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MACHINE FOR CONTINUOUS, HIGH-PRODUCTION MANUFACTURE OF CANDY SUCKERS

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Fig. 1.

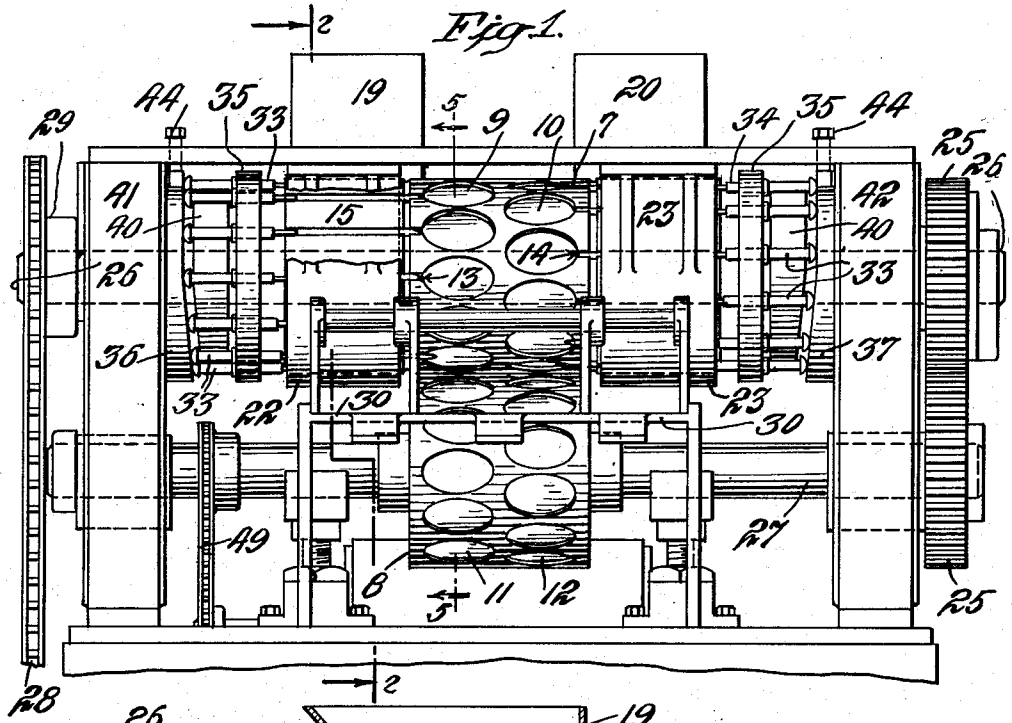


Fig. 2.

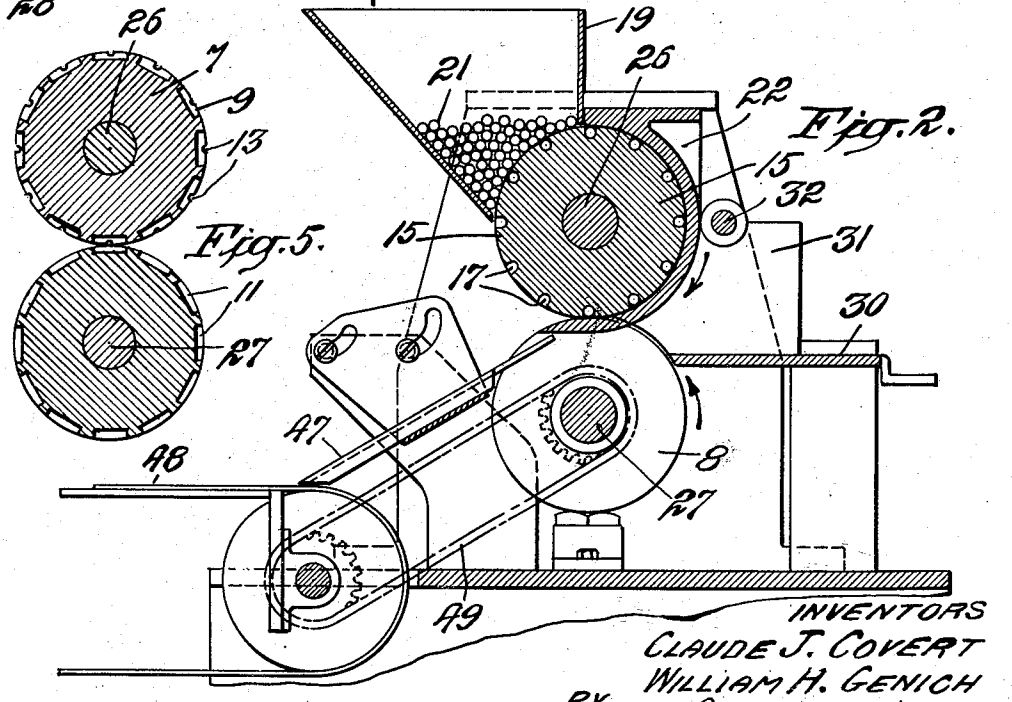


Fig. 5.

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Fig. 3.

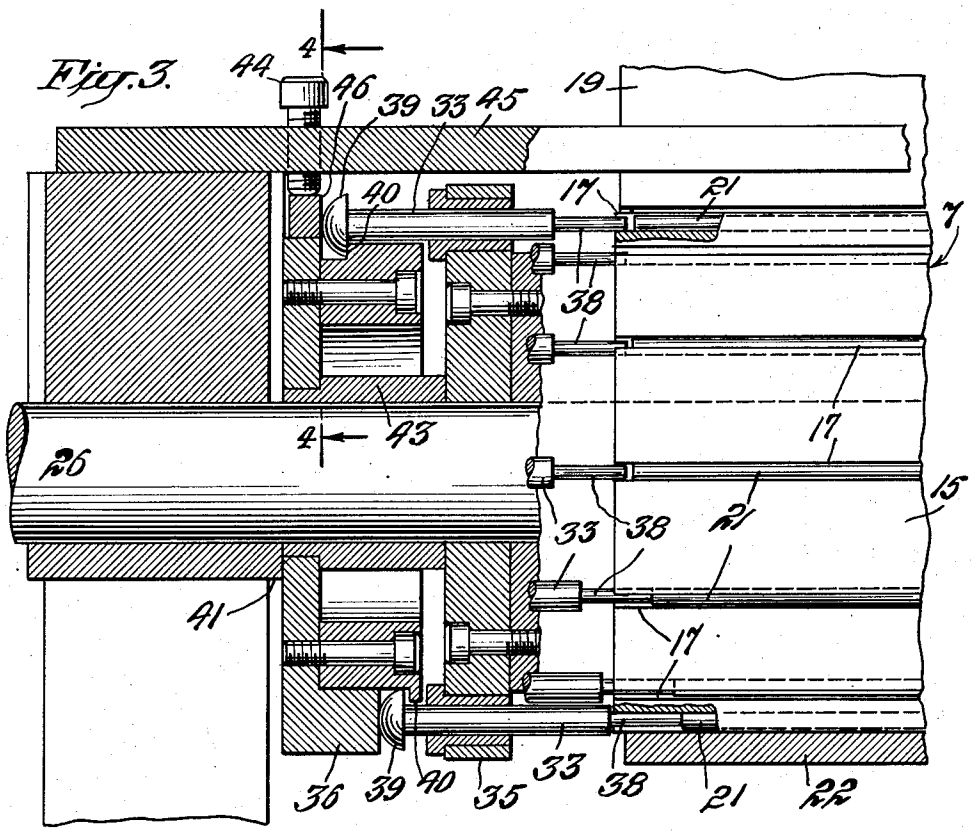


Fig. 4.

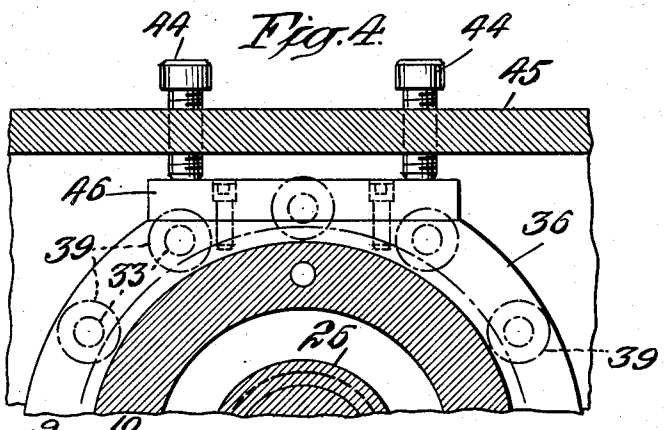
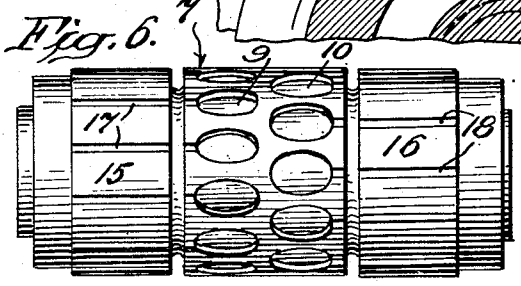


Fig. 6.



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MACHINE FOR CONTINUOUS, HIGH-PRODUCTION MANUFACTURE OF CANDY SUCKERS

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Application April 10, 1951, Serial No. 220,282

3 Claims. (Cl. 107—8)

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The invention here disclosed relates to the manufacture of candy suckers, and the general objects of the invention are to provide an automatic machine for this purpose, which will operate at a continuous, high-production rate and which with these special advantages, will be of relatively simple construction and reasonable in cost.

Special objects of the invention are to provide such a machine in a compact form, requiring small space on an operating floor and in a design which can be readily serviced so that a number of the machines may be readily supervised and taken care of by a single operator.

Other desirable objects attained by the invention are set forth or will appear in the course of the following specification, wherein the novel features of the invention are pointed out and broadly claimed.

The drawings accompanying and forming part of the sepcification illustrate a present commercial embodiment of the invention. Structure, however, may be modified and changed as regards such illustration, all within the true intent and broad scope of the invention as hereinafter described and claimed.

Fig. 1 in the drawings is a broken front elevation of one of the new sucker machines;

Fig. 2 is a broken vertical sectional view as taken through one of the stick hoppers, on substantially the plane of line 2—2 of Fig. 1;

Fig. 3 is an enlarged broken sectional view of the cam and plunger mechanism at the left-hand end of the machine shown in Fig. 1;

Fig. 4 is a broken vertical sectional view of the stationary cam and the set screws for securing same, taken on substantially the plane of line 4—4 of Fig. 3;

Fig. 5 is a vertical sectional view of the mold cavity formed portions of the companion rolls on substantially the plane of line 5—5 of Fig. 1;

Fig. 6 is a detail view of the upper, sucker molding and stick carrying roll.

The machine illustrated comprises essentially a pair of companion rolls, the top and bottom rolls 7, 8, constructed for molding two annular rows of suckers, and at least one of said rolls grooved inward from opposite ends to admit two sets of sticks to the soft, plastic, suckers shaped between the rolls.

In this particular instance both rolls are formed with die cavities, the upper roll with a row of closely spaced, shallow cavities 9 near one end of a row of closely spaced but alternately positioned cavities 10 near the opposite end, and the lower roll with meeting rows of die cavities 11, 12, near the opposite ends of the same.

The alternate arrangement of the candy molding cavities at opposite ends of the rolls enables the maximum utilization of the circumferential

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area of the rolls, providing for the largest candy sizes and the greatest number of candies molded for a given size roll.

This novel construction, providing the maximum output, permits use of reasonably small diameter rolls in a machine of high-production capacity.

The upper roll is shown as having grooves 13, 14, opening from opposite ends into the staggered arranged mold cavities 9, 10, and this same roll is shown as having end extensions 15, 16, grooved at 17, 18, in line with the mold entering grooves 13, 14.

The grooved end sections 15, 16, of the top roll rotate under the open bottom hoppers 19, 20, containing the sticks 21, as shown in Fig. 2, so as to pick up the sticks one at a time in the grooves 17 and 18 and carry them around to and beyond the meeting line of the two rolls.

Circular guards 22, 23, extending from the open bottom portions of the hoppers around the front of the top roll, past the meeting line, serve to confine the sticks in these grooves in passage from the hoppers to the point of insertion in the suckers.

In Fig. 1 the bottom roll 8 is shown as of less length than the upper roll, enabling the guards to be extended beyond the meeting line as far as need be.

The two rolls are driven and maintained in unison by gears 24, 25, connecting the shafts 26, 27, carrying the rolls, and operation is effected by a sprocket chain 28 extending from the drive motor to sprocket 29 on the upper roll shaft.

The candy, in soft, plastic state, is fed into the bite of the rolls on a shelf or feed table 30, Figs. 1 and 2, confined between the side plates 31 laterally adjustable on the shaft 32.

The insertion of the sticks is effected by plungers 33, 34, at opposite ends of the upper roll operating through guides 35, in line with the stick grooves 17, 18, and actuated by stationary cams 36, 37.

The inner ends of the plungers are shown in Fig. 3 as reduced at 38 to freely enter the grooves in the roll, and the outer ends are shown as having heads 39 to ride the faces of the cams 36—37 and to engage in back of the plunger retracting cam flanges 40.

The opposed cam faces 36 and 40 thus provide positive means for projecting and retracting the plungers in the revolution of the roll.

Figs. 3 and 4 show how the cams may be mounted in a floating relation on the shaft 26 at opposite ends of the roll, confined between the end faces of the roll and the opposing walls of the end frames 41, 42, by being carried by sleeves 43 rotatably supported on the shaft but held against rotation by set screws 44 extending down through the top plate 45 of the frame into spaced

engagement with bars **46** carried by the tops of the cams.

This floating mounting of the cams on the roll shaft enables the same plungers and cams to be used with rolls of different length, such as shorter rolls for shorter sticks or smaller candies, by sliding the cams inward to bring the supporting sleeves **43** into engagement with the ends of the shorter rolls and holding them in this position by spacer sleeves on the shaft of the proper length to fit between the outer sides of the cams and the adjoining end walls of the frame. In such cases the cam holding screws **44** may be located in other screw openings provided for the purpose in the top plate **45**.

The cams are designed as shown in Figs. 1 and 3 to hold the plungers **33** and **34** retracted during the arc of travel of the grooves across the open bottom of the stick hoppers, Fig. 2, to force the sticks fully into the suckers at the bottom, at the line of contact between the rolls, and to fully retract the plungers before the grooves again reach the hoppers.

After leaving the cover of the partially surrounding arcuate guards **22**, **23**, the suckers with the sticks solidly imbedded therein, will normally fall clear of the rolls onto the discharge incline **47**, Fig. 2, but if desired, strippers may be provided for positively discharging the completed suckers from the mold cavities and grooves.

As shown in Fig. 2, the incline **47** may deliver the finished products onto a belt conveyor **48** or the like, for transport to a wrapping, packing or other such station.

The belt conveyor **48** is shown in Fig. 2 as operated through a sprocket chain drive **49** from the lower roll shaft **27**.

With this invention the sticks are guided and supported and practically fully enclosed from passage from the hopper into imbedment in the suckers, enabling the use of sticks or skewers of tubular paper or cellophane or the like.

By operating simultaneously from opposite ends of the roll, the stick imbedding action is substantially balanced and the machine is enabled to operate smoothly and quietly at a high rate of production. The mechanism is rugged and simple in design and the parts are relatively few and can be produced and assembled at low cost. Further, the elements are compactly arranged so that the machine is small in size for the results accomplished. The operation is continuous so long as sticks are supplied to the hopper and the moldable candy is supplied to the rolls.

What is claimed is:

1. A machine for continuous manufacture of candy suckers comprising companion molding rolls, one of said rolls having mold cavities in the opposite end portions of the same and stick entering grooves extending from the opposite ends of said roll into the individual mold cavities, said roll having end extensions at the outer ends of said stick entering grooves provided with open stick guide grooves in line with said stick entering grooves, stick hoppers over said end extensions and positioned to deliver sticks individually into the open guide grooves in the end extensions, feed plungers carried by said roll at the outer ends of said end extensions in line with said guide grooves and having heads at their outer ends, means for effecting rotation of the companion mold rolls and stationary cam means positioned for engagement by the heads on the outer ends of said plungers and including opposed cam tracks spaced to receive the heads of the plungers between them and correspondingly inclined to effect positive projection and retraction of the plungers in said guide grooves in the rotation of said rolls.

2. A machine for continuous manufacture of candy suckers comprising companion molding rolls, one of said rolls having mold cavities in the opposite end portions of the same and stick entering grooves extending from the opposite ends of said roll into the individual mold cavities, said roll having end extensions at the outer ends of said stick entering grooves provided with open stick guide grooves in line with said stick entering grooves, stick hoppers over said end extensions and positioned to deliver sticks individually into the open guide grooves in the end extensions, feed plungers carried by said roll at the outer ends of said end extensions in line with said guide grooves and having heads at their outer ends, means for effecting rotation of the companion mold rolls and stationary cam means positioned for engagement by the heads on the outer ends of said plungers and including opposed cam tracks spaced to receive the heads of the plungers between them and correspondingly inclined to effect positive projection and retraction of the plungers in said guide grooves in the rotation of said rolls, said cam means including annular cam rings carrying the opposed cam tracks and having central supporting hubs and the roll carrying the plungers having a central mounting means, the hubs of said cam rings being removably supported in non-rotatable relation on said central mounting means of said roll.

3. A machine for continuous manufacture of candy suckers comprising companion molding rolls, one of said rolls having mold cavities in the opposite end portions of the same and stick entering grooves extending from the opposite ends of said roll into the individual mold cavities, said roll having end extensions at the outer ends of said stick entering grooves provided with open stick guide grooves in line with said stick entering grooves, stick hoppers over said end extensions and positioned to deliver sticks individually into the open guide grooves in the end extensions, feed plungers carried by said roll at the outer ends of said end extensions in line with said guide grooves and having heads at their outer ends, means for effecting rotation of the companion mold rolls and stationary cam means positioned for engagement by the heads on the outer ends of said plungers and including opposed cam tracks spaced to receive the heads of the plungers between them and correspondingly inclined to effect positive projection and retraction of the plungers in said guide grooves in the rotation of said rolls, the mold cavities at the opposite ends of said roll being offset longitudinally of the roll in relatively staggered relation enabling the greatest number of large size mold cavities in a given length mold roll.

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