

(No Model.)

S. H. BAKER.  
AIR VALVE FOR RADIATORS.

No. 600,115.

Patented Mar. 1, 1898.

FIG. 1.

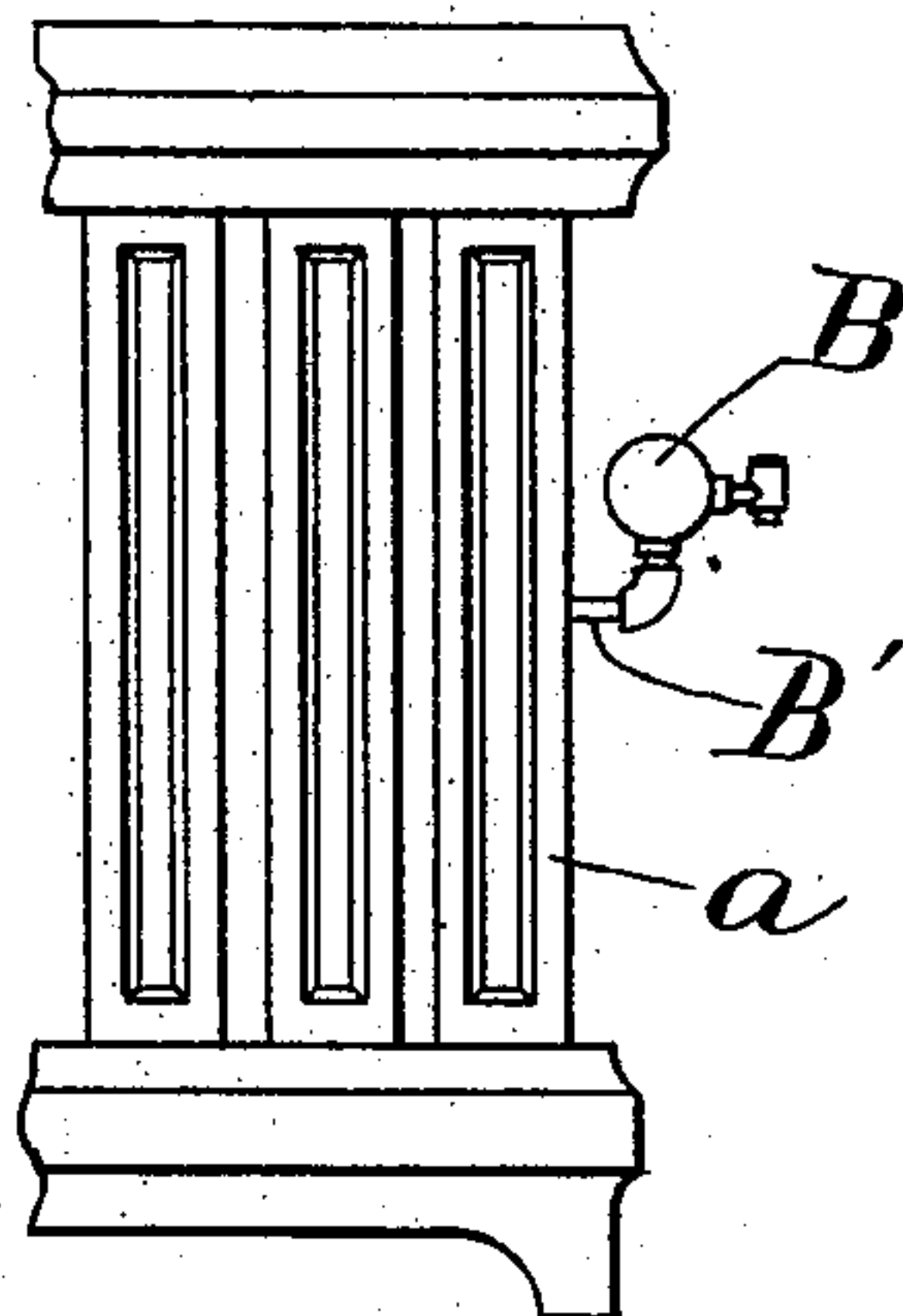


FIG. 2.

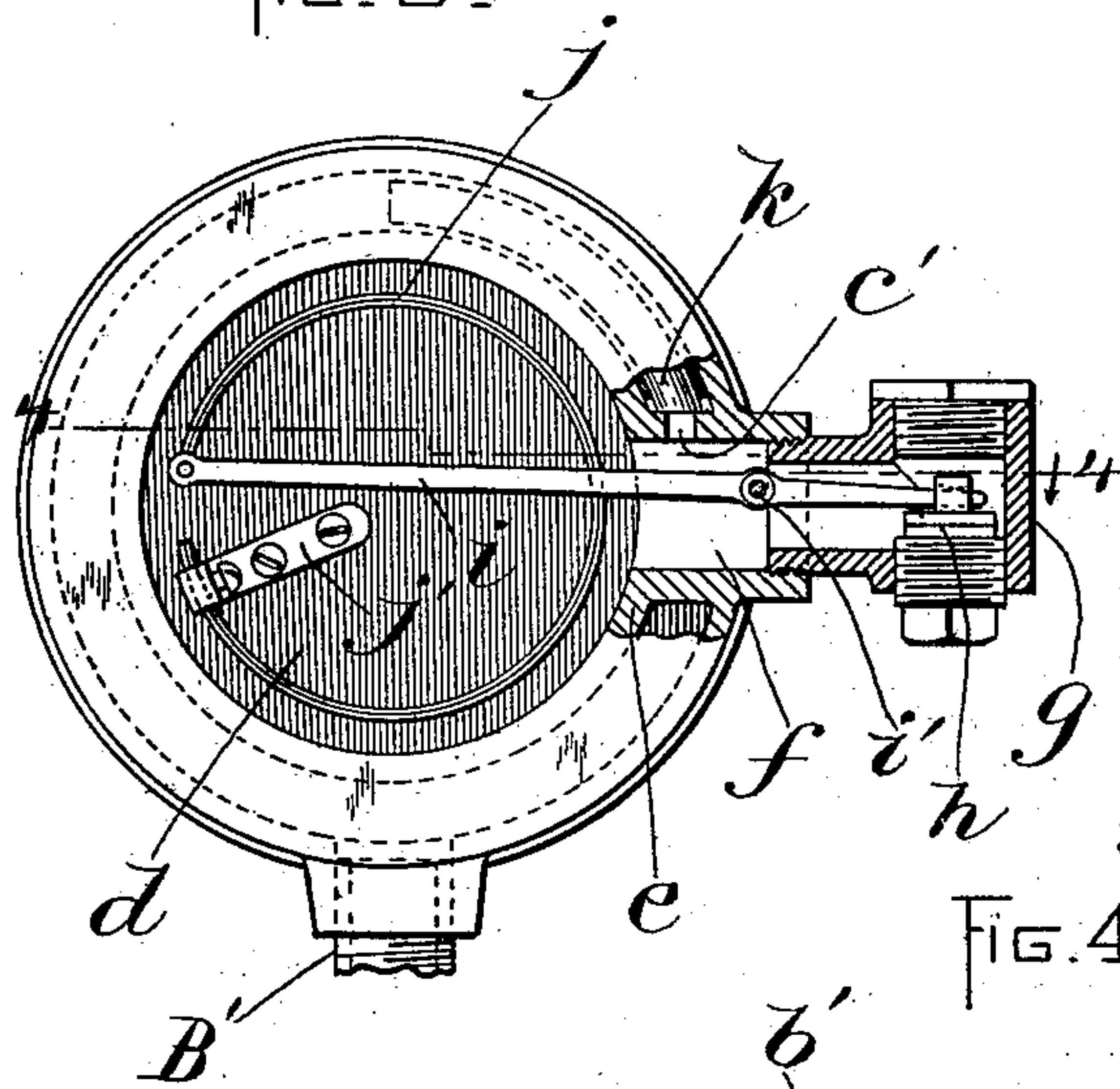


FIG. 3.

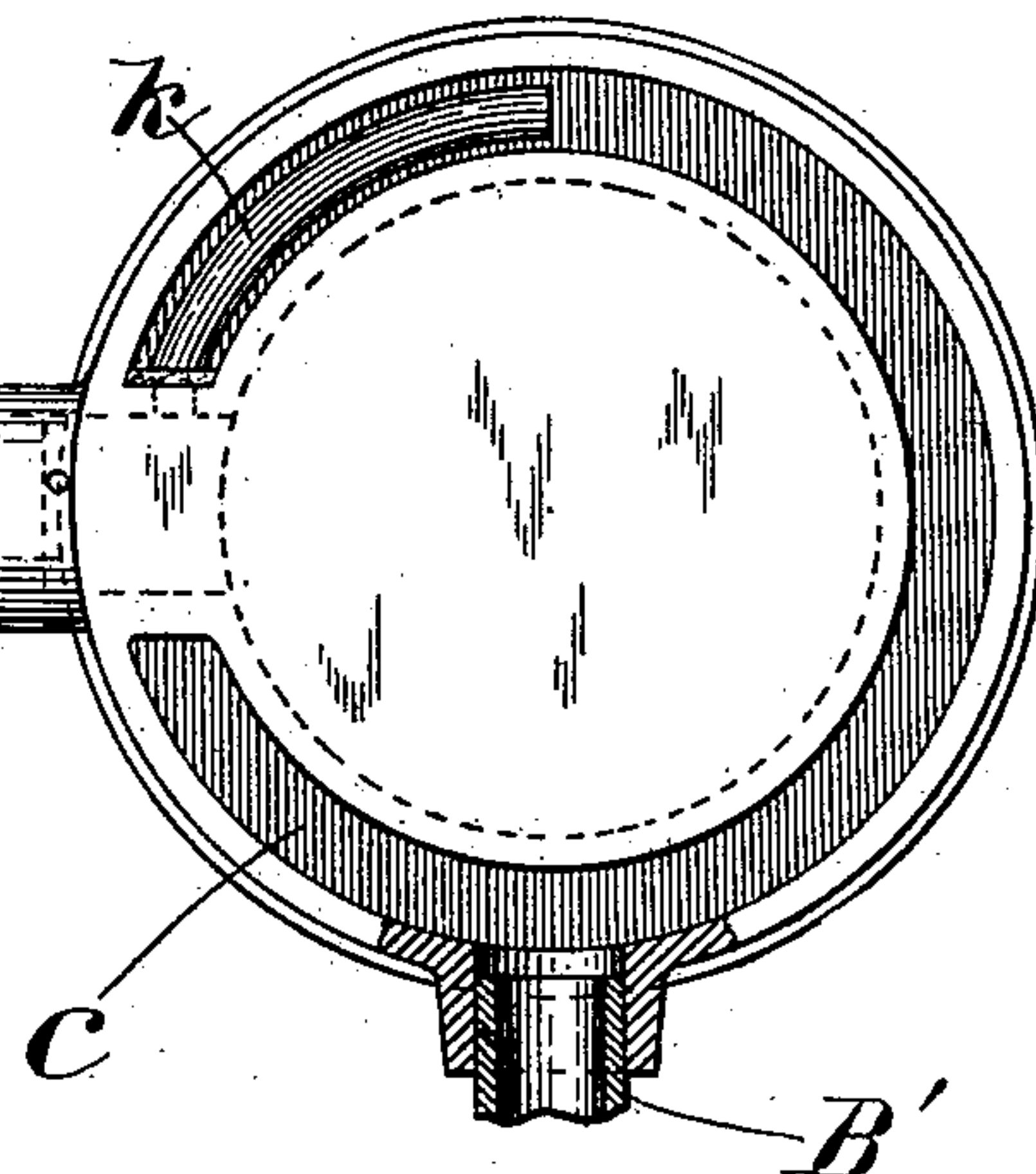


FIG. 4.

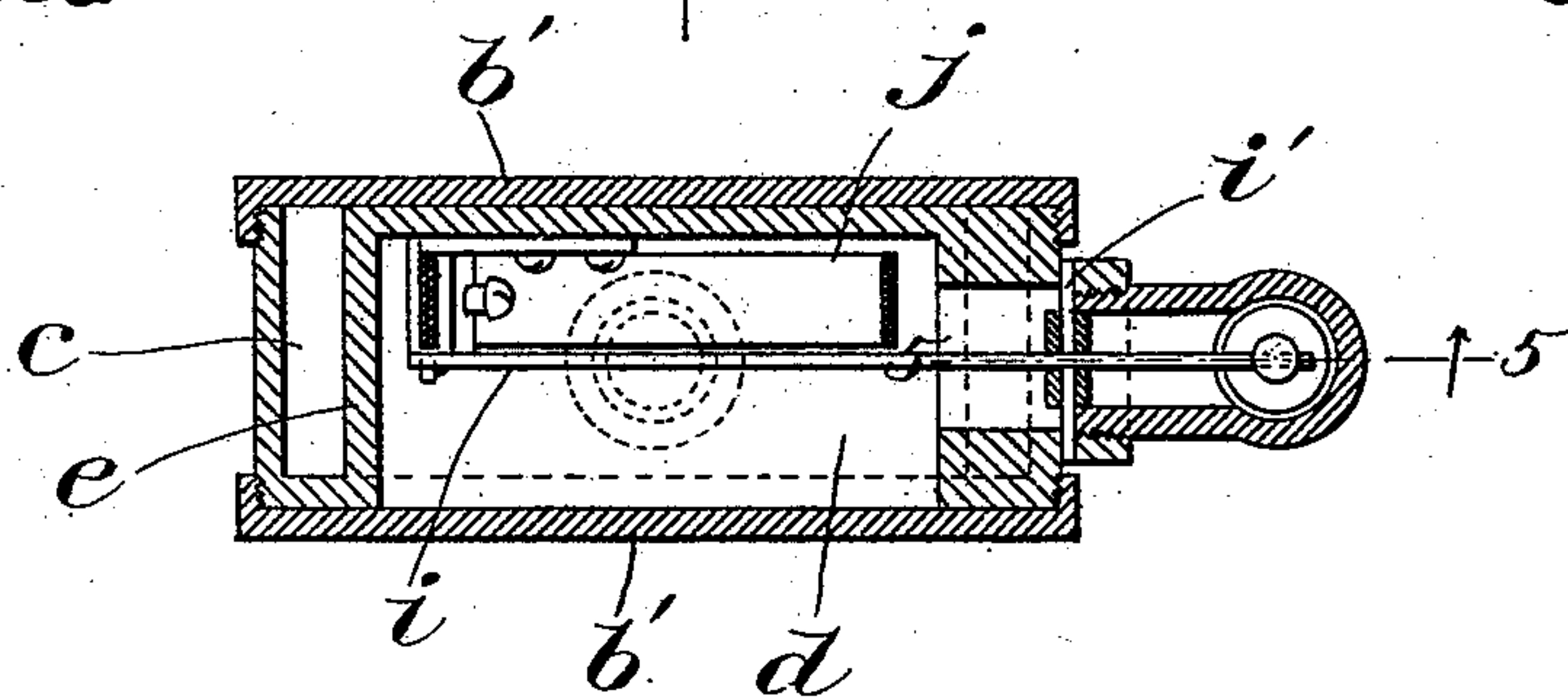
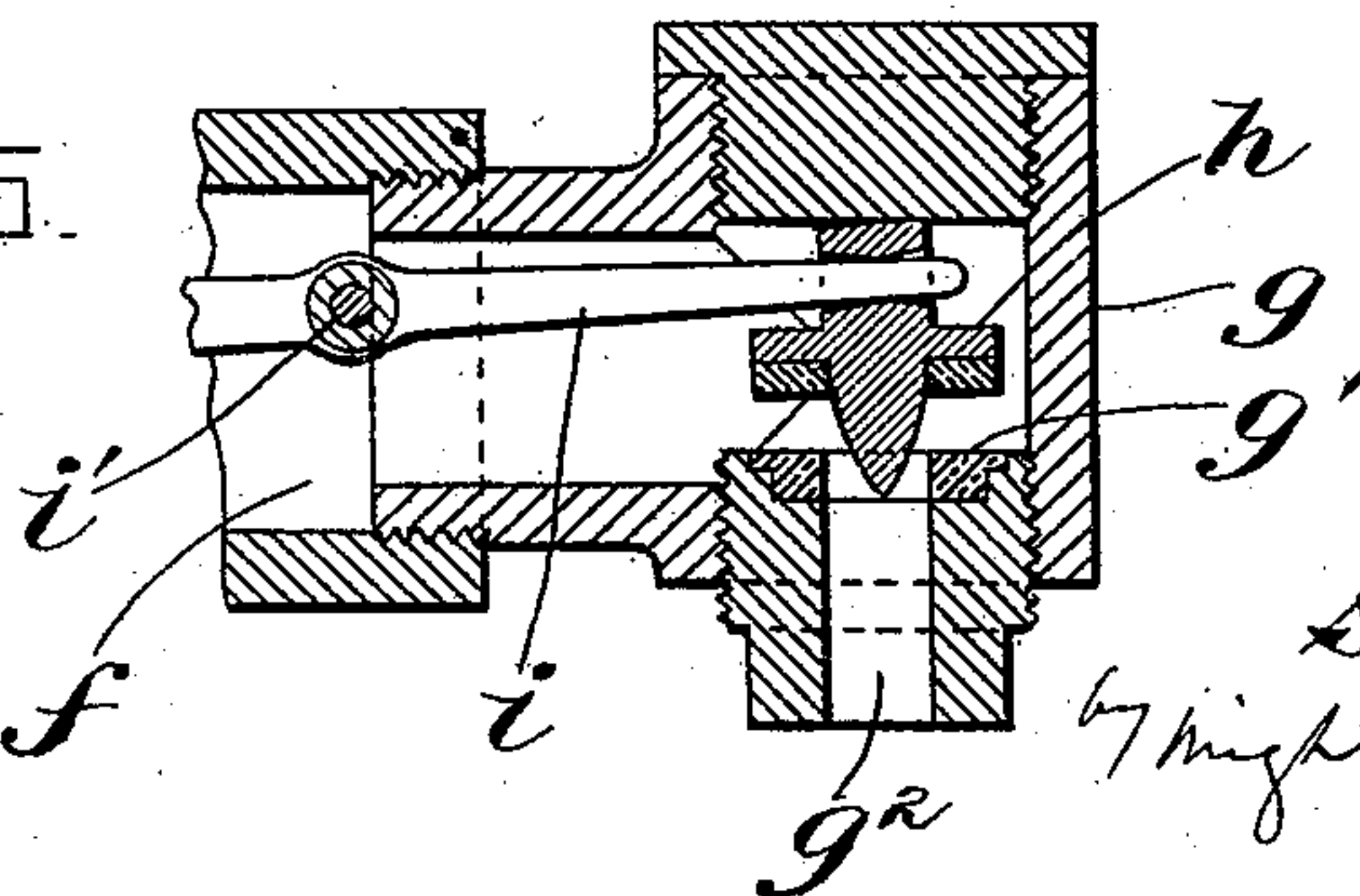


FIG. 5.



WITNESSES:

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INVENTOR:

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# UNITED STATES PATENT OFFICE.

STEPHEN H. BAKER, OF BOSTON, MASSACHUSETTS.

## AIR-VALVE FOR RADIATORS.

SPECIFICATION forming part of Letters Patent No. 600,115, dated March 1, 1898.

Application filed April 17, 1897. Serial No. 632,643. (No model.)

*To all whom it may concern:*

Be it known that I, STEPHEN H. BAKER, of Boston, (Dorchester,) in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Air-Valves for Radiators, of which the following is a specification.

This invention relates to an air-valve for steam-radiators, and has for its object to provide an improved appliance of this character adapted for attachment to a radiator and having a vent which remains open when the radiator is cold and allows air to escape therefrom when steam is admitted to said radiator, but closes automatically when the air has been expelled by the advancing steam.

The invention consists in the improved construction and relative arrangement of parts, which I shall now proceed to describe and claim.

Of the accompanying drawings, forming part of this specification, Figure 1 represents a portion of a radiator, in side elevation, provided with my improved air-valve. Fig. 2 represents in partial section a side elevation of the appliance with one of its side plates removed. Fig. 3 represents a side elevation with the other side plate removed. Fig. 4 represents a section on line 4 4 of Fig. 2. Fig. 5 represents a section on line 5 5 of Fig. 4.

The same reference characters indicate the same parts in all the figures.

Referring to the drawings, the letter *a* designates a steam-radiator to which is attached my improved air-valve B by means of a connecting-pipe B', through which communication is established with the interior of the radiator. The said connecting-pipe opens into an air-and-steam passage or chamber *c*, surrounding a central chamber *d*, which I term the "expansion-chamber." These two chambers are closed by means of removable side plates *b' b'* and are separated by a thin heat-conducting partition *e*. The chamber *c* is stopped at one end and at the other end is provided with an outlet-opening *c'*, communicating with a passage *f*. At the end of said passage is a valve-chamber formed in a casing *g* and provided with a valve-seat *g'* and a port *g<sup>2</sup>*, opening into the atmosphere.

*h* designates a valve in the casing *g*, carried on one end of a lever *i*, which is pivoted

on a cross-bar *i'*, extending across the passage *f*. The said lever extends back into the expansion-chamber *d* and is connected therein to the free end of a thermostat *j*, consisting of an expansion strip or loop of metal formed like the letter C. The other end of said loop is secured to a suitable support *j'*, fixed to the side wall of the chamber *d*.

The thermostat *j* may be constructed in the usual manner of two superposed strips of metal, such as iron and brass, having different rates of expansion under the influence of heat, the metal having the higher coefficient of expansion being on the inside of the loop.

A pipe *k*, the purpose of which will be explained hereinafter, extends through the middle of the chamber *c* from the opening *c'* to the top of said chamber, its lower end surrounding said opening.

The device operates as follows: The action of the C-shaped loop *j* is such that when cold it keeps the valve *b* raised from its seat *g'*, thereby maintaining a free passage from the interior of the radiator through the chamber *c*, the opening *c'*, the passage *f*, and the port *g<sup>2</sup>* to the atmosphere. Therefore when steam is turned on by opening the radiator-valves the air which is in the radiator is forced out through the port *g<sup>2</sup>* by means of the advancing steam. When, however, the air has been practically all expelled and steam enters the chamber *c*, the heat of said steam is radiated from the inner side of the partition *e* and strikes against the expansion-loop *j*, causing the same to expand and "uncurl," and thereby operating upon the lever *i* to force the valve *h* against its seat and close the port *g<sup>2</sup>*.

Although the expansion-chamber *d* is open to the passage *f*, steam cannot enter said chamber because of the body of air therein. The loop *j* is therefore kept free from moisture and may accordingly be constructed partly of iron or steel without danger of destruction from rust.

The purpose of the pipe *k* is to prevent water of condensation from passing through the opening *c'*. Such water collects in the chamber *c* around said pipe, and when it has risen to the highest point of the partition *e* the surplus flows back into the radiator through the connecting-pipe B'.

I claim—



1. An appliance of the character specified, comprising a central expansion-chamber, an air-and-steam chamber surrounding the same and separated therefrom by a heat-conducting  
5 partition, a valve-chamber communicating with said air-and-steam chamber and having a valve-seat and an outlet opening or port, a valve in said chamber, a pivoted lever connected with said valve and extending into  
10 the expansion-chamber, an elongated metal strip attached to said lever and to a fixed support and adapted by its expansion and contraction to operate said valve, and means in the air-and-steam chamber for retaining and  
15 turning back water of condensation.

2. An appliance of the character specified comprising a central expansion-chamber and a surrounding air-and-steam chamber formed in a main body portion of the appliance, and

separated by a heat-conducting partition, re- 20  
movable side plates, one of which constitutes a wall or closure for one of the chambers and the other of which constitutes a wall or closure for the other chamber, a valve-chamber communicating with both of said chambers 25  
and having an externally-opening port, a valve therein, and a metallic thermostat occupying the expansion-chamber and adapted by its expansion and contraction to operate said valve. 30

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 8th day of April, A. D. 1897.

STEPHEN H. BAKER.

Witnesses:

C. F. BROWN,

A. D. HARRISON.