

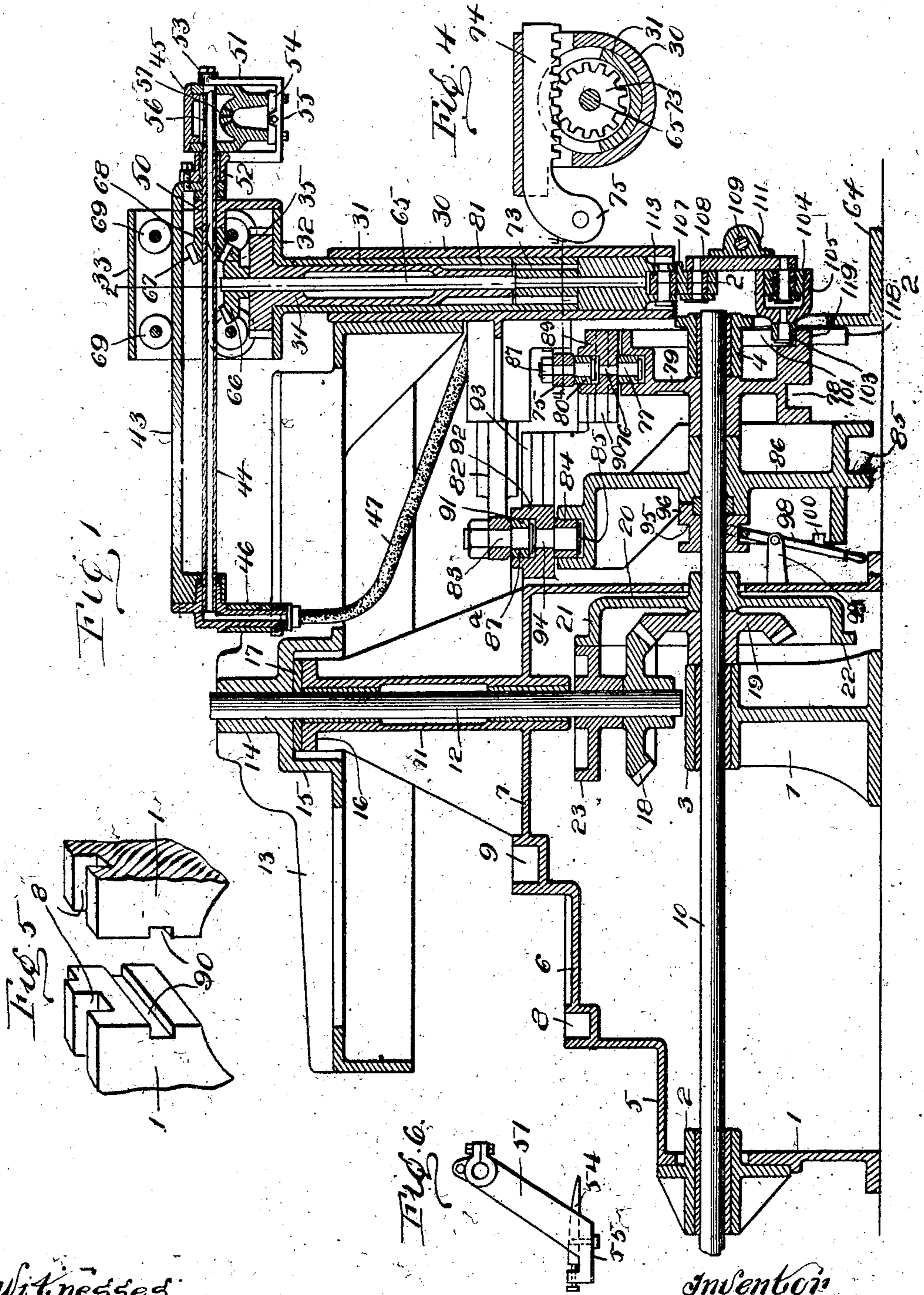
No. 879,889.

PATENTED FEB. 25, 1908.

W. NEWBY.  
MECHANICAL GLASS GATHERER.

APPLICATION FILED JUNE 11, 1906.

3 SHEETS—SHEET 1.



Witnesses  
Samuel T. Payne  
E. E. Potter

Inventor  
William Newby  
by H. C. E. & Co.  
Attorneys

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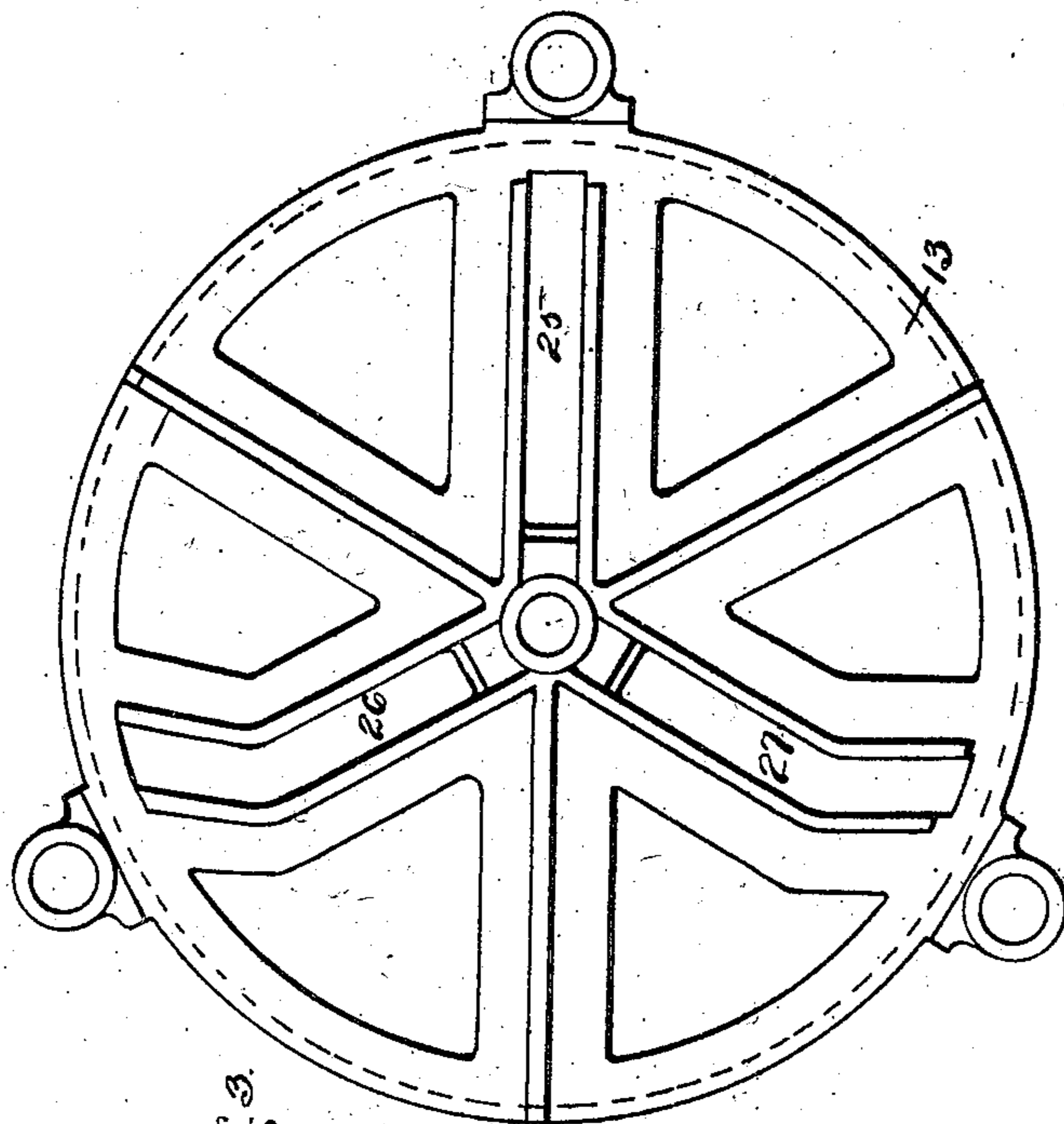


Fig. 3.

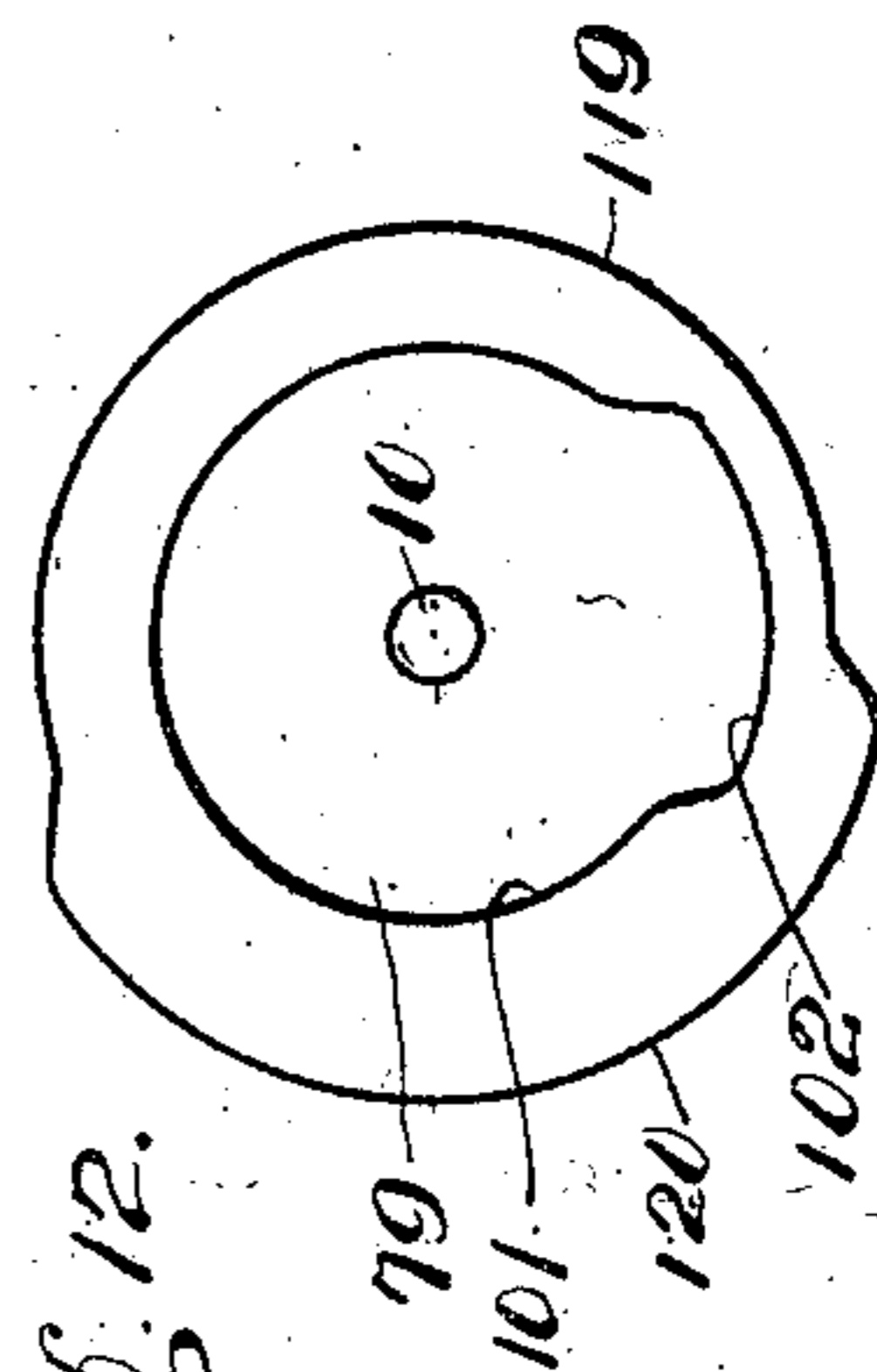


Fig. 12.

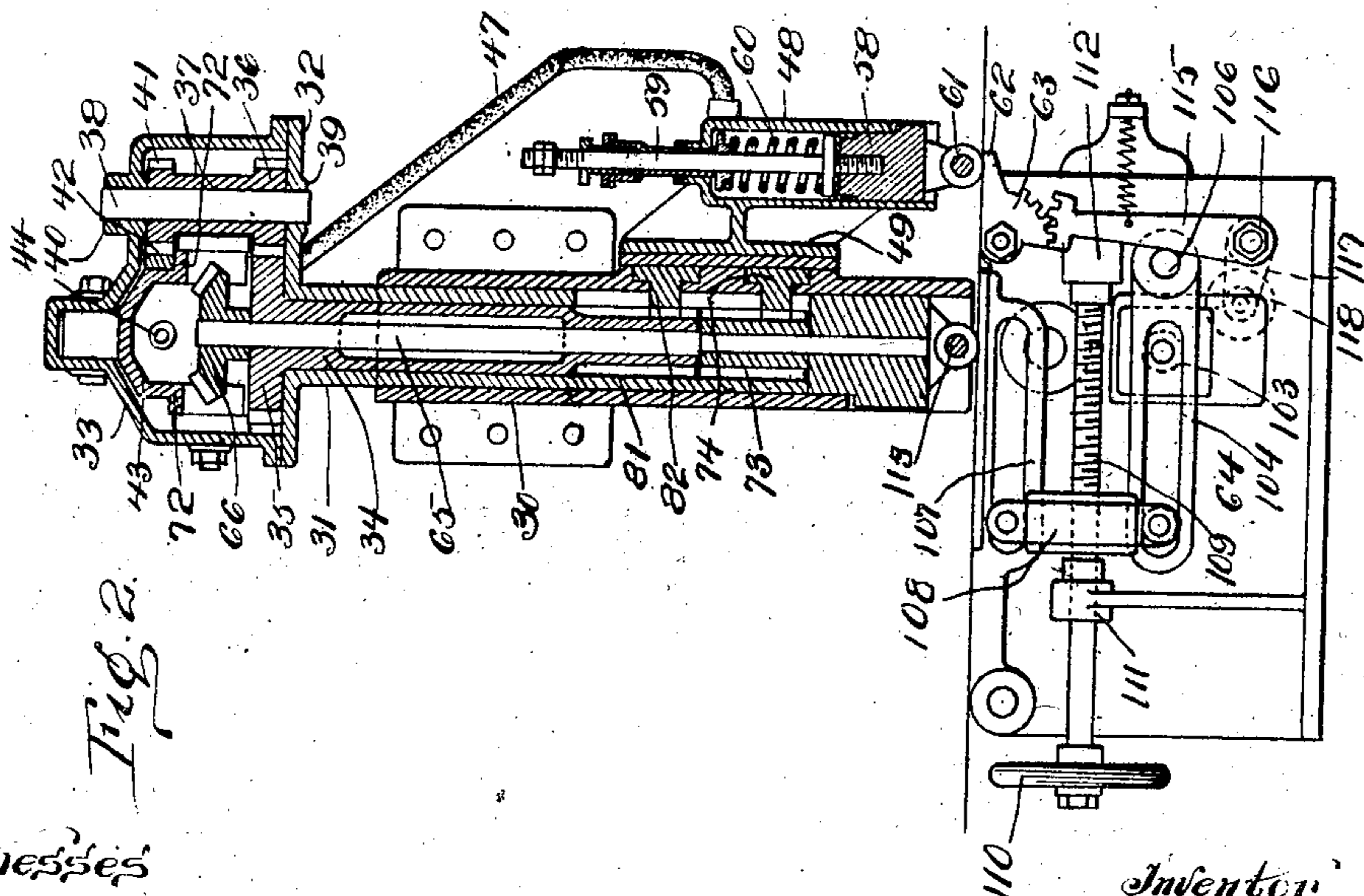


Fig. 2.

Witnesses  
Samuel T. Payne.  
E. E. Potter

Inventor  
William Newby.

by

A. C. Smith & Co.  
Attorneys

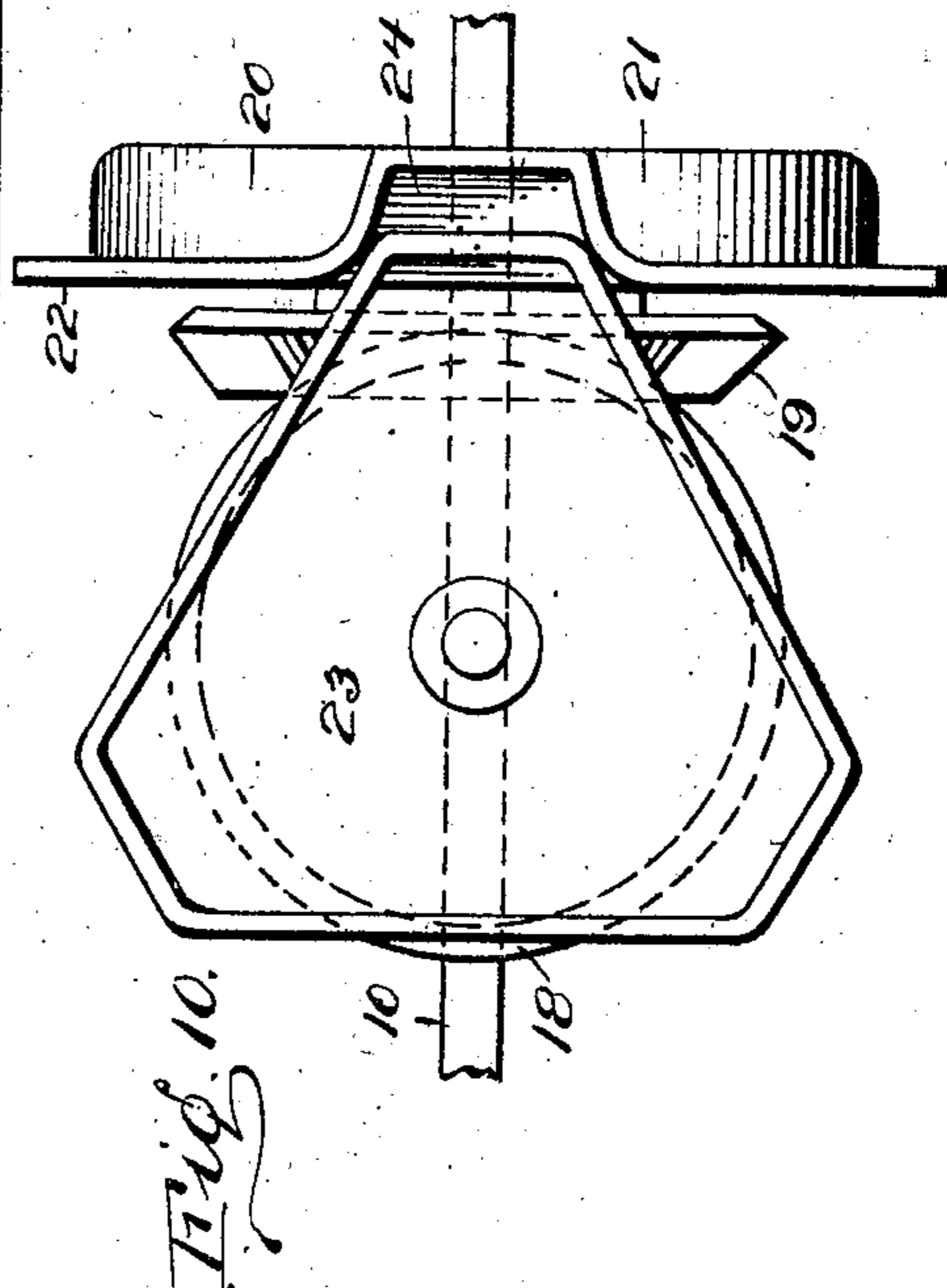
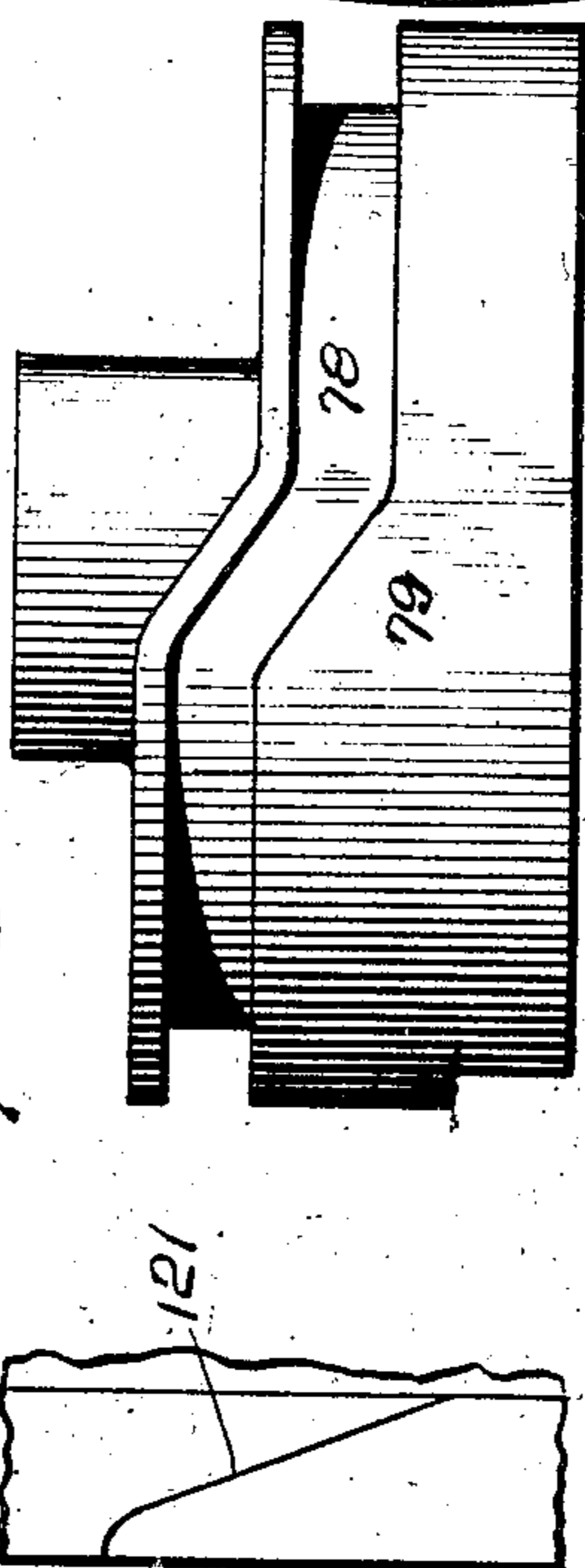
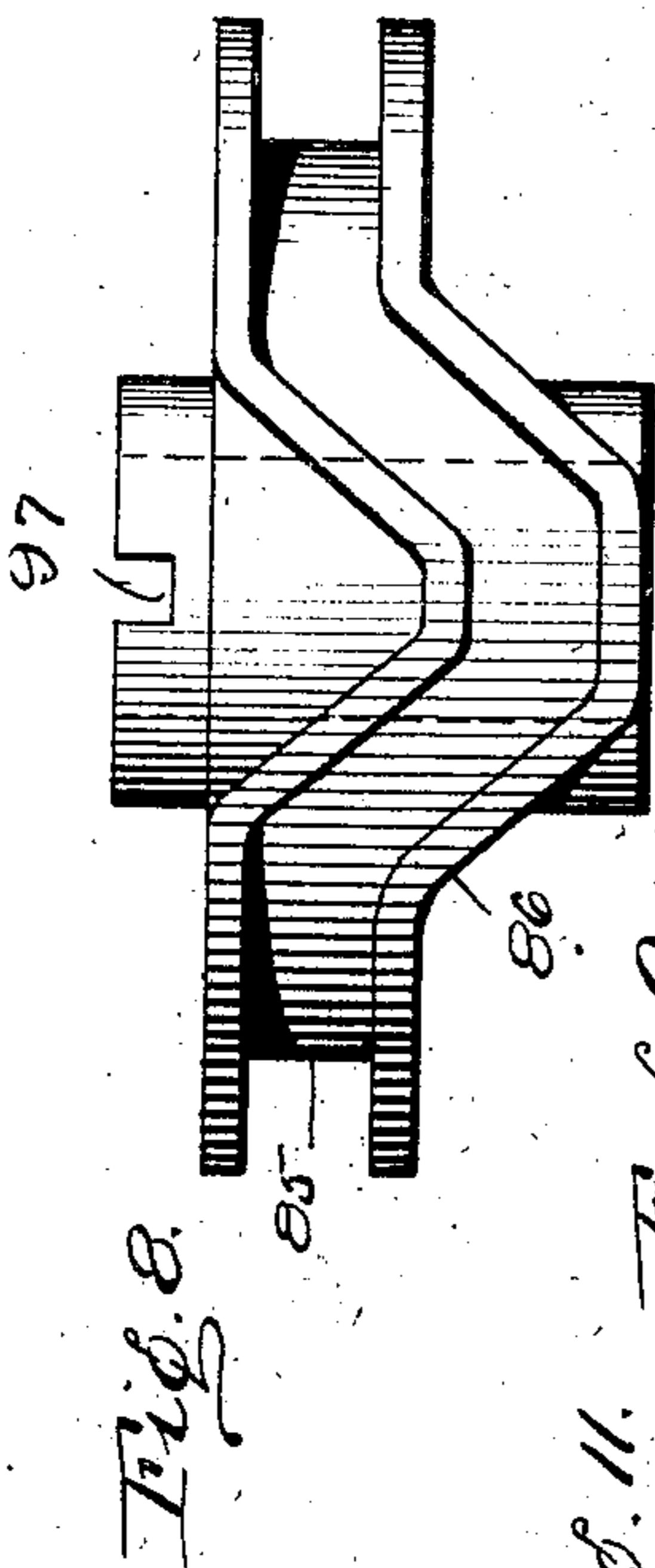
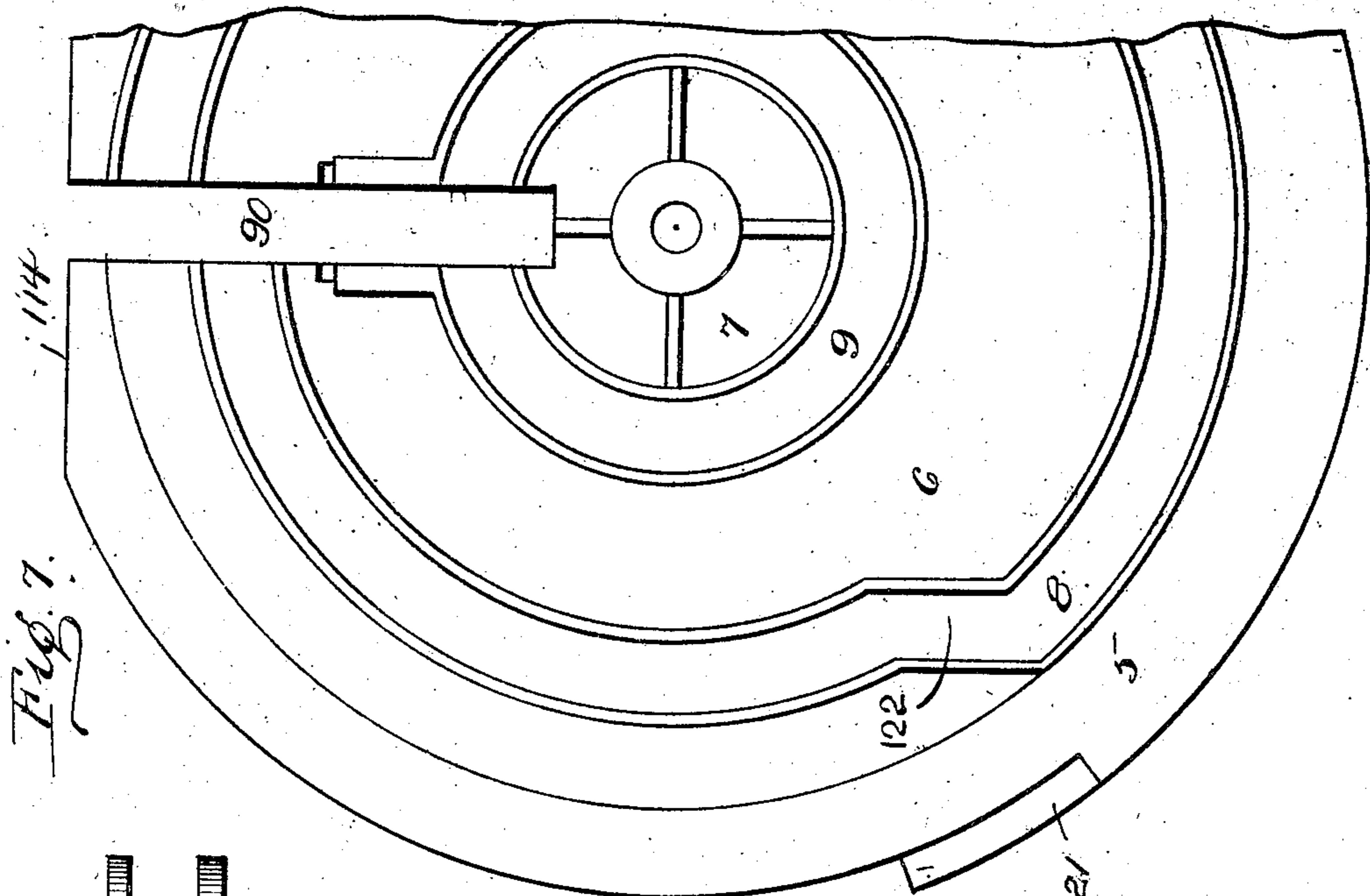
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3 SHEETS—SHEET 3.



Witnesses

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E. E. Potter

by

Inventor  
William Newby.

J. C. Everett & Co.  
Attorneys

# UNITED STATES PATENT OFFICE.

WILLIAM NEWBY, OF PITTSBURG, PENNSYLVANIA.

MECHANICAL GLASS-GATHERER.

No. 879,889.

Specification of Letters Patent.

Patented Feb. 25, 1908.

Application filed June 11, 1906. Serial No. 321,197.

*To all whom it may concern:*

Be it known that I, WILLIAM NEWBY, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Mechanical Glass-Gatherers, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to mechanical glass gatherers, the primary object being to provide automatic mechanical means for gathering molten glass, and for transferring it from the furnace to the molds, a work which is now ordinarily performed entirely by hand.

15 A further object of the invention is to provide mechanism capable of projecting a plurality of glass receiving cups into a furnace successively, then lowering the cup to cause it to slightly dip into the molten glass; then creating a suction through the cup to fill the latter, withdrawing the cup from the furnace and emptying its contents into a mold, and finally carrying the emptied cup away from the mold to make room for the next successive cup.

20 The invention comprises certain novel combinations of devices for effecting these several movements and operations of the cups and for insuring a successive rotation and action thereof.

25 The construction of the mechanism will be fully described hereinafter in connection with the accompanying drawings which form a part of this specification and the novel and characteristic features of the invention will be defined in the appended claims.

30 In the drawings, Figure 1 is a central vertical section of a machine embodying the invention, Fig. 2 is a vertical section on the line 2—2 of Fig. 1, Fig. 3 is a top plan view of the revoluble table employed in the machine, Fig. 4 is a horizontal section on the line 4—4 of Fig. 1, on an enlarged scale, Fig. 45 5 is a detail perspective view of a portion of the main frame, Fig. 6 is a detached side elevation of the glass-bearing device, Fig. 7 is a top plan view partly broken away, of the stationary frame or platform over which the table revolves, Figs. 8 and 9 are plan views of cams for operating the reciprocating racks of the machine, Fig. 10 is a top plan view of the intermittent driving and locking mechanism

for the revoluble table, Fig. 11 is a detail plan view of the incline on the frame for elevating certain vertically movable parts of the machine, Fig. 12 is a face view of one of the cams employed.

The supporting frame of the machine consists of a base 1 formed with shaft bearings 2, 3 and 4, and three platforms 5, 6 and 7 arranged at different elevations. The platforms 6 and 7 are each formed with a cam groove designated respectively by the numerals 8 and 9.

60 A horizontal driving shaft 10 is supported in the bearings of the frame, and rising central from the upper platform is a sleeve bearing 11 within which is mounted a vertical shaft 12 to the upper end of which is secured a circular table 13, said table having a central bearing 14 to receive the shaft 12, and a central cup-shaped hub 15 resting upon a flange 16 formed at the upper end of the vertical bearing 11, a suitable washer or wear plate 17 being interposed between the hub 15 and flange 16 as shown. Upon the lower end of the vertical shaft 12 is fixed a bevel gear wheel 18 adapted to mesh with a mutilated bevel gear 19 mounted upon the driving shaft 10, said mutilated gear having teeth on only one-third of its bearing surface in the particular machine shown in the drawings.

75 Mounted upon the shaft 10 adjacent to the mutilated gear 19 and connected therewith, is a revolving disk 20 having a horizontal flange 21 overhanging the gear 19, and a vertically disposed friction rim 22 adapted to engage and lock a revoluble cam 23 of triangular form mounted upon the vertical shaft 12 above the bevel gear 18, the revolving disk 20 having a recess 24 for the purpose of permitting the cam 23 to turn at the time that the mutilated gear 19 comes in mesh with the gear 18 as shown in Fig. 10.

80 The revoluble wheel 13 is formed with three radially disposed slots or guide ways 25—26, and 27. One of these slots 25, extends from the hub of the circular table directly outward to a point adjacent to the periphery of the table to guide a longitudinally movable shaft (hereinafter referred to) in a direct radial line. The other two guide slots 26 and 27 extend outward from the hub in radial lines for the greater part of their

length, and are then directed away from their radial courses in opposite directions, as at 28, for a purpose to be explained later on.

At equidistant points on the periphery of the revoluble table are arranged depending flanges 29 to each of which is securely bolted a cylindrical casing 30 supporting the mechanism for operating the glass gatherings cups.

The machine here shown is designed for operating three cups, but the number may of course vary, the construction of the machine being accordingly modified. For each gathering cup there is a casing 30 and operating mechanism such as is shown best in Fig. 2. A description of one of these groups of operating devices will suffice for all, as they are all of similar construction.

Within the casing 30 is a revoluble sleeve 31 provided at its upper end with a horizontally disposed support 32 for a housing 33. Within the sleeve 31, is a hollow shaft 34 carrying at its upper end a gear wheel 35, meshing with a pinion 36 formed upon the lower end of a revoluble drum 37, mounted upon a vertical shaft 38 supported in bearings 39 and 40 formed in the support 32, and the housing 33 respectively. Another gear wheel 41 is formed upon the upper end of the drum 37, said gear wheel meshing with rack teeth 42 formed upon one side of a traveler 43 extending through the housing and serving as a support for a tube 44, from the outer end of which is suspended a gathering cup 45. To the inner end of the traveler 43 is secured a hollow coupling 46 connecting the inner end of the tube 44 with one end of a hose 47, the opposite end of which is connected to an air cylinder 48, secured to one side of the casing 30 by a suitable bracket 49, as shown in Fig. 2.

The outer end of the tube 44 extends through a bearing 50 formed in the housing 33, and the bearing 52 formed on the outer end of the traveler 43. Around the bearing 50 is clamped a yoke 51 having a bearing 53 through which the tube 44 also extends. The gathering cup 49 is provided with openings through which the tube 44 extends, said cup being thus revolubly mounted upon the tube 50 within the yoke 51 in position to move over a shearing knife 54 adjustably secured to the cross-bar of the yoke by screws 53. That portion of the tube 44 which extends within the cup is formed with perforations 56 and the bottom 57 of the cup is also perforated to permit a suction of air from the cup by the means shown in Fig. 2, and comprising the cylinder 48, a piston 58 within the cylinder, mounted upon a piston rod 59, and a spring 60 surrounding the piston. The downward stroke of the piston which sucks the air from the cup through the tube 44 and hose 47 is effected by the expansion of the spring 60 after certain mechanism which holds the pis-

ton against downward movement is released. The piston is provided with a roller 61 depending below the cylinder 48 and normally resting upon a lip 62 projecting from a sector 63 pivoted to a bracket 64 secured to the frame 1 below the cylindrical casing 30. Mechanism for coacting with the sector 63 will be described hereinafter.

Within the hollow shaft 34 is a shaft 65 upon the upper end of which is a bevel gear wheel 66 meshing with a bevel pinion 67, formed upon a sleeve 68 slidably keyed upon the tube 44.

Within the housing 33 are revolubly mounted three pairs of guide rollers between which the traveler 43 moves. One pair of said rollers is mounted above the carrier, while the other two pairs 70 and 71 are disposed one pair on either side of the carrier 43 below the oppositely projecting horizontal flanges 72 of the carrier (Fig. 2).

I will now describe the mechanism for revolving the shafts 65 and 34.

Upon the shaft 65 is mounted a gear 73 meshing with a horizontally disposed rack 74, the curved inner end 75 of which carries a short vertical shaft 87 upon the lower end of which is mounted a roller 80, adapted to travel in the groove 8 of the frame 1, and from thence into the groove 58 of a sliding block 89 which travels in the guide ways of the frame 1. On the under side of the sliding block 89 is mounted a second vertical shaft 76 carrying a roller 77 adapted to travel in the groove 78 of a cam wheel 79 mounted on and keyed to the shaft 10.

Upon the lower end of the hollow shaft 34 are formed vertically disposed gear teeth 81 adapted to engage the teeth of a rack 82 similar to the rack 74, except that it is longer. The inner end of the rack 82 carries a vertical shaft 83 upon the lower end of which is mounted a roller 87<sup>a</sup>, adapted to travel in the groove 9 of the frame 1, and from thence into the groove 91, of a sliding block 92, which block travels in guides 93 of the frame, said guides being similar to the guides 90. On the under side of the sliding block 92 is mounted a second vertical shaft 94 carrying a roller 84 adapted to travel in the groove 85 of a cam wheel 86 mounted loosely on the shaft 10.

On the shaft 10 is mounted and driven thereon, a sliding clutch 95 having a clutch jaw 96 for the purpose of interlocking with a recess in the hub of the cam wheel 86. This clutch 95 is moved into or out of engagement by a shifting lever 98 carried by a bracket 99 the mechanism being so arranged that the clutch can only be moved out of engagement when the cam 86 is in its normal position, that is to say, before the gathering cup 45 enters the furnace, as shown in Fig. 1. When in this position, a slot 100 formed in the cam

86 is opposite the clutch lever 98, and permits said lever to be moved to throw the clutch 95 out of engagement with the cam 86, and the lever 98 into the slot 100, thereby releasing the cam 86 and at the same time locking it in its normal position. This arrangement permits of the operation of the machine, without projecting the gathering cup into the furnace, as is sometimes necessary.

The lowering and raising of the casing 30, and the gathering cup 45 is accomplished by novel mechanism which will now be described.

On the inner face 101 of the cam 79 is a recess 102, into which drops a roller 103, connected to the lever 104 by a yoke 105. The lever 104 is fulcrumed at the end 106 upon the bracket 64, and is connected at its opposite end to another lever 107 by a sliding link 108, said link being held in position, or moved horizontally by a screw 109, carrying a hand-wheel 110. The link 108 can move freely in a vertical direction, independently of the screw 109, which is held in position by bearings 111 and 112 of the bracket 64.

When the revoluble table is moving, a roller 113 depending from within the casing 30, rolls on the surface 5 of the frame 1. At the normal position of the machine as shown in Fig. 1, the roller 113 has moved onto the lever 107, which is adjacent to the point 114 of the frame 1 (Fig. 7) and forms an extension thereof.

The tripping of the section 63 to create a suction in the cylinder 48, the hose 47, and the cup 45 is accomplished by a sector lever 115 pivoted upon the bracket 64, and connected by the shaft 116 to the lever 117 which carries on its end a roller 118 adapted to roll on the outer surface 119 having an offset 120 which strikes and forces down the roller 118.

The cup 45 is turned upside down for the purpose of emptying its contents into the mold by the roller 80 being forced outward by the offset 122 in the groove 8 of the frame 1, thereby turning the shaft 65, the shaft 44 and the cup 45.

The piston 58 is brought back into position, and the suction released, by the roller 61 rolling up upon the incline 121, at the time that the cup 45 is turned for emptying.

The teeth 81 on the shaft 34 and the teeth of the pinion 73 are long enough to permit said shafts to have the required limited vertical movement without disengaging said teeth from the racks 74 and 82.

The operation of the mechanism has been disclosed above in connection with the description of the construction, but it may be summarized as follows:—It will be understood that a plurality of gathering cups will be employed, together with a separate casing 30, and mechanism associated therewith for each

of said cups. The initial step in the operation is to project the cup into a furnace containing the molten glass. This is effected through the movement of the carrier actuated by the gears 35, 36 and 41 and the rack 42. After the cup is thus projected into the furnace it is lowered sufficiently to dip into the glass the required distance, by the lowering of the sleeve 31 by the mechanism described for the purpose. The suction through the hose 47, tube 44 and cup caused by the movement of the piston within the air cylinder 48 fills the cup with molten glass, after which the cup is automatically turned by the gearing 66 and 67, the movement of the cup across the knife 54 serving to shear off the superfluous glass, and the cup is then raised and retracted. The revolving movement of the table then carries the cup to the mold where it is emptied. The several cups employed are thus successively operated.

An important feature of the improvement, is that by the construction of the guide grooves 25, 26 and 27, the cup carriers are directed to different points within the furnace so that each successive cup will dip into a different part of the molten glass.

The actuating mechanism is so constructed that the table 13 will be stationary while the cups are being projected, and the cams employed are so timed as to cause an intermittent successive operation of the different sets of cup-operating mechanism.

I would have it understood that the invention is not restricted to the exact construction of mechanism shown and described, as various modifications in the construction and relative arrangement of the parts of the mechanism may be resorted to without departing from the spirit of the invention, and the scope of the following claims.

What I claim and desire to secure by Letters Patent, is:—

1. A mechanical glass gatherer comprising a tubular cup-support, a cup suspended therefrom, means for projecting the end of the support, and the cup, into a glass furnace, a suction pipe communicating with said tubular support and cup, means for elevating the support and cup and withdrawing them from the furnace, means for cutting off the suction within the cup, and mechanism for reversing the cup and moving it away from the furnace.

2. In a mechanical glass gatherer the combination with a revoluble table, of a plurality of tubular cup supports carried by said table, and each having a cup suspended therefrom, means for imparting an intermittent rotary motion to said table, means for moving said cup supports longitudinally, and mechanism for creating a suction through the tubular supports, and cups, and for cutting off such suction, and automatic

mechanism for reversing the positions of said cups.

3. In a mechanical glass gatherer, the combination with a revoluble table, of a movable carrier, a cup support supported therein, and means for imparting a longitudinal motion to said carrier, comprising a vertically disposed shaft, a gear wheel mounted thereon, and rack teeth on the side of said carrier.

4. In a mechanical glass gatherer, the combination with a revoluble table, of a movable carrier, a hollow cup support carried by said table, means for moving said carrier and cup support longitudinally, and means for imparting a rotary motion to said cup support comprising a vertically disposed shaft, a beveled gear mounted thereon, and a beveled pinion on said cup support.

5. In a mechanical glass gatherer, the combination with a revoluble table, of a movable carrier, a hollow cup support provided with perforations at its outer end, a cup suspended upon the outer end of the support and having a perforated bottom, means for moving said carrier and cup support longitudinally, and means for imparting a rotary motion to the cup support.

6. In a mechanical glass gatherer, the combination with a revoluble table, of a casing secured to the table, a sleeve supported within said casing, a housing at the upper end of said sleeve, a movable carrier extending through said housing, a cup support secured to said carrier, means for moving said carrier longitudinally, means for revolving the cup support, and means for raising and lowering said sleeve and housing.

7. In a mechanical glass gatherer, the combination with a stationary frame, provided with a plurality of cam grooves, of a revoluble table, means for imparting an intermittent rotary motion to said table, a movable carrier supported upon the table, a cup support secured to said carrier, a vertically disposed hollow shaft, gearing for imparting a longitudinal movement to said carrier from said hollow shaft, a shaft arranged within said hollow shaft, gearing for revolving the cup support from said latter shaft, and means for revolving both of said shafts comprising racks carrying rollers, said rollers being guided in the grooves of the frame, and gearing upon said shafts.

8. In a mechanical glass gatherer, the combination with a revoluble table, of a carrier supported thereon, a tubular cup support secured to said carrier, a perforated cup secured to the outer end of said cup support, means for moving said carrier longitudinally, means for imparting a rotary motion to said cup support, and means for creating a suction within said cup comprising an air cylinder, a hose connection be-

tween said cylinder, and cup support, and an automatically operating piston within said cylinder.

9. In a mechanical glass gatherer, the combination with a revoluble table, of a cylindrical casing depending from said table, two independently revoluble shafts within said casing, and means for revolving said shafts comprising a plurality of racks engaging gear teeth on said shafts, a plurality of cam wheels for moving said racks, and guide rollers carried by said racks, adapted to travel in guide grooves formed in the frame of the machine.

10. In a mechanical glass gatherer, the combination with a supporting frame provided with longitudinally disposed block guides arranged at different elevations, of a horizontal drive shaft supported in bearings of the frame, a central vertically disposed shaft, means for imparting an intermittent rotary movement to said vertical shaft from the drive shaft, a plurality of cam wheels mounted on said horizontal shaft, a revoluble table carried by said vertical shaft, a movable carrier supported upon the table, a cup support secured to said carrier, means for moving said carrier longitudinally, a shaft for imparting a rotary motion to said cup support, and means operated by said cam wheels for effecting the revolution of said shafts.

11. In a mechanical glass gatherer, a revoluble table having a plurality of radially disposed guide ways, the outer end of which extend in different directions.

12. In a mechanical glass gatherer, the combination with a revoluble table, of a vertically disposed casing supported thereon, a movable carrier above said casing, a cup support on said carrier, a gathering cup suspended from said support, and automatic mechanism for raising and lowering said carrier, and gathering cup.

13. In a mechanical glass gatherer, the combination with a table, of a casing supported thereon, a sleeve within the casing, a carrier above said sleeve, a driving shaft, mechanism for intermittently revolving said table, a cam wheel on said shaft, and mechanism operated by said cam wheel for moving said sleeve vertically.

14. In a mechanical glass gatherer, the combination with a table, of a casing supported thereon, a longitudinally movable sleeve within said casing, a housing supported upon said sleeve, a carrier within said housing, a roller below said sleeve, and a track way on the frame of the machine for said roller.

15. In a mechanical glass gatherer, the combination with a supporting frame, formed with guide ways, of a horizontally disposed table, means for intermittently revolving

said table, a casing depending from the table, a sleeve within said casing, two independently revoluble shafts within said sleeve, a carrier supported above said sleeve, a cup-  
5 support secured to said carrier, means for raising and lowering said sleeve and shafts, and means for imparting rotary motion to said shafts comprising horizontally disposed racks engaging gear teeth on said shafts,

rollers carried by said racks, guide blocks 10 fitting the guide ways of the frame, and cam wheels for said rollers.

In testimony whereof I affix my signature in the presence of two witnesses.

WILLIAM NEWBY.

Witnesses:

F. O. McCLEARY,  
MAX H. SROLOVITZ.