(No Model.)

F. G. BIRCHARD.

CANDY MACHINE.

No. 307,003. Patented Oct. 21, 1884.

Fig. 1.

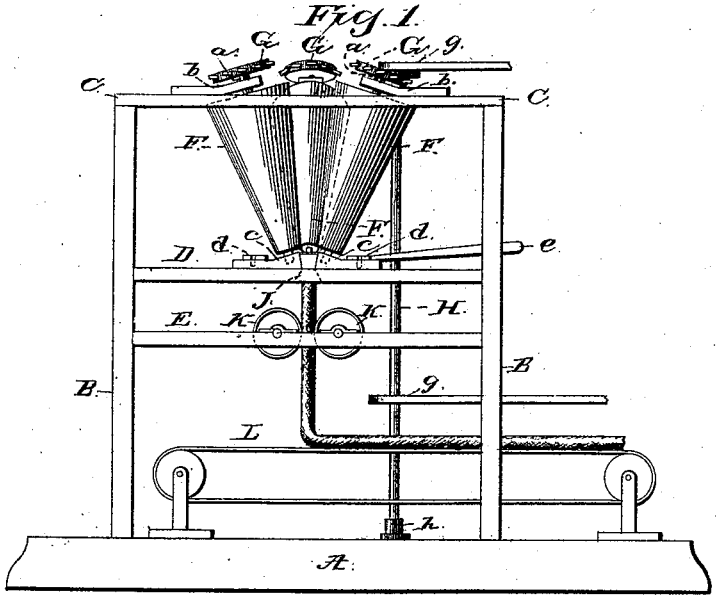


Fig. 2.

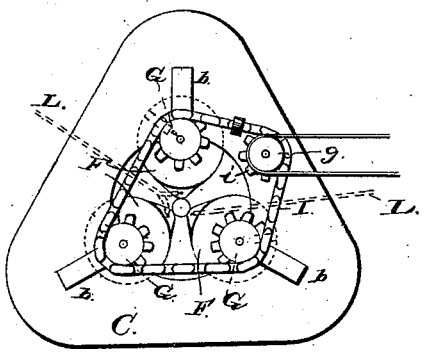
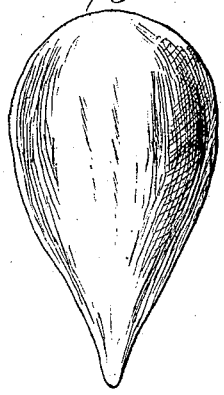


Fig. 3.



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FORD G. BIRCHARD, OF WILLIAMSPORT, PENNSYLVANIA.

CANDY-MACHINE.

SPECIFICATION forming part of Letters Patent No. 307,003, dated October 21, 1884.

Application filed December 28, 1883. (No model.)

To all whom it may concern:

Be it known that I, FORD G. BIRCHARD, of Williamsport, in the county of Lycoming and State of Pennsylvania, have invented a new and useful Improvement in Candy-Machines; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My improvements have for their purpose an increased capacity and efficiency in candy-machines, so that a great variety of work which is now done by hand may be effected by machinery, and such machinery may be adapted for making stick candy, either round or flat, plain or striped, or corrugated, embossed with figures, or lettered, and, in fine, stick candy of all the various varieties known and appreciated in the market.

My invention therein consists in the novel construction, combination, and arrangement of the principal operative parts, all as more fully hereinafter explained and claimed.

For the better comprehension of the same, attention is invited to the drawings connected with this specification, in which—

Figure 1 is an elevation of my machine; Fig. 2, a top plan view of the same, and Fig. 3 a view of a batch of candy.

Similar letters denote corresponding parts of the same in each figure.

The essential elements in my machine are several rolls, each of the form of a truncated cone, arranged with their smaller ends downward about a common center, but inclined a little outwardly from this center, and all revolved in the same direction. These rolls have their lower ends adjustable out and in from the common center, and may have their upper ends also adjustable in the same directions. A batch of candy introduced from above into the common center falls gradually by gravity while it is being compressed by the rolls, and passes out of the common center down through a forming or marking die, and then between other rolls which have rotation toward each other and act as feed-rollers, and thence to an endless belt, which carries away the completed stick of candy. In the act of working this machine suitable means may be employed to keep the candy at a proper temperature for the best manipulation. It is evident that embracing this general description a great variety of changes in construction may be employed without the exercise of invention, and therefore I do not wish to be confined to my precise construction, but to cover equivalent mechanical construction.

I will describe a construction which I have found very effective. Upon a base, A, are placed standards B, which support a top ring-plate, C, which in this instance is shown as of a general three-cornered shape and adapted for a three-roll machine. Between this plate and the base are interposed two other plates, the upper marked D and the lower E. The rolls F, of the form of truncated cones, preferably of hollow metal, have each a shaft, *a*, properly supported in the center of the rolls, which shaft passes through boxes *b*, and is journaled in said boxes, which are secured to the ring-plate C, and preferably in radial slots in the same, and such rolls are arranged at equal distances from each other and form a common center, and are each inclined a little outwardly. The shafts *a* rest at their feet upon or within suitable steps, *c*, which in turn are placed upon the plate D.

As a provision for adjusting the tops of these shafts out and in from the common center by means of the boxes *b*, the latter may be moved by hand in the slots out and in, and secured in place by thumb-nuts to T-bolts passing through the ends of the boxes as a well-known method. Likewise the steps *c* may be moved out and in in radial slots in the plate D, and secured in the same manner; but as the adjustment of the lower ends of the shafts would be more frequently required than that of the upper ends, a speedier method might be desirable. To accomplish this I prefer to employ a ring, *d*, with eccentric slots at as many points as there are steps, and with one or more vertical pins placed upon the plate D and passing through the eccentric slots in ring *d*. When this ring is arranged with each step kept in place by means of the pins in the eccentric slots by means of a lever, *e*, attached to this ring, a partial rotation of it

in one direction will draw the different steps inwardly and equally in radial lines, and a partial rotation in the opposite direction will return these steps to the first position.

In order to give rotation to the rolls, I prefer to mount sprocket-wheels G upon them, preferably just above the ring-plate C, which wheels, as they are not horizontal in their planes of rotation, should have their teeth *f* placed nearly in a horizontal plane. To give rotation to these sprocket-wheels, I provide a shaft, H, with a suitable pulley, *g*, or bevel or friction gear, to which power is applied, which shaft is turned upon a step, *h*, in the base A. This shaft is provided with a sprocket-wheel, *i*, which has a suitable drive-chain, I, which passes around the outside of the sprocket-wheels G and causes them all to be rotated in the same direction.

To meet the occasional increased length required for this drive-chain by reason of the adjustments of the rolls, it should be one of the well-known kinds which have similar detachable links, and to meet the changing elevation of the sprocket-wheels G by reason of adjusting the rolls out and in, suitable adjustable roller-hangers may be attached to the upper side of the ring-plate C, through which the drive-chain may be threaded. A die, J, fits loosely in the plate D, directly under the central space between the bottoms of the rolls, through which die the candy passes from the rolls, which dies serve to give the form, whether round or flat or corrugated, which the stick of candy is intended to have, and this die should preferably have a circular outside and beveled inwardly toward the bottom, so that it can be easily removed and replaced by other dies. Below the die are journaled the feed-rollers K, having revolution imparted in the direction toward each other by suitable means connecting with the main driving-shaft in any convenient way. These feed-rollers should be conveniently removable, so that others can be readily substituted, and their faces should be channeled for the description of stick candy passing between them, whether round or flat, and may be embossed with designs or letters to be impressed upon the candy as it passes between them. Below these feed-rollers is arranged an endless belt, L, driven by suitable belting or other connection with the main driving-shaft, which belt conveys away the completed stick candy.

As it is desirable to have the candy at a suitable temperature when passing through my machine, any well-known heating apparatus may be employed; but I prefer to introduce gas-jets into the lower ends of the rolls F—for instance, as indicated by L L in Fig. 2.

In the operation of my machine a batch of candy of the general form shown in Fig. 3 is introduced into the opening between the upper ends of the rolls F, and by gravity, and by the pull of the feed-rolls after it has entered them, it is drawn downward and compressed and given a round form. By the less rapid presentation of surfaces of the lower ends of the rolls due to the decreased diameter, the candy is also twisted at the same time that it is compressed and lengthened. These rolls may have horizontal corrugations, so that the candy will have corrugated twists, and, indeed, it is apparent that a great variety of external ornamentation may be given by proper surface changes to these rolls. From the rolls the stick of candy passes through the dies, where its final shape, whether round or otherwise, is determined, and where another variety of ornamentation may be given to it by the interior surfaces of the dies by vertical corrugations and other ornaments in the same, the die being loose in its bed, turning more or less, as desired, with the twisting of the candy. The stick of candy then passes to the feed-rolls, and at this point may, if desired, be further changed or ornamented.

It is apparent that in the use of this machine the die may be omitted in certain kinds of work, or altogether. From the feed-rolls the stick of candy passes to the endless belt L and is conveyed away.

This machine will be found very effective in the making of candy in striped sticks, the various-colored candy being made up in a batch in the usual way, on account of the regularity of the variously-colored spirals, and by increasing or diminishing the speed of the revolution of the rolls F any desired pitch can be given to these spirals. In fine, all the well-known and salable varieties of stick candy can be made of a great variety of ornamentation and of any length whatever with a better and more attractive appearance of the candy than if done by hand, and with much greater speed, with greater cheapness, and with also a greater uniformity throughout in its density than if made by hand.

Having thus described my invention, what I claim as new therein, and desire to protect by Letters Patent, is—

1. A candy-machine having adjustable rolls of the form of truncated cones correspondingly arranged with an outward inclination around a common center at equal distances from each other and from the common center, and rotated in the same direction, substantially as described.

2. A candy-machine with the correspondingly-arranged conical rolls F, in combination with feed-rollers, substantially as described.

3. A candy-machine with the correspondingly-arranged conical rolls F, in combination with feed-rollers and an intermediate die, substantially as described.

4. A candy-machine with the adjustable and correspondingly-arranged conical rolls F, the feed-rollers and an endless belt to carry away the candy, substantially as described.

5. A candy-machine with the correspondingly-arranged conical rolls F, corrugated or embossed, substantially as described.

6. A candy-machine with the rolls F, combined with means for heating the same, substantially as described.

7. A candy-machine having corrugated, embossed, or ornamental feed-rolls, in combination with conical rolls for twisting the candy, substantially as described.

8. A candy-machine having a corrugated or ornamental die intermediate a set of feed-rollers, and a set of rolls for twisting the candy, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FORD G. BIRCHARD.

Witnesses:
JAMES B. CORYELL,
ED. C. JOHNSON.