June 5, 1934. L. A. BECKER 1,961,126

WRAPPER FILLING AND SEALING MACHINE

Filed Sept. 7, 1929 9 Sheets-Sheet 1

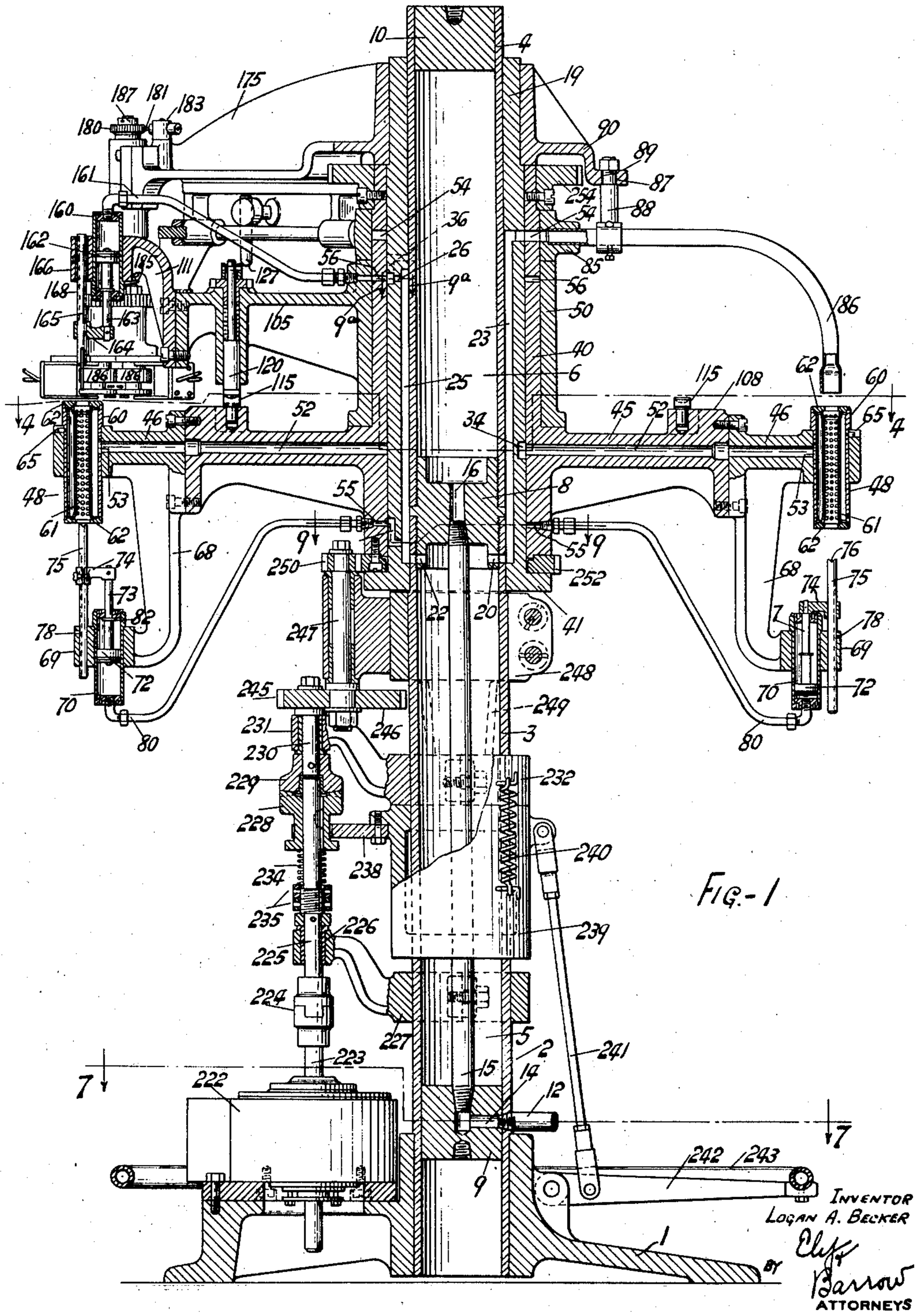

FIG.-1

INVENTOR
LOGAN A. BECKER
BY Cliff & Barrow
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June 5, 1934. L. A. BECKER 1,961,126

WRAPPER FILLING AND SEALING MACHINE

Filed Sept. 7, 1929 9 Sheets-Sheet 2

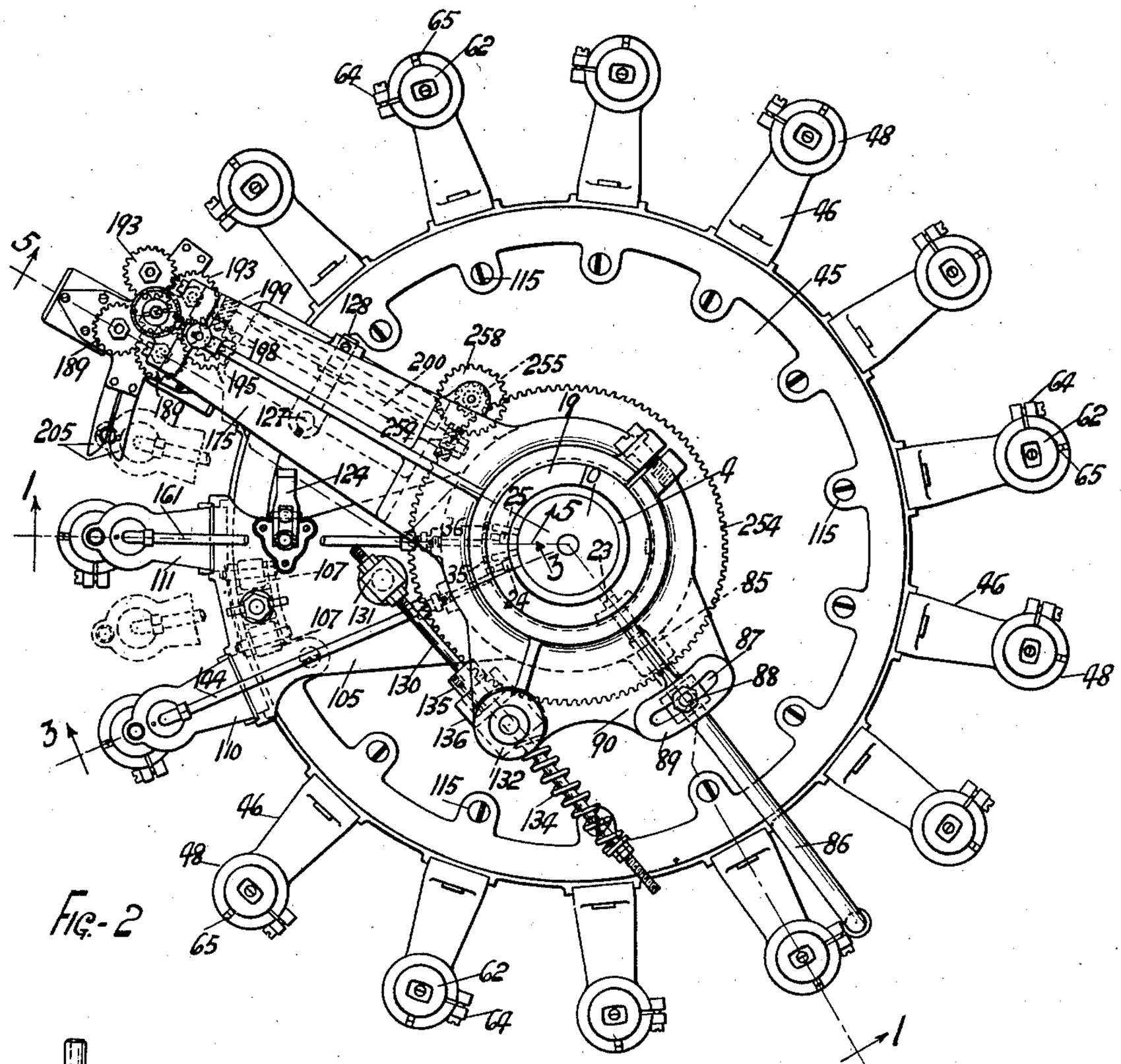

FIG. 2

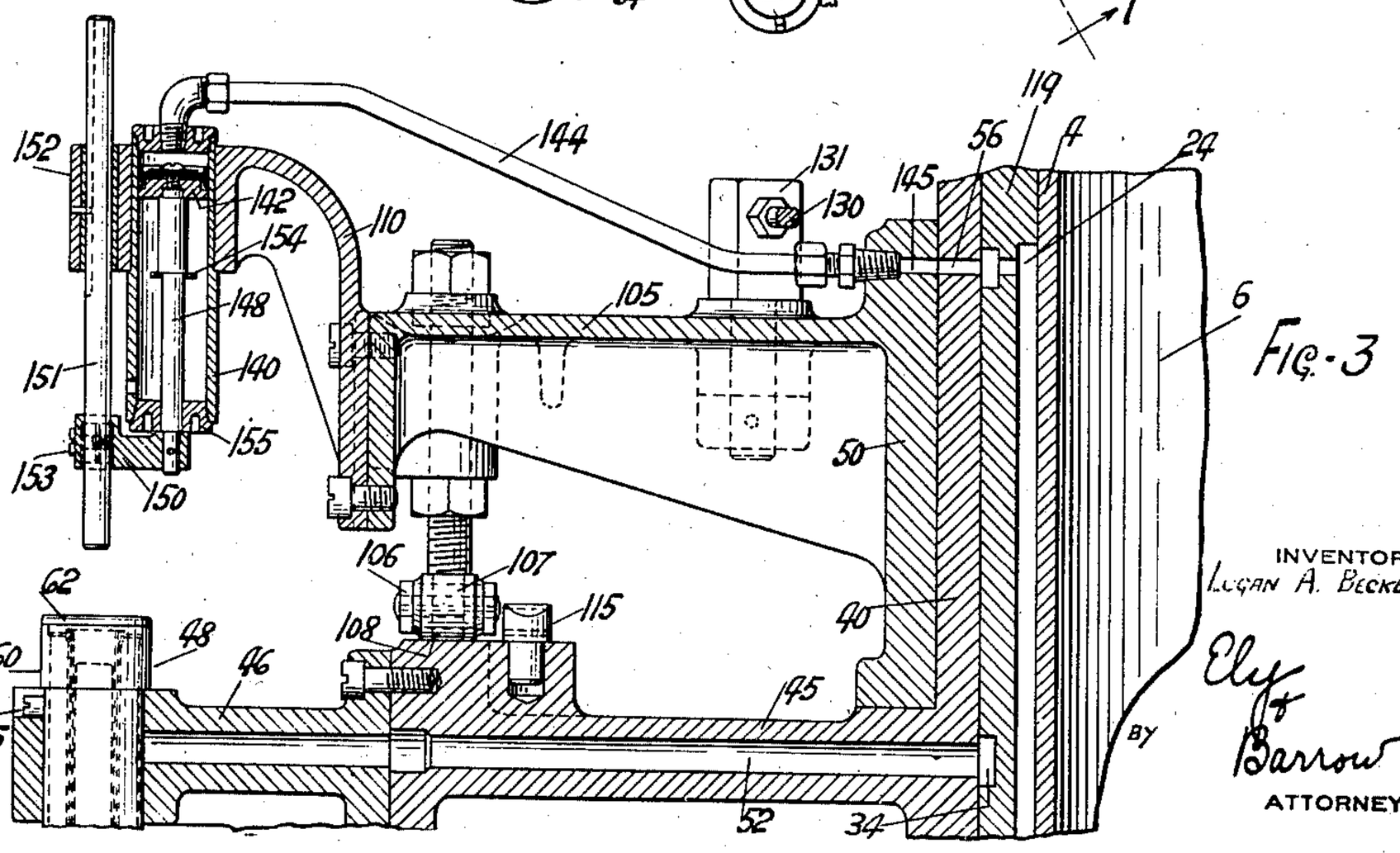

FIG. 3

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June 5, 1934. L. A. BECKER 1,961,126

WRAPPER FILLING AND SEALING MACHINE

Filed Sept. 7, 1929 9 Sheets-Sheet 3

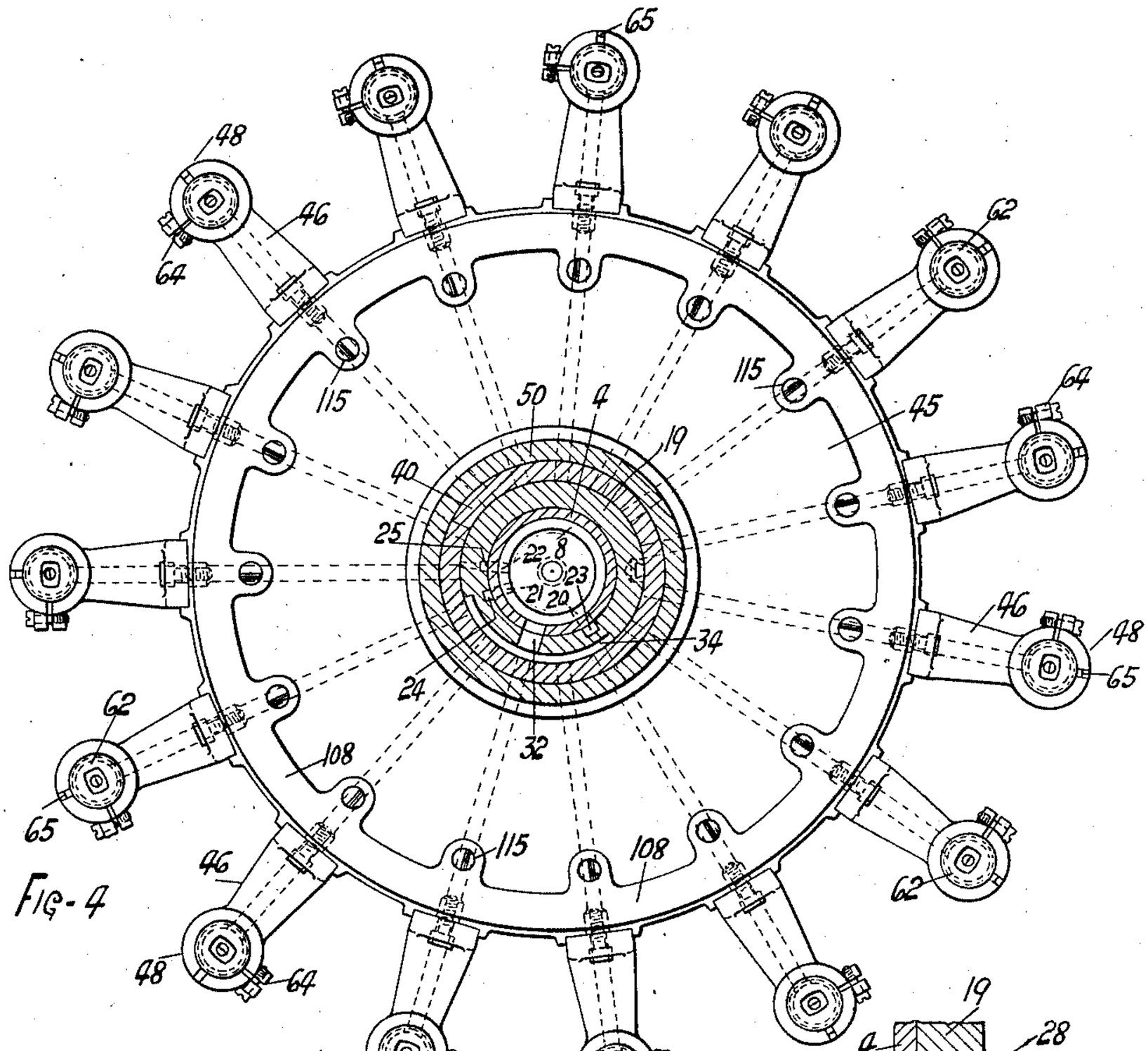

FIG-4

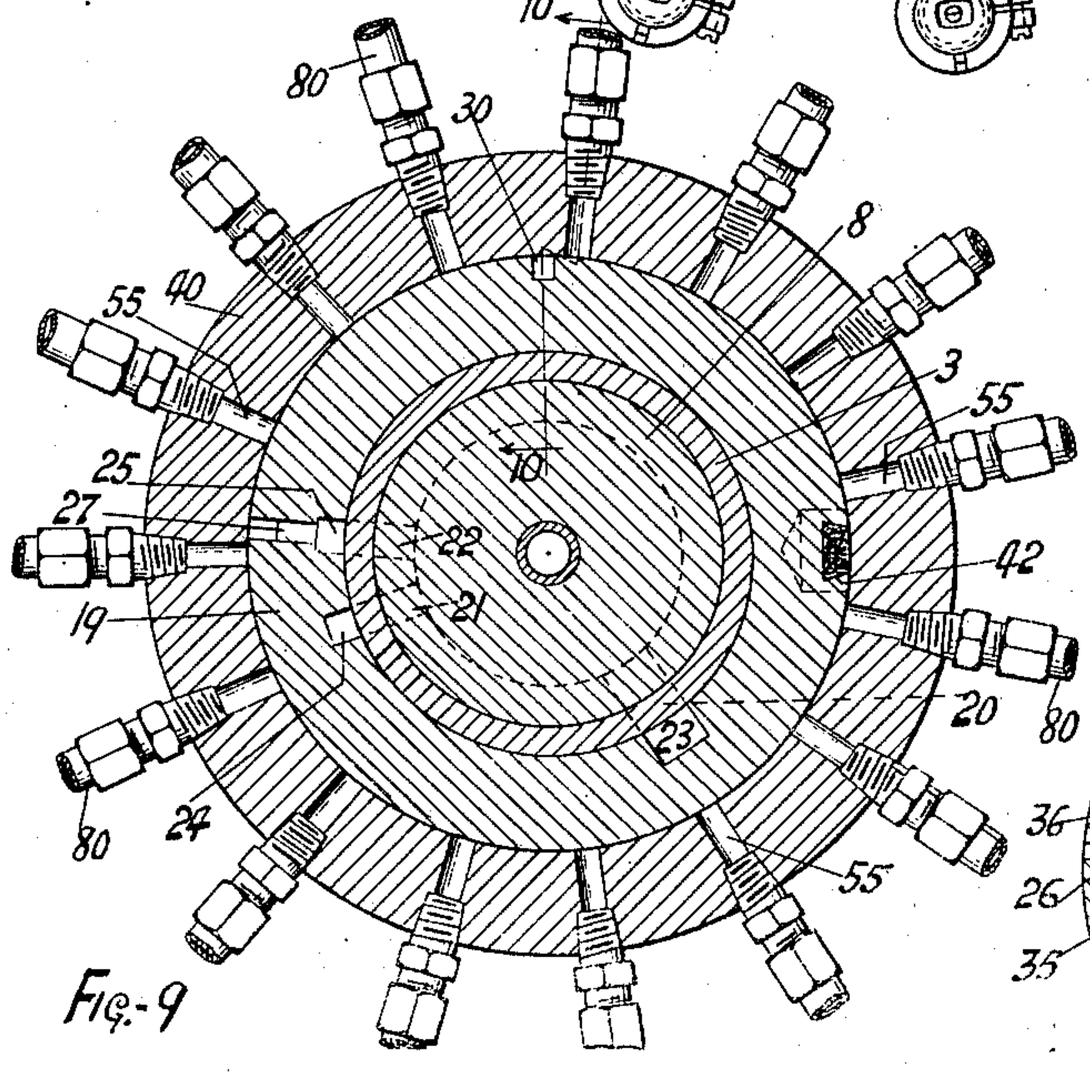

FIG.-9

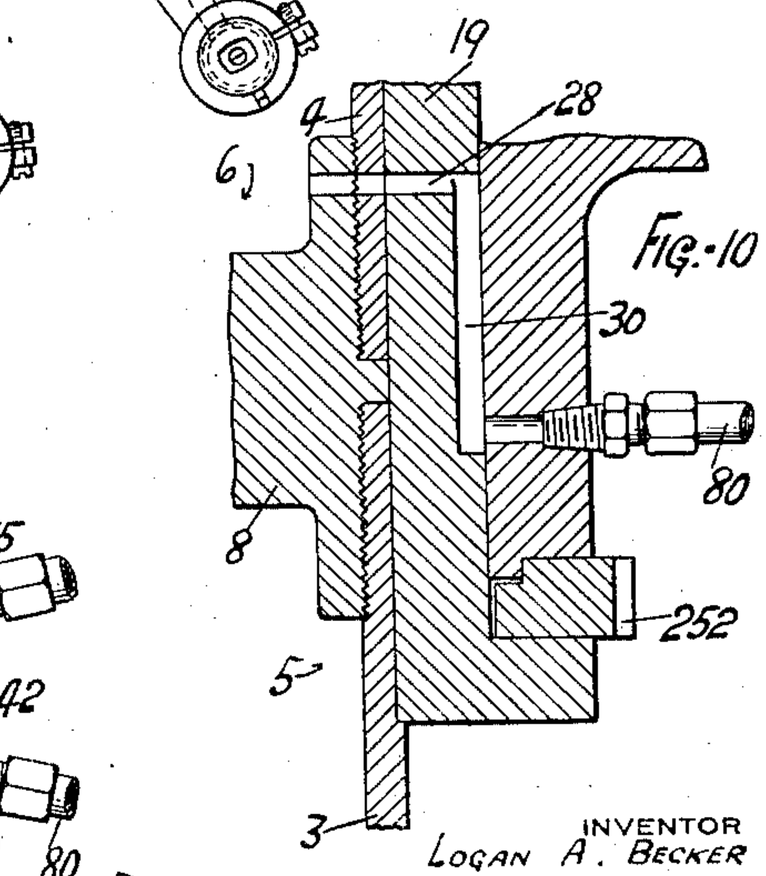

FIG.-10

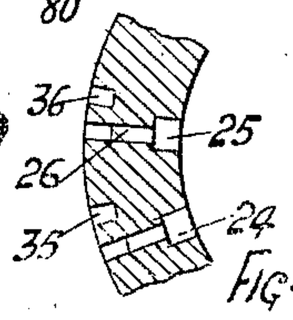

FIG-9a

INVENTOR
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BY Clyde Barrow

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June 5, 1934. L. A. BECKER 1,961,126

WRAPPER FILLING AND SEALING MACHINE

Filed Sept. 7, 1929 9 Sheets-Sheet 4

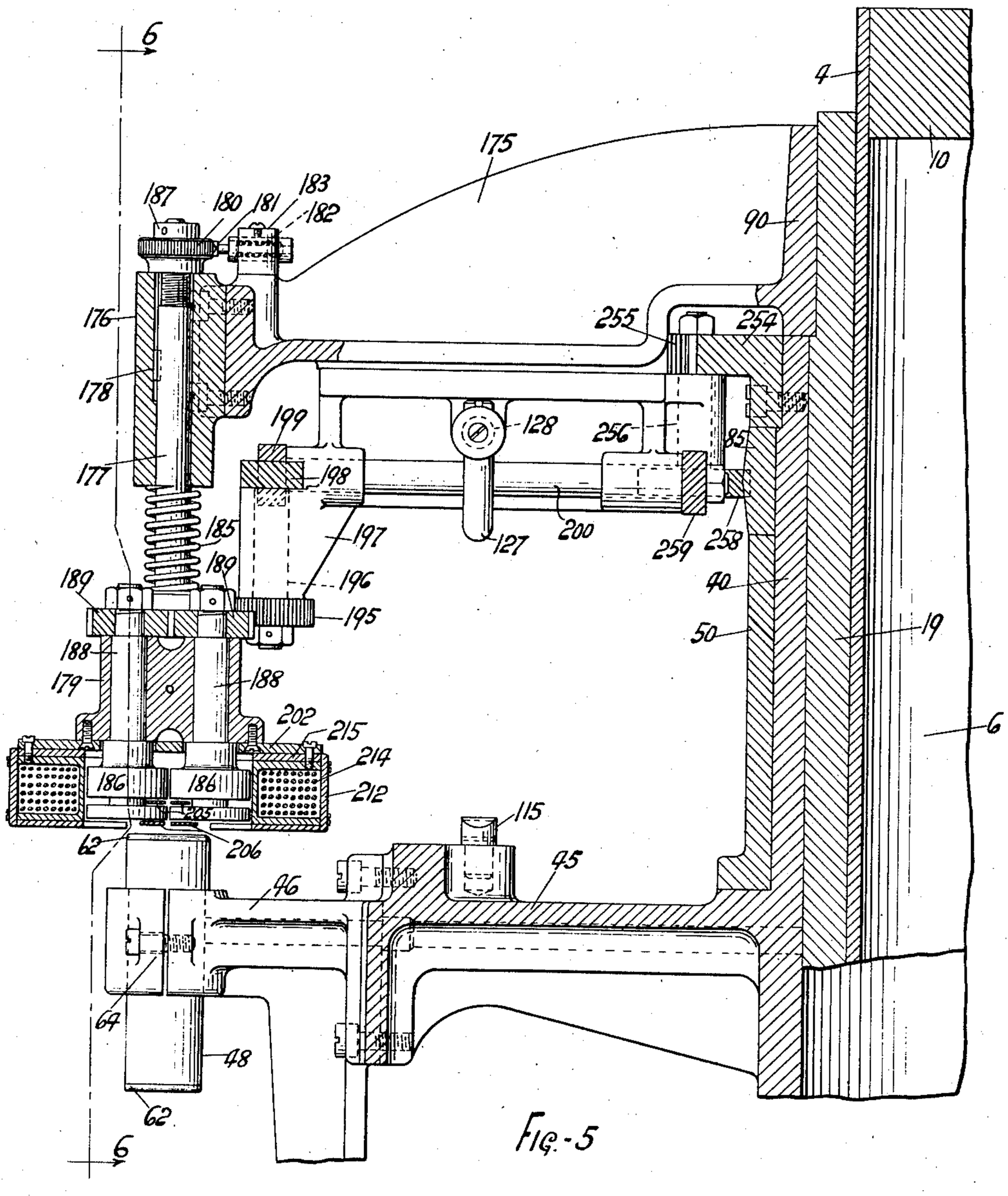

FIG.-5

INVENTOR
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June 5, 1934. L. A. BECKER 1,961,126

WRAPPER FILLING AND SEALING MACHINE

Filed Sept. 7, 1929 9 Sheets-Sheet 5

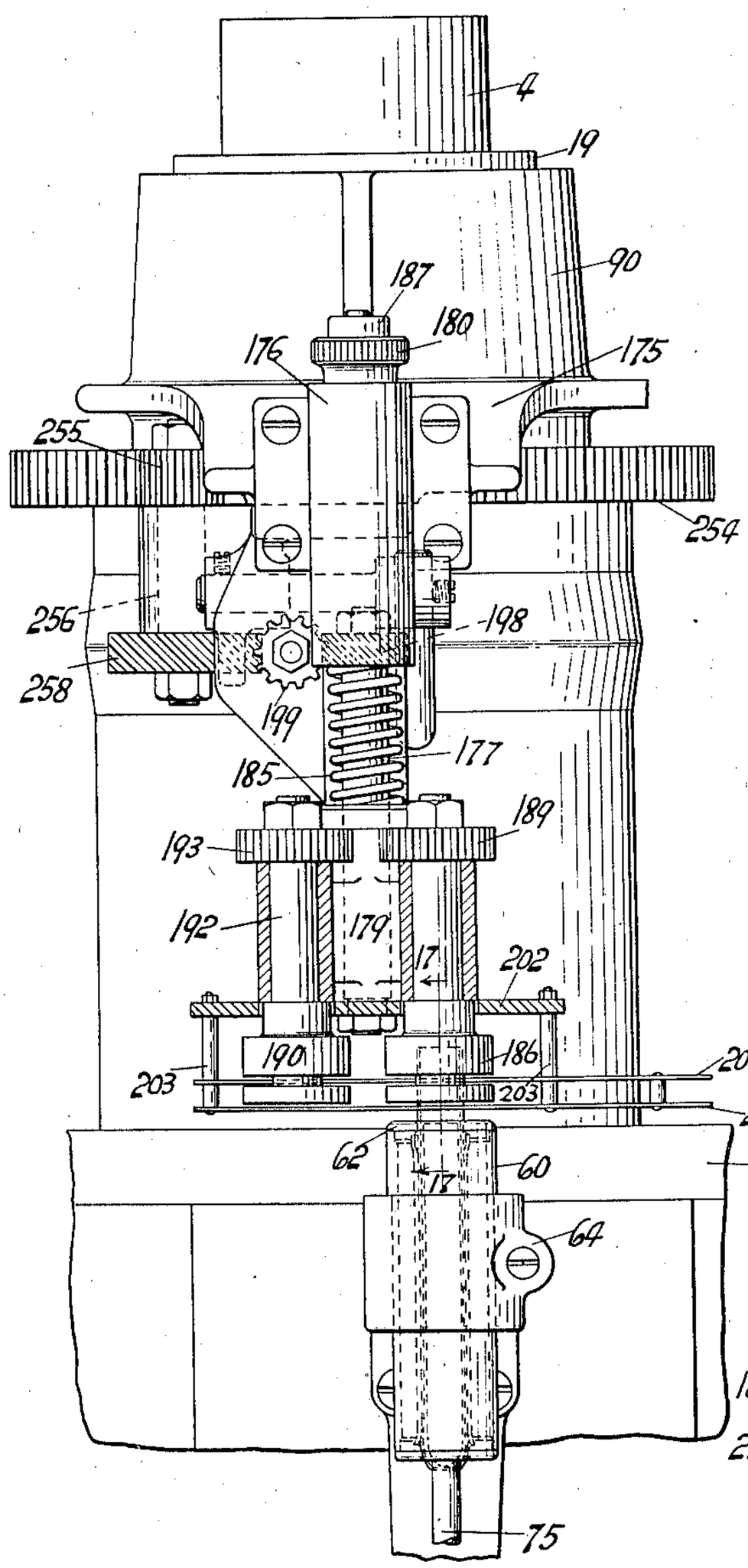

FIG. - 6

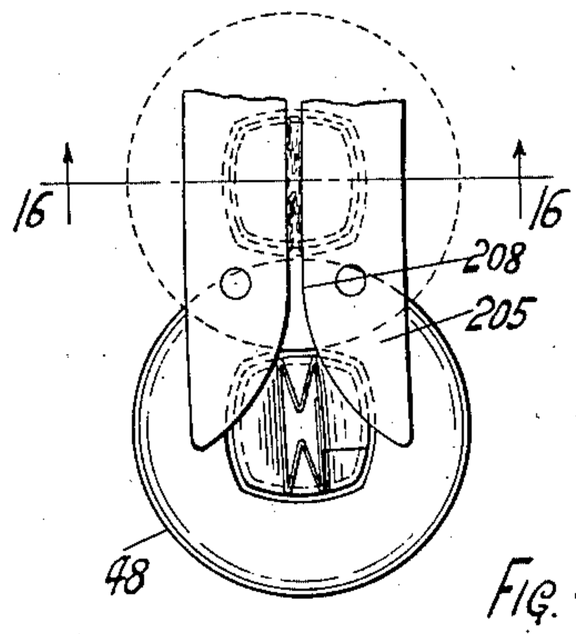

FIG. - 15

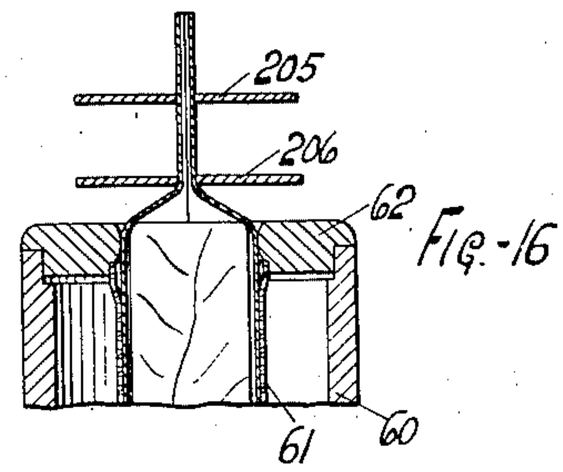

FIG. - 16

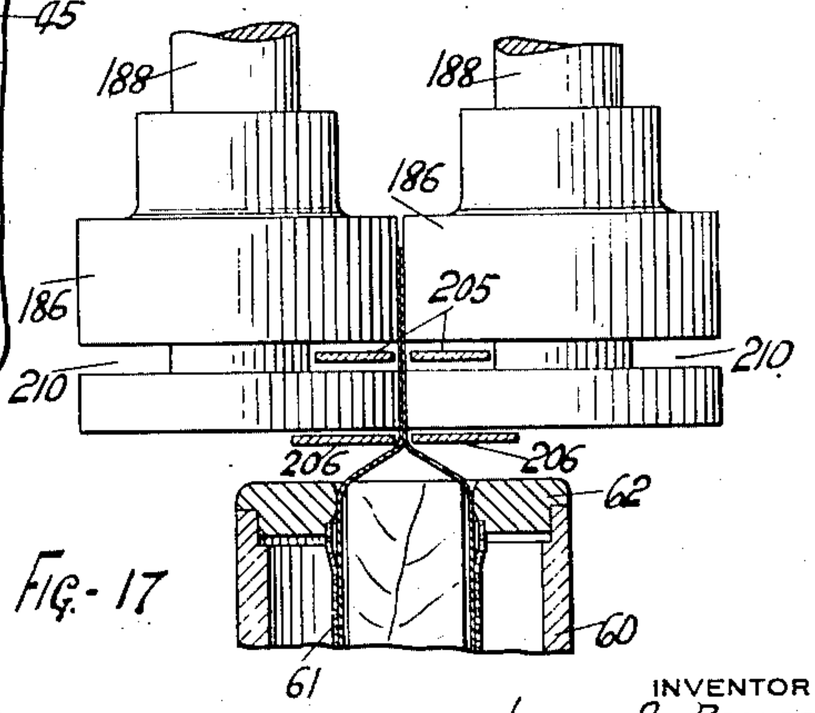

FIG. - 17

INVENTOR
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June 5, 1934. L. A. BECKER 1,961,126

WRAPPER FILLING AND SEALING MACHINE

Filed Sept. 7, 1929 9 Sheets-Sheet 6

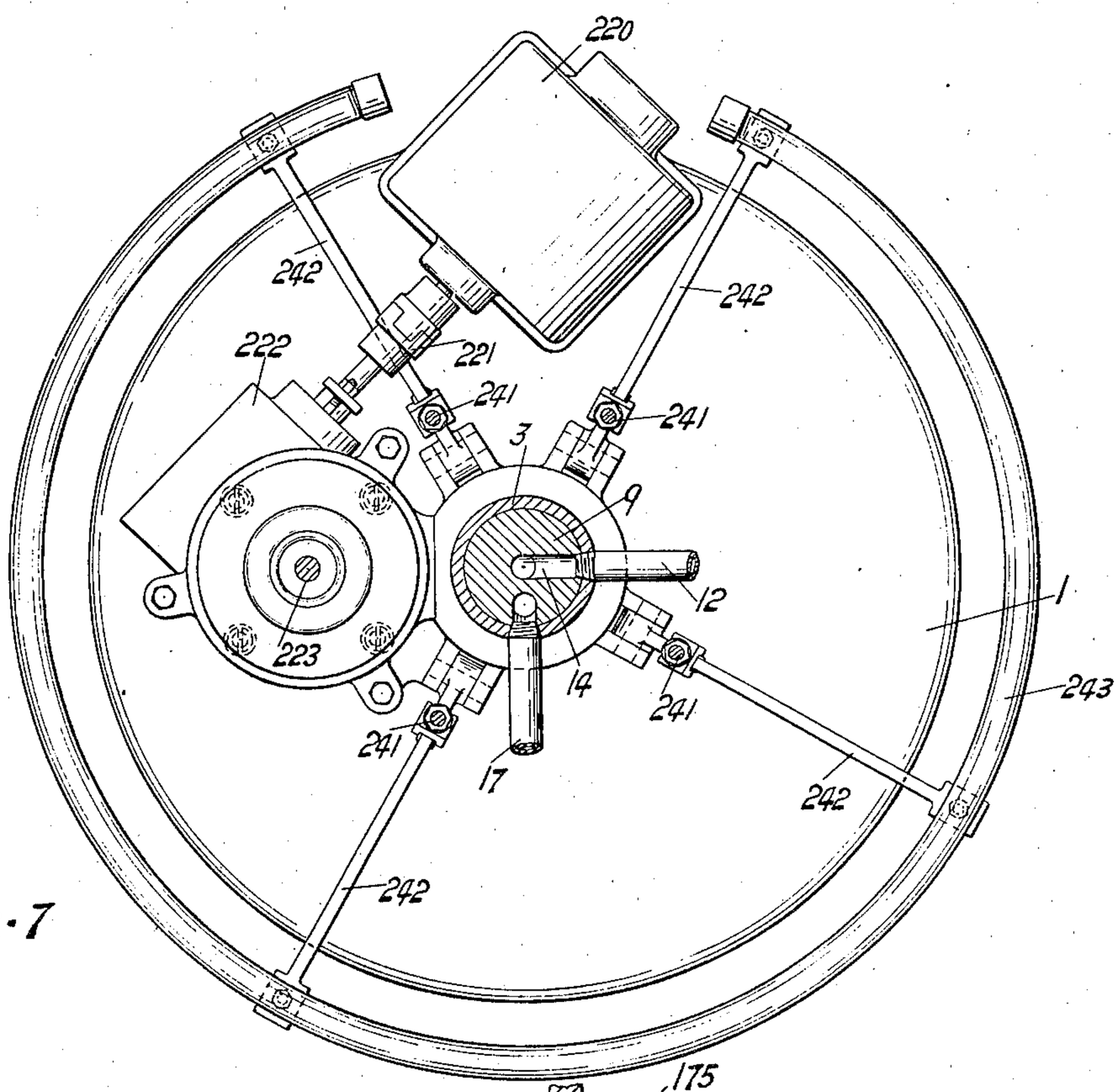

FIG. - 7

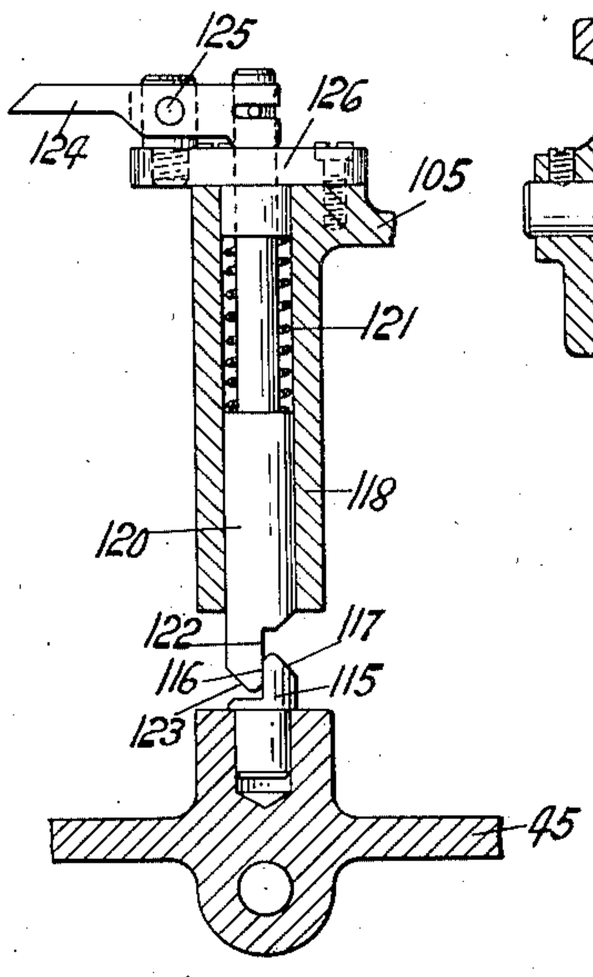

FIG. - 18

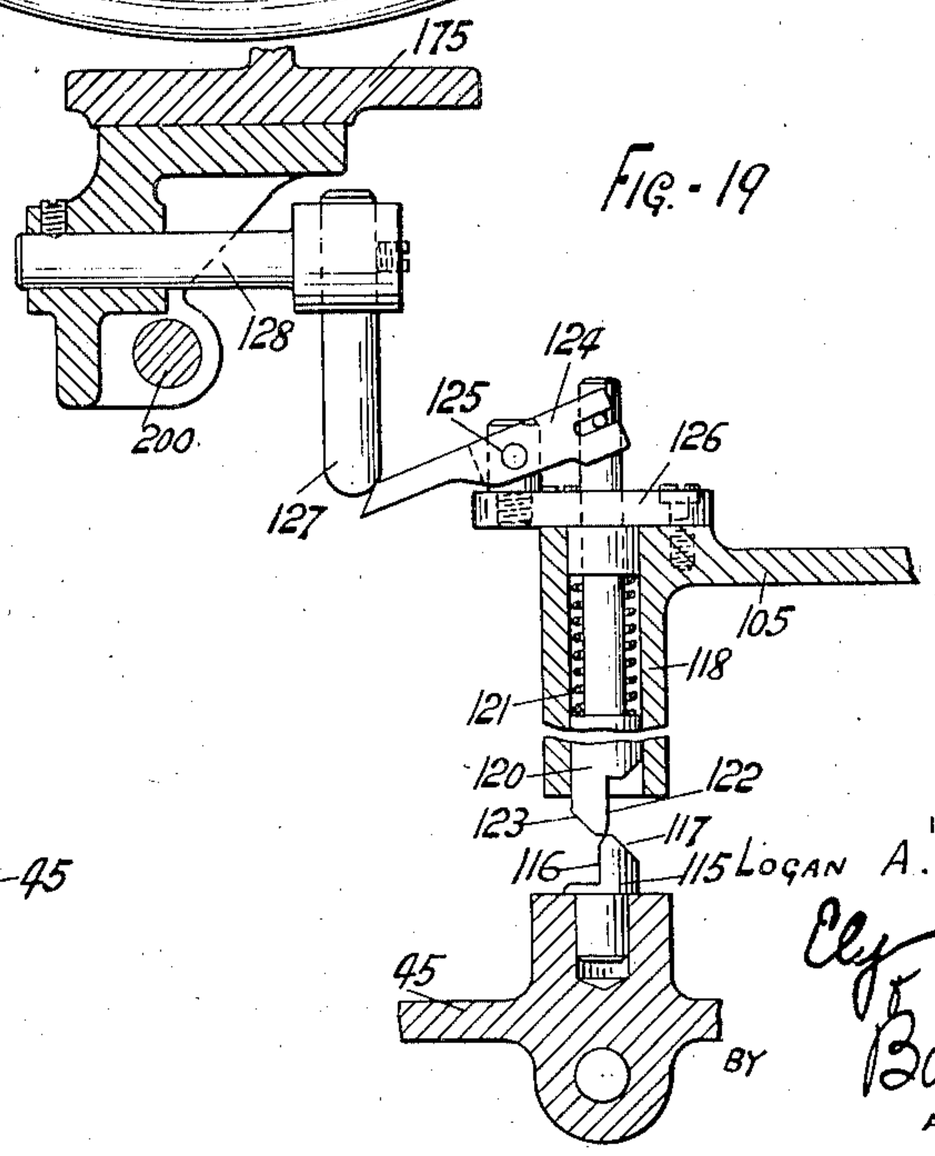

FIG. - 19

INVENTOR
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June 5, 1934. L. A. BECKER 1,961,126

WRAPPER FILLING AND SEALING MACHINE

Filed Sept. 7, 1929 9 Sheets-Sheet 7

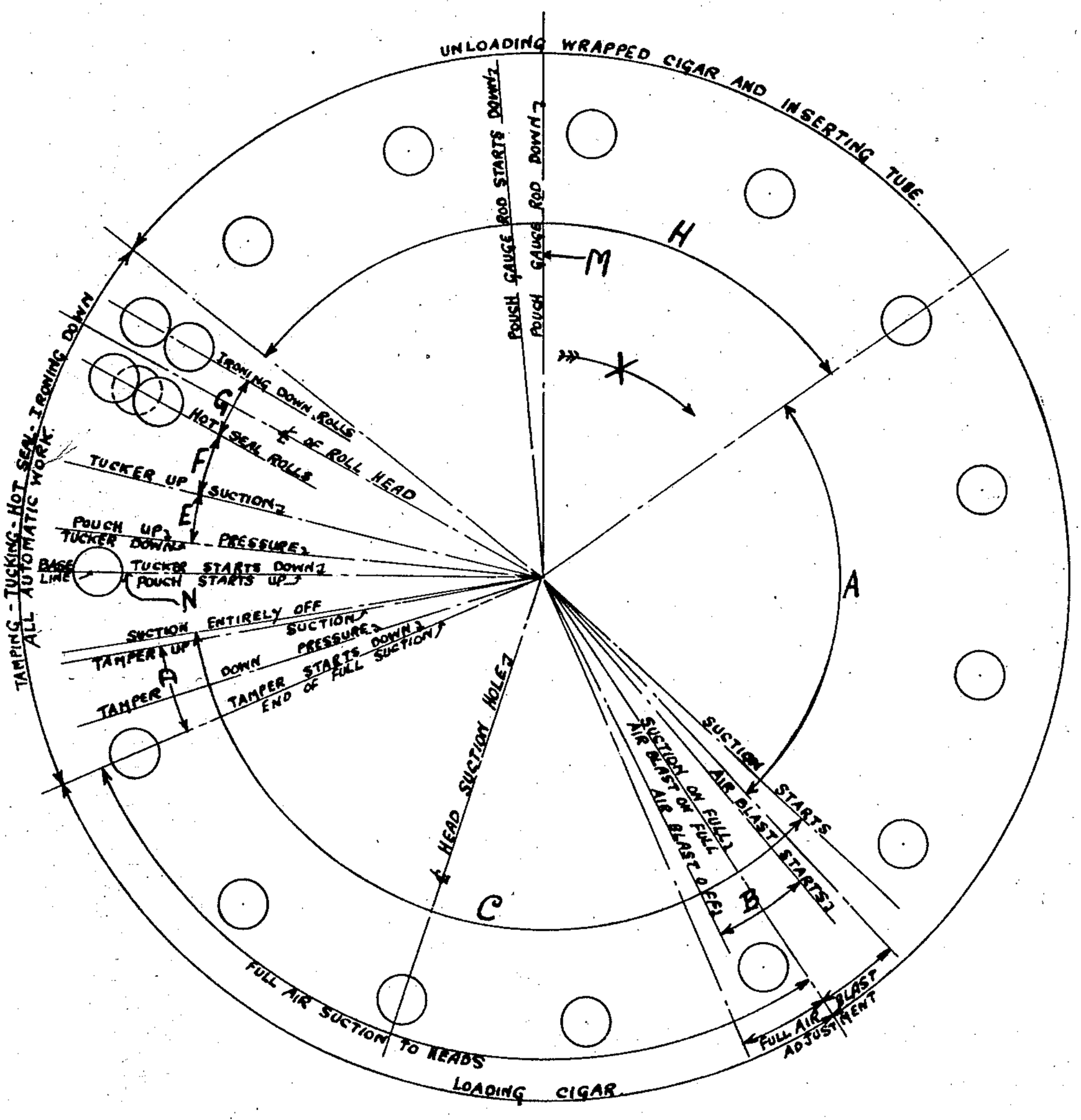

FIG. 8

LOGAN A. BECKER. INVENTOR

BY Clyde Barrow

ATTORNEYS

June 5, 1934. L. A. BECKER 1,961,126

WRAPPER FILLING AND SEALING MACHINE

Filed Sept. 7, 1929 9 Sheets-Sheet 8

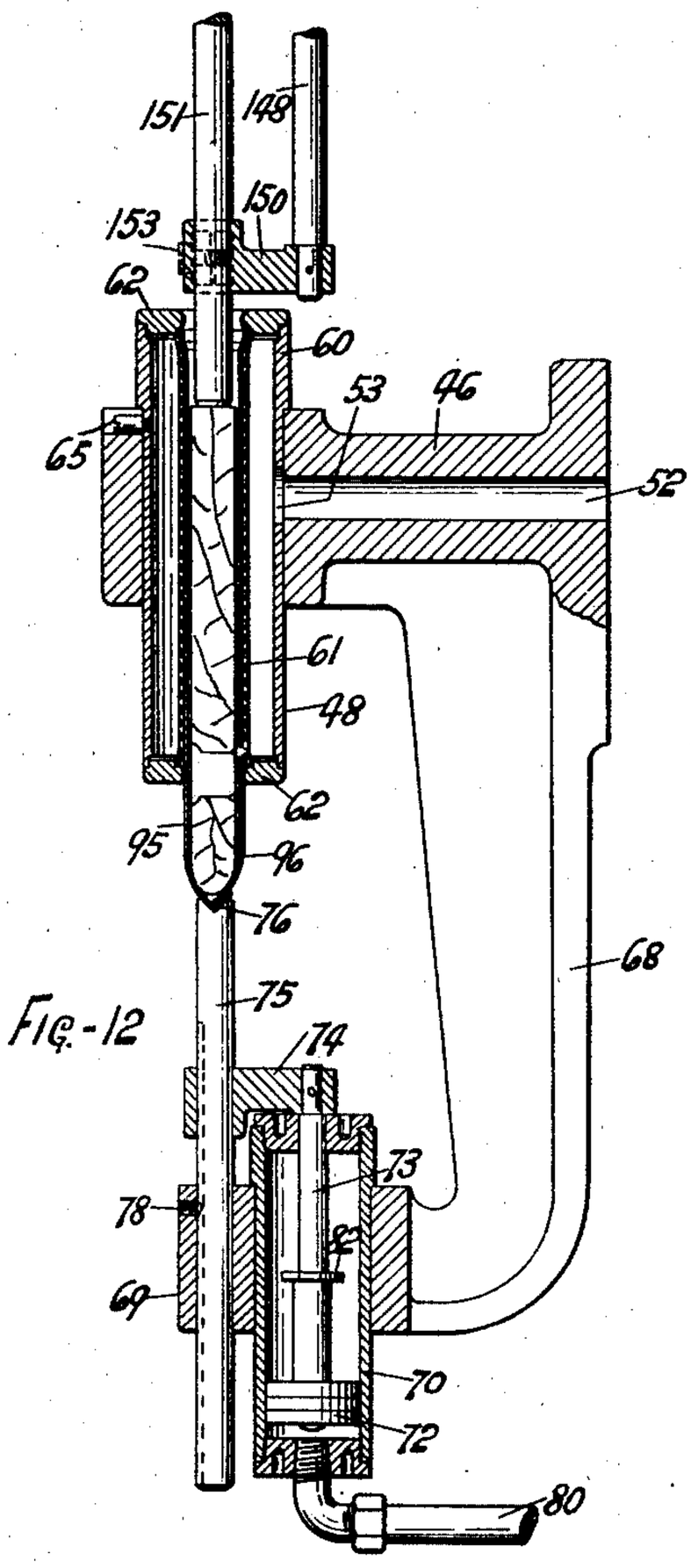

FIG. - 12

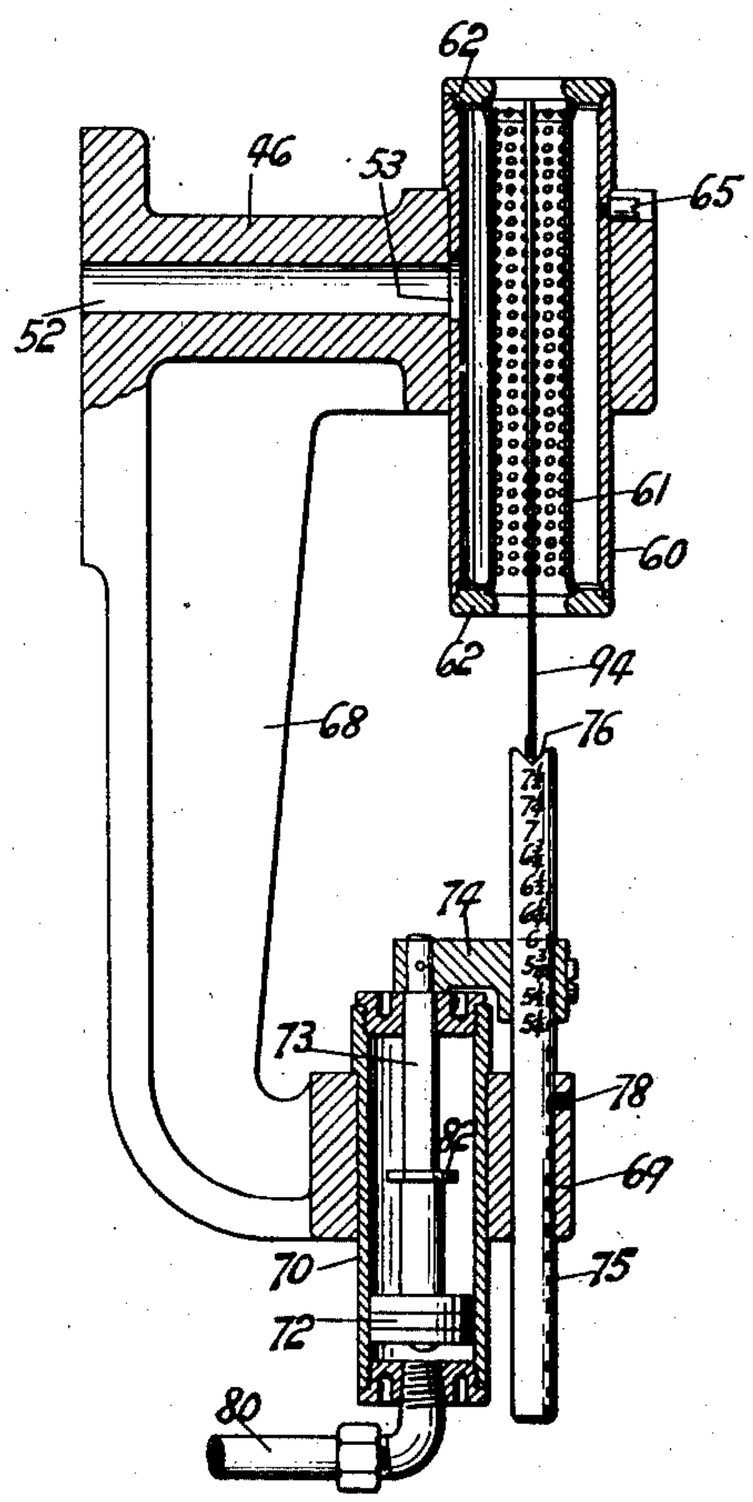

FIG. - 11

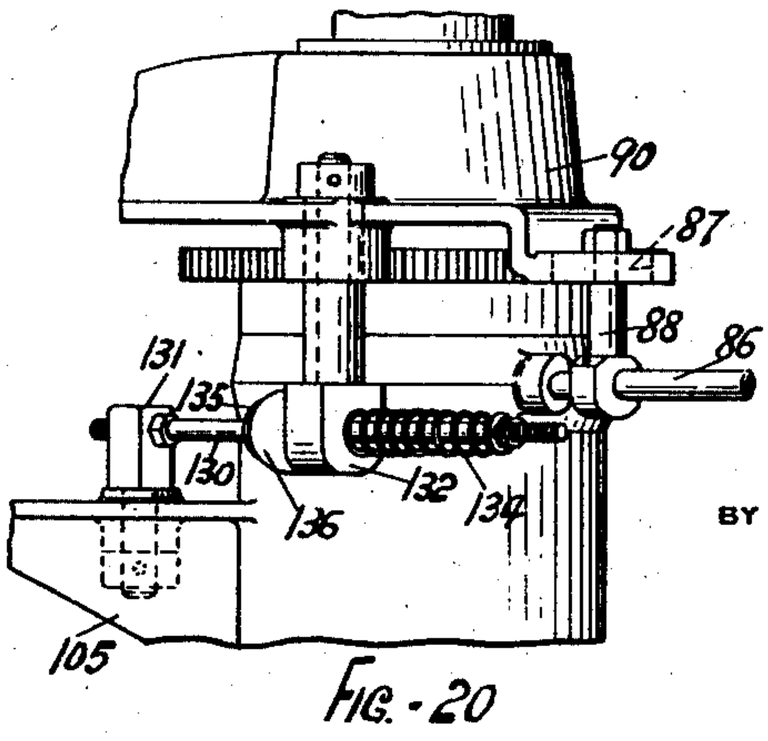

FIG. - 20

INVENTOR
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June 5, 1934. L. A. BECKER 1,961,126

WRAPPER FILLING AND SEALING MACHINE

Filed Sept. 7, 1929 9 Sheets-Sheet 9

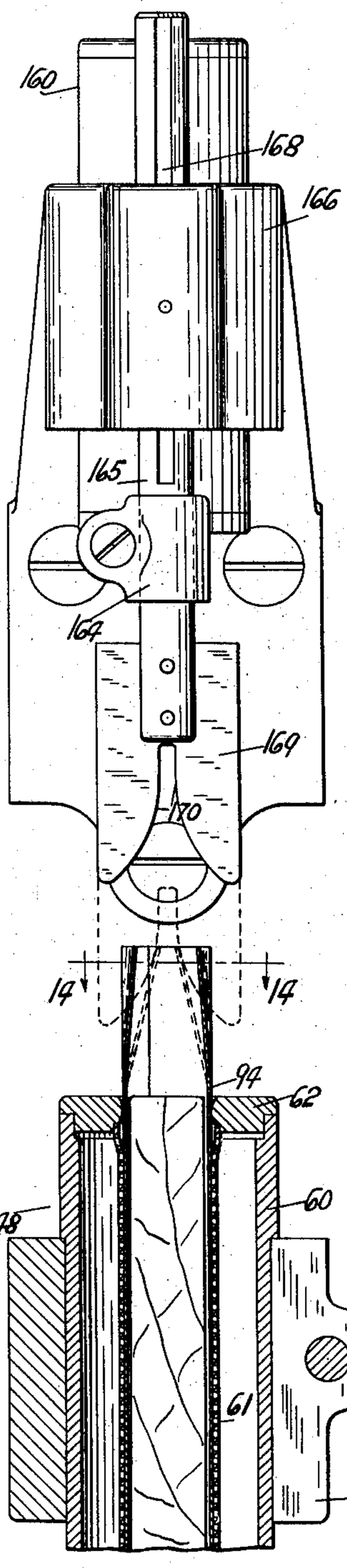

FIG. - 13

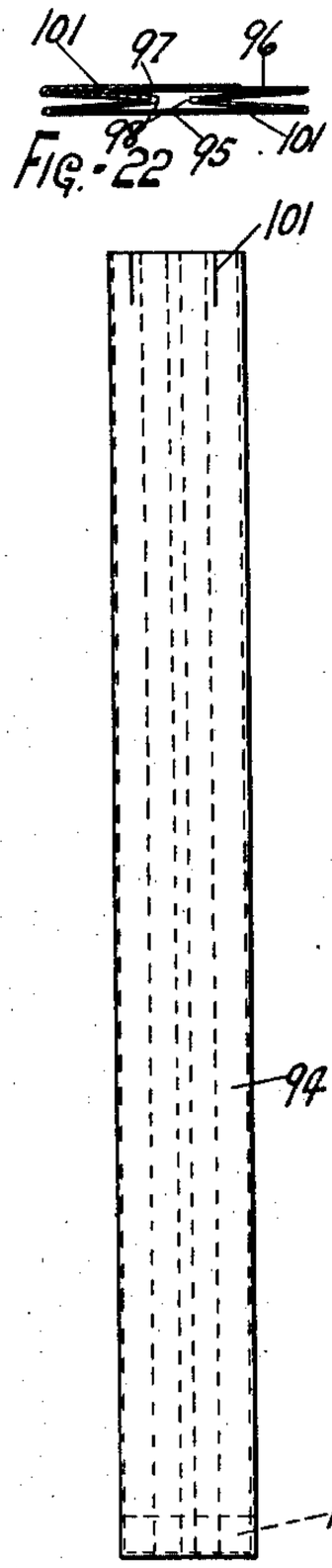

FIG. - 22

FIG. - 21

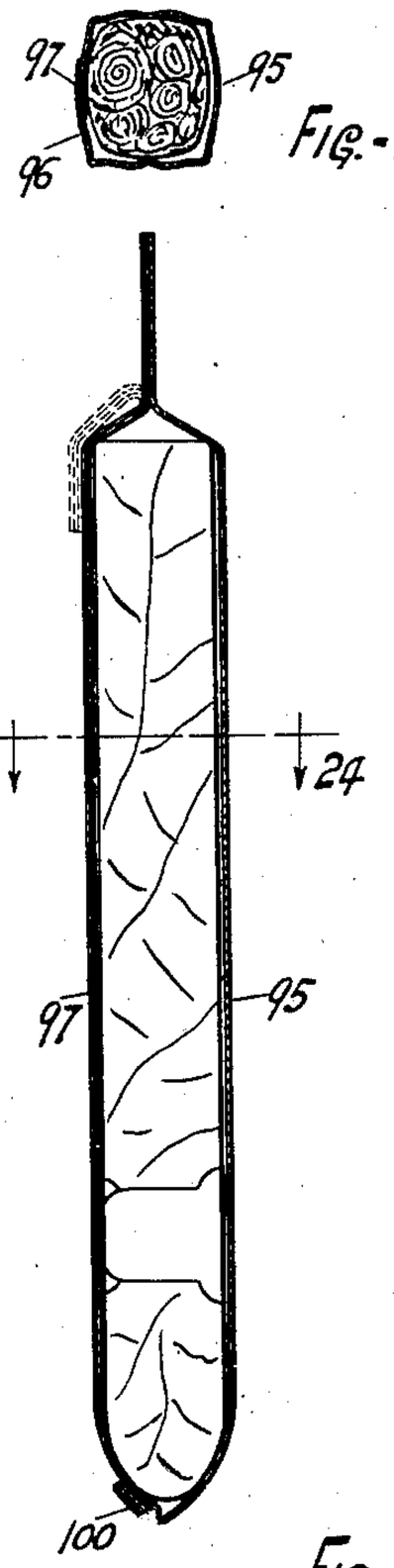

FIG. - 24

FIG. - 23

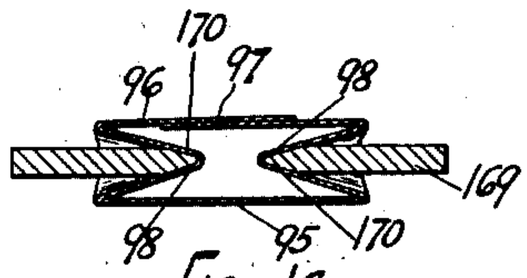

FIG. - 14

INVENTOR
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BY Ely & Barrow

ATTORNEYS

Patented June 5, 1934 1,961,126

UNITED STATES PATENT OFFICE

1,961,126

WRAPPER FILLING AND SEALING MACHINE

Logan A. Becker, Lakewood, Ohio, assignor to The Dobeckmun Company, Cleveland, Ohio, a corporation of Ohio

Application September 7, 1929, Serial No. 390,950

56 Claims. (Cl. 93—6)

The present invention relates to the wrapping or packaging of articles in pouches or containers. The form of the invention shown herein is particularly adapted and designed for the commercial wrapping and sealing of cigars in tubes of transparent sheet cellulose material, known in the art as "cellophane," although the principles of the invention and many features thereof are suitable for the wrapping and sealing of other articles and the use of other materials or forms for the wrapper.

Certain features of the invention are particularly adapted for the specific use set forth herein and the invention will be described with special reference to the packaging of cigars in "cellophane," but it will be understood that it is not the intention to limit the invention or the patent thereon to that one use.

The pouches or containers may be of any form, but those selected for the purpose of illustrating the invention are single tubes of cellulose sheeting and the invention is particularly adapted for use with the waterproofed variety of cellulose sheeting which is provided with a thin, waterproof coating which is fusible by heat and pressure so as to cause the sheets to adhere together to form an air-tight seal. The completed wrapper constitutes a very effective sealing medium which will retain the moisture in the cigar or other commodity and in which the article will keep fresh indefinitely. In addition, the transparent wrapper, having a gloss or sheen, improves the appearance and salability of the articles which are contained therein.

The object of the invention, as applied to the loading of cigars, is to construct a machine which will receive the unfilled containers or tubes sealed at one end, open and spread the same to receive the cigars, locate the cigars at uniform distances in the wrappers, seal the ends, and deliver the wrapped and sealed cigars. The machine is equipped with means for sealing the wrappers under heat and pressure so that an air and moistureproof enclosure is obtained. The machine, except for the insertion of the wrappers or containers, the loading of the cigars and the positive ejection of the wrapped cigars, is automatic and requires the attention of one or two unskilled operators who can thereby perform the work previously done by a large number of operatives and do the work better and more effectively. The output of the machine is rapid and the work is done with exactitude superior to the former hand operations.

It will be understood that while the machine is described with great particularity, the invention is not limited to exact conformity with the details, and changes and improvements may be made therein without departing from the essential features of the invention. Nor is it intended, by the detailed description, to confine the invention to the exact type or kind of machine shown herein as certain features thereof may be combined with machines of other types. The invention is shown as embodied in a continuously moving machine as distinguished from a machine of the intermittent or indexing type, but it is evident that the features of the invention may be employed in machines of the latter type.

It is believed that the invention shown herein is the first automatic or semiautomatic machine for the uses and purposes set forth, and as such, the claims herein are entitled to liberal treatment and a broad range of equivalents.

In the drawings in which the preferred form of the invention is shown:

Figure 1 is a vertical section of the machine, being taken on the line 1—1 of Figure 2;

Figure 2 is a plan view;

Figure 3 is a section on the line 3—3 of Figure 2, somewhat enlarged;

Figure 4 is a section taken on the irregular line 4—4 of Figure 1, the section being taken just above the rotary table or head;

Figure 5 is a section on the line 5—5 of Figure 2, taken through the sealing devices;

Figure 6 is a vertical section of the same on the line 6—6 of Figure 5;

Figure 7 is a section on the line 7—7 of Figure 1, taken immediately above the base of the machine;

Figure 8 is a diagram or chart showing the sequence of the several operations about the machine;

Figure 9 is a detailed section through the central post or valve, the section being taken on the line 9—9 of Figure 1;

Figure 9ª is a detail section on the line 9ª—9ª of Figure 1;

Figure 10 is a section on the line 10—10 of Figure 9;

Figure 11 (Sheet 8) is a sectional view through the holder, showing the wrapper or tube as it is received in the machine and before it is opened;

Figure 12 is a view showing the cigar in place and tamped or moved down into its position in the wrapper;

Figure 13 is a view showing the tucking operation, which is the first of the sealing operations;

Figure 14 is a section on the line 14—14 of Figure 13;

Figure 15 (Sheet 5) is a view, in plan, showing the devices for bringing the end of the wrapper together; following the tucking operation and prior to the sealing;

Figure 16 is a section on the line 16—16 of Figure 15;

Figure 17 is an enlarged section on the line 17—17 of Figure 6 showing the sealing operation;

Figure 18 (Sheet 6) is a view showing the latch or catch mechanism for moving the tucker head and tamping device with the table;

Figure 19 is a view showing the same elements in a second position;

Figure 20 (Sheet 8) is a side view of the tucker head return mechanism;

Figure 21 (Sheet 9) is a front view of the empty pouch;

Figure 22 is a section thereof showing the condition of the pouch when received in the machine;

Figure 23 is a view showing the pouch and sealed package; and

Figure 24 is a section thereof on the line 24—24 of Figure 23.

General statement

As indicated in the opening portion of the specification, the machine comprises a turntable or movable carrier having thereon a series of pockets or holders, equally spaced, each of which is designed to receive a single pouch or tube which is dropped therein by an operator located at the side of the table. After the pouch is inserted in the holder with the mouth or unsealed end uppermost, it is expanded by the joint action of a momentary air blast directed in the mouth of the holder and a partial vacuum or suction applied about the holder. These operations are carried on during a part of the rotation of the table. While the tube is expanded and during the continuance of the suction which holds the container, the same operator or a second operator drops a cigar in each tube within the pocket.

The tube with the cigar therein then passes under a plunger or tamper which enters the mouth of the tube and forces the cigar down to its position in the tube, this operation making it unnecessary for the operator to do more than insert the cigar, the machine insuring the locating of the cigar at the base of the tube and setting all of the cigars at the same point in the tubes so that the product of the machine is uniform.

The suction is then released and the tube, with the cigar therein, is elevated sufficiently to bring the cigar to the top of the holder and expose the extending unsealed end. The end is then presented to a tucker which initiates the sealing of the wrapper along the creases therein so that the sealing will be properly carried out. The panels of the pouch are then brought together in close relationship by converging plates and are forced together by heated pressure devices, here shown in the form of heated rolls, which melt the waterproof coating and render it tacky so that the end of the tube will be stuck together. This end is then ironed to complete the sealing operation.

This leaves the wrapped cigar in the holder, and while the ejecting operation may be performed upon the machine, it has not been thought necessary to incorporate such a device in the present embodiment of the invention as the operator, who is stationed at this point, may lift the wrapped and sealed package from the holder which is then ready to receive a fresh wrapper. In placing the wrapped cigar in the box, the sealed flap or web may be folded under the cigar, as shown in dotted lines in Figure 23.

Cross reference is made to the following applications of the present inventor and John M. Munson:

Serial No. 352,424, filed April 4, 1929, which shows and claims the device for expanding the container to receive the cigar;

Serial No. 369,690, filed June 10, 1929, which shows and claims the container or wrapper per se; and

Serial No. 379,423, filed July 19, 1929, which shows and claims the method of wrapping.

Turntable and holders

The machine comprises a base or stand 1 which supports the various parts of the machine, from which rises the central post 2 which is hollow or tubular for the reasons to be brought out. The post is in two sections 3 and 4 connected together and divided into a lower chamber 5 and an upper chamber 6 by means of the threaded plug or block 8. The lower end of the section 3 is closed by a plug 9 and the upper end of the section 4 by a plug 10 which may have a drive fit therein.

The chamber 5 is a pressure chamber, being filled with air under pressure to supply the blast for opening the containers and for operating certain of the moving elements of the machine. The chamber 6 is a vacuum chamber for expanding and holding the containers and also for operating certain of the moving elements of the machine. The vacuum is supplied through a pipe 12 connected at one end to the intake side of an air compressor (not shown) and at the other end tapped into the base of the machine and into an angular passage 14 in the plug 9 which communicates with the vertical pipe 15 leading to the chamber 6, through the passage 16 in the plug 8. Pressure is supplied to the chamber 5 through the pipe 17 from the pressure side of the air pump.

Surrounding the upper end of the central post and press fitted thereon is the stationary sleeve or valve member 19, this sleeve extending below the plug 8 and communicating with the chamber 5 through transverse ports 20, 21 and 22 (Figure 9). The port 20 communicates with a vertical groove or riser 23, slightly elongated at its upper end, which conducts air to the blast nozzle. The port 21 communicates with a vertical groove or riser 24 which conducts air under pressure to lower the tamping device. The port 22 communicates with a vertical groove or riser 25 which lowers the tucker through the upper port 26 and raises the support for the container so as to expose the end through the lower port 27.

At the lower end of the vacuum chamber 6 is the lateral port 28 (Figure 10) which communicates with a downward passage 30, which withdraws the air from beneath the plunger that supports the container after the removal of the wrapped cigar so that a new wrapper can be inserted. At a point approximately opposite the port 28 and communicating with the vacuum chamber is a larger port 32 which communicates with a horizontal passage 34 extending partially around the outer surface of the valve member 19. The extent of the passage 34 is sufficient to maintain the suction upon the holder from the point where blast is applied to open the containers to the point where the cigar and container is ready

to be elevated for the tucking operation after the tamping operation.

In the upper part of the vacuum chamber are located two similar ports 35 and 36 (Figure 9a), which are provided with extensions that open on the outside of the member 19 in the plane of the discharge openings from the risers 24 and 25. The port 35, which lies between the risers, communicates with the tamper to raise it out of the holder. The port 36, which is located beyond the riser 25, raises the tucker out of the path of the containers after the tucking operation.

Surrounding the valve member 19 is the rotary sleeve 40 which is supported upon the flange 41 of the valve member. A groove 42 in the valve member is filled with a wicking or pad by which the sleeve may be lubricated. From the sleeve 40 extends the carrier or turntable 45, to the outer periphery of which are secured the several split brackets 46 which support the holders or pockets, indicated in general by the numeral 48. On the outside of the sleeve 40 is a sleeve 50, designed to oscillate with the table and to carry the tamper and tucker.

In the embodiment of the invention, fifteen of the brackets and holders are shown and the mechanism is adjusted for that number of devices. The number of holders and corresponding parts of the device, however, may be varied.

The table is provided with radial passages 52, equal in number to the holders, which extend from the inner surface of the sleeve to and register with similar passages in the brackets that open into the interior of the holders through ports 53. These passages are in alignment with the horizontal passage 34, so that the interiors of the holders are subjected to the vacuum during the loading and tamping operations.

The sleeve 40 is provided with a plurality of ports 54 directly above the passages 52 which are adapted to register successively with the port at the top of the riser 23. The sleeve is also provided with an equivalent number of passages 55 below the turntable which are adapted to register successively with the ports 30 and 27 for raising and lowering the support for the container. The sleeve further is provided with ports 56 which register with the upper end of the riser 24 for lowering the tamper, the port 35 for raising the tamper, the port 26 for lowering the tucker, and the port 36 for raising the tucker.

The holders 48 each comprise an outer casing 60 having the port 53 therein, in which is located the central shell 61 which is finely perforated so that the suction may seize and hold the containers. The space around the shell is closed by upper and lower rings 62 and the holders are removably secured in position by the clamps 64 which draw together the split bracket members. Set screws 65 keep the holders from rotating in the brackets. The upper end of each shell is flared slightly, as shown in Figure 13, to provide a funnel-like opening to spread the upper end of the container, and the inner surface of the upper ring 62 is rounded to permit the ready insertion of the container and cigar and to assist in the elevation of the container for the tucking and sealing operations.

Extending downwardly from each bracket 46 is an arm 68 having a lateral extension 69 in which is secured a cylinder 70 with a piston 72 (Figures 11 and 12). The piston rod 73 carries at its upper end an arm 74 in which is adjustably clamped the gage rod or support 75 for the pouch, the upper end of the rod being notched, as shown at 76, to receive the folded and sealed end of the pouch, the notch serving to locate the pouch in the proper position in the holder. The gage rod or support is graduated so that the machine may be set for cigars of different lengths. The lower end of the gage rod is slidable in the projection 69, a key 78 being provided for maintaining the rod in its correct position. The lower end of the cylinder 70 is connected by a pipe 80 with the ports 55. The extent of movement of the plunger and the elevation of the gage rod is fixed by the washer 82 within the cylinder.

Above the oscillating sleeve 50 and around the sleeve 40 is the fixed collar 85 from which is extended the pipe 86 for the blast of air under pressure, the lower end of the pipe being close to and directed into the mouth of the holder, as shown in Figure 1. The collar 85 is fixed in position by means of a pin 88 located in a slot 87 in the flange 89 on the head 90 which is in turn fixed to the upper projecting end of the valve member 19. The slot 87 permits a certain range of adjustment of the pin to vary the point of application of the blast, if found desirable.

So far as the parts have been described in detail, it will be seen that as the table rotates in the direction of the arrow X (Figure 8), the support for the container having been lowered, the operator drops a single pouch or container 94 in each holder or pocket in the large sector marked A in Figure 8. In the sector B, the location of which may be varied as described, the blast is applied through the pipe 86 opening up the mouth of the pouch, and in the sector C the suction is applied to the holder through the passages in the turntable so as to maintain the container in expanded condition. It will be noted that the sector B is located within the sector C at or near the beginning thereof so as to obtain the joint and combined action of the suction and air blast which secures the most efficient opening of the pouch. In the sector D, which is located near the end of the sector C, the tamping operation is performed. In the sector E the tucker operates, and in the sector F the end of the pouch is drawn together. In the sector G the end is heat-sealed and ironed and in the sector H the wrapped cigars are removed. The sectors A and H are not definitely separated and one may overlap the other as found necessary or desirable.

From the point M in the sector H to the point N between the sectors D and E, the support for the pouch is in its lowermost position, as shown in Figures 11 and 12, with the upper edge of the pouch at the upper end of the shell 61. From N to M the support for the pouch is raised to bring the upper end of the cigar at or near the rim of the pocket and to expose the end of the pouch to the tucking or gathering and sealing instrumentalities and for a sufficient distance thereafter to enable the operator to lift the wrapped cigars from the pocket.

Tamping and tucking operations

As indicated in the foregoing portion of the specification, it is necessary to tamp the cigar down into the tube or container so that it will fill out the lowermost portion thereof and so that the product will be uniform. It is also necessary to initiate the sealing operation by tucking or gathering the end in properly. These operations are performed by mechanisms operated con-

jointly and for this reason these two devices will be described together.

It is advisable to describe the pouch or container for a proper understanding of these operations. The pouch has already been referred to as 94. It is made preferably as a plicated tube having the front and rear panels 95 and 96, respectively, the latter having the seam 97 located therein. When the pouches are placed in the holders, the seams should all be faced the same way so that the operator loading the cigars will place them properly so the portion of the bands carrying the trade mark will be under the panel 95. The sides of the tube are provided with the bellows-like folds 98. The lower end of the tube is folded over and sealed, as shown at 100. The upper or open end of the tube may be slit, as shown at 101, to facilitate the spreading of the mouth of the tube, and these slits are preferably located so that they pass through the four thicknesses of the tube on each side, making eight slits in all, as shown in Figure 22.

When the cigar is dropped into the tube or container, it may not reach the bottom thereof and the uncertainty of this result may be due in some measure to differences in the shapes of the cigars. In order to secure the results described, after loading, the holders are passed under the tamping device.

The tamping device is carried upon the oscillating sleeve 50 which is provided with the overhanging arm 105, the weight of the arm and its associated parts being sustained by a roller carriage 106 mounted for vertical adjustment near the outer end of the arm, as shown in Figure 3. The rollers 107 rest upon and move over the elevated rib or track 108 on the outer perimeter of the turntable.

The arm 105 supports both the tamper and the tucker mechanisms. The tamper is supported on a bracket 110 and the tucker on the bracket 111, these brackets being spaced apart at distances equal to the spacing between the holders.

It is necessary that the arm move with the turntable while the tamping and tucking operations are being performed and mechanism has been provided to cause the forward movement with the turntable during the periods when these devices are active and return movement while the devices are inactive. This intermittent movement enables the two devices to operate upon two of the articles simultaneously and to operate step by step without interrupting the continued forward movement of the turntable. The result is accomplished by picking up the oscillating arm at each holder, moving it forward a portion of the distance and then returning the arm in time for its engagement at the next holder.

Located about the turntable are a plurality of catches or pins 115 equal to the number of holders. The pins have heads with vertical faces 116 and inclined rear walls 117. In the arm 105, directly over the path of the catches, is a barrel 118 in which is located the movable plunger 120, urged downwardly by the coil spring 121. The rear face of the plunger is formed with a vertical wall 122 adapted to engage with the wall 116 on the forward movement of the arm, and the front face with an inclined wall 123 adapted to ride over the wall 117 as the plunger is released. The upper end of the plunger has a pin and slot engagement with a rocker 124 pivoted at 125 on a plate 126 on the arm 105. On the fixed bracket which supports the hot sealing rolls, to be described, is a striker pin 127 which engages the forward end of the rocker as it moves with the turntable and raises the plunger to release the engagement with the pin 115. The striker pin 127 is vertically adjustable in an arm 128 which is longitudinally adjustable in the rigid bracket as described. By the means described, the exact point of release can be adjusted to suit the speed of the turntable and the operation of the tamper and tucker.

The oscillating arm 105 is returned to its position by means of a bar 130 (Figure 20) which is adjustably secured in a rotary block 131 on the arm 105, the bar extending rearwardly and moving through a swivel stud 132 depending from the head 90. An adjustable coil spring 134 is compressed against the stud 132 by the forward movement of the oscillating arm and a stop 135 arrests the rearward movement of the arm. A dash post or cushion 136 is located at the rearward position of the arm.

On the bracket 110 is located the cylinder 140 in which is movable the piston 142 (Figure 3). The upper end of the cylinder is connected by the piping 144 to the port 145 in the oscillating collar 50 which establishes communication through the ports 56 to the pressure or vacuum ports 26 or 35 depending upon whether the arm 105 is at the beginning or nearing the end of its stroke. The piston rod 148 carries at its lower end a lateral bracket 150 in the end of which is secured the tamper rod 151, the upper end of which is guided in a sleeve 152 carried on the bracket. A washer 154 on the piston engages the cap 155 in the lower end of the piston to limit its movement. The lowermost point in the movement of the tamper rod is adapted for varying lengths of cigars by the adjustment of the tamper rod in the bracket 150, as shown at 153.

As the oscillating arm begins its forward movement, the ports 145 and 56 register and as the movement continues these ports are placed in communication with the riser 24, as shown in Figure 3, and the piston is moved downwardly. The tamper contacts the upper end of the cigar and moves it to its correct position in the container. As the oscillating arm moves forwardly, the tamper is raised by the movement of the ports 145 and 56 over the vacuum port 35. As the tamper is elevated, the engagement of the pin 115 and the catch 120 is released and the oscillating arm returns to its rearmost position, as has been described.

The next operation is the tucking in of the exposed upper end of the container which has been raised by the elevation of the support. It is advisable to provide a device for this purpose so as to insure that the container will fold inwardly along the creases 98, otherwise the folds might open outwardly and an unsightly and unsatisfactory seal be obtained.

Carried upon the bracket 111 and, therefore, movable with the arm 105 is the cylinder 160 which is connected at its upper end by a pipe 161 to the port 56, by which the cylinder is subjected to pressure and vacuum alternately. In the cylinder is located the piston 162, the rod 163 carrying a lateral arm 164 in which the tucker rod 165 is located. The rod 165 is guided in a sleeve 166 on the bracket and is maintained in correct position by means of the keyway 168. On the lower end of the tucker rod is secured the tucker blade 169 which is set so that it is in vertical alignment with the folds 98. The

under face of the blade is forked to provide the two curved, converging edge surfaces 170.

In the operation of the machine, as the tucker is lowered the container is raised and the parts move from the full line position to the dotted line position shown in Figure 13, which creases or tucks the folds 98 inwardly as shown in cross-section in Figure 14.

The tucker head is raised by the application of the vacuum to the cylinder 160 as has been explained, the movement of the tucker with the turntable and its return being the same as described in connection with the tamper.

Sealing operation

The package is now ready for the final sealing operation. The elements to perform this operation are all carried upon the stationary bracket 175 projecting from the fixed collar 90. Attached to the forward end of the bracket 175 is the sleeve 176 in which is located the vertically adjustable bolt 177 which may be feathered as shown at 178. On the lower end of the bolt is supported the roll supporting head 179 which carries the sealing and ironing rolls. The entire head is adjusted vertically toward and from the top of the holders by means of the nut 180 which is in screw-threaded engagement with the upper end of the bolt 177. The outer surface of the nut 180 is roughened or knurled, being prevented from accidental turning by means of the detent 181 forced against the nut by the spring 182 in the boss 183 on top of the bracket 175. A coil spring 185 surrounds the bolt between the sleeve 176 and the head 179 and keeps the head down to its adjusted position. A set collar 187 limits the lower position of the head.

Located on the head are the two oppositely positioned, heated sealing rolls 186, the shafts 188 of which extend above the top of the head and carry intermeshing, driving gears 189. The pair of ironing rolls 190 are located forwardly of the rolls 186, being carried upon shafts 192 in the head and driven by the intermeshing gears 193 above the head. One of each pair of gears 189 and 193 are in mesh with a driving gear 195 which is elongated sufficiently to mesh with the roll gears in any position of adjustment of the bolt 177. The gear 195 is located on the lower end of the shaft 196 mounted in a bracket 197 depending from the main bracket 175. The upper end of the shaft carries the spiral gear 198 which meshes with a second spiral gear 199 on the horizontal drive shaft 200 located on the under side of the bracket 175 and extending toward the central post. The shaft is constantly driven by means to be described in a later portion of the specification so that the upwardly protruding end of the container will be brought together under heat and pressure and ironed into a tight seal.

To the under side of the head 179 is attached a plate 202 from which depend the vertical posts 203 located on either side of the sealing and ironing rolls. The posts support two parallel sets of curved plates or fingers placed one above the other and indicated by the numerals 205 and 206, the upper plates being slightly narrower than the lower plates. The plates of each pair are spaced apart slightly and are located so as to provide a narrow, curved slot 208 concentric with the turntable and located in alignment with the opposing surfaces of the rolls. The plates 205 are situated above the lower surface of the rolls which are provided with grooves 210 to receive them, and the plates 206 are located below the rolls. The plates extend toward the tucker and the ends thereof are placed as shown in Figure 15 to receive the end of the container from the tucking operation, the end being presented edgewise thereto and is drawn together as shown, in which condition it is presented to the heated sealing rolls.

The rolls 186 are heated so as to melt the surface coating on the sheet material by means of heated shoes or housings 212 attached to the under surface of the plate 202 and partially surrounding the outer surface of the rolls so that they are heated by radiation from the shoes. The shoes are provided with electrical heating coils 214 and are insulated from the plate 202 by pads 215.

As the turntable advances, the successive ends are brought together by the plates or fingers 205 and 206 and are stuck together by the heated pressure rolls. It has been found that it is advisable to iron the adhesively connected end and this operation is performed by the relatively cool ironing rolls 190.

After leaving the ironing rolls, the sealed package may be removed from the holder and the holder is ready to receive a new container.

It will be apparent that other heat applying devices may be substituted for the rolls and any ironing means may be provided, so that the coating is first melted and then solidified to complete the seal.

Driving mechanism

The machine is driven from a motor 220 located on the base 1 of the machine, which is connected by the flexible coupling 221 with reduction gearing, indicated as a whole at 222. From the reduction gearing extends the vertical shaft 223 which is connected by the flexible coupling 224 with a second vertically aligned shaft 225 rotatable in the bearing 226 in the bracket 227 secured to the central post 2 (Figure 1). On the upper end of the shaft 225 is feathered one member 228 of a clutch, the face of which is toothed and engages a second clutch member 229 secured to the stub shaft 230 rotatably mounted in the bearing 231 on the bracket 232 fixed to the central post.

The clutch member 228 is normally held up into engagement with the clutch member 229 by the coil spring 234 adjustable by the nuts 235. Should the machine become jammed, the clutch surfaces 228 and 229 will slip over one another, the member 228 yielding through the spring 234.

The clutch member 228 is also used to stop and start the machine, being depressed by means of a forked arm 238 engaging a recess in the side of the clutch and carried upon a sleeve 239 slidably mounted upon the post 2. A spring 240 maintains the sleeve in elevated position and it may be depressed by means of links 241 located around the sleeve and connected to the arms 242 of a circular treadle 243, so that an operator at any position around the machine may control its operation. There is sufficient play between the arm 238 and the clutch member 228 to permit the limited movement of the latter when the slipping of the clutch takes place.

On the upper end of the stub shaft 230 is the driving pinion 245 which engages the pinion 246 on the jack shaft 247, the latter being mounted in the collar 248 on the central post. This collar is adjustable about the post, being split for that purpose and provided with means for tightening on the post to adjusted position. It is possible,

therefore, to change the pinions 245 and 246 to get the required gear ratio to suit the speed of the machine, the rotation of the collar 248 permitting the substitution of various pitch gears at that point. The collar is provided with feet 249 which support it on the bracket 232.

The upper end of the shaft 247 is provided with a spur gear 250 which meshes with and drives the gear ring 252 attached to the lower surface of the sleeve 40.

The mechanism which has been described rotates the turntable and controls the operation thereof, and the rotation of the turntable not only controls the position of the table itself, but through the valve member, controls the operation of the various elements of the machine.

The hot sealing and ironing rolls are driven through a gear ring 254 secured to the upper end of the sleeve 40 beneath the head 90. This gear meshes with a pinion 255 on the short vertical shaft 256 in the bracket 175, which latter carries a spiral gear 258 meshing with the spiral gear 259 on the shaft 200. The gearing is designed so that the surface speed of the sealing and ironing rolls is equal to the speed at which the pouches are moved by the turntable.

Conclusion

It is believed that the operation of the machine will have been fully understood from the preceding description, it being necessary merely to make a brief résumé thereof.

The wrappers or containers which the machine is designed to handle are made of the thin, transparent sheeting which is difficult to manipulate. The several holders are brought around by the rotation of the turntable by the operator, who places single containers in each holder. The containers are then opened up by the action of the blast and the suction, the upper end of the holder permitting the mouth of the container to flare slightly. In inserting the container, the operator places the tube in one direction so that the next operator, in dropping the cigars within the open containers, will face the cigars in the proper manner. The cigars are then tamped home in the containers and the containers raised jointly with the downward movement of the tucker. The end is then brought together by the converging rails, sealed under heat and pressure and then ironed, whereupon they are ready to be removed from the holders.

The apparatus contains the required features of adjustability so that varying shapes and sizes of cigars may be handled.

While the machine is particularly designed and intended for the application of the "cellophane" wrappers to single cigars, it will be appreciated that the invention is not necessarily confined to machines for that specific purpose as more than one cigar may be placed in a container. Other articles than cigars may be wrapped. However, there is a considerable demand for "cellophane" wrapped cigars and the present machine enables this operation to be performed economically and efficiently, and the wrapped articles are uniform in appearance, neat and attractive. The salability of the goods is greatly increased and other advantages and benefits are obtained.

What is claimed is:

1. A machine for packaging articles in tubular pouches, a movable carrier, a plurality of pockets in the carrier, means for expanding the pouches in the pockets, means for tamping the articles in the pouches, means for projecting the pouches from the pockets, a tucker for bringing the ends of the pouches together above the article, and heat and pressure applying devices for adhesively sealing the ends of the pouches.

2. A machine for packaging articles in plicated tubular pouches, a movable carrier, a pocket on the carrier, means for expanding a pouch in the pocket and maintaining it expanded by suction around the pocket, a device for moving the article to the bottom of the pouch, means for elevating the pouch so that the end thereof is exposed outside of the pocket, and means for applying heat and pressure to the exposed end of the pouch.

3. A machine for packaging articles in plicated tubular pouches, a movable carrier, a pocket on the carrier, means for expanding a pouch in the pocket and maintaining it expanded by suction around the pocket, a device for moving the article to the bottom of the pouch, means for elevating the pouch so that the end thereof is exposed outside of the pocket, a tucker to fold the exposed end of the pouch, and means for applying heat and pressure to the exposed end of the pouch.

4. A machine for packaging articles in plicated tubular pouches, a movable carrier, a pocket on the carrier, an air blast device for expanding a pouch in the pocket and means maintaining it expanded by suction around the pocket, a device for moving the article to the bottom of the pouch, means for elevating the pouch so that the upper end thereof is exposed outside of the pocket, and means for applying heat and pressure to the exposed end of the pouch.

5. A machine for packaging articles, comprising a movable carrier, a perforated holder in the carrier adapted to receive a container, a chamber surrounding the holder, means for exerting suction upon the chamber during a portion of the travel of the carrier and means for sealing an end of the container.

6. A machine for packaging articles, comprising a movable carrier, a perforated holder in the carrier adapted to receive a container, a chamber surrounding the holder, means for exerting suction upon the chamber during a portion of the travel of the carrier, means for directing a blast of air into the holder at one point in the travel of the carrier and means for sealing an end of the container.

7. A machine for packaging articles, comprising a movable carrier, a perforated holder in the carrier adapted to receive a container, a chamber surrounding the holder, means for exerting suction upon the chamber, means for directing a blast of air into the holder and means for sealing an end of the container.

8. A machine for packaging articles, comprising a movable carrier, perforated holders in the carrier, a chamber surrounding the holders, means for exerting suction upon the chamber during a portion of the travel of the carrier, and a device for moving the articles to the bottom of the container while in the holder.

9. A machine for packaging articles, comprising a movable carrier, a perforated holder in the carrier adapted to receive a container, a chamber surrounding the holder, means for exerting suction upon the chamber during a portion of the travel of the carrier, means for relieving the suction during the remainder of the travel of the carrier and means for sealing an end of the container.

10. A machine for packaging articles, comprising a movable carrier, a perforated holder in the

carrier, a chamber surrounding the holder, means for exerting suction upon the chamber during a portion of the travel of the carrier, means for relieving the suction during the remainder of the travel of the carrier, and means for elevating a pouch to expose the upper portion thereof after the suction is relieved.

11. A machine for packaging articles, comprising a movable carrier, a perforated holder in the carrier, a chamber surrounding the holder, means for exerting suction upon the chamber during a portion of the travel of the carrier, means for relieving the suction during the remainder of the travel of the carrier, means for elevating a pouch to expose the upper portion thereof after the suction is relieved, and means for sealing the exposed portion of the pouch.

12. A machine for packaging articles, comprising a movable carrier, a perforated holder in the carrier, a chamber surrounding the holder, means for exerting suction upon the chamber during a portion of the travel of the carrier, means for relieving the suction during the remainder of the travel of the carrier, means for elevating a pouch to expose the upper portion thereof after the suction is relieved, and heat and pressure applying devices for sealing the exposed portion of the pouch.

13. A machine for packaging articles, comprising a movable carrier, a perforated holder in the carrier, a chamber surrounding the holder, means for exerting suction upon the chamber during a portion of the travel of the carrier, means for relieving the suction during the remainder of the travel of the carrier, means for elevating a pouch to expose the upper portion thereof after the suction is relieved, and a tucking device for the exposed portion of the pouch.

14. A machine for packaging articles, comprising a movable carrier, a perforated holder in the carrier, a chamber surrounding the holder, means for exerting suction upon the chamber during a portion of the travel of the carrier, means for relieving the suction during the remainder of the travel of the carrier, means for elevating a pouch to expose the upper portion thereof after the suction is relieved, and a tucking and sealing device for the exposed portion of the pouch.

15. In a machine for packaging articles in pouches, a movable carrier, pockets in the carrier, means for maintaining the pouch open and unobstructed in the pocket, a tamping device movable into the pocket, means to partially project the pouch from the pocket, and a sealing device for pressing the end of the pouch together above the article.

16. In a machine for packaging articles in pouches, a movable carrier, pockets in the carrier, means for maintaining the pouch open and unobstructed in the pocket, a tamping device movable into the pocket, means to partially project the pouch from the pocket, a tucker to fold the exposed end of the pouch, and a sealing device for pressing the end of the pouch together above the article, when the pouch is in the partially projected position.

17. In a machine for packaging articles in pouches, a movable carrier, pockets in the carrier, means for maintaining the pouch open and unobstructed in the pocket, a tamping device movable into the pocket, means to partially project the pouch upwardly from the pocket, means to melt the coating upon the end of the pouch, and a device for pressing the end of the pouch together.

18. In a machine for packaging articles in pouches, a movable carrier, pockets in the carrier, means for maintaining the pouch open and unobstructed in the pocket, a tamping device movable into the pocket, means to partially project the pouch from the pocket, means to melt the coating upon the end of the pouch, and a device for pressing the end of the pouch together above the article and solidifying the coating.

19. In a machine for packaging articles, a table, a head above the table, means for causing continuous relative movement of the table and the head, pockets in the table, a movable support to hold pouches in the pockets with the upper edges of the pouches within or above the pockets, and means to press the exposed ends of the pouches together after they have been elevated above the pockets.

20. In a machine for packaging articles, a table, a head above the table, means for causing relative movement of the table and the head, pockets in the table, a movable support to hold pouches in the pockets with the upper edges of the pouches within or above the pockets, and means to fuse the coating upon the ends of the pouches and press the exposed ends of the pouches together after they have been elevated above the pockets.

21. In a machine for packaging articles, a table, a head above the table, means for causing continuous relative movement of the table and the head, pockets in the table, a movable support to hold pouches in the pockets with the upper edges of the pouches within or above the pockets, means to tamp the articles within the pouches, and means to press and heat seal the exposed ends of the pouches together after they have been elevated above the pockets.

22. In a machine for packaging articles, a table, a head above the table, means for causing relative movement of the table and the head, pockets in the table, a movable support to hold pouches in the pockets, means to tamp the articles within the pouches when said pouches are held with the upper edges within the pockets, and means to fuse the coating upon the ends of the pouches and press the exposed ends of the pouches together after they have been elevated above the pockets.

23. In a machine for packaging articles, a table, a head above the table, means for causing relative movement of the table and the head, pockets in the table, a movable support to hold pouches in the pockets, means to tuck the ends of the pouches, and means to heat seal press the exposed ends of the pouches together after they have been elevated above the pockets.

24. In a machine for packaging articles, a table, a head above the table, means for causing continuous relative movement of the table and the head, pockets in the table, a movable support to hold pouches in the pockets with the upper edges of the pouches within or above the pockets, means to tuck the ends of the pouches, and means to fuse the coating upon the ends of the pouches and press the exposed ends of the pouches together after they have been elevated above the pockets.

25. In a machine for packaging articles, a table, a head above the table, means for causing relative movement of the table and the head, pockets in the table, suction means about the pockets operable during a portion of the operation of the machine, a movable support to hold pouches

in the pockets with the upper edges of the pouches within or above the pockets, and means to press the exposed ends of the pouches together after they have been elevated above the pockets.

26. In a machine for packaging articles, a table, a head above the table, means for causing relative movement of the table and the head, pockets in the table, suction means about the pockets operable during a portion of the operation of the machine, a movable support to hold pouches in the pockets with the upper edges of the pouches within or above the pockets, and means to fuse the coating upon the ends of the pouches and press the exposed ends of the pouches together after they have been elevated above the pockets.

27. In a machine for packaging articles, a table, a head above the table, means for causing relative movement of the table and the head, pockets in the table, suction means about the pockets operable during a portion of the operation of the machine, a movable support to hold pouches in the pockets, means to tamp the articles within the pouches when said pouches are held with the upper edges within the pockets, and means to press the exposed ends of the pouches together after they have been elevated above the pockets.

28. In a machine for packaging articles, a table, a head above the table, means for causing continuous relative movement of the table and the head, pockets in the table, suction means about the pockets operable during a portion of the operation of the machine, a movable support to hold pouches in the pockets with the upper edges of the pouches within or above the pockets, means to tamp the articles with the pouches, and means to fuse the coating upon the ends of the pouches and press the exposed ends of the pouches together after they have been elevated above the pockets.

29. In a machine for packaging articles, a table, a head above the table, means for causing relative movement of the table and the head, pockets in the table, suction means about the pockets operable during a portion of the operation of the machine, a movable support to hold pouches in the pockets with the upper edges of the pouches within or above the pockets, means to tuck the ends of the pouches, and means to heat seal the exposed ends of the pouches together after they have been elevated above the pockets.

30. In a machine for packaging articles, a table, a head above the table, means for causing relative movement of the table and the head, pockets in the table, suction means about the pockets operable during a portion of the operation of the machine, a movable support to hold pouches in the pockets with the upper edges of the pouches within or above the pockets, means to tuck the ends of the pouches, and means to fuse the coating upon the ends of the pouches and press the exposed ends of the pouches together after they have been elevated above the pockets.

31. In a machine for packaging articles, a rotary turntable, pockets in the table adapted to receive containers, the walls of the pockets being apertured, a suction chamber about the pockets, and means operative concurrently with the movement of the table to relieve the suction in the chamber at intervals and to close the ends of the containers.

32. In a machine for packaging articles, a rotary turntable, pockets in the table, the walls of the pockets being apertured, a suction chamber about the pockets, means operative concurrently with the movement of the table to relieve the suction in the chamber at intervals, a support movable axially of the pocket, and means to elevate the support after the suction is relieved.

33. In a machine for packaging articles, a rotary turntable, pockets in the table adapted to receive containers, the walls of the pockets being apertured, a suction chamber about the pockets, means operative concurrently with the movement of the table to relieve the suction in the chamber at intervals, and means to direct an air blast into the pockets and to close the ends of the containers.

34. In a machine for packaging articles, a rotary turntable, pockets in the table, the walls of the pockets being apertured, a suction chamber about the pockets, means operative concurrently with the movement of the table to relieve the suction in the chamber at intervals, a support movable axially of the pocket, means to elevate the support after the suction is relieved, and means for sealing the upper end of the package after the elevation of the support.

35. In a machine for packaging articles, a rotary turntable, pockets in the table, the walls of the pockets being apertured, a suction chamber about the pockets, means operative concurrently with the movement of the table to relieve the suction in the chamber at intervals, a support movable axially of the pocket, means to elevate the support after the suction is relieved, and means for tucking and sealing the upper end of the package after the elevation of the support.

36. In a machine for packaging articles, a rotary turntable, pockets in the table, the walls of the pockets being apertured, a suction chamber about the pockets, means operative concurrently with the movement of the table to relieve the suction in the chamber at intervals, a support movable axially of the pocket, means to elevate the support after the suction is relieved, and means for sealing by heat and pressure the upper end of the package after the elevation of the support.

37. In a machine for packaging articles, a rotary turntable, pockets in the table, the walls of the pockets being apertured, a suction chamber about the pockets, means operative concurrently with the movement of the table to relieve the suction in the chamber at intervals, a support movable axially of the pocket, means to elevate the support after the suction is relieved, and means for tucking and sealing by heat and pressure the upper end of the package after the elevation of the support.

38. A machine for packaging articles in pouches having a fusible coating, a carrier, means for continuously rotating said carrier, a pocket in the carrier, the upper end of the pouch projecting above the pocket, means to fuse the coating, and pressure means movable against the end of the pouch.

39. A machine for packaging articles in pouches having a fusible coating, a carrier, a pocket in the carrier, the upper end of the pouch projecting outside of the pocket, means for bringing the end of the pouch together, and heated pressure rollers between which the end of the pouch is compressed.

40. A machine for packaging articles in pouches having a fusible coating, a carrier, a pocket in the carrier, the upper end of the pouch projecting outside of the pocket, means for bringing the end

of the pouch together, and heated and unheated pressure rollers between which the ends of the pouches are compressed successively.

41. In a machine for packaging cigars in pouches having a fusible coating, a carrier, a pocket in the carrier, a support for the cigar and the pouch at the base of the pocket, means for moving the support outwardly of the pocket to expose the end of the pouch above the cigar, means for fusing the coating, and means for pressing the end of the pouch together.

42. In a machine for packaging cigars in pouches having a fusible coating, a carrier, a pocket in the carrier, a support for the cigar and the pouch at the base of the pocket, means for moving the support outwardly of the pocket to expose the end of the pouch above the cigar, means for fusing the coating, and means for pressing the end of the pouch together above the cigar to form a sealed end.

43. In a machine for packaging cigars in pouches having a fusible coating, a carrier, means to continuously rotate said carrier, a pocket in the carrier a support in said pocket for said pouch, a device for moving the cigar to the bottom of the pouch, means for moving said support outwardly to expedite the fusing operation heated means for fusing the coating, and means for pressing the end of the pouch together.

44. In a machine for packaging cigars in pouches having a fusible coating, a carrier, a pocket in the carrier, means for expanding the pouch against the walls of the pocket, heated means for fusing the coating, and means for pressing the end of the pouch together.

45. In a machine for packaging cigars in pouches having a fusible coating, a carrier, a pocket in the carrier, a suction device for expanding the pouch against the walls of the pocket, heated means for fusing the coating, and means for pressing the end of the pouch together.

46. In a machine for packaging cigars in pouches having a fusible coating, a carrier, a pocket in the carrier, an air blast and a suction device for expanding the pouch against the walls of the pocket, heated means for fusing the coating, and means for pressing the end of the pouch together.

47. In a machine for packaging cigars in pouches having a fusible coating, a carrier, means for continuously rotating said carrier a pocket in the carrier, means for tucking the ends of the pouch together, and heat and pressure devices for fusing the coating and pressing the ends of the pouches together.

48. In a machine for packaging cigars in pouches having a fusible coating, a carrier, a pocket in the carrier, pneumatic means for expanding the pouch, and heat and pressure devices for fusing the coating and pressing the ends of the pouches together.

49. In a machine for packaging cigars in pouches having a fusible coating, a carrier, a pocket in the carrier, pneumatic means for holding the pouch against the side of the pocket during loading, a tucker for bringing the ends of the pouches together, and heat and pressure devices for fusing the coating and pressing the ends of the pouches together.

50. In a machine for packaging cigars in pouches having a fusible coating, a carrier, a pocket in the carrier, pneumatic means for holding the pouch against the side of the pocket during loading, a tamping device to move the cigar to the bottom of the pouch, a tucker for bringing the ends of the pouches together, and heat and pressure devices for fusing the coating and pressing the ends of the pouches together.

51. A machine for loading containers, comprising a movable carrier, holders on the carrier to receive the containers, suction applying means associated with the holders and operable to distend the mouth of a container, and means to relieve the suction when the container is filled.

52. A machine for loading containers, comprising a movable carrier, holders on the carrier to receive the containers, suction applying means carried upon each holder and operable to distend the mouth of a container, and means to relieve the suction when the container is filled.

53. A machine for loading containers, comprising a movable carrier, holders on the carrier to receive the containers, suction applying means associated with the holders and operable to distend the mouth of a container, means to relieve the suction when the container is filled, and means to gather the mouth of the container.

54. A machine for loading containers, comprising a movable carrier, holders on the carrier to receive the containers, suction applying means carried upon each holder and operable to distend the mouth of a container, means to relieve the suction when the container is filled, and means to gather the mouth of the container.

55. A machine for loading containers, comprising a movable carrier, holders on the carrier to receive the containers, suction applying means carried upon each holder and operable to distend the mouth of a container, means to expose the mouth of the container after it is filled, and a folding and sealing device for the container.

56. A machine for loading containers comprising a movable carrier, holders for containers thereon, a pneumatic container opening device associated with each holder, means to operate the same prior to the loading of the container, means to render the opening device inoperative after the loading operation, and means to gather the mouth of the container.

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