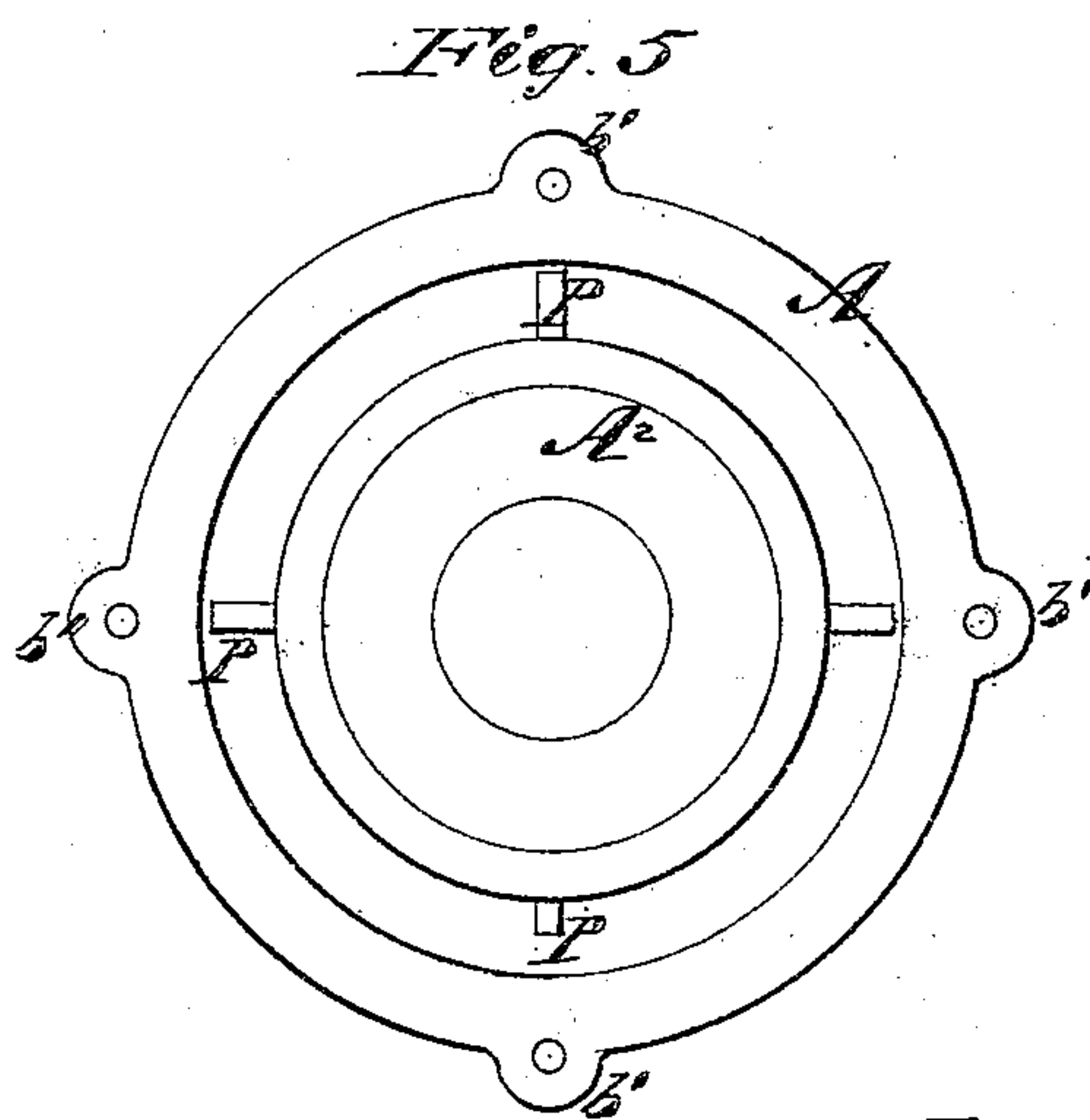
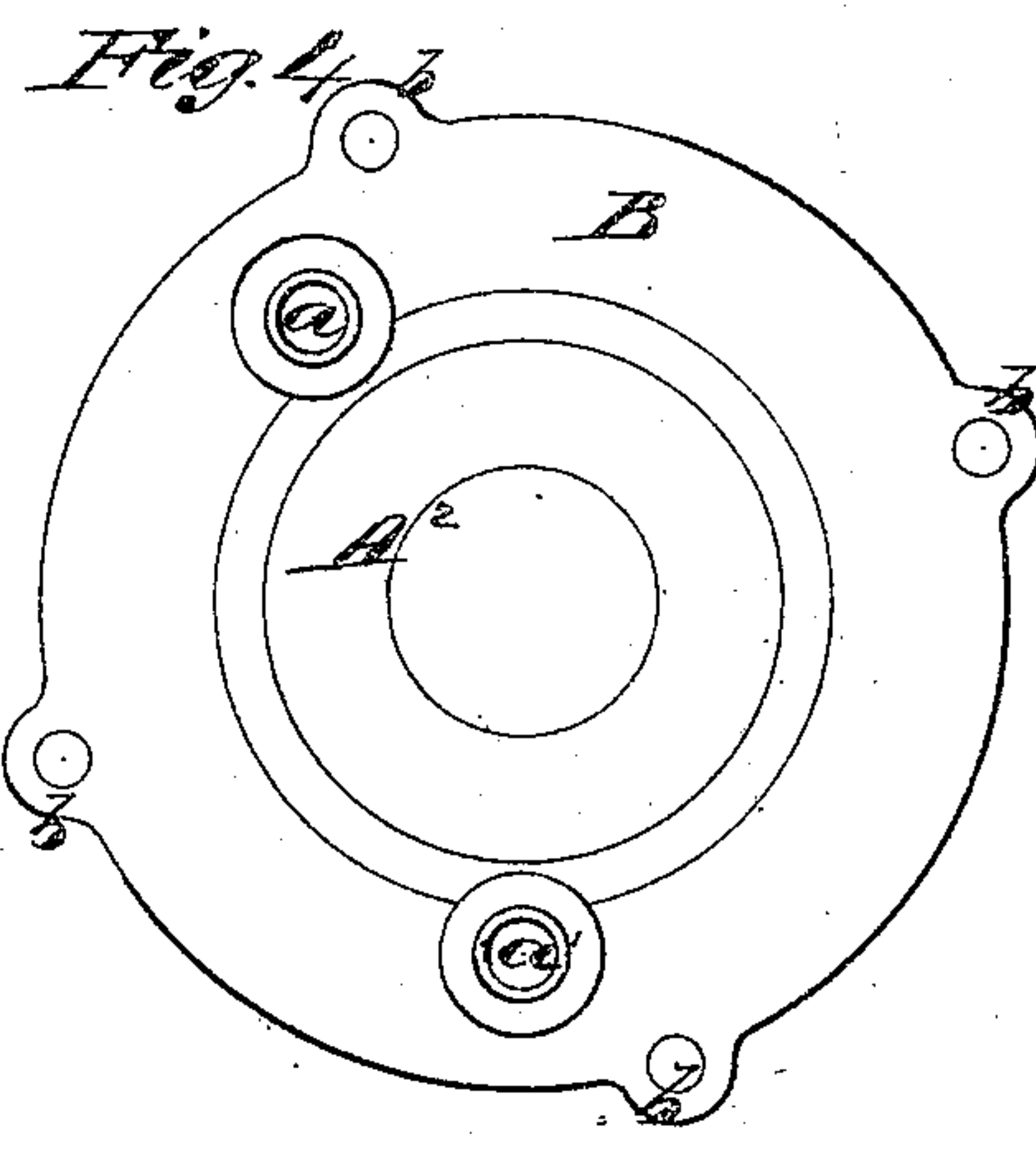
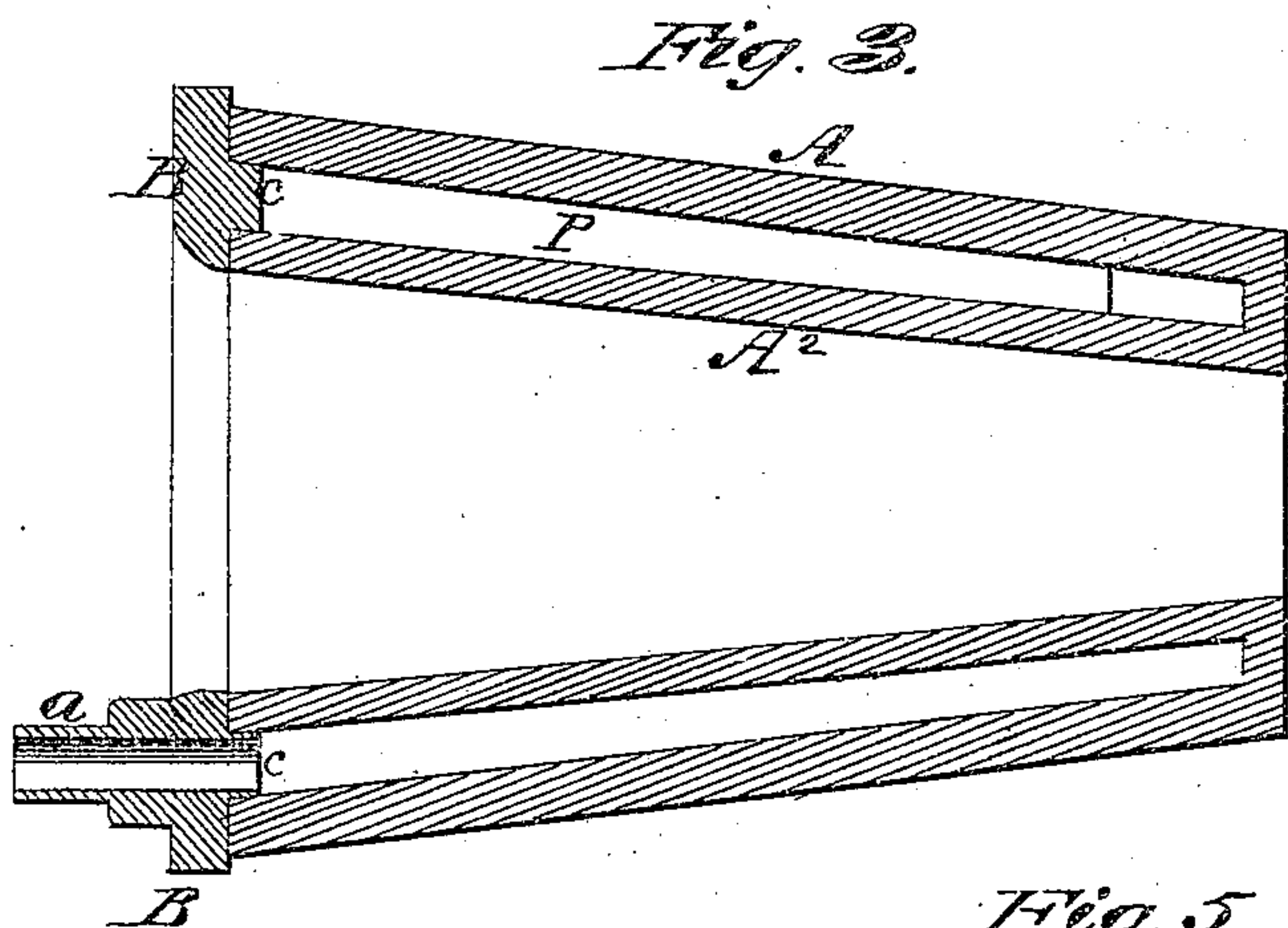
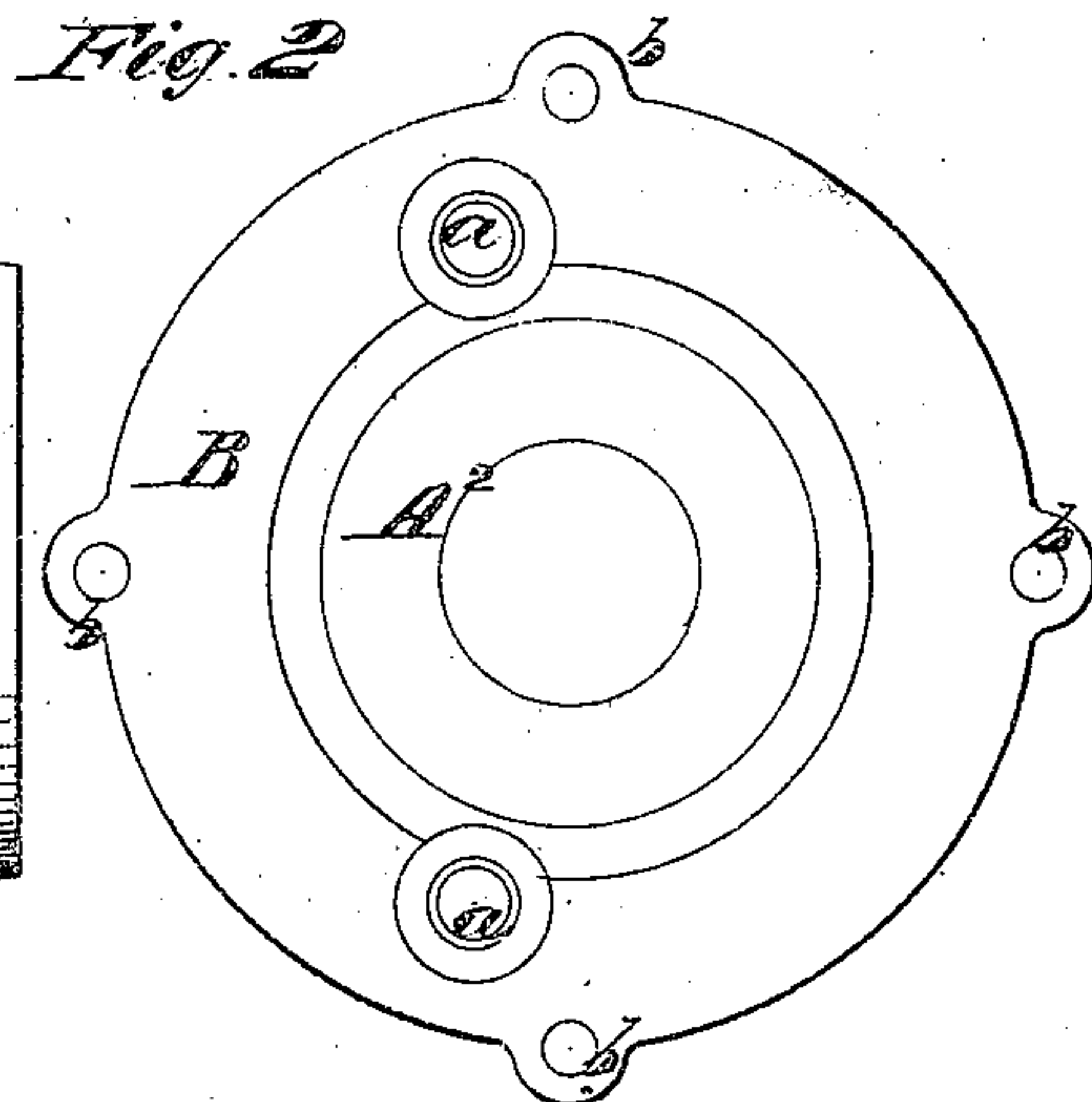
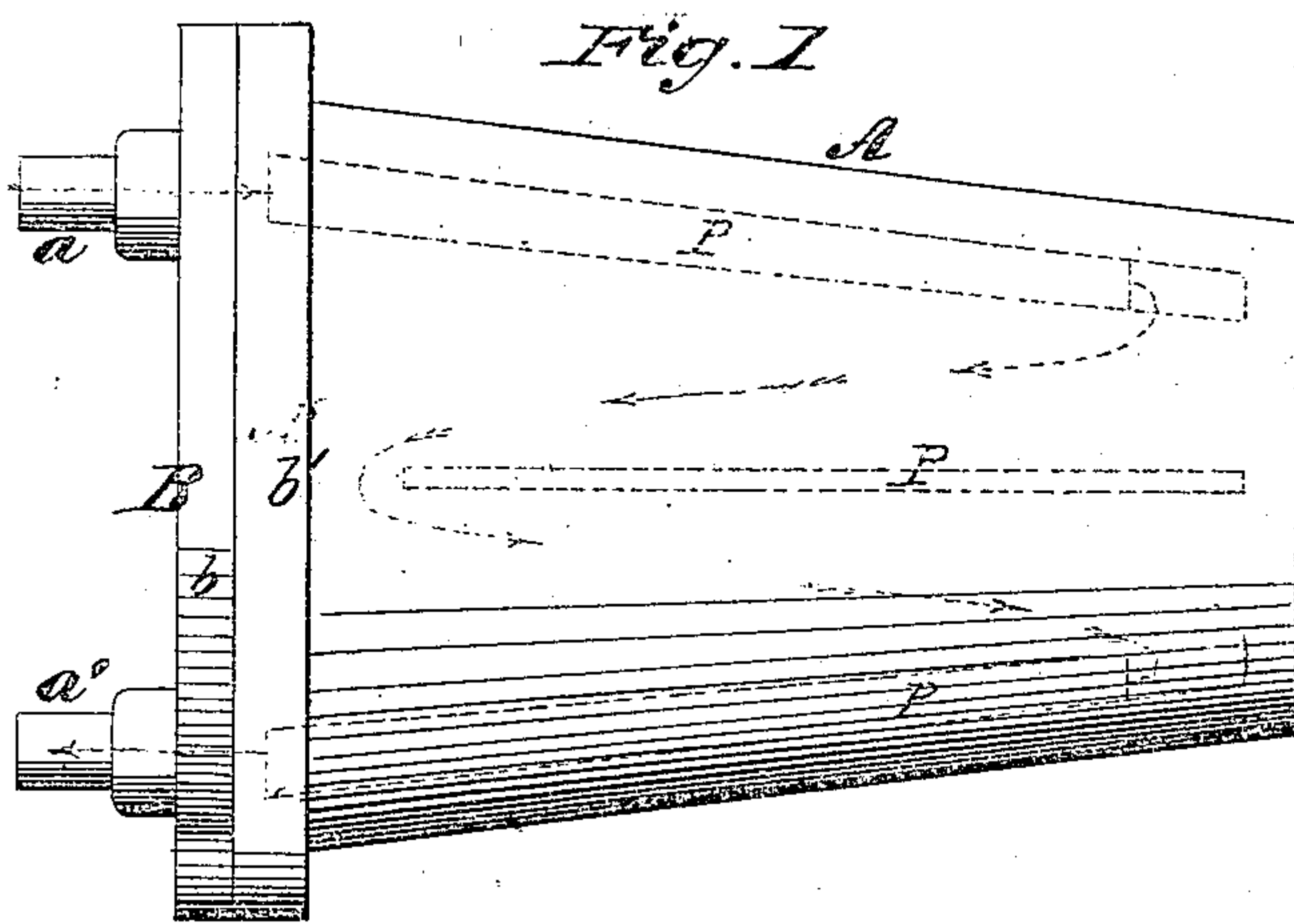


P. L. WEIMER.  
TWYER.

No. 104,804.

Patented June 28, 1870.



*Witnesses:*  
R. J. Campbell.  
J. W. Campbell.

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P. L. Weimer  
G. W.  
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# United States Patent Office.

PETER L. WEIMER, OF LEBANON, PENNSYLVANIA.

Letters Patent No. 104,804, dated June 28, 1870.

## IMPROVED TWEER.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, PETER L. WEIMER, of Lebanon, in the county of Lebanon and State of Pennsylvania, have invented an Improved Tweer; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a side elevation of the improved tweer.

Figure 2 is an end view of the same.

Figure 3 is a diametrical section through the tweer.

Figure 4 is an end view, from which fig. 3 is projected.

Figure 5 is an end view of the tweer without the cover.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is—

First, to construct a tweer with internal longitudinal partitions, arranged in such relation to the inlet and outlet-orifices for water that a current of water can be caused to circulate between the walls of the tweer, from one orifice to another, in a continued stream, the direction of the current being alternately from one end to another of the tweer.

Second, in constructing of cast metal a tweer which is only composed of two separately-formed pieces, one of which is the cap, and the other a double wall-partitioned body, as will be hereinafter explained.

To enable others skilled in the art to understand my invention, I will explain its construction and operation.

In the accompanying drawing—

A, A<sup>2</sup>, and P are portions constituting the body of my improved double-wall-partitioned tweer.

This body-portion is made of the usual well-known form exteriorly, to wit: the form of the frustum of a hollow cone.

The outer wall A, the inner wall A<sup>2</sup>, and the partitions P, are cast in one piece, with the partitioned space at the smallest end closed, and the corresponding space at the opposite end open.

The tweer shown in the drawing has but four partitions in its water-circulating space, arranged at equal distances apart; but, if desirable, a greater or even a lesser number may be adopted.

These partitions are made in such manner that water entering through the pipe *a* will circulate from one end to the other of each space included between two partitions, and then escape out of the pipe *a'*. Consequently there can be no trapping or accumulation of steam at any part of the tweer.

The cap-ring B is constructed with openings, *a a'*, through it, and also with an annular tongue, *c*, which latter is adapted to fit snugly into the annular space

between the two walls, A A<sup>2</sup>, at the butt or largest end of the body of the tweer, as shown in fig. 3. This ring-cover B is securely bolted to the flanges, *b'*, on the body-portion.

I am aware that tweers of the general form shown in the drawing have been made, before my invention, of wrought metal, such as wrought iron and copper; but, owing to the want of proper directors or divisions in such tweers, steam will form and accumulate in spaces which are out of the line of the currents of water.

I am also aware that a spiral coil of pipe, inclosed externally by a casing, has been used prior to my invention as a tweer. This form will obviate the objection above mentioned, but it is liable to a still more serious objection, namely: the pipe-coil will soon be filled with incrustation.

In using tweers, according to my invention, the head of water is usually from twenty-five to fifty feet, and a stream of water is conveyed from this height in a pipe to the inlet-pipe of the tweer, when, after passing through the tweer, it is allowed a free escape; but, when water is a scarce article, the escape-water of the tweer of a furnace is conveyed to a large cooling-pond or reservoir, when it is pumped to the overhead-tank, to be used again. Furnace men generally have the escape-water of their tweers so arranged that the escaping stream is always in view, and, by feeling the temperature of the escape-water, regulate the quantity flowing into the tweer. With such a strong head of water, necessary to keep a sufficient current of water going through the tweer, it was found in the old plate-tweer that the current set from inlet to outlet-pipes by the most direct route, thus allowing parts of the tweer to be without circulation. In these parts the water was rapidly converted into steam, the consequence of which was a hole burned into the tweer. And it was for this reason that I, after manufacturing for nearly twelve years more than one-half of the tweers made in the United States, devised my improved tweer, which is, in all its parts, subjected to the direct action of the water of circulation, by reason of the alternate flow of the water from nose to butt and butt to nose, which is effected by the longitudinal divisions of my tweer terminating alternately at nose and butt of the tweer, and leaving a sufficient space to allow a free passage of the water in a circuitous course.

I am aware of the French patent of Corlett, which describes a tweer composed of an upper and lower half, the water being free to enter the lower, and escape through the opening into the upper half, ("by permitting it to obey the physical laws which make the warm particles of this liquid to rise to the surface,") and thence into the forebay or reservoir, to repeat the

same process; but my tweer differs from his in essential particulars, besides being cast in one piece—an advantage, not of manufacture, but of practical benefit in the use of the tweer.

I therefore disclaim the invention described in said patent to Corlett, and

I claim the improved tweer herein described, composed of the chamber-walls A A<sup>2</sup> and partitions P, cast in one piece, and so that, when the head or butt B, with inlet and outlet-passages in it, is applied, the

tweer will be complete, and there will alternately be at the nose and butt of the tweer, within the walls A A<sup>2</sup>, a passage for the circulation of the water through every part of the chamber, substantially in the manner described.

PETER L. WEIMER.

Witnesses:

S. P. RABER,

JOHN W. ACKEY.