

No. 686,976.

Patented Nov. 19, 1901.

R. W. KELLY & H. T. HAZARD.

AIR RETAINING VALVE.

(Application filed Nov. 15, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1

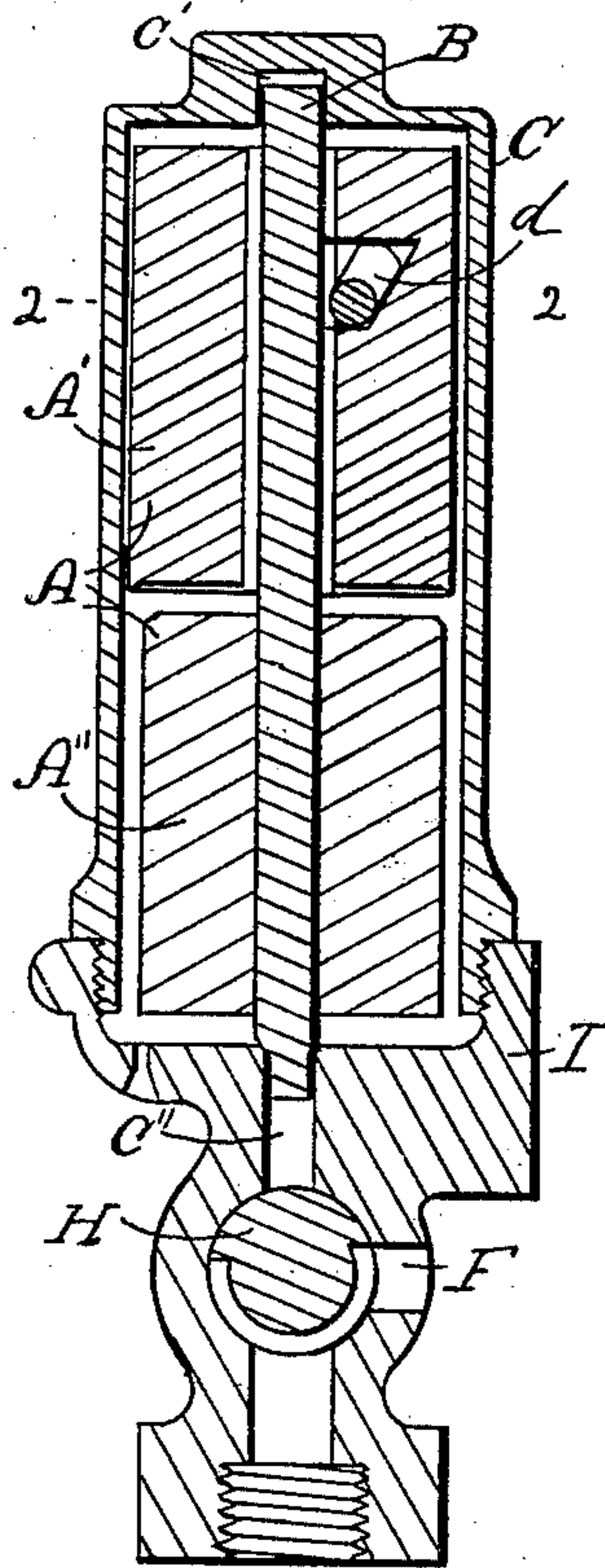


Fig. 2.

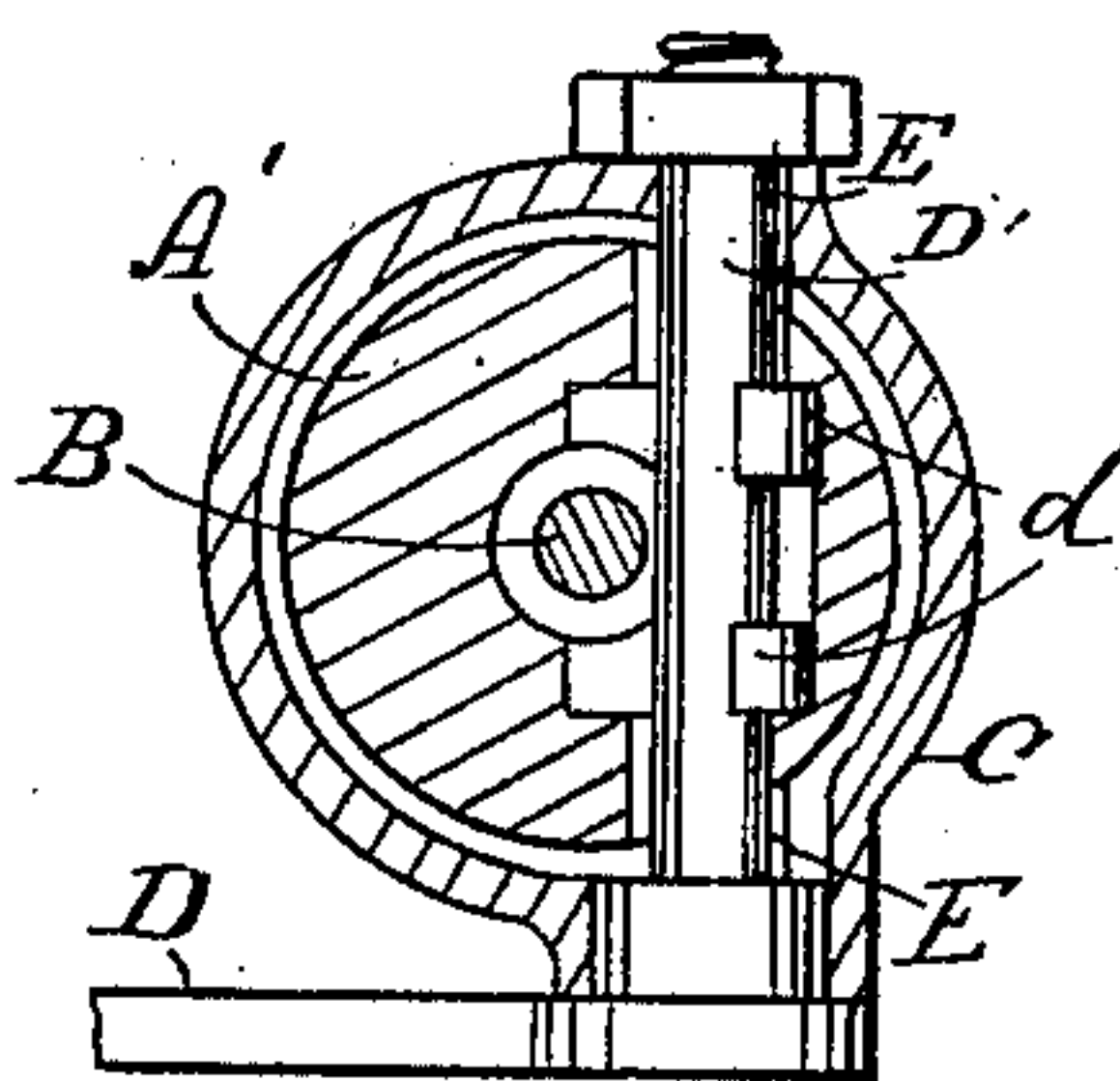


Fig. 3.

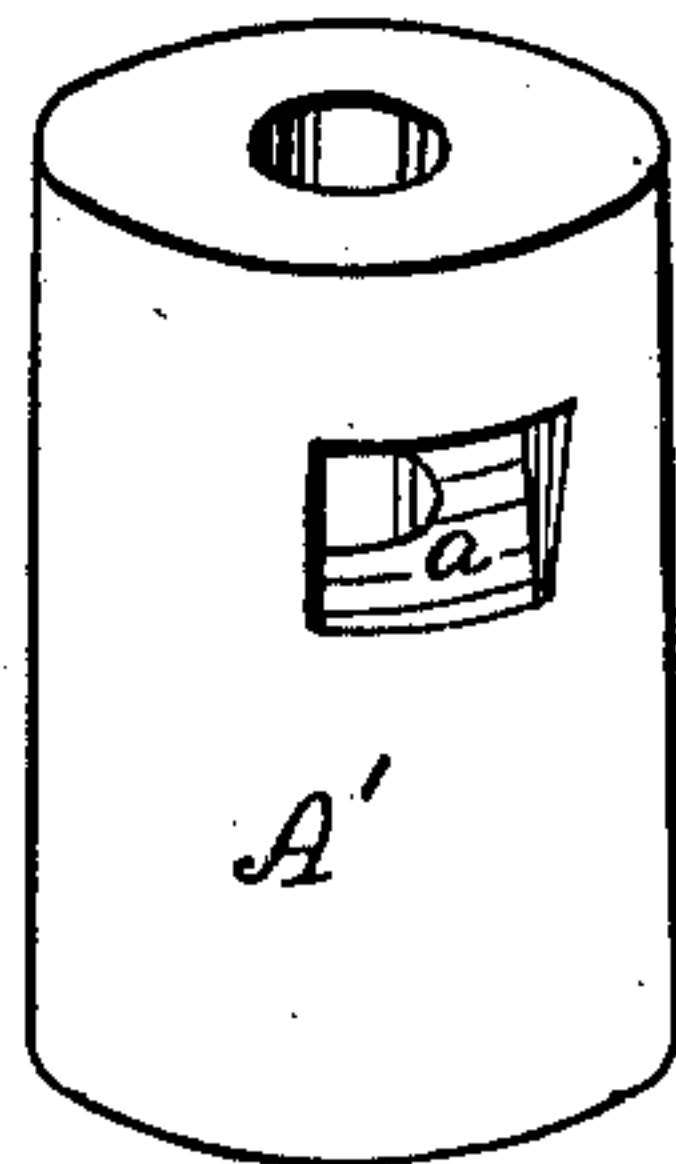
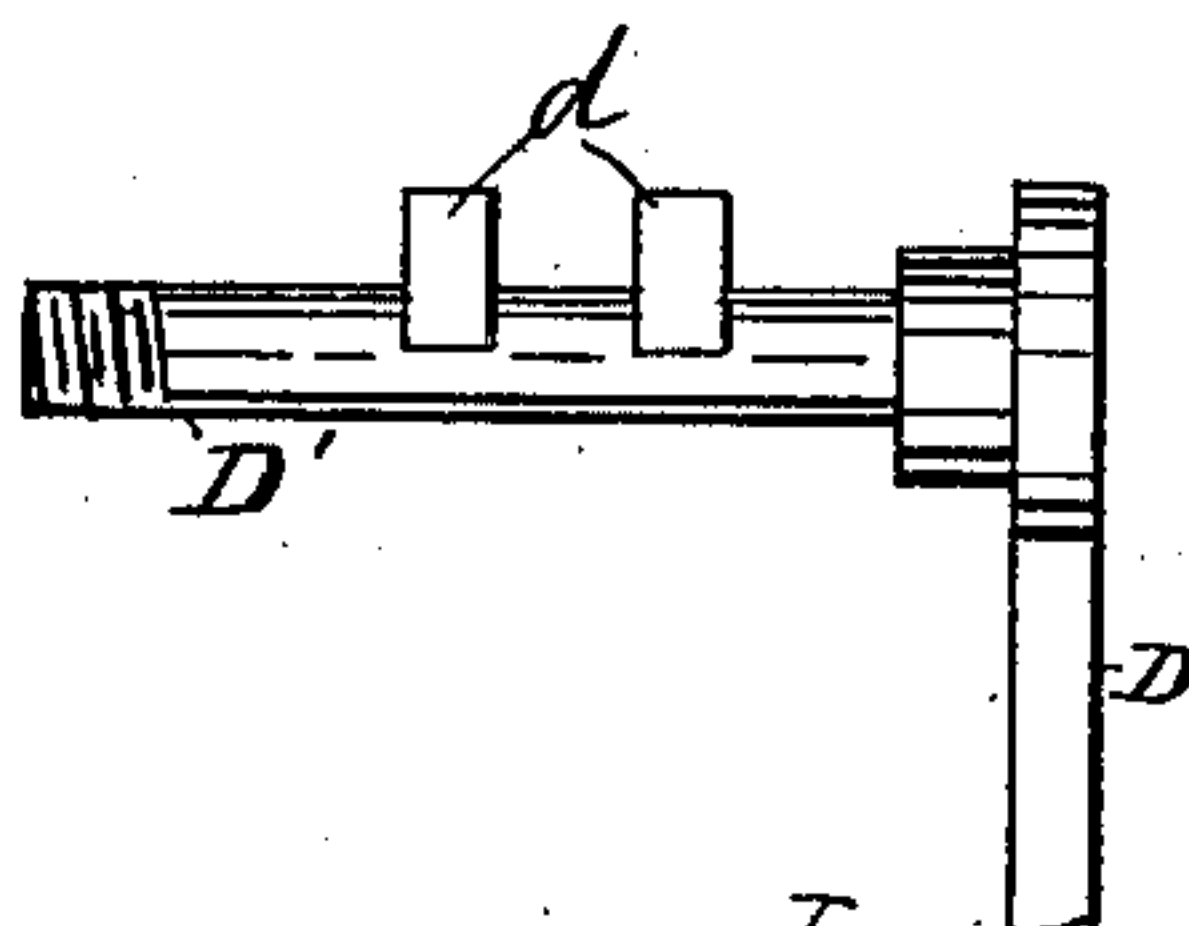


Fig. 4.



Witnesses

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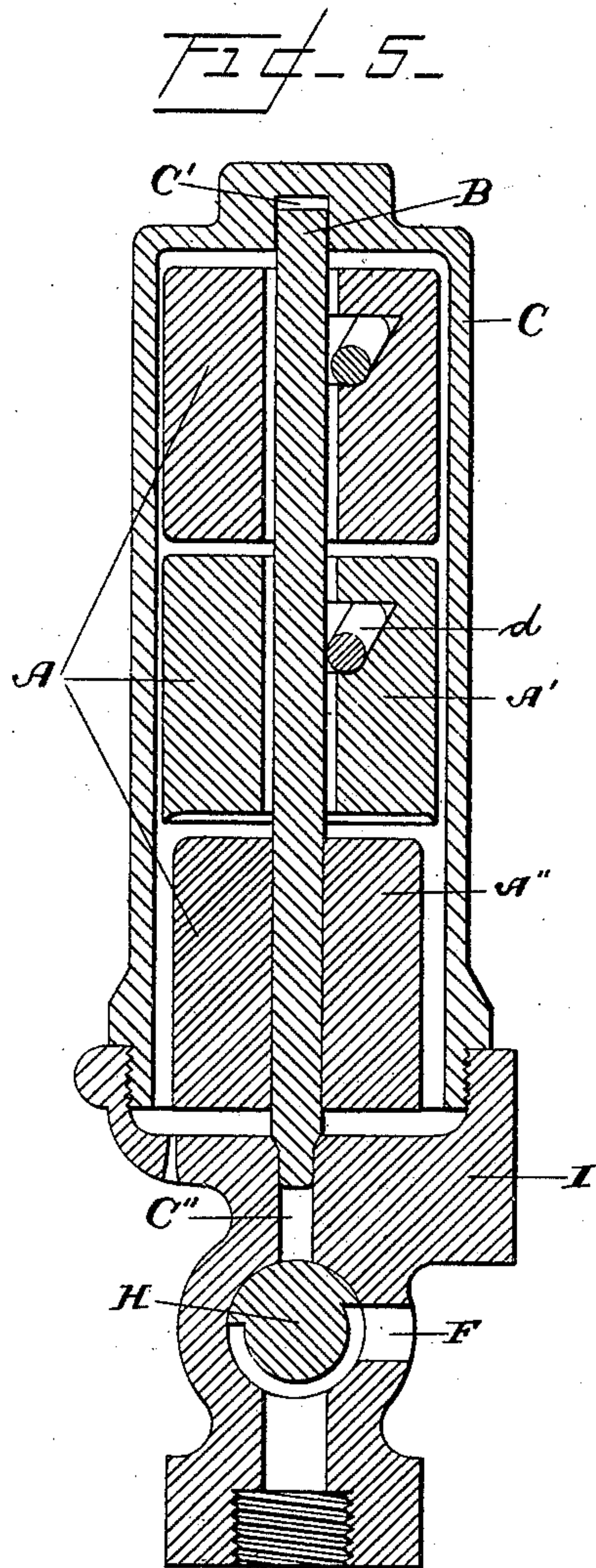
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2 Sheets—Sheet 2.



WITNESSES

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# UNITED STATES PATENT OFFICE.

RICHARD W. KELLY AND HENRY T. HAZARD, OF LOS ANGELES,  
CALIFORNIA.

## AIR-RETAINING VALVE.

SPECIFICATION forming part of Letters Patent No. 686,976, dated November 19, 1901.

Application filed November 15, 1899. Serial No. 737,126. (No model.)

*To all whom it may concern:*

Be it known that we, RICHARD W. KELLY and HENRY T. HAZARD, citizens of the United States, residing at the city of Los Angeles, in the county of Los Angeles, State of California, have invented new and useful Improvements in Air-Retaining Valves, of which the following is a specification.

Our invention relates to improvements in retaining-valves used on railway-cars in connection with the automatic air-brake; and it consists in modifying the well-known pressure-retaining valve located on the exhaust of the triple valve, so that the amount of air retained in the brake-cylinder when the auxiliary reservoirs are being recharged may be increased or diminished, as required; and the object is to provide a pressure-retaining valve in which the pressure retained in the brake-cylinder (when the auxiliary reservoir is being recharged) may be increased for a loaded car. We accomplish this object by the mechanism herein described, and illustrated in the accompanying drawings, forming a part hereof, in which—

Figure 1 is a central longitudinal section, and Fig. 2 is a cross-section taken on line 2 2 of Fig. 1. Fig. 3 is a perspective view of the valve-stopper. Fig. 4 is a detail view of the valve-raising crank-shaft. Fig. 5 is a central longitudinal section showing a plurality of removable weights.

Our valve is similar to the ordinary retaining-valve, except that the weighted valve-stopper is divided into two or more parts, these parts resting one above the other and provided with means to elevate each part from the other parts and from the bottom part, to which the valve-stem is affixed, and the usual discharge-port is dispensed with, the air passing out through the openings in the casing where the valve-stopper-raising mechanism is journaled.

We have shown in the drawings a weighted valve-stopper A, divided into two parts A' and A'', the lower part A'' being rigidly affixed to and carrying the valve-stem B, and the upper part A' having a loose working fit on this valve-stem and resting on the lower division A''. The valve-stem terminates at its upper end in a socket C' in the valve-casing

C, while the lower end terminates in the valve-opening C'' and forms the valve-seat. The valve-casing is screwed into the usual frame I, in which is placed the usual three-way valve H. The upper half of the stopper is provided with means to raise it from and prevent it resting on the lower half when used on empty cars, as follows: It has a transverse hole *a* passing through it for the reception and operation of the shaft D' of the crank D. This shaft is provided with two lugs *d d*, adapted to elevate this half of the stopper up and out of the reach of the lower half of the stopper when the crank D is thrown down and the lugs up, as shown in the drawings. This will then relieve the valve-stopper of the weight of the upper half when the brake would be adapted for an empty car, the lower half only retaining the pressure; but if the car is loaded the lever is reversed, so that the lugs will be thrown on the lower side of the shaft. Then the upper half of the stopper will fall upon and rest on the lower half and add its weight to the lower half, thereby retaining the necessary amount of pressure in the brake-cylinder to properly apply the brakes while the auxiliary reservoir is being recharged. We have dispensed with the usual discharge-port in the casing above the valve-seat, for the reason that sufficient air will escape between the shaft D' and the bearings in which it works for all practical purposes. The rotation of this journal will prevent the openings from becoming clogged. It will be observed that when the valve H is in the position shown in Fig. 1 (this is the same valve and operates in the same way as ordinary pressure-regulating valves) the air from the brake-cylinder has a free passage to the outer air through discharge-port F. This is the position in which this valve is kept except previous to descending the grade, when the valve H is turned so as to close port F, when the air will pass into the valve-chamber C and raise the valve-stopper A' therein and escape therefrom through the openings E.

Under the system now in use the usual pressure-retaining valve on a car equipped with the automatic air-brake has a single valve-stopper weighted in proportion to the



amount of pressure which it is desired to retain in the brake - cylinder—usually fifteen pounds to the square inch. Now this amount will not lock the wheels of an empty car; but it is ample for braking purposes on empty cars; but when the car is loaded this braking capacity is not sufficient to safely control the car on a long downgrade when the train may acquire a dangerous momentum while the auxiliary reservoirs are being recharged and before the brakes can be reapplied. Therefore to prevent the train containing the loaded cars from obtaining unnecessary momentum during this period we have provided the improved pressure-retaining valve herein shown which can be set to retain a minimum pressure for empty cars or a maximum pressure for loaded cars, as the case requires, whereby the train, loaded or unloaded, is at all times under the control of the engineer.

Having described our invention, what we claim as new is—

1. In an automatic air-brake, a pressure-retaining valve having a weighted valve-stopper divided into two or more parts and means to throw these different parts onto the part containing the valve-face.

2. A pressure-retaining valve for use on air-brakes comprising a valve-casing, a weighted valve-stopper in said casing divided into two or more parts, means to elevate these different parts and thereby prevent them from resting on each other, substantially as shown and described.

3. A pressure-retaining valve comprising the frame I having three-way valve H mounted therein, a valve-opening C' leading therefrom into the valve-chamber, the valve-casing C screwed into said frame, a weighted valve-stopper on said chamber adapted to close said valve-opening and divided into two or more parts A' and A'', a crank D having crank-shaft D' attached thereto, and being provided with weighted valve-elevating lugs

d, d, the said crank-shaft being fitted in suitable openings in the upper part of the valve-stopper, the lower part of the stopper being provided with a valve-stem passing through superimposed parts of the valve-stopper and terminating in a socket in the upper part of the casing.

4. An air-retaining valve having a divided valve-stopper, one division thereof resting above the other division, the lower division having a valve-stem the lower end projecting down into the valve-opening and the face thereof resting on the valve-seat, the upper end of the stem passing centrally through the superimposed divisions and terminating in a socket in the upper part of the valve-casing to keep the divisions in central alinement, a crank-shaft passing through each of the upper divisions and adapted to elevate said divisions from the divisions below.

5. The combination in a pressure-retaining valve of the casing and frame thereof, of a weighted valve-stopper divided into parts and means to elevate the parts.

6. In combination with the ordinary pressure-retaining valve used on automatic car-brakes, extra weight for the valve-stopper, the said extra weight having central openings for the passage therethrough of the valve-stem, and means to elevate the extra weights.

7. A pressure-retaining valve for use on empty or loaded cars, having a valve-stopper provided with a number of weights and means to throw these weights on or take them off the stopper as desired.

In witness that we claim the foregoing we have hereunto subscribed our names, this 8th day of November, 1899, at Los Angeles, California.

RICHARD W. KELLY.  
HENRY T. HAZARD.

Witnesses:

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