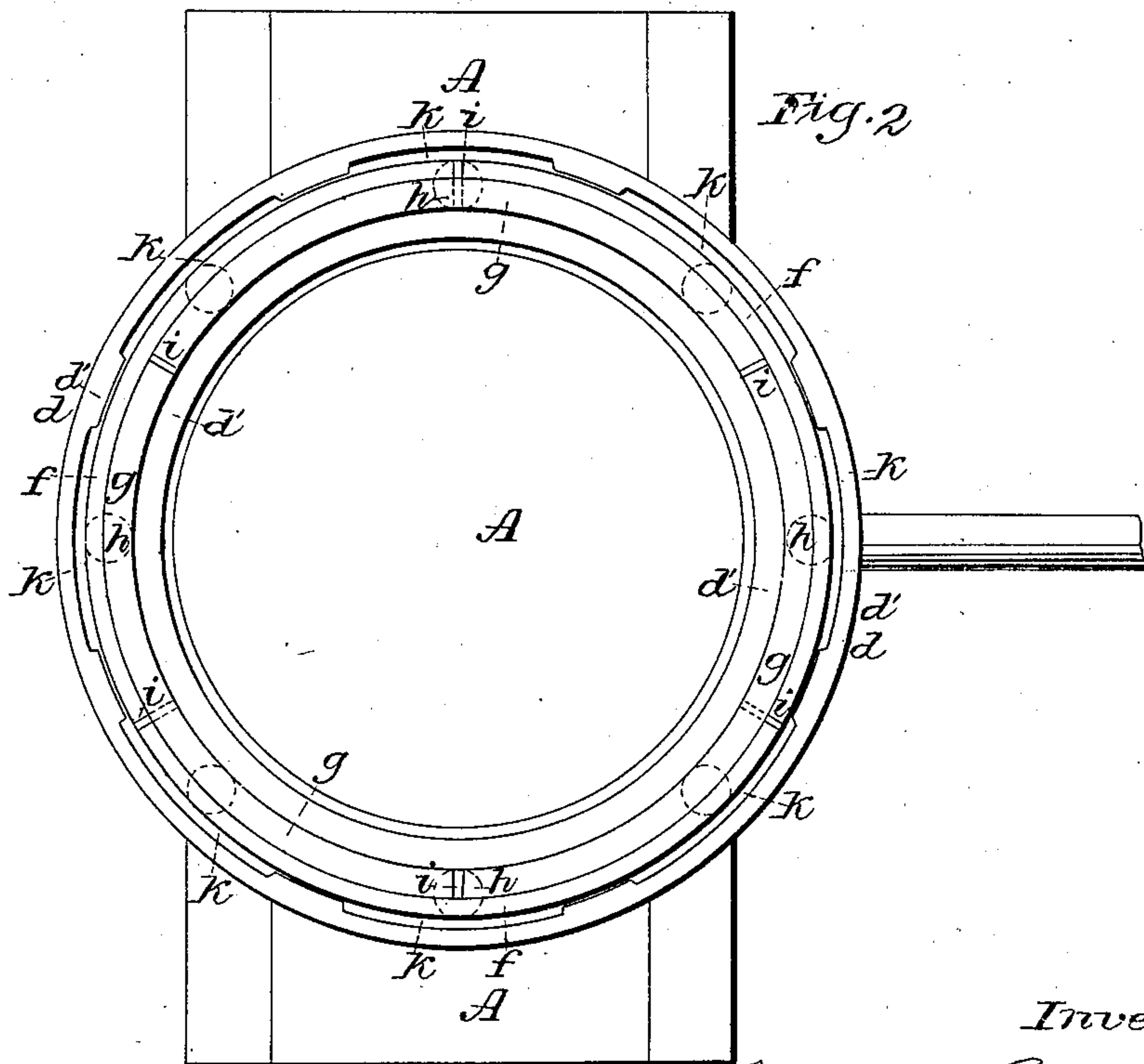
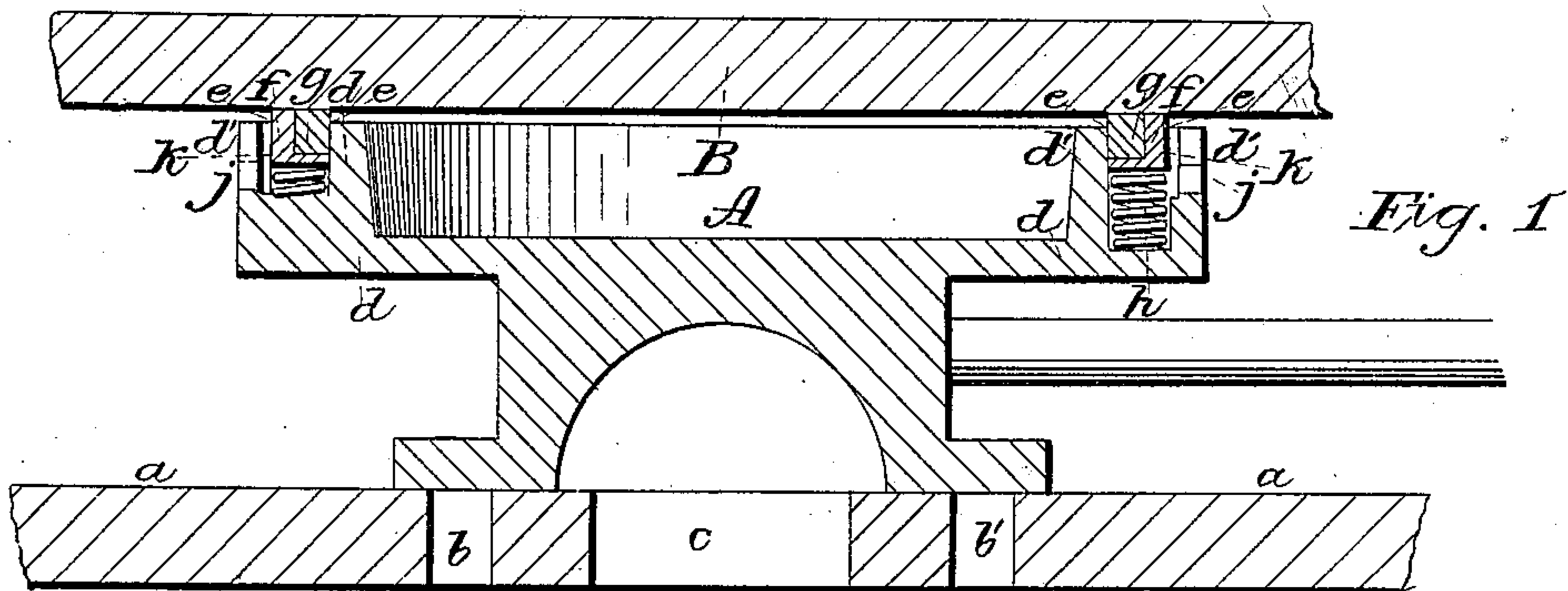


W. B. Robinson.

Steam Balanced Valve.

N^o 39,955. Patented Sep 15, 1863.



Witnesses:

J. W. Combs
G. W. Reed

Inventor:

W. B. Robinson
Per. Mum & Co
Atty

UNITED STATES PATENT OFFICE.

WILLIAM B. ROBINSON, OF DETROIT, MICHIGAN.

IMPROVEMENT IN SLIDE-VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. 39,955, dated September 15, 1863.

To all whom it may concern:

Be it known that I, WILLIAM B. ROBINSON, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful improvement in means of relieving the slide-valves of steam-engines of unnecessary pressure; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal vertical section of the slide-valve and seat and part of the steam-chest cover of a horizontal engine, illustrating the application of my invention. Fig. 2 is a plan of the valve.

Similar letters of reference indicate corresponding parts in both figures.

This invention relates to the protection of the back of the valve from the pressure of the steam in the steam-chest by means of a packing, which is fitted to the valve and works in contact with the inner face of the cover of the chest.

It consists in novel construction and arrangement of the packing, whereby the pressure of the steam is made to keep it steam-tight and compensate for wear.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is the valve, *a a* the seat, and B the steam-chest cover, the inner surface of which is faced flat and parallel with the valve-seat. The face of the valve may be of ordinary form and the ports *b b' c* in the seat arranged in the usual manner.

The valve is constructed with a circular flange, *d*, around its back and with an annular projection, *d'*, on the said flange, extending nearly to the inner face of the cover B, and in this projection there is formed an annular cavity, *e*, for the reception of two packing-rings, *f* and *g*, the transverse section of the said cavity being of square form. The outer packing-ring, *f*, is of angular form in its transverse section, or, in other words, has a rabbet formed in the upper part of its interior, that it may receive within it the inner ring, *g*, the

transverse sectional form of which is quadrangular and of sufficient size to fill the rabbet in the outer ring, so that both rings may fit the cavity *e*. At suitable distances apart there are a number of holes provided in the bottom of the cavity *e* for the reception of spiral springs *h h*, which serve to press against the bottom of the outer ring and so keep the two rings in contact with the flat interior surface of the cover B when there is no steam in the chest. The rings are each cut transversely at one or more points, as shown at *i i* in Fig. 2, or formed in segments to enable the outer one to contract upon the inner one and the inner one to contract closely upon the inner face of the cavity *e*, and holes *j j* are provided in the exterior of the flange, communicating with recesses *k k* in the cavity *e*, to admit steam from the steam-chest, to act upon the exterior periphery and bottom of the ring *f*, to make the said ring contract steam-tight around *g* and compress the latter steam-tight around the inner face of the cavity *e*, and to press both rings up steam-tight against the inner face of the cover B, and thereby exclude the steam entirely from the portion of the back of the valve inside of the ring *g*, the area of which is nearly equal to that of the face of the valve.

An important feature of the invention consists in the employment of the steam-pressure itself to keep the packing tight and exclude the steam from the back of the valve.

I prefer to make the outer ring of the angular form represented in its transverse section, but this form is not indispensable, as two or three plain rings surrounding and fitting each other will serve to make a steam-tight joint.

Instead of making the flange *d* and projection *d'* of circular form, it may be made of the form of a parallelogram, corresponding with the form of the face of the valve, and, instead of the ring-packing, packing of a form corresponding with the flange will then be used, the outer packing, which takes the place of the ring *f*, being in four straight pieces, forming the four sides of the parallelogram, with the joints at the corners, and the inner packing, which takes the place of the ring *g*, being composed of four angle-pieces with the joints

in the middle of the sides of the parallelogram, or the flange and packing may be of any form that may be most convenient.

What I claim as my invention, and desire to secure by Letters Patent, is—

The packing *f g*, composed of two or more divided or segmental rings, or their equivalents, fitted one within the other, and arranged and fitted within a cavity, *e e*, in the back of the valve, to which steam is admitted through

openings *j j* in such manner as to compress or contract the packing around the inner face of the said cavity and at the same time press it against the cover or back of the steam-chest, all substantially as herein specified.

WILLIAM B. ROBINSON.

Witnesses:

JEFFERSON WILEY,
WM. WILEY.