the way when it is desired to conveniently get at the parts of mechanism in the structure *a*, and to that end both the belts *p* and *q* are mounted on the shelves *r*, pivoted at their rear ends, as shown, and thus adapted to be swung up out of the way. Means for adjusting the level of these belts with the level of the conveyer devices are provided in the adjusting-screws *s*, shown in Fig. 3, as applied to the shelf of the feeding-belt *p* only, which screws pass through lugs on the side of said shelf against a suitable abutment *t*.

The chocolate-kettle *m* is provided with the usual paddles *u*, mounted on a shaft *v*, one end of which extends through said kettle and is provided with a suitable stuffing-box, the outer end of said shaft being squared to enter a squared socket in the end of a rotating shaft *w*. This construction permits the kettle to be withdrawn from the structure *a* through a door *x* on the front of the latter, the kettle for this purpose being mounted to run on a suitable track, whereby it is not only more easily moved in and out, but also whereby it is guided into proper connection with the driving-shaft *w*. Any suitable provision may be made for heating the kettle. It has been found necessary to provide means for the removal of the kettle in order to easily get at it for the purpose of cleaning it and filling it.

Owing to the extreme sensitiveness of chocolate in a liquid state to a change of temperature, it has been found necessary in order to produce the best results with this machine on a commercial basis to provide means for regulating the speed of the feeding-apron and the conveyer devices represented by the cords *g*, and also the delivery-apron *q*, and to that end the following regulable driving mechanism for these parts has been devised. Furthermore, it has been found desirable to provide means for regulating the delivery of the chocolate into the trough *o* according to varying conditions. These devices will also be described, and associated with the above driving mechanism is a clutch device which controls the feed-apron and the conveying devices, whereby these may be thrown out of action independently of the rest of the machine. The driving mechanism referred to consists of suitably-arranged pairs of cone-pulleys as follows: In the upper part of the framework *b* there is mounted the cone-pulleys *y* and *z*, over which runs the belt 2, which may be shifted in the usual manner by the

shipper 3, actuated by a screw-rod 4. This upper pair of cone-pulleys is run by a belt 5, running onto a pulley on the shaft of the cone-pulley *y*. On the shaft of the pulley *z* is a pulley 6, over which runs a suitable belt to a smaller pulley on the shaft 7, from which the fan *j* is driven by a belt connection, (shown in dotted lines in Fig. 1 and in full lines in Fig. 2, and indicated by 8.) The speed of this fan may thus be regulated by the shifting of the belt 2. Next below the above-referred-to cone-pulleys *y* and *z* and supported in parallelism therewith in the frame *b* are the cones 9 and 10, connected by a belt 12, operated in a manner similar to the belt 2. These cones 9 and 10 are driven by a belt 13, running over a pulley on the shaft of the cone 9, on the opposite end of which shaft is the cone-pulley 14, which, by a belt running over a similar cone-pulley 15 on the shaft *n*, drives the chocolate-conveyer belts *k*, Figs. 2 and 3. By shifting this belt on the cone-pulleys 14 and 15 the quantity of chocolate delivered to the trough *o* may be regulated. From one end of the shaft of the cone 10 rotary movements are imparted to a vertical shaft 16 (shown in Figs. 1 and 2) by means of beveled-gear connections between it and said cone-shaft. This shaft 16 is made in two parts, which may be coupled or uncoupled by a clutch mechanism 17, as desired. Below the clutch is a beveled gear 18 in mesh with the pinion on said shaft 16, and this beveled gear has located behind it a gear 19, in mesh on the one side with the gear 20, whereby one of the shafts *h* are rotated, and on the other side of this gear 19 meshes with one of that train of gears 21 whereby the shafts *i* and *h* are rotated in the same direction. Referring to Figs. 2 and 3 of the drawings, the lower left-hand shaft *h* of the four over which the cords *g* run extends transversely across the entire machine, and on the opposite side of the machine to that shown in Fig. 1 it is provided with a pinion 22, (see Fig. 2,) which through the gears 23 and 24 imparts rotary movement to the sprocket-wheel shaft 25 over a suitable sprocket, on which runs a chain 26, which, as shown in Fig. 3, drives the feeding-apron *p*. At the lower end of the shaft 16 bevel-gear connection is made with a train of gears, the last one of which, 27, is located on the end of a transverse shaft 28, which by suitable bevel-gear connections rotates the short driving-shaft *w*, with which the agitator-shaft *v* has a driving connection, as heretofore explained. From this description it is obvious that whenever the clutch mechanism 17 is operated to uncouple the upper from the lower end of the shaft 16 the agitator-shaft just referred to, and the conveying devices in the body of the machine, and the feed-apron will stop. The delivery-apron, however, will continue its movement in order that it may carry to the packing-table all of the material that may be thereon at the time. This delivery-apron *q* is driven by separate means from the shaft 16 as follows: Below the cones 9 and 10 are two other cones 29 and 30, 29 being connected with the cone 9 through a gear 31 on the latter in mesh with the gear 32 on the shaft of the cone 29. Thus the last-named cone is driven directly by the belt 13, and said cone, through a suitable belt 33, rotates the cone 30, and the shaft of the latter, through suitable bevel-gear connections, drives the shaft 34, which is shown clearly in Fig. 2 and in dotted lines in Fig. 1. On the lower end of this shaft 34 is a worm-gear 35, which meshes with a suitable gear on the shaft 36 over a suitable sprocket on which the chain 37 runs, and which chain runs over a suitable sprocket on the shaft 38, on which there is a roller 39 for the support of the delivery-apron arm, and this roll, together with others driven therefrom, imparts the required movement to this belt *q*.

From the foregoing description it will be seen that the shifting of the belt *q* on the upper set of cones may regulate the fan, that the shifting of the belt 12 on the next set of cones may regulate the movement of the conveyer devices within the machine, and the speed of the feeding-belt *p*, and incidentally the speed of the agitator-shaft *v*, is also altered. As any adjustment of this belt 12 will affect the speed of the two elevator-belts *k*, this may be compensated for by the shifting of the belt which runs over the cone-pulleys 14 and 15. The lower set of cones driven by the belt 33 regulates the speed of movement of the delivery-apron *q*, and as the belts on these various sets of cones can be manipulated independently one of the other adjustments of the speed of the coöperating parts of the machine may be made to adapt the machine to any class of work which it may be called upon to perform, or any changes in speed rendered necessary by changes of temperature within the structure *a* or rendered necessary by changes of temperature of the coating material may be readily effected, and the part of the machine thus kept practically uniform.

During the running of this machine commercially a thermometer suspended within the boxed-in portion of the machine in such position that it may be read through one of the glass doors *c* serves as a gage or guide whereby the various adjustments of the machine may be effected.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination in a chocolate-coating machine of a conveyer mechanism to carry the confections to be coated, means for flooding the confections on said conveyer with liquid chocolate, a substantially closed casing within which said conveyer and flooding devices are located, means to heat said casing, and means to regulate the speed of the conveyer mechanism through the casing.

2. The combination in a chocolate-coating machine, of a box-like structure, a feed-apron,

a conveyer mechanism for receiving confections from said apron and carrying them through said structure, means within the latter for coating said confections with liquid chocolate, a delivery-apron for receiving coated confections from the conveyer mechanism, and means for regulating the speed of said feed-apron, and conveyer mechanism, independently of said delivery-apron.

3. In a chocolate-coating machine, mechanism for conveying confections through the machine, an inclosing structure for said conveyer mechanism, a heating device for said structure, means for controlling said heating device, and means for regulating the speed of the conveyer mechanism.

4. In a chocolate-coating machine, mechanism for conveying confections through the machine, an inclosing structure for said conveyer mechanism, a heating device for said structure, and means for controlling said heating means, driving mechanism for the conveyer mechanism consisting of two oppositely-arranged cone-pulleys, a belt for the latter, a device for shifting the belt, a suitable connection between one of said cones and said conveyer mechanism, and a clutch in said connection whereby said conveyer mechanism may be stopped independently of said cones.

5. In a chocolate-coating machine, a conveyer mechanism, and a feed-apron, a driving mechanism therefor consisting of two cone-pulleys, a belt therefor, means for shifting the belt, and a connection from one of said cones, whereby both the conveyer and the apron are moved; a separate driving mechanism for the delivery-apron, consisting of two cone-pulleys, a belt therefor, and a connection from one of the cones whereby said delivery-apron is moved.

6. In a chocolate-coating machine, mechanism for conveying confections through the machine, an inclosing structure for said conveyer mechanism, a heating device for said structure, and means for controlling said heating means, a fan for directing a current of air on the coated confections and means for regulating the speed of the fan independently of other moving parts of the machine, whereby said air-current may be increased or diminished in force.

7. In a chocolate-coating machine, a chocolate-kettle slidable horizontally out of the machine, an agitator-shaft therein, a rotating shaft for driving said agitator-shaft, and a separable connection outside of the kettle between the driving-shaft and agitator-shaft, whereby the withdrawal of the kettle from the machine may separate said driving-shaft and agitator-shaft.

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