Jan. 27, 1959 H. PIKAL 2,870,736

APPLE COATING TURRET WITH SWINGABLE HOOD MEANS

Filed Jan. 18, 1957 3 Sheets-Sheet 1

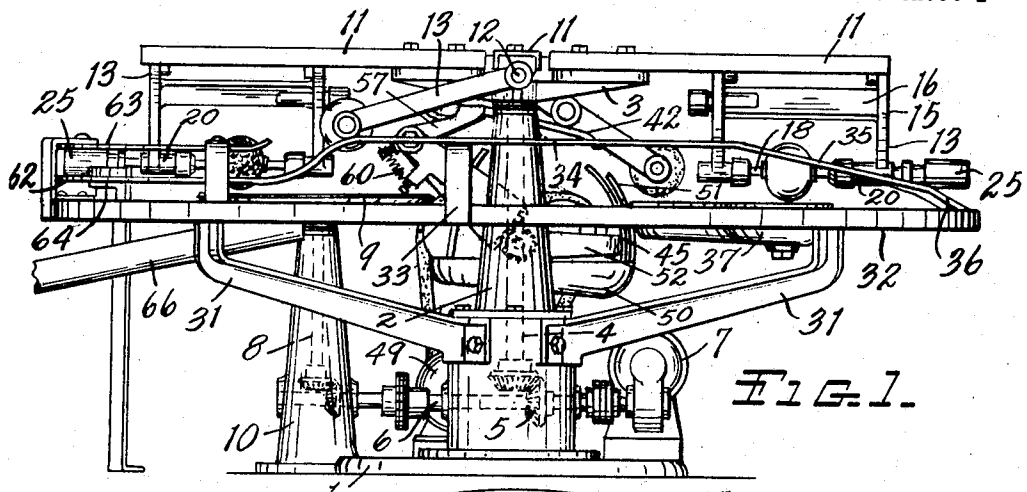


FIG. 1.

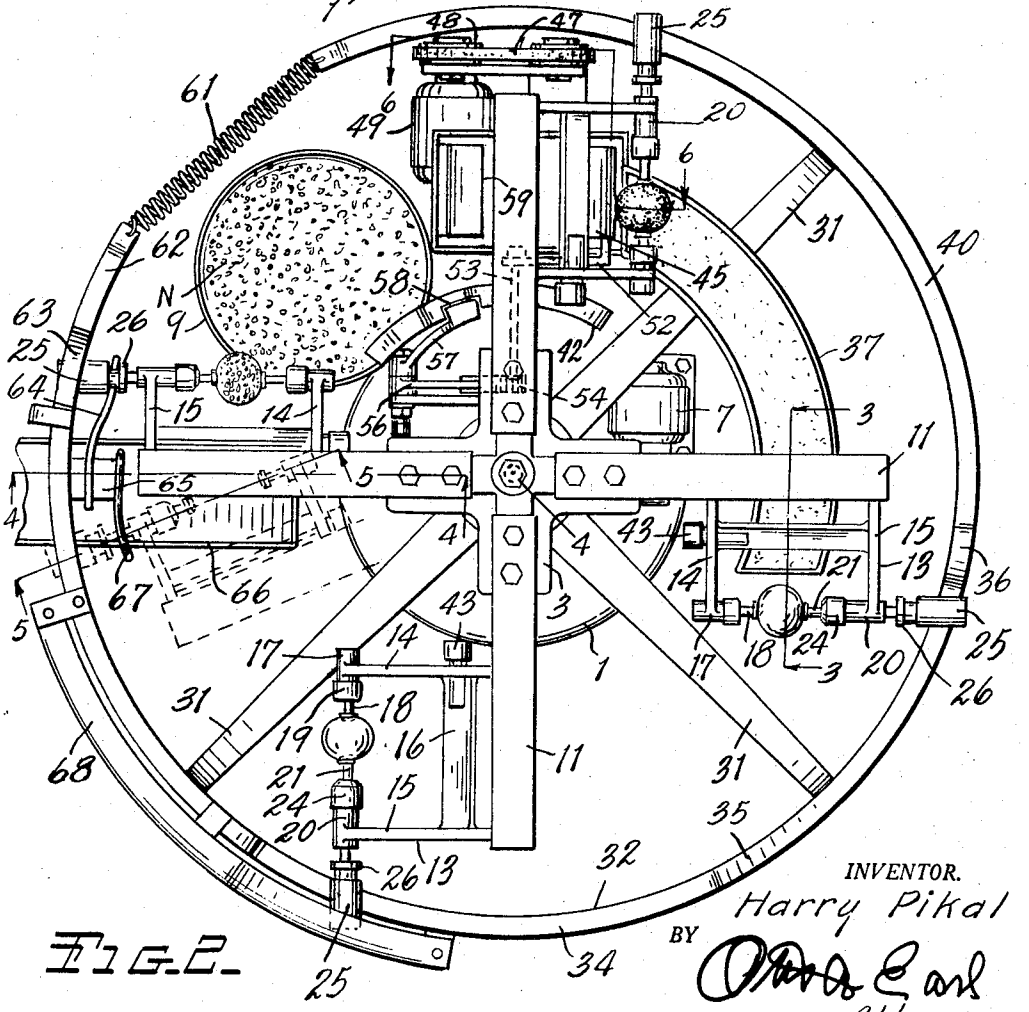


FIG. 2.

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APPLE COATING TURRET WITH SWINGABLE HOOD MEANS

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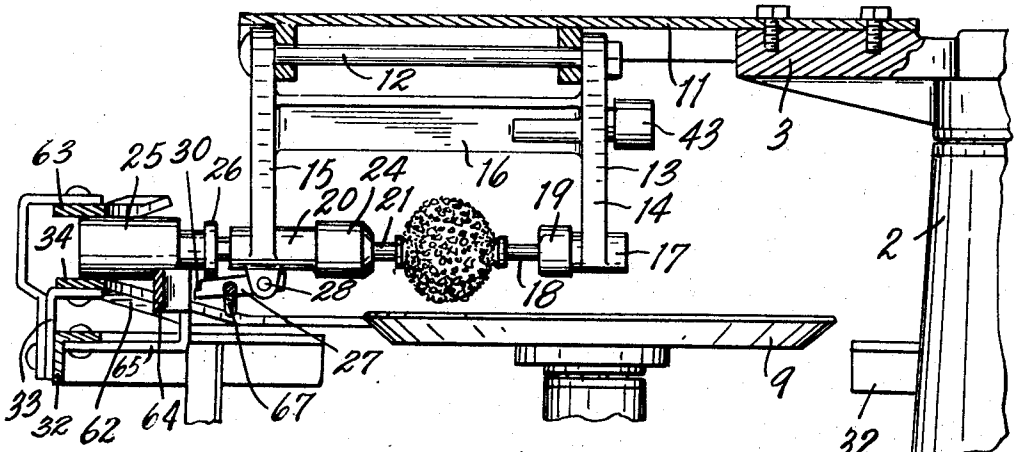


FIG. 4.

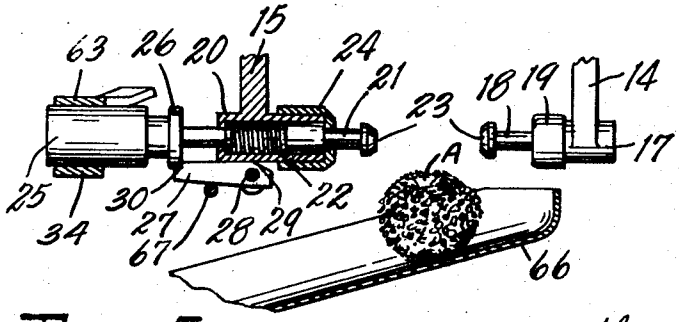


FIG. 5.

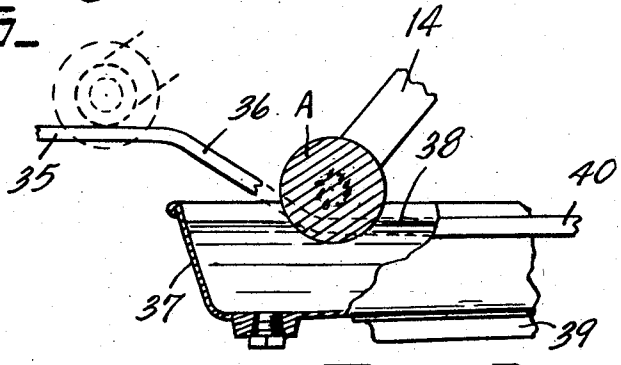


FIG. 3.

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APPLE COATING TURRET WITH SWINGABLE HOOD MEANS

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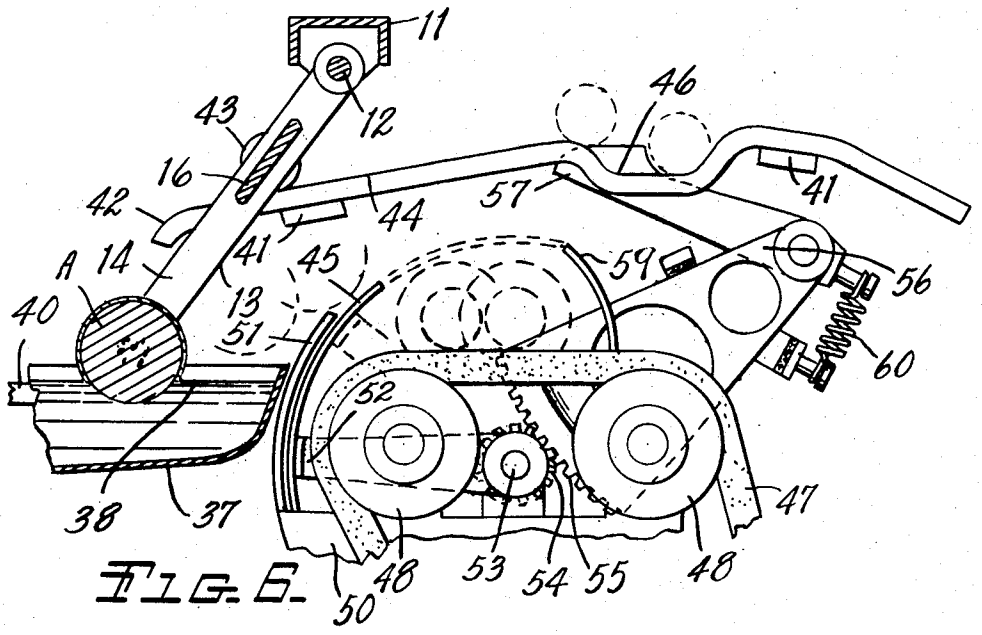


FIG. 6.

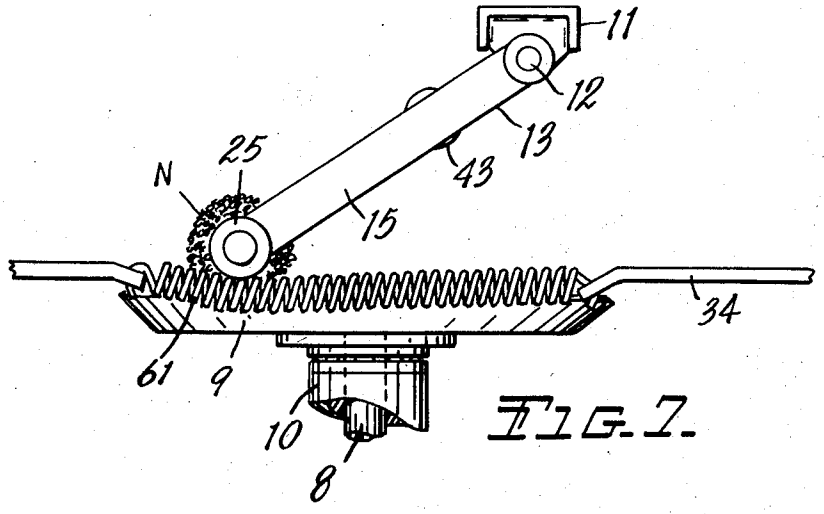


FIG. 7.

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APPLE COATING TURRET WITH SWINGABLE HOOD MEANS

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Application January 18, 1957, Serial No. 635,076

6 Claims. (Cl. 118—13)

This invention relates to improvements in machine for coating apples with caramel and nut meats. The The invention disclosed herein constitutes improvements on the machine for a similar purpose disclosed and claimed in my co-pending application, Serial No. 547,057, filed November 16, 1955, for apple coating machine.

The principal objects of this invention are:

First, to provide a machine which translates apples in a circular path through dipping, spinning, coating and discharge operations whereby a maximum number of apples can be processed in a minimum space.

Second, to provide improved means for spinning excess caramel confection from the dipped apples with means for intercepting and collecting a large portion of the confection thrown off from the apple.

Third, to provide a novel means for supporting the freshly coated caramel apple in the most advantageous position relative to a platform covered with nut meats for embedding nut meats in the fresh caramel coating.

Fourth, to provide a novel form of apple supporting chuck which properly supports the apple in the several coating operations and which is protected against spatter and accumulation of excess caramel thrown off from the apple.

Fifth, to provide a novel form of spring pressed chuck and automatic retracting means for opening the chuck at a discharge station and locking the chuck open until a fresh apple is inserted in the chuck.

Sixth, to provide a novel form of supporting arm and controlling guide rails therefor which will swing the chucks to an elevated position for easy insertion of the apples into the chucks.

Other objects and advantages of the invention will be apparent from a consideration of the following description and claims.

Fig. 1 is a front elevational view of the apple coating machine of the invention viewed from the loading station thereof.

Fig. 2 is a fragmentary top plan view of the machine showing the several arms thereof in operative position at the several operating stations of the machine.

Fig. 3 is a fragmentary cross sectional view taken along the plane of the line 3—3 in Fig. 2 showing an apple entering the dipping trough of the machine.

Fig. 4 is a fragmentary cross sectional view taken along the plane of the line 4—4 in Fig. 2 illustrating the position of an apple leaving the nut meat coating station of the machine.

Fig. 5 is a fragmentary cross sectional view taken along the plane of the line 5—5 in Fig. 2 and illustrating the position assumed by the parts of the machine in discharging the coated apples.

Fig. 6 is a fragmentary cross sectional view taken along the plane of the broken line 6—6 in Fig. 2 illustrating the movement of the apple through the spinning station of the machine.

Fig. 7 is a fragmentary side elevational view showing

the apple supporting mechanism at the nut meat coating station of the machine.

As is pointed out in the abovementioned co-pending application, the operation of coating fresh apples with caramel confection and nut meats or other comestibles requires the dipping of the apples in the heated caramel for a relatively short time so as to utilize caramel at a temperature most satisfactory for adhering to the apple but without cooking the apple or damaging its fresh quality due to the heat of the caramel. Excess caramel must be quickly removed and the apple advanced to a layer of nut meats before the caramel coating cools to a point where it loses its sticky properties which are used to secure the nut meats to the apple. Apples have previously been coated in different manner by supporting the apple on a stick pierced into the core but this and my previous application disclose means for handling the apples without sticks so there is no break in the skin of the apple and the keeping qualities of the apple are thereby greatly extended.

With the foregoing purposes and general functions of the machine in mind it is pointed out that the present invention provides a base **1** on which the upright pedestal **2** is mounted. A turntable or wheel **3** is rotatably mounted on top of the pedestal and driven through the vertical shaft **4** from the beveled gears **5** and cross shaft **6**. The cross shaft is driven by a suitable motor **7** and also functions to drive the upright shaft **8** of a coating table **9** rotatably mounted on a second pedestal **10**.

Secured to the turntable **3** and projecting radially therefrom are a plurality of arms **11** of which 4 are illustrated in the present example. The arms **11** support radially extending pivots **12** from which H shaped hangers **13** are pivotally supported.

The hangers **13** are identical in construction and their details are illustrated most clearly in Figs. 4 and 5. The inner legs **14** and outer legs **15** are connected by cross members **16**. The inner leg **14** carries a bearing **17** at its lower end for a rotatable shaft **18** that is axially fixed in the bearing. A hood **19** rotates with the shaft and overlies the inner end of the bearing to prevent splatter from the apple from reaching the bearing.

The outer leg **15** of the hanger **13** carries a bearing **20** for a rotatable and axially shiftable chuck shaft **21**. A spring **22** in the bearing biases the shaft **21** inwardly toward the shaft **18**. The chuck shafts **21** and **18** carry enlarged heads **23** adapted to frictionally engage the recesses in the opposite ends of an apple. The shaft **21** rotatably carries a hood **24** telescopically engaged over the end of the bearing **20** to protect the bearing from splatter.

The outer end of the chuck shaft **21** carries an elongated actuating roller **25** that engages guide rails **34**, **35**, **36** to control the movement of the hanger as will be described presently. Spaced inwardly from the roller **25** is a collar **26** that is cooperative with a latch lever **27** pivotally supported on the underside of the bearing **20** as at **28**. With reference to Fig. 5 it will be noted that the inner end of the latch lever **27** has a flat abutment surface **29** that limits downward swinging of the lever to slightly below the level of the collar **26**. The outer end of the latch lever **27** is formed with a locking notch **30** arranged to engage the collar **26** when the shaft **21** is retracted outwardly and the latch lever is raised to hold the chuck shaft retracted. Once engaged the pressure of the spring **22** and collar **26** on the latch lever is sufficient to hold the latch engaged.

Supported around the pedestal by a series of radially extending brackets **31** is a circular ring **32** that serves to support the various sections of an annular guide rail. The guide rail is supported at different elevations as by

the posts 33 and the different sections of the guide rail will be separately referred to and identified with their primary function in the operation of the machine.

Starting from the loading station at the front of the machine in Fig. 1 the guide rail has an elevated generally horizontal section 34 that supports the rollers 25 for a substantial distance with the hangers 13 swung substantially rearwardly from their supporting pivots 12. As the hangers and chucks advance along this elevated portion 34 the chucks are readily accessible for an operator to place an apple between the chuck heads 23. A slight outward pressure on the outer shaft 21 moves the collar 26 outwardly and releases the latch lever 27. The operator then merely guides the inner end of the apple into engagement with the inner shaft 18 with the spring 22 functioning to engage the shaft with the apple. The hanger with the shaft now loaded proceeds counterclockwise as shown in Fig. 2 with the roller 25 descending along a downwardly inclined portion 35 of the rail to the dipping station, the action of which is shown most clearly in Figs. 2 and 3.

At the end of the inclined portion 35 the guide rail drops sharply as at 36 to lower the hanger and the apple A carried thereby into the end of a dip tank or trough 37 arranged arcuately around a sector of the machine. The level of the liquid caramel or other confection is maintained near the top of the dip tank as at 38 so that the bottom portion of the apple is immersed in the confection while the shafts 18 and 21 pass just over the edges of the tank. A heater 39 on the bottom of the tank keeps the confection at the proper temperature and the engagement of the roller 25 along the horizontal section 40 of the guide rail causes the outer chuck shaft 21 and the apple to rotate as the apple advances along the dip tank. The major portion of the surface of the apple is thus quickly coated with the heated sticky confection and some of the confection drains downwardly across the ends of the apple.

Near the end of the dip tank control of the elevation of the hangers and the apples is taken over by an inner guide rail 42 supported at a higher elevation than the guide rail 40 by brackets or arms 41 that connect to the pedestal 2. The inner and elevated guide rail 42 coacts with inner rollers 43 carried at elevated positions on the inner arms 14 of the hangers so that vertical variations in the rail 42 cause much more rapid change in elevation of the hanger and apple for each angular movement around the wheel 3 than a corresponding movement along the outer rail would cause.

Opposite the end of the dip tank the upper rail inclines upwardly as at 44 to rapidly raise the apple out of the tank and over the upper edge of a curved hood 45. The hood 45 is movable as will be described in greater detail presently. After clearing the hood 45 the upper roller 43 descends abruptly into a recess 46 in the rail 42 to lower the lower roll 25 onto a rapidly rotating belt 47. The belt is supported by pulleys 48 and driven by a motor 49 to rapidly spin the chuck shafts and the apple and throw off excess caramel from the apple.

The excess caramel thrown off from the apple creates a problem in any practical coating machine as the requirements of sanitation in a food processing machine will not permit accumulations of old food stuffs on any part of the machine and also the matter of waste of the caramel is important. To intercept and collect the caramel as it is thrown off a catch pan 50 is positioned below the position of the apple as it is spun by the belt 47. A back guard 51 projects above the catch pan and the previously described hood 45 swings in an arc inside of the back guard and catch pan. The hood 45 is carried by an arm 52 connected to a shaft 53 supported on suitable bearings at the side of the catch pan and extending radially inwardly toward the pedestal 2. The inner end of the shaft 53 carries a pinion 54 meshing with a rack 55 on the crank 56. The crank 56 has an actuating arm 57 extending into the line of the upper rail 44, the rail being notched as at 58 in Fig. 2 to receive the end of the crank arm. As the upper roller 43 descends into the recess 46 in the rail 44 to lower the apple and the outer roller 25 into operative relation to the spinning belt 47, the upper roller 43 engages and depresses the arm 57 of the crank 56 to rotate the rack 55. This rotates the shaft 53 and hood 45 to raise the hood up and over the spinning apple as a continuation of the fixed back plate 51. A fixed front plate 59 coacts with the raised hood to complete the enclosure around the spinning apple. As the roller 43 approaches the rising front end of the recess 46 it clears the end of the arm 57 permitting the crank 56 to be retracted by a spring 60. This lowers the hood out of the way and as the upper roller advances out of the recess 46 it lifts the apple up and over the front splash plate 59. The catch pan 50, back plate 51, hood 45 and front splash plate 59 are the only parts of the machine subjected to spatter from the spinning apple and they can be relatively easily kept clean by periodic cleaning.

As the hanger and its freshly coated apple leave the control of the inner guide rail 42 they are immediately engaged and supported by a flexible section of the outer guide rail formed by a helical spring 61. As is shown most clearly in Fig. 7 the spring 61 engages and yieldably supports the roller 25 as the apple is brought into rolling contact with the surface of the nut meat table 9. The yieldable support of the spring 61 compensates for varying size and weight of the apples being coated and assures that the apples will press with the correct pressure on the nut meats or other granular comestibles that are spread on the table as at N. The spring 61 causes the apple to have a forward rolling motion and the table 9 is rotated so that portions of the surface of the table which is contacted by the apple will rotate oppositely to the movement of the apple producing a true rolling motion between the apple and the table. This presents a fresh surface of nut meats to all parts of the apple and prevents the apple from plowing through the nut meats.

After passing the coating table 9 the outer guide rail is inclined upwardly as at 62 to elevate the hanger and the freshly coated apple. As is best shown in Figs. 2, 4 and 5 the roller 25 is advanced between the lower guide rail and a hold down rail 63 as it approaches a discharge cam 64. The cam 64 consists of a bar supported on the bracket 65 and cammed radially outwardly in the path of the inner edge of the roll 25. The roll 25 and outer chuck shaft 21 is thus cammed radially outwardly so that the freshly coated apples are automatically released and dropped into a discharge chute 66. Simultaneously with the retraction of the chuck shaft 21 the latch lever 27 contacts an upwardly inclined latch support bar 67 also supported by the bracket 65 to raise the latch lever into locking engagement with the collar 26. The coated apple is thus discharged and the hanger and chuck readied for repeating the cycle of the machine. Desirably a guard rail 68 is carried around the hold down rail 63 and the leading part of the loading portion of the rail 34 so that the operator may approach the loading station without danger of becoming entangled with the advance roller 25.

Having thus described the invention, what is claimed as new and is desired to be secured by Letters Patent is:

1. In an apple coating machine having a plurality of H-shaped hangers and means for advancing the hangers in pivoted pendent fashion around a closed path with the hangers transverse to their path of motion, the lower ends of the hangers having opposed rotatable apple chucking shafts mounted thereon, the combination including a dip tank and means for rollingly supporting said shafts along a reach of said path to coat apples held by the shafts, guide means positioned to engage said hangers and raise the same over the end of said tank, a driven belt positioned at the end of said tank to engage and rotate one shaft on said hangers as the hangers are delivered

thereto by said guide means to spin excess coating off apples carried by the shafts, front and rear splash plates positioned at the side of said belt at its front and rear ends and located transversely of the path of apples carried by said shafts, a lift portion on said guide means to lift said shafts and apples carried thereby over the front splash plate, a curved hood swingably mounted to swing along the front side of said rear splash plate to said front splash to cover an apple positioned between the plates, a drive means connected to said hood and positioned to be actuated by each hanger as the hanger advances to and along said belt, a movable support for supporting a surface of comminuted comestible in the path of apples advanced from said belt, and a vertically yieldable support positioned as a continuation of said guide means to yieldably support said hangers and apples carried thereby as the apples are advanced over said movable support.

2. In an apple coating machine having a plurality of H-shaped hangers and means for advancing the hangers in pivoted pendent fashion around a closed path with the hangers transverse to their path of motion, the lower ends of the hangers having opposed rotatable apple chucking shafts mounted thereon, the combination including a dip tank and means for rollingly supporting said shafts along a reach of said path to coat apples held by the shafts, guide means positioned to engage said hangers and raise the same over the end of said tank, a driven belt positioned at the end of said tank to engage and rotate one shaft on said hangers as the hangers are delivered thereto by said guide means to spin excess coating off apples carried by the shafts, front and rear splash plates positioned at the side of said belt at its front and rear ends and located transversely of the path of apples carried by said shafts, a lift portion on said guide means to lift said shafts and apples carried thereby over the front splash plate, a curved hood swingably mounted to swing from alongside of said rear splash plate to said front splash to cover an apple positioned between the plates, a drive means connected to said hood and positioned to be actuated by each hanger as the hanger advances to and along said belt, and a movable support for supporting a surface of comminuted comestible in the path of apples advanced from said belt.

3. In an apple coating machine having a plurality of hangers having transversely spaced arms and means for advancing the hangers in pivoted pendent fashion around a closed path with the hangers transverse to their path of motion, the lower ends of the arms having opposed rotatable apple chucking shafts mounted thereon, the combination including a dip tank and means for rollingly supporting said shafts along a reach of said path to coat apples held by the shafts, guide means positioned to engage said hangers and raise the same over the end of said tank, a driven belt positioned at the end of said tank to engage and rotate one shaft on said hangers as the hangers are delivered thereto by said guide means to spin excess coating off apples carried by the shafts, a splash plate positioned at the side of said belt at its front end and located transversely of the path of apples carried by said shafts, a lift portion on said guide means to lift said shafts and apples carried thereby over the splash plate, a curved hood swingably mounted to swing alongside the rear end of said belt to said front splash to cover an apple supported by the belt, a drive means connected to said hood and positioned to be actuated by each hanger as the hanger advances to and along said belt, and a movable support for supporting a surface of comminuted comestible in the path of apples advanced from said belt.

4. In an apple coating machine having a plurality of hangers having transversely spaced arms and means for advancing the hangers in pivoted pendent fashion around a closed path with the hangers transverse to their path of motion, the lower ends of the arms having opposed rotatable apple chucking shafts mounted thereon, the combination including a dip tank and means for rollingly supporting said shafts along a reach of said path to coat apples held by the shafts, guide means positioned to engage said hangers and raise the same over the end of said tank, a driven belt positioned at the end of said tank to engage and rotate one shaft on said hangers as the hangers are delivered thereto by said guide means to spin excess coating off apples carried by the shafts, a splash plate positioned at the side of said belt at one end thereof and located transversely of the path of apples carried by said shafts, a lift portion on said guide means to lift said shafts and apples carried thereby over the splash plate, a curved hood swingably mounted to swing alongside the other end of said belt to said splash plate to cover an apple supported by the belt, and a drive means connected to said hood and positioned to be actuated by each hanger as the hanger advances to and along said belt.

5. In an apple coating machine having a plurality of hangers with transversely spaced arms and means for advancing the hangers in pivoted pendent fashion around a closed path with the hangers transverse to their path of motion, the lower ends of the hanger arms having opposed rotatable apple chucking shafts mounted thereon, the combination including a dip tank and means for rollingly supporting said shafts along a reach of said path to coat apples held by the shafts, guide means positioned to engage said hangers and raise the same over the end of said tank, a driven belt positioned at the end of said tank to engage and rotate one shaft on said hangers as the hangers are delivered thereto by said guide means to spin excess coating off apples carried by the shafts, a hood swingably positioned at the side of said belt at one end thereof and located transversely of the path of apples carried by said shafts, a lift portion on said guide means to lift said shafts and apples carried thereby over the hood, and a drive means connected to said hood to swing the hood over an apples supported on said belt and positioned to be actuated by each hanger as the hanger advances to and along said belt.

6. In an apple coating machine having a conveyor arranged to advance opposed pairs of shaft supporting brackets through a closed path and pairs of opposed rotatable shafts carried by said brackets and extending transversely of the path of motion of the brackets to support apples between the shafts of each pair, the combination including a dip tank and means for rollingly engaging said shafts along a reach of said path to coat apples held by the shafts, guide means positioned to raise said brackets and apples carried thereby over the end of said tank, a driven belt positioned at the end of said tank to engage and rotate one shaft of each pair as the shafts are advanced thereto by said guide means to spin excess coating off apples carried by the shafts, a hood swingably positioned at the side of said belt and at one end thereof and disposed transversely of the path of apples carried by said shafts, a lift portion on said guide means to lift said shafts and apples carried thereby over said hood, and a drive means connected to said hood to swing the hood over an apple supported on said belt and positioned to be actuated by each pair of brackets as the brackets advance to and along said belt.

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