May 7, 1929. B. NAGY 1,711,962

MACHINE FOR MOLDING CORK RODS

Filed May 3, 1927 3 Sheets-Sheet 1

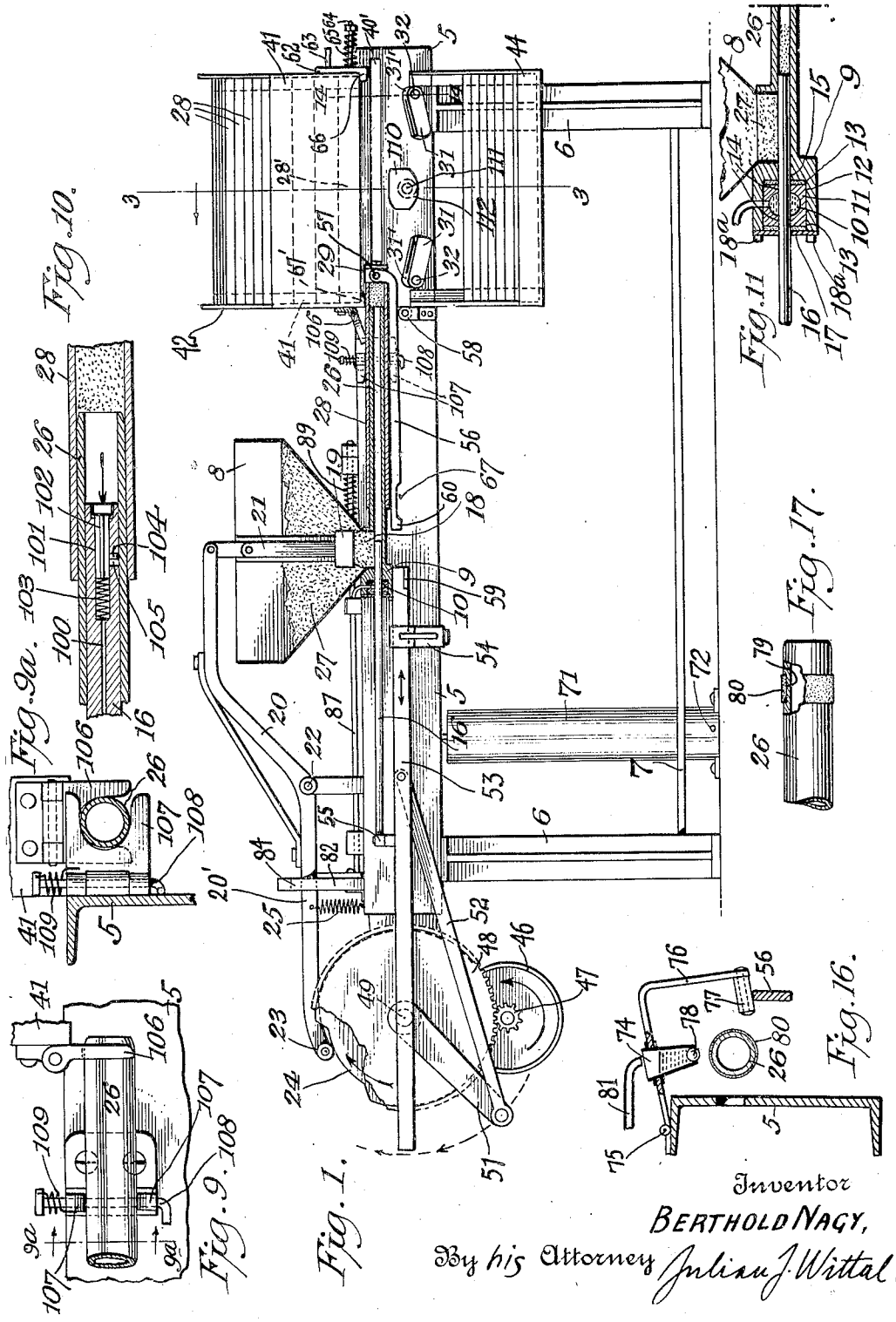


Fig. 1.

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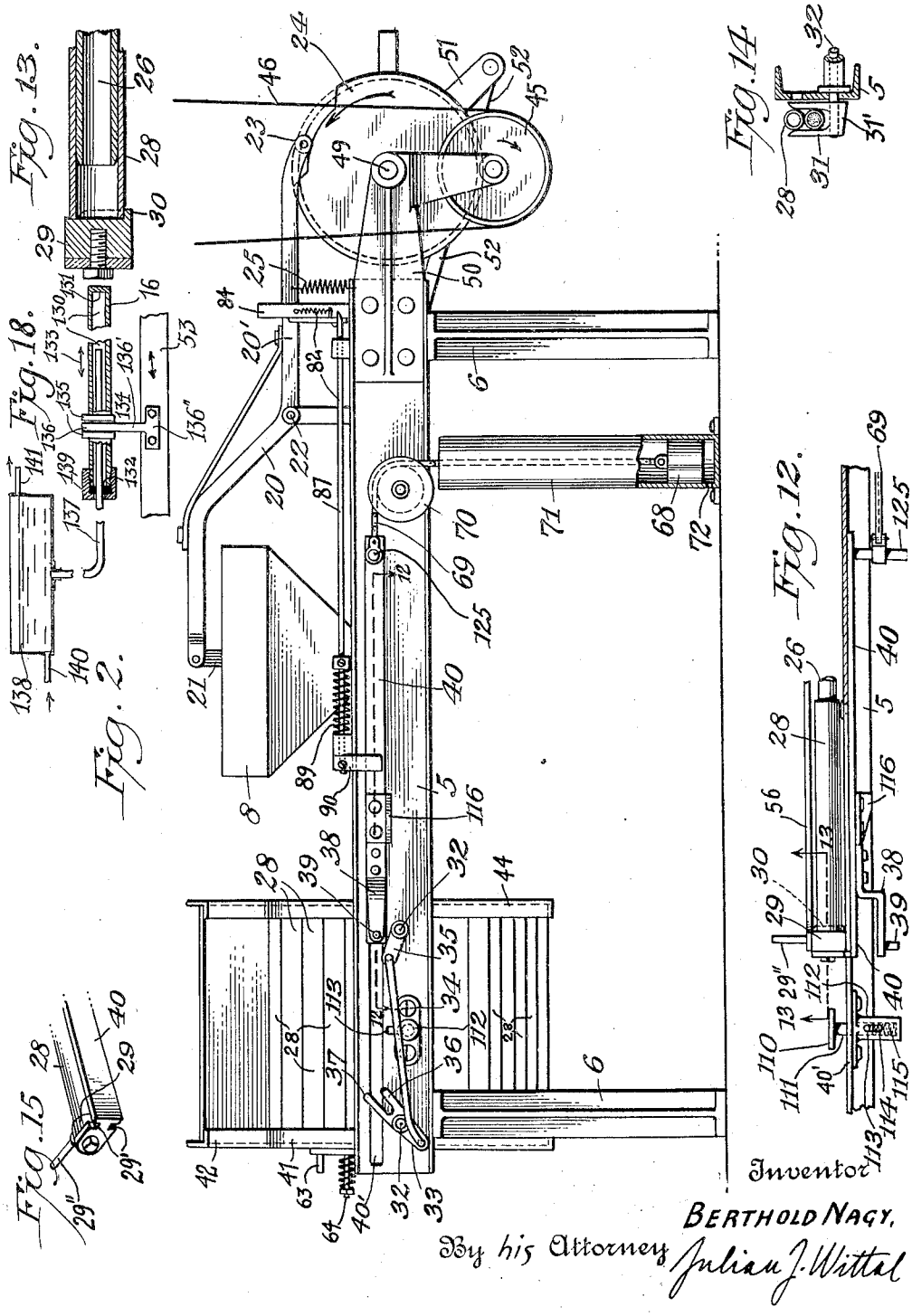


Fig. 13.

Fig. 18.

Fig. 2.

Fig. 14.

Fig. 12.

Fig. 15

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Fig. 3.

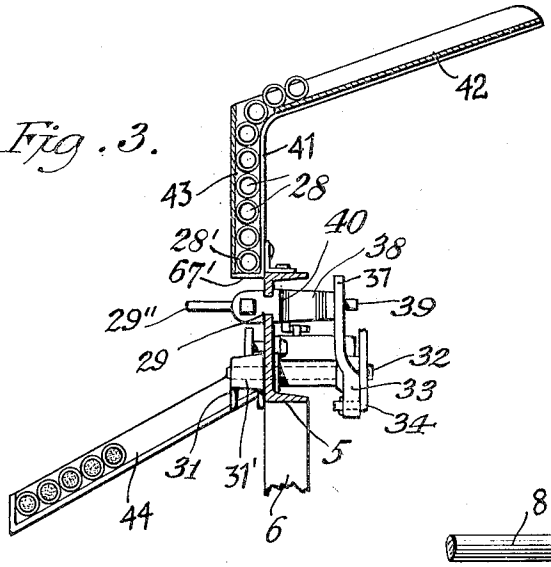


Fig. 4.

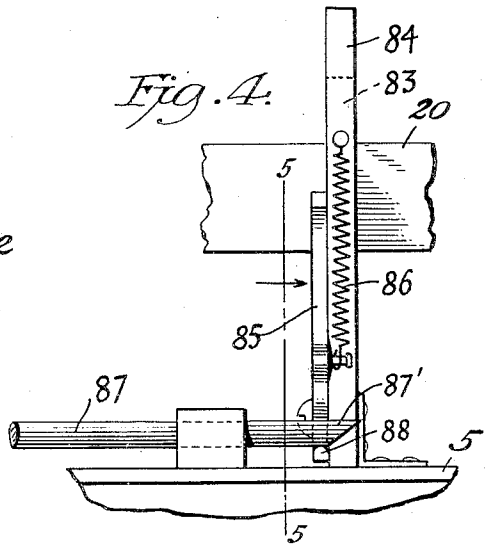


Fig. 5.

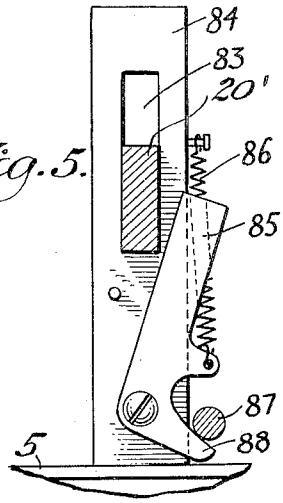


Fig. 6.

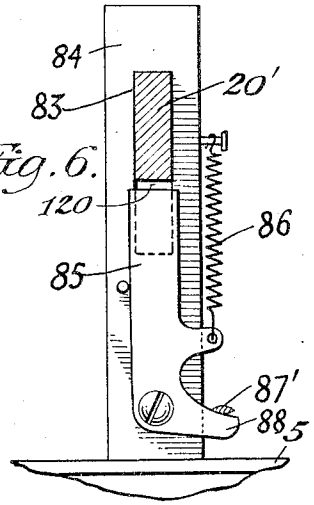


Fig. 7.



Fig. 8.



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Patented May 7, 1929. 1,711,962

UNITED STATES PATENT OFFICE.

BERTHOLD NAGY, OF NEW YORK, N. Y.

MACHINE FOR MOLDING CORK RODS.

Application filed May 3, 1927. Serial No. 188,460.

This invention relates to a simplified machine for forming rods or lengths of predetermined cross-sectional contour composed of a plastic mass of granulated cork and a suitable appropriate, or desired binder.

The object of my invention is to simplify the construction of and obviate some of the objections, which are present in the machines now in use for this purpose.

Prominent features of my invention reside in a horizontally arranged supporting frame of simple channel iron construction, whereon the entire mechanism is supported, said mechanism including a fixed feed tube, a hopper containing the mixed granular cork and binder forming the plastic mass.

Means are provided for feeding this mass in intermittent charges into the path of a reciprocatory plunger having uniform working strokes which plunger forces the successive charges at each forward stroke, through a fixed feed tube and into a mold tube supported thereby, said mold tube, as the charges are compressed therein, recedes in step movements backward or outward along its supporting feed tube until it is filled, when its rear end will drop off the supporting guide tube and drop to a delivery chute after which an empty mold tube will be delivered from a hopper into alignment with the feed tube, after which a weight controlled slide frame forces the empty tube backward on over said feed tube, prior to repeating the packing or filling operation.

A further feature of my present invention resides in novel means for lubricating the packing plunger and other means for applying a lubricant to the outside of the fixed feed tube which in the operation of the machine is transferred in a thin film, to the interior of the mold tube when it is forced back on over the feed tube prior to beginning a new filling or packing operation.

A further feature of the invention may be found in novel automatic means whereby the feed of material from the hopper may be stopped when a full mold tube is discharged and an empty one moved into operative position on the feed tube after which the feed is continued until another change of mold tubes is necessary.

The invention also contemplates the employment of a dash pot or other device for cushioning the end of the backward movement of the parts when feeding an empty mold tube into position on the feed tube which movement may be accomplished by the dropping of a weight attached to a chain passing over a pulley.

In order that the invention may be clearly understood and readily carried into effect the same will now be described more fully with reference to the accompanying drawings illustrating a preferred embodiment thereof, in which:—

Fig. 1 is a side elevation of my improved cork-rod molding machine, the position of the parts being at near the beginning of a mold tube filling operation or when one or two charges of the feeding plunger has been compressed into the outer end of the mold tube and it has moved outwardly on its supporting feed tube a distance corresponding to the depth of the compressed cork therein.

Fig. 2 is an elevation of the machine looking at the opposite side from Fig. 1.

Fig. 3 is a partial vertical cross-section through the feeding tube rack and the frame of the machine, the section being taken about on the line 3—3 of Fig. 1.

Fig. 4 is a detail view showing the means employed for partially stopping the feed of cork material from the hopper when a full mold tube is discharged and an empty one placed in charging position.

Fig. 5 is a detail side view, with parts in section, of the mechanism shown in Fig. 4.

Fig. 6 is a view similar to Fig. 5, but with the parts in the locked position.

Fig. 7 is a detail perspective view of a mold tube filled with cork material.

Fig. 8 is a detail perspective view of a finished cork rod from which thin disks are sliced for use as seals or for other purposes.

Fig. 9 is a fragmentary detail showing oppositely disposed folding yokes adapted to straddle the rear or free end portion of the filling tube to support it against lateral strains and movement, to assure perfect registration with the forward ends of the empty mold tubes as they are successively urged forward on over said filling tube in position for receiving the cork material.

Fig. 9^a is a detail section on the line 9^a—9^a of Fig. 9, showing the position of the locking yokes when no mold tube is in place.

Fig. 10 is a fragmentary longitudinal section through the forward end of the feeding plunger and filling tube and the rear end portion of the mold tube showing valved means

for breaking a vacuum which may exist in the filling tube between the packed mass of cork and the forward end of said plunger as it recedes or is withdrawn backwardly under the hopper to pick up a new charge of cork material.

Fig. 11 is an enlarged sectional elevation showing more clearly the construction of the oil chamber arranged in the casting supporting the cork material containing hopper.

Fig. 12 is a fragmentary horizontal plan view of the parts about on the line 12—12 of Fig. 2.

Fig. 13 is an enlarged fragmentary section through the follower head and portions of the tubes.

Fig. 14 is a detail cross section on the line 14—14 of Fig. 1, showing one of the receiving forks turned up to receive a filled mold tube and an empty tube on top and in alignment with the feed tube on which it is pushed by the return of the follower head from its outermost position.

Fig. 15 is a fragmentary perspective showing a portion of a slide bar, the follower head attached to a forward bend thereof and a portion of a mold tube resting against said head.

Fig. 16 is a detail section showing lubricating means whereby the forward portion of the filling tube may may be oiled or greased to reduce friction in the movements of the mold tube thereon.

Fig. 17 is a detail showing the forward end portion of the filling tube provided with a packing which may be employed to receive oil or other lubricant from the device shown in Fig. 16, while Fig. 18 shows a method to cool the operating plunger of my machine.

Referring to the drawing I provide a frame 5, preferably comprising a channel bar of rather heavy construction which is supported as by legs 6, braced at the bottom by a tie rod 7.

A hopper 8, may be mounted on a casting 9, secured to the frame 5. In the form of construction shown, I may provide an oil chamber 10 (Fig. 11) formed in a block 11, carried in a recess 12, in the rear end of the casting 9. Felt pads 13, are placed at opposite sides of the block and are perforated to register with bores 14, in the block which in turn register with a bore 15, in the casting through which a reciprocatory feeding plunger 16 operates, as will be hereinafter set forth.

The block 11, and its pads are confined in the recess 12, by a cover plate 17 fastened by bolts or screws 18ᵃ.

The hopper 8, has a delivery mouth 18, into which a plunger head 19, is intermittently projected to force a charge of the contained granular cork material into the mouth of the hopper and into the path of the feed plunger 16.

The feeding movements of the plunger head 19 may be accomplished by providing a lever 20, pivoted to a stem 21, of the head, and to an upright at 22, on the frame 5, the remote or free end of the lever carrying a roller 23, normally held in contact with a face cam 24, by a pull spring 25.

Communicating with hopper mouth 18, is a fixed horizontally arranged feed tube 26, through which charges of the cork material 27 are fed by the plunger 16, into a mold tube 28, mounted to slide on said feed tube. The mold tube is in contact at its rear end with a follower head 29, provided with a short ledge 30 (see Fig. 13) on which the end of the said tube rests, and as the successive charges from the plunger 16, are compressed in the mold tube, it will be given a backward step movement corresponding to the amount of cork charge forced in but will retain these advancing step positions as each charge is introduced, by reason of the pack cork expanding against the end of the fixed feed tube, thus forming a packed cork area gradually increasing in length until the mold tube is entirely filled when its front end will be pushed clear of the rear end of the feed tube and will drop into a pair of swinging receiving forks 31, mounted on rock shafts 32, passing backwardly through the frame 5, and there controlled by a forked trip lever 33, on one rock shaft, connected by a link 34 to a short arm 35 on the opposite rock shaft 32.

The fork of the lever 33 comprises a short finger 36 and a longer finger 37, and its operation of tilting the tube receiving forks into the operative position, as at Fig. 14, of the drawings, to receive a full tube and an empty tube on top of it to align the same with the feed tube prior to the engagement of the follower head 29 therewith, a bracket 38 (Fig. 12) having a trip pin 39, will engage the longer finger 37 when slide bar 40, carrying said bracket and the follower head 29, is drawn in step movements to the left in Fig. 2, by the movements of the mold tube filling mechanism. After engaging said long finger, pin 39 will continue its movement to the left and rock the shafts 32 to swing the fork 31 on the reverse side of the beam 5 upwardly at which time the filled tube will be dropped into the forks and an empty one on top of it, as before stated. The empty molding tubes 28 are stored in a hopper rack structure 41 (Fig. 3) having a backwardly inclined top portion 42 to facilitate the filling of the hopper rack, the empty tubes 28 being placed on the incline 42 and automatically rolling down on top of the vertical column 43 of empty tubes as the lower ones of the same are gradually fed into the machine.

The filled molding tubes are dropped on a delivery chute 44 by means to be more fully described presently.

The driving mechanism of the machine con-

sists of a pulley 45 receiving power through belt 46 from any appropriate power source and having a pinion 47 on its shaft meshing with a gear 48. The shaft 49 of the gear is journaled in a bearing extension 50 of the beam 5 and carries a crank 51 keyed thereto. A driving rod 52 connects the crank with a sliding bar 53 arranged on the front of or plunger side of the machine, guided in a suitably formed guide 54 in front of the rest of the driving mechanism described so as to clear them in its motion.

The stamping plunger 16 is secured to this sliding rod 53, as at 55, and executes in its reciprocatory movements the feeding and stamping operations described hereinbefore resulting in a step wise backward movement of the molding tube 28.

The follower head 29 which runs in the slot 40′ of beam 5 and reaches over from bar 40 on the rear side of the machine to the front side of it to receive the back end of molding tube 28, carries rocking lever or bar 56 pivoted to it as at 57 and running on a roller 58 arranged on the front side of beam 5. The sliding bar 53, communicating the driving power to the machine, has a laterally and forwardly projecting lug 59 at the bottom side of its rear end and normally while the filling operations proceed, lug 59 will avoid the front end 60 of lever 56, the same being kept above it by the roller 58, when, however, tube 28 is about filled and the head 29 nears the limit of its backward step movements, that is near the right hand end of the machine, as seen in Fig. 1, a recessed portion 67 of lever 56 will reach above the roller 58 and the lever will drop, placing end 60 in the path of lug 59 on reciprocating rod 53. End 60 will be hit by the lug 59 and the head 29 given a final quick jerking movement towards the right, freeing the filled tube 28, the other end of which has just been pushed off the fixed feed tube 26 and permitting the filled tube 28 to drop into the forks 31, between the branches of said forks which at this moment have been turned upwardly through the medium of pin 39 on the reverse side of the follower head 29 and through its sliding rod 40, as has been more fully explained hereinbefore.

Follower head 29 at the same time will also hit a vertical supporting plate 62, at the farthest rear end of the machine arranged on tube rack 41, and slidable on pins 63 and 64 and push it backwards against the spring 65. The lowermost empty tube 28′ normally rests on a ledge 66 of this plate 62 and it will now drop therefrom in front of the follower head 29. The other forward end of the lowermost empty tube 28′ rests on a downwardly inclined narrow support 67′ on rack 41 and will automatically drop therefrom, the whole tube 28′ being now on top of the tube 28 just filled.

Upon the return of follower head 29 (to be described presently) the new tube 28′ will be in exact alignment with the feed tube 26 and will be pulled forwardly thereover, when the operation of filling the tube will again begin.

The return of the follower head will be executed by a weight 68 attached to the rod 40 on the rear of the machine (Fig. 2) through a chain 69 passing over pulley 70 secured to beam 5.

The weight 68, operates in a cushioning cylinder or dash pot 71, preferably provided with a small hole or holes 72, near its bottom so that the weight 68, when descending in the act of drawing the bar 40 and its associated parts forwardly to start a new filling operation, will be retarded in its descent by the air cushion beneath, thus avoiding a sudden stop or jolt of the parts.

When the rod 40 is thus returned to its forward position, the pin 39 will engage the shorter fork branch 36 (Fig. 2) and will return the forks 31 to their normal positions below the horizontal (Fig. 1) and the filled tube just removed may drop off the inclined hubs 31′ of the forks 31 onto the delivery chute 44. (Fig. 3.)

In order that the feeding of the cork material from the hopper 8 be nearly suspended while the filled tube is being exchanged by a new empty one, I employ the feed locking device indicated in general by the numeral 82 in Figs. 1 and 2 and shown more in detail in Figs. 4, 5 and 6.

The portion 20′ of the feed lever 20 normally operates in an unhindered manner in slot 83 of yoke 84, secured to the top of beam 5 towards the front end of it.

A pivoted locking lever 85 is however arranged on yoke 84 and a spring 86 has the tendency to pull said locking lever into a vertical position as shown in Fig. 6, when it will be underneath the feed lever 20 and will permit only a slight movement thereof so that a very small amount of cork material is fed from the hopper and carried back by the feed plunger 19 to make sure the mold tube in position is completely filled. Normally locking lever 85 is prevented from being pulled in the vertical position but is kept in its inclined position shown in Fig. 5, leaving free play to the member 20′, by a rod 87 engaging a projection 88 on the lever 85. Rod 87 is slidably guided on the top of beam 5 and is normally pushed into its position shown in Fig. 5, by spring 89.

When however follower head 29 reaches the rear limit of its travel and tubes 28 are being exchanged, a handle 125 on the front end of the bar 40 will contact with the head 90 on rod 87 and said rod will be withdrawn from engagement with projection 88, only the thinnest extreme end 87′ thereof remaining in contact with it thus permitting lever 85 to partially lock the feed member 20 while the tubes are exchanged, as shown in Fig. 6. When the weight 68 returns the mechanism

into its initial position rod 87 will again free the member 20, starting its return travel on projection 88 through the contact of its thin extremity 87′ with the same.

Follower head 29 may have two recesses or slots 29′ (Fig. 15) wherewith to be guided in beam 5, and a handle 29″ by which the whole mechanism may be slowly operated in a manual manner for the purpose of starting, observations, and tests.

In the operation of the feeding plunger 16 within the feeding tube 26, a vacuum has been found to exist in the space between the packed cork mass and the end of said plunger as it is moved back for a new feeding stroke. To destroy this vacuum I may provide the plunger 16 with a central bore 100 (Fig. 10.) extending throughout its length and terminating near the front end in an enlarged portion 101, in which a valve 102 backed by a spring 103 operates to close the bore 100 at the forward or packing stroke and to open said bore at the backward stroke so that the space existing between the packed cork and plunger may be in communication with the outer air.

The outward movement of the spring pressed valve 102, may be limited by a pin 104, extending into a slot 105, in the feeding tube 26.

To effectively hold the rear or free end of the feeding tube 26 against lateral movement, I provide a pair of folding yokes 106 and 107 arranged to operate at right angles to each other and to normally straddle the feeding tube as shown in Figs. 9 and 9^a, of the drawings. The yoke 106 is hinged to the tube rack 41 and normally hangs down over the said tube by gravitation, but the other yoke 107, is carried on the frame 5, and is hinged on a vertical pin 108 and urged outwardly in a horizontal plane by a spring 109.

It will be apparent that when an empty mold tube 28 is pushed on over the end of the feeding tube, the yokes will be swung up or folded backwardly as shown in Fig. 1, but will return to the operative position when the said mold tube is forced off the filling tube in the operation of the machine.

In the operation of packing the cork mass into the mold tubes it sometimes happens that a tube not quite filled, will be prematurely forced off the filling tube by reason of the spongy or springy nature of the packed cork mass, and for catching or supporting said unfilled tube momentarily, I provide a head 110, carried on a shank 111, passing back through the frame 5 and into a sleeve or housing 112. (Figs. 1, 2 and 12.)

This shank carries a vertically extended pin 113 operating in a slot 114, and is backed by a spring 115, normally urged said shank and its head forwardly as shown in Fig. 12.

When the filled tubes are delivered at the proper time, they momentarily rest on the head 110, which now is caused to recede or be drawn rearwardly by a cam 116, carried on the slidably bar 40, acting on pin 113, and as the head clears the filled tube it drops into the forks 31, which have now been moved into a vertical position after which the said filled tubes are delivered to the chute as above set forth.

It will be noted in Fig. 6 of the drawings that the lock member 85 when in its operative position does not contact with the portion 20′ of the plunger feed bar 20, leaving a space 120, to permit of a very short feeding movement of the plunger head 19 in the hopper 8, thus a small amount of cork material is fed into the feed tube 26 and carried forward by the feed plunger to make sure each tube is filled before dropping from the feed tube, should the timing or coaction of the parts become disorganized.

It will be understood that suitable general changes may be made in my machine the subject matter of the present invention, without departing from the spirit and scope thereof as defined in the appended claims.

For such a change, in Figs. 16 and 17 I illustrate a novel lubricating device for the outside feed tube 26 and the inside of molding tube 28 which may be employed if desired. The oiling device proper 74 is hingedly supported, as at 75, on the beam 5 about opposite and above the rear end of the filling tube 26. The hinged frame 76 carrying the oil pot 74 is supported at its lower end by roller 77 running on pivoted lever 56.

When said lever is in its normal higher position on roller 58, the oil pot 74 is in its raised position shown in Fig. 16, and its bottom opening is closed by the ball 78.

As soon, however, as the lever 56 drops to its lower position, its recess 67 reaching the roller 58, frame 76 will drop downwardly and ball 78 hits the end of tube 26, the opening of the oil pot will be freed, and a small amount of oil deposited on tube 26. On the return of lever 56 a few moments later the oil pot will again be raised and closed.

Tube 26 has a circular recess 79 opposite the oil device and a felt packing 80 is placed therein to receive the oil which will thereafter be automatically spread over the inside and outside of the respective tubes 28 and 26 facilitating the filling operations and the subsequent removal of the ready cork rod from the tube 28 by reducing friction.

The oil may steadily be refilled into pot 74 through pipe 81 leading to a standard drip oiling device.

Another important modification of my device is illustrated in Fig. 18, in a semi-diagrammatic manner, this change in the device being intended to be primarily incorporated in the preferred embodiment of my machine. With most binders and cork composition masses namely the working plunger 16 is ex-

posed to rather heavy friction and it usually will become warm or hot after a short running of the machine. In most cases therefore, I do not intend to make this plunger in the simple form shown in Fig. 1, neither will I make it in the form indicated in Fig. 10, which is intended only to such cases where a release of the vacuum described hereinbefore is desired, but form it as shown in Fig. 18 and will provide a very simple and efficient, automatic water cooling for the same.

In said Fig. 18, the plunger 16 is made hollow, having a cylindrical inside space 130 therein, closed at the working end 131 of the plunger but open at the other end 132. The plunger will go through the same reciprocating motions as described before, and indicated by arrow 133, and will preferably receive said motion from the rod 53, as before described, but through the device indicated in general by the numeral 134 and consisting of two rings 135 secured on the hollow plunger 16, a ring 136 caught between said two fixed rings 135 and embracing said plunger while being connected to the rod 53 by a stem 136′ and a plate 136″, bolted to said rod. A smaller pipe 137 projects into the inside of hollow plunger 16 to a suitable distance therein, the inside end of the same being open while the other end is connected to the bottom of a tank or water reservoir 138, preferably set somewhat higher than the rest of the mechanism. The open end 132 of the plunger 16 carries a packing device 139 of any suitable standard form through which the pipe 137 may slidably and tightly move.

In the operation of my machine upon the inward stroke of the plunger 16 water will be drawn from the reservoir through the pipe 137 into the space 130 and will efficiently cool the plunger 16 by filling the hollow inside space therein, whereas upon the return or outward movement of the plunger part of the water will be forced out of its space 130 back into the reservoir, as will be obvious by inspecting Fig. 18. This way at every play of the plunger cool water will be drawn thereinto and the warmed up water expelled therefrom. The water will somewhat cool in the reservoir by this play alone, but to accelerate its cooling, a small steady stream of cold water may be provided through pipe 140 flowing into the reservoir, while the warm water may be steadily removed therefrom through another pipe 141 near the top thereof.

The various pipes in Fig. 18 are shown as portions of them being broken away, to indicate larger distances than the space in said drawing would have permitted to fully show.

What I claim as new is:—

1. A machine for molding cork rods embodying a hopper means for feeding granular cork mixed with a suitable binder to provide a plastic mass, a fixed tube communicating with said hopper, a mold tube slidable thereon, gravity means for urging said mold tube toward said hopper and means for intermittently forcing charges of the plastic mass through the feed tube and into the mold tube and compressing the same against the action of said gravity means, and means for stopping the feed from the hopper when a full mold tube is being discharged and an empty one substituted therefor.

2. A machine for molding cork rods embodying a hopper means for feeding granular cork mixed with a suitable binder to provide a plastic mass, a fixed tube communicating with said hopper, a mold tube slidable thereon, gravity means for urging said mold tube toward said hopper and means for intermittently forcing charges of the plastic mass through the feed tube and into the mold tube and compressing the same against the action of said gravity means, and means for stopping the feed from the hopper when a full mold tube is being discharged and an empty one substituted therefor, said first named means comprising a pivoted plunger head and a cam to operate the same.

3. A machine for molding cork rods embodying a hopper means for feeding granular cork mixed with a suitable binder to provide a plastic mass, a fixed tube communicating with said hopper, a mold tube slidable thereon, gravity means for urging said mold tube toward said hopper and means for intermittently forcing charges of the plastic mass through the feed tube and into the mold tube and compressing the same against the action of said gravity means, and means for stopping the feed from the hopper when a full mold tube is bing discharged and an empty one substituted therefor, said gravity means comprising a suspended weight and a sliding frame controlled thereby.

4. A machine for molding cork rods embodying a hopper means for feeding granular cork mixed with a suitable binder to provide a plastic mass, a fixed tube communicating with said hopper, a mold tube slidable thereon, gravity means for urging said mold tube toward said hopper and means for intermittently forcing charges of the plastic mass through the feed tube and into the mold tube and compressing the same against the action of said gravity means, and means for stopping the feed from the hopper when a full mold tube is being discharged and an empty one substituted therefor, said means for forcing and compressing the plastic mass charges into the mold tube comprising a reciprocating plunger bar and a crank and pitman rod for operating the same.

5. A machine for molding cork rods embodying a hopper means for feeding granular cork mixed with a suitable binder to provide a plastic mass, a fixed tube communicating with said hopper, a mold tube slidable

thereon, gravity means for urging said mold tube toward said hopper and means for intermittently forcing charges of the plastic mass through the feed tube and into the mold tube and compressing the same against the action of said gravity means and means for stopping the feed from the hopper when a full mold tube is being discharged and an empty one substituted therefor, said means for stopping the feed from the hopper comprising a slidable trip bar and a spring pulled dog.

6. A machine for molding cork rods embodying a horizontally arranged frame, a hopper containing granulated cork and a suitable binder, a supporting member for said hopper, said member having an oil chamber and a registering bore, a plunger rod operating through the chamber and bore, a feed tube fixed to said supporting member and through which the plunger operates, in combination with a mold tube carried on said feed tube and actuated outwardly in step movements on the feed tube by the successive filling charges delivered by the plunger, and means for discharging a filled mold tube and for substituting an empty one therefor.

7. A machine for molding cork rods, embodying a horizontally arranged frame, a hopper containing granulated cork and a suitable binder, a supporting member for said hopper, said supporting member having an oil chamber and a registering bore, a plunger rod operated through the chamber and bore, a feed tube fixed to said supporting member and through which the plunger operates, in combination with a mold tube carried on said feed tube and actuated outwardly in step movements on the feed tube by the successive filling charges delivered by the plunger, and means for discharging a filled mold tube and for substituting an empty one therefor, said means including oscillating catch forks, tripping mechanism, and a weight controlled sliding frame.

8. A machine for molding cork rods, including in combination with mold tubes, a horizontally arranged frame provided with a longitudinally arranged slot, a bar slidable along said slot, a counter weight attached to said bar by a chain operating over a pulley, a brake cylinder to receive said weight, a hopper containing granulated cork and a binder, a member to support said hopper and provided with an oil chamber and a bore, a feed tube fixed to the supporting member and in registering with said bore, a plunger operating through the oil chamber and bore into said feed tube, a follower head engaging the outer end of each successive empty mold tube to move it into operative position on the feed tube, an extension from said bar passing through the slot in said frame to connect the follower head thereto, means for feeding the cork material into the path of said plunger, means for stopping said feed when a mold tube is filled, said feed tube having a groove near its free end with a felt packing therein, and means for intermittently applying a lubricant to said packing.

9. A machine for molding cork rods including in combination with mold tubes a horizontally arranged frame provided with a longitudinally arranged slot, a bar slidable along said slot, a counter weight attached to said bar by a chain operating over a pulley, a brake cylinder to receive said weight, a hopper containing granulated cork and a binder, a member to support said hopper and provided with an oil chamber and bore, a feed tube fixed to said member and in register with said bore, a plunger operating through the oil chamber and bore and into said feed tube, a follower head engaging the outer end of each successive empty mold tube to move it into operative positon on the feed tube, an extension for said bar passing through the slot in said frame to connect the follower head thereto, means for feeding the cork material into the path of said plunger means for stopping said feed when the mold tube is filled, said feed tube having a groove near its free end, a felt packing therein, and means for intermittently applying a lubricant to said packing, said means for feeding the cork material from the hopper including a vertically operating plunger head, a rock bar pivoted thereto and to a post on the frame, and a cam engaging a roller at the free end of the said bar.

10. A machine for molding cork rods including in combination with mold tubes, a horizontally arranged frame provided with a longitudinally arranged slot, a bar slidable along said slot, a brake element carried by said bar including a chain and a pulley over which said chain operates and a weight suspended on said chain, a hopper containing granulated cork and a binder, a casting supporting the hopper and provided with an oil chamber and a bore, a feed tube fixed to the casting and in register with said bore, a plunger operating through the oil chamber and bore and into said feed tube, a follower head engaging the outer end of each successive empty mold tube to move it into operative position on the feed tube said bar having an extension passing through the slot in said frame to connect the follower head thereto, means for feeding the cork material into the path of said plunger, means actuated by the movement of the oil brake cylinder for stopping said feed when a mold tube is filled, said feed tube having a groove near its free end, a felt packing therein, and means for intermittently applying a lubricant to said oil packing, said lubricating means including a hinged frame, an oil cup carried thereby the

oil cup being closed at the bottom by a ball valve, a roller on said frame, and a trip bar engaging said roller.

11. In a machine for molding cork rods having a hopper, a feed tube to receive and carry mold tubes, a reciprocating feed plunger and means for operating the same to feed cork material into said mold tube, foldable members adapted to engage the end of said feed tube at right angles to each other to brace the said end of said tube against movements.

12. In a machine for molding cork rods having a hopper, a feed tube to receive and carry mold tubes, a reciprocating feed plunger, and means for operating the same to feed cork material into said mold tube, foldable members adapted to engage the end of said feed tube at right angles to each other to brace the said end of said tube against movements, said members comprising hinged yokes straddling the said feed tube.

13. In a machine for molding cork rods having a hopper, a feed tube to receive and carry mold tubes, a reciprocating feed plunger and means for operating the same to feed cork material into said mold tube, foldable members adapted to engage the end of said feed tube at right angles to each other to brace the said end of said tube against movements, said members comprising hinged yokes straddling the said feed tube, one of said yokes operating in a vertical and the other in a horizontal plane.

14. In a machine for molding cork rods having a hopper, a feed tube to receive and carry mold tubes, a reciprocating feed plunger and means for operating the same to feed cork material into said mold tube, said feed plunger being provided with a longitudinal bore and a valve in said bore for the purpose set forth.

15. In a machine for molding cork rods having a hopper, a feed tube to receive and carry mold tubes, a reciprocating feed plunger, and means for operating the same for feeding cork material into said mold tube, a movable head arranged at the rear end of the machine to momentarily support filled mold tubes, and means at the back of the machine for drawing said head backwardly to drop said tubes.

16. In a machine for molding cork rods having a hopper, a feed tube to receive and carry mold tubes, a reciprocating feed plunger, and means for operating the same to feed cork material into said mold tube, a movable head arranged at the rear end of the machine to momentarily support filled mold tubes, and means for drawing said head backwardly to drop said tubes, said means comprising a cam contacting with an extension of said head.

17. In a machine for molding cork rods, having a hopper, a feed tube to receive and carry mold tubes, a reciprocating feed plunger, and means for operating the same to feed cork material into said mold tube, a movable head to temporarily support a filled tube having a shank passing backwardly through the machine frame, a pin on said shank, a spring back of the end of said shank, and means engaging said pin to move said head backwardly.

18. In a machine for molding cork rods, the combination with mold tubes, of a feed tube adapted to support successive mold tubes in telescopic relation, means for urging said mold tubes forwardly onto said feed tube, means for conveying and packing successive charges of cork material into said mold tubes to insure uniform compression of said material, said mold tubes having a backward step movement corresponding to each successive charge packed, and means for changing mold tubes at the end of a packing operation.

19. In a machine for molding cork rods, the combination with mold tubes, of a hopper, a feed tube extending backward from said hopper, hinged devices engaging the free end of the feed tube to hold the same against lateral movement, gravity means for urging successive mold tubes onto said feed tube, a plunger for feeding and packing cork material into said mold tube, and means for changing the mold tubes after a packing operation.

20. In a machine for molding cork rods, the combination with mold tubes, of a hopper, a feed tube extending backward therefrom, devices for locking the free end of said tube against side movement when a mold tube is to be passed thereon, consisting of a gravity controlled fork and a spring controlled fork arranged at right angles thereto, means for feeding material from said hopper and for packing the same into said mold tubes and means for changing said mold tubes following a packing operation.

21. In a machine for molding cork rods, the combination with mold tubes, of a hopper to hold plastic cork material, a frame to support said hopper, a feed tube projecting from said hopper, means for urging successive mold tubes onto said feed tube when engaged by said devices, said means including a head supporting the rear ends of said mold tubes, a slidable bar, a pin extending through a slot in said frame and connecting said head and bar and a weight flexibly connected to the bar.

22. A machine for molding cork rods in connection with mold tubes, embodying a frame, a hopper for holding a plastic mass of cork material, a fixed feed tube communicating with the interior of said hopper, devices for supporting the free end of said feed tube, mechanism for discharging the cork material from said hopper, a gravity controlled head for urging successive mold tubes onto the feed tube and retaining them in operative position thereon, means for feeding cork material into said mold tubes, means for nearly

suspending the feeding action of parts at and near the end of a charging operation and means for changing the mold tubes.

23. A machine for molding cork rods in connection with mold tubes, embodying a frame, a hopper thereon, a feed tube on said hopper devices for centering the free end of the feed tube, discharging mechanism partially within said hopper, a head to feed and hold the mold tubes, a feed locking device to nearly suspend the action of said discharging mechanism at and near the end of a filling operation, means for feeding cork material into said mold tubes and means for changing the same at the end of a filling operation.

24. A machine for molding cord rods in connection with mold tubes, embodying a frame, a hopper, a feed tube, on said hopper discharging mechanism partially within the said hopper, yielding means for feeding and retaining the mold tubes on said feed tube, feed locking means for almost if not quite suspending the action of the said discharging mechanism at and near the end of a filling operation, said feed locking means including a spring actuated rod, a yoke, a spring pulled locking lever thereon and operated by the movement of said rod.

25. A machine for molding cork rods in connection with mold tubes, a frame, a hopper means for discharging plastic cork material therefrom, said means comprising a plunger having a stem, a lever pivoted thereto and to an upright on said frame, a roller on the remote end of said lever, and a cam on which said roller bears, a feed tube, a head for feeding the mold tubes, a slide bar connected to said head, means for almost if not quite locking the action of said discharging means comprising a spring actuated rod, a yoke having a slot to receive the said lever, a spring pulled rocking device swingable over said slot and means on said slide bar for moving said rod to unlock the parts at start of a mold tube filling operation.

26. In a machine for molding cork rods, a receiving element for the usual mixture to make the rods therefrom, a tube to be filled by said mixture in communication with said receiving element, a plunger passing through said receiving element, and into the tube to be filled, filling the same by repeated charges; means to urge a tube to be filled against said plunger to press the same and recede in a step wise movement and means to release and remove the tube when filled and replace the same by an empty one.

27. In a cork rod molding machine as set forth in claim 26, said receiving means being in the form of a mold tube over which a tube to be filled is drawn.

28. In a cork rod molding machine as set forth in claim 26, means to insure comparatively small repeated charges for the tube to be filled, said means including a feed chamber having a passage in front of said plunger and into said receiving element and a member adapted to intermittently close and open said passage.

29. In a cork rod molding machine as set forth in claim 26, said means for releasing, removing and replacing a tube to be filled including a backhead supporting the free end of the tube, steadily urging said tube against said receiving element, but adapted to yield in a stepwise movement; a member operated by the mechanism operating the machine to further move said backhead independently of the tube to be filled and to release the same; a rotatable element adapted to support the filled tube, when released through said backhead, and the empty tubes thereover, and means to remove said filled tube while a lowermost empty tube thereover is being moved over said charge receiving element by said backhead.

Signed at New York, in the county of Kings, and State of New York, this 25th day of April, A. D. 1927.

BERTHOLD NAGY.