

No. 644,328.

Patented Feb. 27, 1900.

H. M. LANE.
ENGINE VALVE.

(Application filed July 26, 1899.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

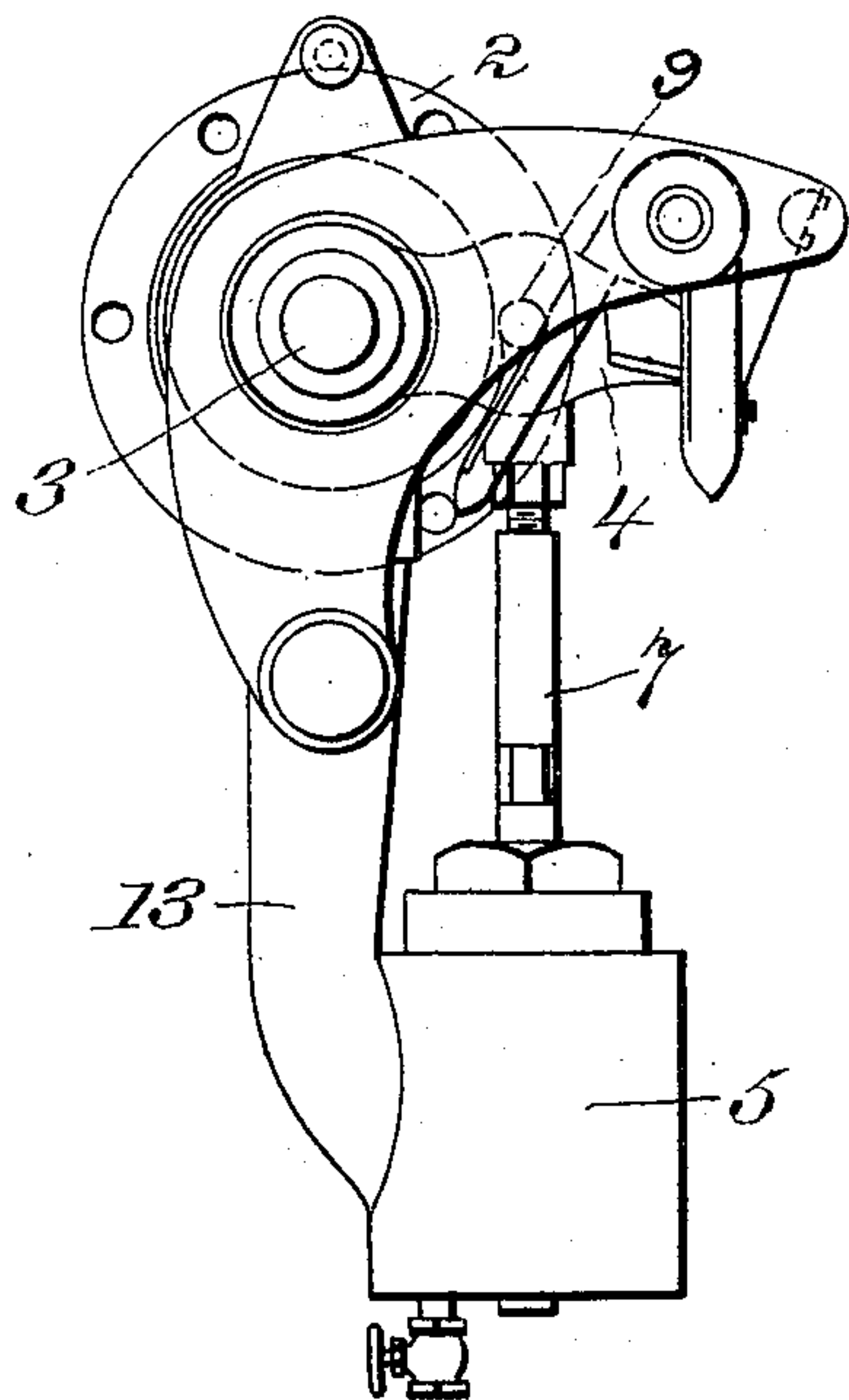


Fig. 2.

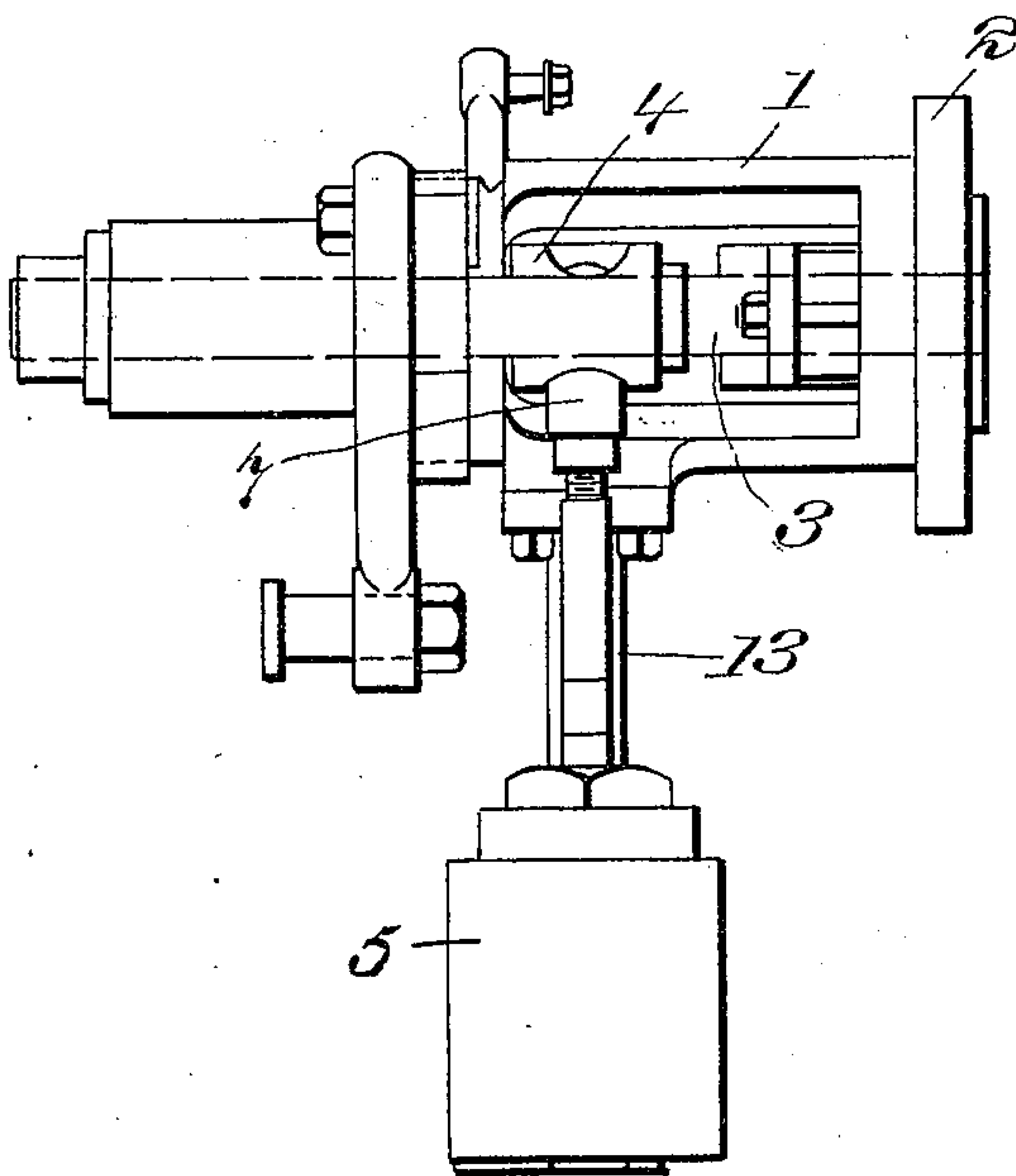
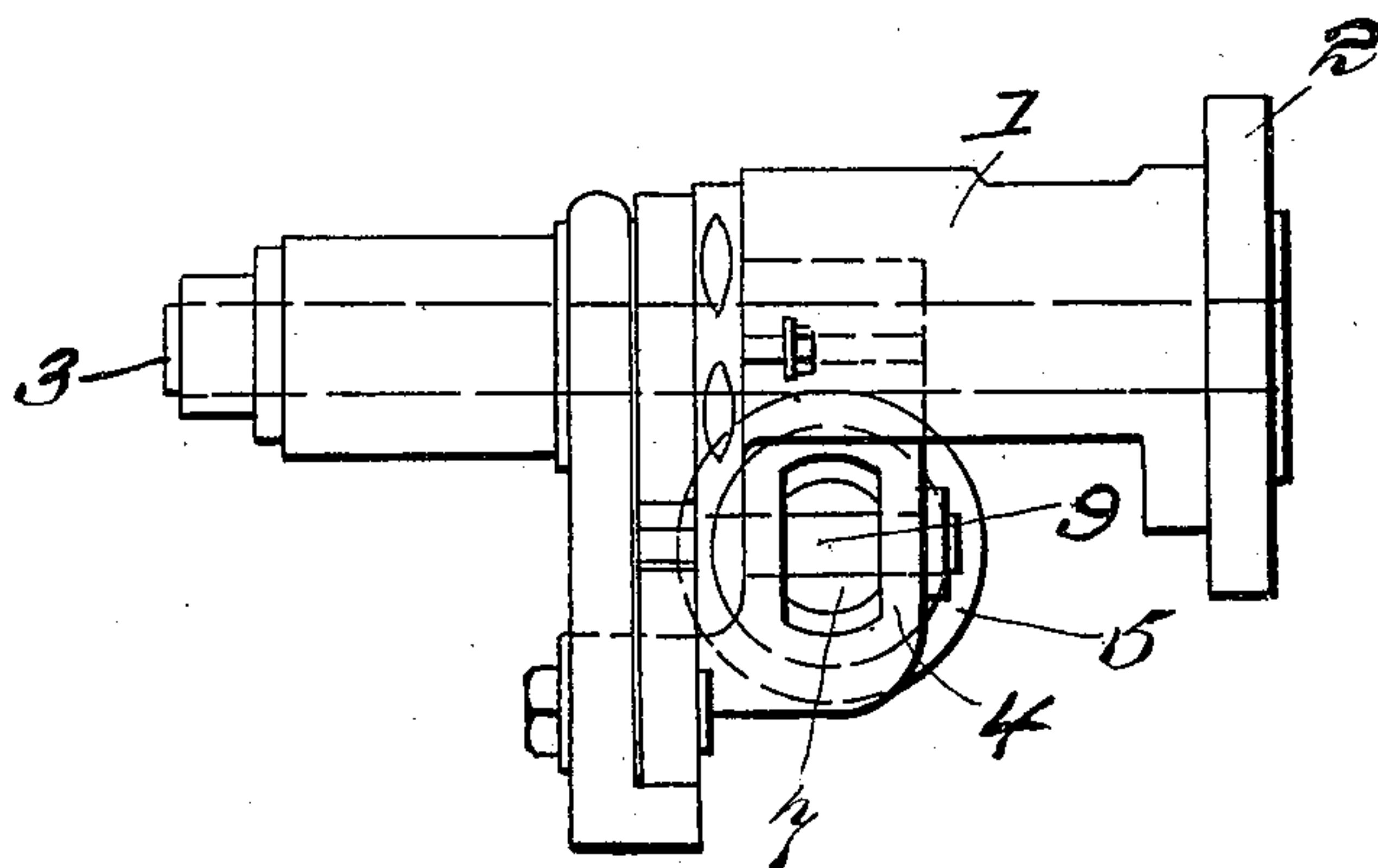


Fig. 3.



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Fig. 4.

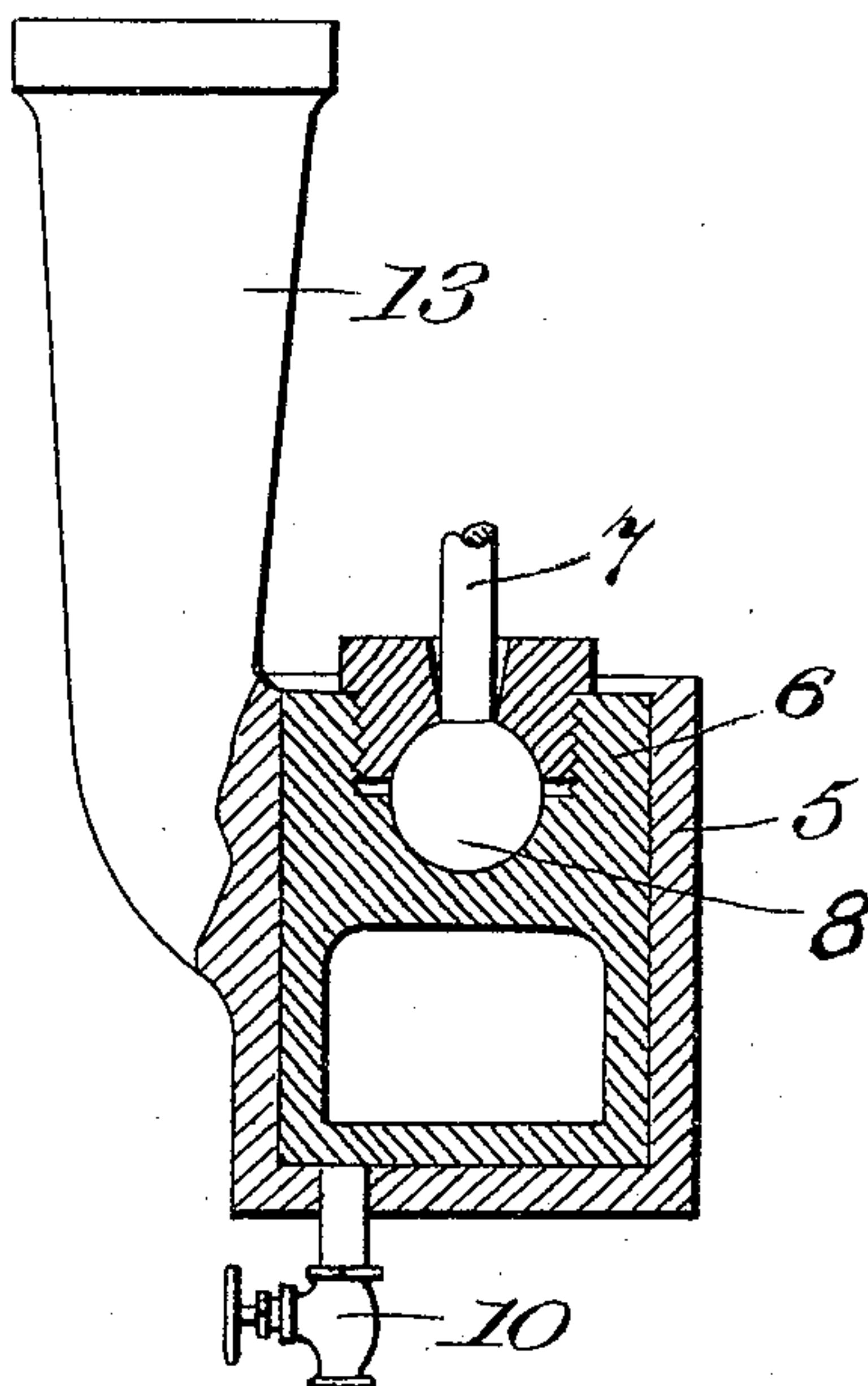
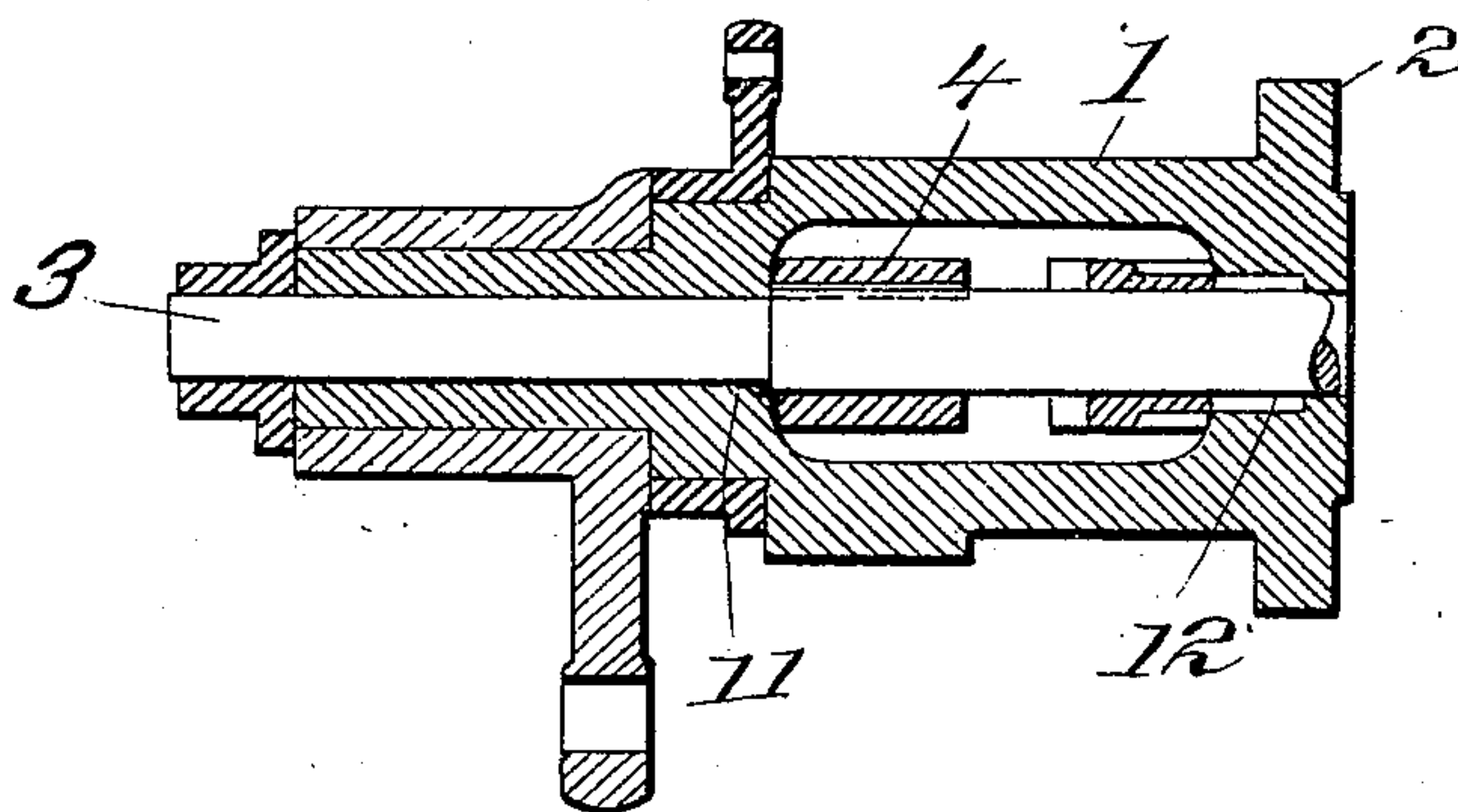


Fig. 5.



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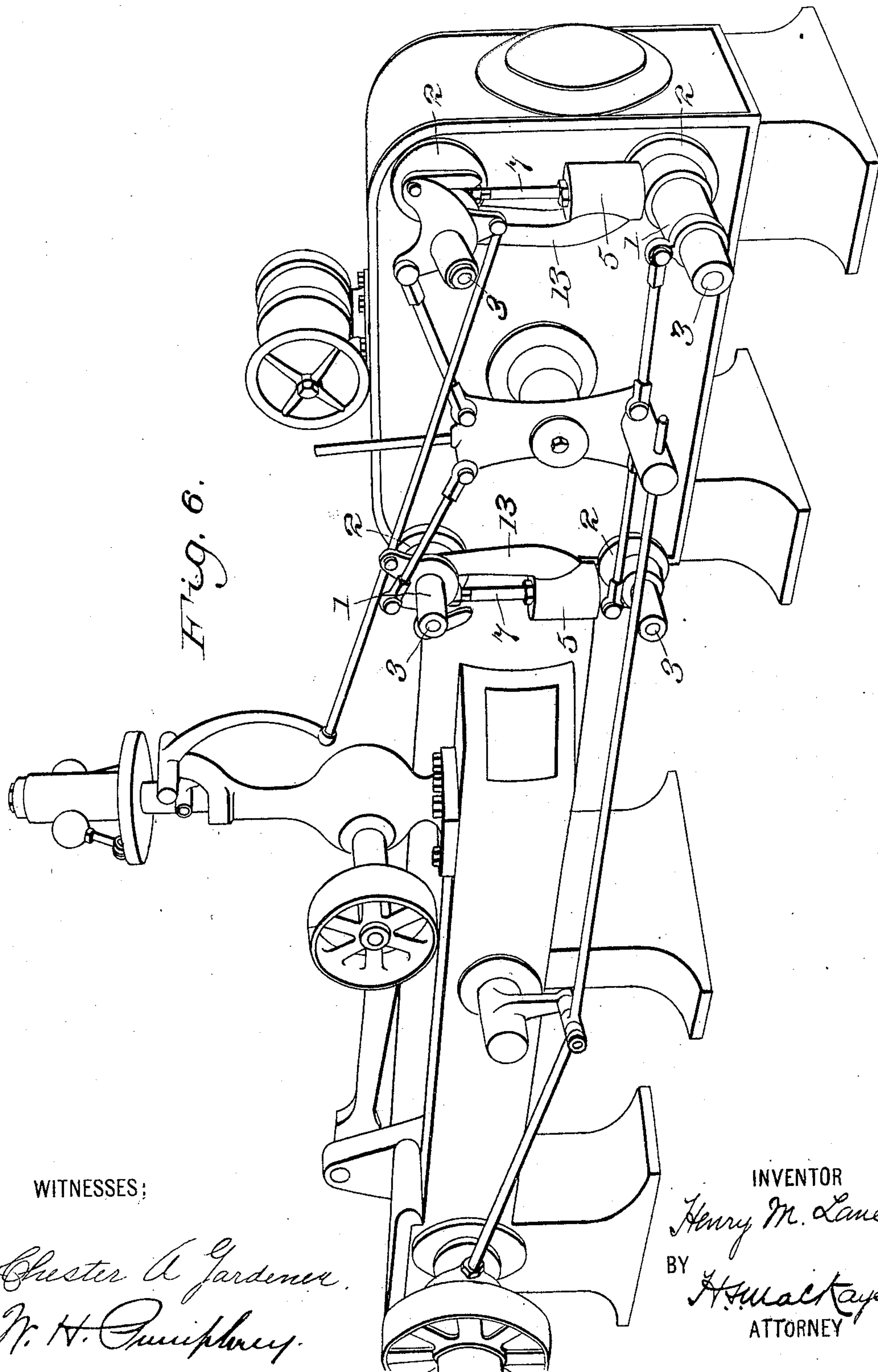
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UNITED STATES PATENT OFFICE.

HENRY M. LANE, OF NORWOOD, OHIO.

ENGINE-VALVE.

SPECIFICATION forming part of Letters Patent No. 644,328, dated February 27, 1900.

Original application filed February 27, 1899, Serial No. 706,911. Divided and this application filed July 26, 1899. Serial No. 725,119. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. LANE, a citizen of the United States, residing in Norwood, in the county of Hamilton and State of Ohio, have invented a certain new and useful Improvement in Corliss-Engine Valves, of which the following is a specification, the same being a division of my pending application, Serial No. 706,911, filed February 27, 1899.

My present invention has relation to improvements in steam-valves for Corliss engines, and more particularly for the steam-admission valves thereof.

The principal objects of my invention are the obviating of twisting stresses in the valve-stem and steam-lever and the prevention of destructive stresses at the valve-bonnet due to changes in dimension following temperature variations in the engine as a whole.

My invention is illustrated in its preferred embodiment in the accompanying drawings, wherein—

Figure 1 is an end view of a Corliss admission-valve embodying my invention. Fig. 2 is an elevation of the same. Fig. 3 is a plan view thereof. Fig. 4 is a sectional view of the dash-pot. Fig. 5 is a horizontal sectional view, and Fig. 6 is a perspective view on a smaller scale, of one form of Corliss engine embodying my improvements.

The usual bonnet is shown at 1, adapted to protect the opening through which the valve-stem projects from the steam-cylinder, the same being attached to the cylinder by means of the flange 2 or otherwise. The valve-stem is shown at 3 and the steam-lever at 4.

I prefer to use a vacuum dash-pot 5 for closing the steam-valve, the preferred construction of which is shown in Fig. 4. In this figure the dash-pot cylinder is shown at 5, and within it is the close-fitting plunger 6. The plunger is connected to the steam-lever 4 by means of the dash-pot rod 7, connected to the plunger preferably through a ball-and-socket joint 8.

As clearly shown in Figs. 2 and 3, I pivot the upper end of the dash-pot rod to the pin 9 within a median aperture in the outer end of the steam-lever. The strains exerted through the dash-pot rod and lever are often very considerable, particularly in high-speed

engines, and this mode of pivoting avoids any twisting effect at the pin.

Owing to variations in lubrication, in packing, and in steam-pressure the appropriate valve-closing force varies considerably. I therefore prefer to proportion the area of the plunger 6 so as to afford an excess of effort with complete vacuum and then provide an opening with a valve 10, whereby the vacuum produced behind the plunger 6 on upward movement may be impaired to a variable and controllable extent. The small amount of air thus admitted is available for cushioning when the plunger descends.

In engines built according to former types of construction there is always a reaction between the steam-lever and dash-pot, passing around through the bonnet and steam-cylinder to the point of attachment to the dash-pot. In order to make these strains self-contained, so that they do not pass through joints or from one piece of mechanism to another, and at the same time to avoid twisting and cantaliver strains on the valve-stem, I attach the dash-pot to the bonnet of the admission-valve, I attach the steam-lever to the valve-stem between two bearings 11 and 12 for said valve-stem, and I attach the plunger-rod to the steam-lever in the median vertical plane of the latter, all as best shown in Figs. 2 and 5.

In my preferred construction I employ a supporting-arm on the bonnet of the admission-valve, and upon the said arm is borne the dash-pot, which governs said admission-valve. The supporting-arm is shown at 13 in Figs. 1, 4, and 6 particularly. By this arrangement the likelihood of variations in distance between the valve-stem and dash-pot due to changes in temperature is reduced to a minimum. These variations when they occur give rise to leakage and other serious difficulties and accidents. Furthermore, this arrangement confines all reactions between the valve parts to small compass easily reached.

As plainly shown in Figs. 2 and 5, the bonnet affords an inner and an outer bearing for the valve-stem, as indicated at 14 and 15. By overcoming cantaliver strains on the valve-stem this construction reduces the danger of accidents and defects in operation due to bending or breaking at this point.

I prefer to employ a bifurcated end 17 on the steam-lever and to let the forked end straddle the upper extremity of the plunger 16. By this means the plunger strains are
5 brought in the vertical median plane of the steam-lever and twisting effort is avoided.

What I claim is—

In an engine of the Corliss type, an admis-

sion-valve, a bonnet therefor having a depending arm, a rotatable valve-stem and a 10 steam-lever thereon; in combination with a dash-pot carried by said depending arm.

HENRY M. LANE.

Witnesses:

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J. J. TICK.