

No. 876,974.

PATENTED JAN. 21, 1908.

H. A. KNOX.
PISTON.

APPLICATION FILED SEPT. 20, 1907.

Fig. 1.

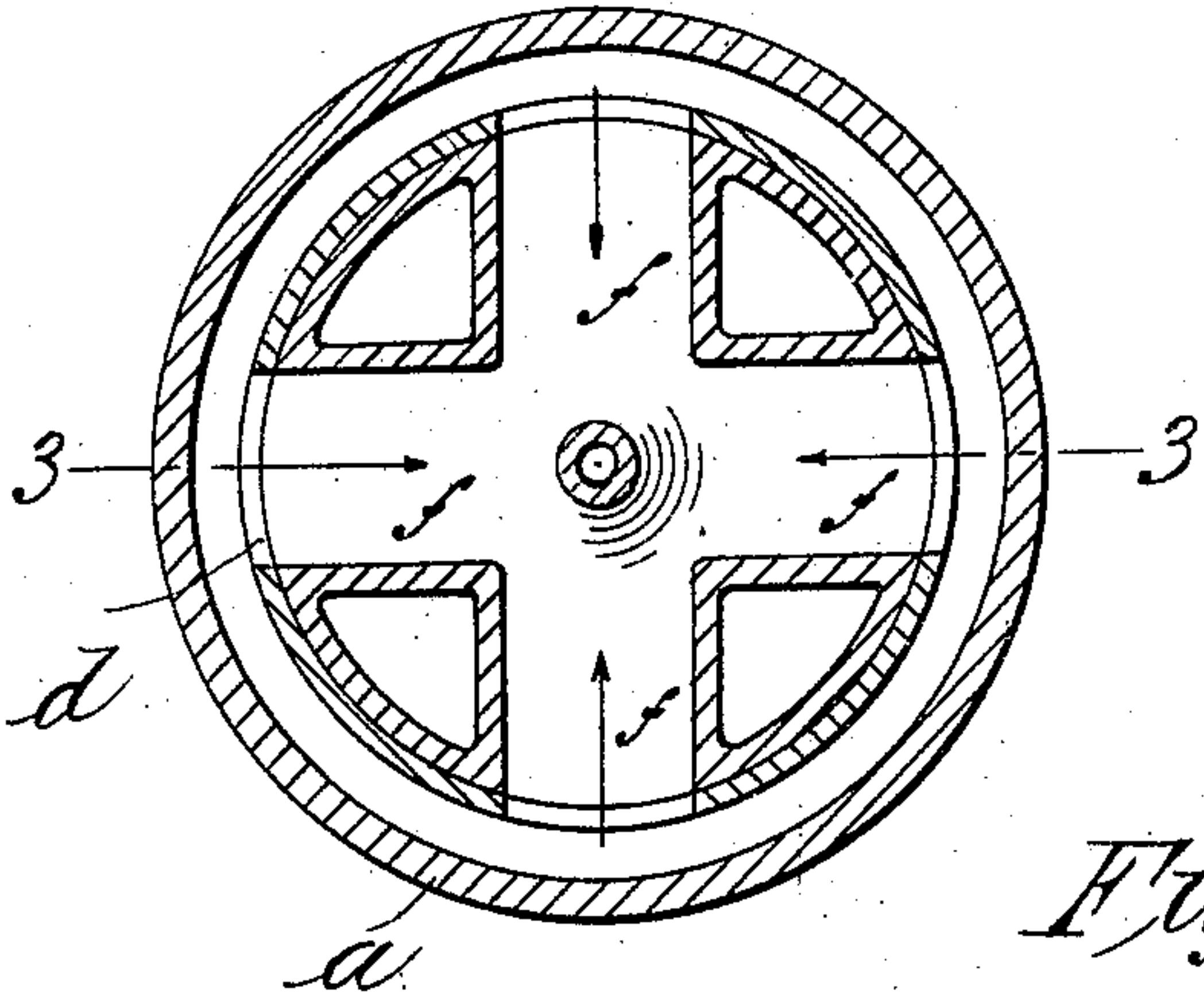


Fig. 2

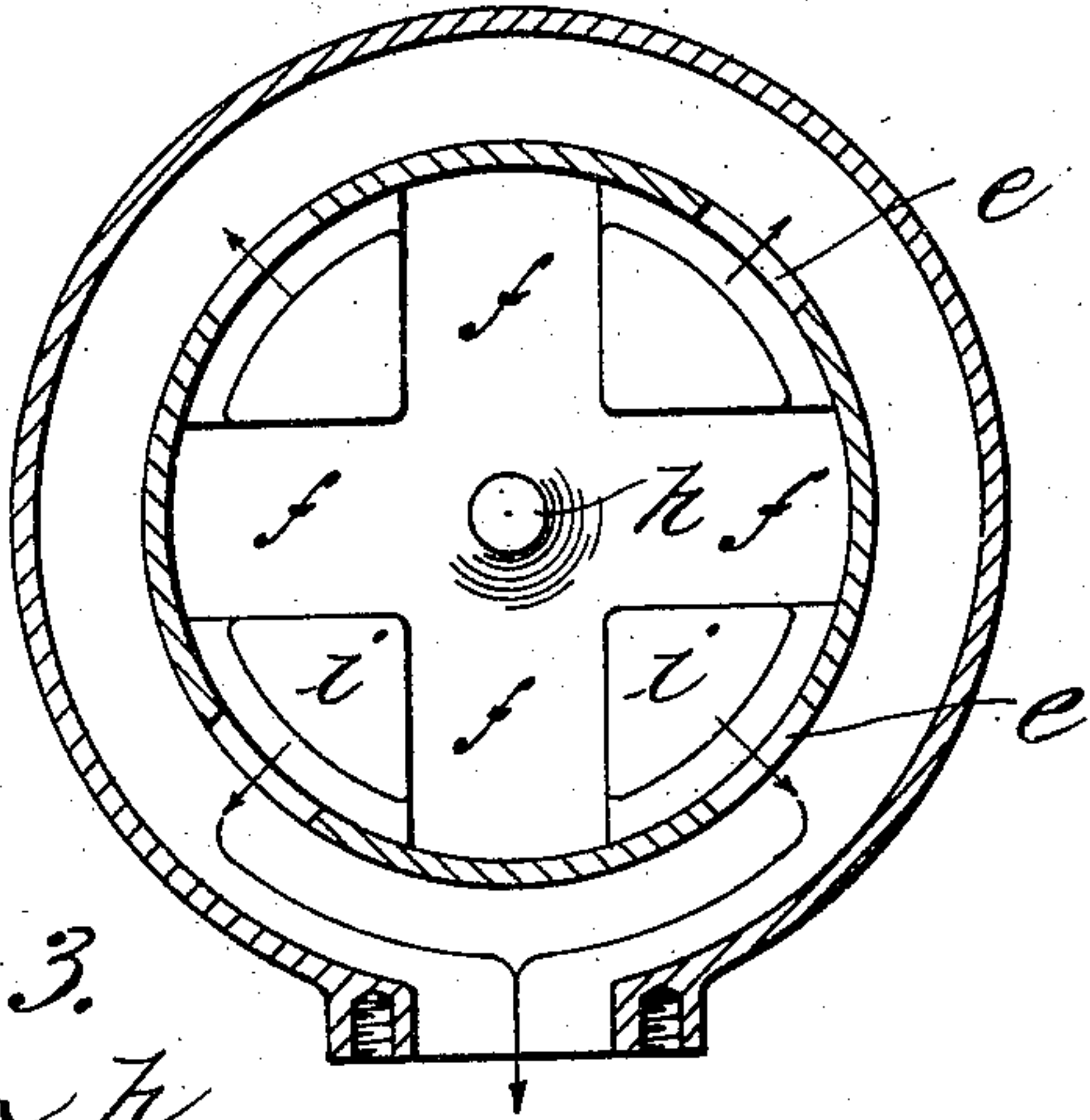
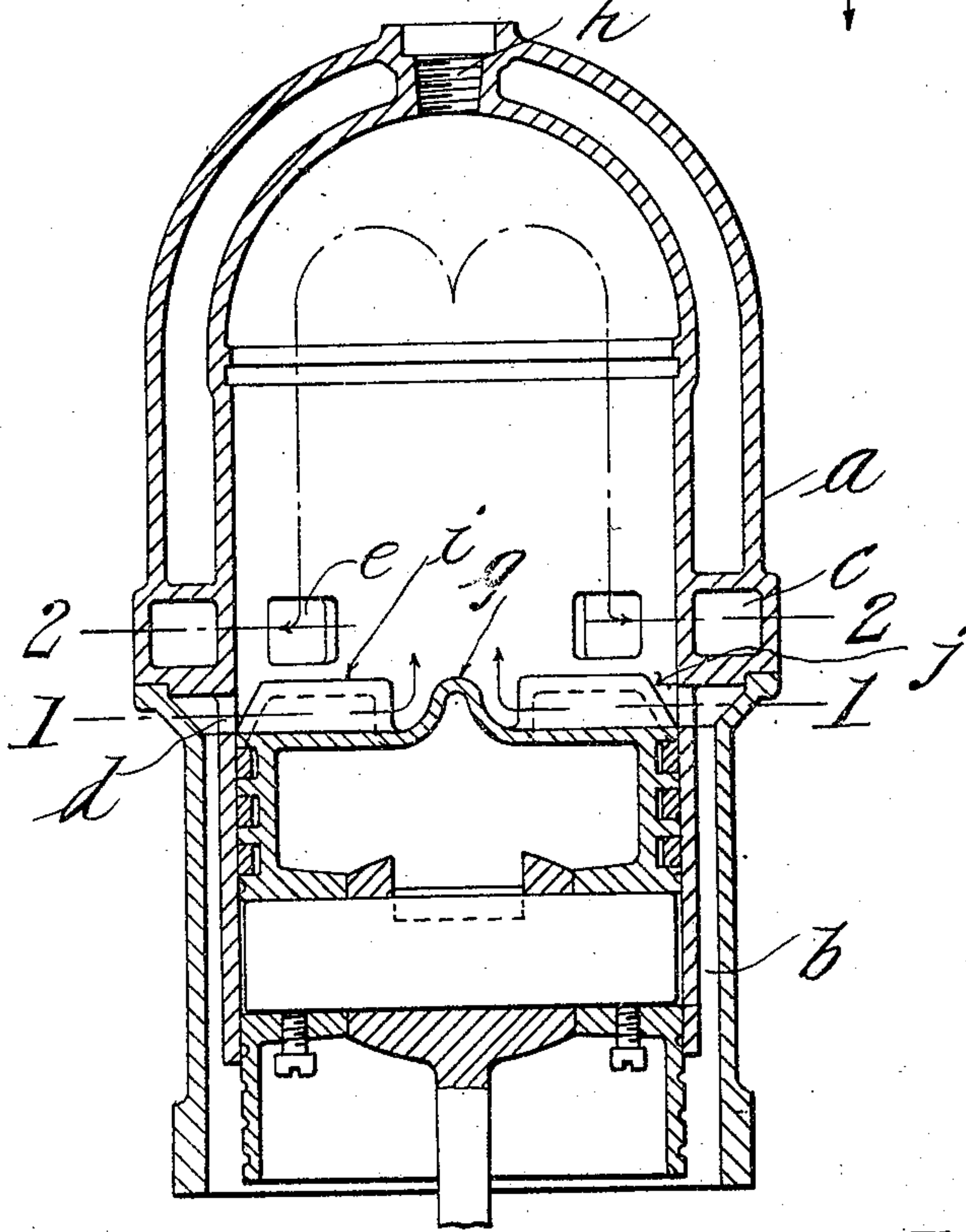


Fig. 3.



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UNITED STATES PATENT OFFICE.

HARRY AUSTIN KNOX, OF SPRINGFIELD, MASSACHUSETTS.

PISTON.

No. 876,974.

Specification of Letters Patent.

Patented Jan. 21, 1908.

Application filed September 20, 1907. Serial No. 393,764.

To all whom it may concern:

Be it known that I, HARRY AUSTIN KNOX, a citizen of the United States of America, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Pistons, of which the following is a specification.

This invention relates to improvements in pistons and particularly to those employed in two cycle internal combustion engines although its use is not limited to such type of engines.

The object of the invention being to so construct the head end of the piston as to prevent excessive heating of this portion.

A further object of the invention is to provide a structure that will efficiently and thoroughly direct the incoming charge of combustible vapor to the upper end of the cylinder and into proximity to the ignition devices that are located therein.

A further object of the invention is to form the head end of the piston so that the burned gases can readily escape from the cylinder through the outlet ports.

Further objects of the invention will be fully described in the body of the specification and particularly pointed out in the claims.

Figure 1 is a transverse sectional view on the line 1—1, Fig. 3, showing the arrangement of the channels for the incoming vaporous charge, with the inlet ports registering with said channels. Fig. 2 is a sectional plan view on the line 2—2 of Fig. 3 showing the relative location of the channels in the head end of the piston and the outlet passages in the cylinder for the burned gases in their escape from the interior of the cylinder. Fig. 3 is a vertical longitudinal sectional view on the line 3—3 of Fig. 1, showing the inlet channels in the head end of the piston registering with the inlet ports in the cylinder.

Referring to the drawings in detail *a* designates the cylinder provided with inlet passages *b* and the annular exhaust passage *c*. The inlet ports *d* and exhaust ports *e* being arranged in their proper relation to each other.

This invention relates primarily to improvements in the construction of the head end of the piston for use in two cycle engines. It has been found from experience that the head end of the piston becomes excessively hot by reason of the burned gases passing

thereover after each explosion, and in order to keep the temperature down as low as possible, and at the same time to maintain the efficiency of the engine; some means to lessen the amount of material that is employed in this part of the piston is necessary whereby efficient cooling of this part of the piston can be maintained.

Referring in detail to construction of piston, *f* designates radially arranged channels that are formed in the head end of the piston and through which the incoming vaporous charge from the ports *d* passes. This charge when it reaches the center portion of the piston comes into contact with a cone or pyramid-shaped boss or projection *g* which directs the vaporous charge upward toward the center or top portion of the cylinder and into contact with, or in close proximity to the ignition device or plug which is secured to this part of the cylinder as shown at *h*. It will be observed that these channels are open at the top, or outer end as plainly indicated in Fig. 2, so that the incoming charge is practically confined in these channels, and that the outgoing or burned gases are deflected or come in contact with the ledge or shoulder shaped quadrants of the piston. The edge of the piston is chamfered as shown at *j* which also aids in directing the burned gases through the ports *e*. From this construction it will be seen that by reason of the small amount of metal employed in the head end of the piston there is very little danger of this part becoming over-heated, since the cool incoming vaporous charge in passing through the channels will serve to keep the parts *i* cool which had previously been heated by the escaping burned gases while at the same time the incoming charge is practically confined in the channels and is directed upward or deflected by means of the boss *g* towards the head end of the cylinder.

It should be mentioned that the location of the boss or deflecting element *g* is not necessarily located at the exact center of the piston head, but is approximately so located. Furthermore the sides of the channels and boss are not limited to a cast structure, but elements may be attached to the piston head in any suitable manner.

The exact shape, size, and number of parts in my construction may be changed in any suitable way without departing from the

spirit and scope of my invention, and that equivalent structures is understood to be included herein.

What I claim, is:

- 5 1. A piston having a plurality of channels on the head end thereof and extending inwards from the periphery thereof, the channels being arranged to register with the inlet ports at the end of the piston stroke.
- 10 2. A piston having its head end provided with channels one side thereof being open,

said channels being radially arranged, a boss or projection on or near the center of the piston, the projection extending toward the head end of the cylinder, whereby the incoming charge from inlet ports in the cylinder to the passage-ways will be directed toward the head end of the cylinder, as described.

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Witnesses:

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