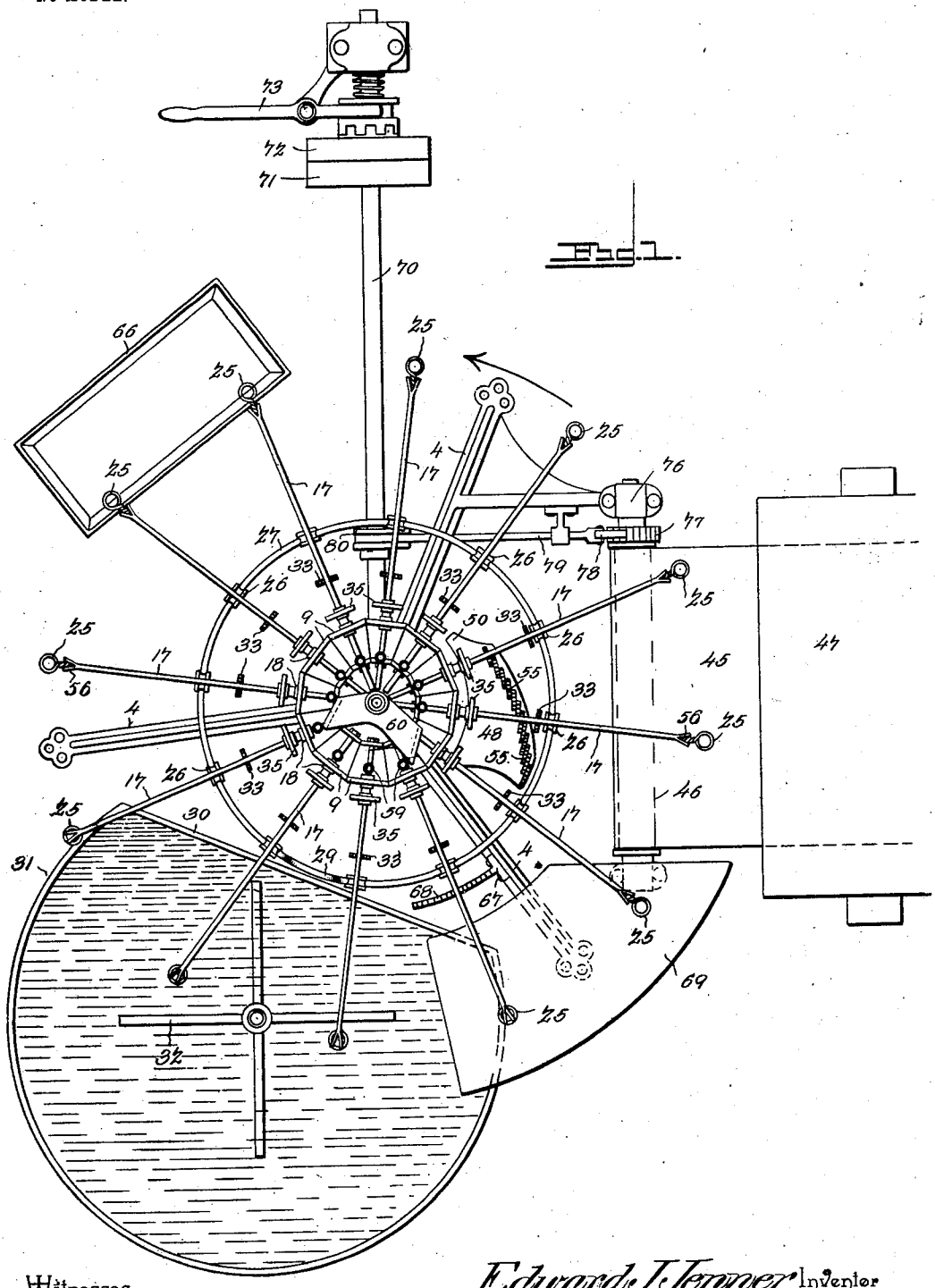
No. 733,968. PATENTED JULY 21, 1903.

E. J. JENNER.

CONFECTION DIPPING MACHINE.

APPLICATION FILED AUG. 17, 1900.

NO MODEL. 4 SHEETS—SHEET 1.



Witnesses
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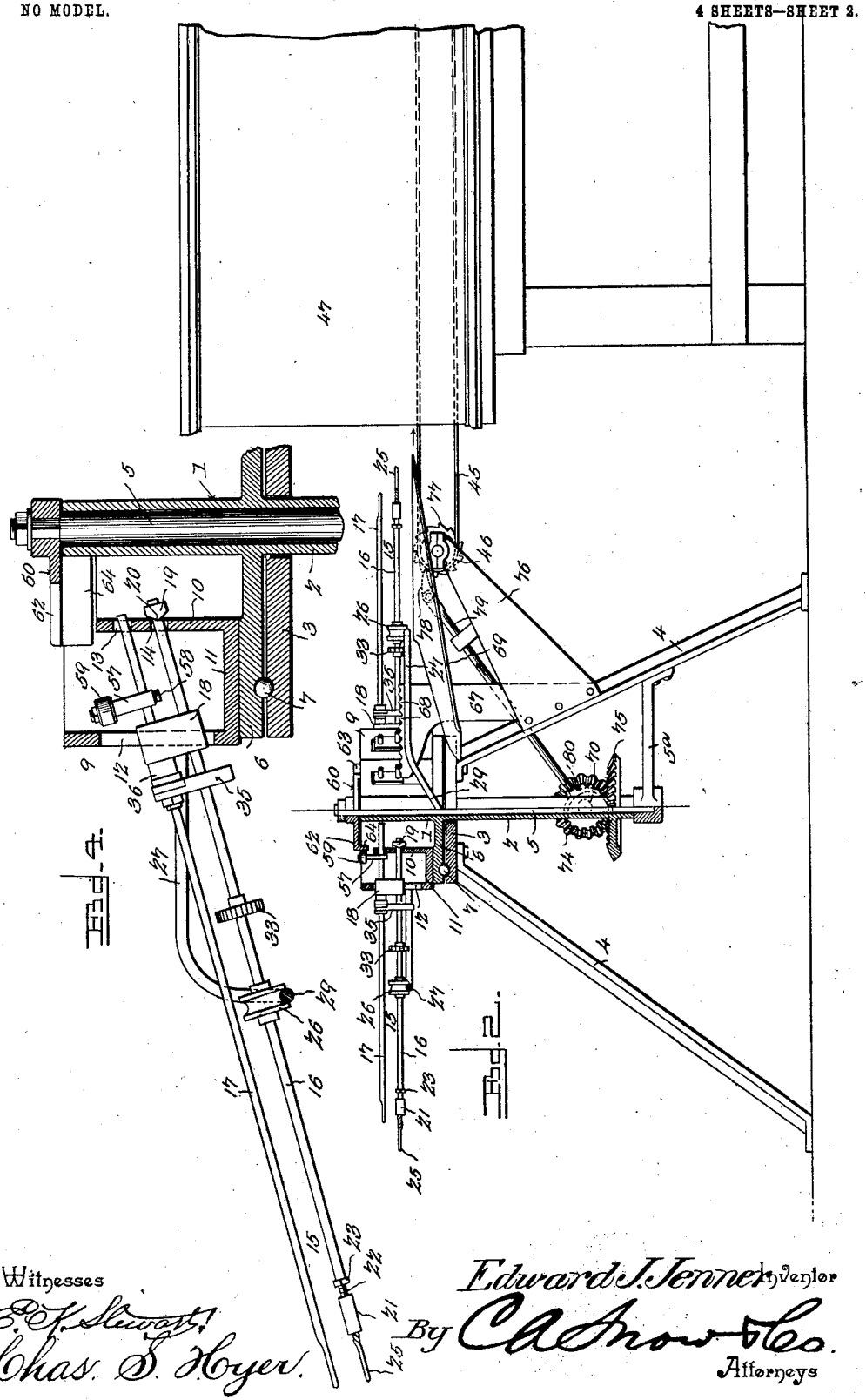
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NO MODEL. 4 SHEETS—SHEET 2.



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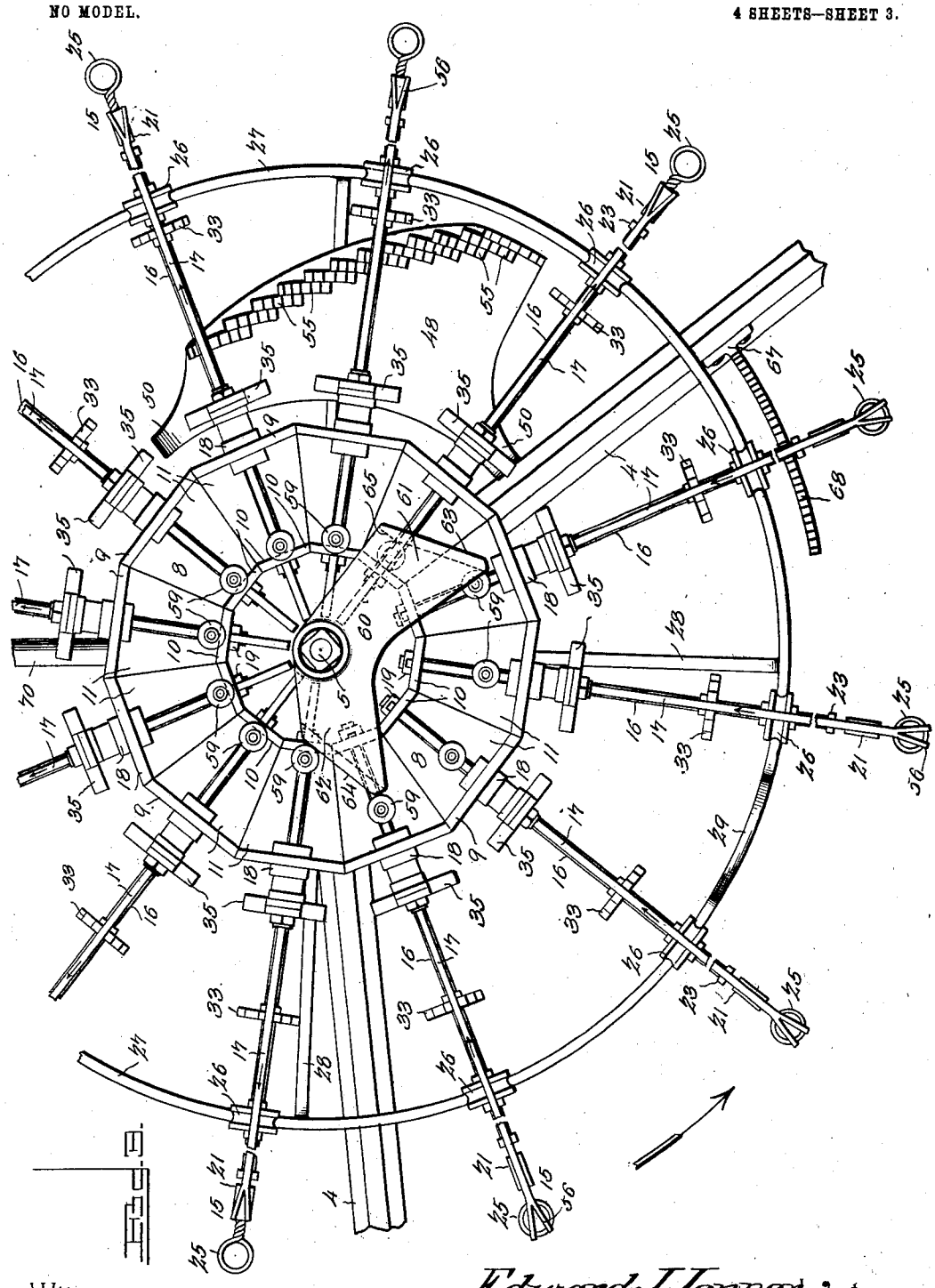
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NO MODEL. 4 SHEETS—SHEET 3.



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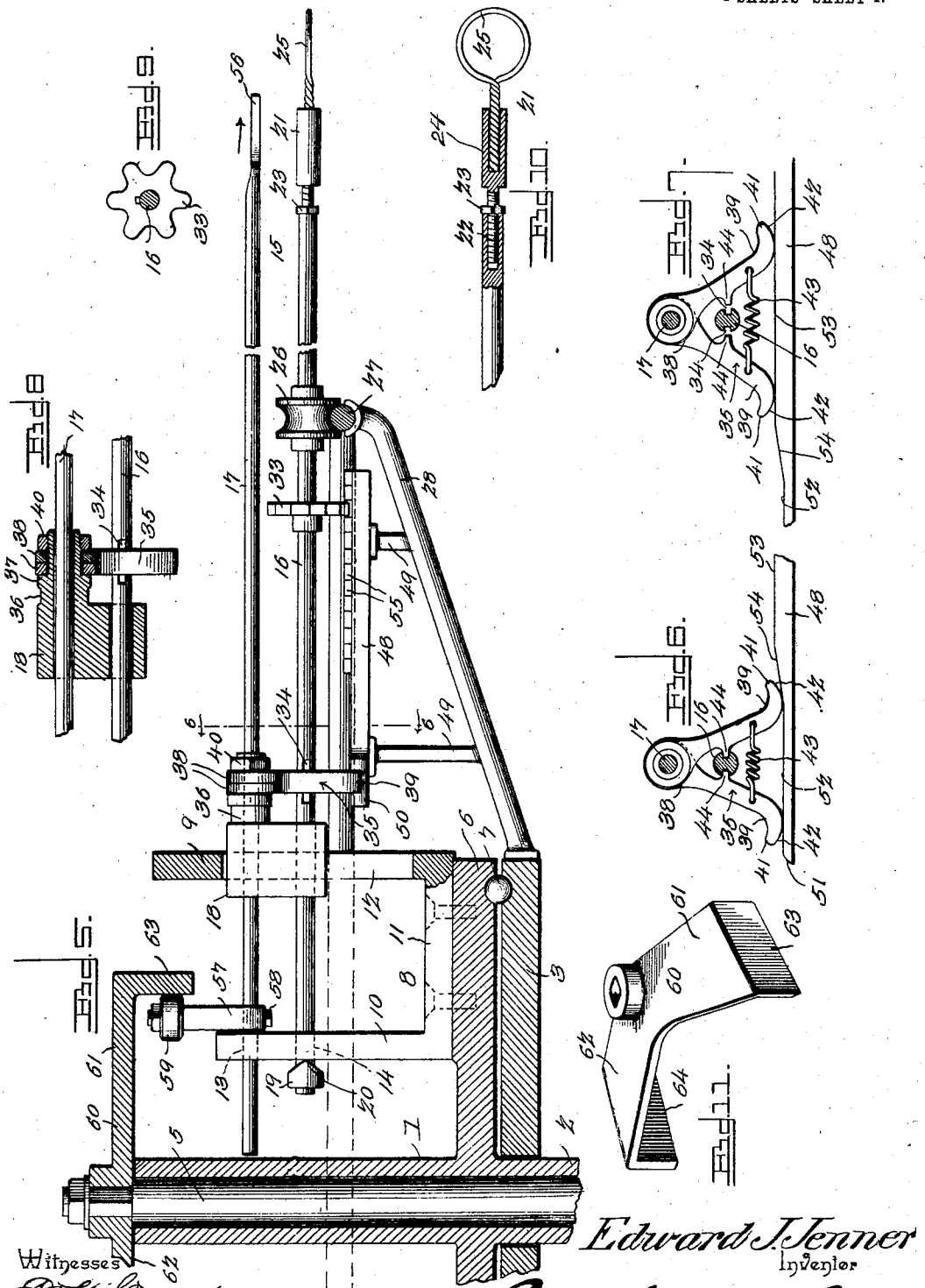
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NO MODEL. 4 SHEETS—SHEET 4.



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No. 733,968. Patented July 21, 1903.

UNITED STATES PATENT OFFICE.

EDWARD J. JENNER, OF SAN ANTONIO, TEXAS.

CONFECTION-DIPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 733,968, dated July 21, 1903.

Application filed August 17, 1900. Serial No. 27,190. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. JENNER, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented a new and useful Confection-Dipping Machine, of which the following is a specification.

This invention relates to machines for coating bonbons, drop-cores, caramels, nuts, and the like with a superficial coating of confection material—such as chocolate, cream-sugar, and other analogous substance; and the object in view is to simplify mechanism of this character and render it more positive and efficient in its operation by including in the organization of the same a plurality of automatically-operating and light-running devices for completely performing the dipping operation and depositing the dipped confections in regular order on a receiver or conveyer and giving the latter a timed actuation at regular intervals and causing the dipped confections to have the appearance of hand preparation, the entire mechanism requiring the attention of one operator only, who under certain arrangements can also actuate the several parts without the use of any other motive power.

The invention primarily consists in the provision of a central rotatable head orbitally carrying a plurality of continuously-moving holders or dipping elements which revolve with the head and receive the substance to be dipped at one side of the machine, automatically dip the substance in the melted coating material at another point, and deposit the completed confection on a receiving or conveying device on the other side of the machine.

The invention further consists in a plurality of orbitally-carried dipping elements having an automatic dipping movement imparted thereto and adapted to successively receive a single core to be coated and dipping the same separately in a manner similar to hand-work to give them the appearance of hand manufacture, the holding devices of the elements being removable for replacement by others of different shapes and sizes to accommodate the contour and nature of different cores.

The invention further consists in the use of a plurality of holders or dipping elements having a continuous rotary movement and automatically movable in the course of their rotation below a horizontal plane to dip in the coating material at the outer extremities only, and thereby facilitate keeping the machine in a cleanly condition.

The invention further consists in certain mechanisms conjointly coacting with a plurality of orbitally-carried holders or dipping elements and a receiver or conveyer whereby the said holders or elements are caused to automatically dip in the coating material, vibrated to remove the surplus coating material, a portion of the holders or elements released from the substance held thereby overturned to regularly deposit the substance carried by each on the said receiver-conveyer and subsequently restored to normal condition for the reception of a new charge.

The invention further consists in a plurality of circularly-rotating dipping elements and mechanism for causing the same to deposit their charges successively in a straight line on a conveyer having a timed actuation relatively to the movement of the said elements.

The invention further consists in the provision of mechanism for holding and moving separate quantities of substances to be coated, combined with a receptacle for holding the melted coating material, which is freely removable and adapted to be replaced by others containing different materials, and thereby avoid emptying the receptacle containing one kind of material in order to use another kind when desired, as many of the separate receptacles being used and forming a part of the complement of the machine as may be necessary.

The invention still further consists in the construction, combination, and arrangement of other features of construction in detail and conjointly, which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a top plan view of a dipping or coating machine embodying the features of the invention. Fig. 2 is a sectional elevation of the improved machine. Fig. 3 is an enlarged top plan view of the central part of the machine, partly broken away. Fig. 4 is a sectional elevation of one of the

dipping elements and the intimately-related supporting devices therefor, showing said element in dipping position. Fig. 5 is a sectional elevation of one of the dipping elements and the mechanism for controlling the movement and adjustment thereof at the time the charge is released therefrom. Figs. 6 and 7 are elevations of a lock in two positions for operation with a part of the dipping element, the latter being shown in section. Fig. 8 is a sectional elevation of portions of one of the dipping elements, showing the manner of supporting the locking device. Fig. 9 is a detail elevation of a pinion applied to a part of the dipping element and operating to rotate the latter. Fig. 10 is a detail sectional elevation of a portion of the one part of the dipping element, showing the detachable holder carried at the outer end thereof to receive the substance to be dipped. Fig. 11 is a detail perspective view of a cam for controlling the position of the parts of each dipping element.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates a central frame or hub having an elongated vertical sleeve 2, extending centrally through a table 3, provided with supporting-legs 4. The table is horizontal, and the sleeve 2 is freely movable around a vertical spindle 5, stationarily fixed in the free end of a bracket 5^a, secured to one of the legs 4 and on which the lower end of the said sleeve also has bearing. The sleeve has a horizontal support 6, located immediately above the table 3, and between the table and the support antifrictional balls 7 are interposed and play in contiguous grooves in the said parts to provide an easy movement for the frame or hub 1 and the parts coöperating therewith. At regular intervals on the support carriers 8 are secured and are of truncated triangular form with the widest portions outermost, and each carrier comprises outer and inner upstanding plates 9 and 10, the plate 9 being higher than the plate 10, and both disposed in planes at right angles to a horizontal base 11, with an interspace between them and parallel to each other. The plate 9 of each carrier is formed with a similar slot 12, and the plate 10 with a pair of vertically-alined openings 13 and 14 in the upper portion thereof, and when the carriers are applied to the support 6 the edges of the plates and bases thereof snugly abut and produce an annular inclosure and give the center of the machine a polygonal appearance, as shown by the plan views, Figs. 1 and 3.

It will be understood that the particular form of the carriers as set forth is not necessarily essential to their practical operation, nor does the operation of the machine demand any specific number of the same, as the number and form may be varied in accordance with the capacity of the machine. In the present arrangement the carriers are twelve in number and afford means for carrying as many holders or dipping elements 15, which radially project from the center thereof and have the same relative position to the machine in general. Each dipping element comprises a lower rod 16 and an upper rod 17, both loosely mounted in a head 18, freely movable in a vertical direction in the slot 12 of the outer plate 9 of the carrier and respectively extending through the openings 14 and 13 of the inner plate 10, the rod 17 having a sliding movement imparted thereto at times, and the rod 16 having sufficient play to permit a dipping depression thereof, as will be presently explained. On the inner end of the rod 16 a collar 19 is rigidly secured and has a front or outer angular or knife-edge bearing construction 20 to engage the inner surface of the plate 10 to reduce the frictional resistance to and obstruction of the depressing movement of the said rod during the dipping operation thereof, and on the outer extremity of this rod 16 a holder 21 is removably attached and in the present instance consists of a screw-threaded shank 22, fitted in a screw-threaded aperture extending longitudinally into the end of the rod, the shank being firmly held in the desired applied position by a jam or binding nut 23 thereon. The shank 22 has a socket 24, in which is held the stem of a circular wire seat 25, and by releasing the shank 22 from the rod a holder of a different character or one having a seat of a smaller or larger dimension and a different contour can be easily applied, and thus adapt the dipping elements for operation in connection with any kind of substance having a regular or irregular form. Inward a suitable distance from the holder 21 the rod 16 also has a grooved roller 26 thereon, which engages a circular track 27, preferably formed of round wire or stock suitable for the purpose and supported in an invariable horizontal position by inclined arms 28, extending inwardly therefrom at intervals and secured to the edge of the table 3. As clearly shown by Figs. 1, 3, and 4, the track 27 is formed with a drop 29, and close to the latter the inner straight side 30 of a tank, receptacle, or kettle 31 is disposed, the said kettle or receptacle containing melted coating-matter—such as chocolate, cream-sugar, or the like—and is removable at will for replacement with another similar device containing a coating substance of different character to avoid the necessity of emptying one receptacle having a substance for coating therein that has been in use in order to place another substance in the same receptacle and which is now the common practice in ordinary machines of this character. An agitator or stirrer is mounted in the receptacle, as at 32, and operated by suitable means to keep the contents of the receptacle thoroughly mixed and in proper condition for application to the articles dipped therein. It will be understood that the inner straight edge or side of the receptacle or kettle will

not interfere with the dipping operation of the rods 16 and 17, because it is intended to have the said side of the receptacle of such height as to permit the said rods to fall to the lowest limit without touching any part of the receptacle.

Keyed fast on each rod 16, inwardly from the roller 26, is a pinion 33 of the form shown by Fig. 9, the pinions of the several rods being at different distances from the inner terminals thereof for a purpose which will be hereinafter explained, and at diametrically opposite points in the same rod, adjacent the head 18, longitudinally-extending recesses 34 are formed for engagement by the opposite parts of a lock 35. A tubular stud 36 is integrally formed or otherwise connected to the upper portion of the head 18 and stands outward from the latter around the rod 17, the said stud having a shoulder 37 and a reduced portion with an outer screw-threaded extremity, and on the reduced portion the upper overlapped ends 38 of depending normally divergent legs 39 are movably fulcrumed, as clearly shown in Figs. 5 and 8, and held in place by a nut 40, engaging the screw-threaded extremity of the reduced portion of said stud. The lower terminals or feet of the legs, as at 41, are outturned and formed with lower regularly-curved edges 42, and the said legs are held in the normal position set forth by an intermediate spring 43, terminally connected thereto to cause inner opposing lugs 44 on the legs to be pressed into the recesses 34 in diametrically opposite portions of the rod 16, and thereby maintain said rod in such position as regards rotation thereof as to dispose the seat 25 in a horizontal or supporting position. At a certain time in the operation of the machine it is desired to rotate each rod 16 and place the charge carried thereby on a suitable conveying device, and therefore it will be required to release the lock just explained. This mechanism is employed with a suitable receiver, and in one practical form, as illustrated, is in line with the end of a conveyer or belt 45, of oil-cloth or other suitable material and which runs over a roller 46 at one side of the machine, the said conveyer or belt running through a refrigerator 47 to cool and harden the confections after deposit thereon.

The mechanism for releasing the locks of the several dipping elements consists of a horizontal plate 48, held in position by uprights 49 from the arms 28 beneath and formed with opposite end projections 50 at the inner portion thereof, with curved beveled entrance and exit edges 51 at the beginning and termination of opposite plane surfaces 52, leading up to and away from the opposite limits of an intermediate elevated cam-surface 53 by inclines 54, as fully shown in Figs. 3, 6, and 7. When the feet of the legs of the lock on each rod or dipping mechanism strike the first plane surface 52 in the direction of rotation of said mechanism, the legs will remain in normal locked position, because the distance between the fulcrum of said legs and the surface is such as not to overcome the tension of the spring 43; but when the feet ride upwardly on the cam-surface 53 over the initial incline 54 the distance between the fulcrum of the legs and the said latter surface is materially less than the normal dependence of the legs, and consequently the said legs are spread apart, as shown by Fig. 7, and the lugs 44 are released from the recesses 34 of the rod 16. In this released condition the rod 16 will be free to turn, and this release will be acquired just previous to the arrival of the pinion 33 in operative alinement with a horizontal segmental rack 55, projecting upwardly from the outer portion of the plate 48 and long enough to completely revolve the rod 16 and reverse the seat 25 at the outer end thereof to deposit the charge or finished confection carried thereby on the conveyer or belt 45. The revolution of the rod 16 again brings the recesses 34 into normal position; but the legs of the lock remain expanded until the feet completely traverse the cam-surface 53 and arrive on the exit plane surface 52, where they contract to normal condition, and the lugs 44 thereof again take into the said recesses 34, and thus remain until the same dipping element again arrives over the plate 48.

A plurality of segmental racks 55 are employed, the number of the same being equal to the number of dipping elements, so that there shall be one for the sole engagement of the pinion 33 of each element. As before intimated, the pinion in connection with each element is at a different distance from the inner terminal of the rod 16, forming a part of the element, and the racks have a stepped arrangement on the plate 48 in contiguous relation and described by parallel arcs, and each from the outermost one to the innermost one having a shorter radius relatively to the center of the plane of rotation of the several elements including the rods 16. The purpose of this arrangement is to cause the several dipping elements in their discharging operation to deposit the completed confections on the conveyer or belt 45 in regular succession, and thereby economize space on the conveyer or belt and increase its capacity.

It is obvious that the holders or dipping elements must include some means for preventing the substance to be coated and placed in the several seats 25 from falling from said seats or becoming misplaced during the movement thereof through the coating material in the receptacle or kettle and while pursuing after operations. It is also appreciated that said retention means must be released from the completed confection at the time it is about to be deposited on the conveyer, and for this purpose the rod 17 and mechanism in connection therewith have been devised. The outer end of the said rod 17 is provided with a fork or bifurcate extremity 56, which

is projected over the seat 25 after the substance to be coated has been placed thereon and serves to retain the latter in immovable position on the said seat. As before stated, the rod 17 is longitudinally slidable, and to produce this movement thereof the said rods of all the dipping elements have upstanding arms 57 near their inner ends, held by set-screws 58 and provided with horizontal rollers 59, there being one arm to each rod. To conjunctively operate with the said rollers 59, a cam or horizontal reversing switch-plate 60 is employed and rigidly fixed on the upper end of the spindle 5, the said switch having opposite members 61 and 62 projecting outwardly at angles to each other, the member 61 being longer than the member 62. The members 61 and 62 terminate, respectively, in outer depending flanges 63 64, the flanges in relation to each other having a convergence toward the axis of the machine, and the rear or inner terminal portion of the inner surface of the flange 63 having a beveled clearance 65, as clearly shown by dotted lines in Fig. 3. The longer flange 63 is disposed in a position for operation of or engagement with the several rollers 59 after the dipping elements have passed through the coating material, and when the said rollers reach the flange 63 they contact with the inner surface thereof, and owing to the inclination or inward angle of the same in the direction of the axis of the machine the rods 17 are gradually moved inwardly to clear the forks at the outer ends thereof from over the seats 25 of the rods 16 and the completed confection carried by the said seats, and when the several rollers will have cleared the flange the rods 17 and their forks will have been fully drawn inward and the rods 16 will be in close relation to the racks heretofore explained and operating to effect a deposit of the completed confection on the conveyer. The rods 17 and their forks remain drawn inwardly, as set forth, until about one-half of their revolution is completed, and while in such condition they pass a tray 66 at the opposite side of the machine and at which sits an attendant or operator who takes the cores, nuts, caramels, or like devices with which the tray is supplied and places them separately in the seats 25, and shortly after this loading operation the rollers 59 of the several rods 17 reach the inner end of the flange 64 and ride over the outer surface of the latter, and as this flange has an outward angle relatively to the axis of the machine and considered from the inner end thereof the rods 17 will be gradually moved outwardly and the forks thereof caused to move over and hold the charges resting in the seats 25 below a short time previous to the arrival of the said devices at the receptacle or kettle containing the coating material. This automatic operation will be of material advantage, as will be readily understood, and it will also be seen that there is no complex mechanism to get out of order or to become clogged. The release of the completed confection and the subsequent retention of the new charge is in each instance sure and certain, and the entire mechanism for attaining the result specified is extremely simple and of a durable nature.

After the holders or dripping elements have passed through the receptacle or kettle containing the melted coating material there will always be more or less of the said material in excess of that desired adhering to the substances or articles carried by the several elements, and unless this surplus material be relieved from the matter treated it is liable to drip over parts of the machine or adjacent rest therefor with obvious uncleanly results or produce an irregularly-covered confection that would have little salable value. To avoid these disadvantages, the improved machine is equipped with a vibrator 67, consisting of a vertically-disposed plate rigidly fixed to one of the legs 4 of the table and having an arcuate curvature of such degree as to have it disposed in a plane parallel with the portion of the track to which it is adjacently placed on the outside. This vibrator extends high enough to have a portion of each rod 16 in advance of the roller 26 contact therewith and to cause a vibrating movement of the dipping elements as an entirety. The upper edge of the vibrator is serrated or corrugated, as at 68. Fixed adjacent to the said vibrator is a drip-pan 69 to receive the surplus material shaken from the confections and inclined toward and extending over into the upper portion of the receptacle or kettle containing the melted coating material.

As shown in the present instance, the mechanism for actuating the several parts comprises a driving-shaft 70, provided with fast and loose pulleys 71 and 72, controlled by a shifting attachment 73 and adapted to receive power from any suitable source. On the opposite end of the said shaft is a bevel-pinion 74, which meshes with a bevel-gear 75, secured to the sleeve 2 just above the bracket 5^a. It will be understood that the said shaft will be supplied with suitable bearing devices, and the shifting attachment will be within convenient reaching distance of the attendant seated at the supply-tray in order to control the movement of the machine as desired. The roller 46 of the conveyer or belt 45 is journaled in upwardly-projecting bracket-arms 76, secured to the legs 4 on that side of the machine, and on one end of the said roller a ratchet-wheel 77 is secured and is continuously engaged by a push-pawl 78, movably attached to the outer end of an eccentric-rod 79, operatively connected at opposite or inner end to an eccentric 80 on the shaft 70. This mechanism for operating the roller 46 has such a timed actuation that the ratchet-wheel will not be turned to shift the conveyer or belt until the full complement of dipping elements have deposited the completed confections on the said

conveyer, and thereby the travel of the conveyer will be slow and retain the confections within the refrigerator for a greater length of time and more completely and perfectly harden the same. The rate of speed maintained will be that adapted to obtain the best result in the completed confection and in accordance with the character of the work to be performed, and in light machines or those having a small capacity the machine can easily be operated by foot-power through the medium of a treadle actuated by the single attendant seated at the tray, and thereby make it possible to run a number of similar machines in a compartment with a material increase in the output, and as the machines are compact in form they will take up a comparatively small amount of floor-space.

When the machine is in motion, the holders or dipping elements are orbitally revolved continuously, and when they arrive at the drop in the circular track they assume the position shown by Fig. 4, and after leaving said drop immediately resume their normal position in a horizontal plane.

The improved machine is particularly adapted to coat cream cores with chocolate or nuts with cream sugar or the like; but it has a general application also and may be employed for coating purposes in the various mechanical arts.

While the preferred form of the device has been shown and descriptively disclosed, it is obviously apparent that it is subject to a wide range of modification, and changes in form, size, proportions and minor details may be resorted to without departing from the principle of the invention.

Having thus described the invention, what is claimed as new is—

1. In a dipping-machine, the combination of a plurality of dipping elements having an orbital movement and each composed of a longitudinally-shiftable part and a revoluble part, and means for supplying a coating material to the charges carried by the said elements.

2. In a dipping-machine, the combination of a plurality of orbitally-carried dipping elements each composed of a longitudinally-shiftable part and a revoluble part and both parts having a united automatic depressing movement, and a receptacle for containing coating material into which said elements depress.

3. A dipping-machine having a plurality of orbitally-carried dipping elements each comprising a lower part with a charge-holder and an upper part with a retention device to coact with the charge-holder, means for revolving the lower part independently of the upper part to deposit the complete charge, and means for independently sliding the upper part to release the charge.

4. A dipping-machine having a plurality of orbitally-carried dipping elements each including two independently-movable parts, the one part being revoluble and the other longitudinally slidable, and a switch for alternately moving the said slidable part in reverse directions at opposite portions of the machine.

5. In a dipping-machine, the combination of an orbitally-carried frame or hub, a plurality of dipping elements mounted in said frame or hub and each comprising upper and lower independently-movable parts which are unitedly free to gravitate, a circular track on which the lower part indirectly moves, a removable holder on the lower part, a receptacle for containing coating material, the track having a part extending downwardly below the plane of the remaining portion of the same, and means for operating the several parts.

6. In a dipping-machine, the combination of a plurality of orbitally-carried dipping elements having an automatic depressing operation at one point in their rotation, a container for coating material into which said elements depress, a vibrator for relieving the charges carried by the elements of surplus coating material, and a drip-receiver extending into the container for the coating material.

7. In a dipping-machine, the combination of a plurality of loosely-mounted horizontal orbitally-carried dipping elements, movable around a common axis, a track of circular form therefor having a drop in one portion thereof, and a receptacle for containing coating material located under the said drop in the track.

8. In a dipping-machine, the combination of a plurality of loosely-mounted horizontal rotary dipping elements movable around a common axis, a track of circular form therefor having a drop in one portion thereof, a receptacle for containing coating material under the said drop of the track, and a vibrator engaged by the said elements after passing the said drop.

9. In a dipping-machine, the combination of a plurality of loosely-mounted orbitally-moving dipping elements, a track therefor having a drop in one portion thereof, a receptacle for containing coating material under the said drop of the track, and means for automatically discharging the coated substances from the elements and preparing the latter for the reception of new uncoated substances.

10. In a dipping-machine, the combination of a plurality of loosely-mounted orbitally-moving dipping elements, a track therefor having a drop in one portion thereof, a receptacle for containing coating material under the said drop of the track, a vibrator engaged by the said elements after passing the said drop, and means for automatically depositing the coated charges from the elements and preparing the latter for the reception of new uncoated charges.

11. In a dipping-machine, the combination of a rotatable support, a series of carriers secured thereto and each comprising an outer upstanding member with a slot therein and

an inner upstanding member provided with apertures, a plurality of dipping elements each comprising upper and lower rods having independent movements and both extending through a head gravitatingly mounted in the slot of the outer member of the carrier and their inner extremities loosely extending through the apertures in the inner member, a track with which the lower rod of each element indirectly engages and provided with a drop in one portion thereof, and a containing-receptacle detachably mounted below the drop in the track.

12. In a dipping-machine, the combination of a plurality of dipping elements having an orbital movement and each comprising a lower revoluble part, a locking device to engage the said lower part of each element to prevent the same from turning, and means for automatically opening the lock to permit the lower part of each element to turn and deposit its completed confection.

13. In a dipping-machine, the combination of a plurality of dipping elements having an orbital movement and each comprising a lower revoluble part, a locking device to engage the said lower part of each element to prevent the same from turning, and a cam-surface to engage each locking device moved thereover to release the lock and permit the revoluble part to be actuated to deposit the completed confection carried thereby.

14. In a dipping-machine, the combination of a plurality of dipping elements having an orbital movement and each comprising a lower revoluble part, a pair of expansible legs carried by each element and having engaging devices to grip the said revoluble part and prevent turning the same, said legs being normally held contracted, and a cam-surface below the legs for expanding the same and releasing the revoluble parts successively to permit them to turn and deposit the completed confections carried thereby.

15. A dipping-machine having a plurality of orbitally-carried dipping elements each having an upstanding projection, and a reversing-switch having opposite engageable surfaces for contact with said projections to shift a portion of each element in opposite directions.

16. A dipping-machine having a plurality of horizontally-disposed continuously-moving orbitally-carried dipping elements movable about a common center and each provided with a revoluble holder and a slidable retention device therefor, and a support for said elements having a depressed portion.

17. A dipping-machine comprising a plurality of orbitally-carried dipping elements each having a roller, and a track on which said rollers have movable bearing.

18. A dipping-machine comprising a plurality of continuously, horizontally, individually rotating dipping elements, a receiver on which the said elements deposit the finished articles carried thereby in transverse rows, mechanism for automatically regulating the arcuate differentiation of the elements relatively to the receiver, and mechanism for shifting the receiver after the full complement of elements have made their deposits thereon.

19. A dipping-machine comprising a plurality of orbitally-carried dipping elements, a receiver for the deposits of said elements, and mechanism having different radial relation to the center of the machine for rotating portions of the said elements when over the receiver to compensate for the arcuate differentiation of the said elements over the receiver to cause the finished articles to be automatically arranged in transverse lines on the latter.

20. A dipping-machine comprising a plurality of orbitally-carried dipping elements, a receiver for the deposits of said elements, and means for compensating for the arcuate differentiation of the said elements when over the receiver to cause the disposal of the deposits in straight rows thereon.

21. A dipping-machine comprising a plurality of orbitally-carried dipping elements, a receiver for the deposits of said elements, a pinion on each element, the pinions of all of the elements being at different distances from the inner terminals thereof, and a plurality of segmental racks contiguously arranged in parallel arcs each described by a shorter radius from the outer to the inner one.

22. A dipping-machine comprising a plurality of orbitally-carried dipping elements, a receiver for the deposits of said elements, a pinion on each element, the pinions of all the elements being at different distances from the inner terminals thereof, and a plurality of segmental racks progressively arranged inwardly toward the center of the machine for engagement with the pinions to compensate for the differentiation in the arcuate movement of the elements over the receiver to cause the deposits of said elements to be disposed in lines across the receiver.

23. A dipping-machine comprising a plurality of orbitally-carried dipping elements, a receiver for the deposits of said elements, a drive-shaft for operating the elements, a ratchet-wheel attached to one end of the receiver, an eccentric on the said shaft, and an eccentric-rod connected to the eccentric at one end and carrying a pawl on its opposite end in operative relation to the ratchet-wheel, whereby the elements are all caused to deposit their completed charges on the receiver before the latter is shifted.

24. A dipping-machine comprising a plurality of continuously-moving orbitally-carried dipping elements having a circular path of movement, a longitudinally-movable receiver over which the said elements terminally move, and means for regulating the differentiation of the arc of movement of the said elements

to cause the latter to dispose their charges successively in a straight line transversely of the belt.

25. A dipping-machine having a plurality of orbitally-carried dipping elements each having a projection, and a reversing-switch having opposite portions for engagement with said projections to shift a portion of each element in opposite directions.

26. In a dipping-machine, having a plurality of orbitally-carried dipping elements each having a holder and a coverer, a cam to impart reciprocatory movement to the coverer, parallel to the holder.

27. In a dipping-machine, having a plurality of orbitally-carried dipping elements each having a holder and a coverer, a centrally-located cam-surface adapted to impart reciprocatory movement to the coverers longitudinally thereof in succession.

28. In a dipping-machine, a dipping element comprising a core-holder and a cover therefor, the cover having a reciprocatory movement transversely of the axis of the core-holder.

29. In a dipping-machine, a dipping element comprising a core-holder and a cover therefor, the cover having a reciprocatory movement transverse and parallel to the top of the holder.

30. In a dipping-machine, a plurality of dipping elements each comprising an upper slidable rod and a lower revoluble rod arranged radially with reference to a common axis.

31. In a dipping-machine, a plurality of dipping elements each comprising an upper slidable rod and a lower revoluble rod arranged radially with reference to a common axis, and means to reciprocate the upper rod in a line parallel to the lower rod.

32. In a dipping-machine, a plurality of dipping elements each comprising a pair of loosely-mounted parallel rods, one of said rods being capable of revolution and the other of longitudinal reciprocation, and means for actuating said rods independently of each other.

33. In a dipping-machine, the combination with a dipping element, having an orbital movement and comprising an upper slidable rod and a lower revoluble rod having a pinion keyed thereto, of a segmental rack disposed in the path of said pinion.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EDWARD J. JENNER.

Witnesses:
ROBERT C. JENNER,
J. W. DIBRELL.