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PATENTED FEB. 5, 1907.

E. J. FERRIS.  
CYLINDER COCK FOR LOCOMOTIVES.  
APPLICATION FILED APR. 5, 1906.

Fig. 1.

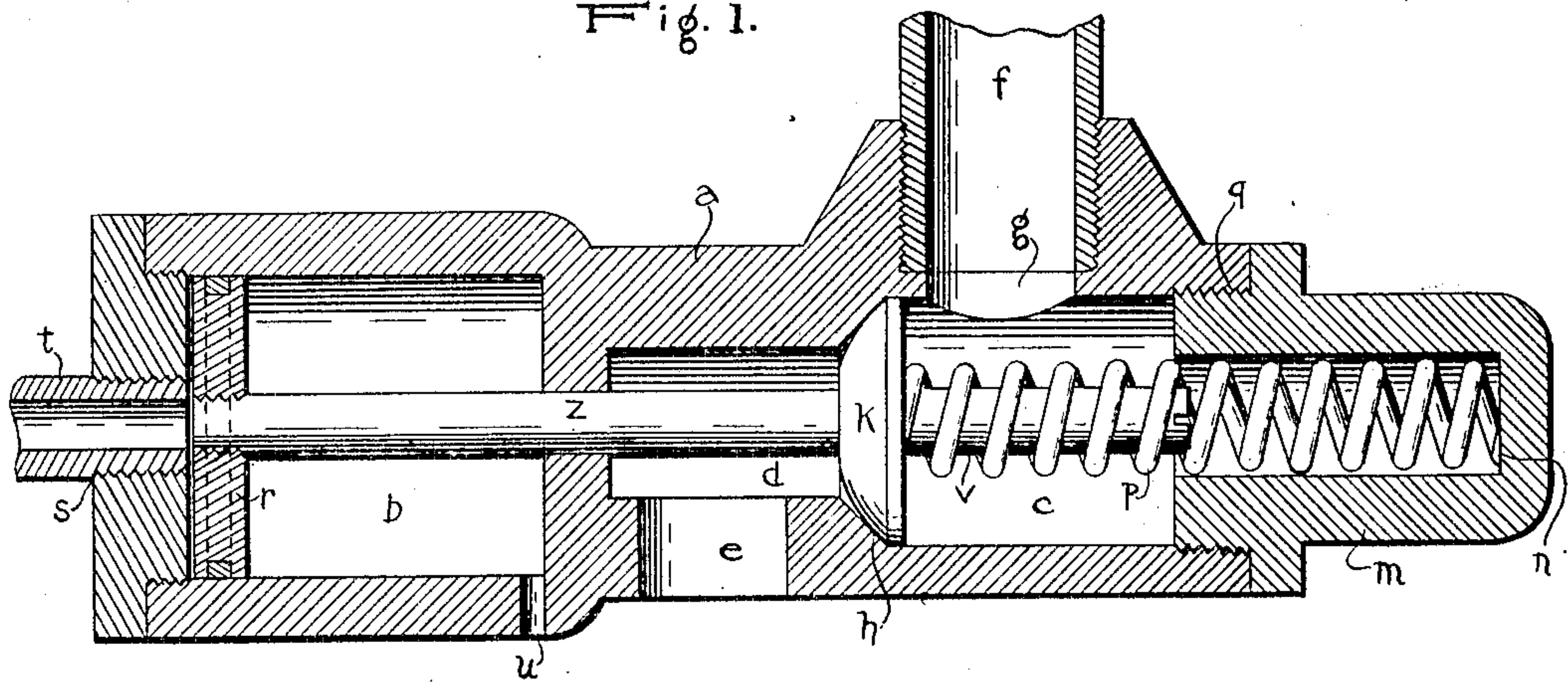


Fig. 2.

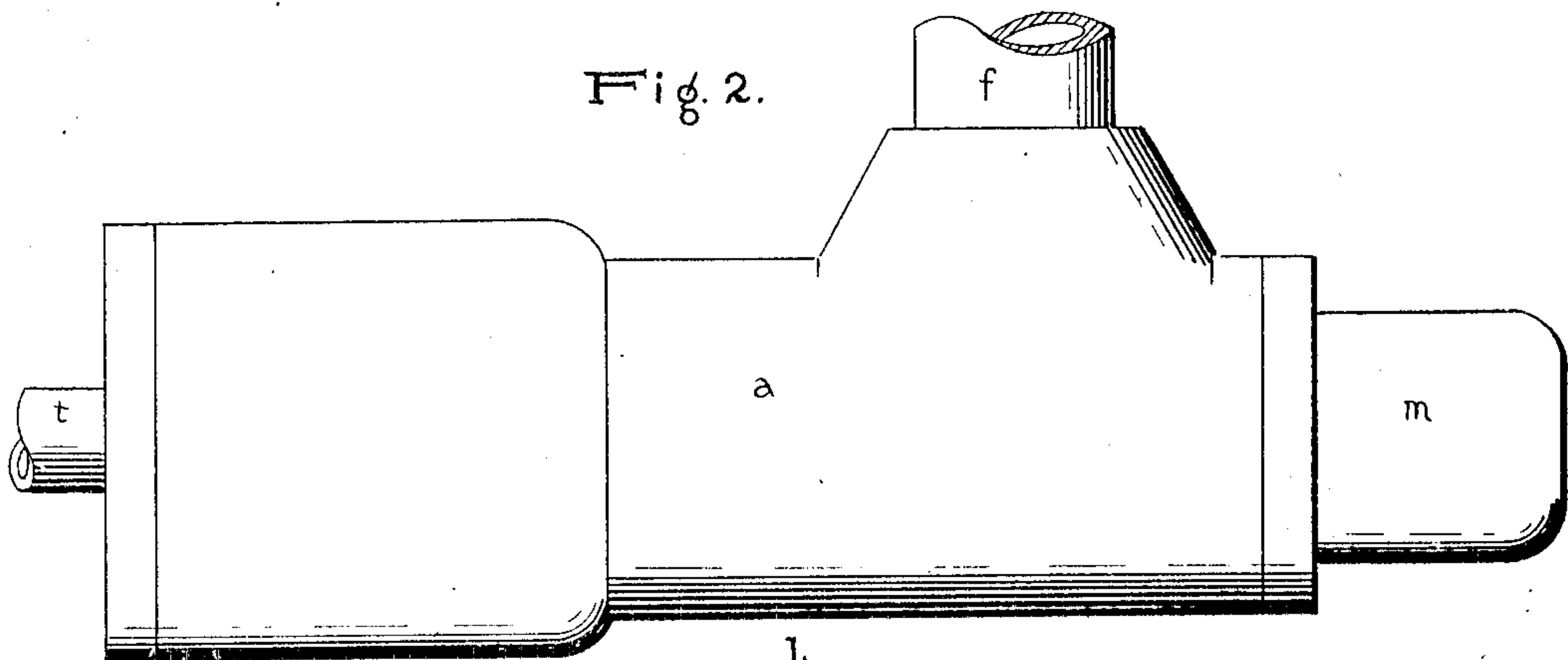
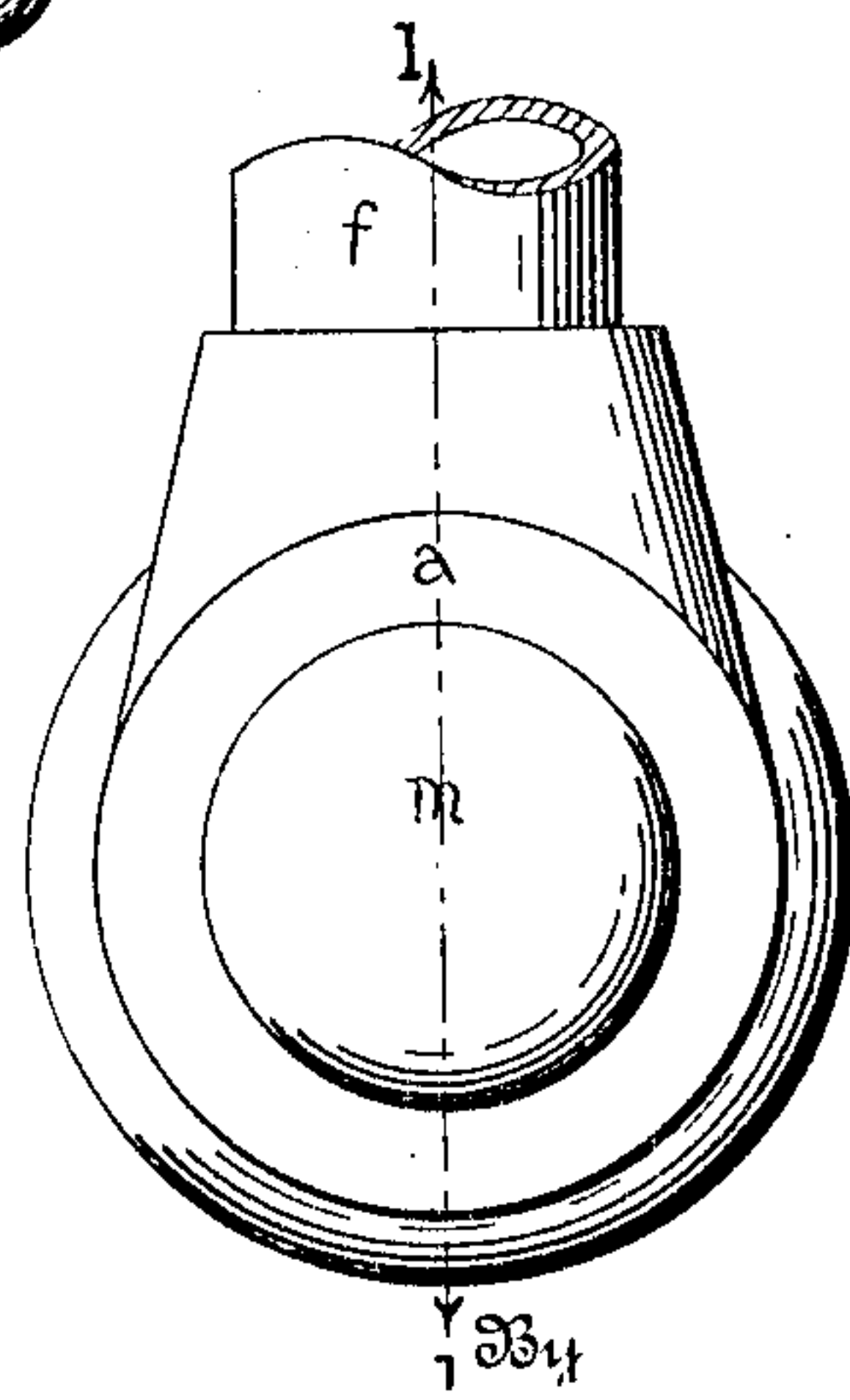


Fig. 3.



Witnesses

Stuart Hilder.  
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# UNITED STATES PATENT OFFICE.

EDWARD J. FERRIS, OF SALTVILLE, VIRGINIA.

## CYLINDER-COCK FOR LOCOMOTIVES.

No. 843,391.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed April 5, 1906. Serial No. 310,056.

*To all whom it may concern:*

Be it known that I, EDWARD J. FERRIS, a citizen of the United States, and a resident of Saltville, in the county of Smyth and State of Virginia, have made a certain new and useful invention in Cylinder-Cocks for Locomotives; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use the invention, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a section on the line 1-1, Fig. 3, showing the invention as applied. Fig. 2 is a side view. Fig. 3 is an end view.

The invention has relation to cylinder-cocks for locomotives; and it consists in the novel construction and combinations of parts, as hereinafter set forth.

In the accompanying drawings, illustrating the invention, the letter *a* designates the body of the device, which consists of the small valve-cylinder *b* and in axial line therewith a valve-chamber *c*, the cylinder *b* and chamber *c* being connected by the neck-passage *d*, which is provided with an exhaust-opening *e*.

The locomotive-cylinder is connected to the device by means of a pipe *f*, the end of which engages a threaded opening *g* in the wall of the chamber *c*. At one end of the chamber *c* next the passage *d* is provided a valve-seat *h*, of bevel form, for the valve *k*, and at the other end of this chamber is an extension-cap *m*, which is provided with a seat *n* for the spring *p*, which engages the valve *k*. This extension-cap is designed to be connected with the body of the device by thread engagement, as indicated at *q*.

The stem *z* of the valve *k* extends axially in the cylinder *b*, passage *d*, and chamber *c*, and is provided with a piston *r* in the cylinder *b*, as well as with the valve *k* in the chamber *c*. The distance between the valve *k* and the piston *r* is such that when the valve *k* is on seat the piston *r* is at the farther end of the cylinder therefrom. Through this end of the cylinder is made a threaded perforation *s* for the engagement of a small pipe *t* for the admission of air or steam. This perforation *s* is made in the center of the end of the cylinder, as indicated, so that when air or steam is admitted through the pipe *t* it will properly actuate the piston, moving it to the other end

thereof. This movement of the piston not only pushes the valve *k* off its seat, but pushes it to the other end of the chamber *c* beyond the opening *g*, which communicates with the locomotive-cylinder, thereby opening communication between the latter cylinder and the open air through the exhaust-opening *e*. An air-escape opening is provided in the cylinder *b* at *u*. An extension *v* beyond the valve *k* in line with the stem *z* serves to engage the spring *p* and hold it in proper position in the chamber *c*.

In operation it is designed to connect these cylinder-cocks in a locomotive by means of their pipes *t* to a pipe running to the cab of the locomotive, this pipe being immediately connected to an air or steam supply. The cocks are thus placed under the control of the engineer. When he admits air or steam to the cylinder *b* back of piston *r*, this piston will be forced to the opposite end of its cylinder, thereby moving the valve *k* and opening the passage between the locomotive-cylinder and the atmosphere. When the air or steam is cut off, the spring operates to replace the valve on its seat and to return the piston to its normal position.

Having described the invention, what I claim, and desire to secure by Letters Patent, is—

1. A cylinder-cock for locomotives, having a cylinder provided with an opening at one end for a fluid-pressure pipe connection, a valve-chamber integral with said cylinder having a valve-seat, and an opening for a steam-pipe connection, a chamber integral with said cylinder intermediate of said valve-chamber and the cylinder having an exhaust-opening, a piston working in said cylinder, a valve mounted upon an extension of the rod of said piston working in said valve-chamber past the opening thereof for a steam-pipe connection, and a valve-closing spring.

2. A cylinder-cock for locomotives, having a cylinder provided with an opening at one end for a fluid-pressure pipe connection, a valve-chamber integral with said cylinder having a valve-seat and an opening for a steam-pipe connection, a chamber integral with said cylinder intermediate of said valve-chamber and the cylinder having an exhaust-opening, an end cap at the other end of the cylinder having a spring-seat chamber, a piston working in said cylinder, a valve mounted upon an extension of the rod of



said piston, working in said valve-chamber  
past the opening thereof for a steam-pipe  
connection, and a coil-spring upon the valve-  
stem, seated in said end cap, the cylinder,  
5 valve-chamber, valve, intermediate cham-  
ber, piston, end cap and spring being all in  
the same line.

In testimony whereof I affix my signature  
in presence of two witnesses.

EDWARD J. FERRIS.

Witnesses:

W. E. ROBERTS,  
F. M. MARTIN.