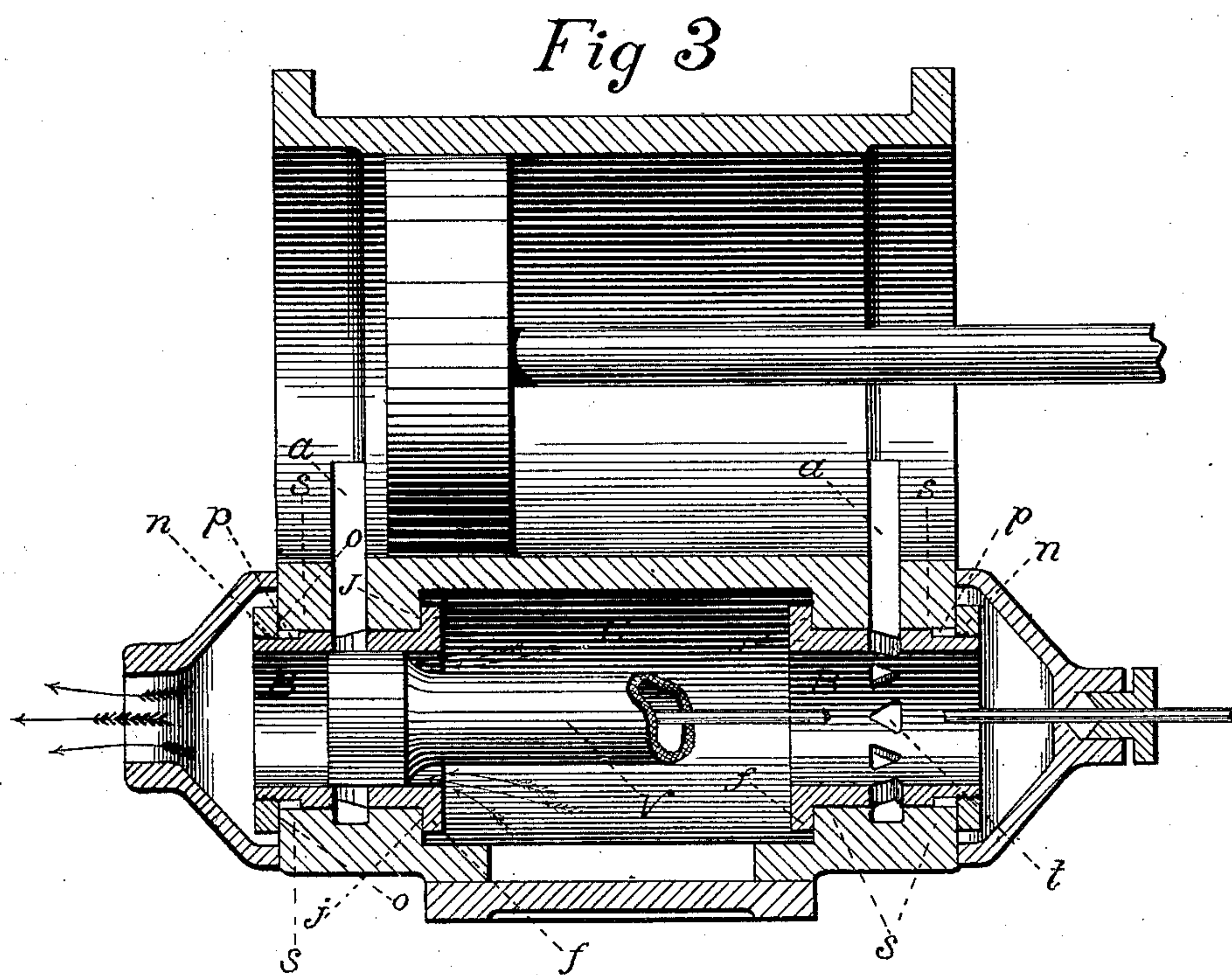
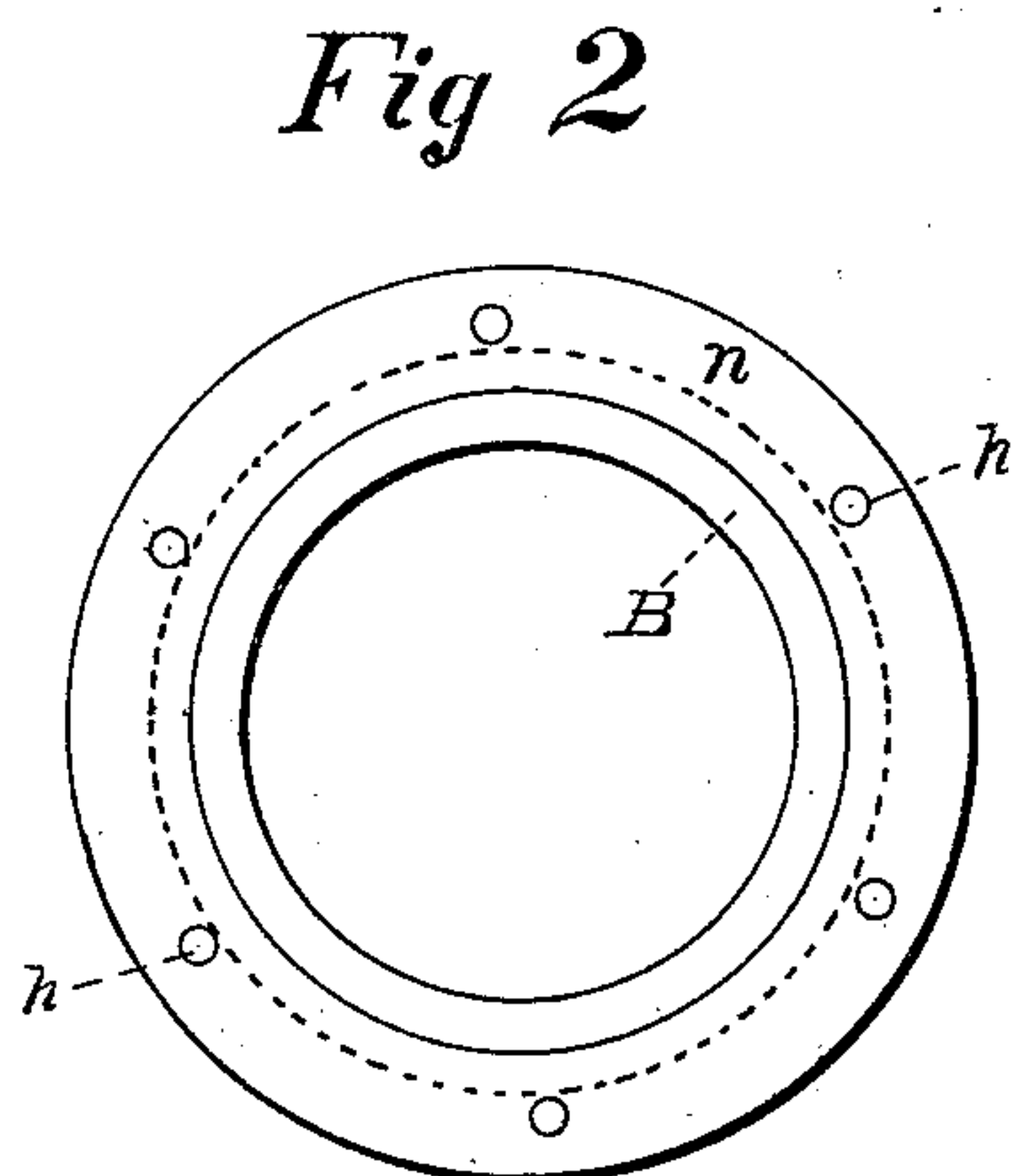
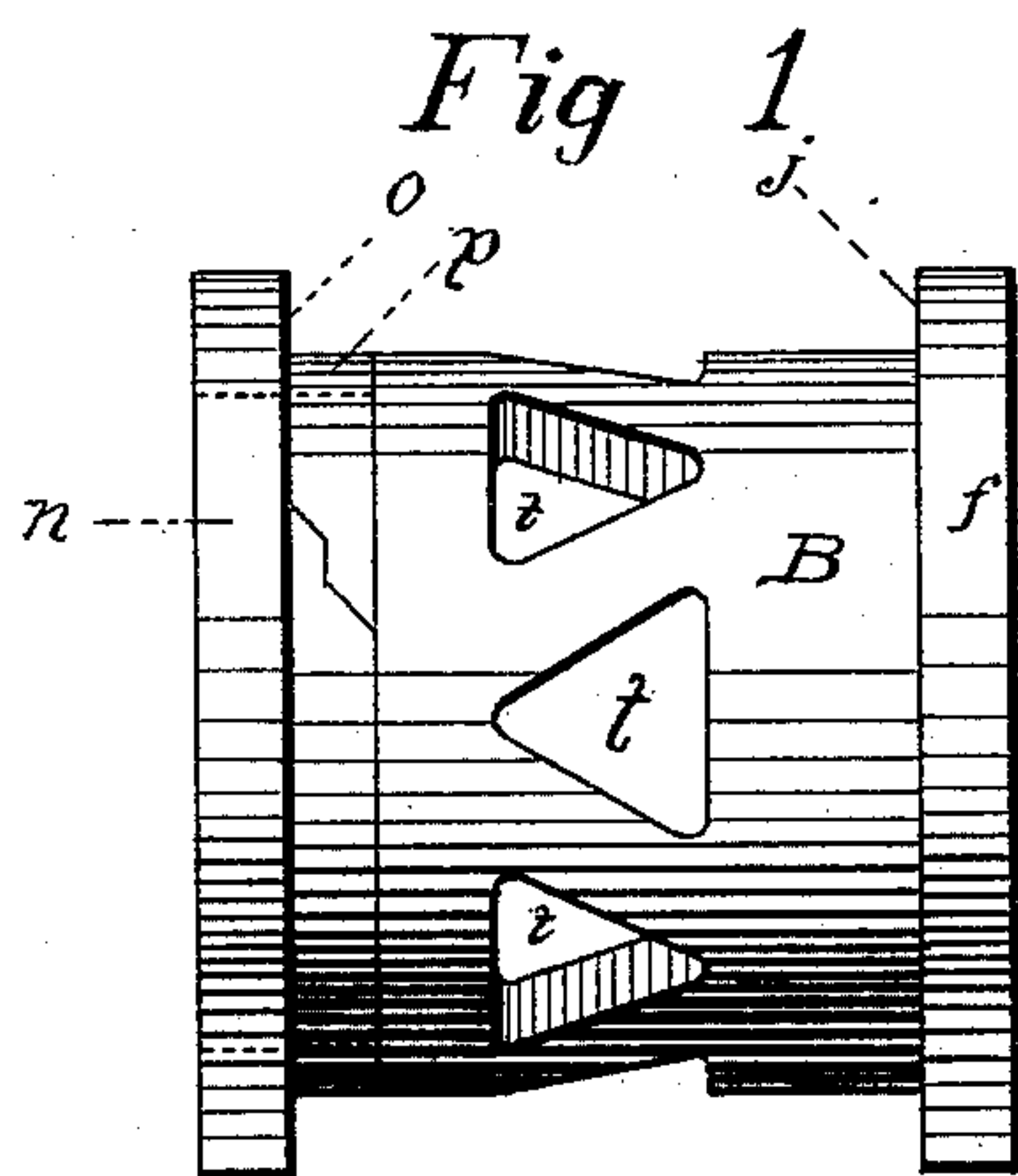


(No Model.)

W. B. OSBORN.  
STEAM ENGINE.

No. 428,729.

Patented May 27, 1890.



Witnesses  
Richard T. Lowndes,  
Alex. B. Osborn,

Inventor  
W. B. Osborn.

# UNITED STATES PATENT OFFICE.

WILLIAM BLAND OSBORN, OF CLARKSBURG, WEST VIRGINIA.

## STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 428,729, dated May 27, 1890.

Application filed February 11, 1889. Serial No. 299,551. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM BLAND OSBORN, a citizen of the United States, residing at Clarksburg, in the county of Harrison and State of West Virginia, have invented certain new and useful Improvements in Steam-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to the valve-casing or seat for piston slide-valves of steam-engines, the object of which is to provide a casing or seat which will retain a truly cylindrical form when in use, and be easily replaced when worn. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the casing; Fig. 2, an end view of the casing. Fig. 3 is a horizontal section through the steam-chest and cylinder of a steam-engine, showing the casing as applied thereto.

Similar letters refer to similar parts throughout the several views.

In Fig. 1, B is the main body of the casing, having formed on one end of it the collar or flange *f*, the flange on the opposite end being formed by the collar-nut *n*, which is removable by a spanner applied to the holes *h h*.

By *t t* are indicated triangular port-openings, and *p* is a spring packing-ring having a steam-tight joint on its sides and outer circumference.

I have found it difficult in practice to form a truly-cylindrical seat for a piston slide-valve where the seat is formed in and is a part of the steam-chest casting. A perfectly-cylindrical hole at the temperature at which machine-work is done will only by chance retain its original form when under the new conditions of steam-pressure and an increase of temperature of, it may be, 300° Fahrenheit. Any

attempt to shape or fit this particular form of valve and seat at their working temperature results in very little advantage.

To avoid the trouble arising from the defect just cited, I propose to use a casing loose in its seat in a direction at right angles to the axis of the valve, but packed against the leakage of steam around its outside circumference by the spring packing-ring *p*, and the joints formed by the face *o* of the collar-nut *n* and the face *J* of the collar *f*, as shown, Fig. 3.

It is evident that the casing can be easily removed and replaced.

To remedy the evil effects of irregular wear on the piston-valve, (arising from the use of rectangular port-openings,) I use an opening of triangular form (shown by *t t*) or rhomboidal form, either of which distributes the metal dividing any two openings, so as to best prevent the difficulty mentioned.

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

1. In a piston-valve, the combination of the valve with the removable seat or casing provided with a flange on one end and a packing and nut on the other end, whereby the seat is made steam-tight and retained in position, substantially as set forth.

2. In a piston-valve, the combination of the valve with the removable seat or casing provided with triangular port-openings, and having a flange on one end and a packing and nut on the other end, whereby the seat is made steam-tight and retained in position, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM BLAND OSBORN.

Witnesses:

RICHARD T. LOWNDES,  
ALEX. C. OSBORNE.