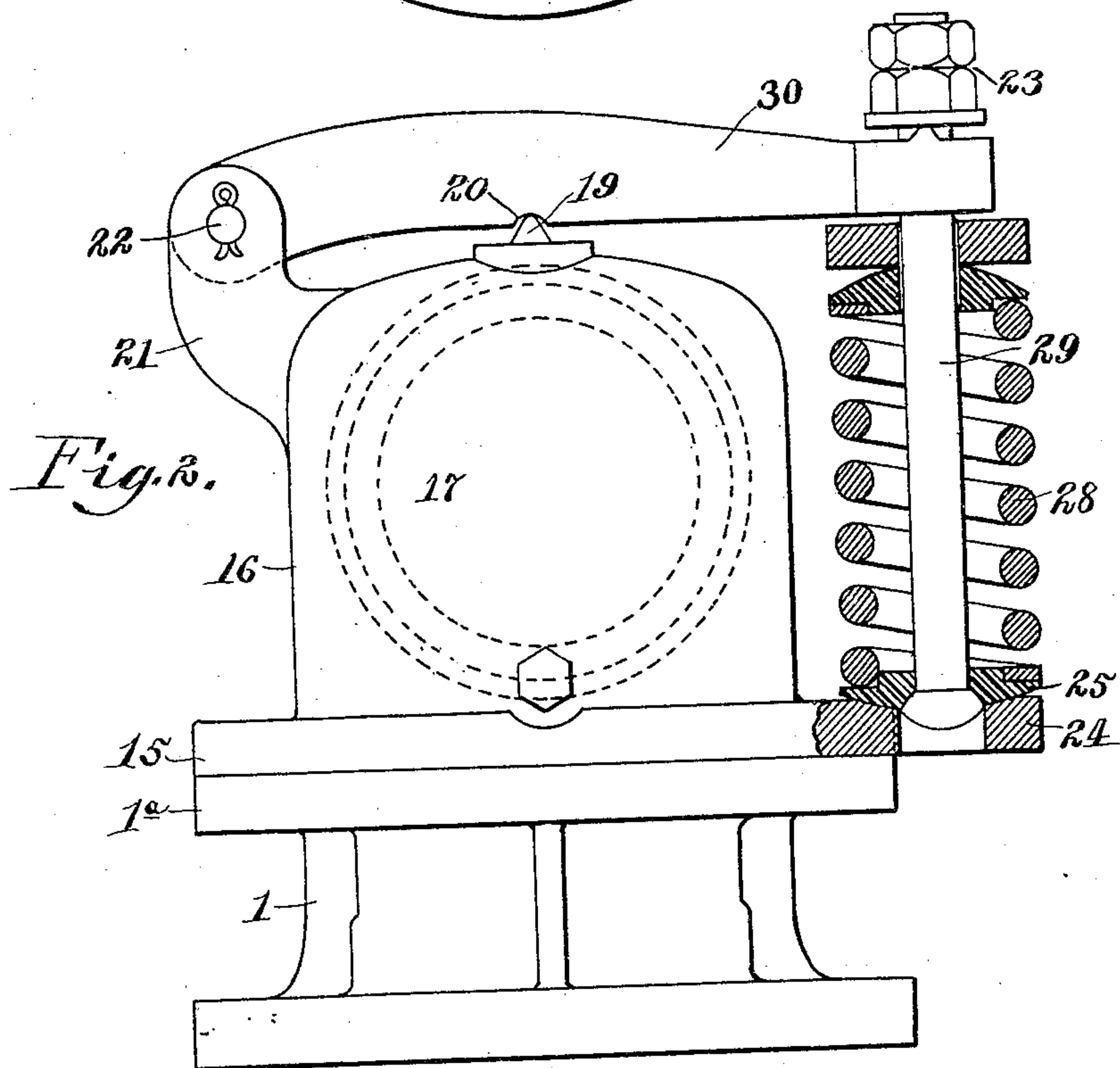
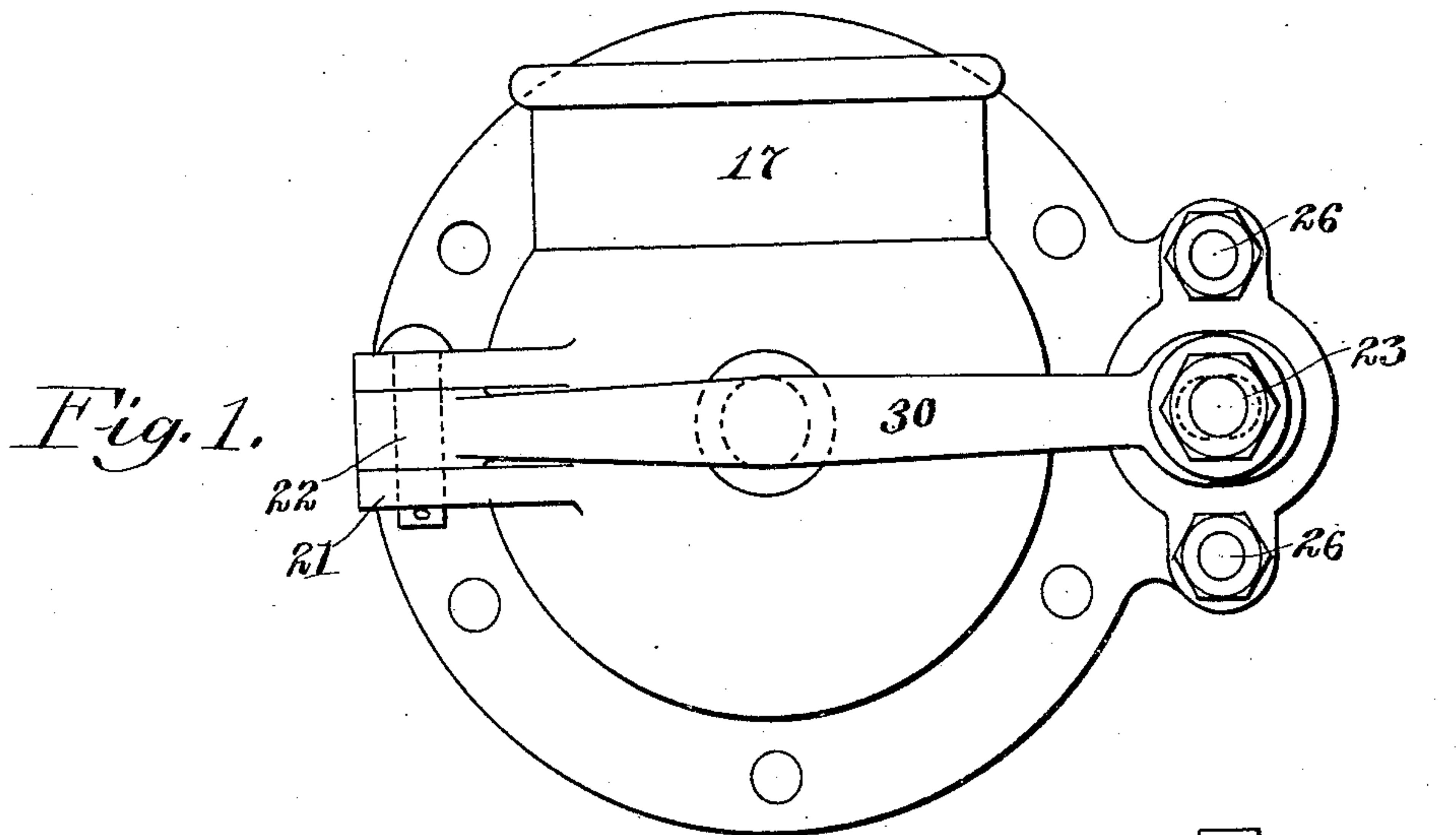


H. C. McCARTY.  
SAFETY VALVE.  
APPLICATION FILED DEC. 7, 1907.

Patented Dec. 28, 1909.  
4 SHEETS—SHEET 1.

944,809.



Witnesses  
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W. O'Neill.

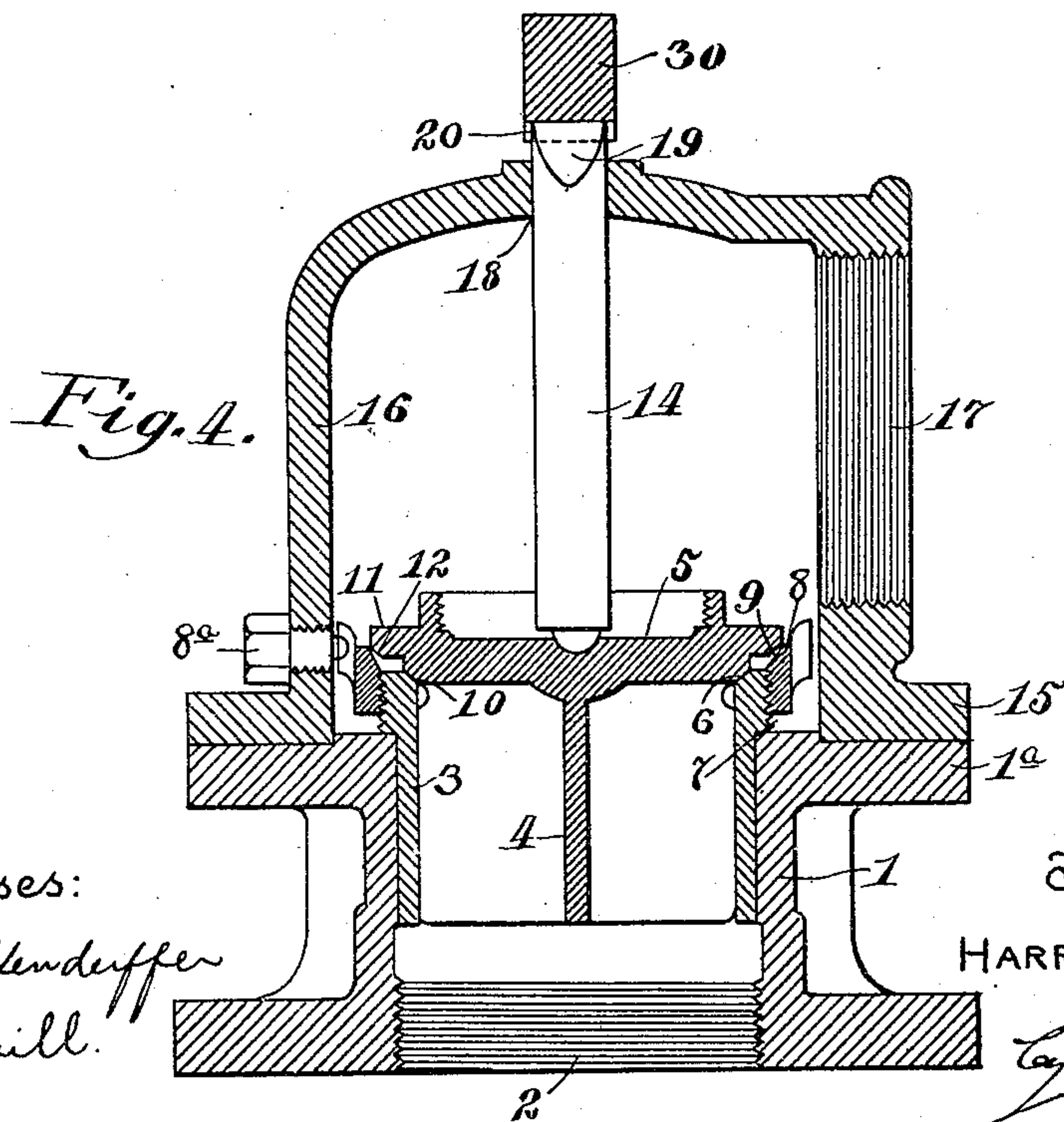
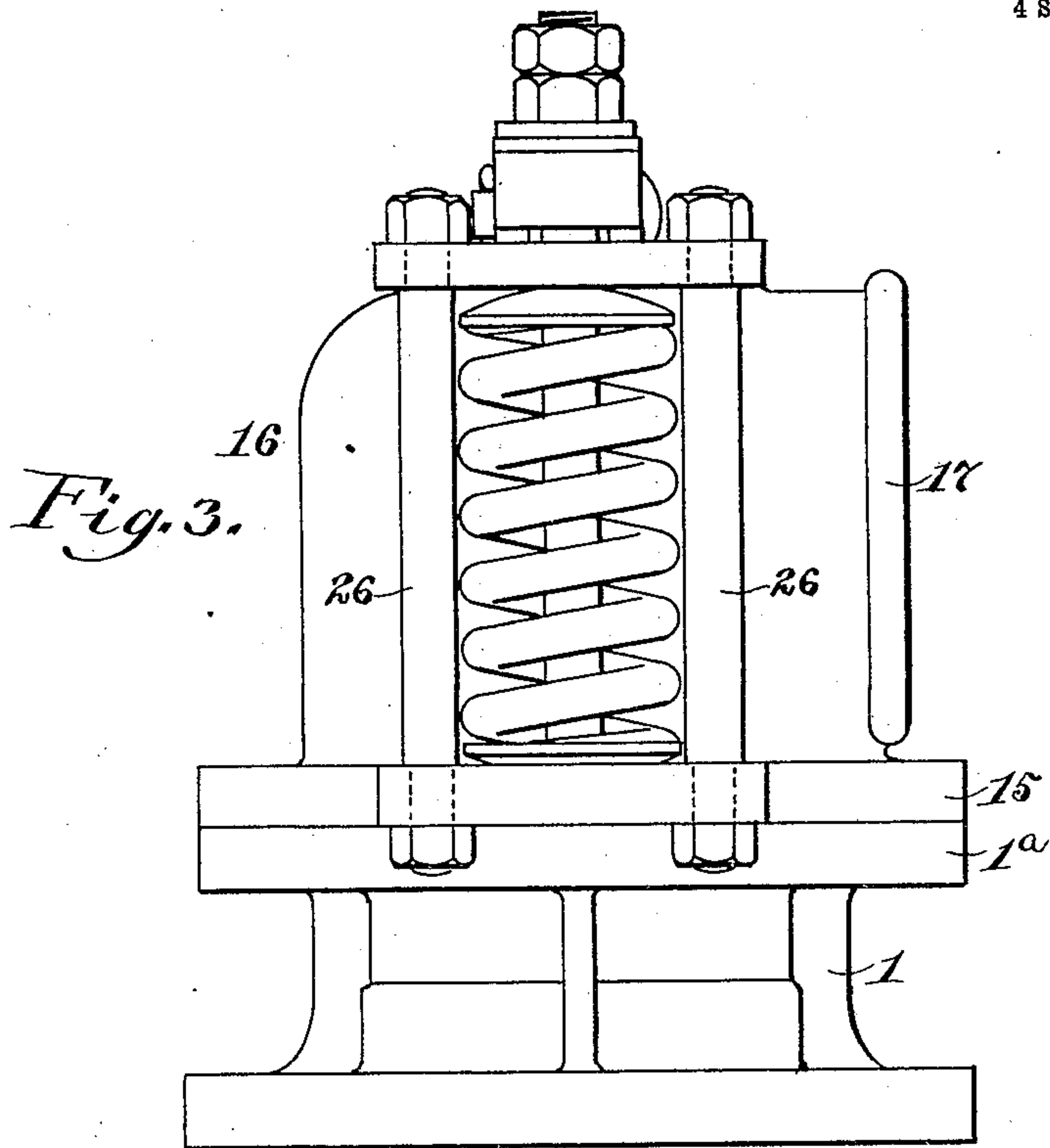
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4 SHEETS—SHEET 2.



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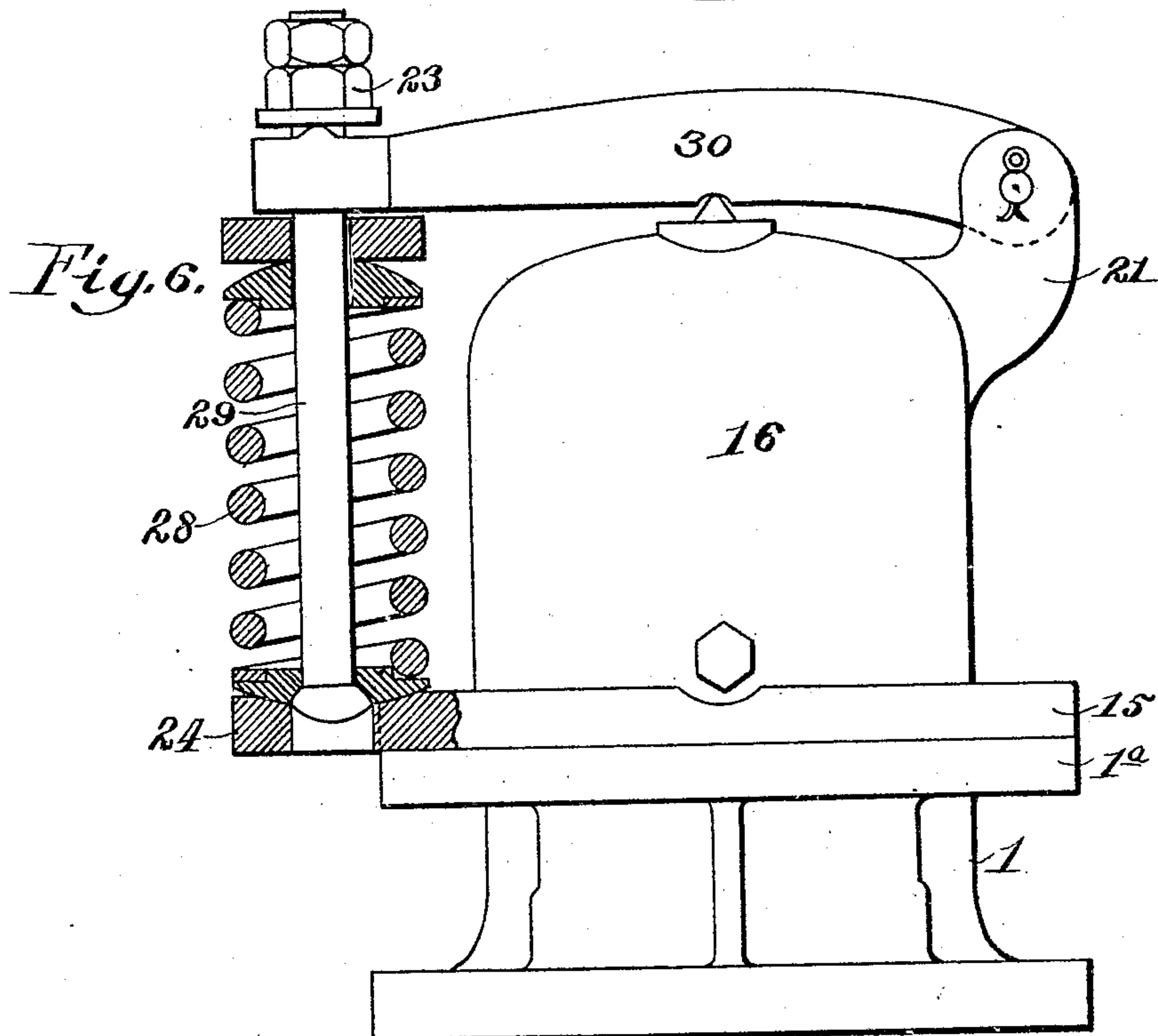
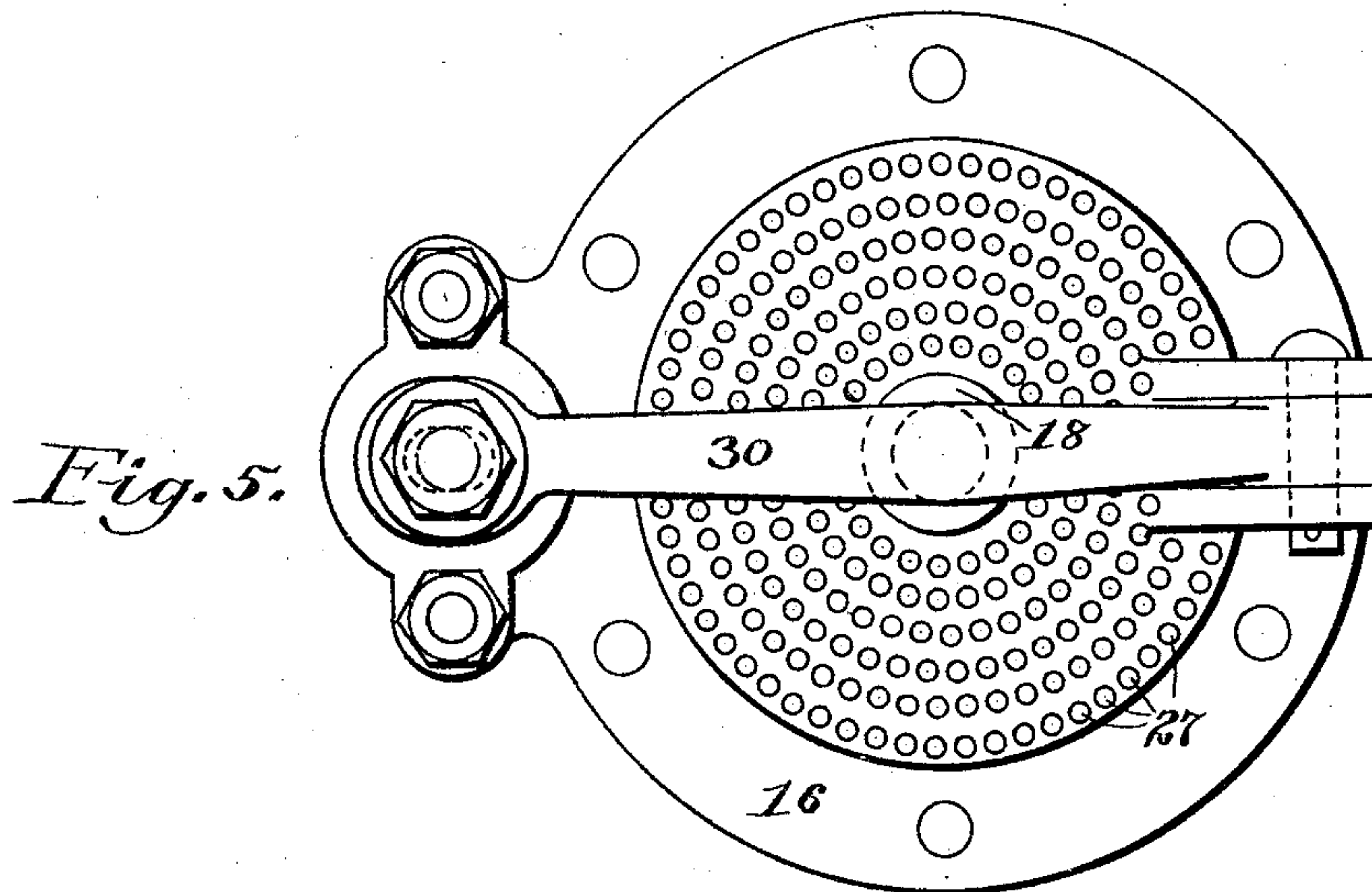
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4 SHEETS—SHEET 3.



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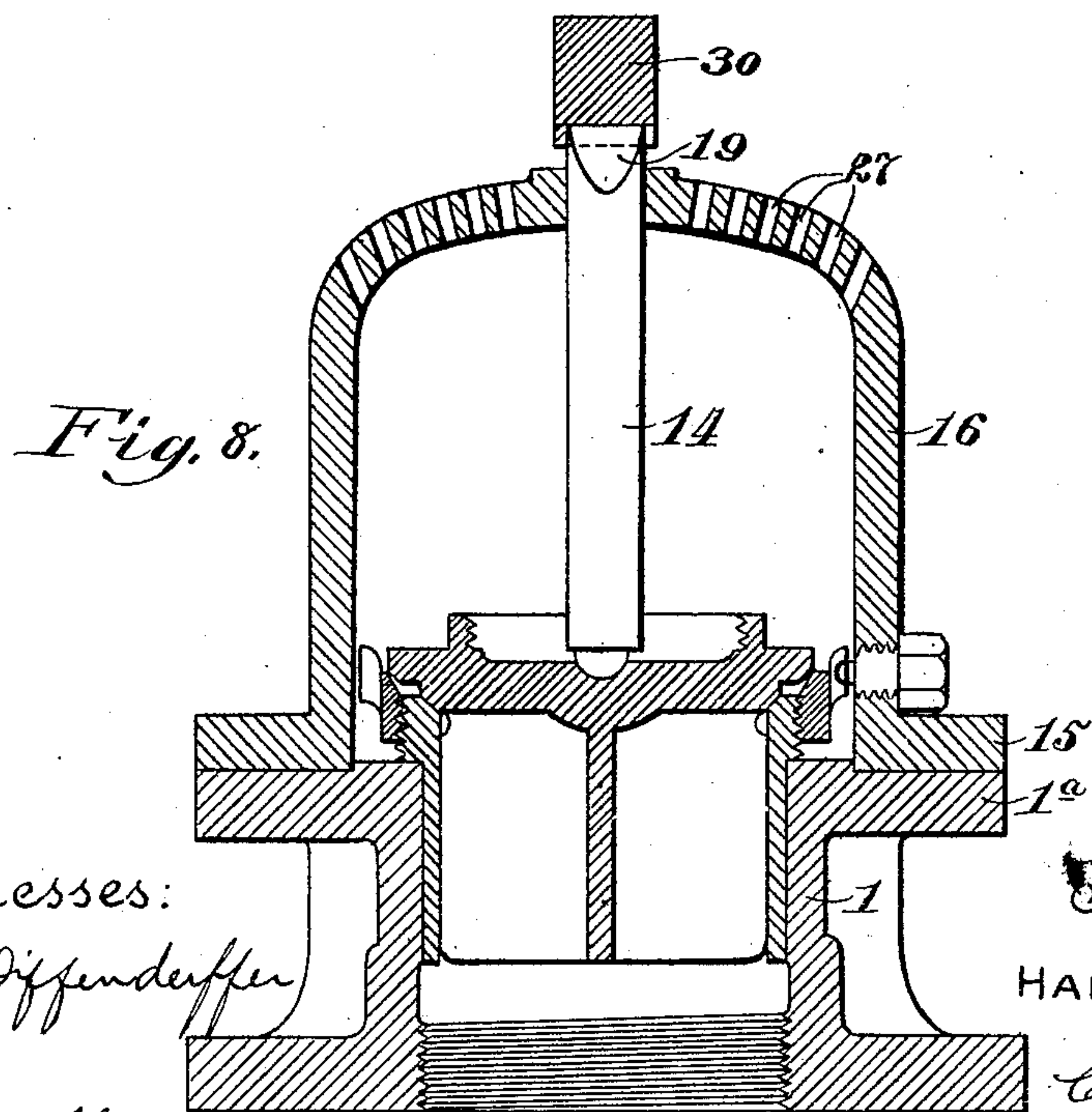
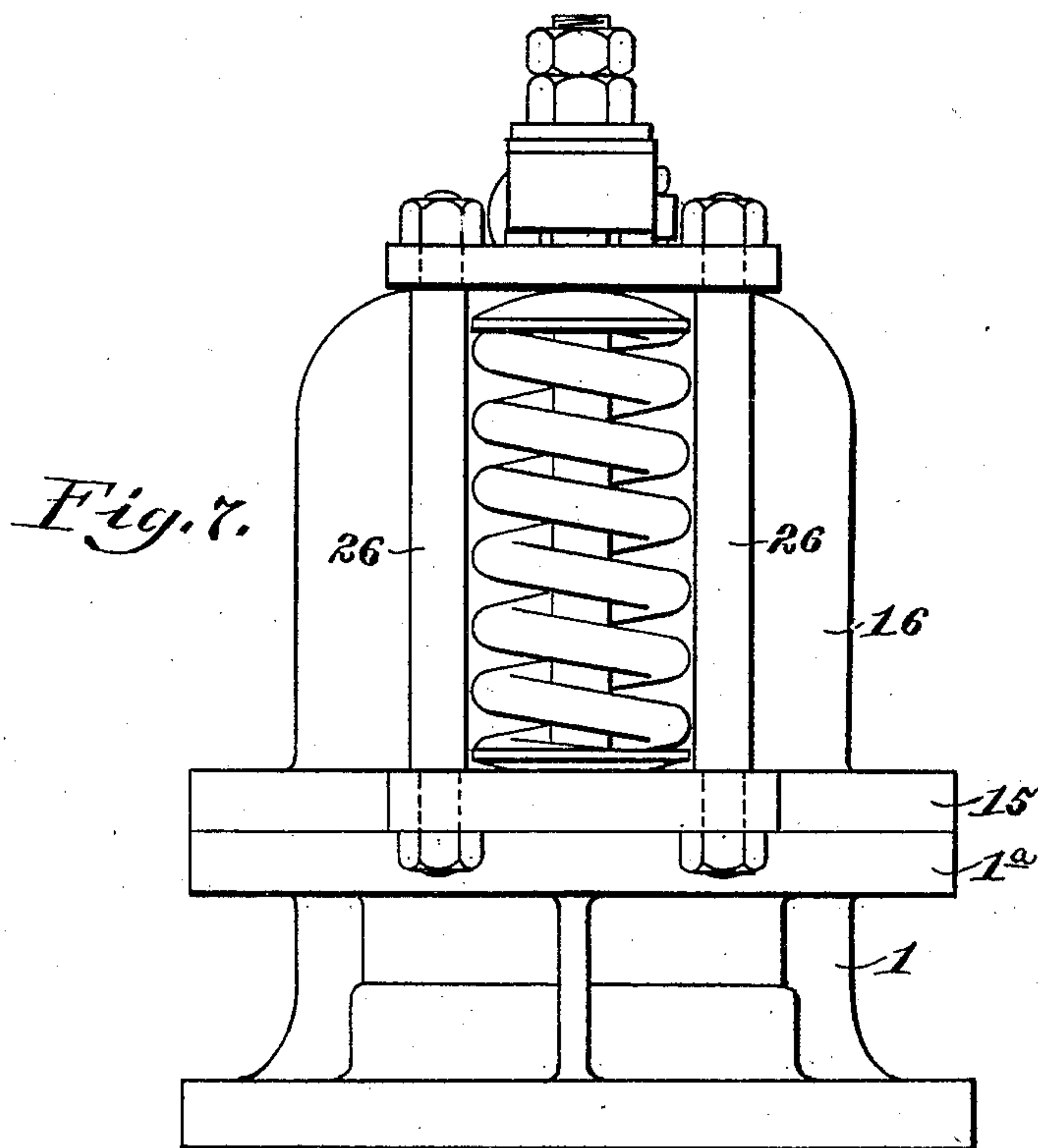


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4 SHEETS—SHEET 4.



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# UNITED STATES PATENT OFFICE.

HARRY C. McCARTY, OF WILLIAMSPORT, PENNSYLVANIA.

## SAFETY-VALVE.

944,809.

Specification of Letters Patent. Patented Dec. 28, 1909.

Application filed December 7, 1907. Serial No. 405,489.

*To all whom it may concern:*

Be it known that I, HARRY C. McCARTY, a citizen of the United States, residing in the city of Williamsport, Lycoming county, State of Pennsylvania, have invented certain new and useful Improvements in Safety-Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to safety valves and has for its object to provide means whereby the usual types of discharge chamber, may in substance be retained while at same time the lever and spring mechanism may be protected against deterioration, if not destruction, from high temperature when the valve is used to govern the pressure in steam superheaters.

To these ends my invention consists of the combination in a safety valve comprising a valve casing, a valve seat, and a valve constructed with a pop chamber between them, of a hood or casing constituting a discharge chamber, whether muffled or otherwise, a lever pivotally connected with the valve within the discharge chamber, with its opposite end extending without said chamber, and a controlling spring governing said lever, which is wholly outside the discharge chamber.

In the employment on steam superheaters, of safety valves of the general types stated, wherein the valve-controlling spring is immediately above the valve and within the steam-discharge chamber, it has been found that the high temperature of the steam, in such use, would speedily draw the temper out of the spring, rendering it unreliable and useless for the purpose for which it was intended and destroying the sensitiveness if not the practical usefulness of the valve. These defects are wholly obviated by my device which is hereinafter described, the novel features of which will be pointed out in the appended claims.

In the accompanying drawings illustrating my invention: Figure 1 is a plan view and Fig. 2 a side elevation of one form of device exemplifying my invention. Fig. 3 is a front view of the same, and Fig. 4 a vertical section thereof. Fig. 5 is a plan view and Fig. 6 a side elevation of the same device constructed with a muffled discharge

chamber; while Fig. 7 is a front view and Fig. 8 a vertical section of the same.

Referring now to said drawings, 1 indicates the lower section of the valve-casing, with its screw-threaded inlet aperture 2, to attach it to steam piping, and it is provided as usual with the guide 3 for the stem 4 of the valve 5, and it has also the usual annular beveled or countersunk valve seat 6, and the exterior screw-threaded portion 7 above the lower casing 1 for the reception of the adjustable ring 8 which has a beveled face forming the upper valve seat 9, the two valve seats 6 and 9 forming between them the usual pop chamber. Means such as screw 8<sup>a</sup> may be employed to adjust the ring 8. The valve 5 has a central depending wing 4 adapted to operatively fit the guide 3, and has an annular beveled face 10 to fit the beveled valve seat 6 and an overhanging flange 11 slightly undercut and having a beveled edge 12 to form, with its seat 9, the huddling or pop chamber.

So far as described the device is not of my invention, and may be varied in detail features without departing from my improvement which relates solely to the discharge chamber and to the means for normally holding the valve to its seat. These features I will now describe.

The valve is held to its seat by means of a spring through the intervention of a vertical rod 14, the lower end of which rests directly or indirectly on the upper surface of the valve, through a disk, and guiding devices may as usual be interposed.

Referring now to Figs. 1 to 4 inclusive it will be observed that the lower section 1 of the valve casing has an annular flange 1<sup>a</sup> upon which rests the coinciding annular flange 15 of the upper section 16 of the valve casing, constituting in itself the discharge chamber, which may be either in the form of a hood with a side outlet discharge as shown in Figs. 1 to 4 or a closed muffling hood with perforated top, as shown in Figs. 5 to 8. Describing the former, it consists substantially of a hood having the form shown in section in Fig. 4, of a depth which, together with its annular flange 15, extending below the plane of the valve and its seat, so that the valve will rise and fall wholly within the hood or upper casing 16. It is provided with a side discharge port



17 which is screw-threaded to connect it to exhaust piping; and with a central aperture 18 in its top wall to admit the free passage therethrough of the valve rod 14, said rod having on its upper extremity a V-head 19 to coincide with a centering slot in the lever 20. The hood 16 has cast upon it, on one side, a bracket 21, suitably recessed to admit a pivot pin 22 passing through it and through the heel of the lever 30, whereby the latter has a pivotal swing over the top of the hood 16. The opposite end of said lever is recessed to admit the passage through it of the upper end of the spring rod 29, a nut 23 being employed to depress this end of the lever and adjust the spring. The annular flange 15 of the hood or upper casing 16 has, formed upon it, at a point on its peripheral edge, opposite to that of the lever bracket, another bracket piece 24 to support the disk plate 25 of the coiled spring 28 and its rod, and the pair of brace rods 26, 26, (see Figs. 1 to 3). A like construction of the hood or upper casing 16 is shown in Figs. 5 and 8, save that the side discharge is omitted, and the hood formed as a closed casing, with a perforated top, as at 27, to form a muffled discharge chamber.

The operation of the device will be readily understood by those skilled in the art, from the description given, and it will be apparent that my new valve will give all the beneficial results of the best types of such valves while its spring mechanism is adequately protected from being injuriously affected by excessive temperature where the device is employed to govern the pressure in steam superheaters.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In a safety valve comprising a casing constructed in two sections having coinciding flanges by which said elements are united, the upper section of the casing operating as a steam-discharge chamber, a valve seat mounted on the lower section, a valve operatively supported thereon, a valve rod actuated thereby, an aperture in the upper section of the casing through which said rod passes, a bracket on said upper section of the casing, a lever pivoted by one end to said bracket and bearing on said valve rod, and means between the opposite end of the

pivoted lever and the flanges of the casing to normally keep the lever depressed and the valve closed.

2. In a safety valve comprising a sectional valve casing, an annularly-flanged lower casing, a valve therein, a superposed upper casing, adapted to operate as a steam-discharge chamber, and having an annular flange coinciding with the flange of the lower casing, a valve rod passing through an aperture in the upper casing, a bracket on the exterior wall thereof, a lever pivotally mounted in said bracket over the projecting end of the valve rod, and spring mechanism acting on the free end of said lever to hold the valve to its seat.

3. In a safety valve, a casing therefor constructed in two sections having coinciding exterior flanges, a valve seat in the lower section, a valve seated thereon, a valve rod adapted to be actuated thereby, an aperture in the upper section through which said rod passes, said upper section adapted to operate as a steam-discharge chamber, a lever pivotally mounted over said upper section and adapted to be actuated by said rod on a rise of the valve, and a spring-controlled rod between the opposite end of said lever and the flange of the upper section of the casing operating to govern said lever to hold the valve to its seat.

4. In a safety valve comprising a sectional valve casing consisting of an annularly-flanged lower section, a superposed upper section having an annular flange coinciding with the flange of the lower section, a valve seat in the latter, a valve operatively mounted on said seat, a valve rod actuated by said rod and passing through an aperture in the top of the upper section of the casing, a lever pivotally mounted by one end on said upper section and bearing on said valve rod, and a spring-controlled rod, exterior of the casing, adapted to hold the lever normally depressed and keep the valve to its seat.

In testimony whereof, I, have hereunto affixed my signature this fifth day of December A. D. 1907.

HARRY C. McCARTY.

Witnesses:

A. M. BIDDLE,  
H. T. FENTON.