Dec. 19, 1939. J. M. BINDER 2,183,928

CORK ROD PACKING MACHINE

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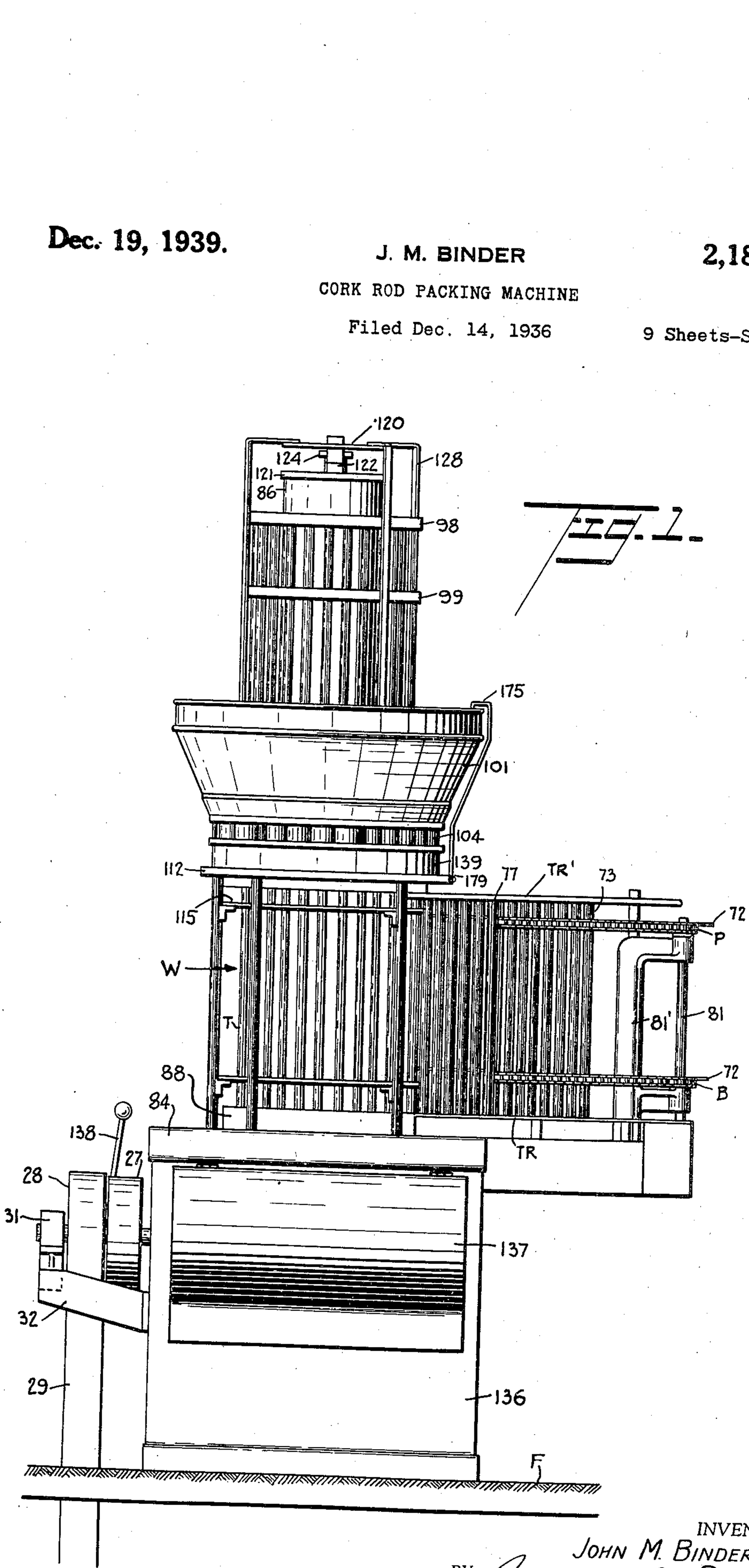

FIG. 1.

INVENTOR.
JOHN M. BINDER.
BY Maxwell E. Sparrow
ATTORNEY.

Dec. 19, 1939. J. M. BINDER 2,183,928

CORK ROD PACKING MACHINE

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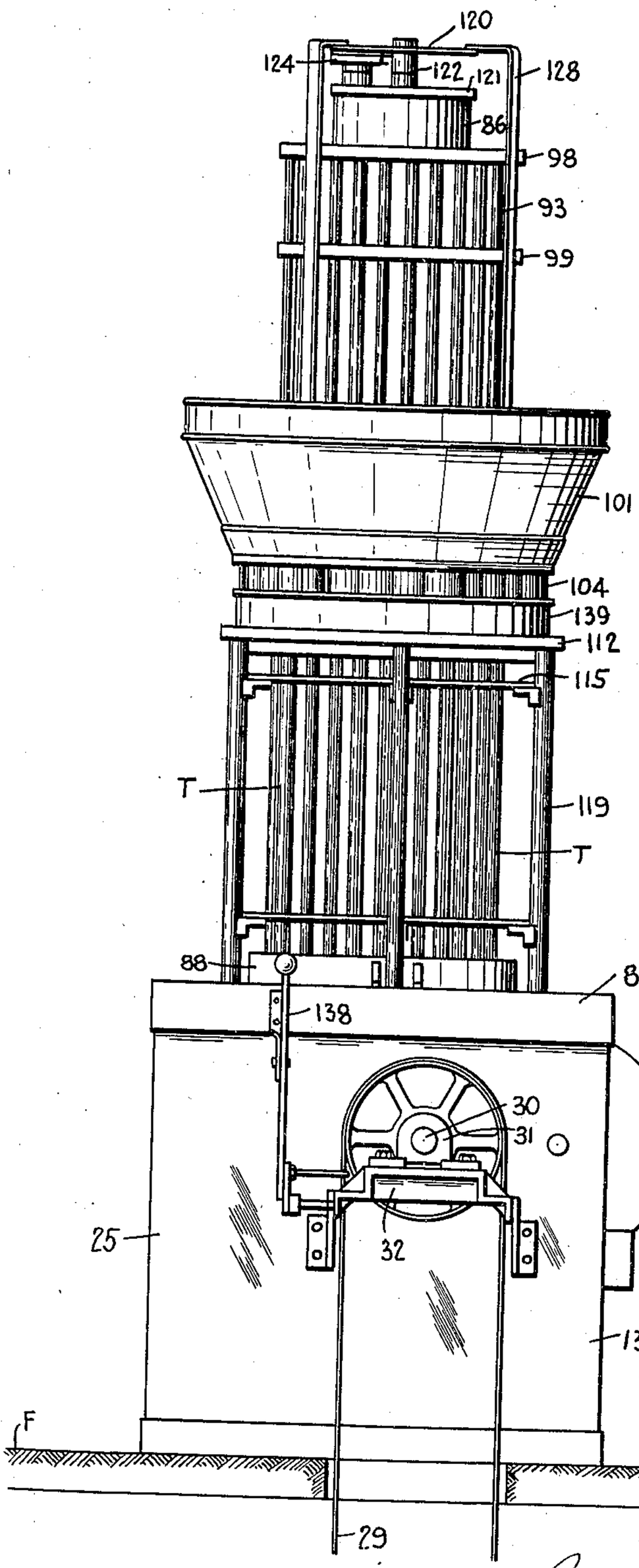

FIG. 2.

INVENTOR.
JOHN M. BINDER.
BY Maxwell E. Sparrow
ATTORNEY.

Dec. 19, 1939. J. M. BINDER 2,183,928

CORK ROD PACKING MACHINE

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Fig. 4.

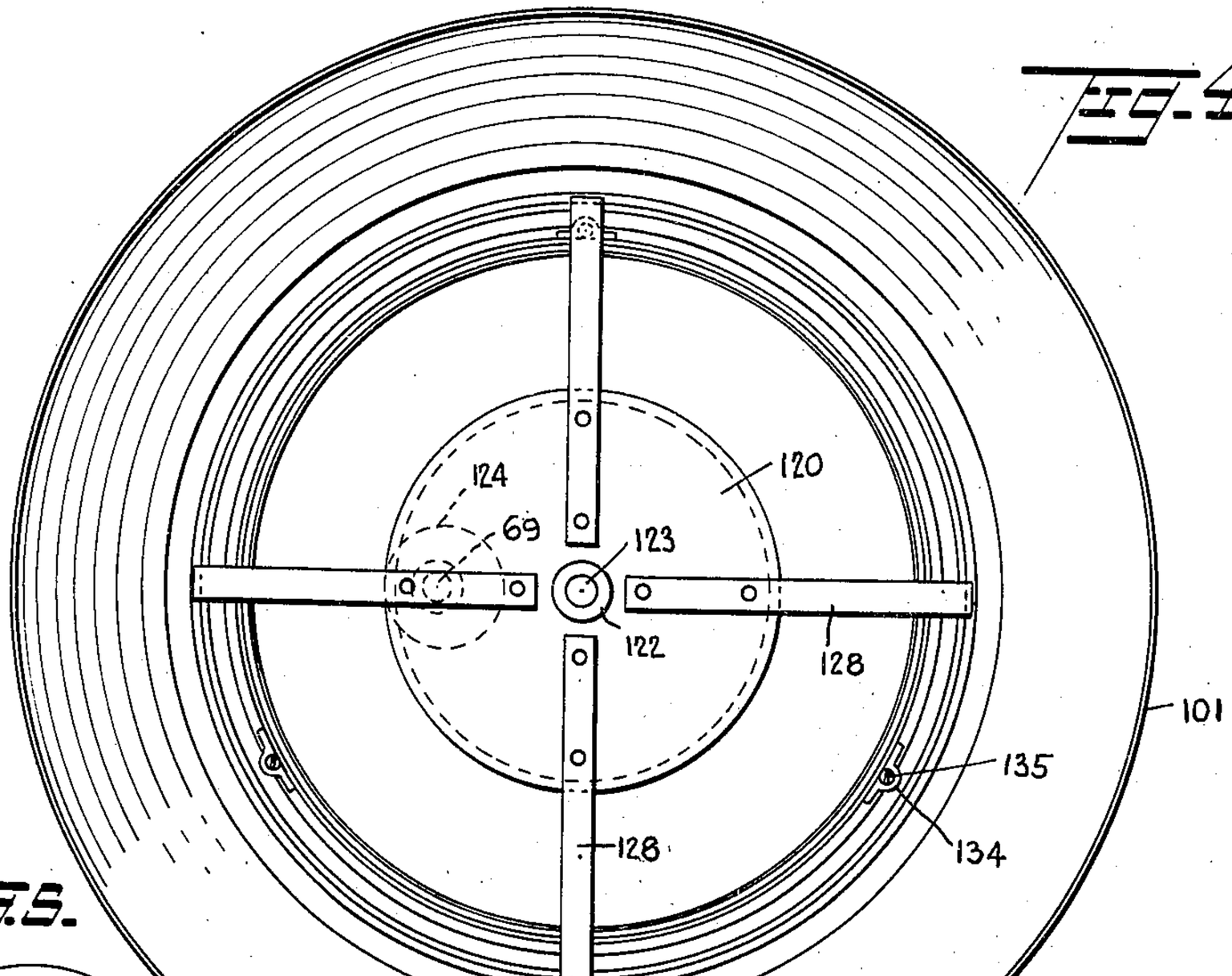

Fig. 5.

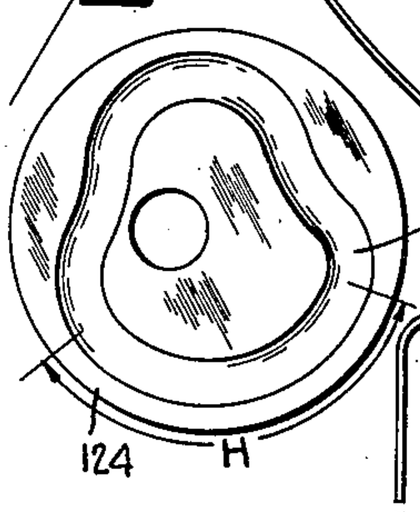

Fig. 3.

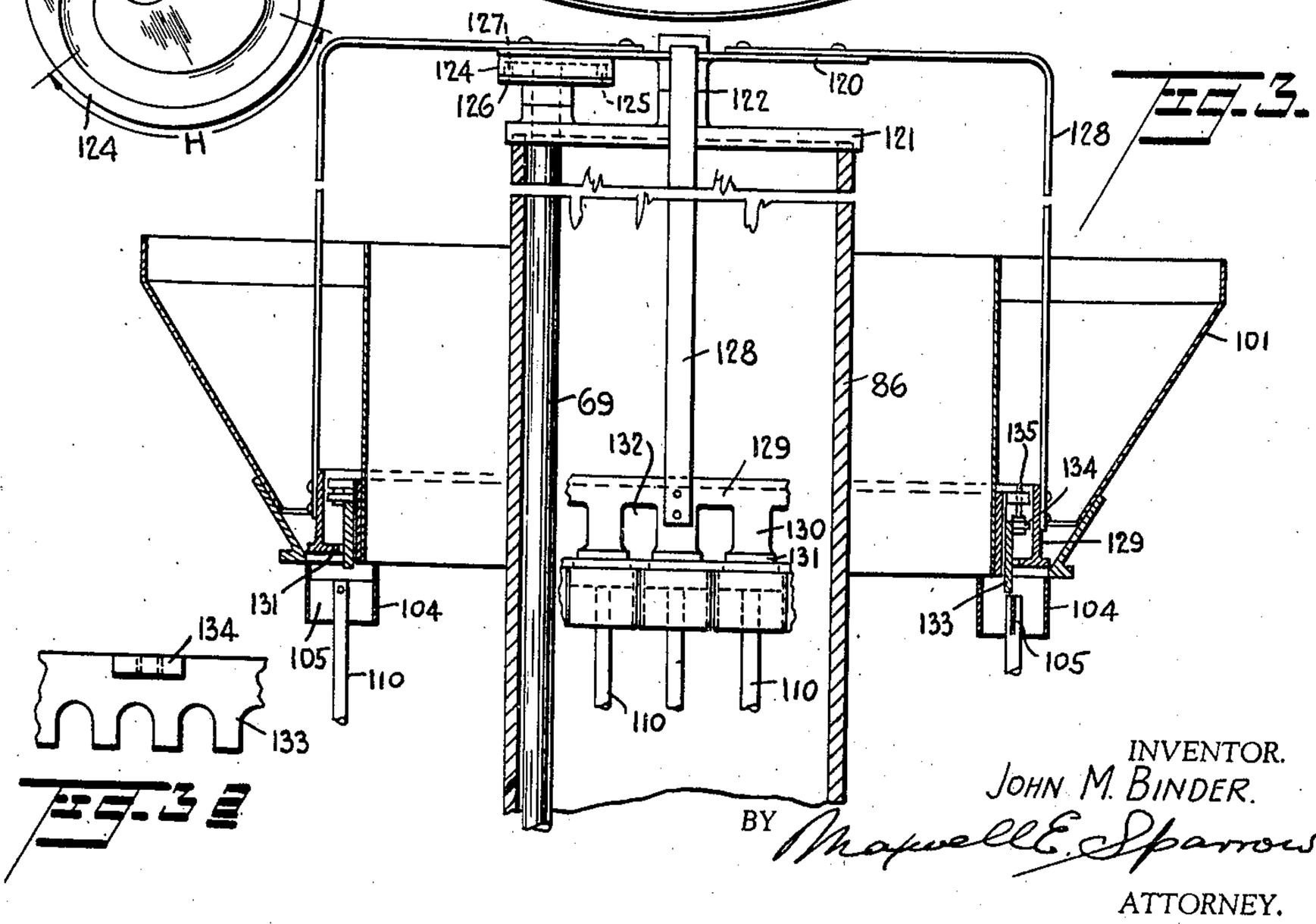

Fig. 2

INVENTOR.
JOHN M. BINDER.
BY Maxwell E. Sparrow
ATTORNEY.

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CORK ROD PACKING MACHINE

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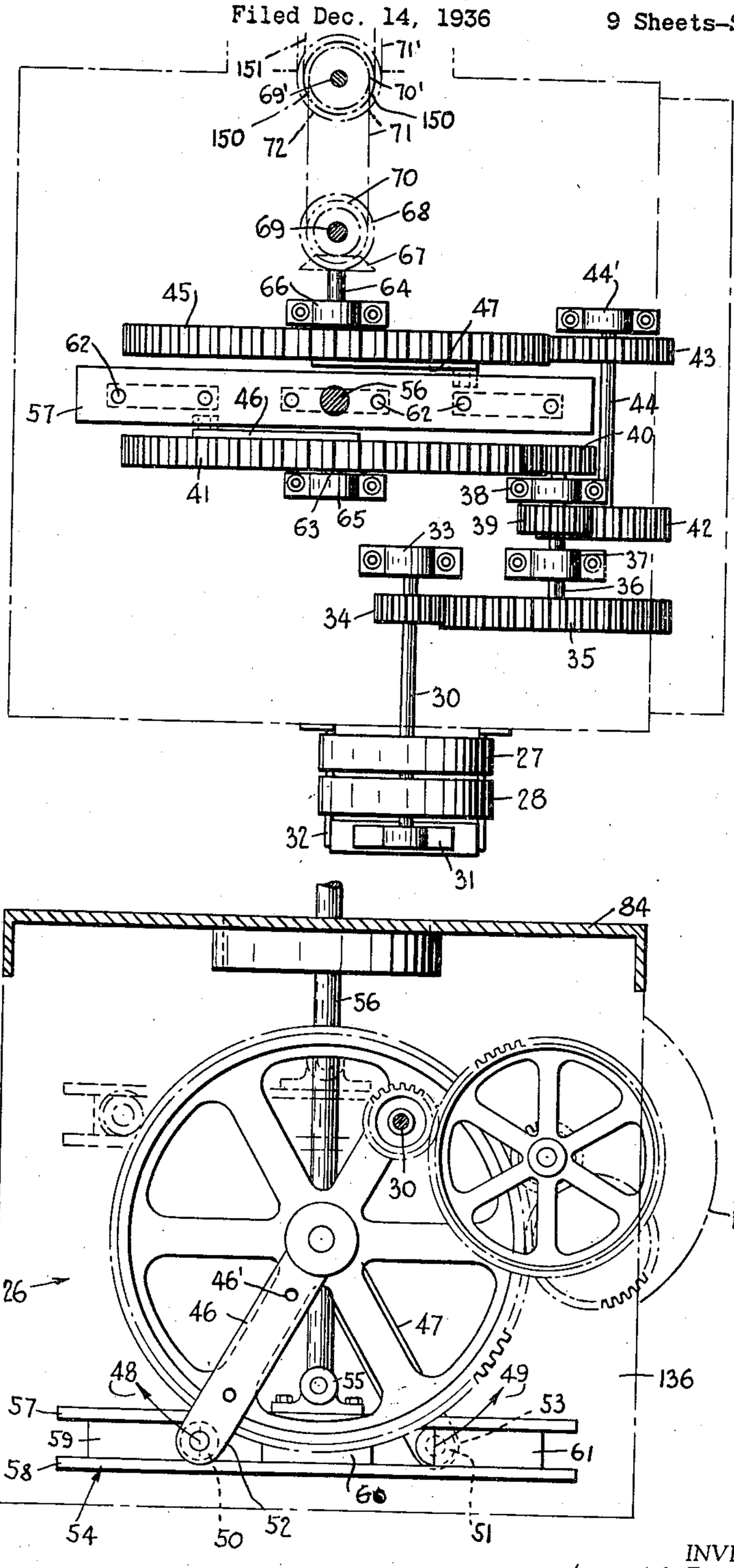

FIG. 7

FIG. 6.

INVENTOR.
JOHN M. BINDER.
BY Maxwell E. Sparrow
ATTORNEY.

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Fig. 8.

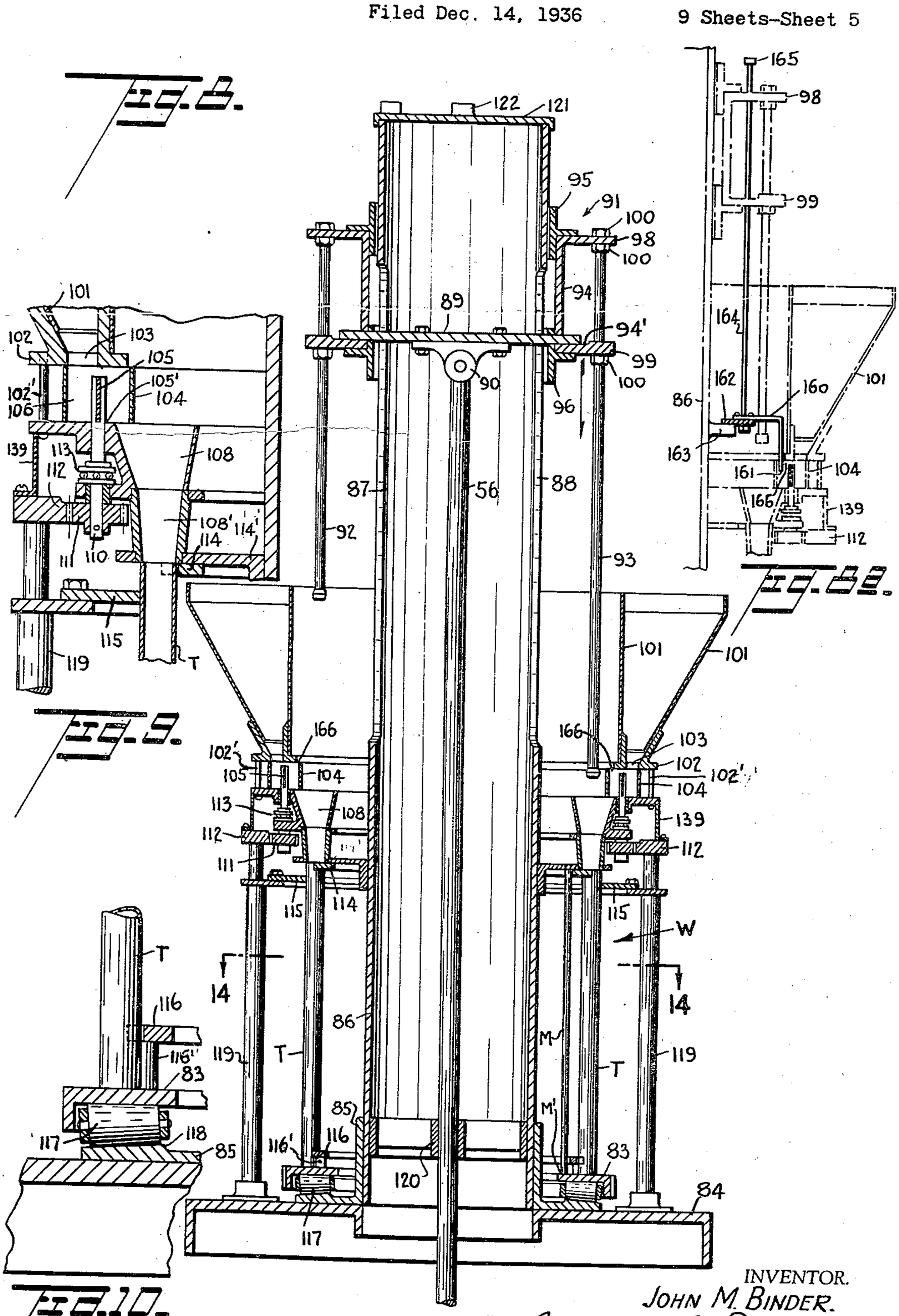

Fig. 8a.

Fig. 9.

Fig. 10.

INVENTOR.
JOHN M. BINDER.
BY Maxwell E. Sparrow
ATTORNEY.

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Fig. 14.

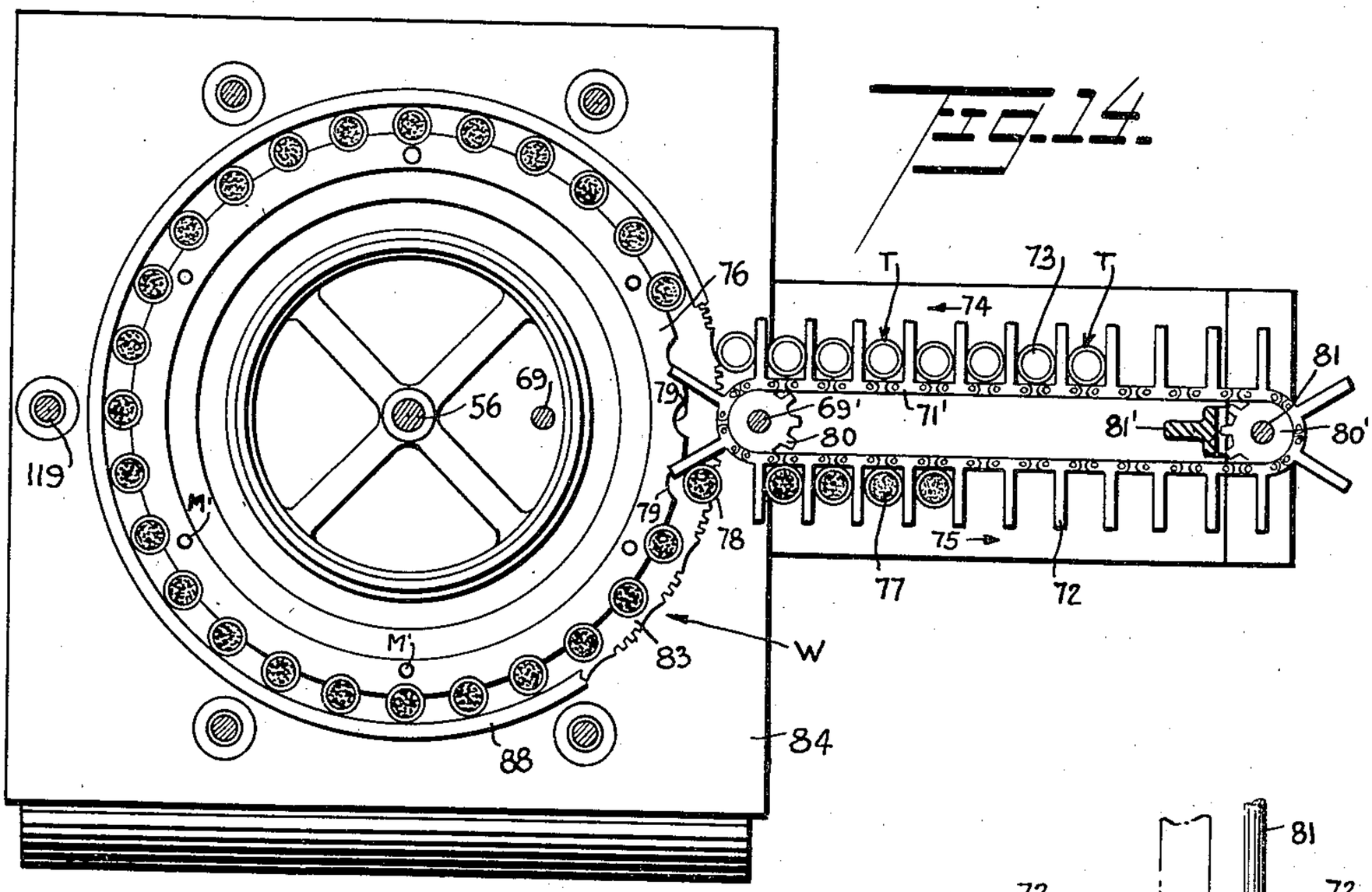
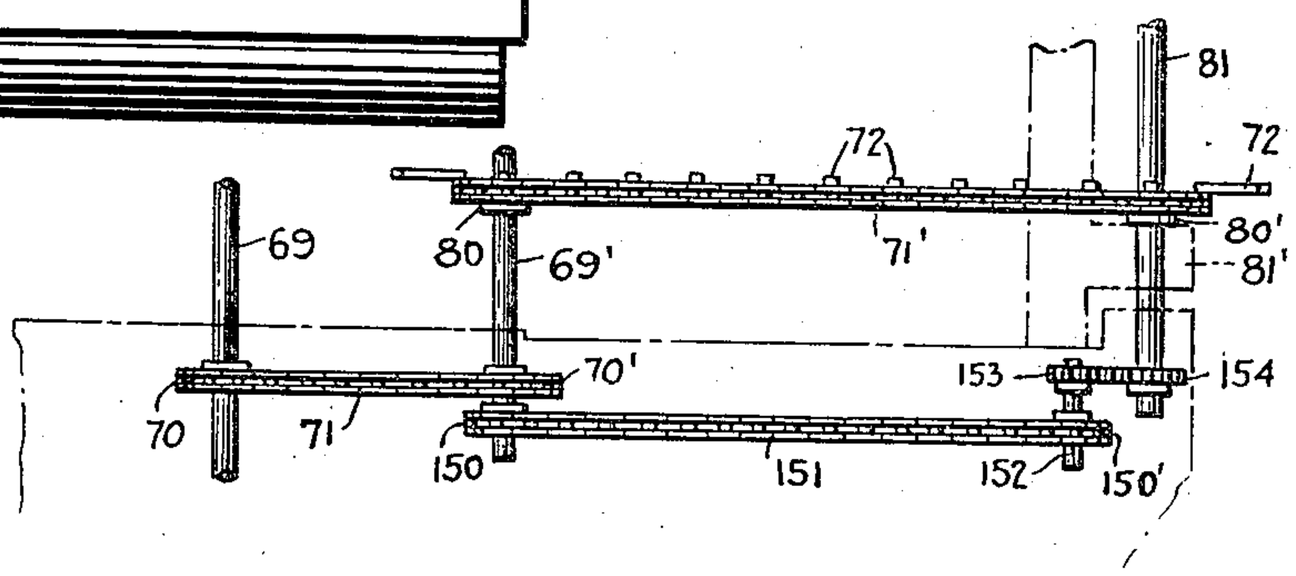


Fig. 14a



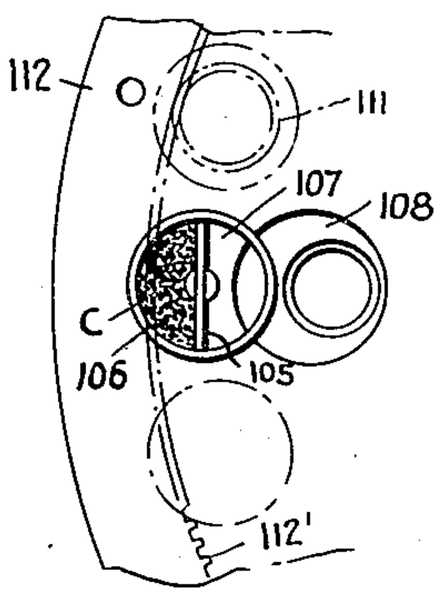


Fig. 11.

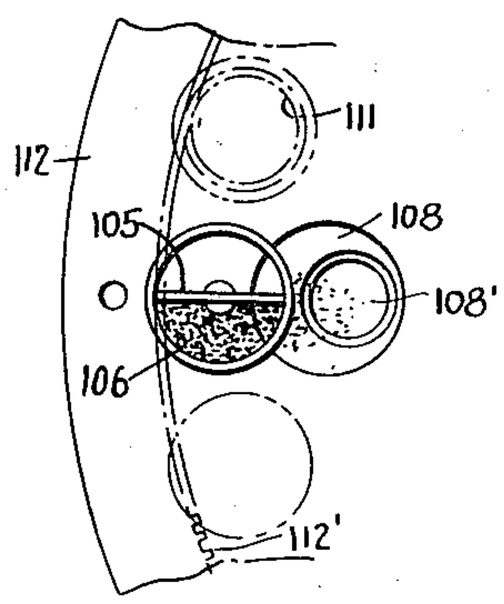


Fig. 12.

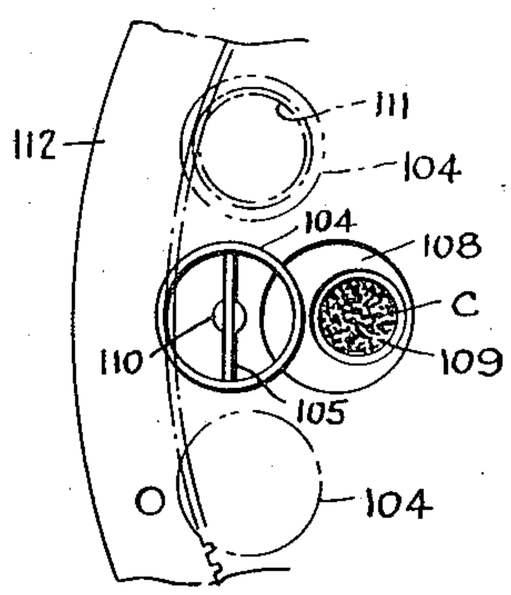


Fig. 13.

INVENTOR.
JOHN M. BINDER.
BY Maxwell E. Sparrow
ATTORNEY.

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Fig. 15.

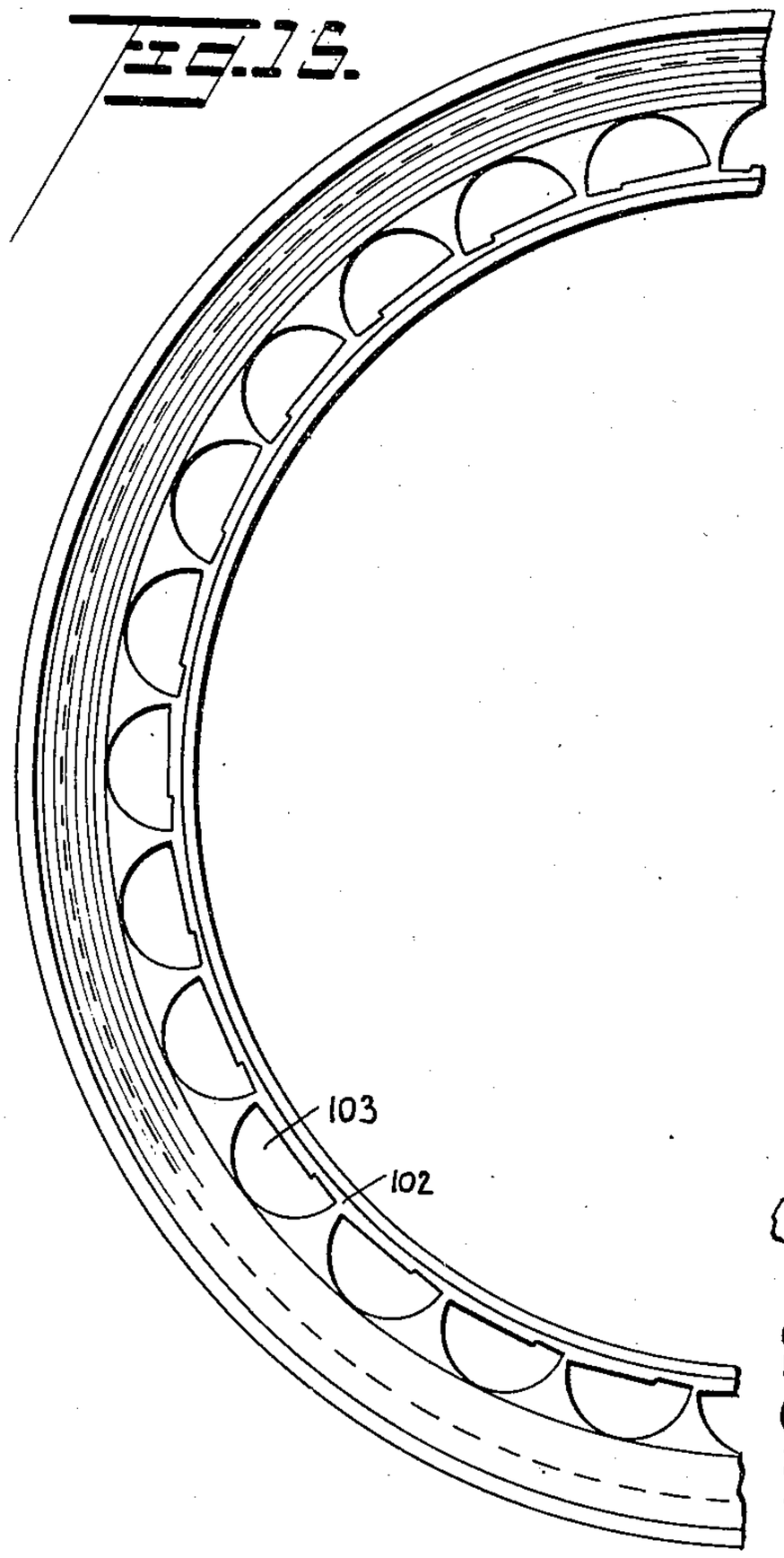
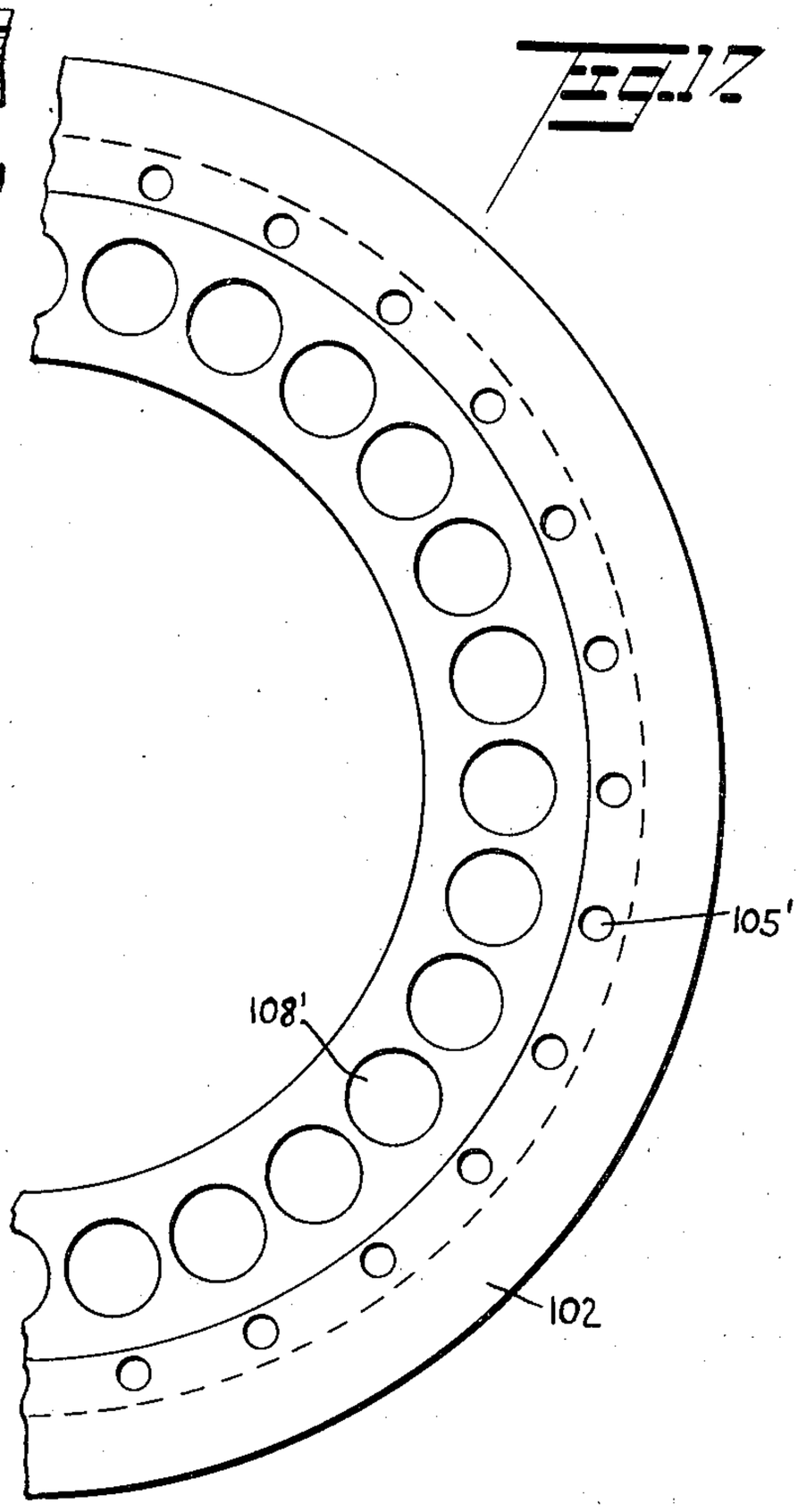
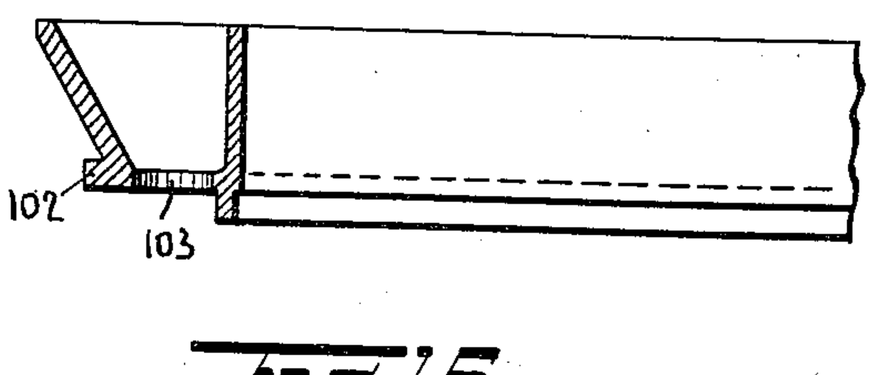


Fig. 17





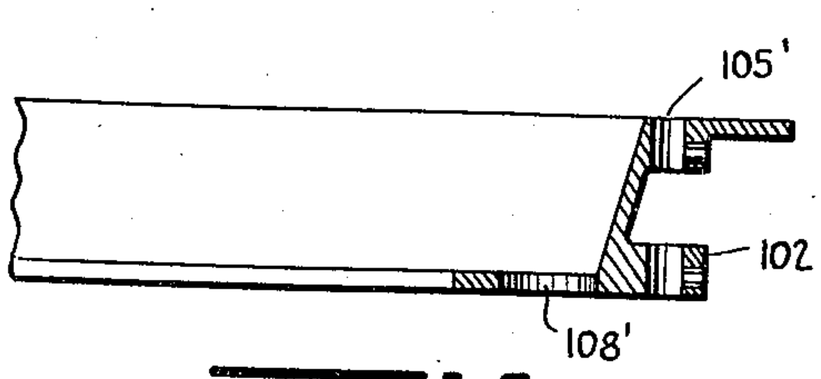


Fig. 16.

Fig. 18.

INVENTOR.
JOHN M. BINDER.
BY Maxwell E. Sparrow
ATTORNEY.

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Fig. 19.

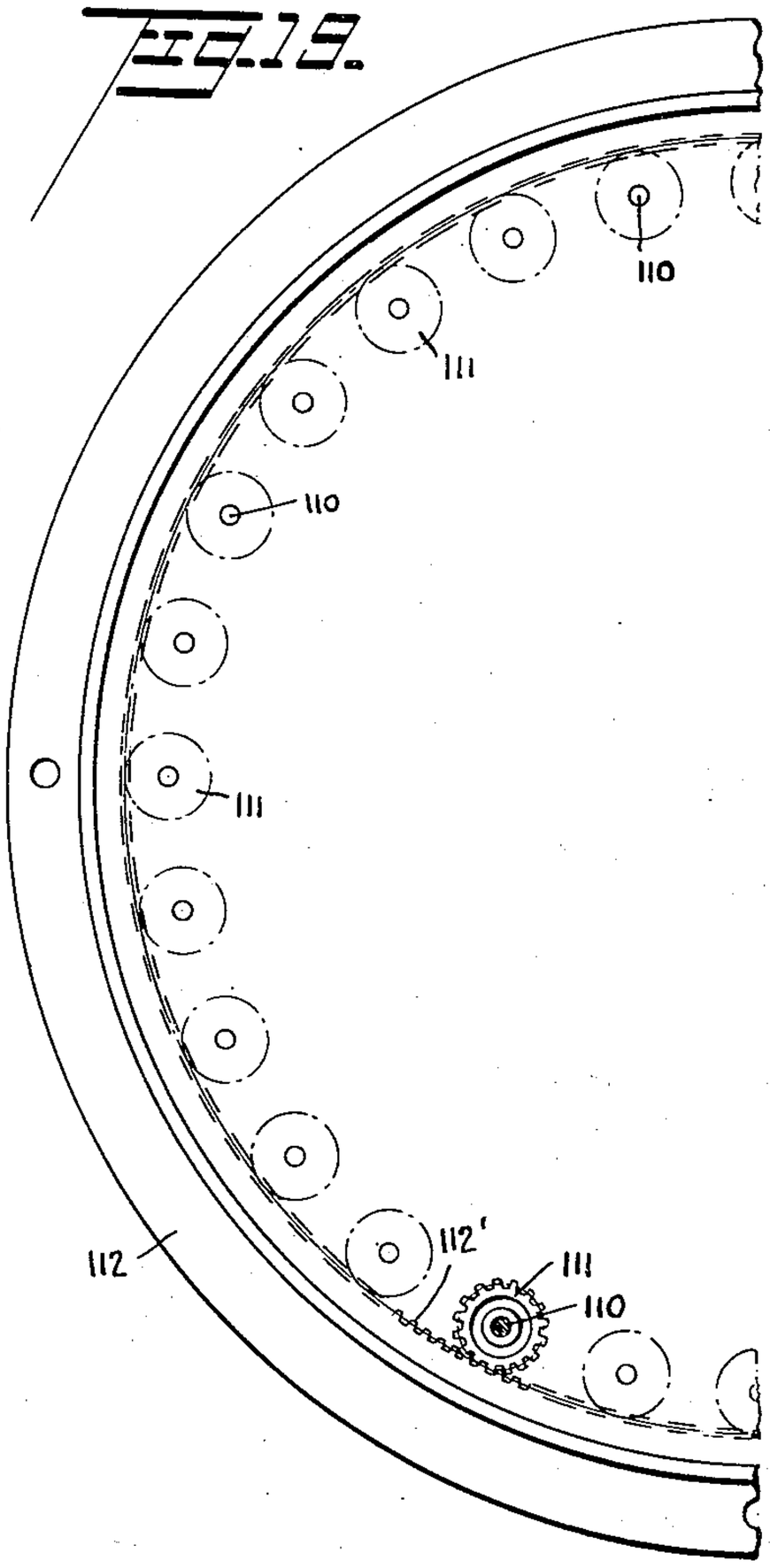
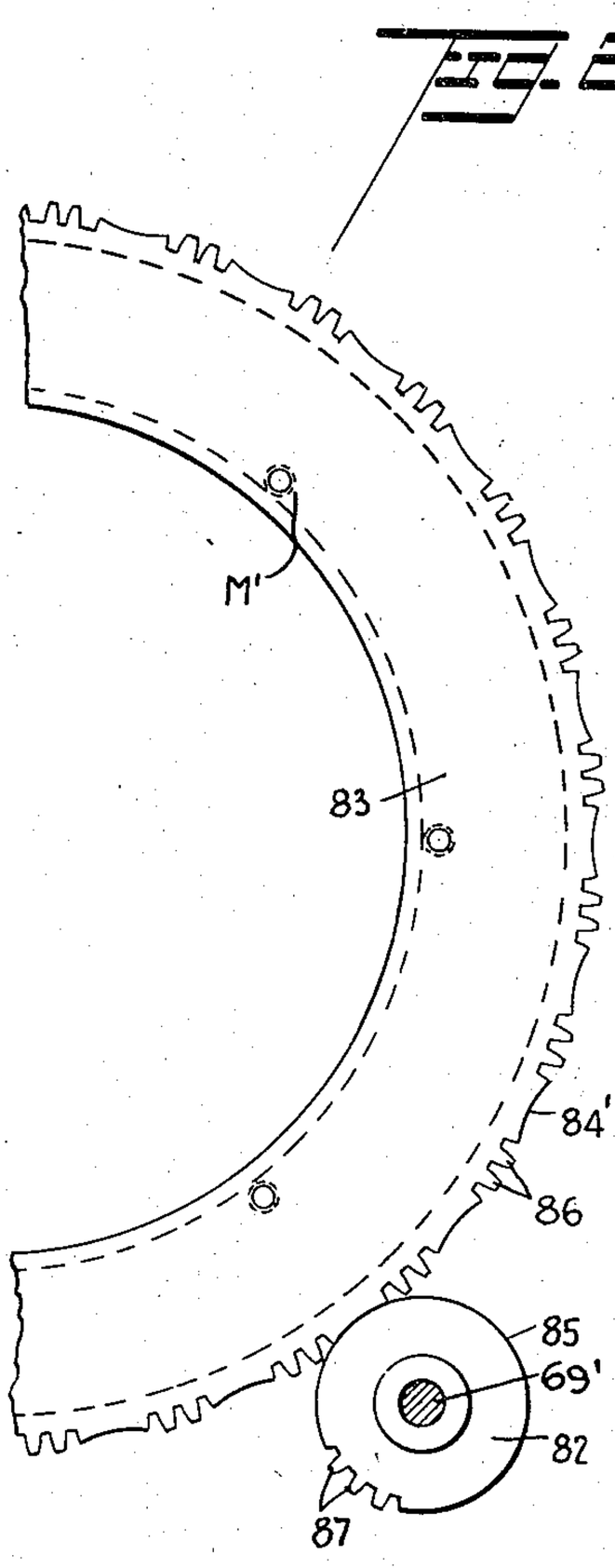


Fig. 21.



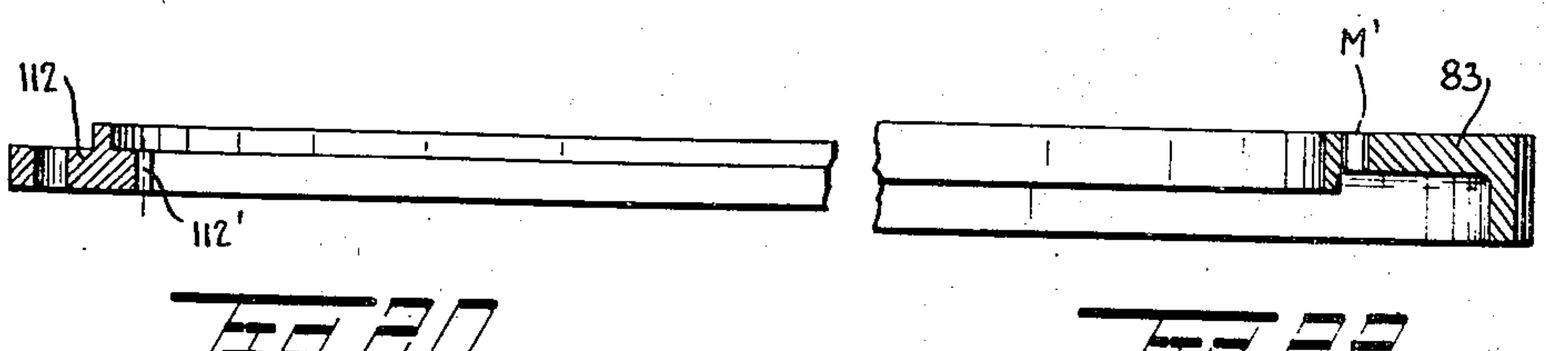


Fig. 20.

Fig. 22.

INVENTOR.
JOHN M. BINDER.
BY Maxwell E. Sparrow
ATTORNEY.

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Fig. 23.

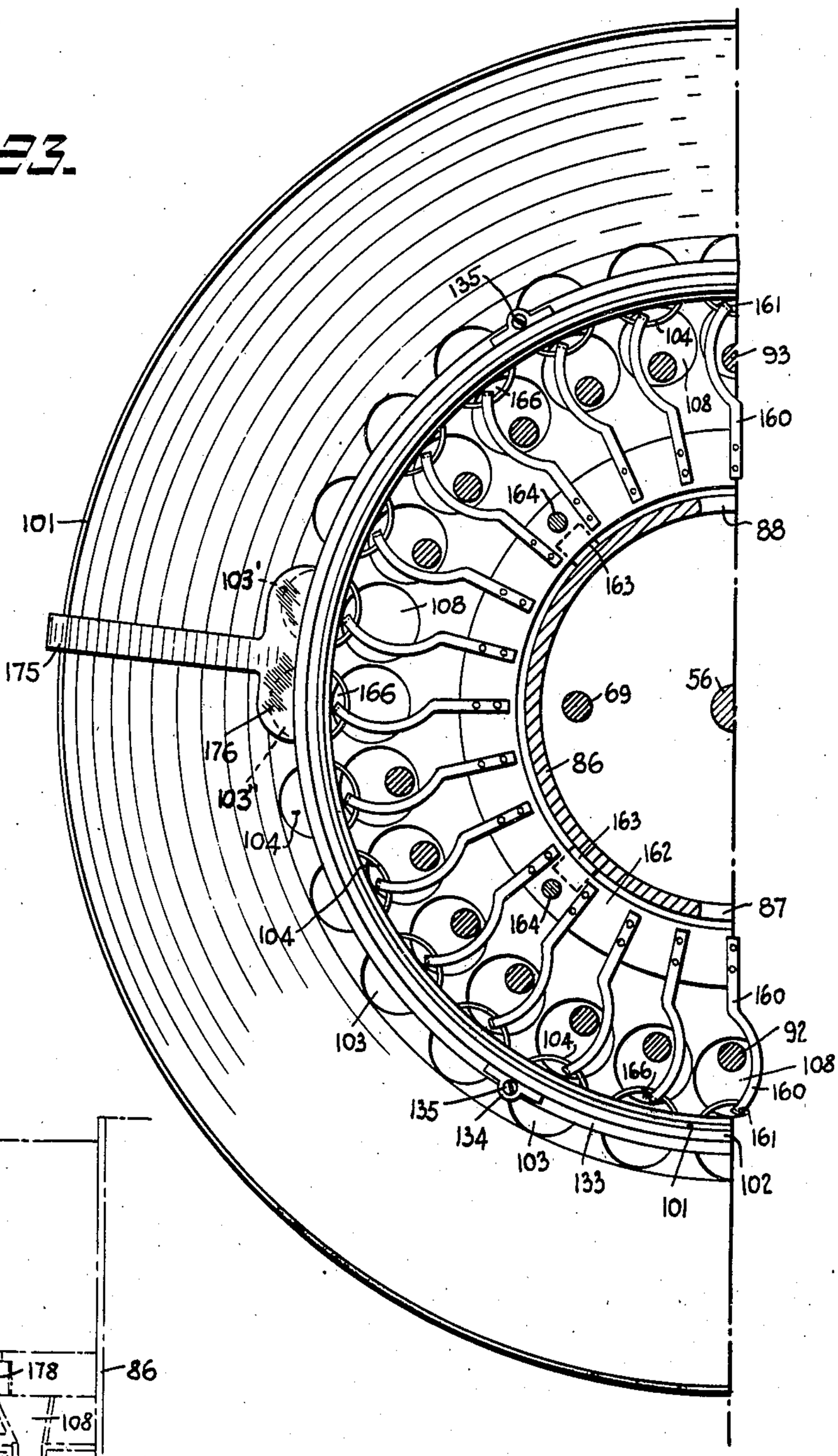
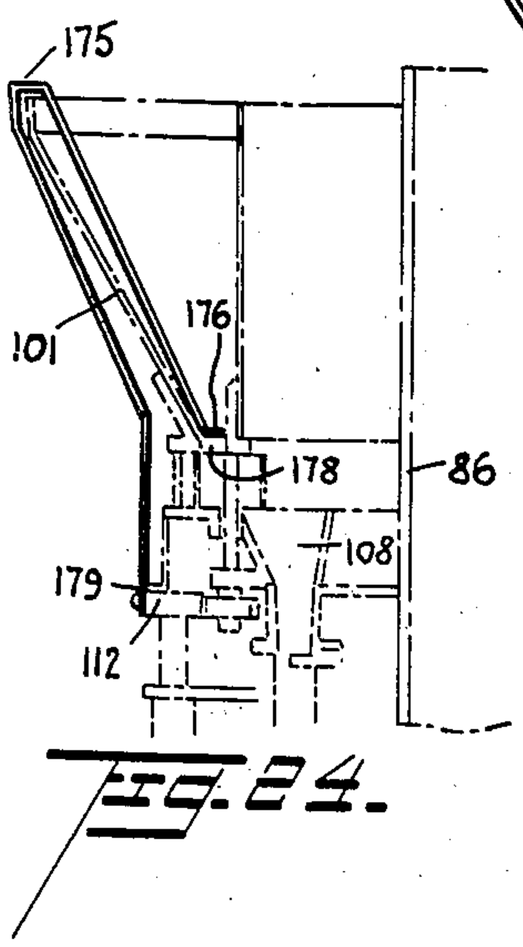


Fig. 24.



INVENTOR.
JOHN M. BINDER.
BY Maxwell E. Sparrow
ATTORNEY.

Patented Dec. 19, 1939 2,183,928

UNITED STATES PATENT OFFICE

2,183,928

CORK ROD PACKING MACHINE

John M. Binder, New Hyde Park, N. Y., assignor to Consolidated Cork Corp., New York, N. Y., a corporation of New York

Application December 14, 1936, Serial No. 115,877

5 Claims. (Cl. 18—5)

This invention relates to improvements in apparatus for packing ground or comminuted material, such as cork, mixed with a suitable binder, into rods or sticks, commonly termed "cork rods".

Round cork discs provided as packings in metal caps for the closure of receptacles, such as, bottles or cans, consists each of a thin layer of ground cork which has been sliced in predetermined thickness from such cork rods.

It is an object of the present invention to provide a machine, which will produce cord rods of uniform density and diameter. This uniformity in cork rod structure is made possible by the novel design of machine made in accordance with this invention by which accurate, equal charges of cork are fed each time between packing operations. Heretofore, in most instances, the cork rods required a supplemental shaving operation to bring about uniformity in diameter prior to being sliced into discs.

It is a further object of this invention to provide a cork rod packing machine simple in construction, efficient and practical in operation and which will operate with a minimum amount of waste.

In a general way the device comprises a vertically reciprocating head carrying a plurality of circumferentially arranged plungers or rams progressively diminishing in length, the difference in length of two adjacent plungers or rams representing the height of a packed charge of granular cork at a stage of production of the cord rod; an intermittently revolving turret for supporting and moving in stations a plurality of tubes to be charged with granular cork and to receive progressively the plungers and for providing instrumentalities for controlling, regulating and for intermittently feeding into the tubes, the charges of granular cork to be compressed by the plungers between successive feedings; and a carriage for presenting the empty tubes to the turret.

According to a phase of the present invention there is provided a separate feeding device for each active tube and which moves simultaneously therewith. The feeding devices receive the charge of material from a common hopper which revolves therewith. Each feeding device comprises a receptacle vertically partitioned to provide a pair of measuring pockets or compartments. The receptacles are located below the common hopper. Below each receptacle is a chute providing a passageway connecting the receptacle with one of the tubes to be charged.

The receptacles are arranged for intermittent revolvement about a common axis and rotation about their respective axes. While one compartment is receiving a charge of granular cork from the common hopper, the other compartment is being discharged into the tube through the connecting chute. Each receptacle, therefore, simultaneously receives and discharges equal charges of granular cork. By turning a half revolution the compartment containing the charge is brought from a position under the common hopper to a position above the chute, and the empty compartment from a position above the chute to a position under the common hopper. These simultaneous operations increase to a considerable extent the efficiency of the machine. Furthermore, as one-half cycle lapses before the feeding takes place sufficient time is obtained for the granular cork to drop into the tubes. The amount of charge is regulated by an adjustable scraper which pushes excess material from the charged compartment into the empty compartment during rotation of the receptacle. A device is employed to close the compartment inlets during the travel stages of the turret. This device is located in the common hopper and prevents the material entering the receptacles during such time. This device also functions as a shaker to agitate the material in the hopper thus facilitating the feeding of the material into the receptacle compartment. An arrangement is provided so that the device functions as a shaker only when not functioning as a closure. That is, the shaker functions as a closure while the turret is moving and functions as a shaker during stationary intervals of the turret when the feeding is done. The shaker controls the amount of flow of the granular cork from the common hopper into the compartments, respectively, the agitation of the shaker breaking up any lumps which may have formed within this hopper. To assure the complete and free discharge of the cork granules from the compartments into the chutes, means are intermittently introduced into the charged compartments for producing a slight downward pressure at the upper portion of the charges.

This invention accordingly consists in the features of construction, combination of parts and in the unique relations of the members and in the relative proportioning and disposition thereof; all as more completely outlined herein.

To enable others skilled in the art so fully to comprehend the underlying features thereof that they may embody the same by the numerous modifications in structure and relation contemplated by this invention, drawings depicting a

preferred form have been annexed as a part of this disclosure, and in such drawings, like characters of reference denote corresponding parts throughout all the views, of which:

Fig. 1 is a front elevational view of a cork rod packing machine made in accordance with the invention.

Fig. 2 is a side elevational view of same.

Fig. 3 is an enlarged top portional view of the shaker or agitator and cork flow control mechanism.

Fig. 3*a* is a sector of the scraper.

Fig. 4 is a top view of Fig. 3.

Fig. 5 is a detail view of the cam used with the shaker.

Fig. 6 is a side elevational view of the driving mechanism. To simplify the drawing, the conventional supports, brackets and bearings have been omitted.

Fig. 7 is a top view of Fig. 6. To simplify the drawing, the conventional supports and brackets for the gears and shafts have been omitted.

Fig. 8 is a longitudinal cross-sectional view of the upper operating mechanism. For simplification, the shaker shown in Fig. 3, has been omitted.

Fig. 8*a* is a partial half view of the hopper showing the arrangement of the cork pushers.

Fig. 9 is an enlarged view of the cork filling portion of the device.

Fig. 10 is an enlarged view of the roller bearing track.

Figs. 11 to 13, inclusive, are diagrammatic views showing how the ground cork is portioned into the tube.

Fig. 14 is a sectional top view taken along lines 14—14 of Fig. 8.

Fig. 14*a* is a diagrammatic side view of the chain drives shown in Fig. 14.

Fig. 15 is a half-top plan view of the hopper ring.

Fig. 16 is a sectional view of Fig. 15.

Fig. 17 is a half-top plan view of the filler ring.

Fig. 18 is a sectional view of Fig. 17.

Fig. 19 is a half-top view of the inner gear track.

Fig. 20 is a sectional view of Fig. 19.

Fig. 21 is a half-top view of the external intermittent gear track.

Fig. 22 is a sectional view of Fig. 21.

Fig. 23 is a half sectional plan view of the hopper and mechanisms therewithin.

Fig. 24 is a partial half view of the hopper showing the two hole closing arrangement.

The device generally comprises a housing 25 resting on a floor F. The driving mechanism 26 is contained within housing 25. A driven pulley 27 and an idler pulley 28 is located outside the housing. A belt 29 transmits the power from any source (not shown) to pulley 27. The two pulleys 27 and 28 are mounted on the drive shaft 30 which is in turn mounted outside housing 25 by the bearing 31. Bearing 31 is supported by means of a bracket 32 secured to housing 25. The drive shaft 30 is supported within housing 25 by bearing 33. Near the end of the shaft opposite the pulleys 27, 28, the drive shaft 30 has mounted upon it a gear 34 which in turn drives a larger gear 35. Gear 35 is mounted on a shaft 36 supported between two bearings 37, 38. Mounted upon shaft 36 are two smaller gears 39, 40 of equal size. The gear 40 drives the main gear 41 in one direction, and the gear 39 drives two medium sized gears 42, 43 mounted on a shaft 44, the latter being supported in bearing 44'. The gear 43 drives the second main gear 45 in a direction opposite to that of main gear 41.

Secured respectively to the two main gears 41 and 45 as by rivets 46' are lever arms 46 and 47, which by rotation of these gears are made to swing around in the direction of arrows 48 and 49. Rollers 50, 51 are secured to the extreme ends 52, 53 of levers 46, 47, respectively. These rollers 50, 51 operate the cross head 54 upon which is mounted by means of a bearing 55 the push rod 56. This cross head may be constructed of flat pieces 57, 58 of suitable material spaced by means of spacers 59, 60 and 61 and secured by rivets 62. The swinging of the levers 46, 47 will move the cross-head 54 up and down thereby operating the push rod 56 in the same directions. Push rod 56 operates the plunger head 91 as later described. Main gears 41, 45 are mounted on two separate shafts 63, 64, respectively, which are respectively supported by means of bearings 65 and 66. The shaft 64 is somewhat longer than shaft 63 and has on its other end a bevel gear 67, which in turn meshes with a bevel gear 68 of the same size. Bevel gear 68 is mounted on a drive shaft 69 which operates the shaker or agitator shown in Figs. 3 to 5, inclusive. Sprocket wheel 70 is mounted on shaft 69 and drives chain 71, which in turn drives the delivery chain sprocket 70', mounted on shaft 69'. A sprocket 150 is also mounted on shaft 69' which drives by means of a chain 151 the sprocket 150' mounted on short shaft 152. This shaft 152 also carries an intermittent gear 153 which is in engagement with gear 154 carried by shaft 81, thereby driving the tube delivery chain 71' intermittently. The delivery chain 71' is provided with spaced fingers 72 which guide therebetween the tubes T in the direction of the arrows 74 and 75. The empty tubes 73 are carried inward toward the carrier disc or guides 116, while the loaded tubes 77 are taken off by fingers 72 as at 78 (see Fig. 14). The construction shown in the drawings provide for twenty-eight notches 79 in carrier disc 116 and for twenty-six tubes circumferentially arranged around the machine. Endless chain 71' is trained over a sprocket 80' mounted on shaft 81 rotatively supported in bracket 81' and a sprocket 80 for intermittent movement mounted on shaft 69'. There are preferably two of these chains 71' employed, namely, B and P respectively, (Fig. 1) for engaging the tubes T intermediate their ends.

Extending laterally from housing 25 is a track Tr and above this track and extending from the bottom of the hopper portion (later described) is another track Tr', between which tracks the empty tubes 73 fed into the turret W of the machine and the filled tubes 77 removed therefrom slide.

Mounted on shaft 69' is an intermittent gear 82 (Fig. 21) which rotates the external gear track 83, intermittently. Gear track 83 consists of the non-toothed arcuate portions 84' engaging with the non-toothed arcuate portion 85 of gear 82, and two teeth 86 adapted to engage with the teeth 87 of gear 82. An arcuate guard 88 (Fig. 14) may be provided for the gear track 83.

Mounted on the table top 84 by means of a flange 85 is the cylinder 86. Cylinder 86 is provided with two slots 87 and 88 through which the cross head 89, mounted by means of bearing 90 to push-rod 56 moves the plunger head 91 up and down. Only one short plunger 92 and one long plunger 93 are shown, but it is understood, that there are a plurality of plungers of pro-

gressively varying lengths as is customary with machines of this type. There are twenty-six plungers in this example of machine.

Fig. 8 shows the plunger head in upper position. This plunger head consists of a double flange portion 94 with two guide flanges 95 and 96. Cross head 89 rests on the top portion 94' of lower flange 99. The plungers may be secured to the two horizontal flanges 98 and 99 by means of nuts 100. About midway of the upper portion of the machine, is a sheet-metal hopper 101 which rests in the hopper ring member 102 having an outlet 103 into each of twenty-eight tubular members or sleeves 104. Vertical partitions 105 are provided dividing the sleeves into two equal compartments. The cork granules C will fall from hopper 101 into portion or compartment 106, while the portion or compartment 107 has just emptied, as shown in Figs. 11 to 13, inclusive. The intermittent gear track 83 (Figs. 8, 14 and 22) will now have turned a distance equal to a space between two respective tubes which is one twenty-eighth of a revolution, and from the position shown in Fig. 11 to the one shown in Fig. 13.

While sleeves 107 turn as in Fig. 12, the cork load falls into the small funnel or chute 108 and from there as at 109 into the tube T (see Fig. 13). The intermittent movement of the turret W has now ceased and the plunger head will descend and each plunger will compress the respective charge in each respective tube.

Tubular members 104 are connected by means of shafts 110 to gears 111 which engage with the inner teeth 112' of the internal gear track 112 (Fig. 19). Shafts 110 are mounted in thrust bearings 113. After the cork has filled the half sections of sleeves 104 as shown in Figs. 11, 12 and 13, it is desirable to assure its free flow into the chutes 108. This is accomplished by a slight pressure of the pusher arms 160 (Figs. 23 and 8*a*) against the charges of cork in the compartments. The pusher fingers 161 will contact the cork (not shown in Fig. 8*a*). These arms 160 are secured to a disc 162 by any suitable means, such as, for example rivets or screws. On its downward movement, disc 162 will rest against a number of lugs 163, which are secured to cylinder 86. A plurality of rods 164 are secured to ring 162 but slide through respective openings in the horizontal flanges 98, 99 of the plunger head 91. This plunger head can thereby move downward with the fingers 160 remaining in the position shown in Fig. 8*a*. Shortly before the completion of the upward stroke of head 91 the upper flange 98 will catch the head 165 of the rods 164 and carry the same up with the fingers 161 and thereby out of the sleeves 104, which are now free to perform their half revolution movement. Fig. 23 shows plainly at 166 where the fingers 161 enter the sleeves 104. As also shown in Fig. 23, the pusher arms 160 are curved to clear the plungers 92 to 93.

The tubes T are held in their respective positions by guides 114, 115 and 116 (Fig. 8). The lower ends of the tubes T rest on top of the gear track 83, which in turn is rotatably mounted on tapered roller bearings 117 on top 118 of the flange 85 (see particularly Fig. 10). Referring particularly to Figs. 8, 9 and 10 supports 119 are employed to hold together stationary parts including table 34, guides 115, inner gear track 112 and guard 139. Support rods M tie together the rotating members of the turret W, such as, the intermittent gear track 83, tube guards 116, 114, chute member 108, hopper casting 102, and hopper 101. Hopper casting 102 is secured to chute casting 108 by means of bolts 102'. Spacers 116' are utilized for spacing the guard member 116 from intermittent gear track 83. Chute flange 114' is rotatably mounted on column 86. A guide bearing 120 for the push rod 56 may be provided at the bottom of the cylinder 86.

Figs. 23 and 24 show an arrangement to prevent the cork from falling from hopper 101 through outlets 103' and 103'' at the location where the tubes T are loaded into the machine or withdrawn from the turret (see Fig. 14). The hopper 101 turns intermittently with the revolvable tube carrier. A closure 176 is secured to the stationary internal gear track 112 by means of leg 179. Portion 175 is formed around the hopper 101 as shown in Fig. 24. All outlets 103 will successively enter location 103', 103'' during each revolution of the turret. Twenty-eight openings 103 and sleeves 104 are provided with but twenty-six plungers, which, therefore, requires closing up the two outlets 103', 103'' which do not receive plungers.

To prevent the cork from sticking or bunching together and to provide also for a stopping of the flow during the turning movement of the filling sleeve 104, a shaker or agitator is provided as illustrated in Figs. 3 to 5, inclusive. This shaker comprises a top plate 120, secured to the head 121 of cylinder 86 by means of a hub 122 with shaft 123. Mounted on top plate 120 is a plate 124 having the eccentric track 125. The shaker shaft 69 has mounted on it a plate 126 having a pin 127 which engages in the track 125.

Supported from the top of plate 120 by means of hangers 128 is the shaker ring 129, having legs 130 having closures 131 and openings 132. Closures 131 are adapted to close openings 103 during the turning operation of sleeves 104.

The amount of cork flow may be adjusted by means of the flow control sleeve 133 which is supported by a plurality of lugs 134 having adjusting screws 135 (Fig. 3*a*).

The table housing 136 is provided with a hinged cover 137 clearing the driving mechanism (Fig. 6). A shift lever 138 may be provided for shifting the drive belt 29 from the idler pulley 28 to the operating pulley 27. The thrust bearings 113 are preferably protected by a removable guard 139 (Fig. 1).

The operation of the machine is as follows:

The ground cork mixed with the proper amount of binding material is placed in the hopper 101. Empty tubes 73 are placed between fingers 72 on sprocket chains 71' as indicated in Fig. 14. The machine is put in operation by shifting lever 138 thus carrying the drive belt 29 from the idler pulley 28 to driver pulley 27. The train of gears in the housing 25 will drive the two main gears 41 and 45 in opposite directions. The two levers 46 and 47 are made to swing around in opposite directions thereby lifting or lowering the lower cross head 54. Attached to this cross head 54 is the push rod 56 which in turn operates the plunger head 91. In the construction illustrated in the drawings, the plunger head is provided with twenty-six plungers progressively varying in lengths from 92 to 93. The difference in length from one plunger to the next is equal to the height of each compressed new charge of cork in the tubes T. The gear drive in the housing 25 will also drive an upright shaft 69 by means of bevel gears 67 and 68 and will engage the sprocket 70'

by means of a chain drive 71. This sprocket 70' drives the delivery chain 71' in the direction of arrows 74 and 75 (Fig. 14). Also fastened to the sprocket shaft 69' is the intermittent gear 82 driving the intermittent gear track 83. Tubes T are carried into turret W intermittently by delivery chains 71'. This intermittent movement of the chains 71' is obtained by means of sprockets, chains and intermittent gears clearly shown in Fig. 14*a*. The delivery chain will now position the empty tubes 73 in the notches 79 of carrier disc 76. The cork granules in the hopper 101 fall into one compartment of each of the twenty-eight sleeves 104. The shaker ring 129 carrying closures 131 and operated by the cam 124 agitates the cork in the hopper and prevents it from lumping. The cam 124 has a uniform track portion H (Fig. 5) during which traverse by the pin 127 the ring 129 will not agitate and will close the outlets 103 to the sleeves 104 which at this time are making one-half a turn. This turning movement of the members or sleeves 104 is brought about by cooperation between stationary internal gear track 112 and the small gears 111 each fixed to a sleeve 104. After the tubes T have advanced a stage during which time sleeve 104 will have performed in a manner indicated in Figs. 11 to 13, inclusive, the balance of the track 125 by reason of its shape will cause pin 127 which rides in the said track to vibrate the shaker twice back and forth, facilitating the flow of cork from hopper 101 into the empty sleeve compartment.

While the shaker illustrated in Figs. 3–5, inclusive will control the flow of the granular cork from the hopper 101 into one of the halves of the sleeve 104 and while the vibration of this shaker will break up any possible lumps which may have formed within hopper 101, provision is made to assure the complete and free discharge of the cork from the sleeves 104 into chutes 108. This is obtained by the finger arrangement clearly illustrated in Fig. 8*a*, in which the free end 161 of each finger 160 enters a sleeve 104 through an opening 166, producing a slight pressure against the top of the charge of cork in the sleeve compartment, thereby causing an immediate discharge into chute 108.

During engagement of teeth 87 of small intermittent gear 82 with teeth 86 of large gear 83 (this movement being one twenty-eighth of one revolution) a preceding tube advances from the delivery chains 71' to a position under one of the funnels 108' of chute 108. During this advancing movement closures 131 carried by legs 130 substantially close the inlet openings 103 during which time sleeve 104 revolves one-half turn as shown (Figs. 11–13, inclusive). Turret W now has completed one twenty-eighth of one revolution and the shaking of the ring 129 permits the cork to enter the empty half chamber of the filler sleeve 104. The above operation repeats itself.

The amount of each charge of cork in the sleeve 104 can be controlled by raising or lowering the control ring 133 located at the top of the receptacles or sleeves 104 and supported by a plurality of brackets 134, by means of adjusting screws 135. As the tubular members 104 rotate one-half turn, the lower surface of the control ring 133 scrapes off the surplus of cork from the charged compartment into the empty compartment. The receptacles or sleeves 104 constitute measuring devices which are regulatable by means of control ring 133.

It is believed from the above description that those skilled in the art will have no difficulty in understanding the construction, the method of use and operation of the device herein disclosed and a further detailed discussion thereof is deemed unnecessary. The invention is of simple and practical construction and is adapted to accomplish among others all of the objects and advantages herein set forth.

Having thus described my invention, I claim and desire to secure by Letters Patent:

1. In a machine of the character described, an intermittently revolvable hopper having a plurality of outlet openings, chutes located below the outlet openings, tubes located below the chutes, a rotating support for the tubes, chutes and hopper, a measuring device located between each hopper outlet and a chute and rotatable relative to said hopper and chute by means independent of the hopper and chute, said measuring device being provided with a dividing partition normally located between each hopper outlet and chute, means for rotating each measuring device to cause it to direct material received by it from the hopper into the chute, an agitator for vibrating the hopper contents and operative within the hopper and provided with closure elements for closing the hopper outlet openings during periods of rotation of the hopper, means for moving the agitator to non-closing position and vibrating the same while in such position during periods of rest of the hopper, and means entrant into the tubes for compressing the material delivered into the same from the hopper and through the measuring devices and chutes.

2. In a machine of the character described, a hopper for containing particles of material to be fed and compressed in tubes, means for intermittently revolving said hopper, the hopper being provided with outlet openings, a plurality of chutes movable in company with the hopper and disposed below the hopper and through which the hopper contents passes, tubes carried below the chutes for the reception of the material passing therethrough, a measuring device interposed between each hopper outlet and each chute, said measuring device comprising a rotatable cylinder provided with a vertical partition dividing it into two chambers, means for rotating each cylinder relative to the hopper and chute to cause the material located in one of the chambers to be rotatively moved to a position over one of the chutes into which it descends, plunger means entrant into the tubes for compressing the material delivered thereinto from the chutes, pusher arms movable against material in one of the chambers in the cylinder for forcing the material therein down into the chute disposed below it, and means engaged by the plunger means on elevation of said pusher arms out of the cylinder chamber to thereby permit rotative movement of the hopper, the chutes and the cylinders.

3. In a machine of the character described, an intermittently revolvable hopper having a plurality of outlet openings, chutes located below the outlet openings and movable in company therewith, tubes located below the chutes and movable with the same, a rotating support for the tubes, chutes and hopper, a measuring device located between each hopper outlet and a chute and rotatable relative to the hopper and chute by means independent of the hopper and chute, said measuring device being provided with a vertically disposed dividing partition normally located between each hopper outlet and chute, means for rotating each measuring device to cause it to di-

rect material received by it from the hopper into the chute, an agitator operative within the hopper and provided with closure elements for closing the hopper outlet openings during periods of rotation of the hopper, means for moving the agitator to non-closing position and vibrating the same while in such position during periods of rest of the hopper, a feed control ring within the hopper and having its lower edge disposed within the measuring devices whereby its lower edge will scrape off surplus material in the measuring device upon movement of the same from filling to delivery position, means for adjustably positioning said control ring, and means entrant into the tubes for compressing the material delivered into the same from the hopper and through the measuring devices and chutes.

4. In a machine of the character described, an intermittently rotatable hopper provided with a plurality of outlet openings, a chute disposed below each of the hopper outlets but to one side of the same, said chutes being rotatively moved in company with the hopper, a cylinder located below each hopper outlet, means for rotating said cylinder independently of and relative to the chutes, means for dividing each cylinder into two chambers, one of which communicates with an outlet opening while the other simultaneously communicates with a chute, a vertically disposed tube having an open upper end disposed beneath each of said chutes, said tube-end being disposed to one side of the cylinder located above it, an agitator operative within the hopper and provided with closure elements for closing the hopper outlets during periods of rotative movement of the hopper, means for moving the agitator to non-closing position and simultaneously vibrating the same while in such position during periods of rotative rest of the hopper, and means entrant into the tubes for compressing the material delivered into the same from the hopper and through the cylinders and chutes.

5. In a machine of the character described, an intermittently revolvable hopper for containing particles of material to be fed into tubes, said hopper having outlet openings, a plurality of intermittently revolvable chutes movable in company with the hopper, a plurality of measuring devices interposed between said chutes and the outlet openings of the hopper, rotatable means for carrying a tube below each of the chutes to receive material therefrom, an agitator operative within the hopper and provided with closure elements for closing the outlet openings of the hopper during its periods of rotation, means for moving the agitator to non-closing position and vibrating the same while in such position during periods of rest of the hopper, plunger means entrant into the tubes for compressing the material delivered into the same from the hopper and through the measuring devices and chutes, pusher means for engaging the material in each of the measuring devices and exerting pressure on the same to force it down into the chute below it and means for lowering the plunger means while the pusher means is in operative material-ejecting position.

JOHN M. BINDER.