

(No Model.)

2 Sheets—Sheet 1.

C. J. MELLIN.

OVERPASS VALVE FOR LOCOMOTIVE ENGINES.

No. 587,505.

Patented Aug. 3, 1897.

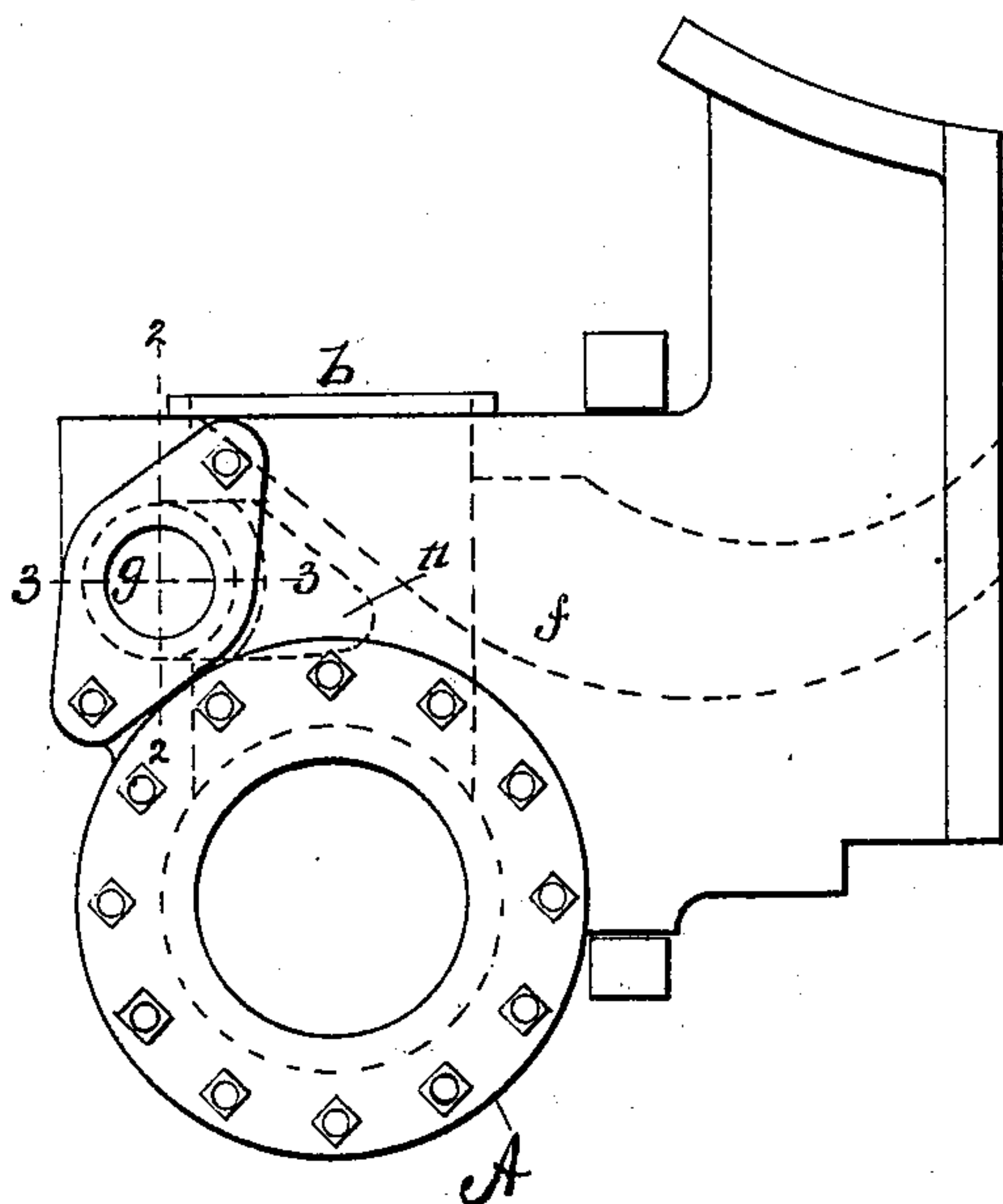


Fig. 1.

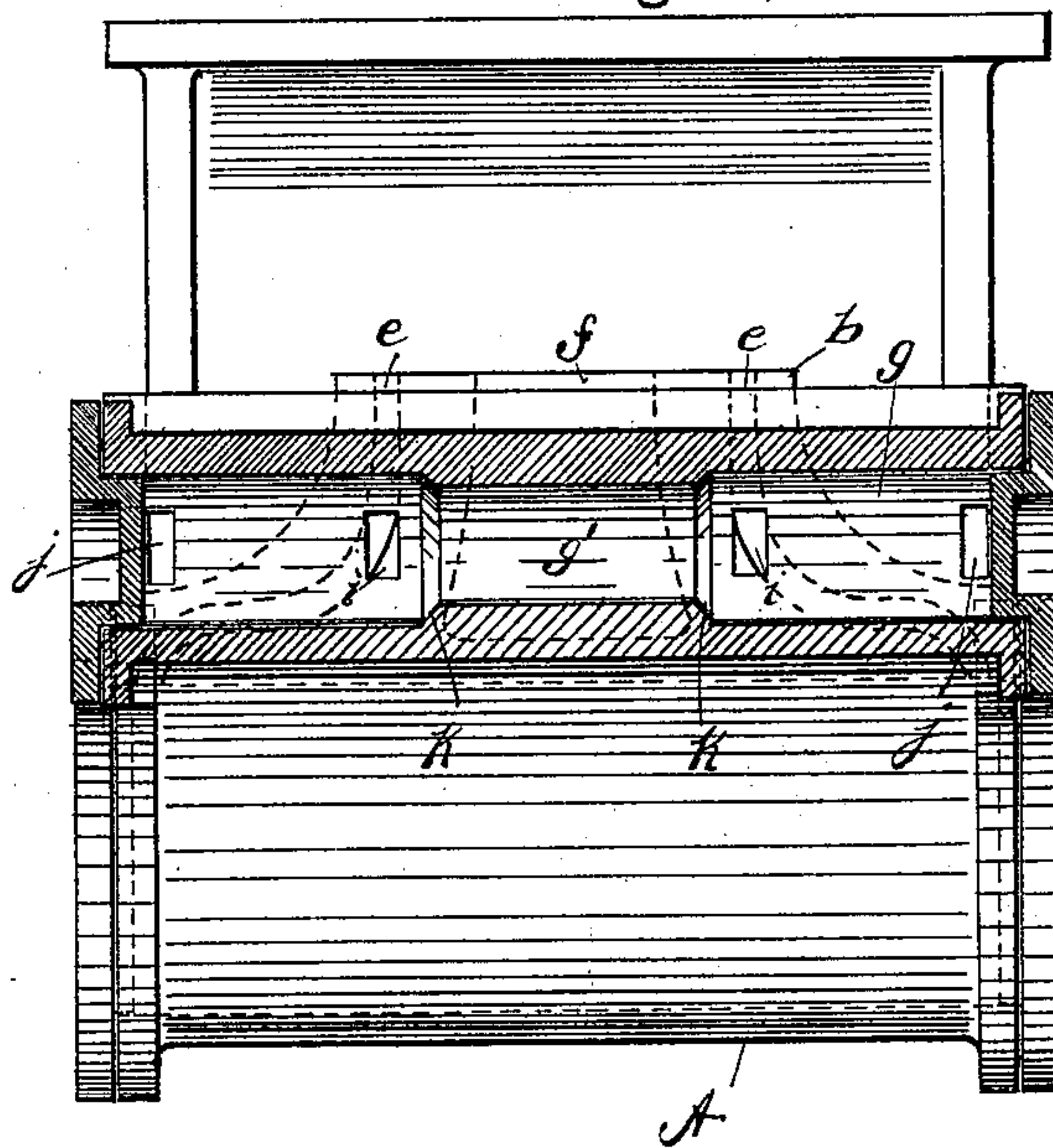


Fig. 2.

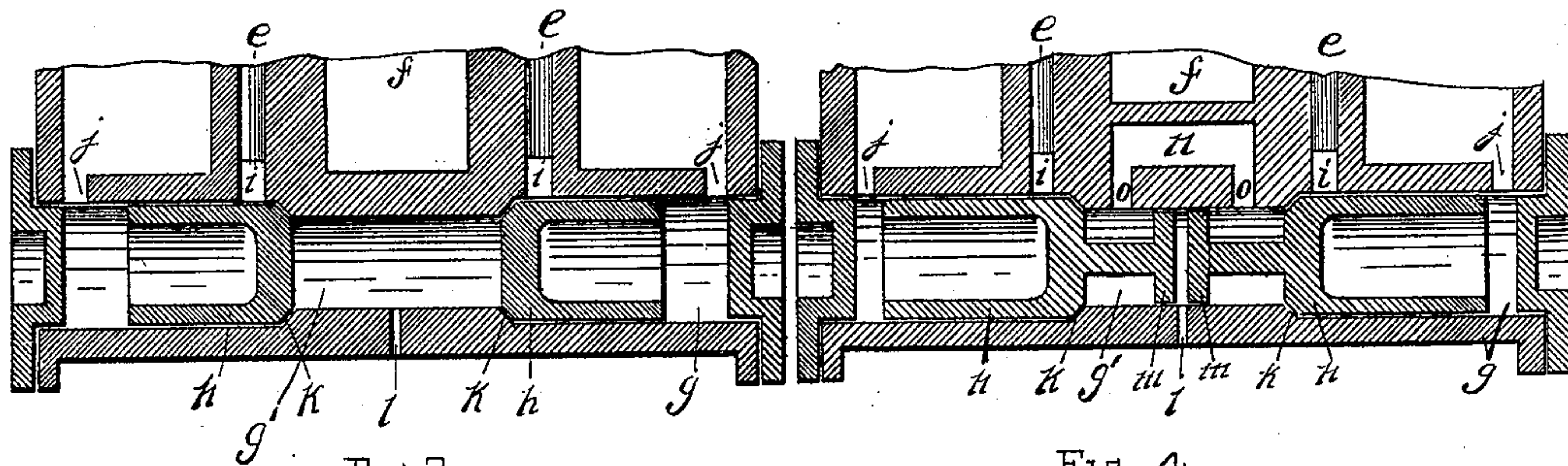


Fig. 3.

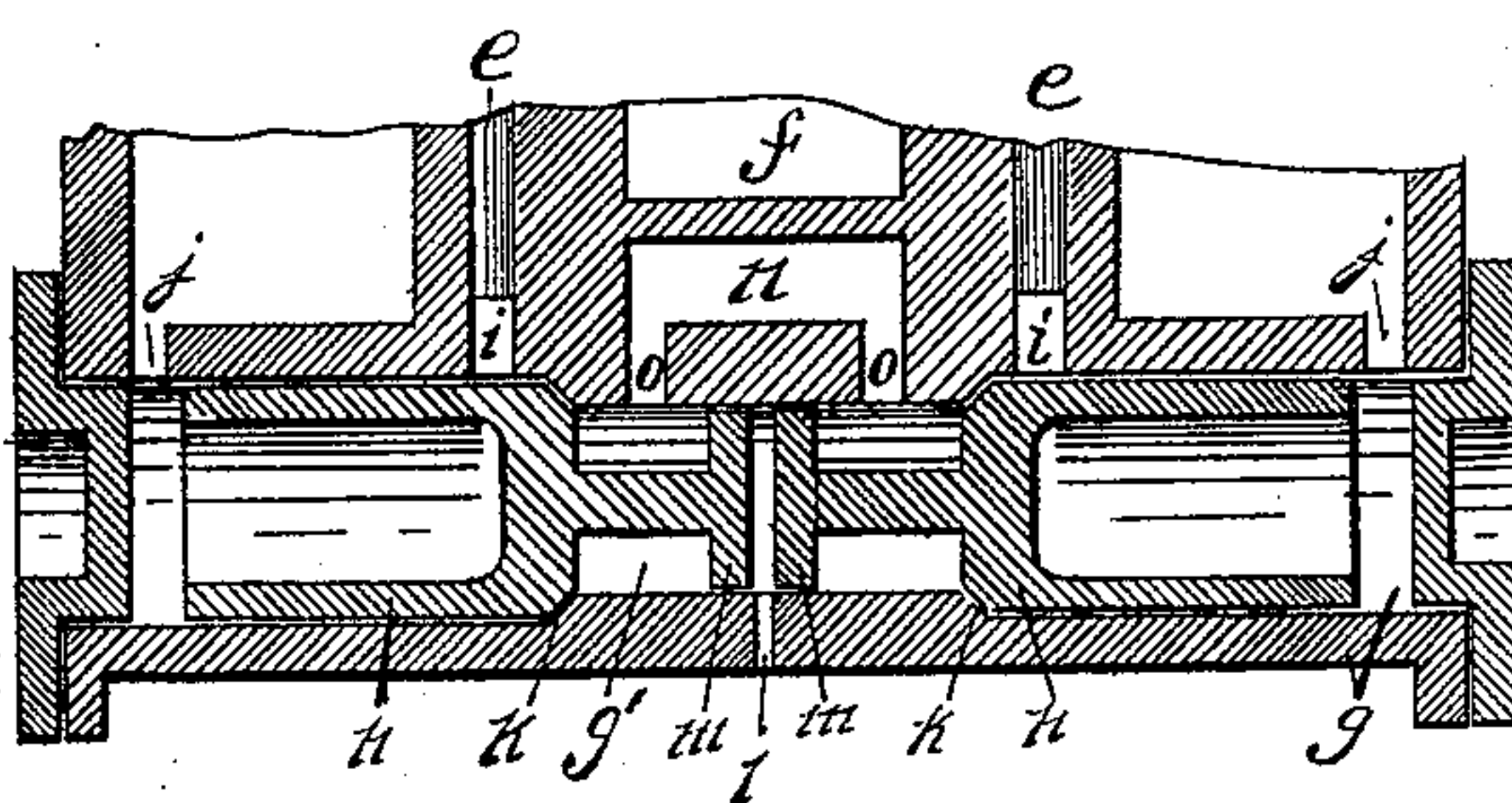


Fig. 4.

WITNESSES:

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INVENTOR

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(No Model.)

2 Sheets—Sheet 2.

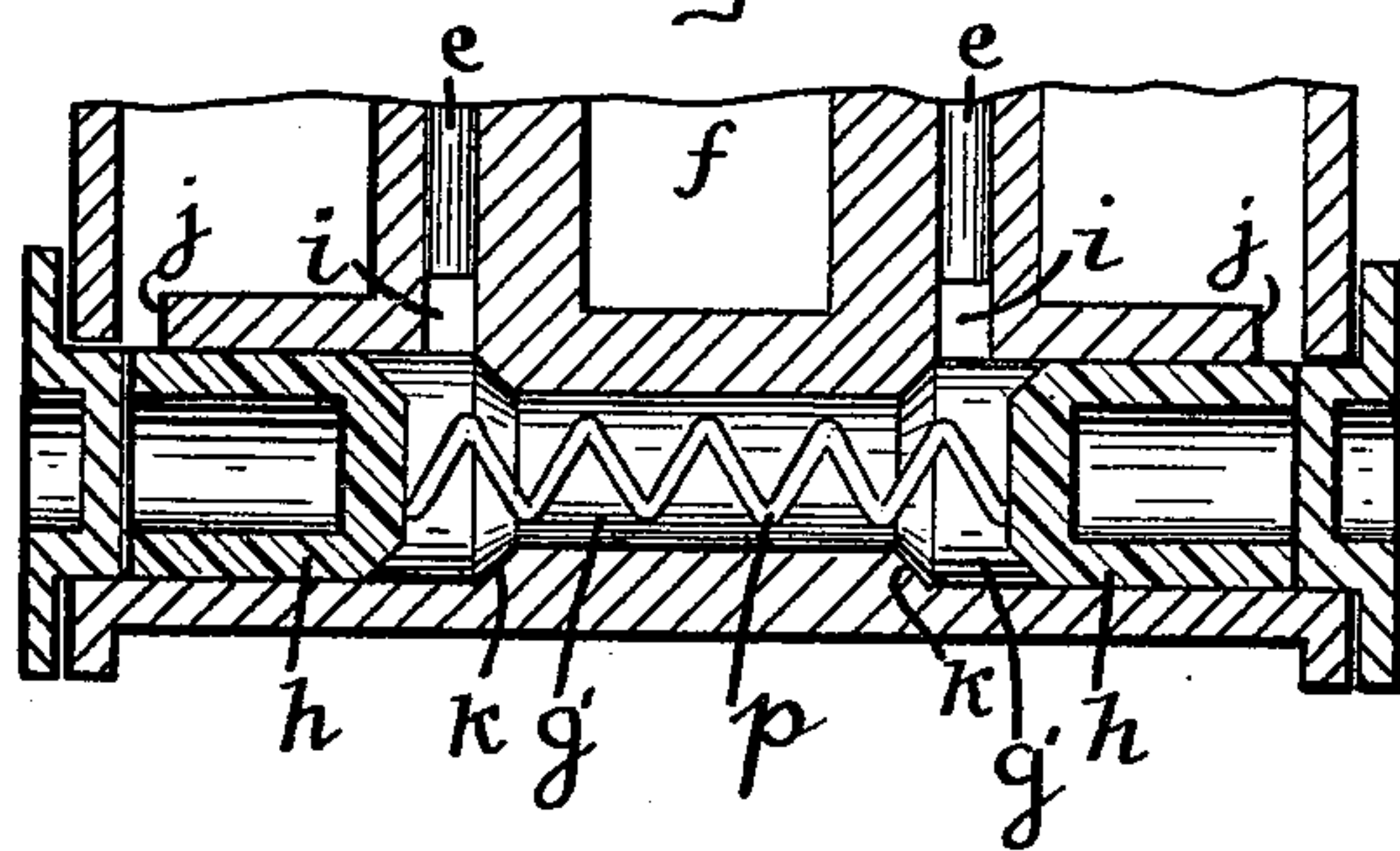
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Fig. 5.



Witnesses

Chas. Morgan
Geo. S. Lockwood.

Inventor.

Carl J. Mellin
by A. P. Thayer
att'y

UNITED STATES PATENT OFFICE.

CARL J. MELLIN, OF RICHMOND, VIRGINIA, ASSIGNOR TO THE RICHMOND LOCOMOTIVE AND MACHINE WORKS, OF SAME PLACE.

OVERPASS-VALVE FOR LOCOMOTIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 587,505, dated August 3, 1897.

Application filed July 18, 1896. Serial No. 599,748. (No model.)

To all whom it may concern:

Be it known that I, CARL J. MELLIN, a citizen of the United States, and a resident of Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Overpass-Valves for Locomotive-Engines, of which the following is a specification.

The object of my invention is to provide simpler and more efficient automatic overpass-valves for free circulation of air in the cylinder while running when steam is shut off, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is an end elevation of a steam-cylinder and part of the saddle-frame of a locomotive, showing the application of my improved overpass apparatus, the steam-chest being removed. Fig. 2 is a vertical longitudinal section on line 2 2 of Fig. 1, the valve being omitted. Fig. 3 is a horizontal section on line 3 3 of Fig. 1. Fig. 4 is a section on line 3 3, Fig. 1, in a modified form of some of the parts. Fig. 5 is a section same as in Fig. 3 with the valves open and with a coiled spring between them instead of the atmospheric port for opening them.

A represents the cylinder; *b*, the port-face; *e*, the steam-ports, and *f* the exhaust-ports.

g represents a valve-case that I provide on the outside of the port-case as an integral part of the cylinder-casting, and preferably parallel with the cylinder, through the middle portion of which I provide an overpass-way *g'* for free circulation of air from one steam-port to another, when steam is shut off, by ports *i*, which have communication with the steam-ports *e*, with valves *h* to close said ports when steam is admitted to the cylinder. Other ports *j* in communication with the steam-chest and with the valve-case *g* admit steam behind the valves and normally keep them closed on the seats *k*, which are intermediate of the ports *i*. Between the valve-seats is a small port *l*, open to the atmosphere.

It will be seen that when steam enters the steam-chest it closes the valves *h*, and they remain closed until steam is shut off. When steam is shut off and the engine is running, it creates a vacuum in the steam-chest and

the atmospheric pressure through port *l* or spring forces the valves back sufficient to open a passage between the steam-ports *e*, through which the air will pass from one side of the piston to the other forward and backward, thus relieving the piston from excessive resistance in drifting and preventing an excessive amount of cold air from entering the cylinder.

For more positive action of the valves, which in case of not closing tightly may possibly be equally subject to steam-pressure on both sides, I have provided them with counterbalancing-pistons *m* in the middle part *g'* of the case *g* between the valve-seats, whereby there will always be preponderating pressure on the other sides for closing them. In this case I provide a by-pass for air around the pistons consisting of the lateral passage *n* and ports *o*, connecting therewith through the side of the valve-case.

The valves may have a spring or springs for opening them when steam is shut off instead of air-pressure, if desired—for example, a coiled spring *p*, placed between them, as in Fig. 5, suitably for taking effect on both, the atmospheric port *l* then being omitted.

I claim as my invention—

1. The combination with the steam-cylinder, of the valve-case having the overpass between the steam-ports, the automatic valves in said case normally subject to pressure from the cylinder steam-chest for closing said overpass, and means for opening said valves when steam is shut off substantially as described.

2. The combination with the steam-cylinder, of the valve-case having the overpass between the steam-ports, the automatic valves in said case normally subject to pressure from the cylinder steam-chest for closing said overpass, and the atmospheric port intermediate of the valves substantially as described.

3. The combination with the steam-cylinder, of the valve-case having the overpass between the steam-ports, the automatic, independent and reversely-acting valves in said case normally subject to pressure from the cylinder steam-chest, for closing said overpass, and means for opening said valves when steam is shut off substantially as described.

4. The combination with the steam-cylinder, of the valve-case having the overpass between the steam-ports, the valves in said case normally subject to pressure from the steam-chest for closing said overpass, counterbalancing-pistons intermediate of the valves, bypass around said pistons, and means for opening said valves when steam is shut off substantially as described.

10 5. The combination with the steam-cylinder, of the valve-case having the overpass between the steam-ports, the valves in said case normally subject to pressure from the steam-chest for closing said overpass, counterbalancing-pistons intermediate of the valves, by-
15 pass around said pistons and the atmospheric

port intermediate of the pistons substantially as described.

6. The combination with the steam-cylinder, of the integral valve-case having the overpass between the steam-ports the valves in said case normally subject to pressure from the cylinder steam-chest for closing said overpass, and means for opening said valves when steam is shut off substantially as described. 20 25

Signed at New York city, in the county and State of New York, this 14th day of July, A. D. 1896.

CARL J. MELLIN.

Witnesses:

W. J. MORGAN,
ERNST CRUNDGREN.