Dec. 29, 1925. 1,567,633

A. L. BAUSMAN

CONFECTION COOLING APPARATUS

Filed May 17, 1923 3 Sheets-Sheet 1

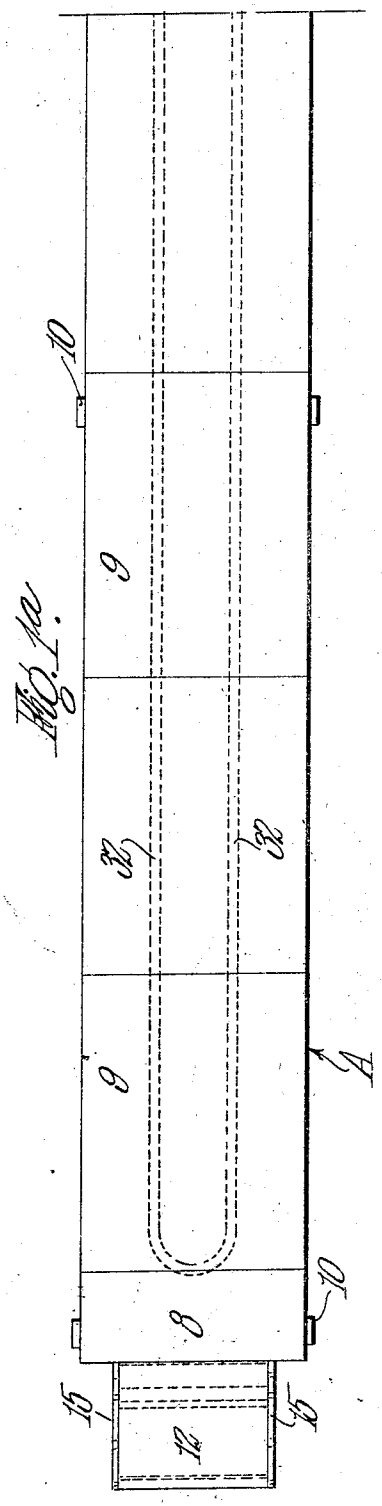


Fig. 1a.

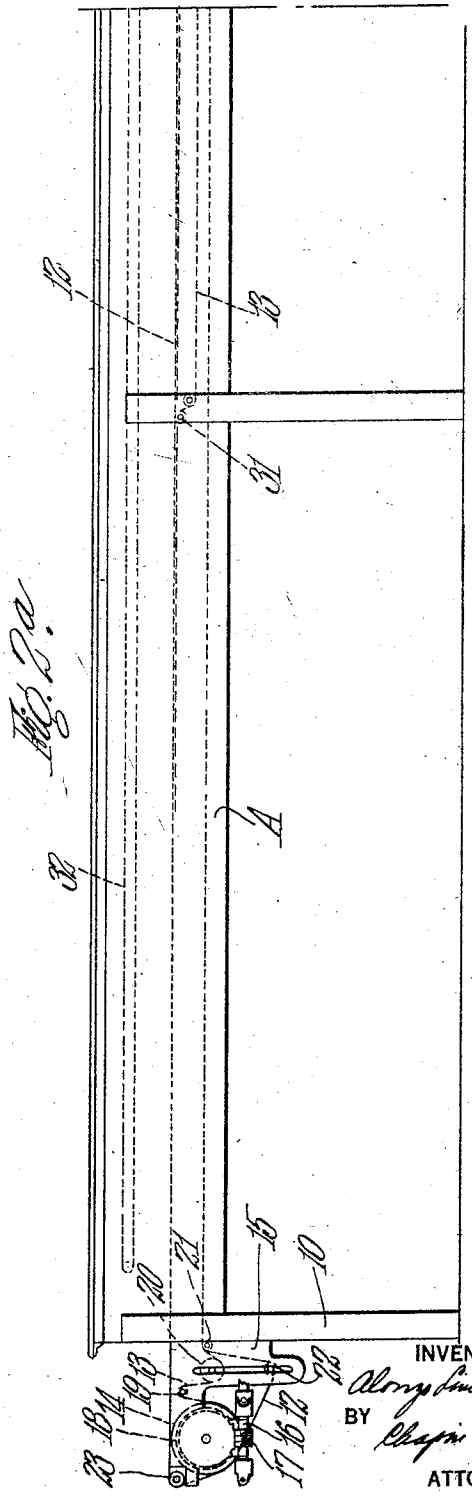


Fig. 1b.

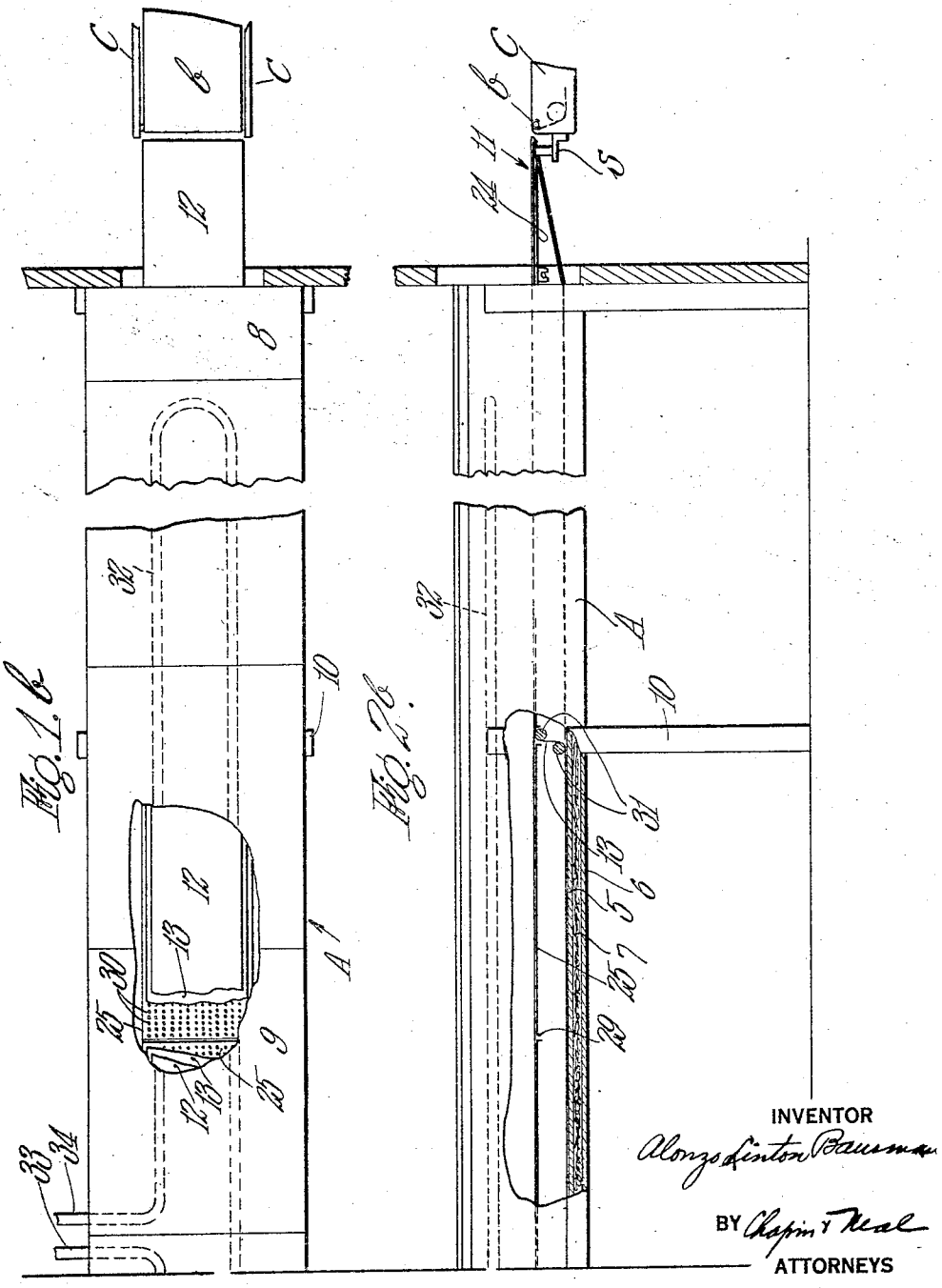
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CONFECTION COOLING APPARATUS

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Fig. 3.

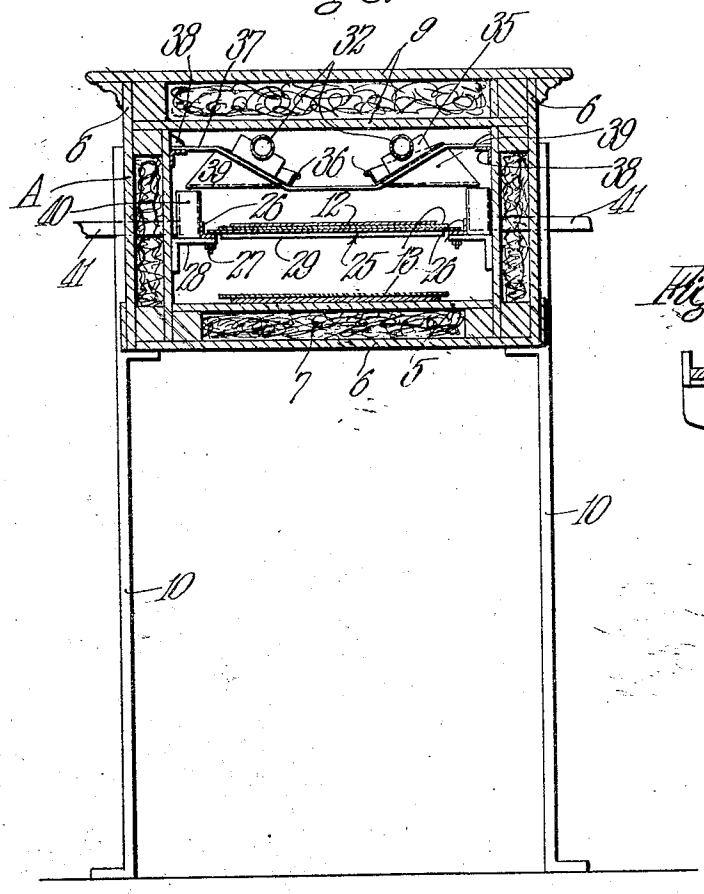
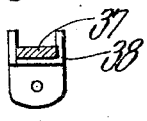


Fig. 4.



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UNITED STATES PATENT OFFICE.

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CONFECTION-COOLING APPARATUS.

Application filed May 17, 1923. Serial No. 639,629.

To all whom it may concern:

Be it known that I, ALONZO LINTON BAUSMAN, citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Confection-Cooling Apparatus, of which the following is a specification.

This invention relates to an improved cooling apparatus, which is particularly intended for cooling confections and the like after they have been coated.

The apparatus of this invention is applicable to a standard type of chocolate coating machine and includes a conveyer which receives the confections, freshly coated with chocolate, and conveys them through suitable cooling means until the coatings are hardened.

The general object of this invention is to provide an apparatus, of the general class described, which is comparatively simple in construction and yet effective in operation.

Another object of the invention is to provide improved means for cooling the confections, especially the bottom surfaces thereof which, being supported on the conveyer, are not exposed directly to the cooling medium and are therefore hard to cool.

Another object of the invention is to provide, in an apparatus of the class described, a confection conveyer having an outer confection carrying belt and an inner belt which drives the other belt by frictional engagement therewith, and means for separating said belts during a portion of their travel to allow the cool air to more readily reach the confection carrying belt and yet leave a sufficient area of contact between the belts for the driving function.

Other objects and advantages will appear in the following description and in the illustrative embodiment of the invention in the accompanying drawings, in which:—

Figs. 1^a and 1^b, when joined together along the vertical dot-dash lines, afford a complete plan view of an apparatus embodying my invention;

Figs. 2^a and 2^b, when similarly joined together, afford an elevational view of the same;

Fig. 3 is a cross-sectional view of the apparatus; and

Fig. 4 is a detail view of a part shown in Fig. 3.

Referring to these drawings; the apparatus includes a suitable casing A, through which the confections to be cooled travel in a longitudinal direction. This casing is preferably provided with inner and outer walls 5 and 6, respectively, which are spaced one from the other to receive insulating material 7. Casing A has at each end two fixed cover sections 8, of similar construction, and intermediate these sections are a plurality of removable cover sections 9 of similar construction, which are mounted in abutting relation with the end sections 8 to afford a complete top enclosure for casing A. The casing is otherwise completely enclosed except for certain openings in its end walls which permit the entrance and exit of a conveyer to be described. The casing A is suitably supported, as by a plurality of legs 10, at the proper level above the floor.

The confections, to be cooled, are usually delivered from a belt, such as *b*, of a confectionery coating machine, a portion of which is indicated conventionally in Figs. 1^b and 2^b at C. These confections are automatically delivered by belt *b* upon a conveyer 11, which passes longitudinally through the casing A and carries the candies in its upper or working stretch of travel. Conveyer 11 is a composite one and consists of an outer and confection carrying belt 12 of suitable material, such as oil cloth, waxed paper or the like, and an inner or driving belt 13. These belts are driven by a roll 14 mounted in a frame 15 supported at one end of casing A,—such roll being driven from a shaft 16 by a worm 17 and worm gear 18. The belt 13 is caused to travel around a substantial part of the periphery of roll 14 by reason of a guide roll 19. A tension roll 20, guided in frame 15 for vertical movement, is arranged between roll 19 and a similar guide roll 21. A similar tension roll 22 operates on belt 12 between roll 14 and guide roll 21. A guide roll 23 is provided to cause belt 12 to make a comparatively sharp turn at the end of its upper stretch of travel, rather than allowing it to travel in the normal course around roll 14 as does belt 13. At the other end of the casing A, a table 24 is provided which is

pivoted at one end to casing A and at the other end is supported on a shelf *s* of the coating machine C. Both belts travel upon this table which, at its end, has a comparatively thin edge to cause the belts to make sharp turns as they pass from their lower to their upper stretches of travel.

The belts 12 and 13 are prevented from sagging during their upper and working stretch of travel, by being supported on a table which is preferably of thin and good heat conducting material and preferably also of a foraminous nature. As shown, this table is made up of a plurality of removable thin metal plates 25, which are mounted in abutting relation and are supported along their side edges by resting on two parallel, longitudinally disposed, and laterally spaced angle irons 26. The latter are secured, preferably in a conveniently detachable manner, as by bolts 27, to a series of angle iron brackets 28 fixed at longitudinally spaced intervals to the inner side walls of casing A. The side edges of the plates 25 are thus spaced from the adjacent side walls of casing A so that air from the region above the plates can pass to the region therebelow. Each plate 25 desirably has downturned ends 29 (Fig. 2^b) so as to prevent the otherwise sharp edge which might abrade belt 12. Each plate is likewise provided with a plurality of holes 30 (Fig. 1^b) passing entirely therethrough,—the idea being to allow air to more readily reach the confection supporting and driving belts. As much of the plate should be cut away as possible without impairing its strength as a support for the belts.

The passage of cold air from the region below plates 25 through the openings 30 aids very materially in rapidly cooling the bottoms of the confections, which bottoms rest on belt 12. The cooling of the bottom coatings of the confections is, however, impeded to some extent by the driving belt 13, which is usually of canvas or the like. To accelerate the cooling of the surfaces, referred to, I provide guiding means, in the nature of rolls 31 (Figs. 2^a and 2^b) which direct belt 13 downwardly to a level below that of plates 25, then along this level and finally upwardly to the level of the plates, where it again travels in contiguous relation with belt 12. This separation of the two belts is desirably made in the central and coldest portion of the apparatus, as shown, and can be made to occur for a substantial portion of the upper stretch of travel of the belts. It is necessary, however, to leave a sufficient area of contact between the belts so that the one will drive the other by frictional engagement. The outer belt 12 is usually of such a nature as not to be capable of being driven directly and the driving belt 13 is designed to take the tensile strains.

While according to the features of the invention, as above described, any suitable cooling devices may be employed, I prefer to provide the specially improved and simplified arrangement best shown in Fig. 3. The cooling system involves the use of one or more conduits in which a suitable cooling medium, such as brine, is circulated. As shown, two conduits 32 are provided and they are mounted longitudinally in parallel and laterally spaced relation within casing A and above plates 25. These two conduits may be joined at their ends, forming one continuous loop, as shown in Figs. 1^a and 1^b, with centrally disposed inlet and outlet portions 33 and 34, respectively, therefor. These conduits 32 rest in seats provided in a series of blocks 35 and are freely liftable therefrom. The blocks 35 are secured at longitudinally spaced intervals to a longitudinally extending trough 36 which underlies each conduit 32 and functions also as a baffle plate, as will appear. Both troughs 36 are suitably secured to a series of cross bars 37, disposed at longitudinally spaced intervals and each cross bar rests by gravity and is supported at its ends in seats provided in lugs 38 fixed to the inner walls of casing A.

It will therefore be seen that, when cover sections 9 are removed, the conduits 32 may be removed by lifting them out through the open upper space of casing A, after which the troughs 36 with attached blocks 35 and cross bars 37 may be removed in a similar manner. With these parts removed and the tension on belts 12 and 13 slackened, each plate 25 may be lifted along one side edge and slid out from under the belts and thus removed, after which the belts themselves may be removed in a similar fashion. These features of the assembly and removal of the parts within casing A constitute an important feature of the invention.

It also is to be noted that the cross bars 37 are so bent that the troughs 36 are angularly disposed with reference to the plane of travel of the belts. These troughs are so disposed that the adjacent side edges of each lie at a lower level than the non-adjacent edges. This arrangement tends to cause the cooled air adjacent conduits 32 to fall downwardly between the conduits and first reach the confections in the central portion of belt 12, which confections by reason of their location are naturally the most difficult to cool. The cool air then spreads outwardly from the central to the outer portions of the belt and finally, as it becomes warmer, upwardly to the conduits 32. Some of the cold air naturally falls through the spaces between the side edges of plates 25 and the inner

side wall of casing A, thus cooling the under sides of these plates and passing therethrough to belt 13, and where this belt is separated from belt 12, travelling directly to belt 12, the more quickly to cool the bottoms of the confections.

The troughs 36 near their central portions are provided with outlets 39, the drip from which is received in receptacles 40, which in turn are provided with outlet pipes 41 passing out of casing A.

The cooled confections may be removed from belt 12 in any suitable way, as manually or by automatic transfer to another suitable conveyer.

The invention has been disclosed herein, in an embodiment at present preferred, for the purposes of illustration but the scope of the invention is defined by the appended claims rather than by the foregoing description.

Claims:

1. In combination, a casing, a confection carrying conveyer extending longitudinally therethrough, laterally spaced conduits extending longitudinally of the casing and above the conveyer and adapted for the circulation of a cooling medium therein, a pair of laterally spaced baffle plates extending longitudinally of the casing in underlying relation with said conduits and in overlying relation with said conveyer, the adjacent side edges of said plates being disposed at a lower level than the nonadjacent edges and affording a channel between them which overlies the central portion of the conveyer and through which air cooled by said conduits passes downwardly and is first applied to cool the confections carried near the central portion of said conveyer thereafter dividing into two streams which pass in opposite directions crosswise of the conveyer toward its side edges and eventually returning past the higher edges of said baffle plates to said cooling conduit.

2. In combination, a casing, a conveyer to carry confections therethrough and comprising a confection supporting belt and a driving belt normally in contiguous relation therewith, means for circulating a cooling medium in the casing, and means for separating the driving and supporting belts of said conveyer to allow the cooling medium to more effectively cool the confections carried on said last named belt.

3. In combination, a casing, a conveyer to carry confections therethrough and comprising a confection supporting belt and a driving belt normally in contiguous relation therewith, a thin foraminous table mounted in said casing and upon which table said conveyer in its working stretch travels, and guiding means to direct said supporting belt below said table and in spaced relation therewith during a portion of the working stretch of said conveyer.

4. Delivery apparatus for confectionery machines, comprising an endless belt to carry the confections, a casing having a chamber through which cold air is forced and through which said belt extends, longitudinally disposed side rails mounted in said casing one on each side of said belt, a series of thin plates mounted in end-to-end relation and each supported at its opposite edges by resting on said rails, and removable covers on said casing allowing access to the interior thereof from above.

5. Delivery apparatus for confectionery machines, comprising, an endless belt to carry the confections, a casing having a chamber through which cold air is forced and through which said belt extends, longitudinally disposed side rails mounted in said casing in spaced relation with the side walls thereof and disposed one on each side of said belt, a series of thin foraminous plates mounted in end-to-end relation and each supported at its opposite edges by resting on said rails, and removable covers on said casing allowing access to the interior thereof from above.

In testimony whereof I have affixed my signature.

ALONZO LINTON BAUSMAN.