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PATENTED APR. 17, 1906.

J. H. CROSKY.

APPARATUS FOR MANUFACTURING GLASS ARTICLES.

APPLICATION FILED OCT. 31, 1904. RENEWED AUG. 26, 1905.

2 SHEETS—SHEET 1.

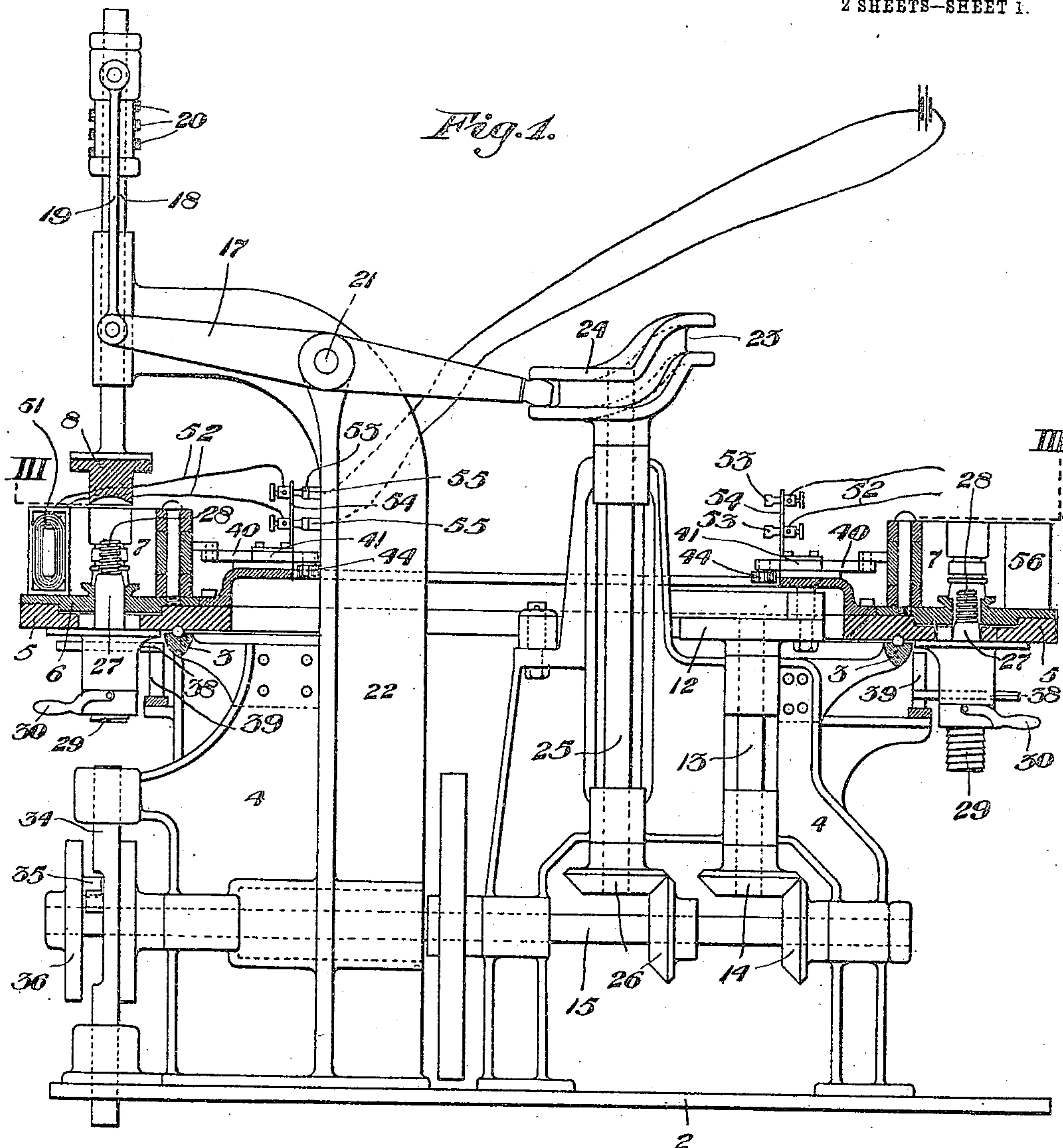
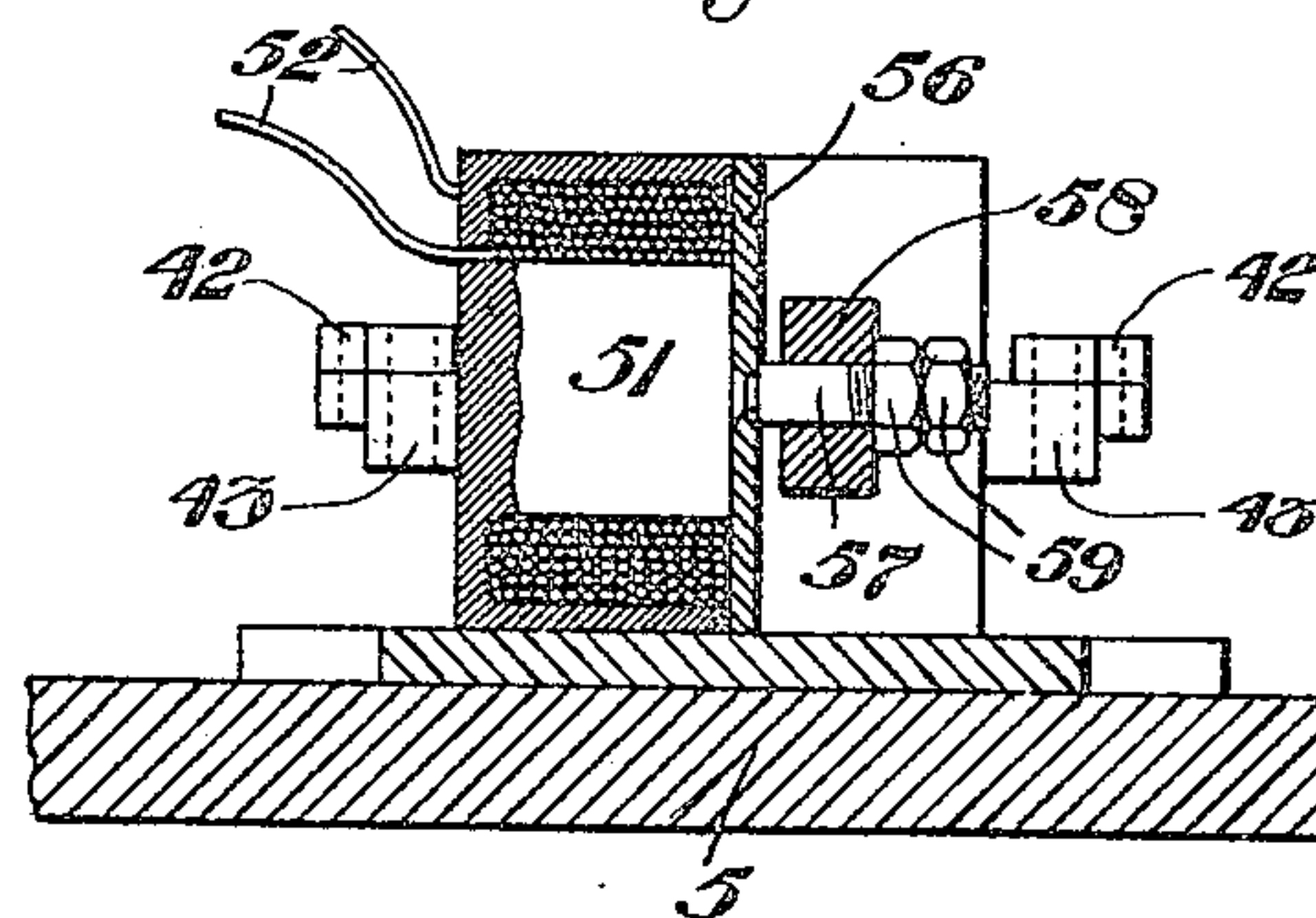


Fig. 2.



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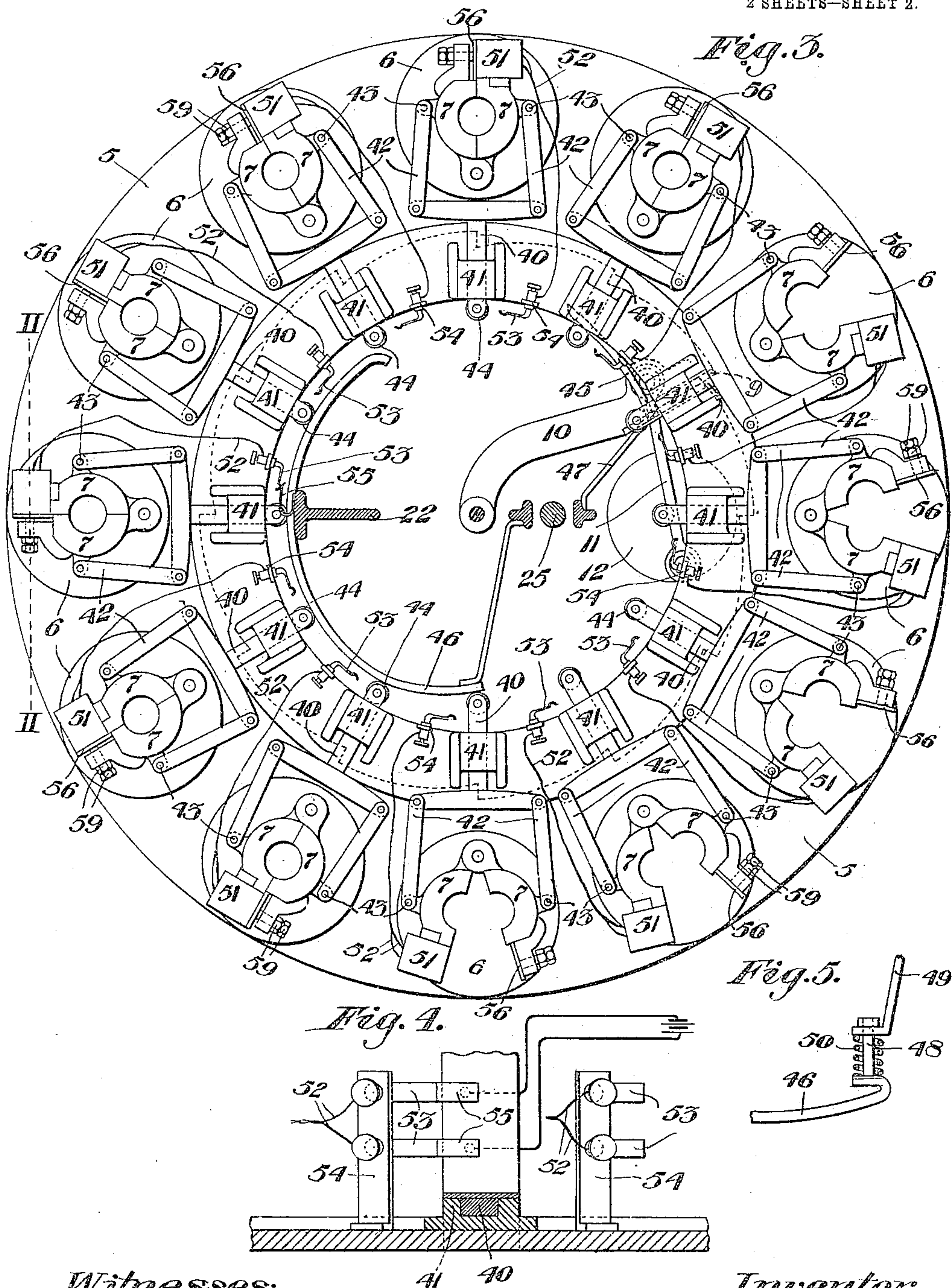
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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MANUFACTURING GLASS ARTICLES.

No. 817,836.

Specification of Letters Patent.

Patented April 17, 1906.

Application filed October 31, 1904. Renewed August 26, 1905. Serial No. 275,980.

To all whom it may concern:

Be it known that I, JOHN H. CROSEY, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Manufacturing Glass Articles, of which the following is a specification, reference being had therein to the accompanying drawings, forming part of the specification, in which—

Figure 1 is a view in vertical sectional elevation of my improved apparatus for molding or pressing glass articles. Fig. 2 is an enlarged detail view in cross-section, indicated by the line II II of Fig. 3, showing the magnetic closing device for the mold. Fig. 3 is a plan view of the machine, the upper portion having been removed on the section-line III III of Fig. 1. Fig. 4 is an enlarged detail view showing the contacting terminals for the energizing-current in elevation. Fig. 5 is a detail view showing a resiliently-mounted actuating-cam.

My invention refers to improvements in apparatus for forming articles from material of a plastic nature, as glass, and is particularly designed for the manufacture of insulators for telegraph or other wires.

The present invention is similar in construction and mode of operation to that shown and described in my prior application bearing Serial No. 211,904, filed June 10, 1904, and refers particularly to the mechanism for opening and closing the molds.

Referring now to the drawings, 2 represents any suitable base upon which the structure and operative elements comprising my invention are mounted.

3 is a ball-race mounted upon the structural framework 4, provided with an annular groove adapted to support a series of bearing-balls, upon which rests a turn-table 5, supporting and carrying the molds. These molds are of the usual construction, comprising a base-mold 6, upon which are mounted the hinged sides 7 7, as will be readily understood, these molds being adapted to be intermittently rotated around upon the carrier 5, so as to bring each mold beneath a pressing-plunger 8 at the proper place and time.

The table 5 is intermittently actuated by

means of a spring-controlled pawl or ratchet 9, mounted in the outer end of a swinging arm 10, actuated by pitman 11 from crank-disk 12 on the upper end of shaft 13 driven by gearing 14 from main shaft 15. The operation of this construction will be readily understood without further description or from an examination of the specification and drawings of my former application, the turn-table being rotated by these means between each period of rest occurring during the back travel of the pawl 9.

The plunger 8 is reciprocated and pressed downwardly into the mold formed by sides 7 by means of a lever 17, connected with the stem 18 of plunger 8 by suitable links 19 and any convenient intervening cushioning device, as a spring 20. Lever 17 is pivoted at 21 on the upwardly-extending standard 22, which also provides a bearing for the plunger-rod, the lever extending backwardly and engaging by a terminal roller with the groove 23 of a cam 24, mounted on the upper end of a vertical shaft 25 and driven through gearing 26 on main shaft 15, as clearly shown in Fig. 1.

The exterior portions of the insulator are entirely formed by molds 6 and 7 and plunger 8, and for the purpose of providing the internally-threaded cavity of the insulator I provide a vertically-reciprocating plunger 27, having a threaded terminal 28, the lower portion of the plunger being provided with any suitable supporting device, as annularly-arranged screw ratchet-teeth 29, adapted to be engaged by the pawl-teeth of a pivoted arm 30. By this construction the plunger may be raised vertically into the interior of the mold-cavity, but cannot be lowered therefrom except by rotation in a direction adapted to withdraw the screw-terminal by unscrewing it from the glass article, although the plunger may when desired be dropped by releasing the pawl-teeth. At the proper time the plunger 27 is freely raised by means of an independent spindle 34, which in turn is raised by a wiping-cam 35, mounted or secured upon a disk 36 at the outer end of shaft 15, or in any other suitable manner. The glass is formed upon the threaded end of the plunger when in such raised position, the mold sides being tightly closed, the operation being performed upon downward movement of the plunger.

For the purpose of removing the threaded plunger it is provided with a star or toothed wheel 38, which engages a series of stationary pins or abutments 39 immediately upon further rotation of the table, causing the spindle to be rotated backwardly to unscrew and to travel in a downward direction during such rotation, the operation continuing until the threaded terminal has been entirely withdrawn, as will be readily understood.

For the purpose of automatically opening and closing the sides 7 7 of the mold I provide reciprocating actuating-bars 40, mounted in suitable bearings 41, provided with connecting-links 42, pivotally connected at each side at 43 with the mold sides 7. The inner end of each plunger 40 is preferably provided with a roller 44, depending downwardly below plunger 40, as clearly shown in Fig. 1, and adapted to be engaged on its inner or outer side with either the opening or the closing cam 45 46. The opening-cam 45 is rigidly held upon supporting-arms 47, secured to the main framework, and is so arranged as to engage behind the roller 44 in its travel around with the rotating table and to withdraw the pitman and links, opening the mold for the purpose of the removal of the finished article. The closing-cam 46 operates in a reverse manner, engaging behind the rollers 44, as clearly shown, causing them and the pitman to travel inwardly as the molds progress around with the table toward the point where they are charged with molten glass immediately before coming under the plunger. The operation of this construction will be readily understood without further description, it also being understood that the travel of the moving parts, the location of the cam, &c., are within the province of the designing engineer.

For the purpose of providing a relief resiliency for the cam, so as to prevent breakage of the mold due to any obstruction falling between its sides, the end of closing-cam 46 may be provided with backwardly-extending stud 48, passing through a supporting-bracket 49, a stiff spring 50 being interposed of sufficient strength to ordinarily hold the cam outwardly to operative position, but capable of being pressed inwardly in case of any obstruction or other cause preventing the free closing of the mold, Fig. 5.

In apparatus of this character it is desirable that the molds shall be tightly closed at the time of receiving the molten glass and during the pressing operation of the plunger, and while ordinarily the closing device just described will accomplish this purpose I have provided supplemental mechanism therefor consisting of a magnet 51, incorporated with one of the sides 7 of the mold, which magnet may be of any suitable construction adapted to be energized by an electric current. I have secured good results by wrapping a soft-

iron core with the usual insulating wire in the manner indicated in Fig. 2 and connect the terminal wires 52 with contact-springs 53, mounted in any suitable support 54, carried upon the rotating table and provided with binding-posts, to which the wires 52 are connected. 55 represents the stationary contacts, mounted at a suitable point to engage the movable springs 53 for each mold, so as to energize the magnet and draw the other side 7 closely into contact immediately before the plunger operation, the contacts 55 being connected with any suitable source of current, as indicated. The opposite side of the mold is provided with an armature-plate 56, mounted in the mold side, or an extension of it, in such a manner as to provide a limited range of movement, whereby the armature may be adjusted so as to insure positive closing of the sides of the mold. While any suitable mounting may be used, I have shown a stud 57, upon which armature-plate 56 is carried, the stud being mounted in a bearing 58, threaded at one end and provided with limiting adjusting-nuts 59, by which means the desired results may be secured.

The operation of the apparatus will be readily understood from the foregoing description, being continuous and automatic, and the machine is capable of making a large number of insulators within a given period of time at a minimum cost and in a uniform and satisfactory manner.

It will be understood that various changes or modifications may be made in the design, proportions, or various details of the invention without departing from the scope of the claims; but all such changes and modifications are to be considered as covered thereby.

Having described my invention, what I claim is—

1. In a rotatable apparatus of the class described, the combination with a plurality of divided molds, of opening and closing mechanism for each mold provided with an actuating-pitman, stationary cams arranged to engage terminals of said pitmen and to actuate them inwardly and outwardly respectively, and supplemental electrically-actuated means for forcing the sides of the molds closely together at the pressing position, substantially as set forth.

2. In a rotatable apparatus of the class described, the combination with a plurality of divided molds, of opening and closing mechanism for each mold provided with an actuating-pitman having a roller, stationary opening and closing cams arranged to engage said roller to withdraw or press the pitman to open or close the mold, and supplemental electrically-actuated means for forcing the sides of the molds closely together at the pressing position, substantially as set forth.

3. In a rotatable glass-forming apparatus, the combination with a plurality of divided

molds and a rotating carrier therefor, of opening and closing mechanism for each mold provided with an actuating - pitman having a roller, a stationary circularly - arranged actuating-cam provided with a movable terminal adapted to engage the roller to close the mold, a resilient backing for said terminal, a cam arranged to engage the roller to open the mold, and supplemental electrically-actuated means for forcing the sides of the molds closely together at the pressing position, substantially as set forth.

4. A glass - mold provided with hinged sides, one of said sides being provided with a magnet and the other of said sides constituting an armature, substantially as set forth.

5. A glass - mold provided with hinged sides, one of said sides being provided with a magnet and the other of said sides constituting an armature, with movable contacting terminals, and stationary terminals arranged to make contact therewith to energize the

magnet and close the mold, substantially as set forth.

6. A glass - pressing mold provided with hinged sides, means for opening and closing the mold, and a magnet and armature incorporated with the sides, with means for energizing the magnet to tightly close the mold, substantially as set forth.

7. In apparatus for forming glassware, the combination with a rotatable mold-carrier, of a series of divided molds mounted thereon, means for opening and closing the molds, and a magnet and armature incorporated with the sides of the mold, with means for establishing a circuit through the magnet, substantially as set forth.

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

JOHN H. CROSKEY.

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