A. J. MEIER.

MACHINE FOR CASTING LEAD POTS AND BUCKLES AND LOADING SAID BUCKLES IN SAID POTS.

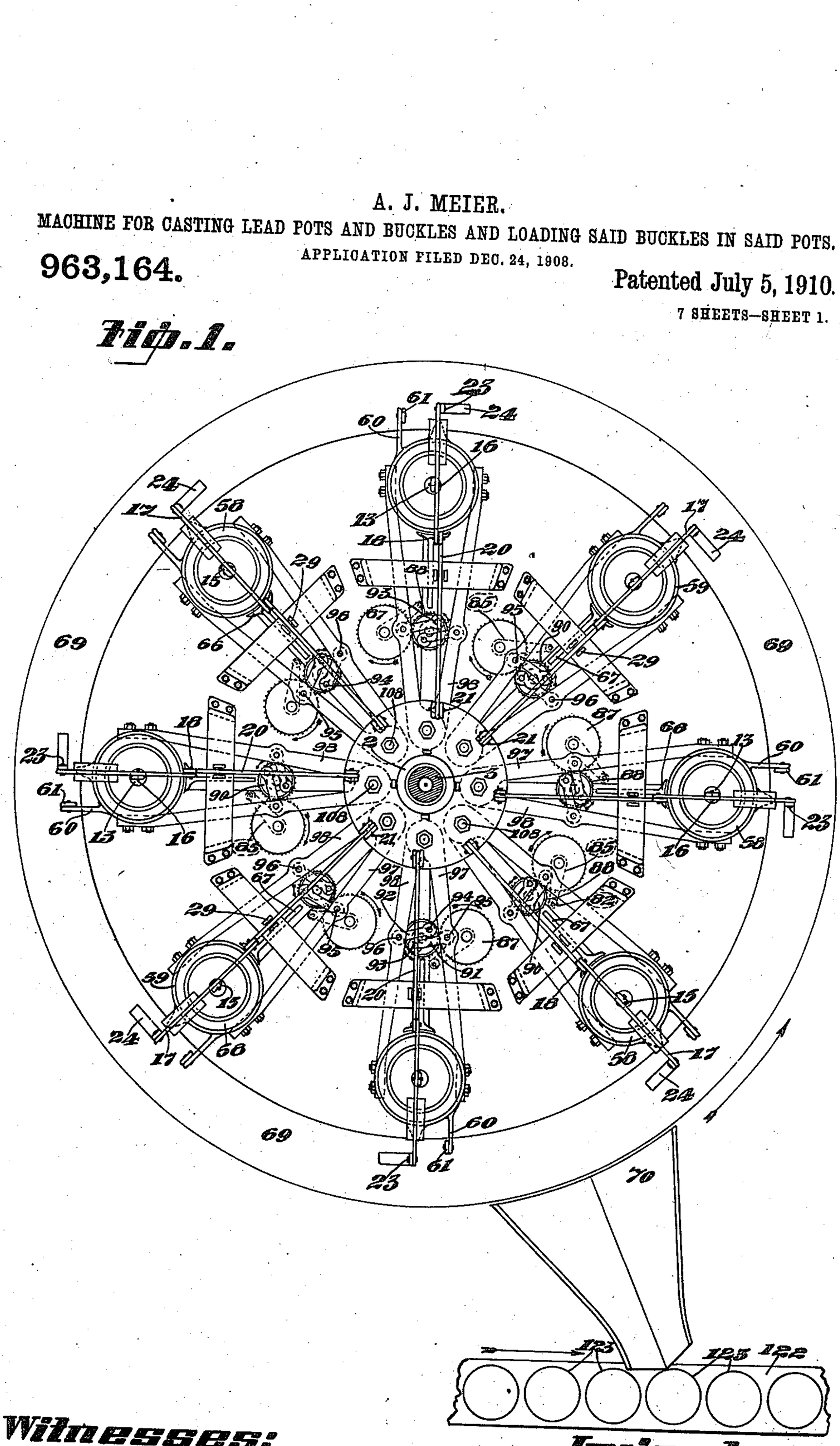
APPLICATION FILED DEC. 24, 1908.

963,164.

Patented July 5, 1910.

7 SHEETS—SHEET 1.

Fig. 1.



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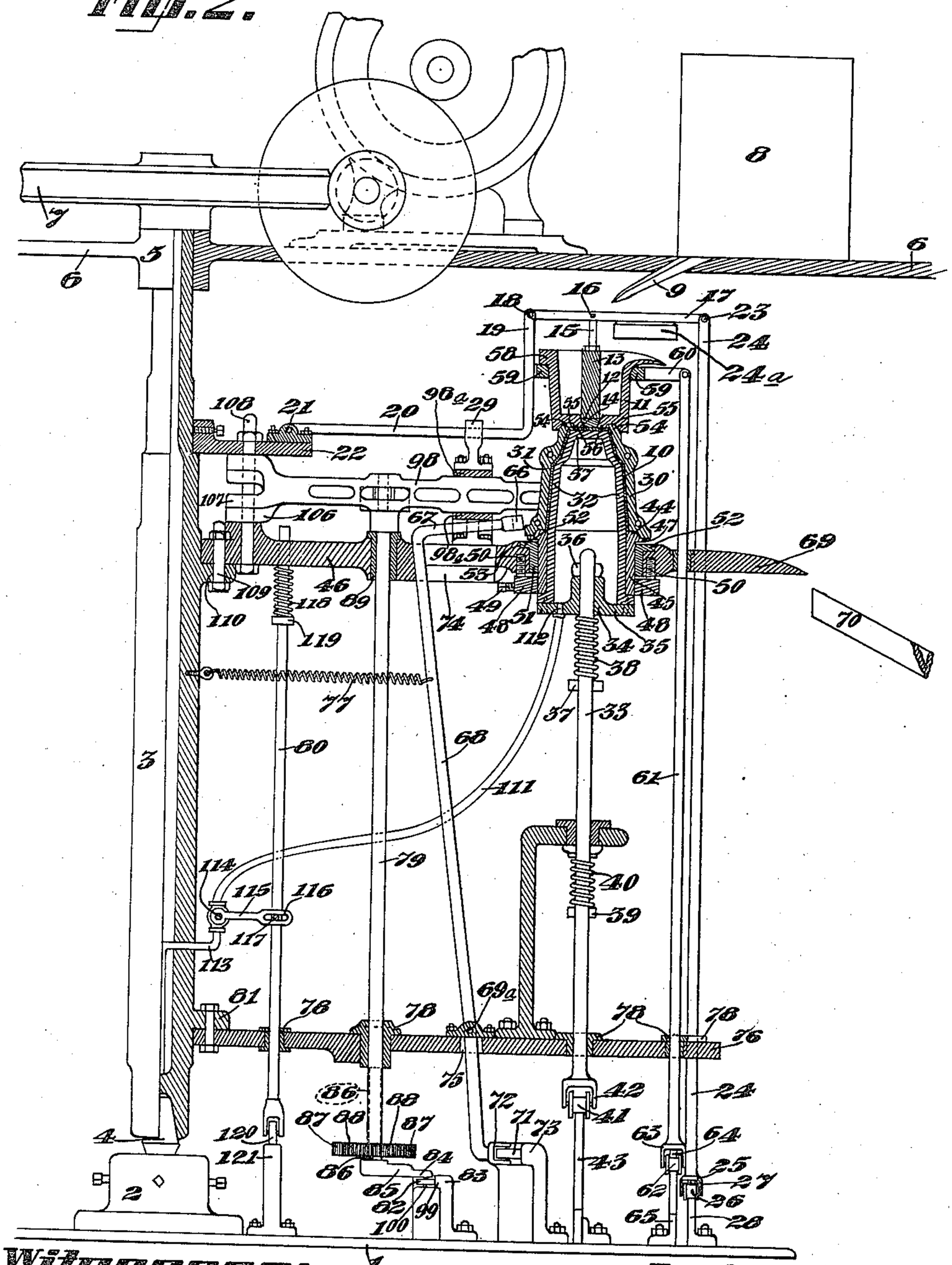
7 SHEETS—SHEET 2.

Fig. 2.



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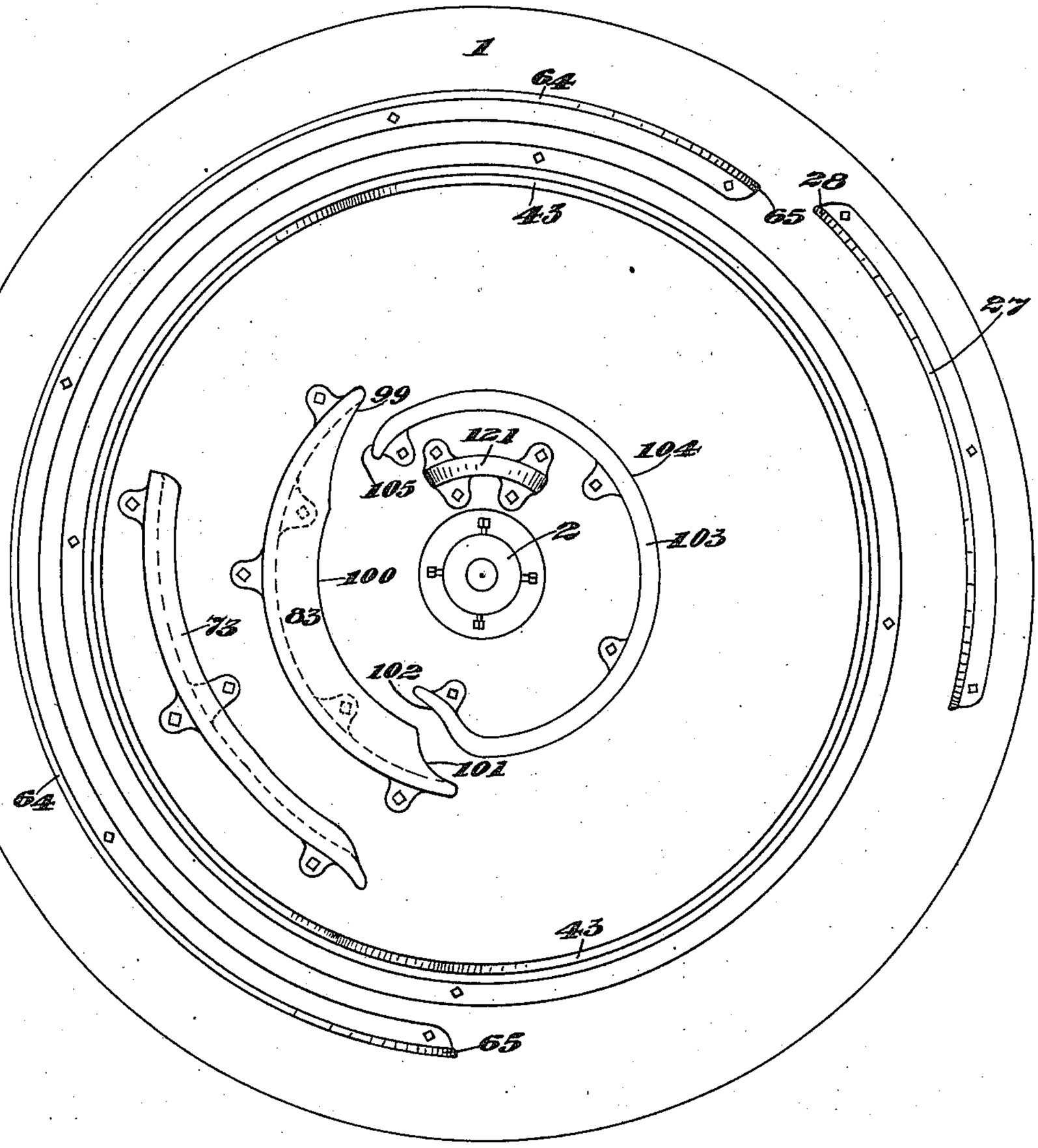
7 SHEETS—SHEET 3.

Fig. 3.



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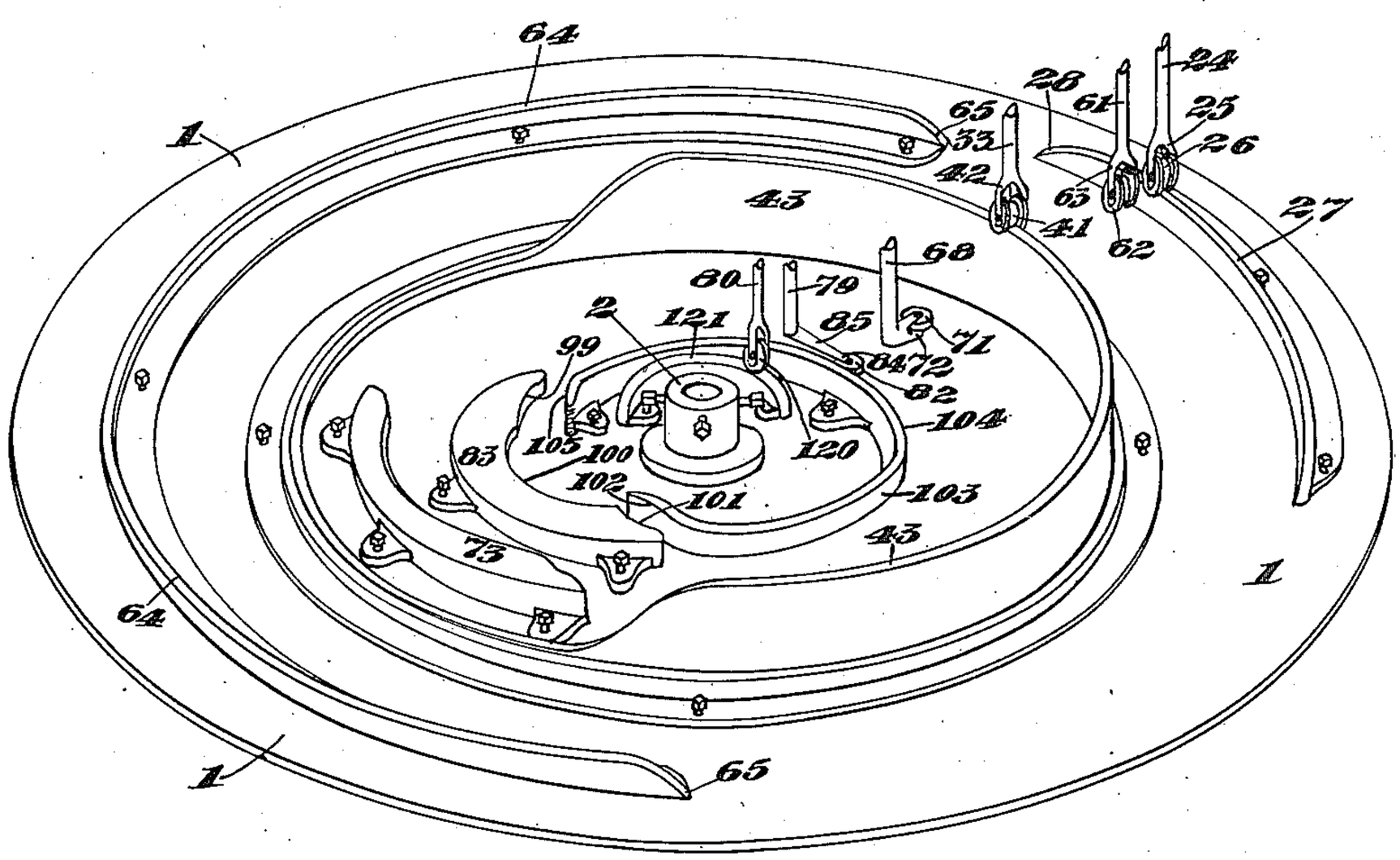
7 SHEETS—SHEET 4.

Fig. 4.



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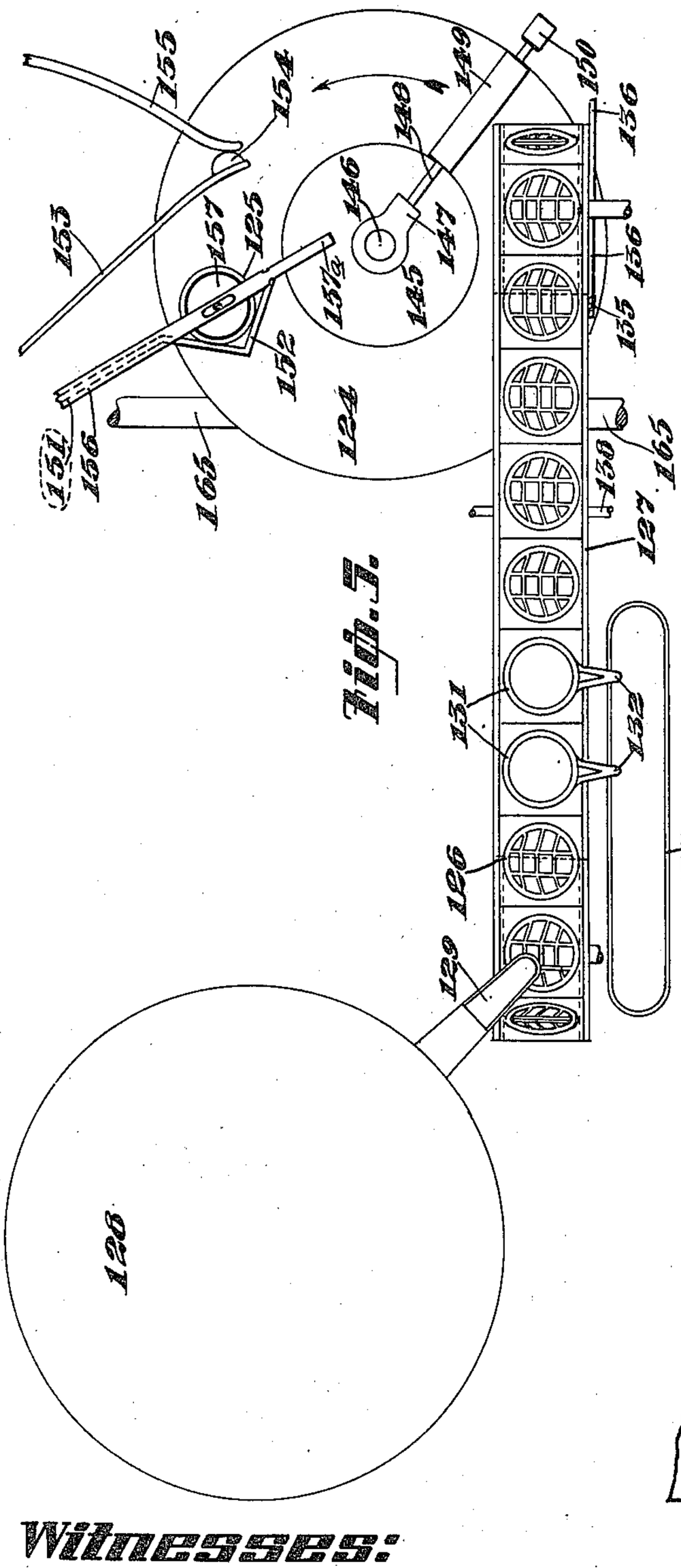

Fig. 7.

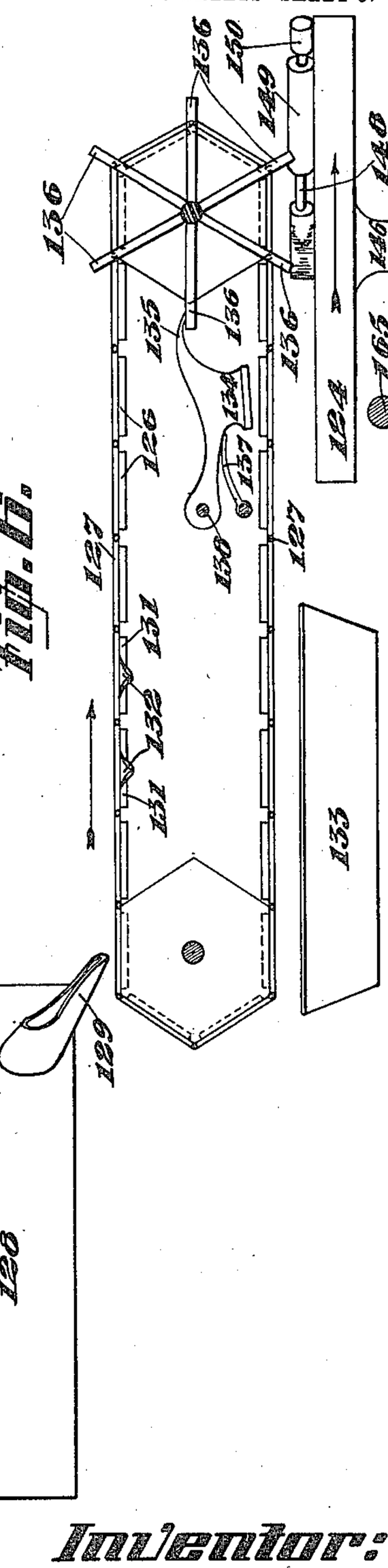

Fig. 6.

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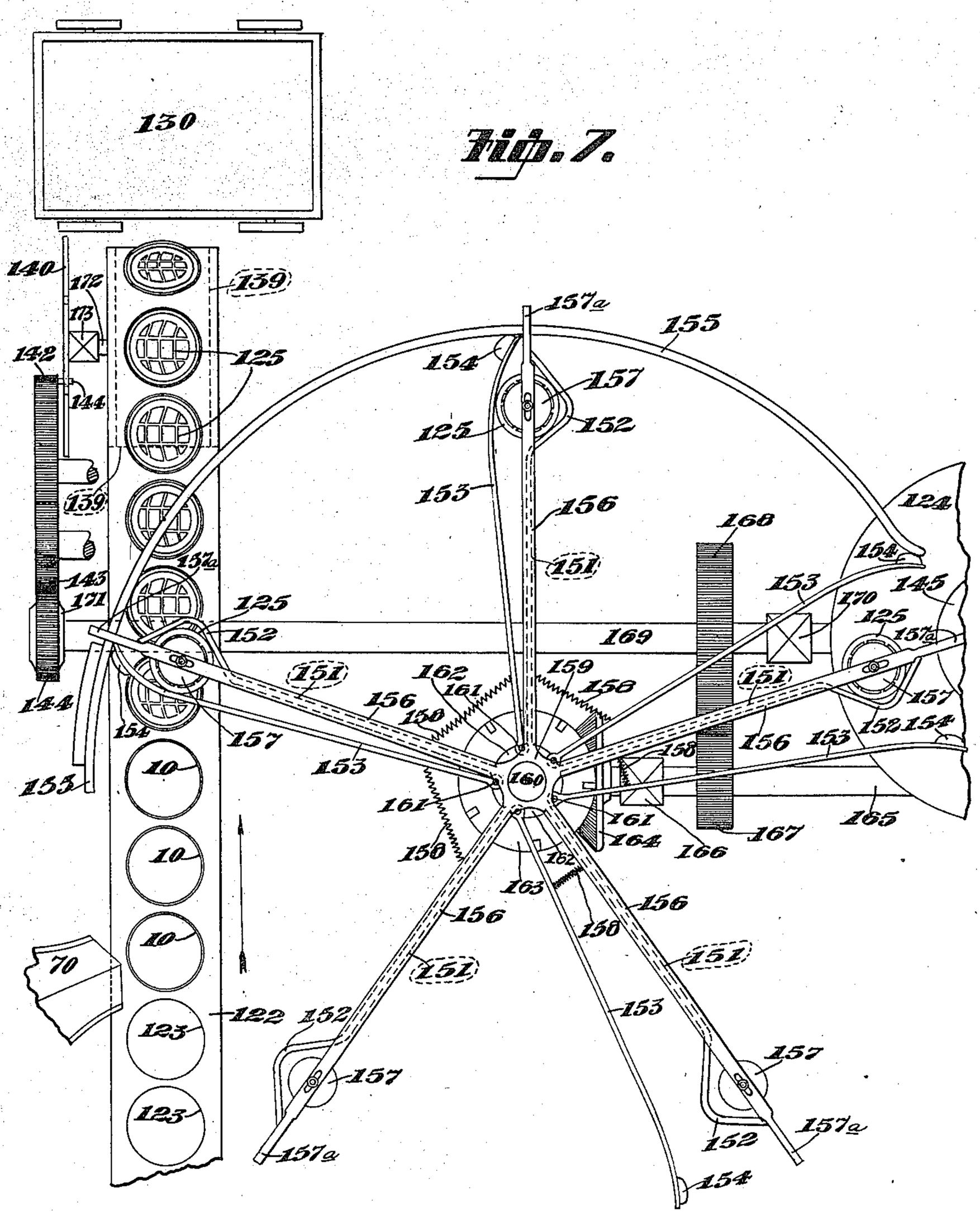
7 SHEETS—SHEET 6.

Fig. 7.



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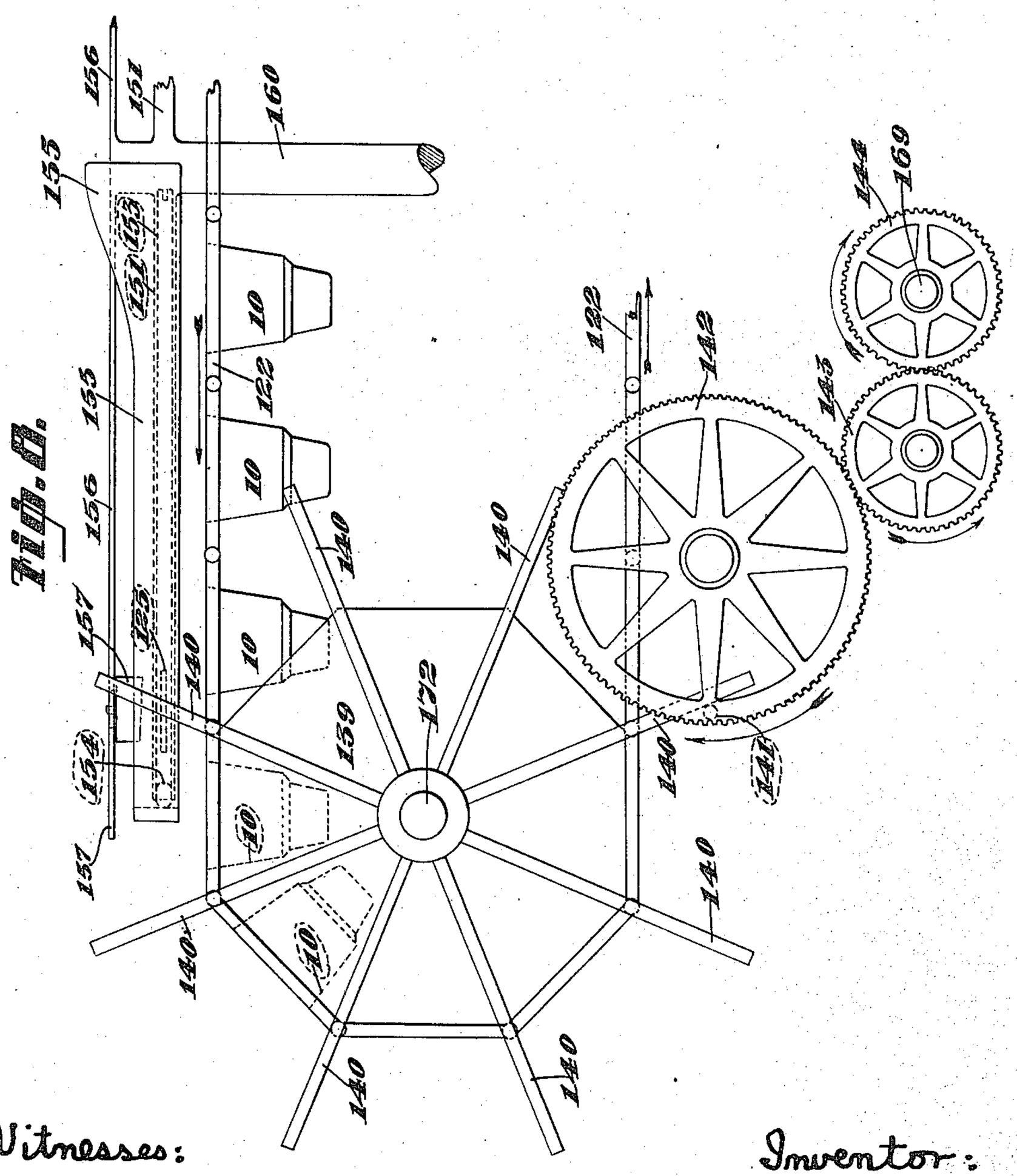
963,164. Patented July 5, 1910.

7 SHEETS—SHEET 7.

Fig. 6.



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UNITED STATES PATENT OFFICE.

ALBERT J. MEIER, OF GLENDALE, MISSOURI.

MACHINE FOR CASTING LEAD POTS AND BUCKLES AND LOADING SAID BUCKLES IN SAID POTS.

963,164. Specification of Letters Patent. Patented July 5, 1910.

Application filed December 24, 1908. Serial No. 469,098.

To all whom it may concern:

Be it known that I, ALBERT J. MEIER, a citizen of the United States, residing at Glendale, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Machines for Casting Lead Pots and Buckles and Loading said Buckles in said Pots, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention consists in the method of, and apparatus for, forming the lead corroding-pots described in my patent dated December 8, 1908, No. 906,253, and in the method of, and apparatus for, casting buckles, and in the method of, and apparatus for, loading said buckles into said corroding-pots.

In the drawings forming part of this specification, in which like numbers of reference denote like parts wherever they occur, Figure 1 is a top plan view of the apparatus for casting said lead corroding-pots; Fig. 2 is a sectional view of part of same from the central post to the outer part of the machine on the line of the center of one of the rotating arms; Fig. 3 is a top plan view of the base of said machine; Fig. 4 is a perspective view of the several cams in the corroding-pot apparatus showing their relation to each other and that of the rods actuated thereby; Fig. 5 is a top plan view of the buckle-casting mechanism; Fig. 6 is a side elevation thereof; Fig. 7 is a top plan view of the mechanism for loading the buckles into the corroding pots; and Fig. 8 is a side elevation thereof.

From the base 1 projects the bearing-block 2 supporting the core or central post 3 pivoted on the stud 4. Said core 3 is, also, journaled in casting 5 so as to revolve therein, said casting being supported by floor 6. Said core is rotated by gear 7 mounted in connection therewith, said gear 7 being driven by suitable gearing. A reservoir 8 is conveniently located on floor 6, ready to supply molten metal or other fluid material through spout 9 for casting the corroding-pot 10, said molten material falling into receptacle 11 from said spout. A valve 12 in the drawing shown controlled by the plunger 13 closes the outlet port 14 in the bottom of said receptacle. Said plunger is raised so as to open port 14 by means of link 15, pivoted at 16 to lever 17 fulcrumed at pivotal point 18 to arm 19 of elbow 20, pivoted at 21 to bracket 22 projecting from core 3 and rotating therewith. Lever 17 is pivoted at 23 to rod 24 and is actuated thereby, weight 24ª being attached to said lever and tending normally to hold same down. The lower end of rod 24 is provided with a yoke 25 in which roller 26 is journaled. Said roller, at certain intervals, rides on the cam having the high part 27 and the low part 28. In Fig. 2 the position of lever 17, of plunger 13, and valve 12 is that in which said roller is out of engagement with either the low part 28 or high part 27 of the cam that actuates it. When said roller, by reason of the rotation of core 3, has been caused to travel around base 1 (same being connected with core 3 by bracket 22, etc.), rod 24 is raised, lever 17 is tilted, and elbow 20 may move on its pivotal point 21 far enough to be disengaged from fork 29. The lifting of said parts raises plunger 13 and valve 12, and thereby opens port 14, thus allowing molten metal to flow from receptacle 11 into the space between the jaws 30 and 31 forming the female die and the male die 32 borne by the rod 33, which is slidingly mounted in sleeve 34 in head 35, stops 36 and 37 respectively, limiting the degree of movement of said rod 33 relative to said head 34 in either direction. When male die 32 has been caused to enter the female die and molten metal has been allowed to flow out of receptacle 11 to form the pot 10, die 32 is held in the position shown in Fig. 2 only by the pressure of stop or pin 37 against spring 38 and of pin 39 against spring 40. When, however, roller 41, journaled in yoke 42 at the lower end of rod 33, rides on the highest part 43 of the cam which actuates said rod, said rod 33 is raised still higher, and pin 39 and stop 37 press against springs 40 and 38, respectively, giving an additional final pressure in molding the pot 10, which pressure is necessarily yielding, because of the interposition of springs 38 and 40, and thus too hard an impact or pressure upon the object molded is prevented. On the other hand, when roller 41 has passed the highest part of the cam 43 springs 38 and 40 will press upon pins 37 and 39, and thus retract said rod 33 from inside of die 32 until stop 36 strikes upon the end of sleeve 34, at which time die 32 will be itself withdrawn from within the jaws 30 and 31, leav-

ing the pot 10 resting upon the top 44 of collar 45.

Collar 45 serves as a guide for die 32 and is seated in an aperture through table 46 having a flange 47 which rests upon said table to support said collar in position and to prevent any movement thereof downwardly. Said collar 45 is held from upward movement by the ring 48 fastened thereto by said set-screw 49. Said ring 48 is fastened, also, to table 46 by countersunk screws 50. A bushing 51 having a flange 52 which seats in a notch 53 on table 46 provides a suitable surface for engagement by the flange 47. Said flange 47 forms, also, a rest for the bottom of jaws 30 and 31 when same are closed. The top part of said jaws are formed with lips 54 fitting into recesses 55 in the bottom of receptacle 11. Said receptacle 11, therefore, rests closely upon and over said jaws which enables the lips 56 of the port 14 to conduct the metal to be molded directly upon the head 57 of the male die 32 when same has been propelled the farthest distance forward within the female die, thus leaving a narrow and restricted space in which the metal can run, exit of said metal from said space being prevented by the top 44 of collar 45. While it is necessary thus to conduct the flowing metal from receptacle 11 to the above-mentioned narrow space with the shortest possible degree of travel and to this end the lips 56 of port 14 thus overlap the lips 54 of jaws 30 and 31, yet, in order that the article, when it has been cast, can be removed from said jaws after the die 32 has been retracted, it is necessary that said jaws 30 and 31 shall be separable. Before same can be moved apart, however, it is necessary to lift receptacle 11 from its close contact with, and seat upon, same. Accordingly, receptacle 11 is provided with a flange 58 underneath which a ring 59 encircles said receptacle, said ring being borne by arm 60 connected with rod 61 supplied at its lower portion with a roller 62 journaled in yoke 63. A cam having a high part 64 and a low part 65 is provided for engagement at predetermined intervals with roller 62 and by this means, rod 61 and arm 60 are, from time to time, lifted and thereby receptacle 11 borne by ring 59 is raised out of engagement with lips 54 of jaws 30 and 31.

When, as heretofore described, the pot has been molded, receptacle 11 raised off of jaws 30 and 31, and jaws 30 and 31 spread apart from each other, the pot 10 is left standing on the top 44 of collar 45. At this time, head 66 of arm 67 of bell-crank lever 68 moves forward, and pushes against said pot 10, so that it moves upon the rounded rim 69 of table 46, and falls over on its side thereon, and slides from thence, on account of said rim being rounded, into trough 70. The pot 10 is molded upside down, but travels with its bottom first down trough 70. Said bell-crank lever 68 is pivoted at 69[a], and is tilted so as to cause the head 66 to engage the pot 10 by the riding of roller 71 journaled in yoke 72 on cam 73. A slot 74 in table 46 allows the rocking of the upper part of said bell-crank 68, while a slot 75 in platform 76 accommodates the movement of the lower part thereof. After the head 66 has pushed the pot 10, as hereinbefore described, it is retracted by spring 77 connected with the core 3.

Platform 76 contains openings and sleeves 78 extending through said openings as guides for the rods 24, 61, 33, 79, and 80. Said platform is attached by bracket 81 to core 3.

The opening of the jaws 30 and 31 heretofore mentioned is produced by roller 82 riding on cam 83, said roller being journaled in a yoke 84 in one end of arm 85, a short shaft 86 extending from said arm to gear 87, said shaft 86 being fastened to platform 76. Gear 87 meshes with and drives gear 88, which is of less diameter, said gear 88 being mounted on shaft 79 and rotating same. Shaft 79 rotates in sleeve 89 located in an opening through table 46, and at its upper end bears a plate or wheel 90, from which extend two links 91 and 92, pivoted thereto at 93 and 94, respectively, and also pivoted at 95 and 96, respectively, to arms 97 and 98, which are supported in guide 98[a] attached to table 46.

When roller 82 first engages cam 83 it rides on the low part 99, the opening of jaws 30 and 31 being positively and relatively quick. Said roller then runs on the regular part 100 during its travel thereover, said jaws remain open, being held positively so by the links 91 and 92 and connected parts. When said roller descends on part 101 of said cam 83 no closing movement of the jaws 30 and 31 is caused thereby, but simultaneously, said roller rides on the part 102 of cam 103, and thereby said jaws are positively closed and remain so during the travel of said roller 82 over the regular part 104 of the cam 103. The opening of the jaws is not caused by said roller descending on the part 105 of cam 103, but is by its ascent on the part 99 of cam 83.

The opening of the jaws 30 and 31 in the manner just referred to is produced by the spreading apart of arms 97 and 98 and the closing of said jaws is accomplished by drawing said arms toward each other. Said arms are spread apart by the rotation of wheel 90 in the direction denoted by the arrow in Fig. 1, which rotation moves pivotal points 93 and 94 into such relation to pivotal points 95 and 96 as to move links 90 and 91 to the position where they distend the arms 97 and 98. Movement of the wheel 90 in the direction indicated by the arrow

causes the end of link 91 attached to arm 97 to push arm 97 away from its fellow, and, at the same time, such movement causes link 92 to push 98 in the opposite direction, thus separating said arms and opening the jaws 30 and 31. The arms 97 and 98 terminate in perforated forks 106 and 107, respectively, and are pivoted thereby to bolt 108 which passes through bracket 22 and table 46, said table being attached to the core 3 by bolt 109 and bracket 110.

After the pot 10 has been cast, and before the receptacle 11 is lifted, the jaws 30 and 31 open, or die 32 retracted, it is desirable to inject water or other cooling means into the chamber inside of die 32. For this purpose a hose or flexible pipe 111 connects with port 112 in head 35, said hose or pipe receiving a supply of water or other fluid from pipe 113 containing the valve 114. An arm 115 operates said valve 114 and is provided with a slot 116 through which projects a pin 117, said pin being carried by rod 80. When rod 80 rises, said pin thus engaging arm 115 rocks said arm and opens valve 114 so as to allow the flow of fluid into the chamber inside of die 32. This continues for only so long as desired, as spring 118, pushing against block or pin 119 on rod 80 tends to force said rod 80 downwardly, said rod 80 being originally forced downward by the riding of roller 120 on cam 121.

It will be readily understood that the several cams herein mentioned are arranged to produce the different motions effected thereby at exactly such time as best suits the operations to be performed by the other parts of the machine, and, also, so that said various movements will come in the right order of succession.

Figure 1 shows that the machine consists of a grouping of a plurality of units each unit comprising the parts hereinbefore described, that is to say, each unit comprises a male and female die, as hereinbefore described, and means for operating same; a metal-feeding receptacle and means for operating it and connected parts; an arm 68 for pushing the pot when completed; a water pipe and connections; and the plurality of cams hereinbefore described. Each of these groups of parts, or units, is caused to travel continuously by the continuous rotation of the core 3. Only when a receptacle 11 is opposite the point where spout 9 can discharge into it does any one of said receptacles receive a charge of metal, but at that point the operation begins, the movement of the various parts being suitably timed. First the jaws 30 and 31 close and the male die 32 enters between same, then the receptacle 11 seats on top of said jaws, plunger 13 is lifted, and metal flows in to form the pot 10, all while the particular unit to which said parts belong is traveling away from the spout 9. Meanwhile, other units are approaching the position of spout 9.

The various operations hereinbefore described occur in the following order: Metal is allowed to run out of reservoir 8 through spout 9 into receptacle 11. Valve 12 is opened by raising plunger 13. The metal flows over the head of die 32 and takes the form thereof and of the coöperating die. Cooling fluid is then ejected from pipe 111. Receptacle 11 is lifted and the die 32 is then retracted and the jaws 30 and 31 opened. Arm 67 then pushes the completed pot off its resting place and throws it upon its side on the part 69 of table 46, said operation occurring at that period of time when the pot is opposite trough 70 and can be relied upon to fall into said trough, the unit that made same having in the meantime traveled nearly all the way around the circle so as to be again near spout 9.

Each pot 10, when completed, is discharged upon an endless conveyer 122 from trough 70, there being a plurality of openings 123 in said conveyer adapted to receive same. Said conveyer travels in the direction indicated by the arrows in Fig. 1 and in Fig. 7. Conveyer 122 travels past trough 70 to receive the pots 10 as cast, and, also, travels alongside of table 124 in order to receive the buckles 125 that have been cast in the molds 126 carried by endless conveyer 127. A reservoir 128 contains suitable metal for casting the buckles and said metal is fed into the molds 126 through spout 129, suitably controlled. One end of said conveyer 127 is adjacent said spout 129 and the other is located over, and in proximity to, table 124. The object of this location is that the buckles, cast in endless succession, shall be carried, as soon as cast, to table 124 which is adapted to receive same and by rotation to carry same immediately to a loading position over the pots 10 carired by conveyer 122. By these arrangements the greatest convenience of, as well as celerity in, the three operations of casting the pots, casting the buckles, and loading the latter in the former is secured, since the pot casting dies travel in endless succession continuously past spout 9 and the buckle casting molds 126 pass in endless succession and continuously past spout 129, and each pot is carried as soon as completed by said endless conveyer to a point where same is automatically loaded with the number of buckles usually placed in one such pot. Automatic means hereinafter to be described transfer said buckles as delivered on said table into said pots. The pots loaded with buckles are carried by endless conveyer 122 to a place where same can be conveniently loaded on a series of trucks 130. Thus two separate casting operations and one operation of loading the product of one casting operation in the product of the other cast-

ing operation are all performed automatically, obviating the necessity of manual handling of material or either of the products for any purpose from the time the casting of both products begins until same, the one loaded in the other, are ready to be carried away in trucks to the corroding room.

Inasmuch as it is necessary that conveyers shall be driven with an intermittent movement so timed as to allow the loading of a plurality of buckles (18, more or less, the drawings in this specification being intended to make provision for such loading of 18) into each corroding pot 10, means must be provided in connection with the buckle-casting apparatus to prevent the delivery upon table 124 of buckles which would, by the automatic means operating in connection with said table, carry said buckles to conveyer 122 at the time when same is moving, as such delivery would result in said buckles falling merely on said conveyer 122 and not into a corroding pot 10. Accordingly, two molds 131 borne by conveyer 127 have spouts 132 opening into receptacle 133. When, therefore, the automatic control of the exit of metal from spout 129 allows metal to fall into molds 131, same simply runs out immediately into receptacle 133. The delivery of buckles on table 124 is, accordingly, interrupted when the molds 131 are passing over table 124 in the discharging position underneath hammer 134, and by reason thereof no buckles are in position to be dropped into a pot 10 borne by conveyer 122 at the time when said conveyer is being moved forward to bring the next corroding pot 10 into position to receive its quota of buckles. In other words, as each of said pots is to receive a plurality of buckles that have been previously delivered on table 124 by conveyer 127, conveyer 122 is moved intermittently and to accommodate such intermittent movement the supply of buckles is interrupted at periodical intervals of time to coincide with the periodical movements of conveyer 122. Said periodical movements of conveyer 122, however, are so arranged as to bring an opening 123 opposite trough 70 at the proper moments to receive a pot 10 from said trough, each of said pots falling into an opening 123 with its mouth up.

The automatic means for controlling the exit of metal from spout 129 allows just enough metal to form a buckle to fall into each mold 126. When endless conveyer 127 has carried each molded buckle to the point underneath hammer 134, lip 135 becomes disengaged from arm 136 and hammer 134 is allowed to drop so as to impact upon the bottom of a mold 126 so as to disengage a buckle 125 therefrom, said buckle falling upon table 124 which rotates in the direction indicated by the arrows in Figs. 5 and 6 and carries said buckle away, hammer 134 being immediately raised by spring 137 so as to be out of engagement with conveyer 127 and so as to be ready for impact upon the bottom of the next mold when it reaches the proper position. Hammer 134 is pivoted on rod 138 or any other suitable support. A plurality of arms 136 successively trip hammer 134 after its successive operations.

Means for intermittently moving the conveyer 122 is illustrated in Fig. 8, same consisting in a star wheel 139, the arms 140 of which successively engage pin 141 on gear 142 driven by gears 143 and 144 in a relation calculated and predetermined relative to the loading of eighteen buckles in each corroding pot carried by said conveyer 122.

Table 124 rotates in the direction shown by the arrow in Fig. 5, being thus impelled by any suitable mechanism, center 145 of said table remaining stationary and fixed to shaft 146, to which is, also, fixed the bracket 147 and arm 148 carrying rollers 149 and 150. When a buckle 125 falls from conveyer 127 underneath hammer 134 upon rotating table 124, it is carried around to the point where a rotating sweep arm 151, terminating in a cup 152, catches same and causes said buckle to travel in the reverse direction until said buckle engages spring arm 153. Spring arm 153 is provided with knob 154, which engages the regular, interior wall of cam 155. As arm 153 is bent back, as shown in Fig. 7, to engage the buckle, it holds same securely in cup 152. Arm 156 carries a hammer 157, a projection 157[a] beyond which rides on the cam face of cam 155, and, when buckle 125 has been carried to a point over one of the corroding pots 10 borne by carrier 122, said hammer has reached such point on the surface of cam 155 as to drop off said cam and impact the buckle, thereby disengaging same from the retention of spring 153 in cup 152. The buckle, thereupon, falls into the corroding pot underneath same. Arm 156 is a spring arm and its resilience, coupled with the weight of hammer 157, causes it to descend quickly when it rides off of the cam face. When arm 153 has passed the end of cam 155 its resilience causes it to become approximately straight like the one shown in the lower part of Fig. 7, while spring 158, attached to the next forward arm 151, draws same so far forward as to be out of the way of the buckle carried forward on table 124 by the arm 151 with which said spring arm 153 cooperates, but to which it is not attached.

Arms 151 and 156 are attached to a central ring 159 driven by shaft 160. Each arm 153 is pivoted at 161 to flange 162 encircling shaft 160 and extending from beveled gear 163. Said gear is driven by beveled gear 164 mounted on shaft 165 supported by bearing 166. Spur pinion 167, also,

mounted on said shaft 165 drives spur gear 168 mounted on shaft 169 supported in bearings 170 and 171. Said shaft 169 drives gear 144, and thereby actuates gears 143, 142, star wheel 140, and conveyer 122. Wheel 140 is mounted on and drives shaft 172 supported by bearing 173, said shaft 172 bearing and driving wheels 139, and thus drives conveyer 122, so as to cause same to move when said shaft 172 is rotated.

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

1. The combination of a pot-casting apparatus, a buckle-casting apparatus, a carrier for the product of the former, and means for loading the product of the latter in the product of the former.

2. The combination of a pot-casting apparatus, a buckle casting apparatus, a carrier for the product of the former, a rotating table to receive the product of the latter, and means for conveying the buckles from said table to said carrier.

3. The combination of a pot-casting apparatus, a carrier, a source of buckle-metal supply, a continuously traveling buckle molder, a table to receive the product of said molder, and means for carrying said product to said carrier.

4. The combination of a source of metal supply, a plurality of traveling molds, a rotatable table, and means for producing travel of said molds and of said table.

5. The combination of a source of metal supply, a rotatable table, a plurality of molds adapted to travel past said source of metal supply and over said table, and means for moving said molds and said table.

6. The combination of a source of metal supply, a rotatable table, a plurality of molds adapted to travel past said source of metal supply and over said table, means for moving said molds and said table, and means for discharging objects from said molds upon said table.

7. The combination of a source of metal supply, an endless conveyer carrying a plurality of molds, there being also mold spaces carried by said conveyer adapted to discharge the metal flowing thereinto, and a receptacle for said discharged metal.

8. In a machine of the character described, the combination of a central rotatable spindle, a mold comprising male and female dies, a metal receptacle having a port adapted to open into said mold, means for closing and opening said port, means for opening said female die, means for actuating said male die, and means for removing the molded object.

9. In a machine of the character described, the combination of a central rotatable spindle, a mold comprising male and female dies, a metal receptacle having a port adapted to open into said mold, means for closing and opening said port, means for opening said female die, means for actuating said male die, means for removing the molded object, and cams adapted to operate each of said means.

10. In a machine of the character described, the combination of a base bearing cams, a central rotatable spindle, a plurality of rods bearing rollers adapted to ride on said cams, means projecting from said spindle to support various operative parts, and the following operative parts, each actuated from one of said cams: a female die, a male die, a metal receptacle, and a closure therefor.

11. In a machine of the character described, the combination of a base bearing cams, a central rotatable spindle, a plurality of rods bearing rollers adapted to ride on said cams, means projecting from said spindle to support various operative parts, and the following operative parts, each actuated from one of said cams: a female die, a male die, a metal receptacle, a closure therefor, and a fluid injector.

12. In a machine of the character described, the combination of a rotatable spindle, means for driving same, and a plurality of parts carried by said spindle, namely: an openable female die, a reciprocatable male die, a metal receptacle having a port, means for closing and opening said port, and means for closing and opening said female die.

13. In a machine of the character described, the combination of a rotatable spindle, a pair of guide projections attached thereto, cams located adjacent to said spindle, and a plurality of arms engaging said cams and guided by said projections.

14. In a machine of the character described, the combination of a rotatable spindle, means for driving same, and a plurality of groups of parts adapted to rotate with said spindle, each group comprising a mold, a fluid receptacle adjacent same having an opening from same into said mold, and means for closing same, an object remover, a mold opener, and means for opening the passage from said fluid receptacle into said mold.

15. In a machine of the character described, the combination of a source of fluid supply, a rotatable spindle, means for rotating same, and a plurality of groups of parts adapted to be rotated by said spindle and past said source of fluid supply, each of said groups comprising a mold, a fluid receptacle adjacent same having an opening from same into said mold and means for closing same, an object remover, a mold opener, and means for opening the passage from said fluid receptacle into said mold.

16. In a machine of the character de-

scribed, the combination of a rotatable spindle, means for driving same, a cam in proximity to said spindle, a female die also supported adjacent said spindle, a male die, and means for actuating said male die from said cam.

17. In a machine of the character described, the combination of a rotatable spindle, means for driving same, a cam in proximity to said spindle, a mold supported in proximity to said spindle, and means for injecting cooling fluid adjacent said mold actuatable by said cam.

18. In a machine of the character described, the combination of a rotatable spindle, means for driving same, a cam in proximity to said spindle, a mold composed of coöperating female and male dies, and means for injecting fluid within said male die, said means being actuatable by said cam.

19. In a machine of the character described, the combination of a rotatable spindle, means for rotating same, a cam adjacent said spindle, a mold supported adjacent said spindle, a fluid receptacle resting upon said mold, means for lifting said receptacle off said mold, said means being actuatable by said cam.

20. In a machine of the character described, the combination of a rotatable spindle, means for rotating same, a cam adjacent said spindle, a mold supported adjacent said spindle, a fluid receptacle resting upon said mold, said receptacle having a projection therefrom, and means for raising said receptacle adapted to engage said projection and to be actuated by said cam.

21. In a machine of the character described, the combination of a support, a female die composed of removable parts, a removable male die, and a rest for the molded object.

22. In a machine of the character described, the combination of a divaricatable female die, a reciprocatable male die, said parts being adapted to form a mold, a rest underlying said mold, and means for divaricating said female die and reciprocating said male die.

23. In a machine of the character described, the combination of a support, a collar, the upper edge of which forms a rest, and movable dies adapted to form a mold above said rest.

24. In a machine of the character described, the combination of a support, a collar, the upper edge of which forms a rest, movable dies adapted to form a mold above said rest, and means for pushing the molded object from said rest.

25. In a machine of the character described, the combination of a buckle-casting mechanism, a pot-carrier, a table intermediate same, and a buckle-flattener in connection with said table.

26. In a machine of the character described, the combination of a buckle-casting mechanism, a pot-carrier, a table intermediate same, and an arm bearing a buckle-flattening roller.

27. The combination of a mold, a metal receptacle having a port adapted to open into the mold, means for opening and closing said port, means for engaging and bodily removing the molded object, and cams for operating both of said means.

28. The combination of a mold composed of coöperating male and female dies, the female die having separable parts, a fluid receptacle resting upon the mold, means for lifting the receptacle off said mold, means for subsequently separating the parts of said female die, and means for actuating the male die.

29. The combination of a mold composed of coöperating male and female dies, the female die having separable parts, cam-operated means for separating said parts at the conclusion of the molding operation, cam-operated means for actuating the male die and cam-operated means for removing the molded object.

30. The combination of a mold composed of coöperating male and female dies, the female die having separable parts, a pair of cams, means operable by one cam for actuating the male die, and means operable by the other cam for moving the parts of the female die.

31. The combination of a mold composed of coöperating male and female dies, the female die having separable parts, means for separating said parts, and means for raising and lowering the male die.

32. The combination with a mold composed of a die having separable parts, and a reciprocating die, of means for separating said parts, means for reciprocating the second-named die and means for injecting fluid within the second named die.

33. The combination with a mold composed of separable members, of a rest below the mold adapted to support the molded object, means for separating said members, and means for removing the object from said rest when said members are separated.

34. The combination with a mold composed of coöperating male and female dies, the latter die having separable parts, of a fluid receptacle resting upon the mold, cam-operated means for lifting the receptacle from said mold, and cam-operated means for subsequently separating the parts of said female die.

35. The combination, in a machine of the class described, of a table, a series of molds arranged to travel thereover, and an impact member arranged to strike said molds to discharge the molded objects therefrom upon the table.

36. The combination, in a machine of the class described, of a movable table, a series of molds arranged to travel thereover, and an impact member arranged to strike said molds to discharge the molded objects therefrom upon the table.

37. The combination, in a machine of the class described, of a table, a series of molds arranged to travel thereover, and a hammer arranged to strike the bottom of said molds, to discharge the molded objects therefrom upon the table.

In testimony whereof I have affixed my signature in presence of two witnesses.

ALBERT J. MEIER.

Witnesses:
GLADYS WALTON,
EDNA J. GOCKEL.