

(No Model.)

J. A. AYRES.  
AUTOMATIC VALVE.

No. 327,986.

Patented Oct. 13, 1885.

Fig. 1.

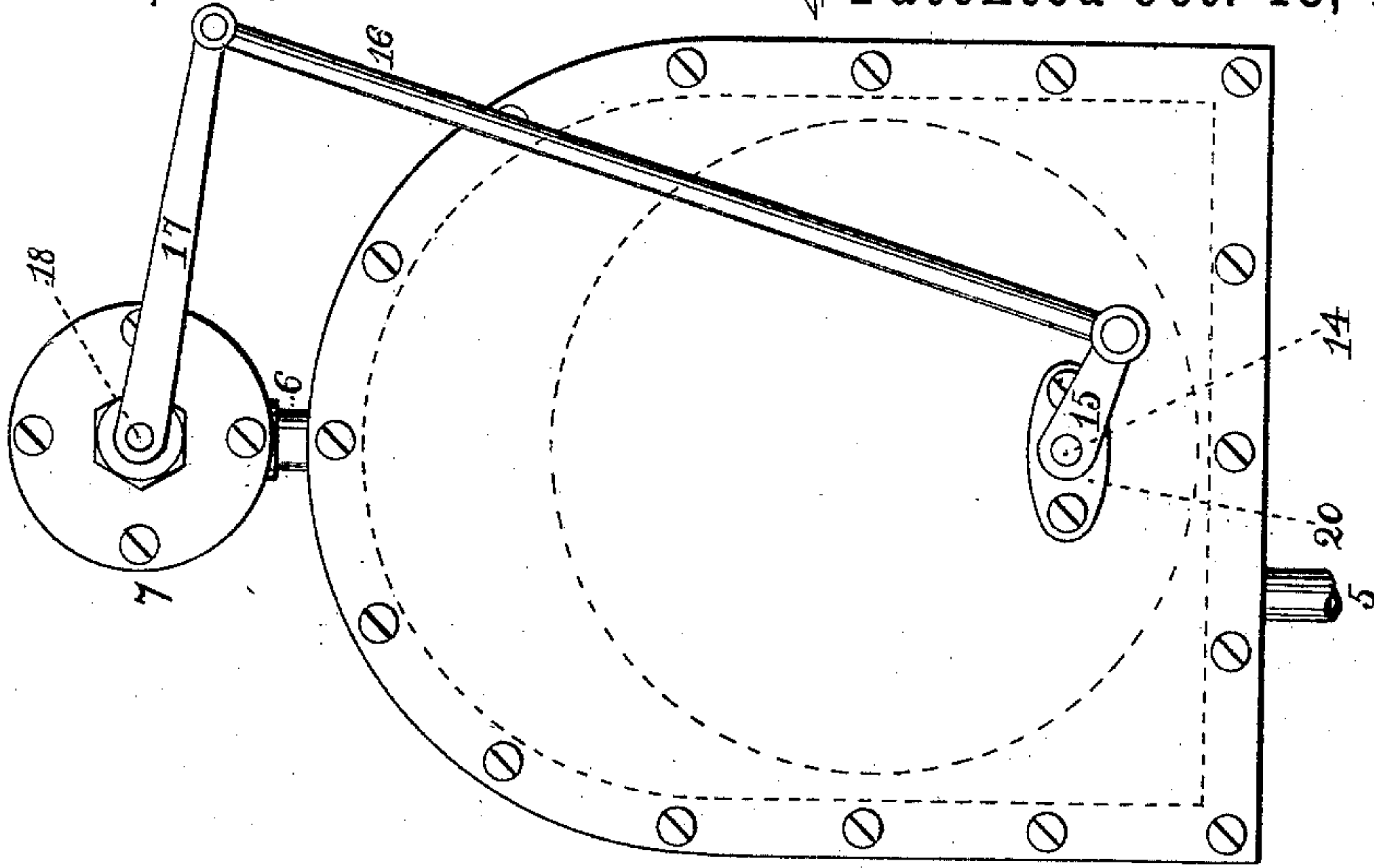


Fig. 2.

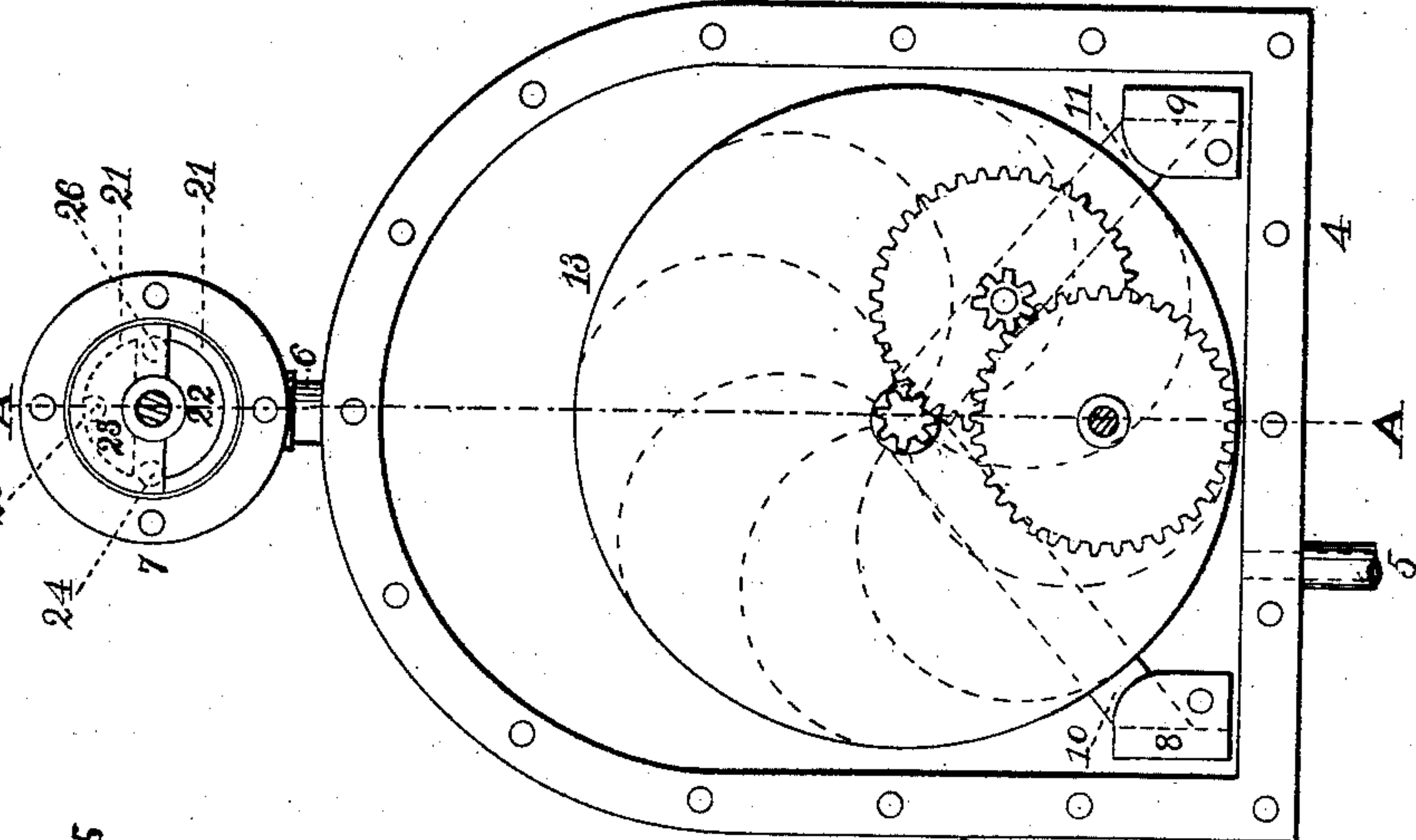
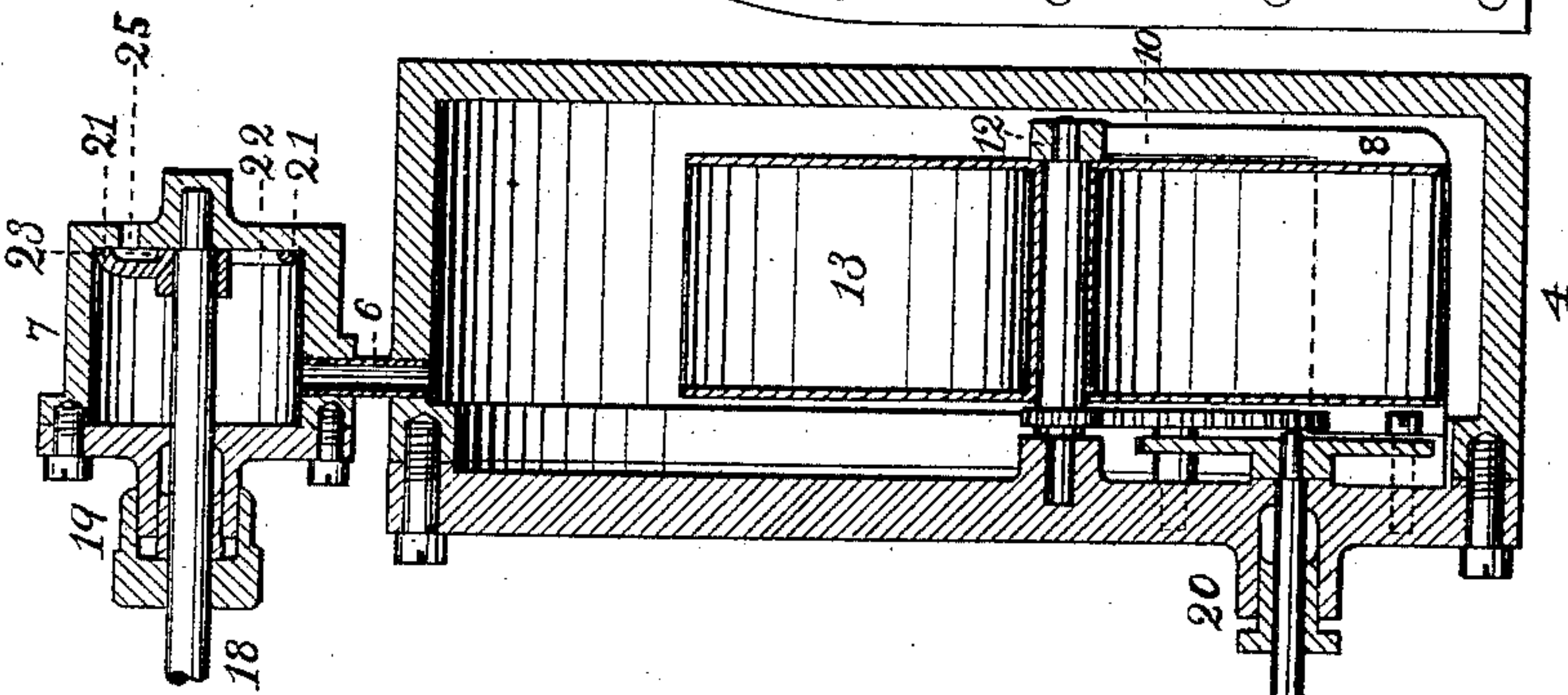


Fig. 3.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC VALVE.

SPECIFICATION forming part of Letters Patent No. 327,986, dated October 13, 1885.

Application filed February 9, 1884. Serial No. 120,207. (No model.)

*To all whom it may concern:*

Be it known that I, JARED A. AYRES, of Groton, (Mystic River,) and State of Connecticut, have invented a certain new and useful Improvement in Automatic Valves, of which the following description and claim constitute the specification, and which is illustrated by the accompanying sheet of drawings.

This apparatus operates its valve by means of a wheel and intermediate mechanism acted upon by the current of elastic fluid which is controlled by the valve.

Figure 1 in the drawings is a front elevation of the exterior of the apparatus, while Fig. 2 is a front elevation with the front walls and parts exterior thereto removed; and Fig. 3 is a central vertical section on line A A of Fig. 2.

4 is a box having the downward opening 5 and the upward opening 6, which latter is a tube connecting the box 4 with the cylindrical box 7. Within the box 4, and fastened to its left-hand wall, are the horizontal arms 8 and 9, respectively, supporting the inclined arms 10 and 11. The latter unite to form the journal-bearing 12. Within that bearing and a corresponding bearing in the left-hand wall of the box 4 the journals of the wheel 13 revolve. That wheel is constructed with side disks and longitudinal concave floats, the latter of which are represented in cross-section by the curved dotted lines in the lower part of Fig. 2. The axis of the wheel 13 is connected by gearing with the shaft 14 in such a way as to diminish speed and increase power to any desired extent—for example, about twenty-four fold. The arm 15 is keyed to the shaft 14, and is pivoted to the rod 16, the latter being pivoted to the arm 17, while that is keyed to the shaft 18. That shaft passes through the stuffing-box 19 as the shaft 14 does through the stuffing-box 20.

Keyed to the inner end of the shaft 18 is the valve 21 having the semicircular port 22, and the semicircular recess 23.

The right-hand wall of the box 7 is perforated with the ports 24, 25, and 26. The ports 24 and 26 are to be connected by tubes with places where intermitted supplies of elastic fluid—such as compressed air—are wanted. The port 25 is an exhaust-port, through which waste air leaves the apparatus.

The downward opening 5 is a tube connected with an air-pump or other source of elastic fluid. The box 4 is filled with water when prepared for operation, and, indeed, the whole apparatus may be submerged in that liquid.

The mode of operation is as follows: The current of compressed air, being forced into the box 4 through the tube 5, rises through the water in the box, and displaces the water from that one of the curved chambers of the wheel 13 which is immediately above the opening 5. Thereupon the levity of the air in that chamber causes the wheel 13 to begin a rotary motion, which motion brings the adjacent chamber, which is below the first, into position immediately above the opening 5. Thus all the chambers of the wheel 13 are successively operated with and the rotary motion of the wheel made continuous. That continuous rotary motion operates through the gears the shaft 14, the arm 15, the rod 16, the arm 17, and the shaft 18, to cause the valve 23 to oscillate in such a way as to bring the ports 24 and 26 alternately into connection with the port 22, and in such a way as that when the port 24 is in connection with the port 22 the port 26 is, through the recess 23, in connection with the port 25, and when the port 26 is in connection with the port 22 the port 24 is, through the recess 23, in connection with the port 25. The current of air, after doing its work under the wheel 13, continues upward through the tube 6 into the box 7, and is sent by the oscillating action of the valve 21 into and through the ports 24 and 26, alternately. After performing its function in the places to which it is sent it may return through those ports, respectively, and pass thence into the recess 23, and thence escape through the port 25.

This invention may be used in connection with a variety of machines wherein valves are employed; but I propose, first, to connect it with a system of water-works, whereby pneumatic pressure is made to force water out of a well or other reservoir into a house or other place where water is wanted for use. In such a system the tube 5 is connected with an air-pump and the ports 24 and 26 are connected by tubes with a certain other apparatus placed in a well. Thus my invention is interposed between that air-pump and that other apparatus, and

its function is to change the continuous current of compressed air, which it receives from that air-pump through the tube 5, into intermittent currents of compressed air, which it  
5 discharges into that other apparatus through the ports 24 and 26, alternately.

I prefer to so place my invention that the water in the box 4 shall neither freeze up nor run out into the air-pump; but I do not deem  
10 it necessary to state how those inconveniences be avoided; nor do I consider it needful to describe the air-pump from which my invention receives compressed air, or the other apparatus to which my invention sends com-  
15 pressed air, for my invention, as hereinbefore set forth and hereinafter claimed, does not include either of those contrivances.

I claim as my invention—

The combination of the wheel 13, turning on an axis and adapted to be worked by air 20 passing upward through the water in which the wheel is submerged, with the valve 21, oscillating over the ports 24 and 26, and with the crank-arm 15, the pitman-rod 16, and the arm 17, operating to change the rotary mo- 25 tion of the wheel to the oscillating motion of the valve, all substantially as described.

JARED A. AYRES.

Witnesses:

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MORGAN W. BEACH.