S. PITTALUGA.

CAN DRAINING MACHINE.

APPLICATION FILED JULY 20, 1916.

1,254,269.

Patented Jan. 22, 1918.

4 SHEETS—SHEET 1.

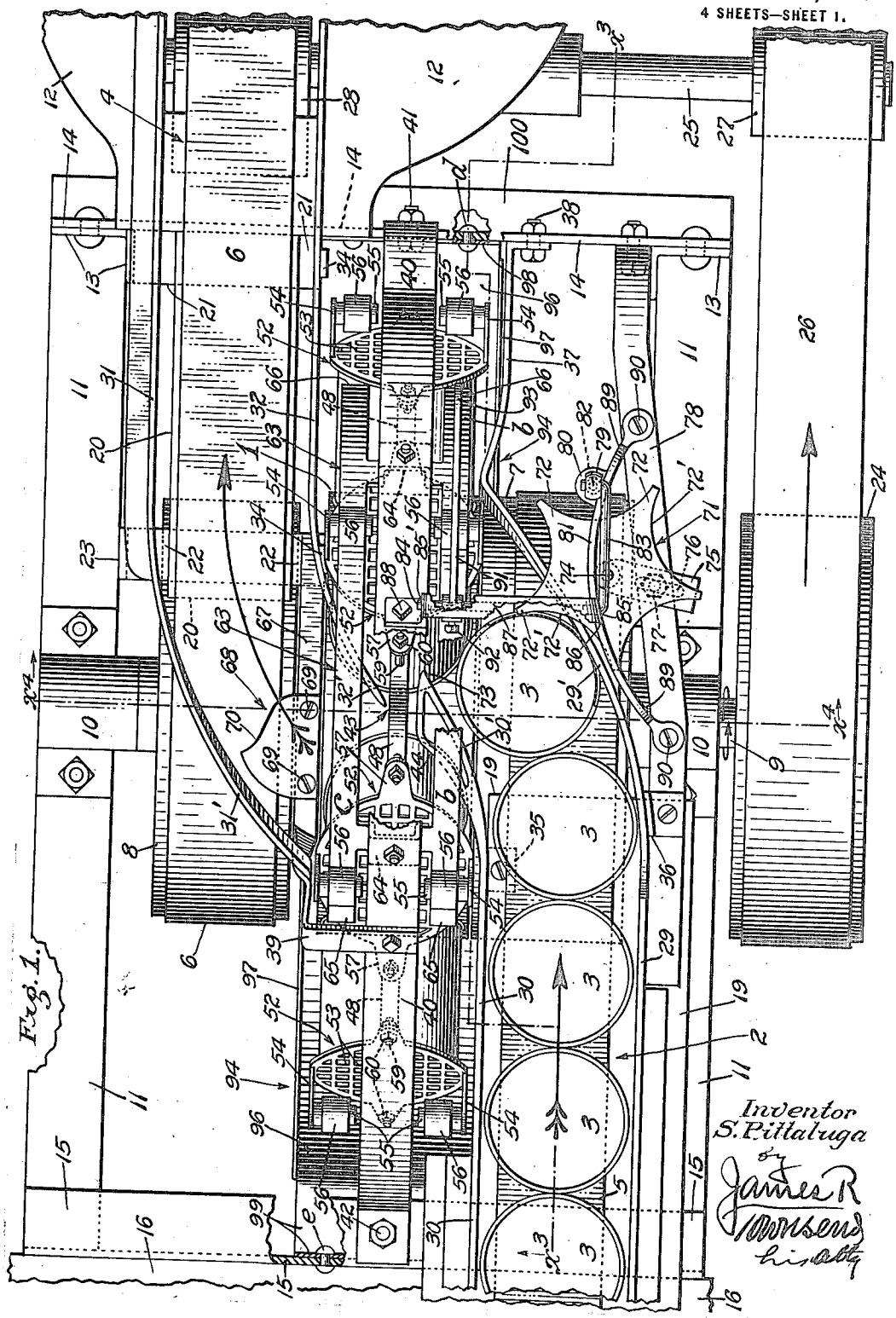

Fig. 1.

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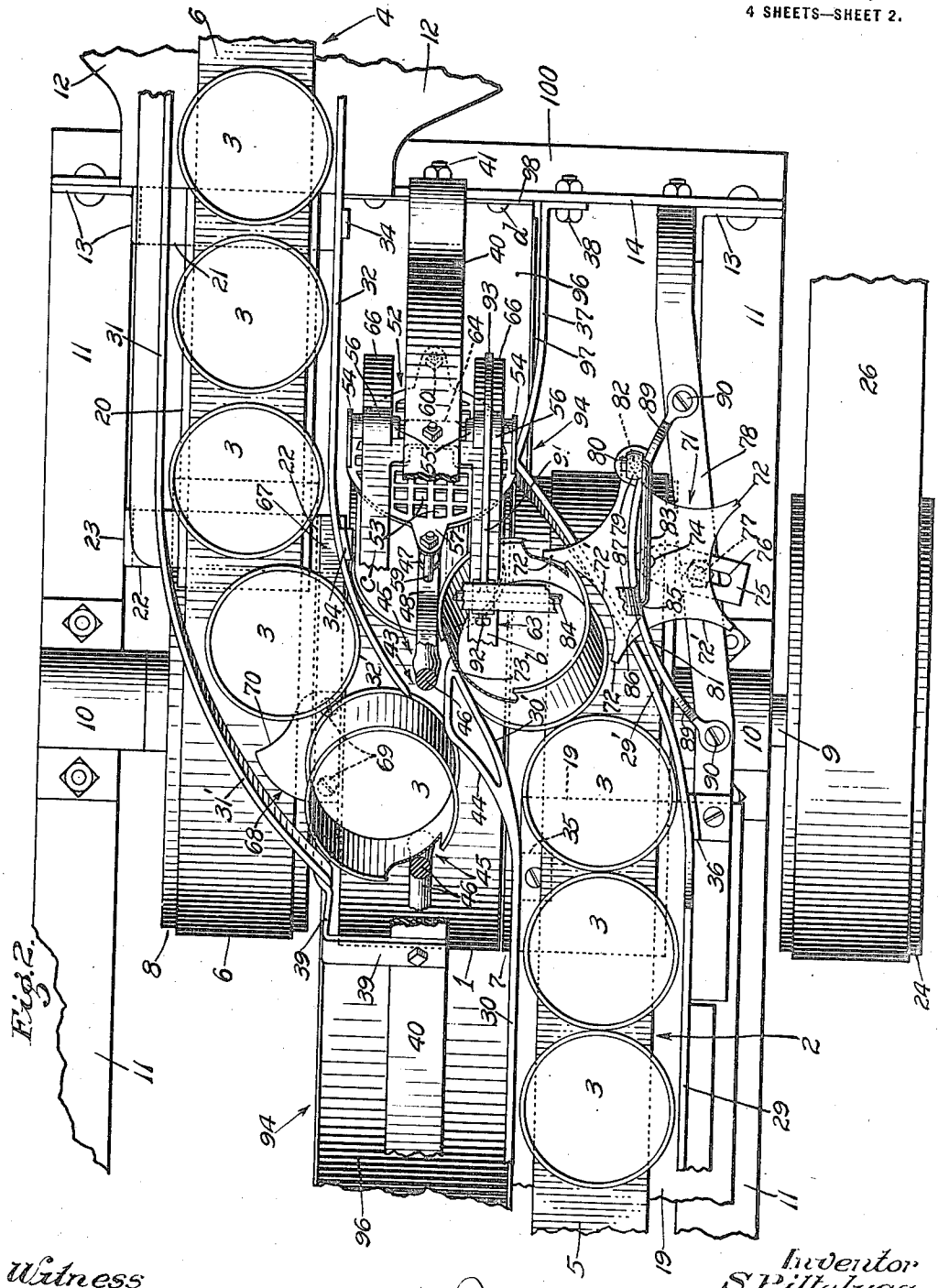

Fig. 2.

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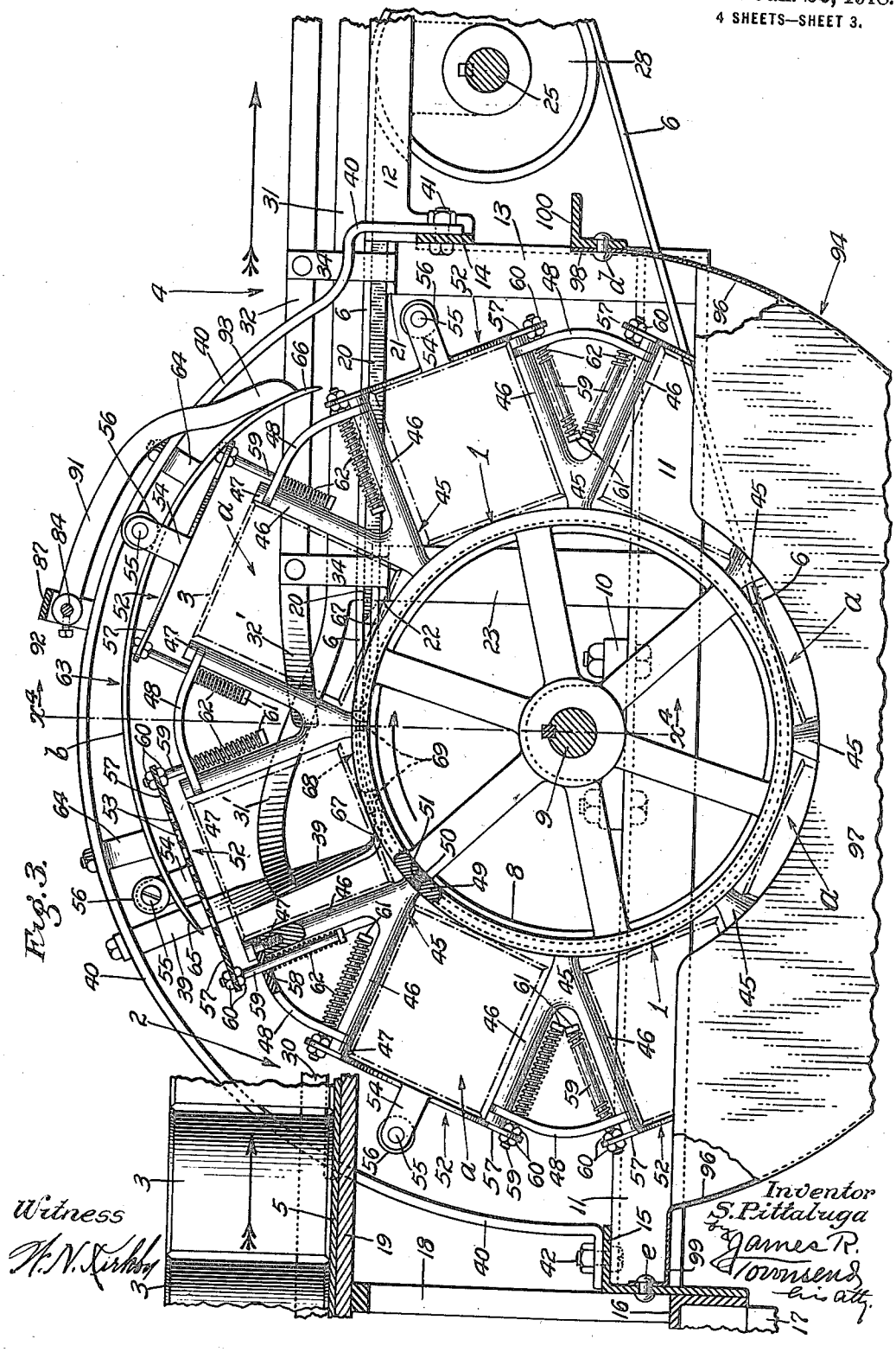

Fig. 3.

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4 SHEETS—SHEET 4.

Fig. 6.

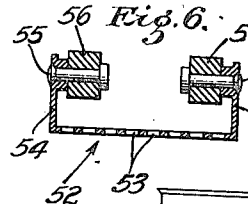


Fig. 4.

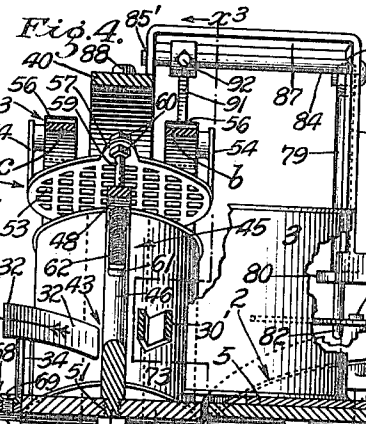
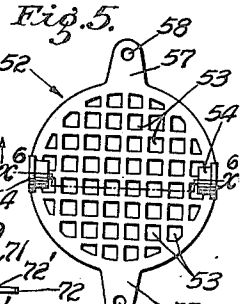


Fig. 5.



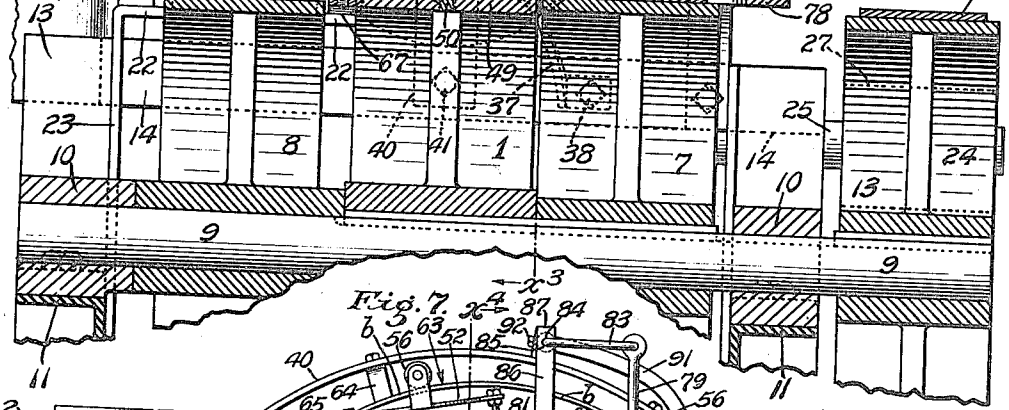
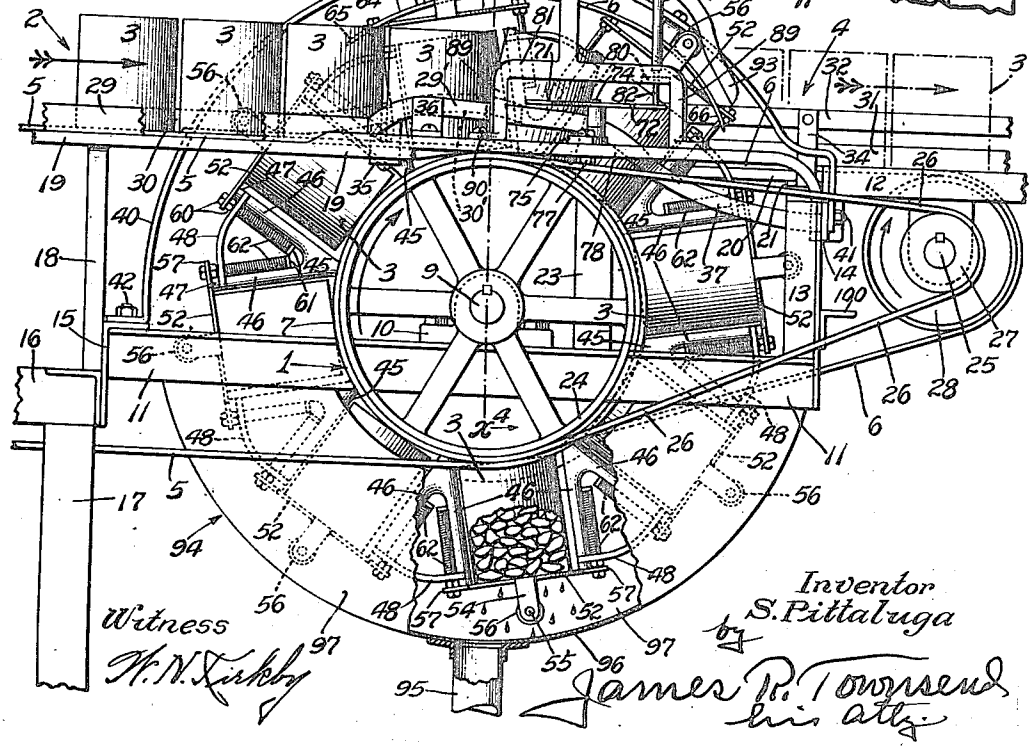


Fig. 7.



Witness

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UNITED STATES PATENT OFFICE.

STEFANO PITTALUGA, OF LOS ANGELES, CALIFORNIA.

CAN-DRAINING MACHINE.

1,254,269. Specification of Letters Patent. Patented Jan. 22, 1918.

Application filed July 20, 1916. Serial No. 110,415.

To all whom it may concern:

Be it known that I, STEFANO PITTALUGA, a subject of the King of Italy, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Can-Draining Machine, of which the following is a specification.

This invention may be employed for various purposes, but more particularly relates to means to be employed in connection with the fruit canning industry. It is customary in canning fruits to wash the fruit and place it in cans or other suitable containers which are then filled with syrup, then heated and then hermetically sealed.

In order that the fruit thus put up shall be in most perfect condition for keeping and for consumption, it is desirable that the liquid adhering to the surface of the fruit be thoroughly drained off before the syrup is applied to the can; and an object of this invention is to provide means whereby such liquid can be perfectly drained off, thus leaving the can and the fruit contained therein ready to be entirely charged with syrup, so that the quality of the syrup filling for each can will be uniform and the syrup filling will not be diluted with foreign liquid.

The invention is regarded as pioneer and broadly new in that mechanical means are provided whereby the filled fruit cans are inverted and so held for a time sufficient to accomplish the purpose above suggested.

A broad feature of the invention consists in a rotary device provided with means for holding the can or other container that is closed, except at one end or side, with the opening of said container presented away from the axis of rotation, and means for rotating the device so as to drain the liquid contents from the container; and in carrying out the invention I preferably arrange the rotary device with its axis of rotation horizontally disposed, so that as the container revolves around said axis the force of gravity will operate to effect the draining.

This invention comprises a draining machine for operation in connection with a moving train of open topped containers such as cans or bottles and the like, wherein the containers are successively delivered to and held upon a drum rotating on a practically horizontal axis so that the containers are carried around with said drum, thus turning each container upside down to drain some or all of the contents therefrom during the course of travel of the containers. Provision is also made whereby the containers are discharged from the rotary device after the draining has been effected.

The invention may be utilized for draining a train of containers immediately after washing the same, but is more especially adapted for draining containers after they have been washed and packed with washed and rinsed fruit or the like preparatory to filling the containers with syrup in which the fruit is to be sealed up.

The machine comprises in combination, a rotatable device, which may be termed a drum, adapted to support the bottoms of the containers, and perforated cover members that are adapted to seat on the tops of the open containers after the same have been delivered to the drum; said cover members serving to hold the solid contents of the containers in place while allowing the foreign liquid to drain off as the cans are inverted during a portion of the rotation of the drum.

An object of the invention is to provide a machine of this character in which each container will be delivered to, revolved by and removed from the drum without interfering with any of the other containers. To this end a delivery conveyer and discharge conveyer are mounted on a level with the top of the rotary drum, on opposite sides thereof and out of alinement with each other; the arrangement being such that the containers successively approach and move onto said drum at one side, revolve around, and shift along the axis thereof, and move off of said drum and leave it at the other side.

Another object is to provide a feeding arrangement whereby the containers are automatically fed to the rotatable drum.

A feature of the invention is the adaptability of the machine for handling cans of different sizes, the feeding arrangement being subject to adjustment for this purpose.

The invention comprises means for receiving upright open-topped containers, means for delivering containers to the receiving means, means to retain solid contents in and to allow liquid contents to flow out of the container, means to tilt the container to

drain liquid contents from said container, and to restore the container to upright position, and means to remove the upright container from the tilting and restoring means.

Other important features and advantages of the invention may appear from the subjoined detail description of one specific embodiment thereof.

The accompanying drawings illustrate the invention.

Figure 1 is a plan view of a draining machine embodying this invention and applied to operate upon a moving train of containers on the way to a syrup filling machine, a fragment of which is shown. Containers are shown as they enter the machine, the first container of the train being in position preparatory to riding out upon the discharge conveyer. Structural parts are broken away for clearness of illustration.

Fig. 2 is a plan view, showing parts in a slightly advanced position from that of Fig. 1 with containers in position as they enter and leave the machine. A container is shown as held in check preparatory to moving into the drum pocket that is just being vacated by the discharging container. Parts are broken away and shown in section for clearness of illustration.

Fig. 3 is a fragmental sectional elevation viewed from irregular line x^3, Figs. 1 and 4 with the lower portion of the draining trough broken away. Parts are in position corresponding to Fig. 1 with the containers upon the drum indicated by dot and dash lines.

Fig. 4 is a fragmental axial section on line x^4, Figs. 1, 3 and 7, with parts in position corresponding to Figs. 1 and 3. Parts are broken away to illustrate parts otherwise hidden.

Fig. 5 is a top view of one of the cover members detached, omitting the operating rollers.

Fig. 6 is a cross section on line x^6, Fig. 5.

Fig. 7 is a side elevation on a somewhat smaller scale than the preceding figures showing parts in a position approximately corresponding to that of Fig. 2 with the feeding arrangement just about to deliver a container to the rotary drum. A portion of the draining chute is broken away to illustrate the draining action of a container.

Feathered arrows on the various views indicate the direction of movement of the containers and small arrows on the various section lines indicate the direction of sight.

The machine comprises a rotatable drum 1 rotating on a horizontal axis, a delivery conveyer 2 mounted at one side of said drum to deliver containers 3 thereto, means to cause the containers to revolve with the drum and a discharge conveyer 4 mounted at the other side of said drum to carry the containers therefrom after said containers have moved around with the drum, each container being thus inverted for drainage purposes during one revolution of the drum.

Said delivery and discharge conveyers 2 and 4 may be of any desirable form and in the present instance comprise conveyer belts 5 and 6 respectively, running parallel to the plane of rotation of the drum. Conveyer belt 5 runs over a head pulley 7 and conveyer belt 6 runs over a tail pulley 8, said pulleys being positioned upon opposite sides of the drum 1 and in close proximity thereto so that the delivery conveyer belt 5 operates upon one side of the drum and the discharge conveyer belt 6 operates upon the other side of the drum. The drum 1 and pulleys 7, 8 are approximately of the same diameter, being carried by a horizontal shaft 9 that is journaled in bearings 10 positioned upon side angle-iron members 11 of a frame that is suitably supported adjacent to the frame 12 of a syrup filling machine to which machine the containers are conveyed after passing around said drum. The side members 11 are supported at one end by side hangers 13 that depend from a cross-piece 14 of the machine frame 12 and at the other end by a cross angle-iron 15 that is secured to a table 16 having supporting legs 17.

An upright standard 18 is carried by the table and upon said standard is mounted a conveyer board 19 that serves as a support for the delivery conveyer belt 5. The discharge conveyer belt 6 is supported by a conveyer board 20 which is carried by horizontal arms 21 and 22 that are formed respectively by lateral extensions of the adjacent upright hanger 13 and a leg 23 of the supporting frame.

The boards 19, 20 and the conveyers are tangentially arranged relative to the produced periphery of the drum at the top thereof.

The drum 1 and delivery conveyer pulley 7 are keyed to the shaft 9 and are driven by a pulley 24 fixed to the overhanging shaft end, said pulley 24 being driven from the operating shaft 25 of the syrup-filling machine through belt 26 and drive pulley 27. The tail pulley 8 of the discharge conveyer is loosely mounted upon the shaft 9 and said conveyer is driven from a head pulley 28 on the operating shaft 25, the pulley 28 being made of a somewhat larger diameter than the drive pulley 27 so that the discharge conveyer may travel at a slightly greater speed than the peripheral speed of the drum, thereby insuring against any blocking of the containers as they move off of the drum and onto the discharge conveyer.

The containers are adapted to be transferred onto and off of the drum at the top thereof, being moved axially of the drum from the delivery conveyer at one side and, after moving around in a clock-wise direction

(in Figs. 3 and 7) for one revolution of the drum, (see Figs. 1, 2, 3 and 7), are moved axially of the drum and onto the discharge conveyer at the opposite side. To this end a delivery guide-mouth is positioned just forwardly of the vertical axial plane of the drum to act in conjunction with the delivery conveyer belt 5, and a discharge guide-mouth is positioned just rearwardly of said plane to act in conjunction with the delivery conveyer belt 6; the arrangement being such that a container is moved from the delivery conveyer 2 at one side and guided into the space upon the drum that has just been vacated by a container moving from the drum and onto the discharge conveyer 4 at the other side.

Side rails or guides 29 and 30 are mounted upon the delivery conveyer board 19 to form a guide-way in which the upright containers are moved to the drum by the conveyer belt 5, said guides terminating in outer and inner curved extensions 29′, 30′ respectively, that turn together in an axial direction toward the drum to form the curving guide-mouth through which the containers pass to the drum from the belt 5.

Side rails or guides 31 and 32 are mounted, one upon each side of the discharge conveyer board 20, on the lateral arms 21 and 22 to form a guide-way in which the containers are conveyed from the drum by the conveyer belt 6, said guides terminating respectively in outer and inner curved extensions 31′, 32′ that turn together in an axial direction toward the drum to form the curving guide-mouth through which the containers are adapted to discharge from the drum to the belt 6. The inside extension 32′ as well as rail 32 are both carried by upright lips 34 of the lateral arms 21, 22, respectively and the opposite inside extension 30′ is supported from the conveyer board 19 by a clip 35, see Fig. 1.

The outer extension 29′ of the delivery mouth is supported at one end upon the conveyer board 19 by a clip 36, and extends aslant over the pulley 7 in the direction of rotation thereof, said extension following the pulley periphery and being bent at the edge of the drum to form a transverse spanning portion 37, the end of which portion is secured to the cross-piece 14 by a bolt 38. The outer extension 31′ of the discharge mouth is supported adjacent the drum by a hanger 39 carried by an arched supporting bar 40 that circles around over the rotary drum and its operating parts, said arched bar having one end secured to the cross-piece 14 by a bolt 41 and the other end secured to the cross angle-iron 15 by a bolt 42.

The guide extensions are all positioned at a sufficient height so that the sides of the upright containers will contact with said extensions well above their bases and thus prevent tipping of the containers as they are deflected by the various guides from a straight course upon delivery to and discharge from the drum. Said inside extensions 30′ and 32′ project from opposite sides into the rotary path of travel of the containers, extending to almost the mid-transverse plane of the drum to thus form a mid-gap 43 which allows clearance for drum parts during rotation of the same.

At the back of the inner extension 30′ of the delivery mouth is a built-out portion to constitute a guide edge 44, of concave form and curving from the guide 30 toward the discharge conveyer. This guide edge 44 projects into the path of the containers and serves to impart the initial axial shifting movement to successively transfer the containers from the drum as the containers ride up from the left hand side in Figs. 1, 2, 3 and 7. The guide edge 44 forms a continuation of the extension 32′ positioned upon the opposite side of the gap 43, said extension and guide edge serving as an aslant abutment that extends across the path of rotation of the containers to thereby shift the same off of the drum and onto the discharge conveyer.

The approaching containers on the delivery conveyer belt 5 are successively guided from their straight line path upon contacting with the curved outer guide 29′ and thus shifted from the conveyer belt 5 over onto the drum periphery and into pockets *a* formed between standards 45 that are spaced at equal intervals around the drum in the mid-circular plane thereof. Said standards 45 are of a Y-form having aslant limbs 46 that are provided with tapped sockets in their extremities to receive studs 47 which pass through and secure connecting bridge pieces 48 in place upon the said limb extremities. The standards, in the instance shown, are detachably mounted upon the drum rim 49, having stud ends 50 that screw into tapped holes 51 in said rim for this purpose and when the standards are mounted in position upon said drum rim the limbs 46 of adjacent standards are in parallelism with one another to thus constitute the parallel-sided pockets *a* to receive the containers.

Suitable means revolving with the drum are provided to hold the containers in place upon the drum and the solid contents within the containers during inversion of said containers when the drum is rotated for drainage purposes. Said draining means in the present embodiment consists of a plurality of equally spaced perforated cover members 52 mounted on the encircling standards 45, each cover member being adapted to span the pocket *a* formed between the parallel limbs 46 of adjacent Y standards and being adapted to yieldingly seat over the top

of an open container 3 upon delivery of said container to the drum, to thus hold the solid contents in place in the container while allowing the rinsing liquid to drain out through the perforated cover members as the drum is rotated.

Said cover members 52 are preferably circular in shape, and each is provided with a series of perforations 53 that extend over an area corresponding substantially to the cross sectional area of the circular container over which said cover member is adapted to seat. At diametrically opposite sides of each cover member are provided upturned lips 54 that carry studs 55 upon which are rotatably mounted rollers 56, said rollers being positioned inwardly of the lips and just above the upper surface of the cover. Lateral lip extensions 57 are also formed at diametrically opposite sides of each cover member, said lip extensions being arranged equidistant between the upturned lips 54 and provided with bores 58 to receive depending stems 59 that are secured by lock-nuts 60. The stems of each cover member are thus oppositely arranged and are slidably mounted in each pair of adjacent bridge pieces 48 with the connected cover member 52 positioned over the intervening pocket *a*. Each stem 59 is provided with end shoulders 61 against which a compression spring 62 impinges, said spring being mounted upon the stem and having its other end bearing against the respective bridge piece 48, thus tending to normally hold the cover member in retracted position to bear down upon the top of the open container.

The cover members are each adapted to be retracted to yieldingly seat upon the open top of a container after said container has been inserted thereunder upon the drum and to be extended in opposition to the springs 62 to unseat from the top of a container preparatory to discharging the same and receiving another, and means are provided to automatically actuate said cover members which means comprises a stationary cam or track 63 supported at the top of the machine and adapted to co-act with each cover member once during each revolution of the drum.

Said track is preferably of a bifurcated form consisting of two limbs *b*, *c* that are spaced apart centrally of the drum, one upon each side of the mid-transverse plane thereof, said limbs being supported by clips 64 bolted to the overhead arched bar 40 and lying in the path of the spaced apart rollers 56 of the respective cover members. The limbs *b*, *c* are of the same extent and curvature, being eccentric to the axis of the drum and serve to co-act with said rollers to retract and extend the cover members in time with the delivery and discharge of the containers. Said track deviates from the axis of the drum in an eccentric path so that the middle portion is at a greater distance from the drum axis than the extremities 65 and 66.

The rollers 56 of each cover member are adapted to successively ride over the track 63 during each revolution of the drum, thus to lift the respective cover member during this travel and hold the same in an extended position while the drained container thereunder is shifted out onto the discharge belt 6 and an undrained container is delivered in its place from the delivery belt 5.

Said track 63 projects upon that side of the vertical axial drum plane from which the containers approach, a sufficient distance to permit each pair of approaching rollers 56 to engage the track just before the container under the respective cover member engages the guide edge 44 to move off of the drum; and said track projects upon the other side of said vertical plane, a sufficient distance to permit the rollers to ride off of the track just after another container has been inserted in place on the drum and under said cover member.

The side of the track toward which the rollers 56 approach, from the tip 65 to the middle portion, is of a gradual eccentric slope to allow the cover members 52 to be gradually raised by their rollers; while the opposite side, from the middle portion to the tip 66, is of a more abrupt change of curvature to facilitate a somewhat quicker reseating action of the cover members as the rollers pass over said opposite side.

By this comparatively quick reseating action any possible spilling of the solid contents of the retained containers upon tipping as they start downward toward the right hand side in Figs. 1, 2, 3 and 7 is avoided.

A horizontal bar 67 in the present instance forming a continuation of the upright hanger 39, is carried at its free end upon the lateral conveyer board support 22, said bar being positioned between the drum 1 and pulley 8 and lying slightly below the level of the top of the drum periphery, so that the containers may readily pass over said bar and onto the discharge conveyer. The pulley 8 is of a slightly less diameter than the drum 1, and a carrier plate 68 is mounted upon the horizontal bar 67 by countersunk screws 69, the curvature of said plate corresponding to and being alined with the drum periphery. A lip 70 of the carrier plate overhangs the belt 6 which has a slight upward incline from the pulley 8 to the conveyer board 20, the purpose of this lip arrangement being to facilitate the passing of the containers from the drum 1 to the conveyer belt 6 without any interference or obstruction, said containers sliding over the lip and then onto the belt running underneath.

An automatic feeding arrangement is provided to successively feed the containers to

the drum in step with the rotating drum pockets, and thus prevent any jamming or marring of the containers.

To this end the approaching containers on conveyer 5 are intermittently delivered to the drum, each container being momentarily held in check by appropriate means until a vacant pocket *a* and its spanning cover member 52 are in position to receive said container.

Said feeding arrangement comprises a rotatable star-wheel 71 positioned adjacent the delivery guideway or mouth and having teeth 72 with concave faces 72′ therebetween, said faces conforming substantially to the periphery of the containers. The star-wheel is arranged so that the teeth 72 will extend over the guide 29′ and into the path of travel of the approaching upright containers, which are successively received between adjacent teeth 72 as said containers move from the conveyer belt 5 to the drum periphery to thus rotate the star-wheel. The star-wheel 71 is mounted on a vertical axle 74 supported in a carrier 75 that is adjustably secured by means of a slot 76 and stud 77 to the supporting bar 78 which spans over to the cross-piece 14 from the delivery conveyer board 19. The slot and stud arrangement serves to pivotally and slidably mount the star-wheel to be adjusted back and forth as desired, so that the teeth 72 may project over into the path of travel of the containers for a greater or less distance depending upon the size of the containers being run through the machine.

An upright latch rod 79 is slidably mounted in a lateral projection 80 of the support 81, said latch rod having a tip 82 that is adapted to alternately extend into and out of the path of the star-wheel teeth 72 as said sprocket is turned by the passing containers, thus causing an intermittent rotative movement of the star-wheel to intermittently deliver said containers in step with the rotating drum pockets *a*.

With a tooth 72 in contact with the latch rod tip 82, as in Fig. 2, the star-wheel is locked against further clock-wise rotation and in this position the container between the overhanging teeth 72 is carried by the running belt 5 over against the guide nose 73 of the guide extension 30′, which nose together with the forwardly engaging star-wheel tooth 72 serves to hold the container in check under the moving conveyer belt 5 until a pocket *a* has advanced a requisite rotary distance to receive said checked container, whereupon the latch is raised and the star-wheel is then free to turn and allow the container to pass along into said pocket.

Means to alternately raise and lower the latch rod to produce this intermittent drum delivery are provided, said means being timed with and operated by the revolving drum, and comprising a rock arm 83 formed on a rock-shaft 84 that is journaled at 85, 85′ in a frame which in the present instance consists of an upright limb 86 extending from the standard 81 and a horizontal limb 87 extending over to and being secured upon the arched bar 40 by a stud 88. Said standard 81 is supported by legs 89 secured upon the spanning bar 78 by screws 90. The rock arm 83 is pivoted to the upper extremity of the latch rod 79 and is adapted to actuate the same as the axle 84 is rocked back and forth. To rock said axle in proper time an operating arm 91 is adjustably secured to the axle by a set screw 92, said arm being positioned above the track limb *b* and extending toward its tip 66. The operating arm thus lies in the path of the rollers 56 and has an end portion 93 normally bearing upon the limb *b* (see Figs. 1 and 3), in which position the latch tip 82 extends into the path of the star-wheel teeth in position to engage with a tooth 72 to thus hold the oncoming container in check preparatory to inserting the same into the approaching empty pocket *a*, (see Fig. 7). Said arm 91 is raised as a roller 56 rolls over the track 63 and under the arm portion 93 to thus turn the rock shaft 84 and raise said latch tip from in front of the engaging tooth 72 to free the container.

Each container is held in check for a short interval corresponding to the interval that it takes a standard 45 to pass by said container, thus insuring against interference and possible jamming of the containers by the revolving standards. The arrangement is such that a roller 56, of the cover member preceding the one under which the container is to be inserted, actuates the arm 91 and raises the latch tip 82 to release the sprocket 71 and free said container for movement into the empty pockets *a*.

In practical operation the containers to be drained approach the drum 1 on conveyer belt 5 and are successively fed through the delivery guide mouth and into the pockets *a* of the rotating drum, said containers passing onto the drum just forwardly of the vertical axial plane of the drum, at which position the cover members of the respective pockets are extended to receive the containers by the rollers 56 riding upon the track 63 as hereinbefore described. The perforated cover members 52 are seated upon the respective open container tops by the rollers 56 rolling off of the track 63 upon further rotation of the drum, thus to hold the containers in place during inversion of the same and thereby allow the rinsing liquid to drain off through the perforated cover members as the drum turns around, see Fig. 7.

Said containers are retained upon the drum for one revolution and upon riding up from the left hand side in Figs. 1, 2, 3 and

7 to a position just rearwardly of the vertical axial plane of the drum the respective cover members are again extended by the rollers riding onto the track tip 65 preparatory to transferring the containers onto the conveyer belt 6. Each cover member is held in this extended position during the travel of said rollers over the track 63 or while the underneath container engages with the guide edge 44 to ride from the respective pocket *a* and another container rides into said pocket.

The standard 45 at the rear of each container serves to push it in an aslant direction along the guide edge 44 and guide extension 32′ and through the discharge guide mouth to be picked up by the discharge conveyer belt 6. After said standard has thus discharged the container it moves on through the gap 43 between the guide extensions 30′, 32′ and the vacated pocket *a*, forwardly of said standard, then comes into register with the delivery guide mouth to receive another container from the delivery conveyer belt 5 at which time a container is released by the feeding sprocket 71 as hereinbefore described.

The rotatable drum thus continues to successively receive containers from the conveyer belt 5, carry them around therewith and then successively discharge them onto the conveyer belt 6.

A suitable drainage trough 94 is preferably mounted under the drum 1 to catch the drainings, said trough being provided with an outlet pipe 95, see Fig. 7, which serves to carry off the draining water as it runs from the containers. The trough is open at the top, being made in the present instance of sheet metal to form a circular bottom 96 and inclosing sides 97, the bottom 96 terminating at its ends in flanges 98 and 99 to support said trough from the machine frame, see Fig. 3. Flange 98 is secured by rivets *d* to the cross-piece 100 that is carried by the side hangers 13 for this purpose and flange 99 is secured by rivets *e* to the cross angle-iron 15. The trough is thus supported under the drum so that the containers may dip down into the trough upon their travel around with the drum and thus avoid any splashing of the drainings.

It is thus seen that the container holding means comprise the surface of the drum 1, the cover members 52 and their connections and adjuncts 59, 58 and 62 which are attachments of the drum; that the delivery conveyer 2 and the deflecting guides 29′, 30′ constitute means to deliver upright open-topped containers to the container-receiving means; that the rotating shaft 9 operating through the drum and its attachments constitutes means for tilting the containers from and returning them to upright position; that the perforated cover members 52, the springs 62 and stems 69 serve to retain the solid contents of the containers and to allow liquid to drain therefrom; that said shaft and its connections also serve to return the containers to upright position and that the guides 44, 31′ and 31 serve to remove containers from the tilting and draining mechanism to the discharge conveyer 6.

I therefore do not limit this invention to the specific construction shown but may vary the construction as may be found desirable from time to time, without departing from the broad and pioneer features I have disclosed herein and pointed out in the appended claims.

I claim:—

1. A draining machine for containers comprising a drum rotatable on a horizontal axis and means for conveying containers to, around with, and from said drum for the purpose specified; said means comprising a drainage cover adapted to retain the solid contents of the container in the container when inverted.

2. A draining machine for containers comprising a drum rotatable on a horizontal axis, means for automatically feeding containers to said drum, means to hold the containers and solid contents in place as the same are inverted and drained during rotation of the drum, and means for conveying the containers from the drum.

3. A draining machine for containers comprising a drum rotatable on a horizontal axis, a delivery conveyer mounted at one side of said drum and adapted to deliver containers thereto, means to hold the containers and solid contents in place as the same are inverted and drained during rotation of the drum, and a discharge conveyer mounted at the other side of said drum and adapted to carry the containers therefrom.

4. A draining machine for containers comprising a drum rotatable on a horizontal axis, a delivery conveyer mounted at one side of said drum and adapted to deliver containers thereto, means to hold the containers and solid contents in place as the same are inverted and drained during rotation of the drum, a drainage trough mounted below said drum to catch and carry away the drainings, and a discharge conveyer mounted at the other side of said drum and adapted to carry the containers therefrom.

5. The combination of a drum rotatable on a horizontal axis for draining containers; a delivery conveyer mounted at one side of said drum; a discharge conveyer mounted at the other side of said drum, said delivery and discharge conveyers being positioned on a level with the top of the drum and the containers being adapted to successively move onto the drum from the delivery conveyer, to revolve with said drum to and out of inverted position for one revolution, and to then successively move from the drum

onto the discharge conveyer; and drainage covers revolving with the drum to retain the solid contents of the container while inverted.

6. The combination of a drum rotatable on a horizontal axis for draining containers, a delivery conveyer mounted at one side of said drum to deliver containers thereto, draining covers revolving with the drum to retain the solid contents of the containers when inverted, means for transferring the containers to the drum, a discharge conveyer mounted at the other side of said drum to receive containers therefrom, and means for transferring the containers from the drum.

7. The combination of a drum rotatable on a horizontal axis for draining containers, a delivery conveyer mounted at one side of said drum and on a level with the top thereof, means to guide the containers onto the drum forwardly of the vertical axial plane thereof, the containers being carried around with the drum to thus invert and drain said containers, means to retain solid contents of the containers when inverted, a discharge conveyer mounted at the other side of said drum and on a level with the top thereof, and means to guide the containers off of the drum rearwardly of the vertical axial plane thereof after revolving with said drum for one revolution.

8. The combination of a drum rotatable on a horizontal axis for draining containers, standards equally spaced around said drum to form a plurality of encircling pockets, means to automatically feed containers to said pockets, means to hold the containers and solid contents in place as the same are inverted and drained during rotation of the drum, and means to automatically discharge containers from said pockets.

9. The combination of a drum rotatable on a horizontal axis for draining containers, a delivery conveyer mounted at one side of said drum, means actuated by rotation of the drum to feed containers from said delivery conveyer to the drum, means to hold the containers and solid contents in place as the same are inverted and drained during rotation of the drum, and means for discharging and conveying the containers from the drum.

10. The combination of a drainer drum, rotatable on a horizontal axis, means for conveying open-topped containers to said drum, a plurality of perforated cover members arranged around said drum and adapted to seat over the tops of the containers, said perforated cover members serving to hold the solid contents in place in the containers while allowing the rinsing liquid to drain off as the drum is rotated, and means for conveying the containers from the drum.

11. The combination of a drainer drum, rotatable on a horizontal axis, means for conveying open-topped containers to said drum, a plurality of perforated cover members arranged around said drum and adapted to seat over the tops of the containers, said perforated cover members serving to hold the solid contents in place in the containers while allowing the rinsing liquid to drain off as the drum is rotated, means for conveying the containers from the drum, and means to automatically seat and unseat the cover members upon respective delivery to and discharge from said drum.

12. A draining machine for containers comprising a drum, rotatable on a horizontal axis, standards equally spaced around said drum to form a plurality of encircling pockets, a delivery conveyer mounted at one side of said drum and adapted to deliver containers to said pockets, perforated cover members adapted to span said pockets to yieldingly hold the containers in place upon the drum and drain said containers in their travel around with the drum, and a discharge conveyer mounted at the other side of said drum and adapted to carry the containers therefrom.

13. A draining machine for containers comprising a drum rotatable on a horizontal axis, standards equally spaced around said drum to form a plurality of encircling pockets, a delivery conveyer mounted at one side of said drum and adapted to deliver containers to said pockets, perforated cover members adapted to span said pockets to yieldingly hold the containers in place upon the drum and drain said containers in their travel around with the drum, a discharge conveyer mounted at the other side of said drum and adapted to carry the containers therefrom, and means to automatically seat and unseat the cover members upon respective delivery to and discharge from said drum.

14. A draining machine for containers comprising a drum rotatable on a horizontal axis, standards equally spaced around said drum to form a plurality of encircling pockets, a delivery conveyer mounted at one side of said drum and adapted to deliver containers to said pockets, cover members yieldingly mounted to span said pockets and hold the containers in place upon the drum during their travel around with the drum, a stationary track positioned above the rotatable drum, said track being adapted to co-act with said cover members to automatically seat and unseat the cover members upon respective delivery to and discharge from the drum as said drum is rotated.

15. A draining machine for containers comprising a drum, rotatable on a horizontal axis, means for feeding containers to said drum, a plurality of cover members arranged around said drum and adapted to hold the containers in place during their

travel around with the drum, spring means to normally hold said cover members in retracted position upon the tops of the respective containers after delivery of the same to the drum, a stationary track adapted to coact with said cover members to extend the same in opposition to said spring means before discharge of the containers from the drum, and means for discharging and conveying the containers from the drum.

16. A draining machine for containers comprising a drum rotatable on a horizontal axis, means for feeding containers to said drum, a plurality of cover members arranged around said drum and adapted to hold the containers in place during their travel around with the drum, spring means to normally hold said cover members in retracted position upon the tops of the respective containers after delivery of the same to the drum, an eccentric stationary track positioned above the rotatable drum, rollers mounted on the respective cover members and adapted to roll onto said track to thus extend the cover members in opposition to said spring means before discharge of the containers from the drum, and means for discharging and conveying the containers from the drum.

17. A draining machine for containers comprising a drum rotatable on a horizontal axis, standards equally spaced around said drum to form a plurality of encircling pockets, a delivery conveyer mounted at one side of said drum, a guideway to guide the containers from said delivery conveyer and into the pockets, draining covers revolving with the drum to hold the containers and solid contents in place when inverted, a star-wheel mounted adjacent the guideway and having teeth extending into the path of travel of the containers to thereby turn said star-wheel, automatic means to cause an intermittent rotative movement of said star-wheel to thus intermittently deliver said containers in time with the rotating drum pockets and means for discharging and conveying the containers from the pockets.

18. A draining machine for containers comprising a drum, rotatable on a horizontal axis, standards equally spaced around said drum to form a plurality of encircling pockets, draining covers revolving with the drum to hold the containers and solid contents in place when the containers are inverted, a delivery conveyer mounted at one side of said drum, a guideway to guide the containers from said delivery conveyer and into the pockets, a star-wheel mounted adjacent the guideway and having teeth extending into the path of travel of the containers to thereby turn said star-wheel, a latch actuated by rotation of the drum to alternately extend into and out of the path of said star-wheel teeth to cause an intermittent rotative movement of the star-wheel and thus momentarily check each container until the respective pocket is in position to receive said container, and means for discharging and conveying the containers from the pockets.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 15th day of July, 1916.

STEFANO PITTALUGA.

Witnesses:
JAMES R. TOWNSEND,
WILLIAM N. KIRKBY.