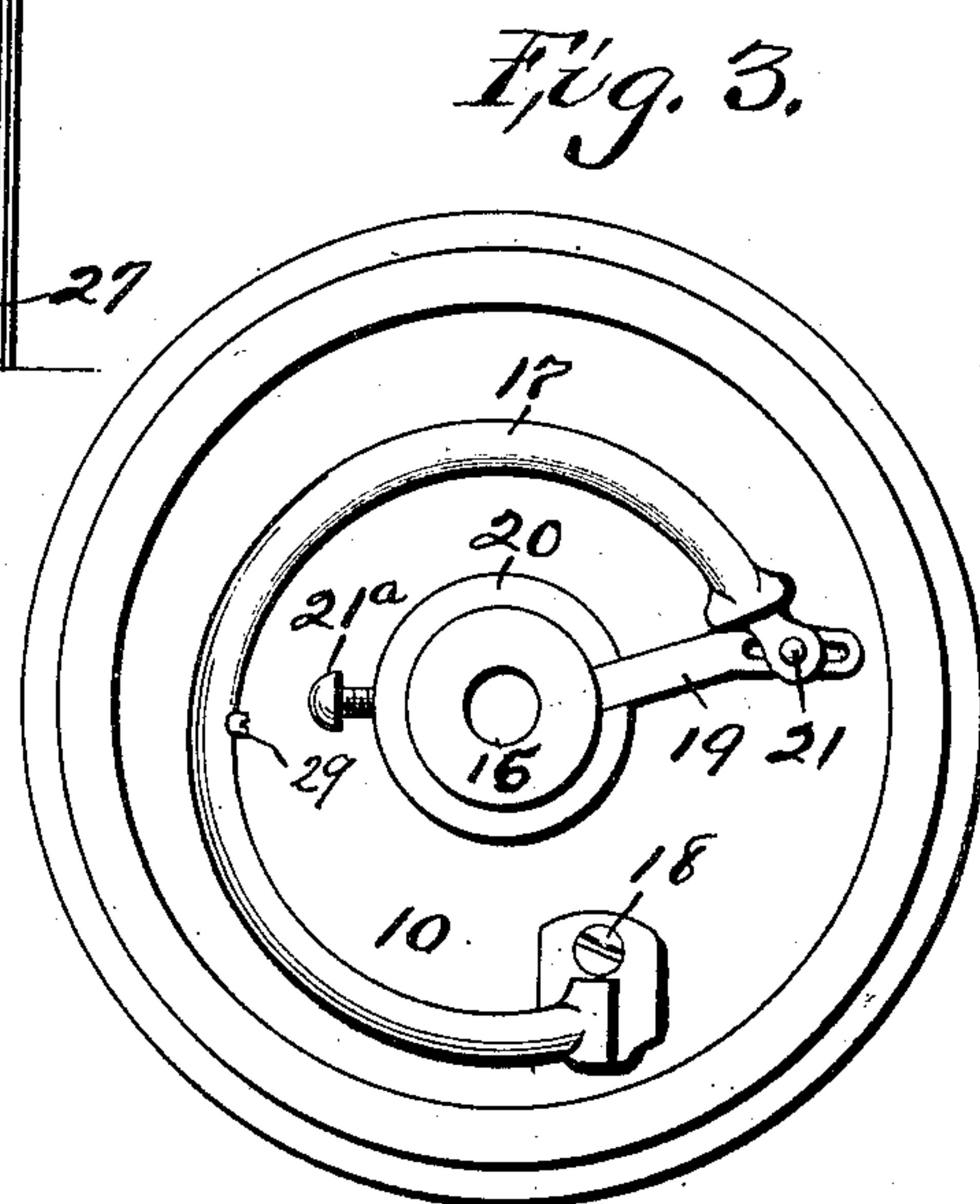
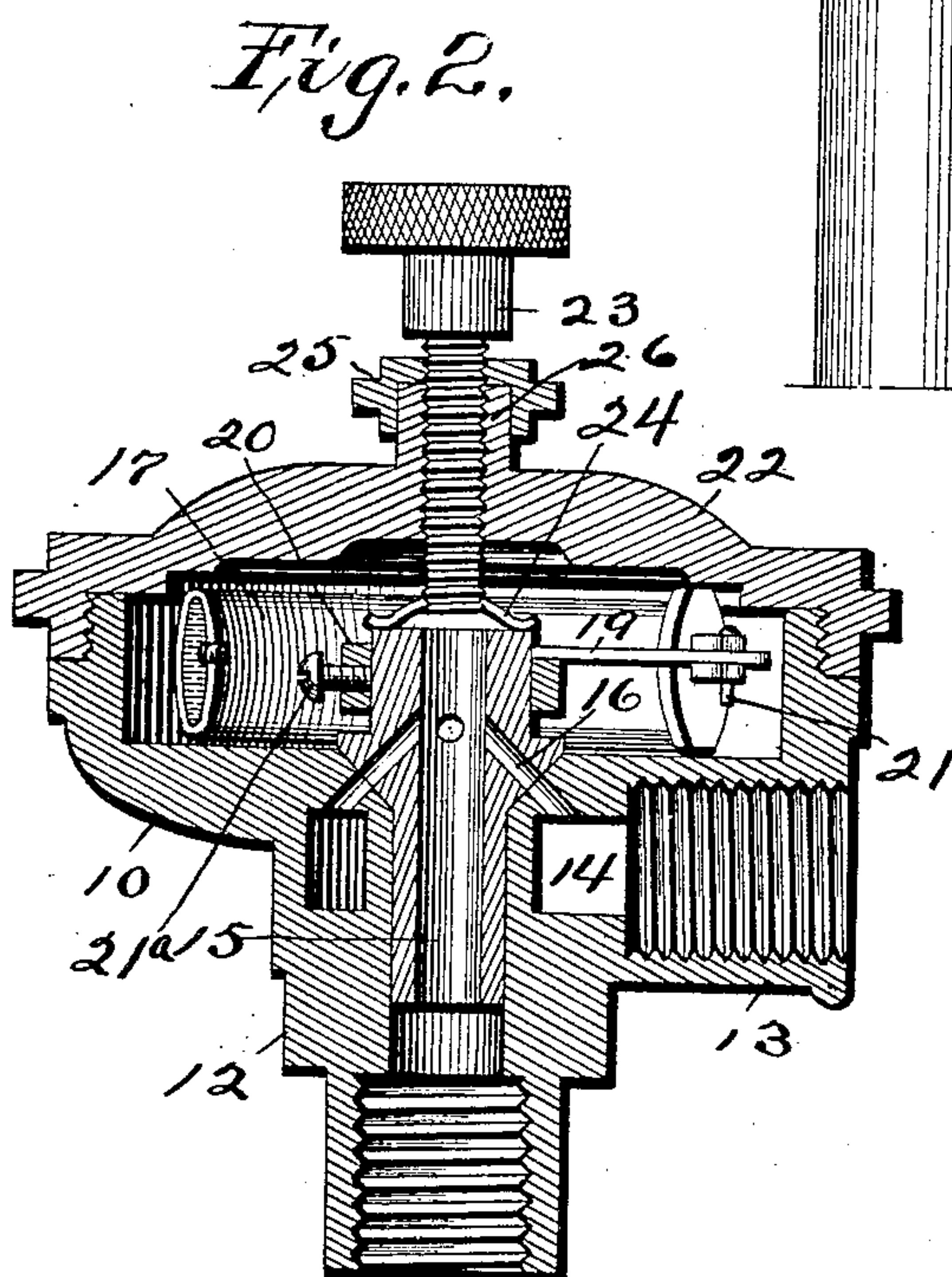
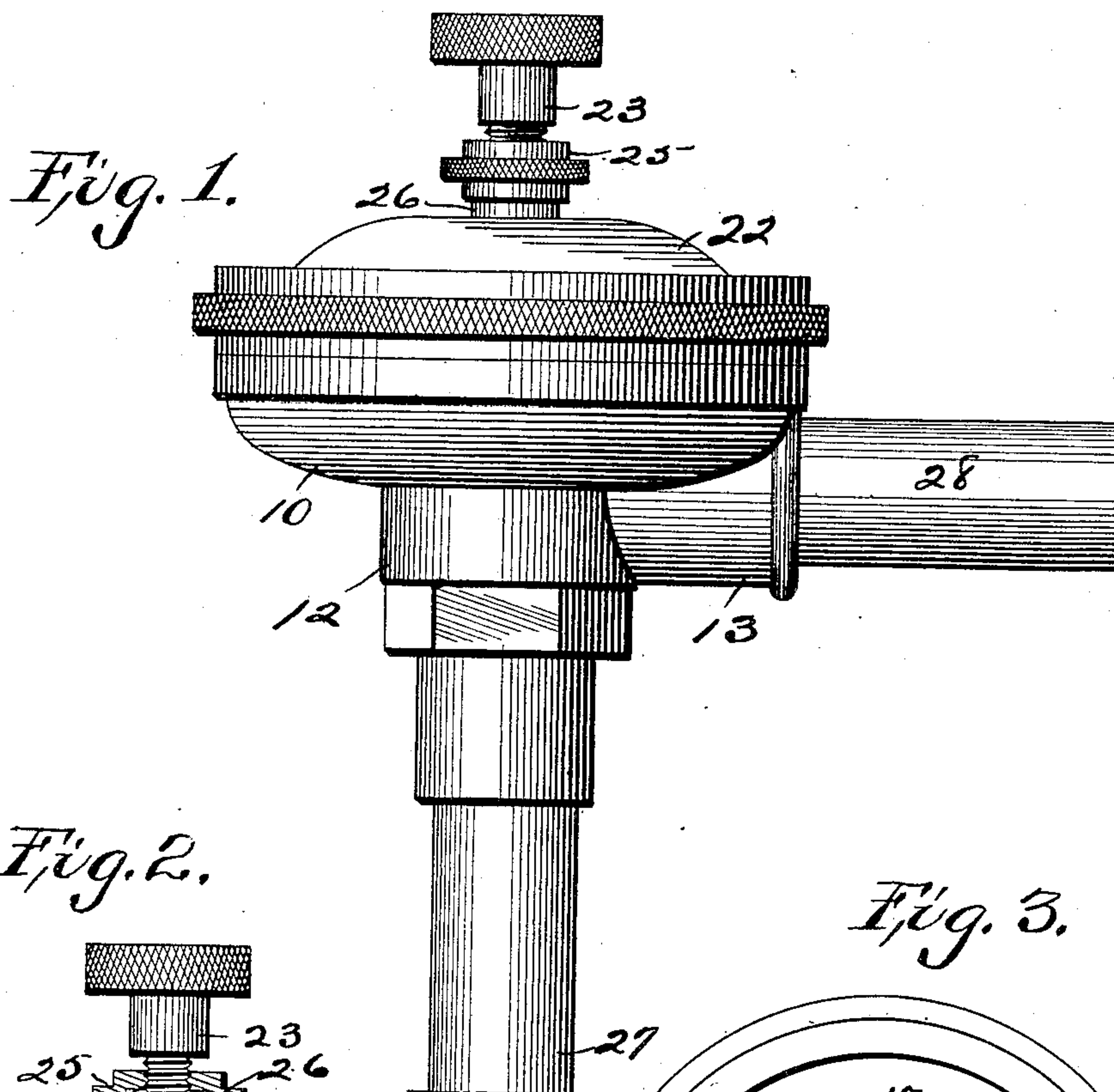


No. 829,901.

PATENTED AUG. 28, 1906.

W. W. STUBBS.  
DRAIN VALVE FOR HEATING SYSTEMS.  
APPLICATION FILED JULY 25, 1905.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

WILLIAM W. STUBBS, OF MARSHALLTOWN, IOWA, ASSIGNOR OF ONE-HALF TO MUNDY AND SCOTT, OF MARSHALLTOWN, IOWA.

## DRAIN-VALVE FOR HEATING SYSTEMS.

No. 829,901.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed July 25, 1905. Serial No. 271,385.

*To all whom it may concern:*

Be it known that I, WILLIAM W. STUBBS, a citizen of the United States, residing at Marshalltown, in the county of Marshall and State of Iowa, have invented a new and useful Drain-Valve for Heating Systems, of which the following is a specification.

My object is, first, to drain condensation-water and air from pipes where steam is used; second, to maintain a uniform heat in a heating system.

My invention consists in the construction, arrangement, and combination of elements and subcombinations, as hereinafter set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the device connected with distributing - pipes extended therefrom at right angles to each other. Fig. 2 is a vertical and transverse sectional view that shows the positions of all the interior parts relative to each other and the chamber of the case in which they coöperate. Fig. 3 is a top view of the case from which the cover is removed and shows how a thermostat inclosed therein is connected with the case and the rotary valve fitted in a vertical bore in the case.

The numeral 10 designates a circular open-topped case that may vary in size as desired. It has a central downward extension 12 and an internal screw in its lower end adapted to receive the end of a service-pipe. A vertical bore extends through the lower part of the center of the case and the extension 12 and terminates at its top with a conical valve-seat. A lateral extension 13 projects at right angles from the extension 12 and terminates at its outer end with an internal screw to admit the end of a discharge-pipe and has a chamber 14 at its inner end, as shown in Fig. 2. A tubular plug-valve 15 is fitted in the bore in the case and provided with a plurality of inclined ports 16, that can be placed in communication with the chamber 14 by rotary motion of the valve. To automatically rotate the valve, a semicircular thermostatic bar 17 is fixed to the case by means of a screw 18 at its outer end or in any suitable way and the other end is adjustably connected with the valve by means of a bar 19, that has a bridle at its free end and a collar 20 on the top of the valve to which the inner end is

fixed, and a pin 21 is extended through the end of the bar 17, as shown in Fig. 3, or in any suitable way. The collar 20 is adjustably and detachably fixed to the valve by means of a set-screw 21<sup>a</sup>. A cover 22 is fitted and detachably fixed on the top of the case 10, as shown, or in any suitable way and provided with a central screw-threaded bore, through which is extended a screw 23. To the lower end of the screw is fixed a spring 24, that engages the top of the valve 15 and serves to retain the valve in its seat, and at the same time the resiliency of the spring allows rotary motion to the valve as required to alternately open and close the ports in the valve that communicate with the chamber. A cap 25 is fitted on the top of the upward extension 26 of the cover 22 to aid in making the cover steam tight. A pipe 27 is fixed to the downward extension 12 of the case 10 to be connected with a service-pipe (not shown) and a corresponding discharge-pipe 28, fixed to the horizontal extension 13.

In the practical use of my invention water of condensation passes up from a service-pipe (not shown) and enters the pipe 27, from whence it passes through the ports in the valve into the chamber 16, and from thence through the discharge-pipe 27 to a tank to be utilized for any purpose desired. The thermostat-bar 17 is hollow and provided with a vent that is closed by a plug 29 to allow alcohol or mercury to be filled in to aid in contracting and expanding the bar for the purpose of automatically operating the valve 15 as required to open and close the ports 16 and when the steam has a high temperature is dry and actuates the thermostatic bar 17 it closes the ports 16.

Having thus set forth the purpose of my invention and the construction and function of each element and subcombination and the arrangement and combination of all the parts, the practical operation and utility thereof will be obvious to persons familiar with the art to which it pertains.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a steam drain-valve, a case having a closed chamber in its top portion, a downward extension having a central bore, a valve-seat at the top of the bore, an annular chamber surrounding the downward extension and a lateral extension communicating



with the annular chamber and a discharge-pipe, a tubular valve fitted in the bore and provided with ports communicating with the valve and the annular chamber in the case  
5 surrounding the valve and means to automatically rotate the valve.

2. In a steam drain-valve, a case having a closed chamber in its top portion, a downward extension having a central bore, a  
10 valve-seat at the top of the bore, an annular chamber surrounding the bore and a lateral extension communicating with the annular chamber and a discharge-pipe, a tubular valve fitted in the bore and provided with  
15 ports communicating with the valve and the annular chamber in the case surrounding the valve and a thermostat inclosed in the case to automatically rotate the valve.

3. In a steam drain-valve, a case having a  
20 closed chamber in its top portion, a downward extension having a central bore, a valve-seat at the top of the bore, an annular chamber surrounding the bore and a lateral extension communicating with the annular  
25 chamber, a tubular valve fitted in the bore and ports communicating with the valve and the annular chamber in the case surrounding the valve, a thermostat inclosed in the case to automatically rotate the valve, a cover on  
30 top of the case, a screw seated in the cover and a spring fixed to the lower end of the screw to contact with the top of the tubular valve fitted in the extension having a central bore.

4. In a steam drain-valve, a case having a closed chamber in its top portion, a downward extension having a central bore, a valve-seat in said extension at the top of the  
40 bore, a lower chamber in the case surrounding the bore in the extension and a lateral extension communicating with said lower chamber, a tubular valve fitted in the bore and ports communicating with the valve and  
45 the lower chamber in the case surrounding the valve, a thermostatic curved bar in the chamber fixed at one of its ends to the case and means at its other end for adjustably connecting it with the tubular valve.

5. In a steam drain-valve, a case having a  
50 closed chamber in its top portion and a concentric downward extension having a central bore, a valve-seat at the top of the bore, a second annular chamber surrounding the bore communicating with a discharge-pipe, a  
55 tubular valve fitted in the bore and ports communicating with the valve and the second annular chamber in the case surrounding the valve, a tubular thermostatic curved bar in the chamber fixed at one of its ends to the  
60 case and its other end adjustably connected with the tubular valve and liquid sealed in the bar.

6. In a steam drain-valve, a case having a

closed chamber in its top portion and a downward extension provided with a central bore  
65 and a conical valve-seat at the top of the bore, a second annular chamber below the first chamber surrounding the bore and a lateral extension communicating with the second annular chamber and a discharge-  
70 pipe, a tubular valve fitted in the bore provided with ports communicating with the tubular valve and the lower annular chamber in the case, a cover on top of the case, a screw seated in the cover and a spring fixed  
75 to the lower end of the screw to contact with the top of the valve, a tubular thermostatic bar in the chamber and fixed thereto at one of its ends, an adjustable collar on the tubular valve, a bar extended from the collar and  
80 provided with a bridle at its free end and a pivot fixed to the end of the bar and extended into the bridle.

7. In a steam drain-valve, a case having a closed chamber in its top portion and a down-  
85 ward extension having a central bore, a valve-seat at the top of the bore, an annular chamber surrounding the bore and a lateral extension communicating with the annular chamber and a discharge-pipe, a tubular  
90 valve fitted in the bore and provided with ports communicating with the valve and the lower annular chamber in the case surrounding the valve, a thermostatic curved bar in the chamber fixed at one of its ends to the  
95 case and its other end adjustably connected with the tubular valve and a service-pipe connected with the lower end of the tubular extension of the case.

8. A steam drain-valve comprising a case  
100 having a closed chamber in its top portion and an integral downward extension provided with a central bore, a valve-seat at the top of the bore, an annular lower chamber surrounding the bore and a lateral extension  
105 communicating with the annular chamber and a discharge-pipe, a tubular valve fitted in the bore and provided with ports communicating with the tubular valve and the lower annular chamber in the case, a cover  
110 on the top of the case, a screw seated in the cover and a spring fixed to the lower end of the screw to contact with the top of the valve, a tubular thermostatic bar in the chamber and fixed thereto at one of its ends,  
115 an adjustable collar on the tubular valve, a bar extended from the collar and provided with a bridle at its free end and a pivot fixed to the end of the bar and extended into the  
120 bridle, arranged and combined to operate in the manner set forth for the purposes stated.

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Witnesses:

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