C. E. McMANUS
CORK ROD PACKING MACHINE
Filed Dec. 1, 1923

Fig. 3.

Charles E. McManus Inventor
By his Attorney

Fig. 4.
Patented Mar. 30, 1926.

UNITED STATES PATENT OFFICE.

CHARLES E. McMANUS, OF NEW YORK, N. Y.

CORK-ROD-PACKING MACHINE.

Application filed December 1, 1923. Serial No. 678,086.

To all whom it may concern:

Be it known that I, CHARLES E. McMANUS, a citizen of the United States, residing at the 5 borough of Manhattan, in the city, county, and State of New York, have invented certain new and useful Improvements in Cork-Rod-Packing Machines, of which the following is a specification, reference being had therein to the accompanying drawings, which form a part thereof.

My invention relates to cork rod packing machines, and more particularly to a machine of this type employing a group of circularly arranged reciprocatory plungers or rams adapted to act successively and progressively in relation to a sequence of tubes, but upon succeeding charges of cork composition successively delivered in measured quantities to each tube, until the desired volume of compacted cork composition has been accumulated in each tube.

Herefore in this art it has been the common practice in machines where plungers are circularly arranged, to have the compacting plungers of progressively decreased or graduated lengths to compensate for the progressively increasing volume of compacted cork composition within a tube, as it has movement with relation to succeeding plungers.

In a machine embodying my present invention, instead of using packing plungers of graduated lengths, I employ a sequence of plungers which are of uniform length, substantially so, and secure the desired variance in the effective stroke of succeeding plungers by a construction which will successively lower the tubes to a predetermined extent to compensate for the amount of cork composition progressively accumulated therein. This mechanism is also so constructed that each tube is brought in the operative relation to succeeding plungers or rams and will receive a charge of cork composition prior to each compacting stroke of the plunger mechanism, which cork composition will be delivered in the path of movement of a plunger so as to ensure its timely delivery to the tube.

The measuring mechanism by which cork composition, in measured quantities is delivered to the tube, is so constructed as to afford ample time for the cork composition to flow from a supply hopper to within the measuring device, and is so actuated in synchronism with the support for the tubes as to ensure the timely delivery of the cork composition and avoid the possibility of the scattering of this composition about the machine.

The cork composition is delivered to the tubes progressively through tubular openings, through which the compacting plungers or rams are adapted to pass before entering the tubes, and these openings are of progressively increased length in the direction of movement of the tubes during the packing operation, so that the discharge end thereof will be in the same relation to a tube irrespective of a change in the vertical level of the top of the tube due to its progressive movement away from the plungers during the operation of the machine in delivering and compacting succeeding charges of cork composition therein.

It is essential to support each tube in a manner which will permit the development of the desired compacting pressure by the plungers or rams while at the same time permitting the gradual step by step descent of the tube necessary to compensate for the increasing volume of cork composition accumulated therein, and defining the extent of this downward movement so as to secure the desired modified effectiveness of the stroke of the plunger with relation to the contents of the tube.

The mechanism for imparting intermittent rotary movement to the measuring mechanism and the tube carriers is controlled by a crank wheel mechanism for imparting reciprocatory movement to the plungers, and is so constructed as to secure positive movement of the tubes and of the measuring device, and to limit this movement to that required to secure the desired alignment of the measuring device, the openings leading therefrom and discharging into the tubes, and the tubes themselves, thus avoiding all possibility of interference by said measuring device and said tubes with the plungers or securing the desired axial alignment of these parts with the plungers.

In a machine embodying my invention, a fairly high speed is permitted in the machine and the likelihood of the production of imperfect rods is reduced to a minimum.

The invention consists primarily in a cork rod packing machine embodying therein a sequence of plungers of substantially uniform length, means reciprocating said plungers, a rotatable carrier for a plurality of tubes
whereby said tubes respectively may be 5 brought into operative relation to succeeding plungers, supports for said plungers whereby each of said tubes will be held against downward movement with a plunger, said supports being of decreasingly graduated heights with relation to the plungers whereby the tubes with each actuation of said carrier will be permitted to descend from one of said supports to the other, and means for delivering a measured quantity of cork composition to within each tube while upon each of said supports; and in such other novel features of construction and combination of parts as are hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawings,

Fig. 1 is a front view of a machine embodying my invention;

Fig. 2 is a vertical section through the machine;

Fig. 3 is a plan view with a part of the plunger mechanism and of the cork composition hopper broken away; and

Fig. 4 is a diagrammatic view illustrating the mode of operation of the machine.

Like numerals refer to like parts throughout the several views.

In the embodiment of my invention shown in the drawings, the main frame of the machine consists of a base 10, having a circular formation at the top thereof and a central tubular column 11 concentric with the circular portion of said base. The column 11 is hollow as shown, the interior of the column being finished to permit a tubular slide 12 to have reciprocatory movement therein.

Mounted within the base 10 is a crank wheel 13 connected by means of a pitman 14 with the piston-like slide 12, so as to impart reciprocatory movement to said slide and the parts carried thereby. The crank wheel 13 is driven from any desired source of power, as the pulley driven shaft 15, the small gear 16 carried thereby and the internal gear 17 upon the wheel 13. This internal gear is preferably used to permit the utilization of the crank wheel for imparting an intermittent rotary movement to the tube carrier and the cork composition feeding mechanism in a manner which will be more fully referred to hereinafter.

The central column 11 has secured there to, above the base 10, a fixed cork composition hopper 18 of any desired capacity to permit the continuous operation of the machine and convenience in the renewal of the supply of the cork composition to said hopper. This hopper has associated therewith a cork composition feeding mechanism by which a measured quantity of cork will be delivered to each tube being packed, prior to each compacting operation of the plunger mechanism of the machine.

Rotatably mounted upon the central column 11 is a tube carrier consisting of a drum 19 having a sequence of circularly arranged sleeves 20 arranged in vertical alignment with the circular top of the base 10, and the discharge port of the hopper 18, each sleeve preferably being supported by a vertical flange 21 upon the drum 19. The number of sleeves 20 will vary in accordance with the number of charges required to fill each tube, the operation of the machine requiring that a tube shall be moved intermittently throughout the entire circumference of the base 10 during each filling operation.

The top of the base 10 has thereon a sequence of supports 22 of gradually decreasing heights, the highest of these supports being shown at 22° and the lowest at 22°. In the forms of the invention shown, the supports 22 are a sequence of abrupt steps, the height of each of these steps corresponding with the depth of each compacted charge in each tube.

Carried by the hopper 18, or secured to the central column 11 in any other desired manner, is a depending circular flange 23 having a sequence of steps 24 upon the lower face thereof, said steps also being of decreasing height with relation to the plungers and to the base, the first of these steps being shown at 24° and the last of them at 24°, the stop 24° being immediately above the support 22°, and the stop 24° being immediately above the support 22°. The purpose of these stops is to check upward movement of the various tubes with the plungers.

Passing vertically through the flange 23 and opening downwardly of the stops 24 are a sequence of channels 25 of progressively decreasing length in the direction of movement of the drum 19. Cork composition is delivered to said channels by the measuring mechanism and discharged therefrom in part by flowing under gravity, and in part by the action of the plunger thereon, into that tube which, as the moment, is in a position to receive such cork composition from any particular channel 25. These channels are so positioned in relation to each other that they will be axially aligned with the respective sleeves 20 when these sleeves come to rest after each feeding movement of the carrier. The top of each channel or passage 25 is adapted to receive cork composition from a measuring device receiving rotary movement with the tube carrier, this measuring device being adapted to receive cork composition from discharge ports in the bottom of the hopper 18, which ports preferably are elongated as shown more particularly in Fig. 3 so as to ensure a filling of this measuring device with the cork composition as it receives rotary movement with relation to succeeding
channels and the succeeding plungers, to be hereinafter referred to.

The measuring device proper, comprises an annulus 26, having a sequence of pockets 27 therein, said pockets being opened at both ends and being spaced apart a distance corresponding with the distance between succeeding channels 25. This annulus is carried by the drum 19 as shown more particularly in Fig. 2 of the drawings and the said pockets 27 are in axial alinement with the sleeves 20.

The lower end of the drum 19 is outwardly extended as shown at 28, and within this extended portion is a sequence of spaced, anti-friction rollers 29 adapted to be successively engaged by a cam about the perimeter of the crank wheel 13. This cam has a circular portion 30 adjacent one edge of the wheel, and extending for approximately 270° in the same plane, a short portion 31 parallel with the portion 30, spaced away therefrom a distance substantially coinciding with the diameter of each anti-friction roller of the series 28, and a connecting oblique section 32 connecting one end of the section 30 with one end of the section 31. The riser 32 is so positioned as to operate with an anti-friction roller of the sequence 28 only when the conditions about the machine are such as to permit rotation of the drum 19 and the sleeves 20, and annulus 26 carried by and rotatable with said drum. This construction is to ensure exactitude in the relative timing of the plungers, of the cork composition feeding mechanism, and of the tube holding sleeves 20.

The circular portion 30 of this cam serves to maintain the carriers and the measuring mechanism in accurate alinement with the various plungers upon each stroke of the plunger mechanism.

Carried by the top of the slide 12 is a top frame or spider 33, having a sequence of downwardly extending plungers or rams 34, all of which are of substantially the same length. It will be readily understood that precision as to the length of these plungers is not essential when the material to be worked upon is cork composition, which possesses sufficient resiliency to compensate for any slight variance in the lengths of different plungers. The various plungers 34 are responsive in axial alinement with a channel or passage 25 so as to pass there-through upon the down stroke of the plunger, and also through a pocket 27 of the annulus 26 which, at the time, are in axial alinement with the channel or passage, and the plungers. Since the sleeves 20 are successively brought into axial alinement with each channel or passage 25, and are always in alinement with the same pocket 27, it is apparent that each plunger upon each down stroke will pass through a discharge port of the hopper 18, a pocket 27, and a channel 25 into a tube 35 carried by a sleeve 20, and during this operation will not only assist gravity in delivering cork composition to within the tube as required, but will compact the charge of cork composition thus delivered, although upon succeeding down strokes this operation will be in relation to succeeding tubes and not the same tube.

The length of each plunger 34 is such that when the piston-like slide 12 is in its uppermost position, the lower ends of the plungers will be positioned sufficiently above the bottom of the hopper 18 to prevent cork composition to accumulate between the plunger and the annulus 26, in any material volume, while at the same time affording ample time for the progressive advancement of the various tubes to be packed or in process of being packed, and of the annulus 26.

The slide or spider 33 is so constructed as to possess sufficient rigidity to avoid flexing as a result of the resistance encountered by each plunger during the compacting operation, the plungers themselves being held against flexure by the bearing 36 and supported by the pendant flange 23 and annulus 26.

Between the supports 29 and 23 is a recess 36, adapted to permit tubes 35 to drop from the sleeves 20 as these sleeves are progressively positioned above said recess, thus affording clearance for the insertion of a fresh, empty tube in the sleeve 20 from which the filled tube has just dropped.

The various supports 22 terminate in advance of the parallel co-operating stops 24, a distance slightly greater than the diameter of the tubes, so as to permit the tubes to fall from the stops upon the succeeding support, following the initial rotary movement of the tube carriers upon each actuation thereof.

The operation of the herein described cork rod packing machine is substantially as follows:

In starting a run of the machine, a tube is inserted in each of the sleeves 20 as it is passing above the recess 36, and held in position until the tube passes upon the support 22 there being sufficient clearance adjacent the stop 24 to permit the tilting of the tube when placing it within said sleeve. When the tubes are thus inserted, the various plungers will be toward their uppermost position as shown in Figs. 1 and 2. To avoid waste of cork composition, it is desirable to fill all of the sleeves 20 with tubes before granular cork is delivered to the hopper 18. Upon the continued rotation of the crank wheel 13, from the position shown in Figs. 1 and 2, the plungers 34 will receive slight upward movement, and at the same time the short section 31 of the cam upon said crank wheel passes from engagement between succeeding wheels of the sequence.
28 and the oblique section 32 by engagement with said wheels, will impart a rotary movement to the drum 19 to the various sleeves 20 carried thereby, and to the annulus 26, to an extent to bring the various pockets 27 of said annulus, and each sleeve 20, progressively into relation to succeeding plungers 34.

As the desired quantity of movement of the drum 19 is completed, the section 30 engages between the succeeding wheels of the sequence 28, and holds the drum in this position, the short section 31 of said cam being thus positioned where it will enter between succeeding rollers as the rotary movement of the wheel 13 brings this section into a position where it will again engage said sequence of rollers.

As the annulus 26 is thus receiving movement from above one passage 25 toward the adjacent passage 25, cork will flow from the hopper 18 through the elongated discharge port of said hopper, the close fit between the top of this annulus and the bottom of the hopper preventing the escape of any cork composition except to within the pocket.

As the annulus 26 and the various tubes 35 come to rest, the opening in each tube will be in vertical alinement with a channel or passage 25 and with a pocket 27, and in axial alinement with the plunger 34, cooperating with each channel 25.

When the parts are in this position, cork will flow by gravity from each pocket 27 through each channel 25 in the flange 24, and into each tube, the quantity of this cork being determined by the capacity of the pocket 27, although the slight distance between the plungers 34 and the top of the annulus 26, when the plungers are in their uppermost position, will tend to slightly increase this volume, but to a definite extent.

As the crank of the wheel 13 passes the vertical center, the head or spider 33 will be moved downward slowly, so as to exert the minimum compacting pressure upon cork in the pockets 27, due to a possible sluggish action of this cork composition and a tendency of the thinly coated cork granules to adhere to the walls of the pocket. This downward movement, however, will assist gravity in rapidly discharging cork composition from the annulus to each passage 25, and thereto from the various tubes 35.

It will be noted that before each down stroke of the plungers, which move as a unit, tubes in the tube carrier will be positioned upon different vertical planes by the supports 22, so that notwithstanding that the plungers are all of substantially the same length, the effectiveness of their stroke in compacting the cork, is controlled by the position of the several tubes. Hence, when the first charge of cork is delivered to the various tubes, the only charge which will be compacted is that which is in the tube 35 seated upon the support 22, and that all tubes in advance of this tube will be imperfectly filled and packed during the initial cycle of operations of the machine. When the machine, however, has completed this initial cycle, this filled tube will be discharged from the machine, and the tubes 75 that pass through the machine following this particular tube will also be completely filled and packed, so that thereafter each actuation of the carrier will deliver one completely filled and packed tube as a result of the progressive action of the successive plungers 34.

The condition of packing is illustrated diagrammatically in Fig. 4 of the drawings, which shows the position of each tube in the machine, and the packing relation of the plungers in relation thereto, showing the progressive filling and packing of each tube and the operative relation of the various plungers to all of the tubes in the machine, upon one stroke of the plunger.

With each down stroke of the plungers 34, the supports 22 will check downward movement of the tubes 35 with the plungers. As the plungers ascend, however, there is a tendency, by reason of frictional engagement between the plunger and the tube, to raise the tube, which necessitates the employment of the stops 24. By staggering the stops 24 in relation to the supports 22, however, clearance is afforded for an initial movement of the tube supports following the escape of the plunger from within the tube, to permit the tubes to descend by gravity to the succeeding support 22 without interference from the vertical fall between succeeding stops.

Following each up stroke of the plunger 34, the cams 30, 31 and 32 will impart the desired fixed quantity of rotary movement to the sleeves 20 and the annulus 26, the section 30 preventing any possible overruning of the drum 19 and the parts carried thereby.

The reciprocatory piston-like slide 12 will ensure the desired accurate rectilinear movement of the plungers, and is also a construction which facilitates lubrication. The use of plungers of substantially the same length facilitates uniformity in the actuation of the cork composition feeding mechanism, and secures a well balanced condition in the plunger mechanism. At the same time, all plungers will pass through the pockets 27 simultaneously, so that there are uniform pressure conditions as to all of the plungers upon each down stroke thereof.

It is not my intention to limit the invention to the precise details of construction shown in the accompanying drawings, it be-
ing apparent that such details are subject to wide variation, while still preserving the essential characteristic of the invention, which resides in the sequence of plungers of substantially uniform length, and that arrangement by which the tubes, after having each charge compacted therein, are caused to descend to a lower level in relation to the plunger and to an extent approximating the height of a compacted charge of cork composition in each tube.

Having described the invention, what I claim as new and desire to have protected by Letters Patent, is:

1. A cork rod packing machine embodying therein a sequence of plungers of substantially uniform length, means reciprocating said plungers, a rotatable carrier for a plurality of tubes whereby said tubes respectively may be brought into operative relation to succeeding plungers, supports for said plungers whereby each of said tubes will be held against downward movement with a plunger, said supports being of decreasingly graduated heights with relation to the plungers, whereby the tubes with each actuation of said carrier will be permitted to descend from one of said supports to the other, stops of decreasingly graduated heights above said supports respectively and in operative relation to the tops of the tubes, whereby only limited upward movement of the tubes with the plungers is permitted, and means for delivering a measured quantity of cork composition to within each tube while upon each of said supports.

2. A cork rod packing machine embodying therein a sequence of plungers of substantially uniform length, means reciprocating said plungers, a rotatable carrier for a plurality of tubes whereby said tubes respectively may be brought into operative relation to succeeding plungers, supports for said plungers whereby each of said tubes will be held against downward movement with a plunger, said supports being of decreasingly graduated heights with relation to the plungers, whereby the tubes with each actuation of said carrier will be permitted to descend from one of said supports to the other, stops of decreasingly graduated heights above said supports respectively and in operative relation to the tops of the tubes, whereby only limited upward movement of the tubes with the plungers is permitted, and means for delivering a measured quantity of cork composition to within each tube while upon each of said supports.

3. A cork rod packing machine embodying therein a sequence of plungers of substantially uniform length, a slide for actuating said plungers, a rotatable carrier for a plurality of tubes whereby said tubes respectively may be brought into operative relation to succeeding plungers, a crank wheel, a member carrying all of said plungers, a pitman connection between said crank wheel and said slide, co-operating means upon said carrier and actuated by said crank wheel, whereby said carrier is intermittently actuated while said plungers are adjacent their uppermost position, supports for said plungers whereby each of said tubes will be held against downward movement with a plunger, said supports being of decreasingly graduated heights with relation to the plungers, whereby the tubes with each actuation of said carrier will be permitted to descend from one of said supports to the other, stops of decreasingly graduated heights with relation to the plungers, whereby the tubes with each actuation of said carrier will be permitted to descend from one of said supports to the other, means for delivering a measured quantity of cork composition to within each tube while upon each of said supports.

4. A cork rod packing machine embodying therein a sequence of plungers of substantially uniform length, a slide for actuating said plungers, a rotatable carrier for a plurality of tubes whereby said tubes respectively may be brought into operative relation to succeeding plungers, a crank wheel, a member carrying all of said plungers, a pitman connection between said crank wheel and said slide, co-operating means upon said carrier and actuated by said crank wheel, whereby said carrier is intermittently actuated while said plungers are adjacent their uppermost position, supports for said plungers whereby each of said tubes will be held against downward movement with a plunger, said supports being of decreasingly graduated heights with relation to the plungers, whereby the tubes with each actuation of said carrier will be permitted to descend from one of said supports to the other, stops of decreasingly graduated heights above said supports respectively and in operative relation to the tops of the tubes, whereby only limited upward movement of the tubes with the plungers is permitted, and means for delivering a measured quantity of cork composition to within each tube while upon each of said supports.

5. A cork rod packing machine embodying therein a sequence of plungers of substantially uniform length, a slide for actuating said plungers, a rotatable carrier for a plurality of tubes whereby said tubes respectively may be brought into operative relation to succeeding plungers, a crank wheel, a member carrying all of said plungers, a pitman connection between said crank wheel and said slide, co-operating means upon said carrier and actuated by said crank wheel, whereby said carrier is intermittently actuated while said plungers are adjacent their uppermost position, means whereby movement of said carrier is arrested and it is maintained in a fixed position with relation to said plunger following each actuation thereof, by said last named co-operating means, supports for said plungers whereby each of said tubes will be held against downward movement with a plunger, said supports being of decreasingly graduated heights with relation to the plungers, whereby the tubes with each actuation of said carrier will be
permitted to descend from one of said supports to the other, and means for delivering a measured quantity of cork composition to within each tube while upon each of said supports.

6. A cork rod packing machine embodying therein a sequence of plungers of substantially uniform length, a slide for actuating said plungers, a rotatable carrier for a plurality of tubes whereby said tubes respectively may be brought into operative relation to succeeding plungers, a crank wheel, a member carrying all of said plungers, a pitman connection between said crank wheel and said slide, a sequence of spaced members carried by said carrier, a cam upon said crank wheel comprising a long circular section adapted to normally hold said carrier against movement in a fixed position with relation to said plungers, a short section parallel therewith and spaced therefrom, and an oblique connecting section, whereby said carrier is intermittently actuated once during each reciprocatory movement of said plungers and while they are adjacent their uppermost position, supports for said plungers whereby each of said tubes will be held against downward movement with a plunger, said supports being of decreasingly graduated heights with relation to the plungers, whereby the tubes with each actuation of said carrier will be permitted to descend from one of said supports to the other, and means for delivering a measured quantity of cork composition to within each tube while upon each of said supports.

7. A cork rod packing machine embodying therein a sequence of plungers of substantially uniform length, means reciprocating said plungers, a rotatable carrier for a plurality of tubes whereby said tubes respectively may be brought into operative relation to succeeding plungers, supports for said plungers whereby each of said tubes will be held against downward movement with a plunger, said supports being of decreasingly graduated heights with relation to the plungers, whereby the tubes with each actuation of said carrier will be permitted to descend from one of said supports to the other, a hopper adapted to receive cork composition and having a downwardly presented outlet, a rotatable annulus having a sequence of pockets therein through which said plungers are adapted to pass, means whereby channels of progressively increasing lengths are formed leading from adjacent said annulus to a point adjacent the tops of the tubes in said carrier respectively, and means intermittently actuating said annulus simultaneously with, and to the same extent as, said carrier.

8. A cork rod packing machine embodying therein a sequence of plungers of substantially uniform length, means reciprocating said plungers, a carrier including therein a rotatable member having a sequence of spaced sleeves thereon each adapted to receive a tube, means actuating said rotatable member whereby said tubes respectively may be brought into operative relation to succeeding plungers, supports for said plungers whereby each of said tubes will be held against downward movement with a plunger, said supports being of decreasingly graduated heights with relation to the plungers, whereby the tubes with each actuation of said carrier will be permitted to descend from one of said supports to the other, a hopper adapted to receive cork composition and having a downwardly presented outlet, a rotatable annulus having a sequence of pockets therein in axial alignment with said sleeves respectively, said plungers being adapted to pass through said pockets, a fixed pendant flange intermediate said annulus and said supports, said flange having therein a sequence of channels of progressively increasing lengths leading from adjacent said annulus to a point adjacent the tops of the tubes in said carrier respectively, said flange having formed thereon a sequence of stop surfaces adjacent the lower ends of the channels therein respectively, and means intermittently actuating said annulus simultaneously with, and to the same extent as, said carrier.

9. A cork rod packing machine embodying therein a base having an annular top on which is formed a sequence of supports of decreasingly graduated heights, a hollow cylindrical column centrally of said annular base, a cylindrical slide mounted in said column, a sequence of annularly arranged plungers of substantially uniform length carried by said slide, said plungers being concentric with, and positioned above, said supports respectively, a crank wheel, a pitman connection between said crank wheel and said slide, a rotatable carrier for a plurality of tubes whereby said tubes are intermittently moved from one of said supports to the succeeding support of the next lower level to bring tubes progressively into operative relation to each of said plungers, cooperating means upon said carrier and actuated by said crank wheel for intermittently actuating said carrier while said plungers are adjacent their uppermost position, and means for delivering a measured quantity of cork composition to within each tube while upon each of said supports.

10. A cork rod packing machine embodying therein a base having an annular top on which is formed a sequence of supports of decreasingly graduated heights, a hollow cylindrical column centrally of said annular base, a cylindrical slide mounted in said column, a sequence of annularly arranged plungers of substantially uniform length carried by said slide, said plungers being
concentric with, and positioned above, said supports respectively, a crank wheel, a pitman connection between said crank wheel and said slide, a rotatable carrier for a plurality of tubes, a cam upon said crank wheel comprising a long circular section adapted to normally hold said carrier against movement in a fixed position with relation to said plungers, a short section parallel therewith and spaced therefrom, and an oblique connecting section, whereby said tubes are intermittently moved from one of said supports to the succeeding support of the next lower level to bring tubes progressively into operative relation to each of said plungers, co-operating means upon said carrier and actuated by said crank wheel, for intermittently actuating said carrier while said plungers are adjacent their uppermost position, and means for delivering a measured quantity of cork composition to within each tube while upon each of said supports.

11. A cork rod packing machine embodying therein a base having an annular top on which is formed a sequence of supports of decreasingly graduated heights, a hollow cylindrical column centrally of said annular base, a cylindrical slide mounted in said column, a sequence of annularly arranged plungers of substantially uniform length carried by said slide, said plungers being concentric with, and positioned above, said supports respectively, a crank wheel, a pitman connection between said crank wheel and said slide, a rotatable carrier for a plurality of tubes, a cam upon said crank wheel comprising a long circular section adapted to normally hold said carrier against movement in a fixed position with relation to said plungers, a short section parallel therewith and spaced therefrom, and an oblique connecting section, whereby said tubes are intermittently moved from one of said supports to the succeeding support of the next lower level to bring tubes progressively into operative relation to each of said plungers, co-operating means upon said carrier and actuated by said crank wheel, for intermittently actuating said carrier while said plungers are adjacent their uppermost position, a hopper adapted to receive cork composition and having a downwardly presented outlet, a rotatable annulus having a sequence of pockets therein in axial alignment with said sleeves respectively, said plungers being adapted to pass through said pockets, a fixed pendant flange intermediate said annulus and said supports, said flange having therein a sequence of channels of progressively increasing lengths leading from adjacent said annulus to a point adjacent the tops of the tubes in said carrier respectively, said flange having formed thereon a sequence of stop surfaces adjacent the lower ends of the channels therein respectively, and means intermittently actuating said annulus simultaneously with, and to the same extent as, said carrier.

12. A cork rod packing machine embodying therein a sequence of plungers of substantially uniform length, means reciprocating said plungers, a member forming a sequence of supports corresponding in number with said plungers and positioned below said plungers respectively, said supports being of progressively decreasing heights, an intermittently operative carrier adapted to impart movement to a sequence of tubes between reciprocations of said plungers whereby said tubes are permitted to descend from one support to the other, and means for delivering a measured quantity of cork composition to within each tube while upon each of said supports.

In witness whereof I have hereunto affixed my signature, this 28th day of November, 1923.

CHARLES E. McMANUS.