No. 837,409. PATENTED DEC. 4, 1906.

W. B. JONES & C. E. BLUE.

MACHINE FOR MAKING GLASS INSULATORS.

APPLICATION FILED MAY 10, 1906.

2 SHEETS—SHEET 1.

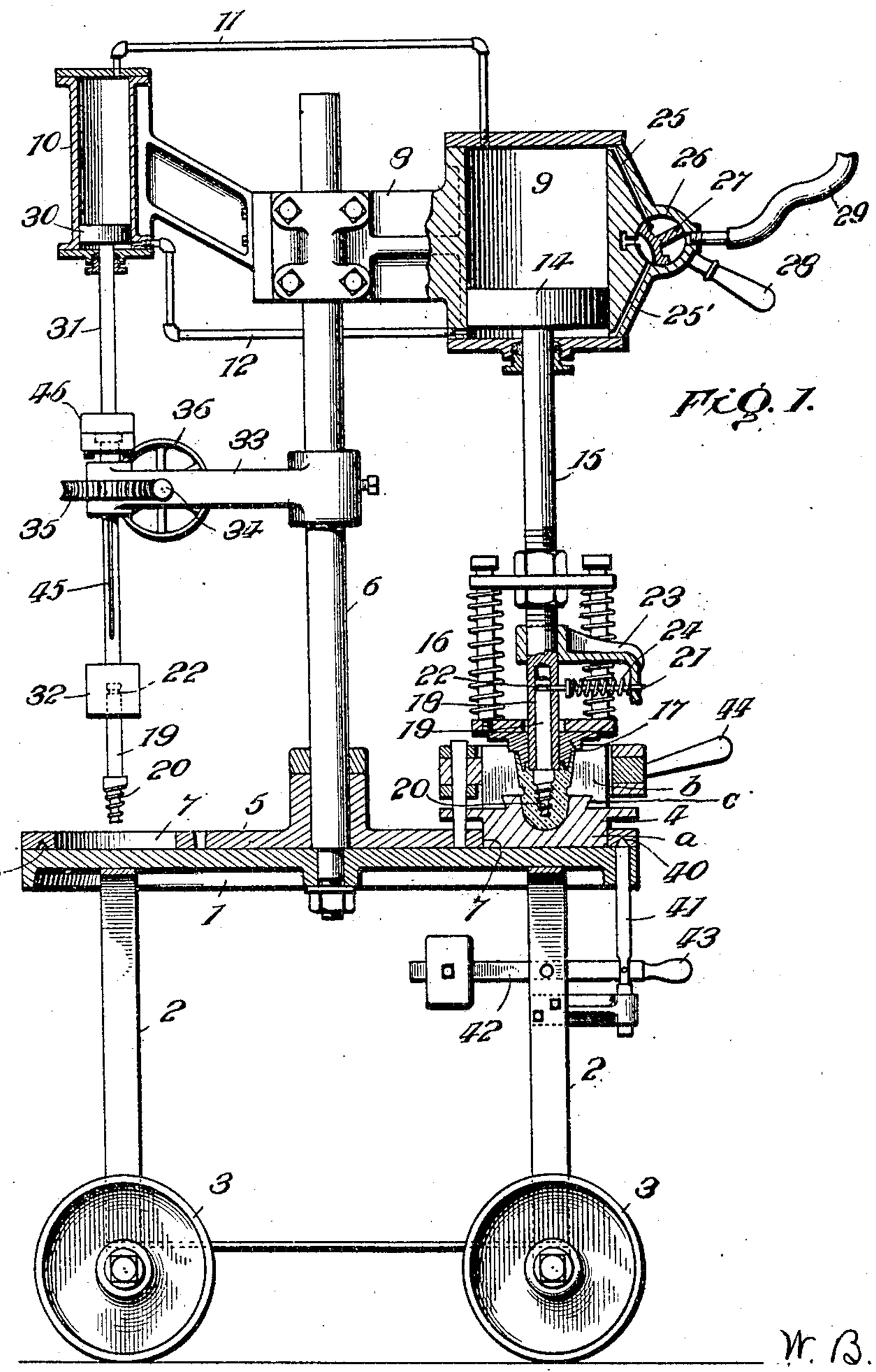

FIG. 1.

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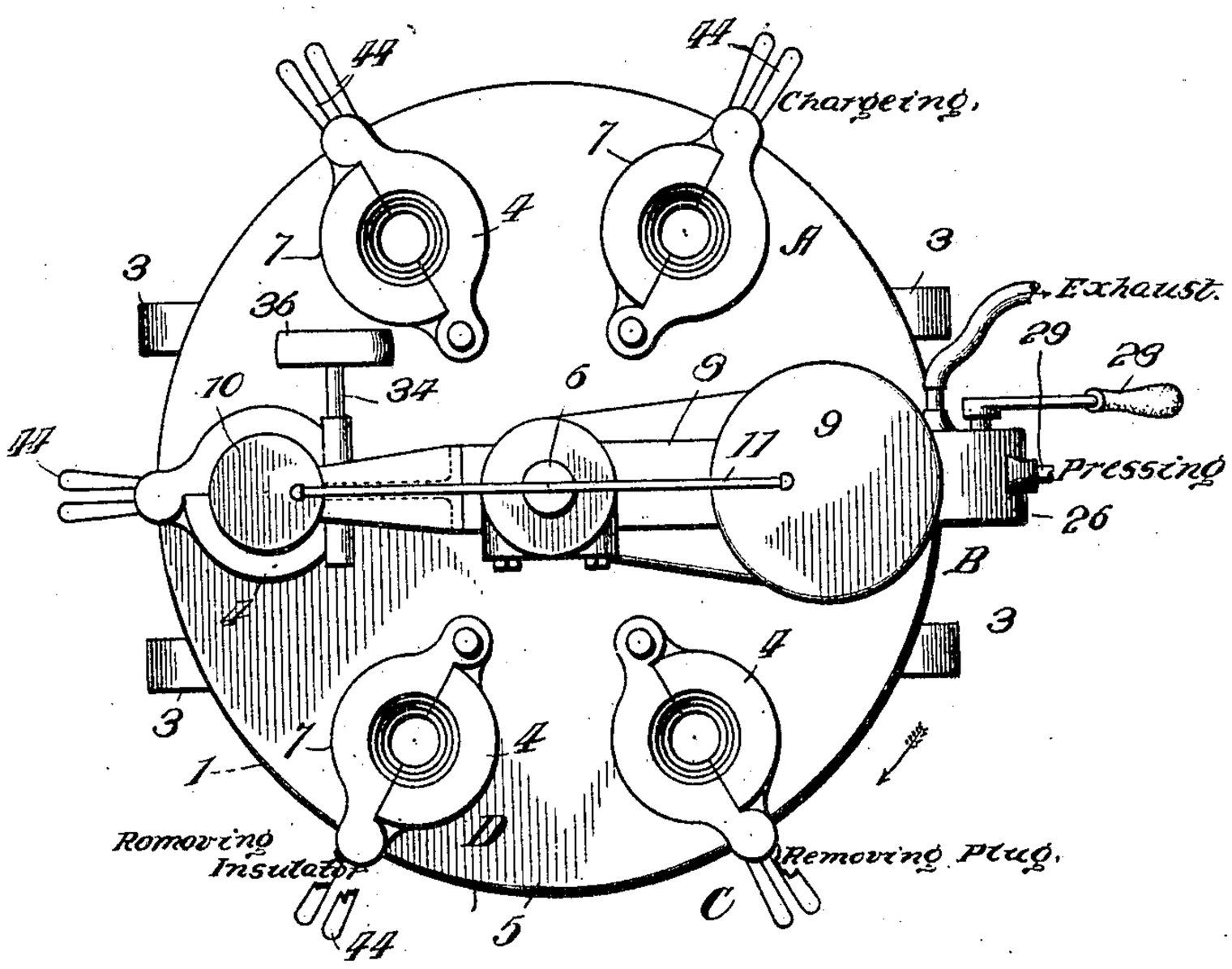
2 SHEETS—SHEET 2.

FIG. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM B. JONES AND CHARLES E. BLUE, OF WHEELING, WEST VIRGINIA.

MACHINE FOR MAKING GLASS INSULATORS.

No. 837,409. Specification of Letters Patent. Patented Dec. 4, 1906.

Application filed May 10, 1906. Serial No. 316,213.

To all whom it may concern:

Be it known that we, WILLIAM B. JONES and CHARLES E. BLUE, citizens of the United States, residing at Wheeling, in the county of Ohio and State of West Virginia, have invented certain new and useful Improvements in Machines for Making Glass Insulators, of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention relates to improvements in machines for making glass insulators, all of which will be fully described hereinafter.

In the accompanying drawings, Figure 1 is a side elevation of a machine embodying our invention, some of the parts being shown in vertical section. Fig. 2 is a top plan view of the same.

In carrying out our invention a table 1 is supported upon suitable standards 2, and these standards 2 are suitably mounted upon supporting-wheels 3, by means of which the table and its coöperating mechanism can be moved around from place to place in a factory, as may be desired, for the purpose of convenience. So far as our invention is concerned, however, the table, which is a support for the mold or molds 4, may be secured to a stationary support, since the table or mold-support has no operative movement whatever.

Resting upon the upper face of the mold-support 1 is a revolving member 5, which is loosely journaled upon a standard 6, made fast at its lower end to the mold-support. This revolving member is provided with a plurality of openings 7, adapted to receive a mold 4, as shown in Fig. 1.

Secured to the upper end of the standard 6 is a bracket 8, which supports at one side of the standard a cylinder 9 and at the opposite side of the standard a cylinder 10. The upper ends of these cylinders are placed in pressure communication through the medium of a pipe 11, and their lower ends are placed in pressure communication through the medium of a pipe 12.

Located within the cylinder 9 is a piston 14, carrying a piston-rod 15, which extends downward through the lower head of the cylinder 9 and carries a presser-head spring mechanism 16, of the usual construction and which is well known by those skilled in the art. This mechanism 16 carries a suitable presser-head 17 for forming the open ends of the insulator, and the interior of the mold 4 is shaped to give the insulator the proper external conformation. The piston-rod 15 extends through the presser-head mechanism and is provided with a longitudinal opening 18 at its lower end to receive the upper end or stem 19 of the screw-plug 20. By means of a spring-actuated pin 21, adapted to have its inner end engage a groove 22 in the stem 19, the screw-plug is supported within the opening 18. A bracket 23, which is secured to the piston-rod 15, serves to form a bearing for the outer end of the pin 21 and a stop for the outer end of the spring 24.

Suitable passage-ways 25 and 25′ communicate, respectively, with the upper and lower ends of the cylinder 9, and a valve-chest 26 communicates with these passage-ways. Located within the valve-chest 26 is a suitable valve 27, to which is connected an operating-handle 28. A fluid-pressure communication 29 is provided for the valve-chest 26, and through the medium of the valve 27 and its handle 28 the operator can control the passage of the pressure to the respective ends of the cylinder 9, and thus cause the piston 14 to move up or down in the cylinder 9, as desired.

Located within the cylinder 10 is a piston 30, and this piston 30 is provided with a piston-rod 31, passing through the lower head of the cylinder, and carries at its lower end a socket 32, which is adapted to engage the upper end of the stem 19 of the screw-plug 20. Secured to the standard 6 is a bracket 33, and this bracket 33 carries a worm-shaft 34, operatively engaging a worm-gear 35, rotatably but slidably connected with the piston-rod 31. The shaft 34 carries a wheel or pulley 36, adapted to be operated by any desired motor.

By reference to Fig. 1 it will be noticed that the mold 4 consists of a lower portion *a* and an upper open-and-shut portion *b*, which interlocks with a dovetailed annular flange *c* of the lower portion. It will also be noticed that the lower portion *a* is the part of the mold which is placed in the opening 7 of the movable member 5. While we here show but one mold, we desire it to be understood that there will be a mold for each one of the openings 7, whereby the operation of charging, pressing, removing the plug, and remov-

ing the insulators from the mold will be in a sense a simultaneous operation after the machine is in operation.

The movable member 5 serves as a spacing device for the molds, which are supported, as before stated, by the mold-support or table 1. Formed in the under side of the member 5 is a cavity or opening 40 for each opening 7, and adapted to engage these openings in succession for locking the movable member in position to have the molds register with the piston-rods 15 and 31, with which a pin or rod 41 engages. This pin is held normally upward through the medium of a weighted lever 42, the outer end of which is formed into a handle 43.

The operation of our invention is as follows: The molds are charged at the point A. The operator, through the medium of the handles 44 of the upper section of the mold which is at the pressing-point, moves that mold around in the direction indicated by arrow sufficiently to bring the mold which was at the charging-point A to the pressing-point B, and this also carries the mold which is at the pressing-point B to the plug-removing point C and carries the mold which was at the point C to the insulator-removing point D. The operator then through the medium of the lever 28 causes the piston 15, with the screw-plug 20, to descend and presses the screw-plug into the molten glass, which was placed in the mold at the point A. Through the movement of the handle 28 in the opposite direction the piston-rod 15 is moved upward, leaving the screw-plug in the mold. Another screw-plug will be placed in the piston-rod 15 when it is in its raised position and the foregoing operations repeated. When the mold has reached the point C, where the plug is removed, the upper end of the stem 19 will be engaged by the socket 32 of the piston-rod 31. It will be understood that the piston-rod 31 works simultaneously with the piston-rod 15, and when the socket 32 is in engagement with the stem 19 the lower portion 20 of the piston-rod is rotated through the medium of the worm-shaft 34 and worm-gear 35, as previously described, and will turn the screw-plug out of the insulator.

Attention is directed to the fact that the lower portion 45 of the piston-rod 31 is journaled to the upper portion in a socket 46, whereby the lower part can be caused to rotate independently of the upper part, and that the lower portion 45 is provided with a longitudinal feather or key which engages a groove (not shown) in the worm-gear 35, whereby the worm-gear is allowed to slide in respect to the portion 45, but is locked against relative rotary movement.

From the foregoing it will be understood that the charging, pressing, plug-removing, and insulator-removing operations are performed practically simultaneously.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A machine of the character described comprising a non-movable mold-support, a plurality of molds movable thereon, a movable mold-spacing device for the molds, a vertically-movable plug-carrying member adapted to force the plug into the mold located at one point in the movement of the spacing device, and a vertically-movable and rotatable member for engaging and removing the plug located at another point in the movement of the spacing device, and means common to the plug-carrying and removable members and adapted to operate them simultaneously.

2. A machine of the character described, comprising a non-movable mold-support, a movable mold-spacing device, a vertically-movable plug-carrying member adapted to press the plug in a mold, a plurality of molds spaced by the spacing device, a vertically-movable and rotatable member located at a different point in the movement of the spacing device from that occupied by the plug-carrying member, means for simultaneously moving the plug carrying and removing devices, and mechanism for rotating the plug-removing device.

3. A machine of the character described comprising a mold-support, a cylinder located thereabove and carrying a piston, the piston having a plug-carrying member connected therewith, a second cylinder provided with a piston, the last-mentioned piston carrying a plug-removing member, said cylinders having fluid-pressure communications at their opposite ends, and means for controlling the said pressure communications.

4. A machine of the character described, comprising a mold-support, a plug-carrying member, a plug-removing member comprising a cylinder, a piston therein, a piston-rod connected with the piston, and a rod connected with the piston and rotatable independent thereof and adapted to engage a screw-plug.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM B. JONES.
CHARLES E. BLUE.

Witnesses for William B. Jones:
E. D. HOGE,
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