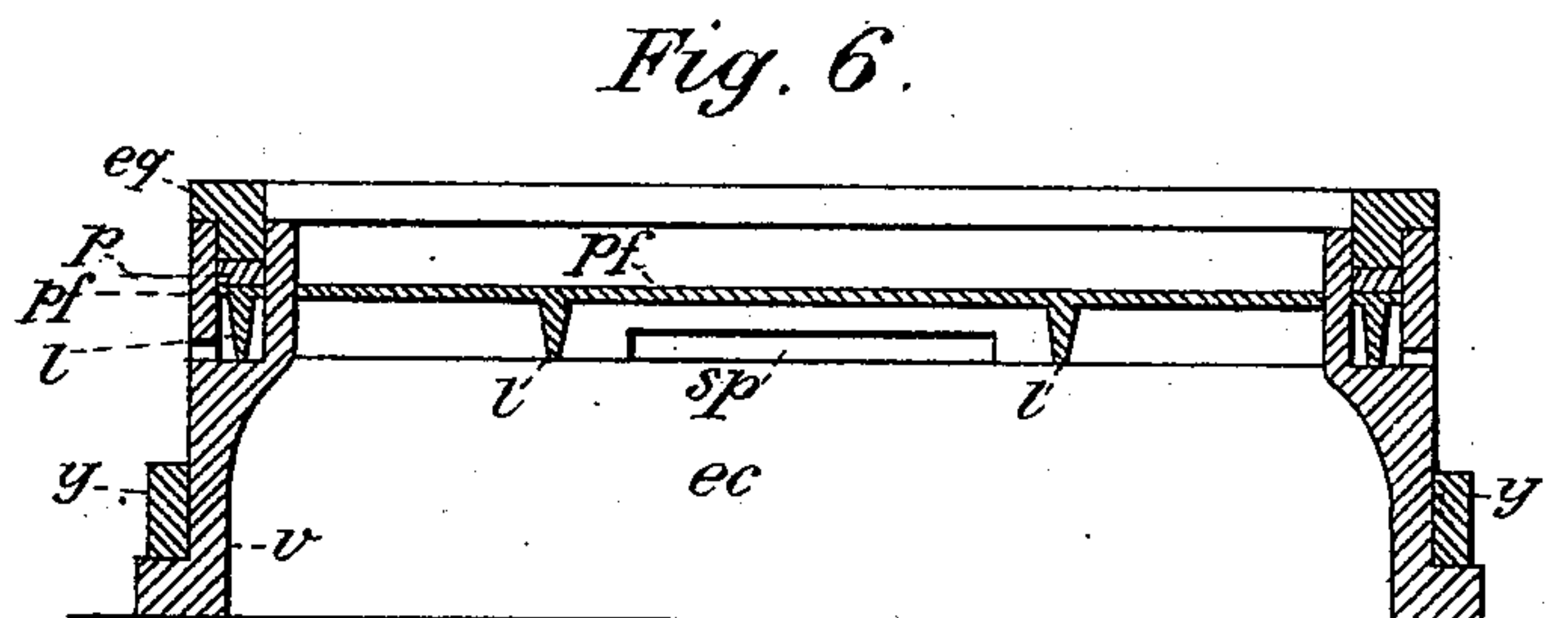
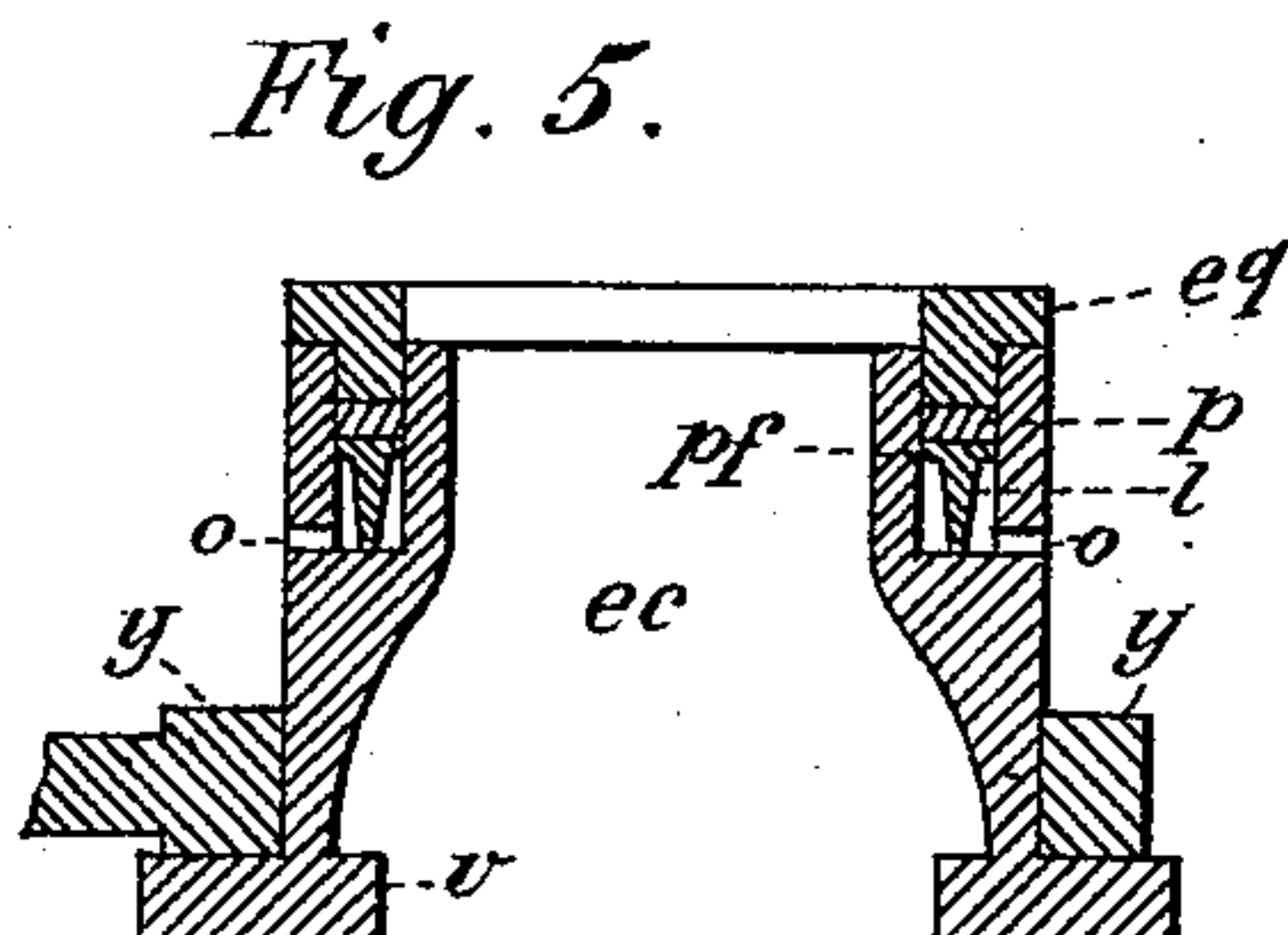
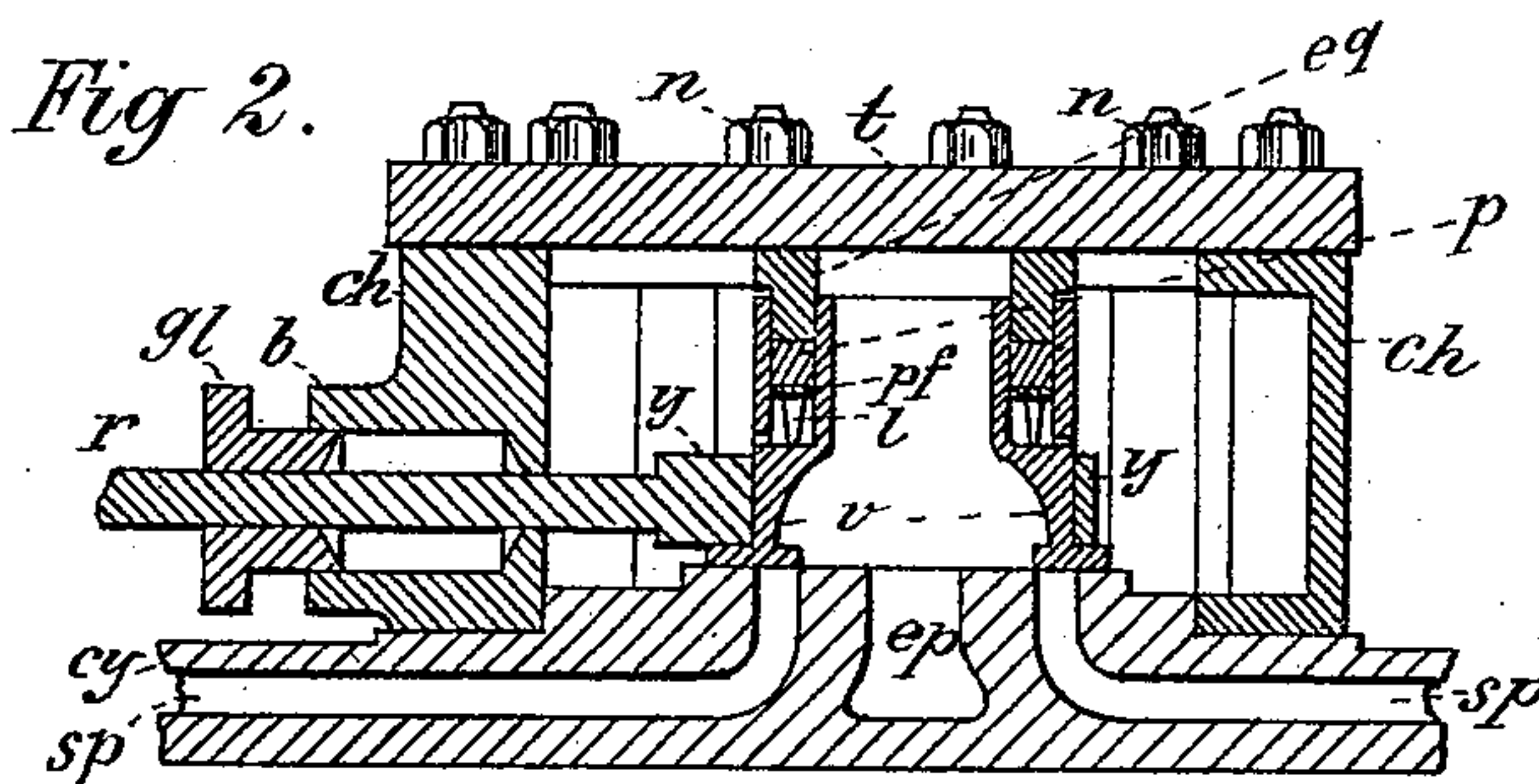
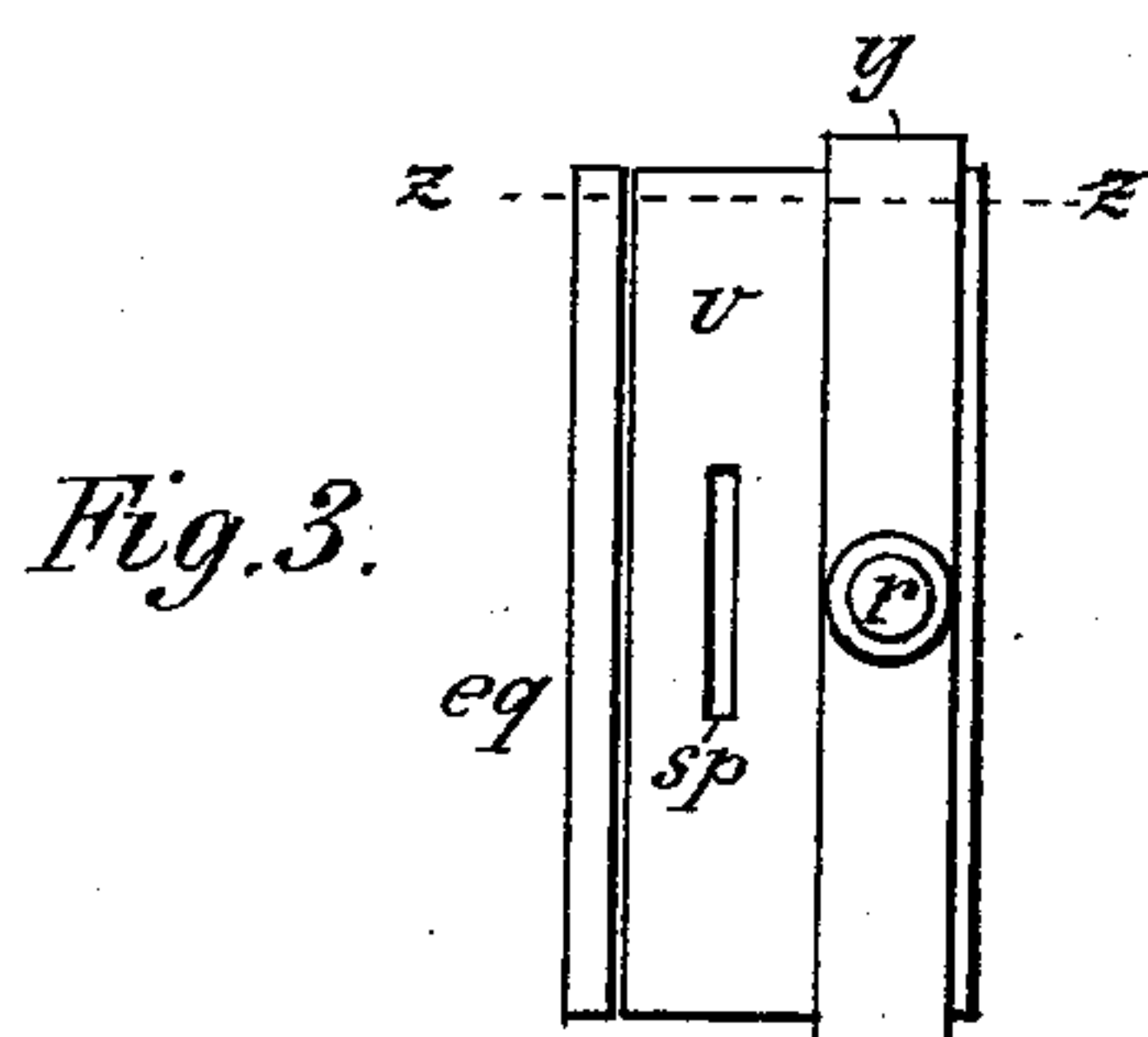
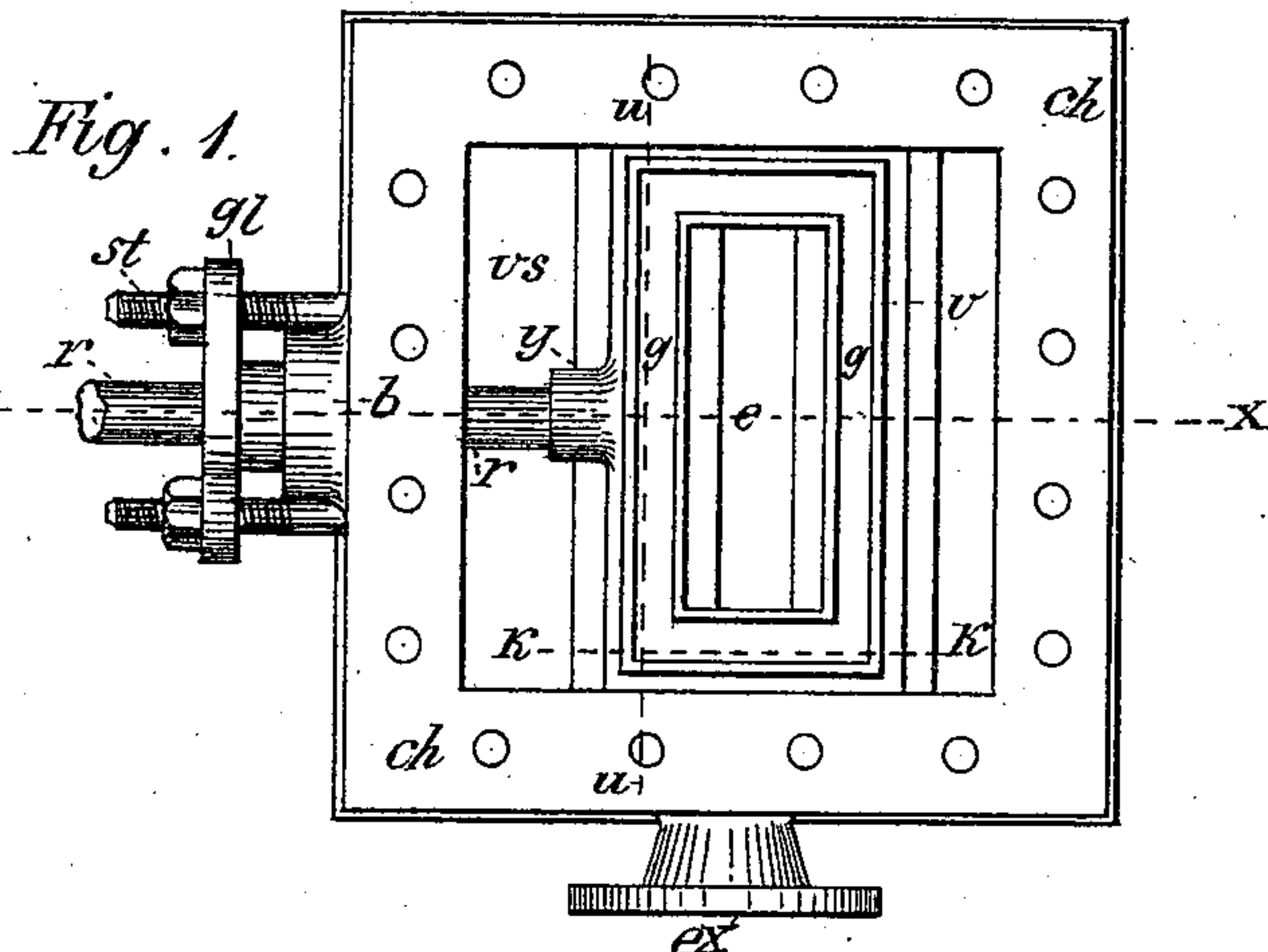
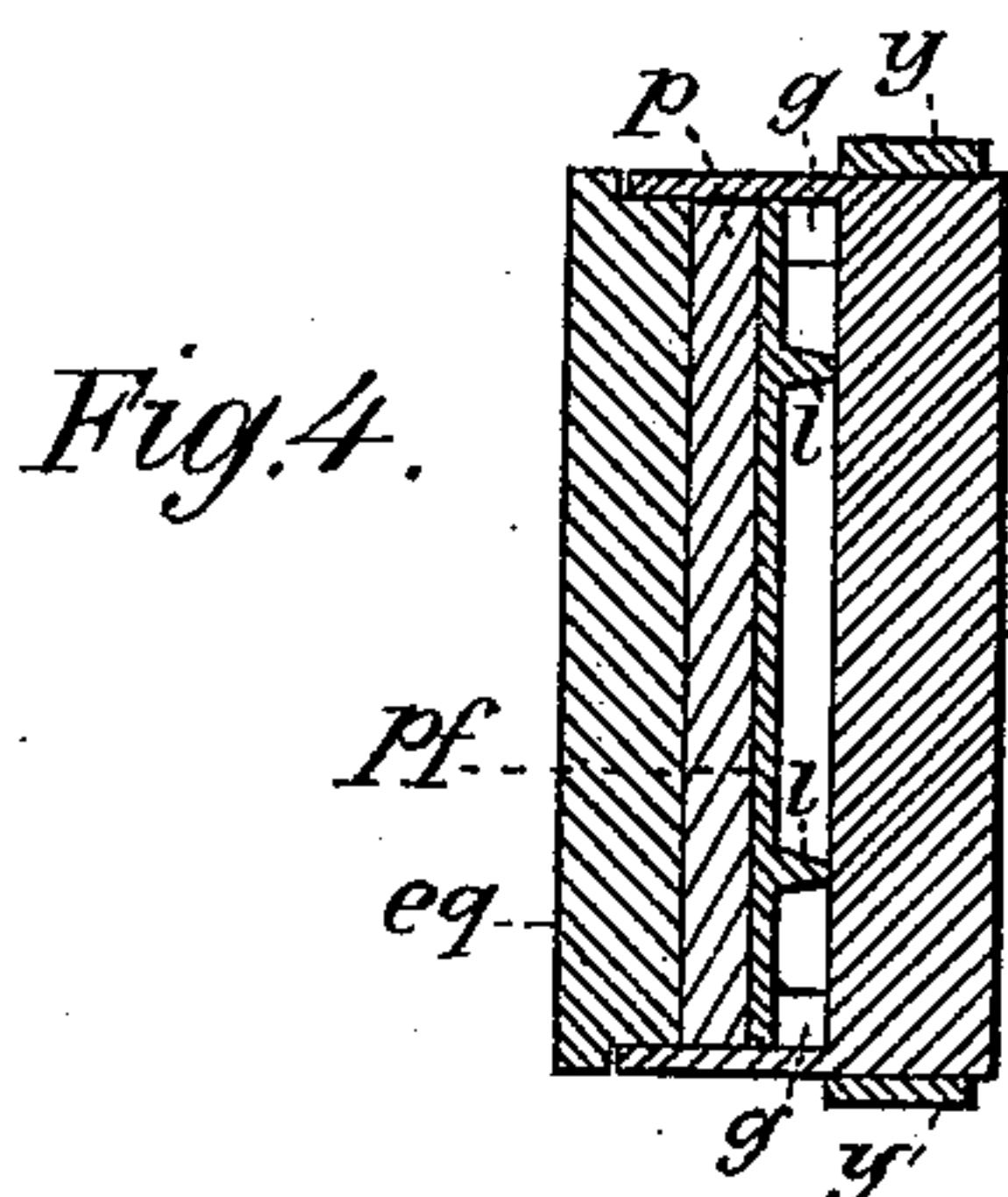


(No Model.)

J. BOOTH.  
SLIDE VALVE.

No. 355,433.

Patented Jan. 4, 1887.



WITNESSES.

Gustav Bohn.  
Hatter Hurry.

INVENTOR.

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att'y.



# UNITED STATES PATENT OFFICE.

JOHN BOOTH, OF INDIANAPOLIS, INDIANA.

## SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 355,433, dated January 4, 1887.

Application filed September 15, 1886. Serial No. 213,631. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN BOOTH, a resident of Indianapolis, Marion county, Indiana, have made certain new and useful Improvements in Slide-Valves, a description of which is set forth in the following specification, reference being made to the accompanying drawings, in the several figures of which like letters represent like parts.

My invention relates to the construction of slide-valves for steam-engines; and my object is to relieve the valve from the friction consequent on the difference of pressure between the back of the valve and the cavity of the exhaust-passage, and is an improvement upon the device for which Letters Patent No. 339,734 were issued to me on the 13th of April, 1886.

In the drawings, Figure 1 represents a top view of the valve and steam-chest with the cover removed. Fig. 2 is a cross-section through the center on the line *x x*, Fig. 1. Fig. 3 is a front end view of the valve. Fig. 4 is a cross-section on the line *z z*, Fig. 3. Fig. 5 is a section on the line *k k*, Fig. 1, and Fig. 6 is a section on the line *u u*, Fig. 1.

In detail, *v* is the slide-valve, and *eq* is an equalizing frame or ring, which rests in a groove formed in the sides of the valve.

*p* is the packing beneath the equalizing-frame and resting upon a packing frame or ring, *pf*, which is provided with legs *l*, as shown in Fig. 5. These legs rest directly upon the bottom of the groove, sustaining the packing-frame some distance above it, to allow the steam to enter through the ports *o* and under the packing-frame.

*ec* is the exhaust-cavity of the valve, which is enlarged, as shown in Fig. 5, to give as much room as possible for the steam to escape.

*ep* is the exhaust-port in the cylinder below, and *sp* are the steam-ports.

*ch* represents the steam-chest, of which *t* is the top, and *cy* is the cylinder below. The valve *v* is surrounded by a yoke, *y*, to which is connected the valve-rod *r*, through the gland *gl* and boxing *b*, in the same manner as described in my former patent.

The exhaust-cavity extends through the whole depth of the valve, and the packing-groove *g* is formed in the walls of the valve,

between the outside and the exhaust-cavity, the equalizing-frame *eq* fitting in the packing-groove *g* and extending above the top of the valve and having an outside dimension corresponding to the valve. The packing-frame *pf* is also fitted to the groove *g*, and is supported by legs *l* above the ports *o*, through which the steam is admitted, pressing the packing-frame up toward the equalizing-frame. The space between these is filled by any suitable packing material—such as asbestos; or metallic packing may be used, if desired, and the pressure of the steam from below, acting under the packing-frame and compressing this packing material, will force it upward against the equalizing-frame *eq*, and this latter is pressed outward against the steam-chest cover, thereby making the upper-pressed surface of the equalizing-frame equal to the downward-pressed surface of the valve, less the area of the space between the packing-groove and the outside walls of the valve, thus making a sufficient pressure upon the valve to secure its adherence to its seat.

The packing-frame may be made of any desired shape, provided the groove is made of corresponding shape, and it may be used in combination with the ordinary slide-valve, if desired.

My present improvement consists in dispensing with the elliptic spring shown in my former Letters Patent, and in providing the packing-frame with legs which support it in the groove above the steam-ports, making use of the steam itself to raise the parts, as hereinbefore described.

What I claim, and desire to secure by Letters Patent herein, is the following:

1. A slide-valve of a steam-engine provided with grooves in the walls between the outside and the exhaust-cavity, a top frame or ring resting in such groove upon any suitable packing material, in combination with a packing-ring, also resting in such groove and supported by suitable legs above the steam-ports which admit the steam, all combined substantially as described.

2. The steam-chest *ch*, having the top *t*, the cylinder *cy*, having steam-ports *sp*, exhaust-port *ep*, the valve *v*, having the enlarged ex-

haust-port *ec*, the groove *g*, formed in the walls  
of such valve, with steam-vents *o* connected  
therewith, the equalizing-frame *eq*, resting  
upon the packing *p*, supported by the packing-  
5 frame *pf*, having legs *l*, all contained within  
such groove, all combined substantially as  
shown and described.

In witness whereof I have hereunto set my  
hand this 10th day of September, 1886.

JOHN BOOTH.

Witnesses:

C. P. JACOBS,  
HATTIE MURRY.