

(No Model.)

2 Sheets—Sheet 1.

W. A. HENRY & C. N. BRADY.
PRESS FOR MAKING ARTICLES OF GLASSWARE.

No. 603,952.

Patented May 10, 1898.

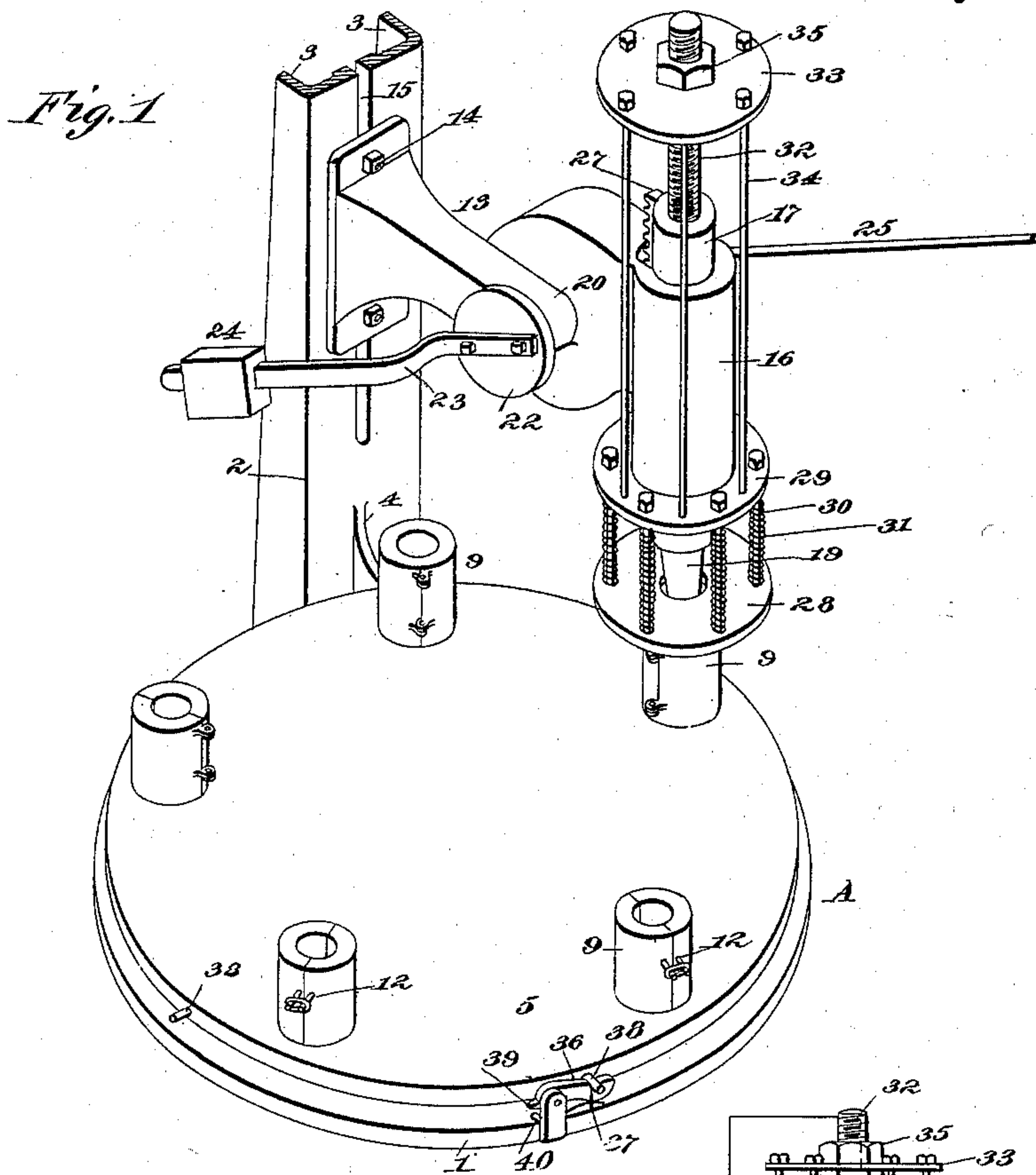
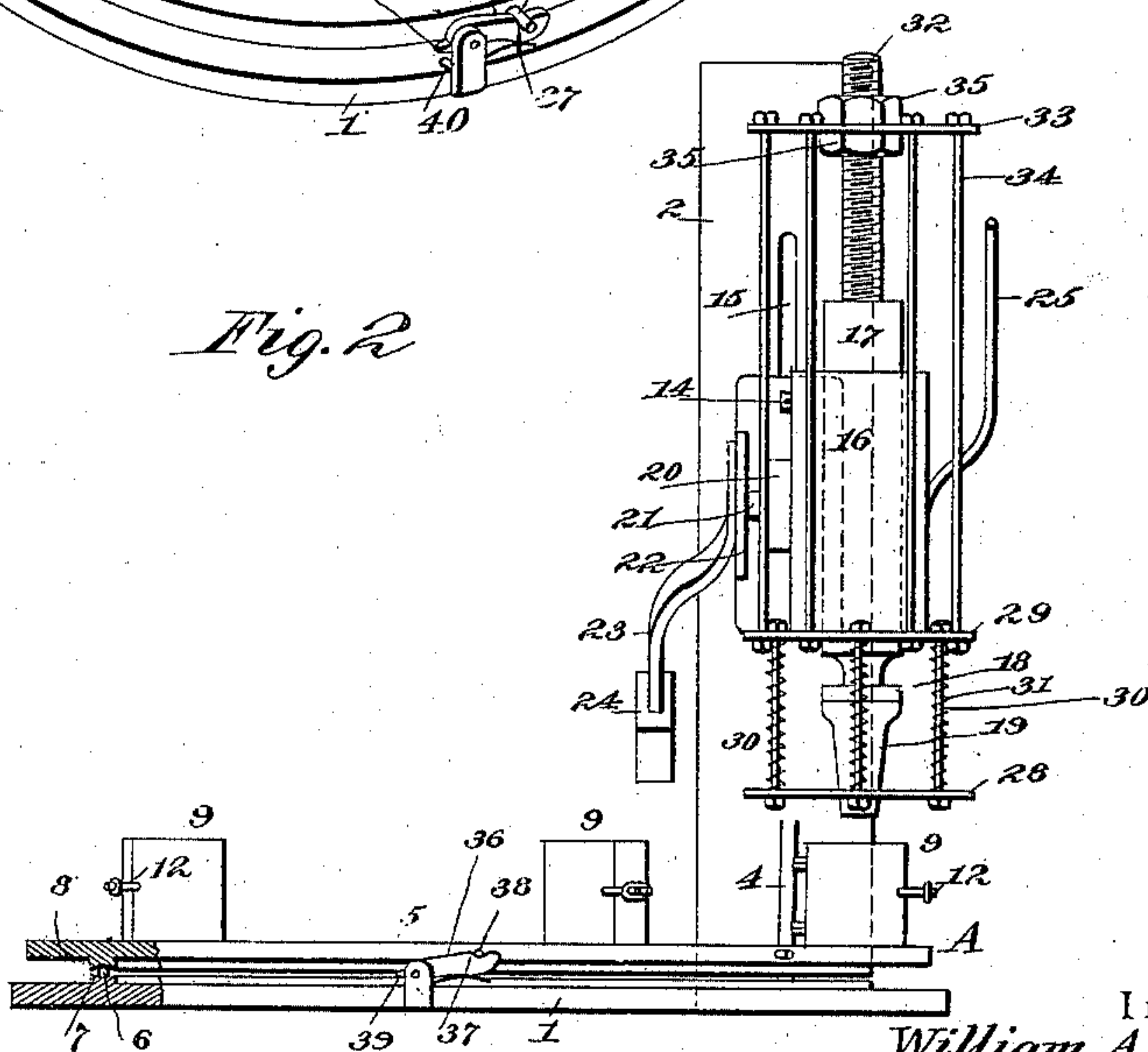


Fig. 2



Witnesses.

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(No Model.)

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Fig. 3

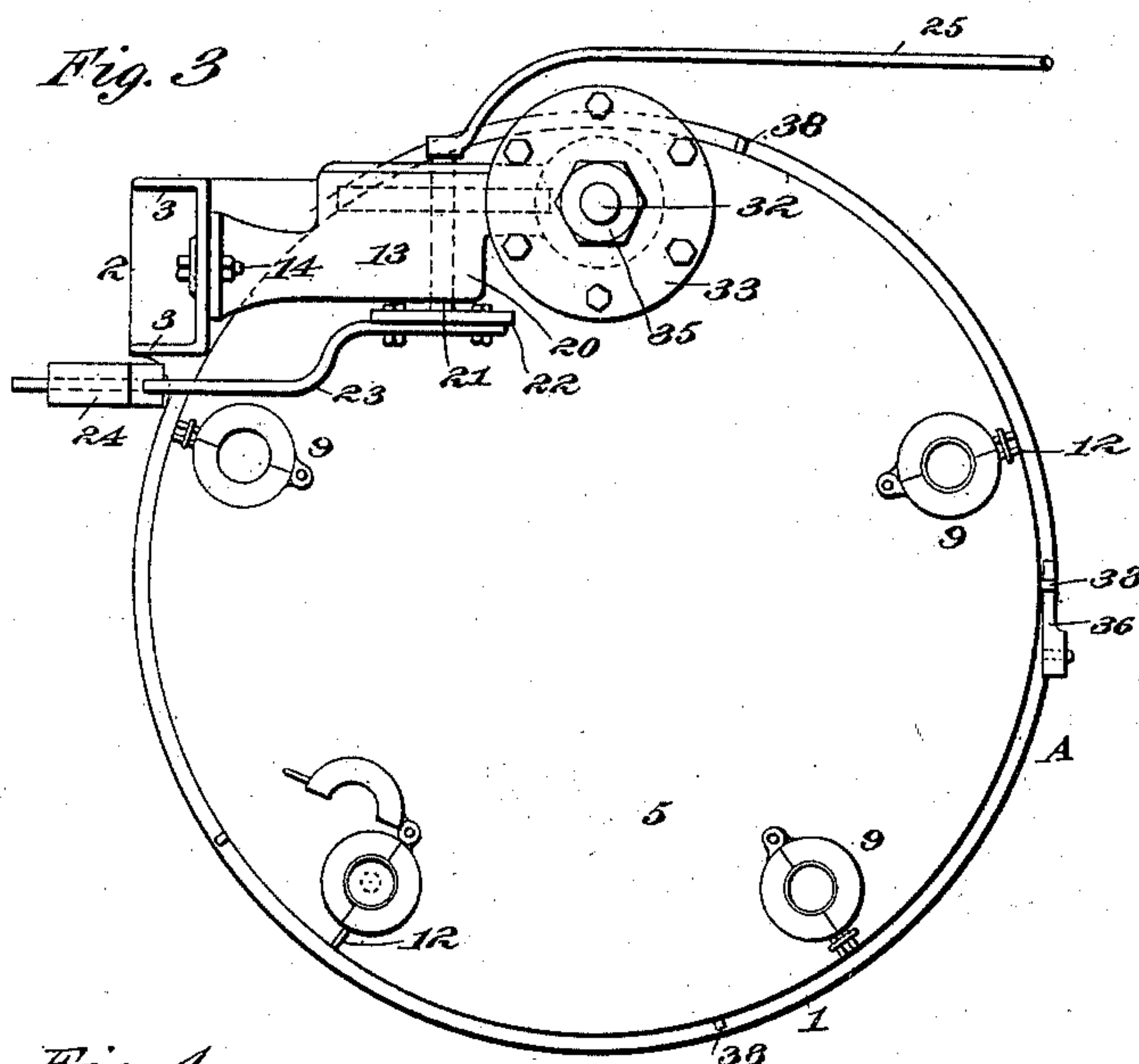


Fig. 4

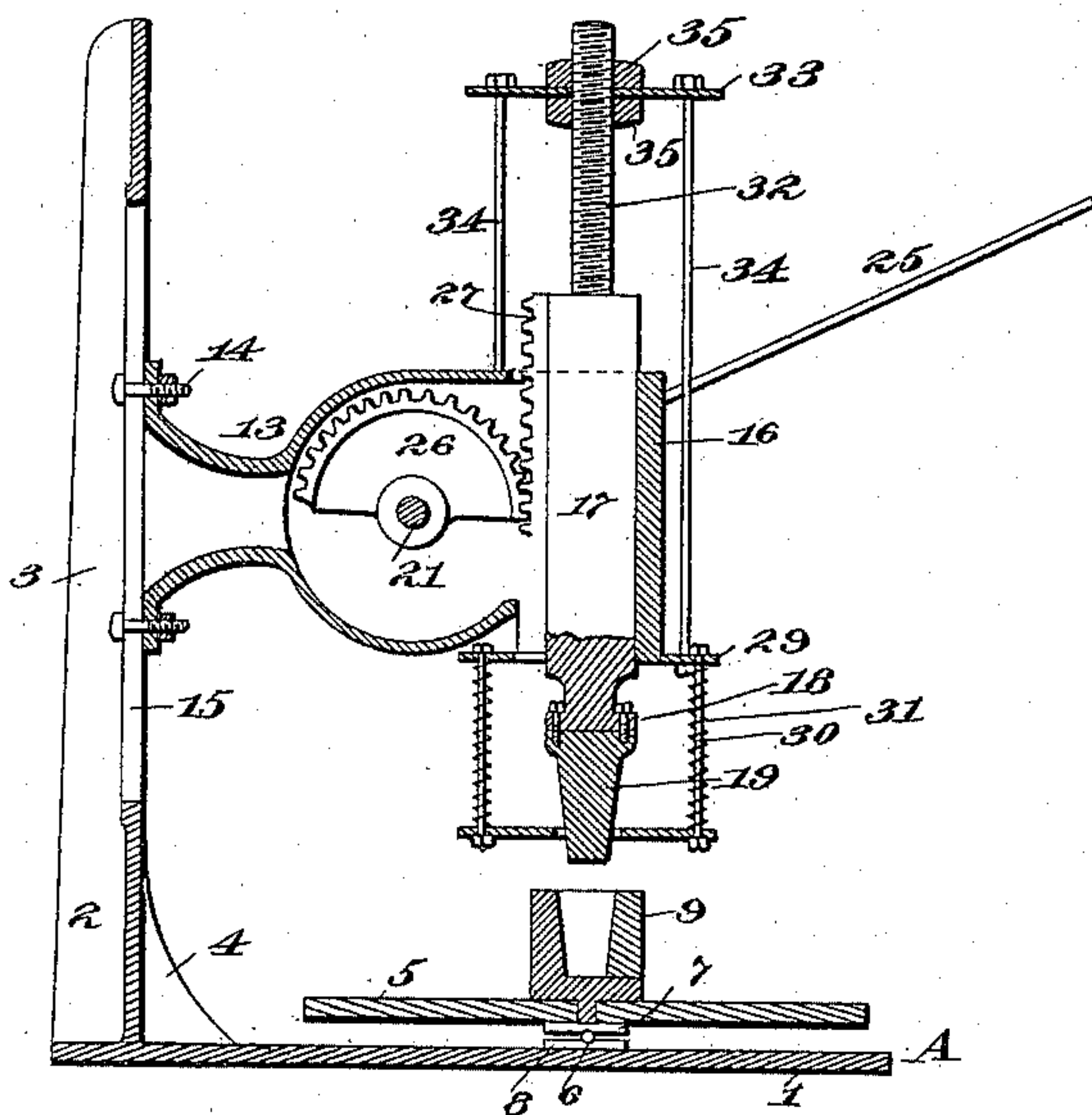
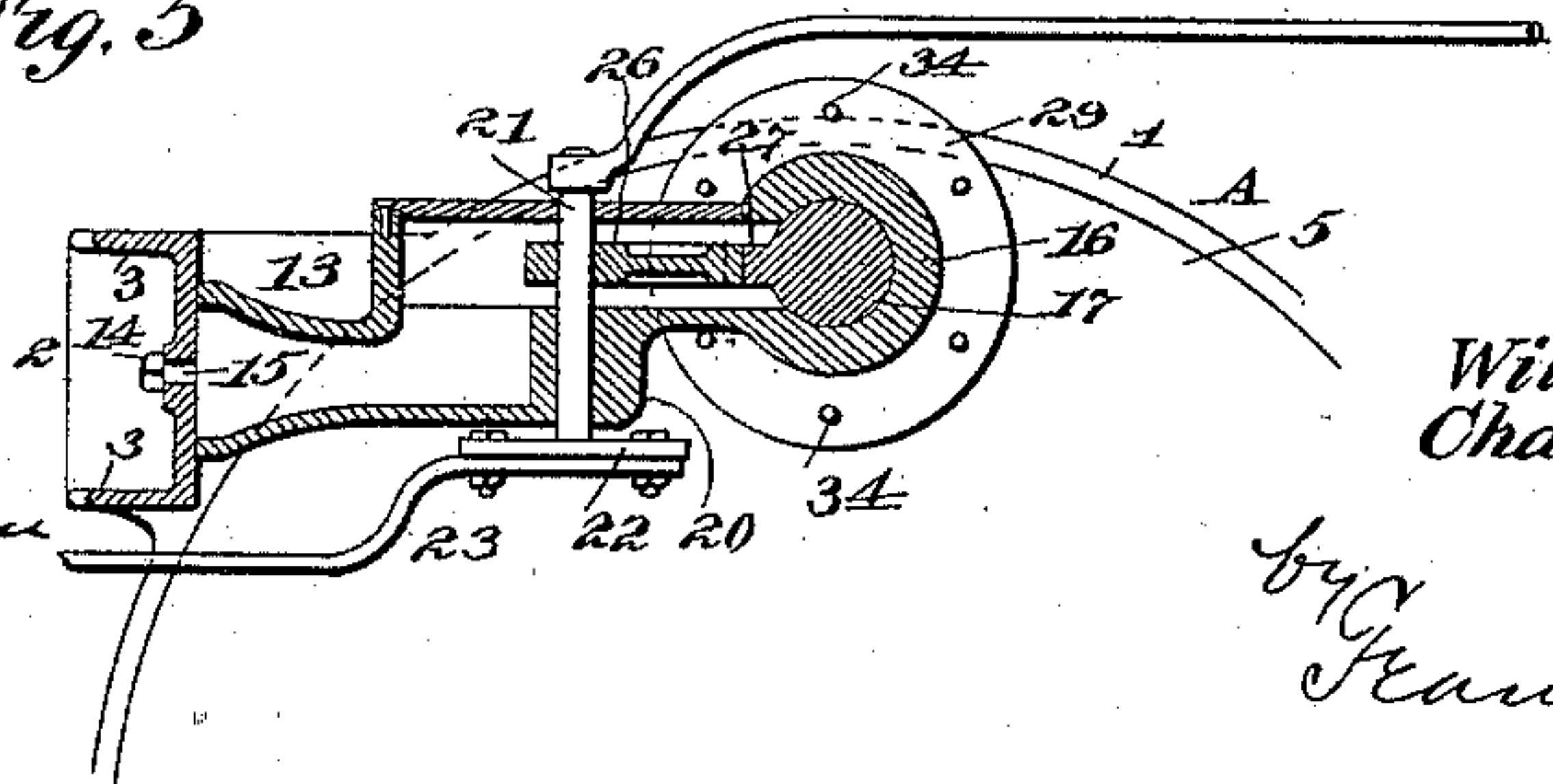


Fig. 5



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM A. HENRY AND CHARLES N. BRADY, OF WASHINGTON, PENNSYLVANIA, ASSIGNORS TO THE HAZEL GLASS COMPANY, OF SAME PLACE.

PRESS FOR MAKING ARTICLES OF GLASSWARE.

SPECIFICATION forming part of Letters Patent No. 603,952, dated May 10, 1898.

Application filed May 14, 1897. Serial No. 636,462. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM A. HENRY and CHARLES N. BRADY, citizens of the United States, residing at Washington, in the county of Washington and State of Pennsylvania, have invented certain new and useful Improvements in Presses for Making Articles of Glassware; and we do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to various new and useful improvements in presses for making articles of glassware; and it relates particularly to those presses wherein a single plunger and plunger-operating mechanism are used in connection with a plurality of molds, appropriate mechanism being employed for successively bringing the said molds into alinement with the plunger and for forcing the plunger therein.

The objects of our invention are to simplify and improve the construction of such presses and to produce a press of the type referred to which can be operated more easily and with greater rapidity than has heretofore been possible.

Broadly speaking, our invention comprises a carrier for the molds, said carrier being essentially disk-like in character and mounted, preferably, on balls, so as to turn easily and yet possess the requisite rigidity, suitable mechanism for retaining the carrier in its different positions of rest, a single plunger coöperating successively with the several molds and with respect to which the molds are movable, and mechanism for operating the plunger so that the same may be engaged with the successive molds.

Our invention also relates to various improvements in details of construction by which the press will be further improved, the more important of such improved details being means for allowing the plungers of various shapes and sizes and for allowing molds of various shapes and sizes to be used, all as will be more fully hereinafter described and claimed.

For a better comprehension of our invention attention is directed to the accompany-

ing drawings, forming a part of this specification, and in which—

Figure 1 is a perspective view of the press, showing the same for use with five molds for making ordinary drinking-tumblers; Fig. 2, a side elevation of the same; Fig. 3, a plan view; Fig. 4, a vertical sectional view, and Fig. 5 a cross-sectional view taken on the horizontal line running through the operating-shaft.

In all of the above views corresponding parts are represented by the same letters and numerals of reference.

A represents the main frame of the machine, comprising, essentially, a base or foundation 1 and a supporting arm or bracket 2, which may be cast together. The base 1 may be essentially circular in form, as shown. The bracket or arm 2 is located with respect to the base at one side of the longitudinal diameter thereof, and the front face of said arm or bracket extends at right angles to said longitudinal diameter. In order that the arm or bracket 2 may be properly supported, we provide the same on its rear face with two integral webs 3 3 and upon its front face, at the lower part thereof, with an integral knee or bracket 4.

Mounted upon the base 1, so as to turn with respect to the same and in the same plane therewith, is a mold-carrier 5, which preferably is disk-like in character. This mold-carrier may be mounted upon a central vertical pivot, so as to turn with the base 1; but by preference we mount the same on a series of small balls 6 6, traveling in tracks 7 8, formed on the base and under side of the mold-carrier, respectively, as will be understood. We consider the use of balls for this purpose to be preferable to a central vertical pivot, since the mold-carrier will thereby be supported with greater rigidity and will give less to the impact of the plunger in the molds and there will be less wear, while at the same time the mold-carrier will be free to turn with a minimum resistance.

Mounted upon the mold-carrier are the molds 9, all preferably of the same shape and size and of any suitable character. These molds are secured to the carrier 5 in any suitable way, by preference such as by provid-

ing them on their under side with a small tenon engaging a recess in the mold-carrier. These molds are opened in any suitable way—such, for example, as by means of ordinary handles 12.

13 represents the main supporting-arm, which is preferably cast hollow, as shown, and which is secured to the front face of the arm or bracket 2 by means of bolts 14, working in a slot 15 in said arm or bracket, whereby the supporting-arm 13 may be adjusted vertically on said arm or bracket, as will be understood.

Carried at the outer end of the supporting-arm 13 is a cylindrical plunger-casing 16, which is preferably made integral with said supporting-arm. Working within the plunger-casing 16 is a plunger carrier 17, which is reciprocated vertically by means of mechanism to be described. The lower end of the plunger-carrier 17 is turned to a disk 18, to which a plunger 19 may be bolted or secured in any suitable way. The plunger 19 is of the desired shape and size for the particular work to be done.

By making use of a removable plunger secured to the plunger-carrier, as described, we are enabled to use our press with molds of different shapes and sizes and to employ therewith plungers of different shapes and sizes, it being obvious that by adjusting the supporting-arm 13 with respect to the bracket 2, the plunger 19 may be maintained in the proper position with respect to any sized mold.

The mechanism which we prefer to employ for reciprocating the plunger-carrier 17 and plunger 19 is illustrated in the drawings; but it is to be observed that we are not to be limited to the same, since the plunger-carrier may be actuated by any appropriate arrangement of mechanical elements or by a pressure-cylinder connected directly therewith or by electrical or other power, such as will be suggested to any skilled mechanic.

Having reference to the particular operating mechanism which we illustrate, we mount in a suitable bearing-box 20, cast with the supporting-arm 13, a main operating-shaft 21. This shaft is provided at one side with a disk 22, to the outer surface of which is bolted a counterbalancing-arm 23, carrying a weight 24, adjustably secured thereto. In order that the weight 24 may clear the bracket 2, the arm 23 is given a double bend at its center, as illustrated. Upon the other end of the shaft 21 is an operating-handle 25, by means of which the shaft 21 may be partially rotated. The operating-handle 25 is of any suitable shape to allow it to be conveniently actuated, that shown being well suited in practice for the purpose. Mounted upon the shaft 21 at the other side of the bearing-box 20 from the disk 22 is a toothed segment 26, which engages with a rack 27, secured to the side of the plunger-carrier 17, so that when the shaft 21 is partially rotated the segment 26 will engage with and move the rack 27 downward or up-

ward, as the case may be, to force the plunger 19 into the mold or to withdraw the same from the mold, as will be understood.

In order to close the top of the mold as the plunger enters therein and to prevent the molten glass from being forced out of the same, we employ a disk 28, which is moved down with the plunger onto the top of the mold and which is held firmly in that position as the plunger enters the mold. In order that this may be done, it is necessary that the plunger 19 should be arranged to move independently of the disk 28 when the latter is in contact with the top of the mold, and in order that the device may be used with molds of different sizes it is further necessary that each disk 28 should be adjustable with respect to the top of the mold-carrier—i. e., to be movable toward and away from the same. That these functions may be accomplished we prefer to employ the mechanism illustrated.

Surrounding the plunger-casing 16 and movable up and down thereon is a collar 29. Extending up from the disk 28 and entering holes in the collar 29 are guide-rods 30, surrounding each of which is a coiled spring 31. The guide-rods 30 are movable either in the collar 29 or the disk 28 or in both of said elements, so that the disk 28 may be moved toward the collar 29 against the tension of the springs 31.

Extending up from the plunger-carrier 17 is a screw-threaded rod 32, mounted upon which is a disk or collar 33, which connects with the collar 29 by means of connecting-rods 34, arranged outside of the plunger-cylinder 16. The disk 33 is adjustable on the rod 32 by means of adjusting-nuts 35 above and below said disk, as will be understood.

In order that the mold-carrier may be locked in its various positions of movement—i. e., when each of the molds is successively brought into alinement with the plunger 19—we employ suitable stop devices, one form of which is shown, and consists of a pivoted spring-pressed pawl 36, mounted, for instance, upon the base 1, adjacent to the periphery of the mold-carrier, having a semicircular slot therein with which pins 38 engage, said pins being secured to the periphery of the mold-carrier and being so located thereon that when said pins are in engagement with the slot 37 the several molds will be brought successively into alinement with the plunger 19.

In order to limit the upward movement of the pawl 36, it may be provided with a small lug 39, engaging a stop-pin 40.

The operation of our improved press is as follows: The skilled workman drops the requisite quantity of molten glass preferably in the mold next adjacent to the plunger 19. The mold-carrier is then turned either by hand or by suitable automatic mechanism until the mold containing the molten glass is brought into alinement with the plunger 19, at which time the stop mechanism will lock the carrier in that position. With the

special mechanism described the handle 25 is then moved downward, so as to rotate the shaft 21, causing the segment 26 to engage the rack 27, forcing the plunger-carrier 17 and plunger 19 downward, bringing the disk 28 into contact with the upper surface of the mold, and subsequently forcing the plunger 19 into the mold to press the glass therein, during which latter movement the collar 29 will move with respect to the disk 28 by virtue of the elastic connection between those elements. The handle 25 is then released, and by reason of the weight 24 the parts will be returned to their original position, the movements above described being reversed in the same sequence. The proper amount of molten glass is then poured into the next mold and these operations are repeated. As soon as the molds containing the finished articles have been moved around to the other side of the press a boy in attendance may open the molds and remove the articles therefrom, after which the articles are annealed in the usual way.

The entire press is simple in construction, and we have found in practice that it performs this work in a very efficient manner. As a matter of fact, our experience leads us to believe that with a press of this character a skilled workman will be enabled to turn out a very much larger percentage of work than is now possible.

The mounting of the mold-carrier on balls we consider an important and valuable suggestion, as it enables said carrier to be moved with little friction, while at the same time it is very firmly and rigidly supported. So, also, do we lay especial stress on what might be called the "interchangeability" of the parts, in that it is constituted for efficient work with molds of different sizes and shapes, by reason of which pressed articles of a multitude of forms and sizes may be effectively made.

Having now described our invention, what we claim as new therein, and desire to secure by Letters Patent, is as follows:

1. In an improved press for making articles of glassware, the combination of a circular mold-carrier rotatable in a horizontal plane, a plurality of molds thereon, a bracket adjacent to said mold-carrier, a supporting-arm carried by said bracket and arranged tangentially to the mold-carrier, and a plunger arranged to reciprocate with respect to the supporting-arm and to cooperate successively with the molds, substantially as set forth.

2. In an improved press for making articles of glassware, the combination of a circular mold-carrier rotatable in a horizontal plane, a plurality of molds thereon, a bracket adjacent to said mold-carrier, a supporting-arm carried by said bracket and arranged

tangentially to the mold-carrier, means for adjusting said arm vertically, and a plunger arranged to reciprocate with respect to the supporting-arm and to cooperate successively with the molds, substantially as set forth.

3. In an improved press for making articles of glass, the combination of a base 1, a mold-carrier rotatably mounted on said base, a plurality of molds secured to said mold-carrier, a bracket 2, a supporting-arm 13 adjustably mounted on said bracket, a plunger-cylinder 16 at the front end of said supporting-arm, a plunger-carrier 17 in said cylinder and with respect to which said molds are movable, a plunger removably secured to the lower end of said plunger-carrier, a main operating-shaft 21 in said supporting-arm, a toothed segment 26 keyed to said shaft, and a rack 27 on the plunger-carrier and with which said segment engages, substantially as set forth.

4. In an improved press for making articles of glass, the combination of a base 1, a mold-carrier rotatably mounted on said base, a plurality of molds secured to said mold-carrier, a bracket 2, a supporting-arm 13 adjustably mounted on said bracket, a plunger-cylinder 16 at the front end of said supporting-arm, a plunger-carrier 17 in said cylinder and with respect to which said molds are movable, a plunger removably secured to the lower end of said plunger-carrier, a main operating-shaft 21 in said supporting-arm, a toothed segment 26 keyed to said shaft, a rack 27 on the plunger-carrier and with which said segment engages, and a counterbalance-weight connected to said shaft, substantially as set forth.

5. In an improved press for making articles of glass, the combination of a base 1, a mold-carrier rotatably mounted on said base, a plurality of molds secured to said carrier, a bracket 2, a supporting-arm 13 adjustably secured to said bracket, a plunger-cylinder 16 at the free end of said arm, a plunger-carrier 17 movable vertically in said cylinder, means for operating said plunger-carrier, a plunger at the lower end of said plunger-carrier, a collar 29 movable on said cylinder, a mold-closing disk, yielding connections between said disk and said collar, a screw-threaded rod 32 connected to the plunger-carrier, a disk 33 on said rod, adjusting-nuts 35 for adjusting the positions of said disk with respect to the rods, and connecting-rods 34 connecting the disk 33 with the collar 29, substantially as set forth.

This specification signed and witnessed this 22d day of February, 1897.

WILLIAM A. HENRY.
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Witnesses:

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