

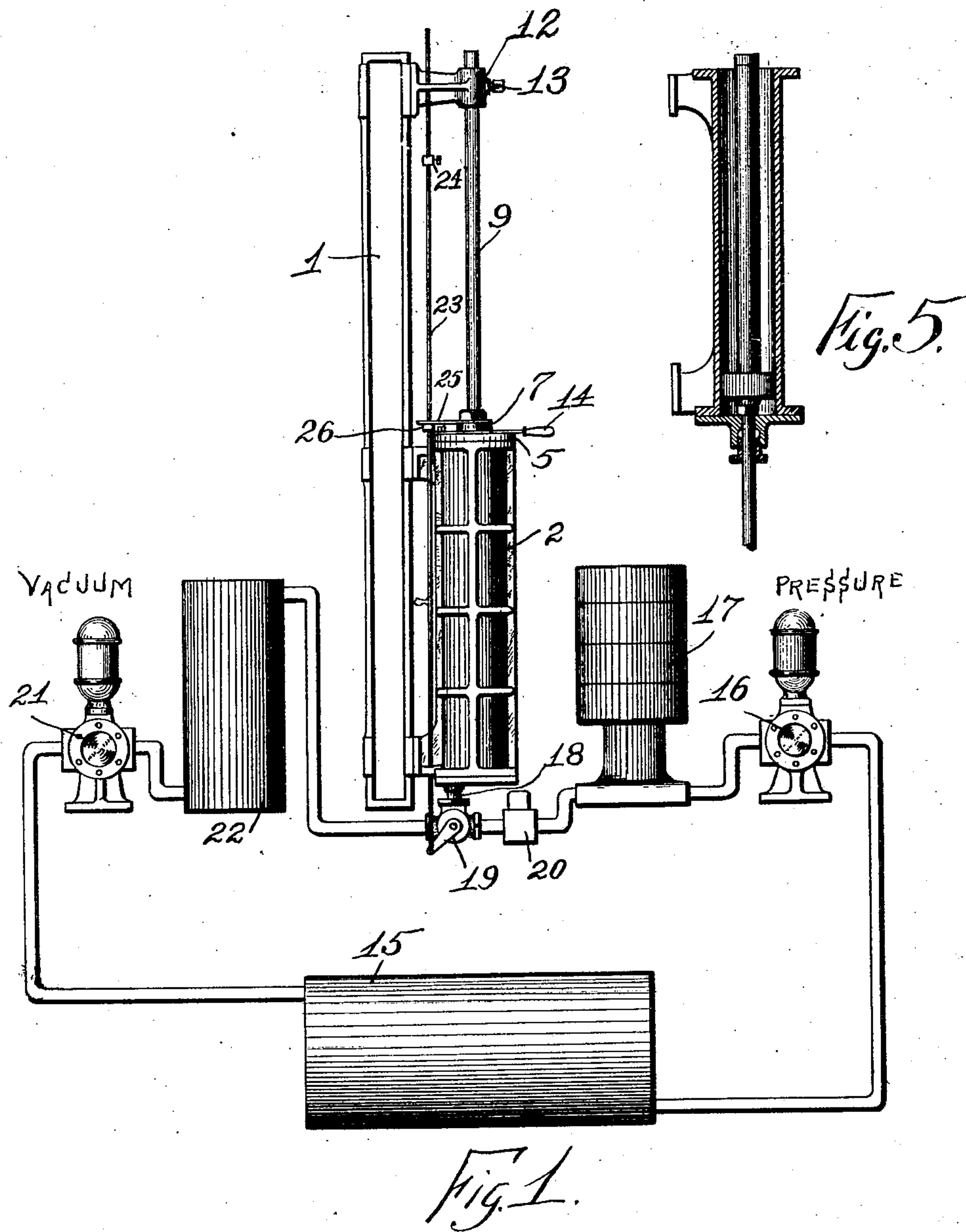
No. 879,915.

PATENTED FEB. 25, 1908.

E. J. SCHRODER.
MOLDING MACHINE.

APPLICATION FILED NOV. 11, 1907.

2 SHEETS—SHEET 1.



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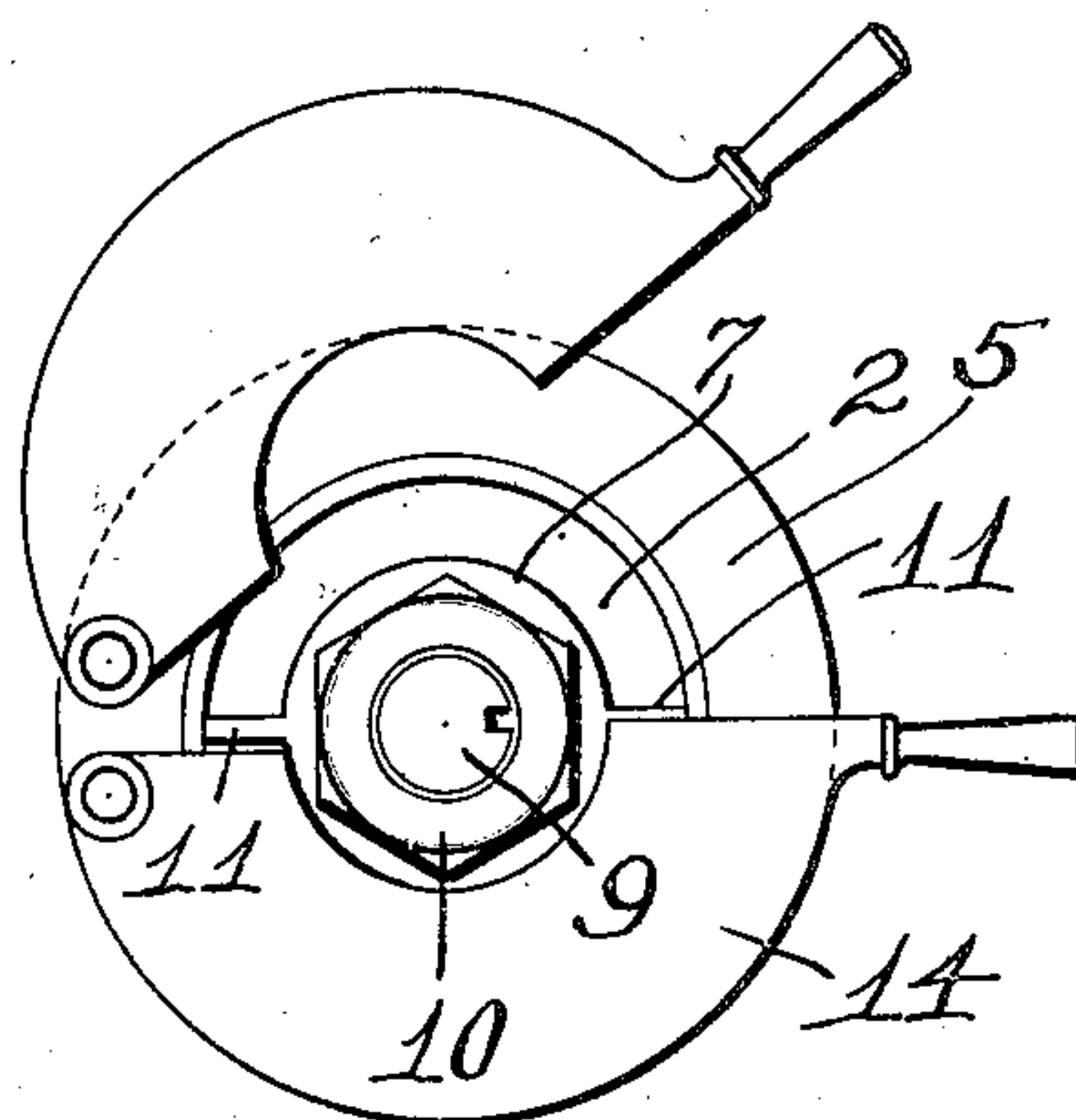
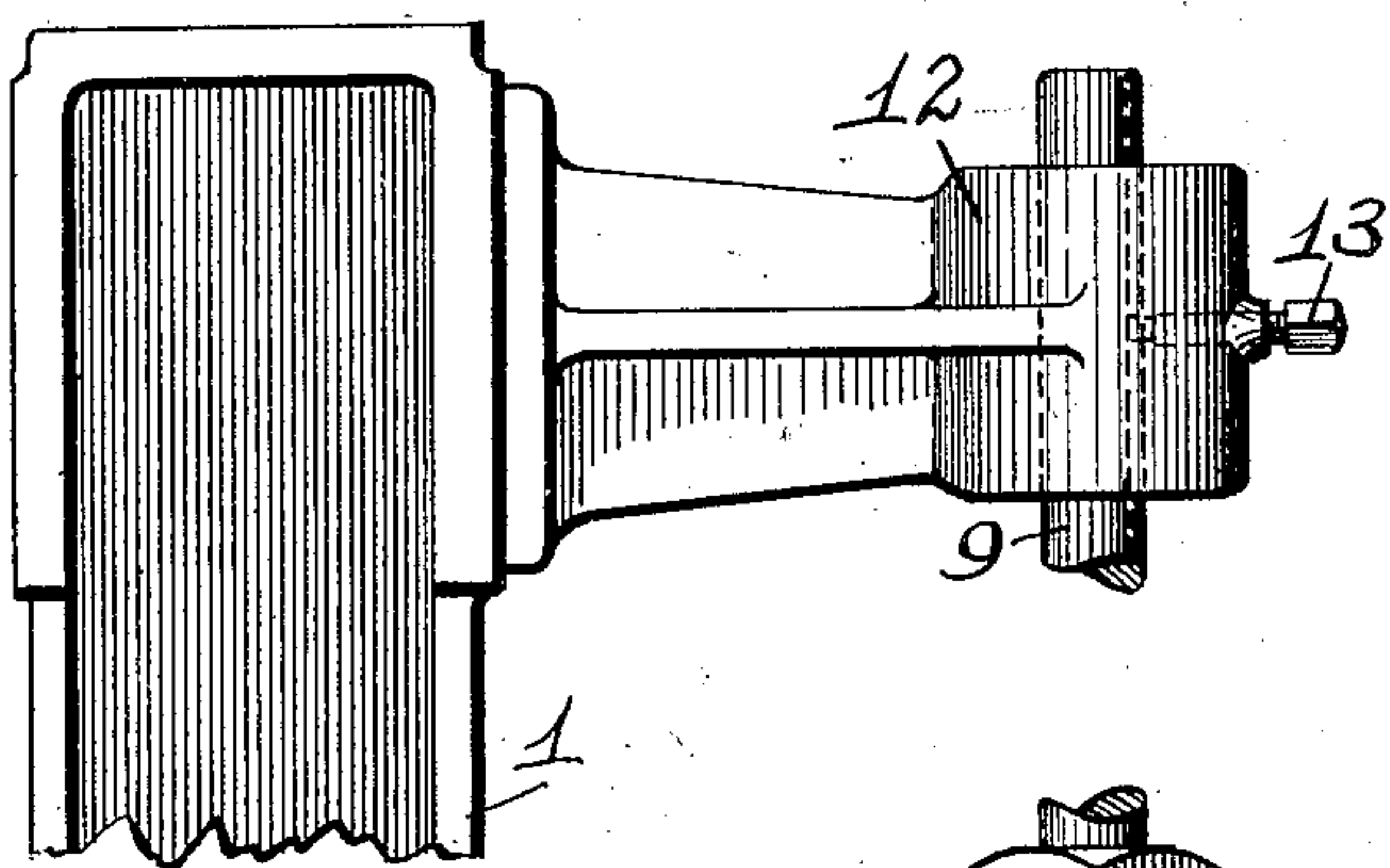


Fig. 3.

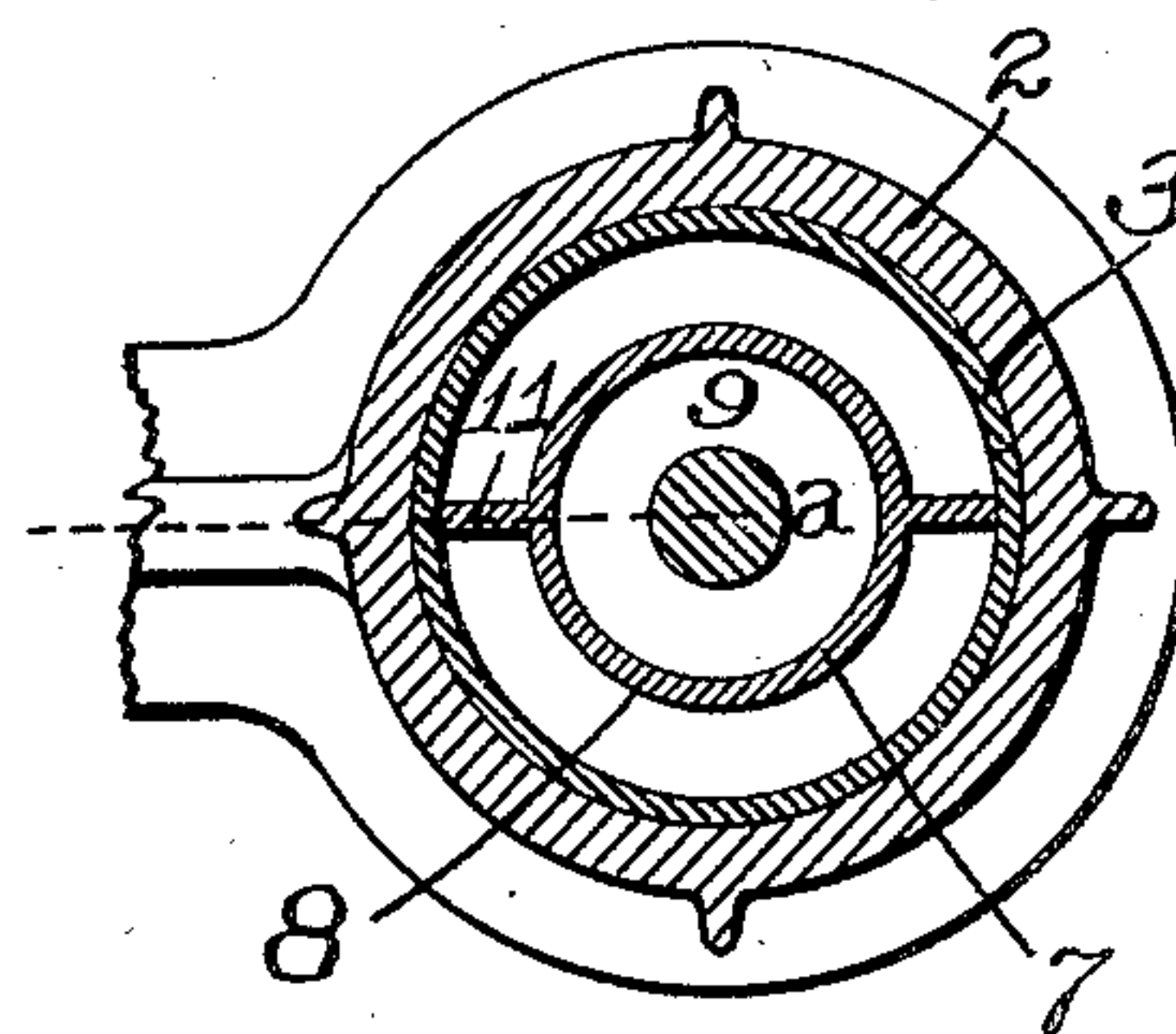
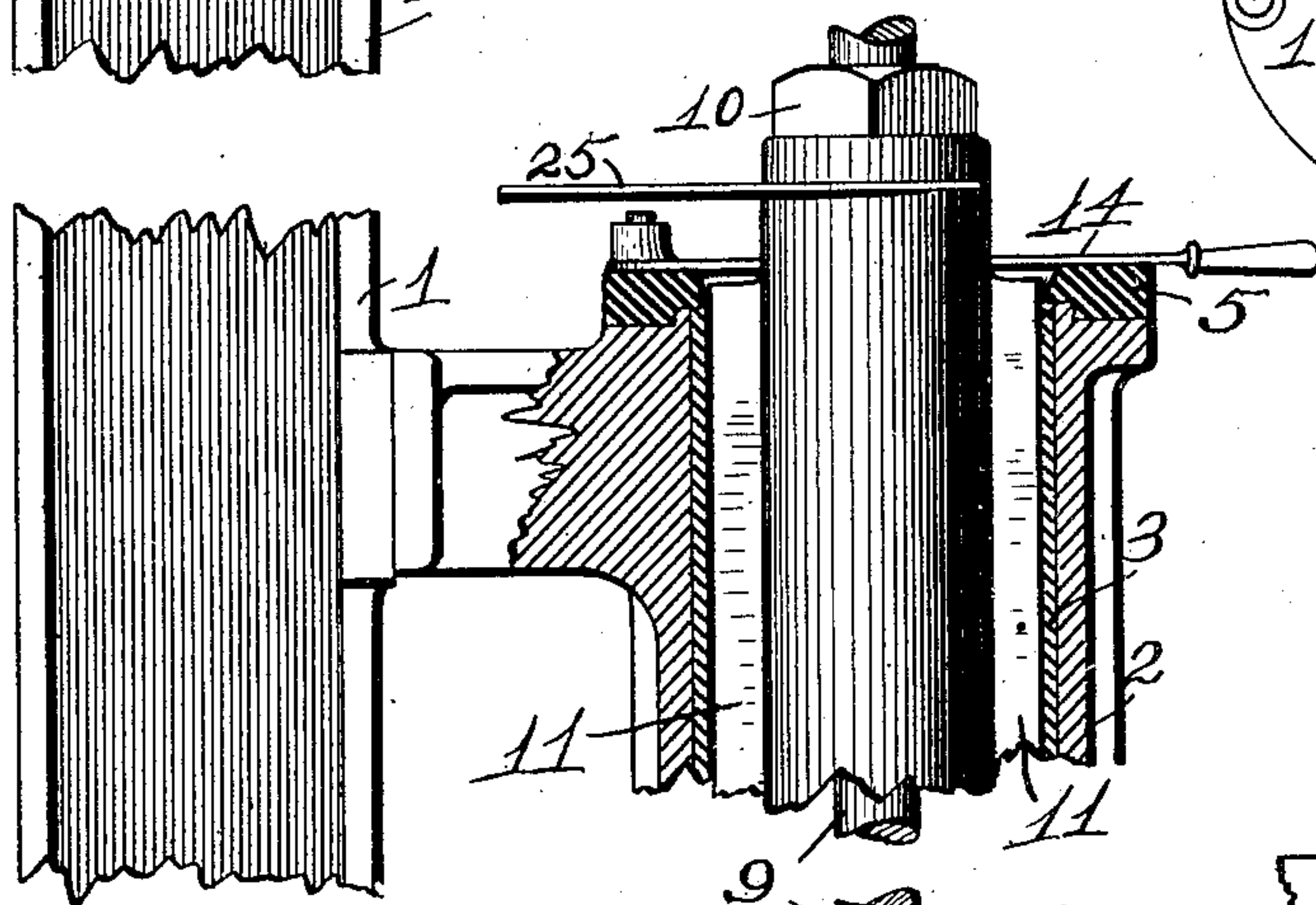


Fig. 4.

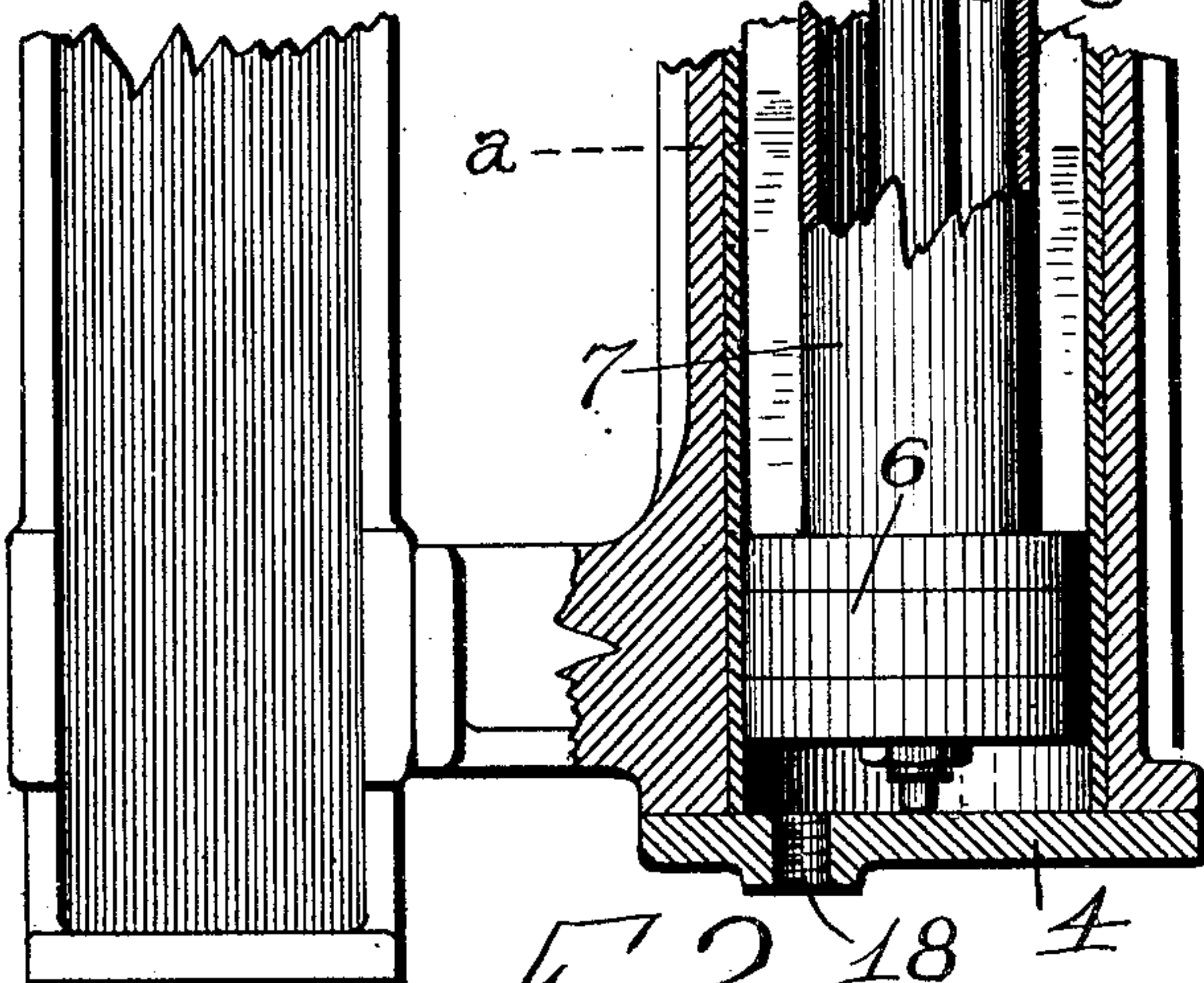


Fig. 2.

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UNITED STATES PATENT OFFICE.

EDWIN J. SCHRODER, OF HAMILTON, OHIO.

MOLDING-MACHINE.

No. 879,915.

Specification of Letters Patent.

Patented Feb. 25, 1908.

Application filed November 11, 1907. Serial No. 401,545.

To all whom it may concern:

Be it known that I, EDWIN J. SCHRODER, a citizen of the United States, residing at Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Molding-Machines, of which the following is a specification.

This invention, pertaining to improvements in molding machines applicable, for instance, to the production of cylindrical or semi-cylindrical pipe-covering from plastic material, will be readily understood from the following description taken in connection with the accompanying drawings in which:—

Figure 1 is a side elevation of a molding plant exemplifying my invention: Fig. 2 a vertical longitudinal section of the molding machine proper when adapted for the molding of semi-cylindrical objects: Fig. 3 a plan of the same: Fig. 4 a horizontal section of the same in the plane of line *a* of Fig. 2: and Fig. 5 a vertical longitudinal section of the mold and its immediate accessories when adapted for the production of completely cylindrical objects.

In the drawings:—1, indicates an upright support, which may, if desired, be a column in a building: 2, a vertically disposed cylindrical mold fixedly secured to the support and having a diameter and length appropriate to the articles to be molded: 3, a lining disposed separably therein and provided for convenient repairs: 4, a cylinder-head closing the lower end of the mold, the upper end of the mold being open: 5, a funnel-ring secured upon the upper end of the mold: 6, a piston fitting the mold: 7, a cylindrical core projecting rigidly up from the piston and having a diameter appropriate to the internal diameter of the objects to be molded, and having such length that its upper end will project somewhat above the top of the mold when the piston is at the lower end of the mold: 8, a separable hollow shell forming the body of the core: 9, a piston-rod rigidly secured to the piston and projecting upwardly therefrom through the core shell 8 and projecting upwardly for a considerable distance above the upper end of the core, the portion of the piston-rod above the core being splined: 10, a nut threaded upon the piston-rod above the core-shell and serving to clamp the latter firmly in place relative to the piston and piston-rod: 11, oppositely disposed radial wings projecting rigidly from the core, the outer extremities of these wings closely fit-

ting the interior of the mold: 12, a piston-rod guide carried by the support at such distance above the top of the mold as to permit the piston to rise to the top of the mold: 13, a screw carried by the guide 12 and having its point engaging the spline of the piston-rod so that the core is prevented from turning: 14, a pair of thin blades lying upon and pivoted to the top of the mold and adapted, when swung to inward position, to close the upper end of the mold around the core: 15, a supply tank containing a supply of liquid for use in operating the machine: 16, a pump connected with the supply tank and adapted to withdraw liquid from the tank and discharge it under pressure: 17, an accumulator connected with the discharge pressure pump 16 so as to be supplied thereby with liquid under pressure: 18, an inlet and outlet connection at the lower end of the mold, the mold being connected with the discharge from the accumulator: 19, an ordinary three-way valve disposed in the pipe-connection between the mold and the accumulator, in such manner that the mold may be placed in communication with the accumulator, or, alternately, with a point of discharge from the mold: 20, an ordinary pressure-reducing valve disposed in the connection between the three-way valve and the accumulator: 21, a pump having its discharge connected with supply tank 15, and having its inlet connected with the outlet branch of the three-way valve: 22, a vacuum tank disposed in the connection between vacuum pump 21 and the mold: 23, an operating rod for the three-way valve, this rod being disposed vertically alongside the piston-rod: 24, an adjustable collar on the valve-rod: 25, a tappet carried by the piston-rod and adapted to engage under the collar 24: and 26, a second collar carried by the valve-rod.

Giving attention to the exemplifying arrangement illustrated in Fig. 1, the pressure pump 16 draws liquid from the supply tank and maintains pressure in the accumulator. The accumulator discharges to the mold through reducing valve 20 when the three-way valve is properly adjusted, and such pressure cause the mold piston and core to rise. The vacuum pump 21 maintains partial vacuum in vacuum tank 22, and when the three-way valve is properly adjusted the piston and core descend by their own weight aided by the vacuum, the liquid discharging

from the mold and being delivered again to the supply tank by the vacuum pump. When the three-way valve has been adjusted to proper position and the pressure admitted below the piston, the piston rises till the tappet strikes the collar 24, thus shifting the valve and cutting off the further inflow of liquid under the piston. A further adjustment of the valve causes the liquid to be sucked out from under the piston and the piston and core to descend, the descent ceasing when the tappet strikes collar 26.

Turning to Fig. 2 of the drawings, in using the machine the piston and core are to first be in their lower position, as shown, and the blades 14 are to be open. The mold is then to be filled with the plastic material, and after the material has set then the valve is to be adjusted to admit pressure under the piston, whereupon the piston and core rise in the mold and force the molded article up out of the mold. The blades are then closed in under the molded article and the piston and core are allowed to descend, leaving the molded article supported by the blades. The molded article being formed in two halves, by reason of the action of the wings 11, can be readily removed from the machine and, after the blades are again opened, the machine is ready for a new charge of plastic material.

It is not always that the molded article is wanted in divided form and, in such case the upper portion of the piston-rod, and its guide, and the tappet, would interfere with convenient removal of the molded article. When integral instead of divided articles are to be molded then the wings are omitted from the core, and the piston-rod may project below instead of above the mold, as indicated in Fig. 5, thus providing for the ready removal of undivided molded articles.

I claim:—

1. A molding machine comprising a vertically disposed mold closed at its lower end and open at its upper end, a piston adapted to reciprocate therein, a core projecting upwardly from the piston, means for raising and lowering the piston and core in the mold, and a movable blade for use at the top of the mold and adapted to be entered between the top of the piston and the base of a molded article supported thereon, combined substantially as set forth.

2. A molding machine comprising a vertically disposed cylindrical mold closed at its lower end and open at its upper end, a piston adapted to reciprocate therein, a cylindrical core projecting upwardly from the piston, means for raising and lowering the piston and core in the mold, and a blade movably mounted at the top of the mold and adapted to be entered between the top of the piston and the base of a molded article supported thereon, combined substantially as set forth.

3. A molding machine comprising a vertically disposed mold closed at its lower end and open at its upper end, a piston adapted to reciprocate therein, a core projecting upwardly from the piston, wings projecting rigidly outward from the core and extending lengthwise thereof and engaging the bore of the mold so as to divide the same into several compartments, means for raising and lowering the piston and core in the mold, and a blade movably mounted at the top of the mold and adapted to be entered between the top of the piston and the base of the molded article supported thereon, combined substantially as set forth.

4. A molding machine comprising a vertically disposed mold closed at its lower end and open at its upper end, a piston adapted to reciprocate therein, a core projecting upwardly from the piston, means for raising and lowering the piston and core in the mold, and a pair of blades pivotally mounted at the top of the mold and adapted to be entered between the top of the piston and the base of a molded article supported thereon, combined substantially as set forth.

5. A molding machine comprising a vertically disposed mold closed at its lower end and open at its upper end, a piston adapted to reciprocate therein, a core projecting upwardly from the piston, means for injecting and withdrawing liquid from under said piston, and a blade movably mounted at the top of the mold and adapted to be entered between the top of the piston and the base of a molded article supported thereon, combined substantially as set forth.

6. A molding machine comprising a vertically disposed mold closed at its lower end and open at its upper end, a piston adapted to reciprocate therein, a core projecting upwardly from the piston, means for injecting liquid under pressure into the mold below the piston, suction means for removing the liquid from below the piston, and a blade movably mounted at the top of the mold and adapted to be entered between the top of the piston and the base of a molded article supported thereon, combined substantially as set forth.

7. A molding machine comprising a vertically disposed mold closed at its lower end and open at its upper end, a piston adapted to reciprocate therein, a core projecting upwardly from the piston, a piston-rod projecting from the piston, a guide for said piston-rod independent of the core, means for raising and lowering the piston and core in the mold, and a blade movably mounted at the top of the mold and adapted to be entered between the top of the piston and the base of a molded article supported thereon, combined substantially as set forth.

8. A molding machine comprising a vertically disposed mold closed at its lower end and open at its upper end, a piston adapted

to reciprocate therein, a core projecting upwardly from the piston, a three-way valve connected with the lower end of the mold, mechanism for delivering liquid under pressure to the mold through said three-way valve, mechanism for producing a partial vacuum in the mold through the three-way valve, and a blade movably mounted at the top of the mold and adapted to be entered between the top of the piston and the base of a molded article supported thereon, combined substantially as set forth.

9. A molding machine comprising a vertically disposed mold closed at its lower end and open at its upper end, a piston adapted to reciprocate therein, a core projecting upwardly from the piston, a valve for admitting pressure liquid to and permitting its discharge from the lower end of the mold, a valve-rod connected with said valve, an adjustable collar on the valve-rod, a tappet moving with the core and piston and adapted to engage said collar and arrest the admission of liquid when the core and piston reach a predetermined height, and a blade movably mounted at the top of the mold and adapted to be entered between the top of the piston and the base of a molded article supported thereon, combined substantially as set forth.

10. A molding machine comprising a vertically disposed mold closed at its lower end and open at its upper end, a piston adapted to reciprocate therein, a core projecting upwardly from the piston, mechanism and pipe-connections for producing and conveying liquid under pressure to the lower end of the

mold, mechanism and pipe-connections for withdrawing the liquid from the lower end of the mold, and a valvular device for controlling the flow of liquid to and from the mold, combined substantially as set forth.

11. A molding machine comprising a vertically disposed mold closed at its lower end and open at its upper end, a piston adapted to reciprocate therein, a core projecting upwardly from the piston, an accumulator connected with the lower end of the mold and with a source of supply for liquid under pressure, a tank connected with the lower end of the mold and with mechanism for producing a partial vacuum in the tank, and valvular mechanism for controlling the flow of liquid to and from the mold.

12. A molding machine comprising a vertically disposed mold closed at its lower end and open at its upper end, a piston arranged to reciprocate therein, a core projecting upwardly from the piston, a liquid supply tank, a pressure producing pump, an accumulator, a pipe-connection from said tank to the lower end of the mold through said pump and accumulator, a vacuum tank, a vacuum-producing pump, pipe-connection from said liquid supply tank to the lower end of the mold through said vacuum pump and vacuum tank, and valvular mechanism for controlling the flow of liquid to and from the mold, combined substantially as set forth.

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Witnesses:

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