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E. L. VINCENT, ADMINISTRATRIX.

WASHER COUNTER.

APPLICATION FILED FEB. 13, 1919.

1,350,755.

Patented Aug. 24, 1920.

2 SHEETS—SHEET 1.

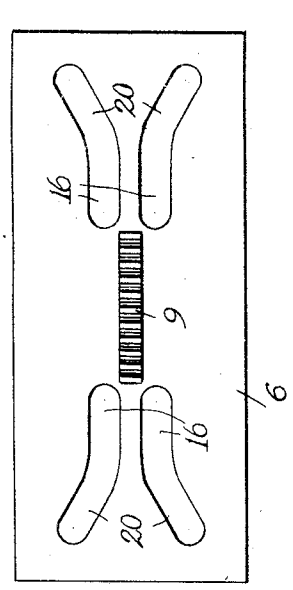


Fig. 3

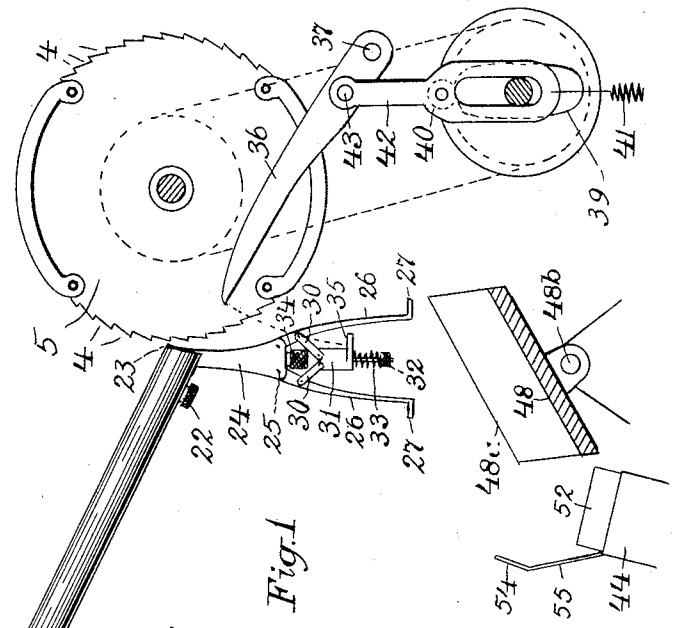


Fig. 1

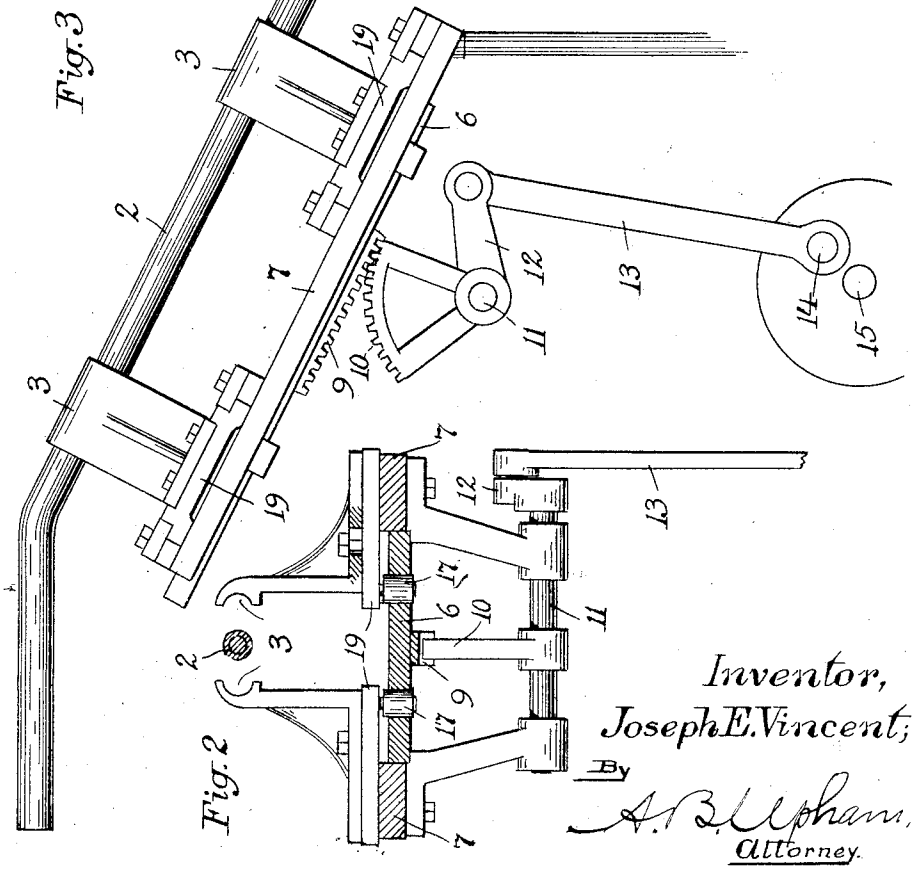


Fig. 2

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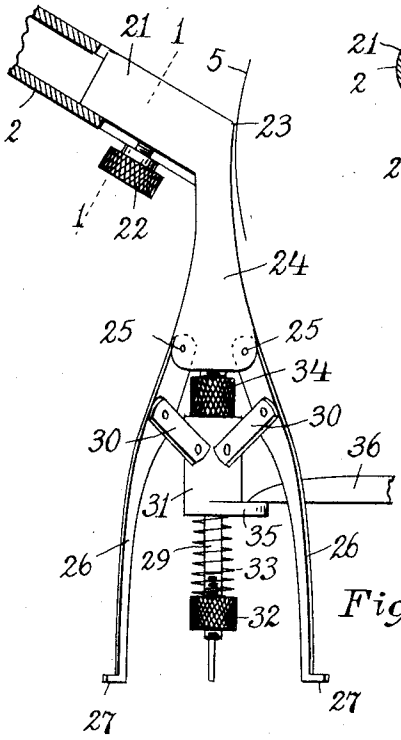


Fig. 4

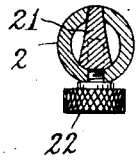


Fig. 5

Fig. 6

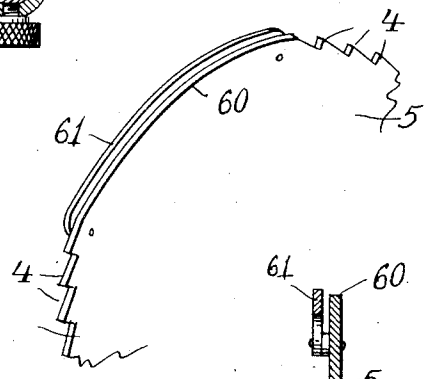


Fig. 7

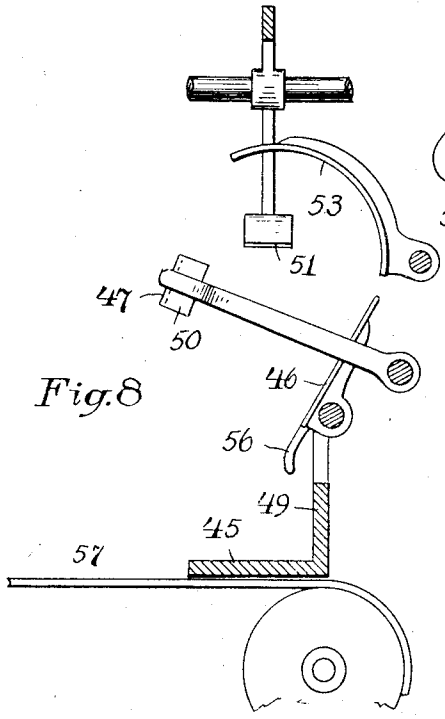


Fig. 8

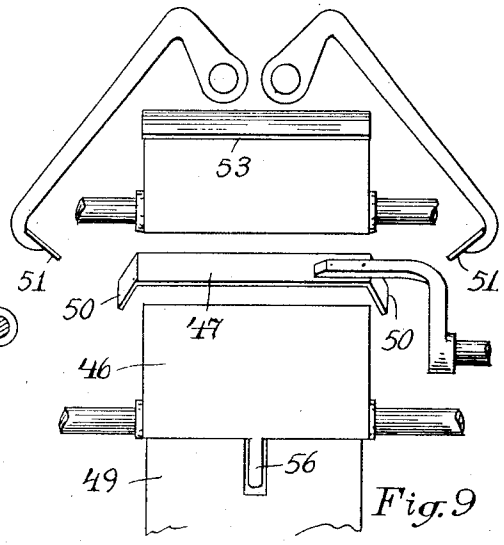


Fig. 9

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UNITED STATES PATENT OFFICE.

JOSEPH E. VINCENT, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO MISSAK MOVSESSIAN, OF CAMBRIDGE, MASSACHUSETTS; EDITH L. VINCENT ADMINISTRATRIX OF SAID JOSEPH E. VINCENT, DECEASED.

WASHER-COUNTER.

1,350,755. Specification of Letters Patent. Patented Aug. 24, 1920.

Application filed February 13, 1919. Serial No. 276,857.

To all whom it may concern:

Be it known that I, JOSEPH E. VINCENT, a citizen of the United States, and a resident of Cambridge, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Washer-Counters, of which the following is a full, clear, and exact specification.

In a previous patent granted me February 27, 1917, No. 1,217,372, I have disclosed means whereby a partially toothed disk counted and segregated rubber washers such as are used in sealing well known forms of glass jars, the washers being taken from radial rods revoluble at will into reach of the disk, and delivered to spring arms which temporarily held the growing pile of washers until the predetermined number had been accumulated.

In this present invention I have improved upon the counting disk by forming it with two sets of teeth so that a single revolution segregated two separate sets of washers. I have further improved the same by providing the un-toothed segments of the disk with a guard rail for preventing the washers from crowding down before acted upon by the counting teeth.

Instead of the turret type of washer feeding means, I have devised means whereby a single inclined rod can receive the washers upon one end and deliver them from the other end to the counter and a further improvement relates to the assembling device.

In the drawings forming part of this specification, Figure 1 is a side elevation of a machine embodying my improvements. Fig. 2 is a cross section of the rod and rod holding means. Fig. 3 is an under view of the gripper controlling plate. Fig. 4 is a side elevation of the grouping device nearly full size. Fig. 5 is a cross section on 1—1 in Fig. 4. Fig. 6 is a perspective view of a portion of the counting disk. Fig. 7 is a cross section of the same. Fig. 8 is a diagram illustrating in side elevation the box closing mechanism. Fig. 9 is a front elevation of the same.

The main feature of my invention consists of the inclined receiving and delivering rod 2 and the means for supporting it in a manner to permit the washers to pass from the end upon which they are first placed to the end from which they are taken. For the accomplishment of this apparently paradoxical task, I provide two spaced grippers each comprising two separable jaws 3, one pair of jaws being adapted to recede from the rod immediately after the other pair of jaws has gripped the same, so that there is always one pair at a time rigidly holding the rod. A quantity of washers having been strung upon the upper end of the rod, which is shown as horizontal, the mechanism is set in motion by which the upper pair of jaws move away from the rod far enough to permit the accumulated washers to pass between these separated jaws and to slide down against the lower pair of jaws by which the rod is now being supported.

Then the lower jaws separate after the upper ones have advanced and gripped the rod, and these washers slide on down to the lower end of the rod.

Close to the lower end of the rod is the counter disk 5 having two oppositely disposed sets of teeth 4 whereby the washers are one by one engaged and withdrawn from the rod.

The mechanism for the proper manipulation of the jaws 3 consists of a plate 6 reciprocated between the two parts 7 of a supporting table by any suitable means, as the rack teeth 9 on the under surface of the plate, and a segmental rack 10 supported on a shaft 11 and actuated through the medium of a lever arm 12, pitman 13, crank pin 14 and driving shaft 15. This shaft may be actuated continuously but slowly, or it may be adapted to be clutched in at will.

The plate is formed with two pairs of slots 16 entered by friction rolls 17 projecting from the jaws or from the slides 19 on which the jaws are adjustably mounted. The slides being laterally slidable and the slots 16 formed with angularly disposed portions 20, the longitudinal movements of the plate give the desired lateral shifting of the jaws. As shown in Fig. 3, the left hand ends of one pair of slots are widely separated, while their right hands are near together; but in the right hand pair, the left hand ends are near together and the right hands are widely separated. Consequently, a move of the plate in one direction will slide one pair of

jaws tightly into holding contact with the rod 2, and the other pair of jaws to a suitable distance away therefrom; and vice versa.

To the lower end of the rod 2 is attached the assembling device comprising a head 21 slidable within the end of the tubular rod 2 and held in position by a screw 22, as shown in Figs. 4 and 5, it being thus made adjustable in order to present its nose 23 at the exact distance from the periphery of the disk 5 required for the particular grade of washers to be counted and packed. Depending from this head 21 is a stem 24 sharply conical in outline and having pivoted to its base at 25 a plurality of slender legs 26, each leg having a toe 27 projecting outwardly from its lower end.

A spindle 29 descends centrally from the stem 24 having a collar slidable thereon, a link 30 being pivoted to each leg 26 and to this collar 31. The lower part of the spindle is threaded and provided with a knurled nut 32, and between this nut and the collar is a helical spring 33 whereby the collar is yieldingly pressed upward and the legs outward to their normal position illustrated in Fig. 4. Between the collar 31 and the under surface of the conical stem 24 is a knurled nut 34 turning in a threaded section of the spindle 29 and serving to limit the upward play of the collar and hence the outward spread of the legs 26. By screwing this nut 34 up or down, the legs are adjusted to fit washers of various diameters.

To release an accumulated number of washers from their support on the toes 27, the collar 31 is provided with a lip 35 disposed to be struck by an arm 36 pivotally supported at 37 and adapted to be oscillated by any suitable means, as a cam 39 acting twice against an antifriction roll 40, a tension spring 41, and a bar 42 pivotally attached to the arm 36 at 43. The movable end of the arm swings from its position where it will not interfere with the descending washers, to a point where it will sufficiently depress the collar 31 to centralize the legs 26 and thereby permit the pile of washers to descend to a device for guiding them into a carton 44.

This guiding device consists simply of an inclined table 48 having side wings 48^a, preferably mounted on an axis 48^b to permit angular adjustment. When the pile of washers drop upon this table, they slide therefrom into the open mouth of a carton 44. The filled carton is then moved to mechanism by which it is closed, such mechanism being illustrated in Figs. 8 and 9. As the carton stands upon the shelf 45, with the tilting back 46 vertical, the clasping device 47 swings down and inward, pressing the carton snugly against the back 46 and 49, the inclined wings 50 coming against the carton's sides and centering it laterally. Immediately following this action, the two hands 51 swing toward each other against the side-flaps 52 of the carton and flex them horizontally inward, and then the curved plate 53 swings downward engaging first the cover-flap 54 and bending it down, at the same time flexing the cover 55 and carrying the flap 54 down and into the carton between the latter's front and back and the edges of the flaps 52 until the cover is snugly in position. The carton being now fully closed, the tilting back 46 is given a sudden swing to the position shown in Fig. 8, so that its finger 56 gives the carton a sudden thrust that slides it from the shelf 45 onto the moving apron 57 by which it is carried away to any suitable receptacle.

I find that sometimes the soft rubber washers crowd in between the nose 23 and the uncut sections of the periphery of the counter-disk 5 and the latter rotates by them. To prevent this, I provide these uncut portions 60 with a rail 61 curved concentric therewith but spaced therefrom laterally, and slightly projecting beyond the disk, as shown in Figs. 6 and 7. Thus shielded, the outermost washer will be given a slight torsional pressure which effectually prevents its being crowded down until reached by the first of the teeth 4 to reach it.

What I claim is:

1. The combination with means for manipulating apertured articles, of a rod having one end presented to said means and having its other end disposed for receiving the apertured articles, means being provided for causing the articles to travel from the receiving end to the delivery end of said rod, and supporting means for said rod consisting of two spaced devices adapted alternately to engage and support said rod, whereby the apertured articles can travel along said rod past each of said devices while the other is suporting the rod.

2. The combination with means for manipulating annular articles, of a rod having one end presented to said means and having its other end disposed for receiving the annular articles, the rod having means for causing the articles to traverse from its receiving end to its delivery end, and supporting means for the rod consisting of two sets of gripping devices each acting to grip the rod and holding it while the other releases it.

3. The combination with means for manipulating annular articles, of an inclined rod presenting its lower end to said means, and supporting means for the rod consisting of two sets of gripping jaws each acting to grip the rod and hold it while the other releases it.

4. The combination with means for manipulating articles having holes through

them, of an inclined rod presenting its lower end to said means, and two pairs of laterally slidable jaws each pair having means for sliding its jaws away from the rod immediately after the other pair has moved into engagement with the rod, the apertured articles to be strung upon the elevated end of the rod and to descend to the lower end from which they are removed.

5. The combination with means for the manipulation of apertured articles, of an inclined rod presenting its lower end to said means, a supporting table, a plate slidably supported by the table and having means for its reciprocation in a direction parallel with said rod, the plate having two pairs of oppositely inclined slots, two pairs of jaws slidably supported by said table, each having an antifriction roll entering one of said slots, whereby said rod is rigidly supported at all times but permits said apertured articles to slide from end to end thereof.

6. A washer accumulating device comprising a supported stem, a plurality of legs pivoted thereto at their upper ends each having a toe outwardly projecting from its lower end, a spindle depending from said stem, a collar slidable on said spindle, links joining said legs and collar to give in and out movements of the legs by vertical movements of the collar, a nut turning on the lower end of the spindle, a helical spring presing betwen said nut and collar, and a nut turning on the spindle above the collar for adjusting its uppermost position and hence the outward swing of the legs.

7. A washer accumulating device comprising a supported stem, a series of legs pivoted to the lower portion of said stem, a resiliently supported member linked to said legs and having a projecting lip, a pivoted striking arm adapted to descend upon said lip, and means for forcibly swinging said arm.

8. The combination with a movable member having teeth along a predetermined section thereof, of an inclined tubular rod presenting its lower end close to said teeth, a head slidable within the lower end of said tubular rod, a clamping screw for fastening said head in a predetermined position relative to the said teeth, and an accumulating device supported by said head.

9. A washer counting device comprising an edged member having teeth for a portion of said edge, a rail attached to said member close to but spaced from the untoothed portion of said edge, means supporting a quantity of washers adjacent said member, and means for moving said member in contact with said washers whereby said teeth remove said washers until the untoother portion of the member reaches them and said rail prevents further feeding of the washers accidentally.

10. A washer counting device comprising a rotative disk having teeth for a portion of its periphery, a rail curved concentric with said disk and attached thereto spaced from the non-toothed portion of its periphery, the outer surface of said rail being farther from the center of the disk than is the latter's periphery.

In testimony that I claim the foregoing invention, I have hereunto set my hand this 4th day of February, 1919.

JOSEPH E. VINCENT.