No. 649,260. Patented May 8, 1900.

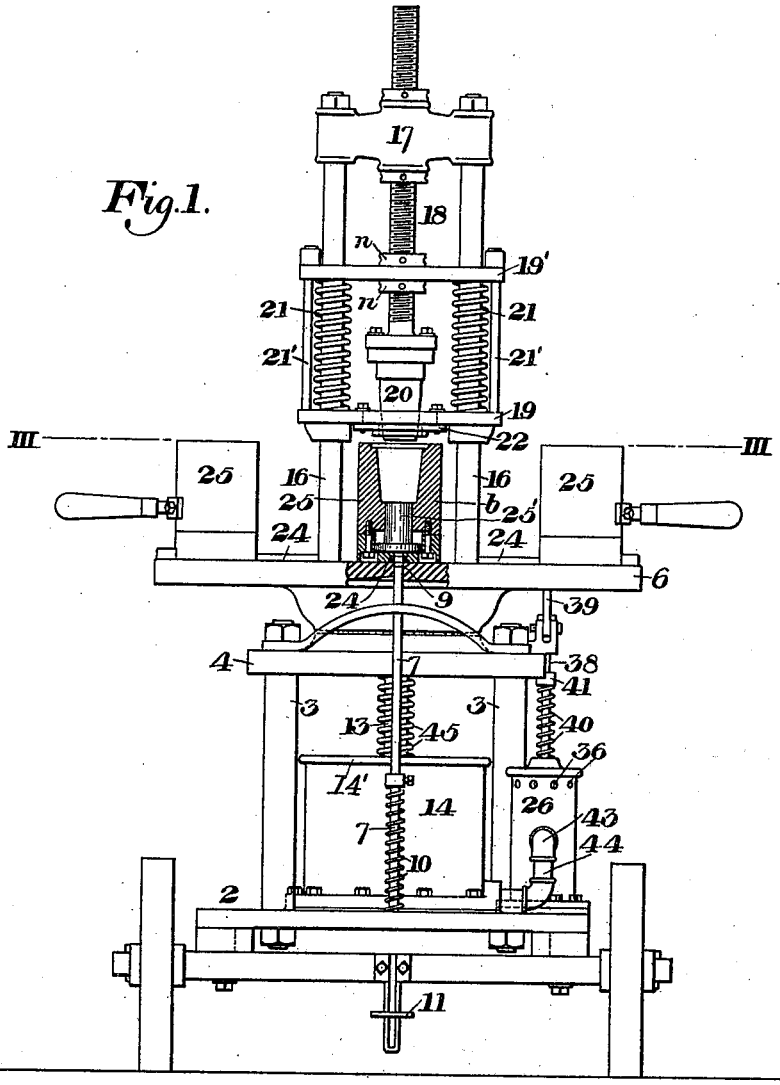
D. A. RIPLEY.

APPARATUS FOR PRESSING GLASSWARE.

(Application filed Nov. 9, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.



WITNESSES

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Fig. 5.

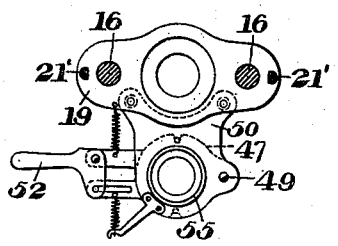

Fig. 2.

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Fig. 7.

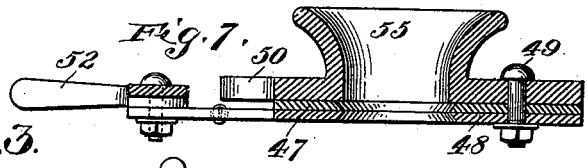


Fig. 5.

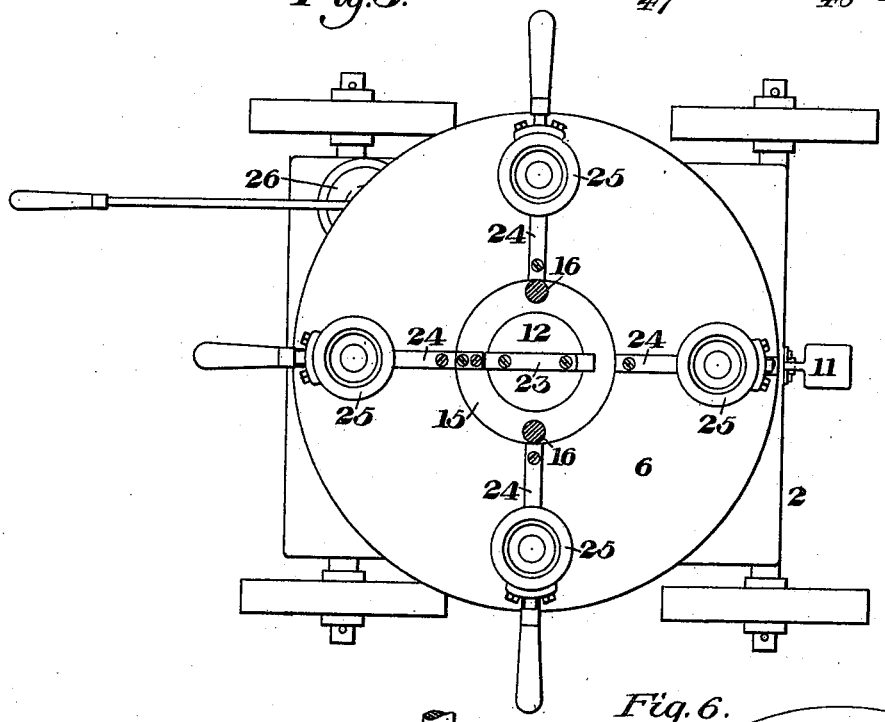


Fig. 6.

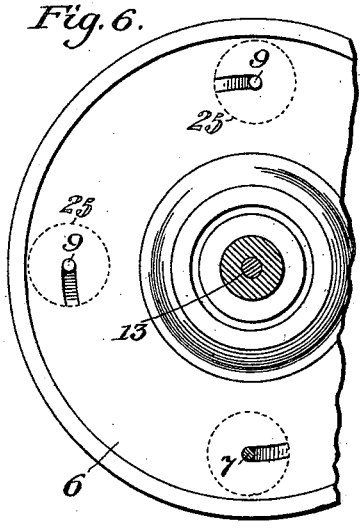
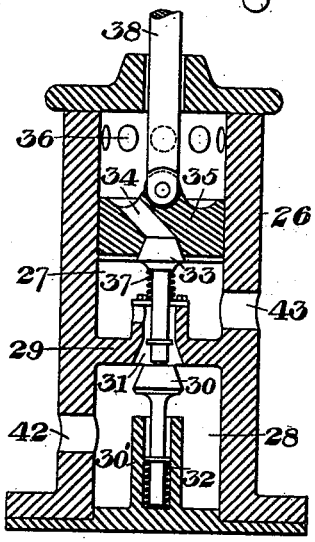


Fig. 4.



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UNITED STATES PATENT OFFICE.

DANIEL A. RIPLEY, OF PITTSBURG, PENNSYLVANIA.

APPARATUS FOR PRESSING GLASSWARE.

SPECIFICATION forming part of Letters Patent No. 649,260, dated May 8, 1900.

Application filed November 9, 1899. Serial No. 736,389. (No model.)

To all whom it may concern:

Be it known that I, DANIEL A. RIPLEY, of No. 63 Hazelwood avenue, in the city of Pittsburg, county of Allegheny, and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Pressing Glassware, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an end elevation, partly in section, of my improved apparatus. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a horizontal section on the line III III of Fig. 1. Fig. 4 is a vertical sectional view of the pneumatic valve, and Fig. 5 is a detail plan view of the cutting-off mechanism. Fig. 6 is a bottom plan view of part of the table, showing the inclined approaches to the holes 9. Fig. 7 is a detail sectional view of the glass-cutting-off mechanism on a larger scale than in the other figures, this section being on the line VII VII of Fig. 5.

In the drawings, 2 represents a frame or carriage which may be set on wheels, so that it can be moved from place to place in the factory.

6 is a rotary table supported by suitable standards 3 and a bed 4 and preferably mounted on antifriction ball-bearings 5. This table can be stopped and held at intervals of its revolution, preferably a quarter of a revolution apart, by a locking mechanism consisting, preferably, of a stop-rod 7, which is movable vertically in the base of the frame 2 and in a bracket 8. The upper end of this rod is adapted to engage in holes or notches 9, formed in the table at the proper distances apart with inclined approaches, (shown in Fig. 6,) and the rod is caused to enter these holes by the force of the spiral spring 10 as the holes are brought successively opposite to the end of the rod. The stop-rod is operated by a pedal 11, which enables the attending boy to disengage it from the table by pressing with his foot. The table is annular, and in the center is a top plate 15, which is fixed to and projects upwardly from the bed 4 and through which the standards 16 of the machine-frame pass. In the center of the top plate 15 is a vertically-movable mold-carrier plate 12, mounted on a piston-rod 13, which extends upwardly from a cylinder 14 and is adapted to raise the mold-carrier when compressed air or steam is admitted below the piston. At the upper end of the standards 16 is a cross-head 17, through a nut in which passes a vertically-adjustable screw 18, carrying at its lower end the plunger 20.

19 is a spring-plate which is movable vertically in the standards 16, springs 21 being interposed between it and a yoke 19′, which is held by nuts *n* on the screw 18. Guide-rods 21′ extend from the spring-plate through holes in said yoke. The plunger 20 extends through a hole in the spring-plate 19, and the parts are so arranged that the spring-plate may be pushed upwardly by the mold *b* against the yielding pressure of the springs when the mold is raised against the spring-plate by the cylinder and piston. The spring-plate carries a ring 22, which fits around the top of the mold-cavity when the mold is raised against the spring-plate, as described below; but the ring is preferably fixed to the spring-plate and not to the mold. There are preferably four keys or slideways 24, which are formed radially on the surface of the annular table 6. These ways are arranged to register with a like slideway 23, which extends across the parts 12 15, and serve as a track on which the molds 25, whose bases are suitably grooved to fit thereon, can slide. This arrangement allows the molds, preferably four in number, as they are brought in succession by rotation of the table opposite to the keyway 23 to be pushed from the table onto the central vertically-movable mold-carrier 12.

The piston-head in the cylinder 14 is operated by compressed air or other fluid, and I have invented and show a valve mechanism adapted to admit the air gradually and in such manner that the workman by the feeling of the valve can know how the operation of pressing is proceeding and can control the same just as if he were applying the pressure with a hand-lever. This valve mechanism comprises a cylinder 26, upper valve-chamber 27, and a lower chamber 28, the two chambers being separated by a partition-wall 29. In the lower chamber 28 is a valve 30, whose stem is seated in a socket 30′ and whose face is held against the air-port 31 by a spiral spring 32 and by the pressure of the air. In

the upper chamber 27 is a valve 33, whose stem extends down through the port 31 and rests on the top of the valve 30. The head of the valve 33 is adapted to fit in and close an exhaust air-port 34 in a piston 35, which reciprocates in the upper chamber 27.

36 are the exhaust air-ports.

37 is a spiral spring which pushes the valve upwardly and keeps it seated in the air-port 34 when the piston-head is pushed down against it. The rod 38 is pivotally connected with the piston-head 35 and extends upwardly from the cylinder 26 to a hand-lever 39. A spring 40 is interposed between the top of the cylinder 26 and a collar 41 on the rod 38, the purpose of which is to keep the piston-head 35 elevated when it is at rest.

42 is an inlet for compressed air in the side of the lower chamber 28, and 43 is an air-outlet in the chamber 27, through which the compressed air passes to the air-inlet pipe 44 of the cylinder 14. A spiral spring 45 is placed around the piston-rod 13 between the top of the cylinder and a portion of the frame 2. The top 14′ of the cylinder 14 is movable and fits under the spring 45. In case the piston-head should be projected too far it will engage the top 14′, which being backed by the spring will serve as a cushion.

The operation is as follows: One of the molds 25 being in position at or near the circumference of the rotary table and having received a gathering of molten glass is pushed along the slideways 24 to the carrier 12 directly under the plunger 20. The workman then moves the valve-lever 39, which depresses the valve-piston 35 and brings the exhaust-air port 34 upon the head of the valve 33, and thus closes the port, and as the piston 35 continues to descend the stem of the valve 33 engages the head of the valve 30 and opens the port 31, permitting the compressed air to pass from the chamber 28 to the chamber 27 and thence to the cylinder 14 below the piston, whereupon it raises the piston and causes the mold-carrier 12 to be lifted, raising the mold against the spring-plate 19 and to the plunger 20, which enters the mold and presses the molten glass therein. The spring-plate meanwhile rises with the mold and holds the ring 22 against the top of the mold-cavity. The rate of admission of air into the cylinder can be regulated accurately by operating the valve-lever quickly or gradually, as required, and the workman can tell by the feeling of the valve-lever in his hand just what the condition of the operation is at any time. Thus if the air should rush too quickly into the chamber 27 and through the port 43 into the main cylinder the upward pressure of the valve-piston would immediately make the fact known to him, and when the operation of pressing the glass is finished the accumulation of pressure back of the valve-piston will give to him the same indication. When the pressing operation is completed, the workman releases the valve-lever 39, whereupon the valve-piston will rise, allowing the valve 30 to seat itself and to close the air-port 31, and when the valve-piston rises above the limit of motion of the valve 33 the port 34 will be opened and the compressed air will exhaust through it. The exhausting of the air will cause the main piston to descend and to lower the mold-support and mold away from the stationary plunger and the spring-plate. The mold 25 is then drawn back on the slideway to its original position on the rotary table, the boy releases the table from the stop-rod 7 by pressing on the pedal 11, and the table is given a quarter-revolution, which brings the second mold in front of the workman, who supplies to it a gathering of glass and moves it to the center of the table on the mold-carrier, whereupon the operation above described is repeated. The movement of the table that brings the third mold in front of the workman brings the first mold in front of a boy who is stationed at the stop-rod 7 and who then raises the pedal 11 with his foot. This causes the end of the rod 7 to pass through the table and to enter the opening in the base of the mold, thus lifting a movable mold-section 25′, which raises the pressed-glass article sufficiently to allow its easy removal.

In Figs. 2 and 5 I show mechanism which I have devised for cutting off the gatherings of glass which are supplied to the molds. It consists of two cutting-rings 47 48, which, however, need not be truly circular. They are pivoted at 49 to a plate 50, which projects from the spring-plate 19 and has a feed mouth or hopper 55, adapted to center and guide the glass into the mold. The attachment of the cutting device to the spring-plate makes it self-adjusting in height. 52 is a handle connected with arms which project from the cutting-rings and are arranged so that when the handle is moved laterally the rings will be brought together. When the mold is brought under the feed-mouth, the gathering of molten glass is placed through the same, so as to extend into the mold below. The handle 52 is then moved in either direction, and the rings are brought together, so as to engage the glass and cut it off. Normally the edges of the cutters are protected by the plate 50 from contact with the glass as it is being fed to the hopper, and said plate is out of the path of motion of the cutters, so that it will not interfere with the action of the cutters as the glass is passing between them. This device has many advantages. It is accurate and reliable in its operation and accomplishes successfully what hitherto has been a matter of difficulty.

My improved machine is very effective and enables the pressing of glass articles, tumblers, &c., to be carried on very rapidly and economically.

I claim—

1. A glass-press having an annular rotary mold-table, a mold-carrier central to the table,

a plunger above the same, and means for raising the mold-carrier to the plunger; substantially as described.

2. A glass-press having an annular rotary mold-table, and a plunger central to the table, and molds movable from the annular table to pressing position beneath the plunger; substantially as described.

3. A glass-press having an annular rotary mold-table, a mold-carrier central to the table, a plunger above the same, and radial slideways for the molds; substantially as described.

4. A glass-press having an annular rotary mold-table, a machine-frame having a stationary central top 15, a central vertically-movable mold-carrier, and a plunger; substantially as described.

5. A device for cutting off a gathering of glass, comprising movable annular cutters through which the glass is fed, said cutters having their openings in register and adapted to afford free passage for the dropping of plastic glass therethrough, and a protector above the cutters normally protecting their edges from contact with the glass, the protector being out of the path of motion of the cutters whereby the cutters may act while the glass is passing between them; substantially as described.

6. A device for cutting off a gathering of glass, comprising annular cutters through which the glass is fed, said cutters having their openings in register and adapted to afford free passage for the dropping of plastic glass therethrough, and being movable to close upon the glass, and a frame having a feed-opening directly above the cutters and protecting the margins thereof from contact with the dropping glass, the frame being out of the path of motion of the cutters, whereby the cutters are allowed to act while the glass is passing through the said opening, and between the cutters; substantially as described.

7. A glass-press having a spring-plate and a glass-cutting device carried by the spring-plate; substantially as described.

8. The combination with a glass-pressing cylinder, of an air-controlling valve having a piston connected with the operating-handle, and having an exhaust-port, a valve adapted to be brought into contact therewith, and an air-inlet valve adapted to be unseated by the stem of the exhaust-valve; substantially as described.

9. The combination with a glass-pressing cylinder, of an air-controlling valve having a piston connected with the operating-handle, an exhaust-port, and an inlet-valve adapted to be unseated by motion of said valve-piston; substantially as described.

In testimony whereof I have hereunto set my hand November 8, 1899.

DANIEL A. RIPLEY.

Witnesses:
THOMAS W. BAKEWELL,
GEORGE B. BLEMMING.