

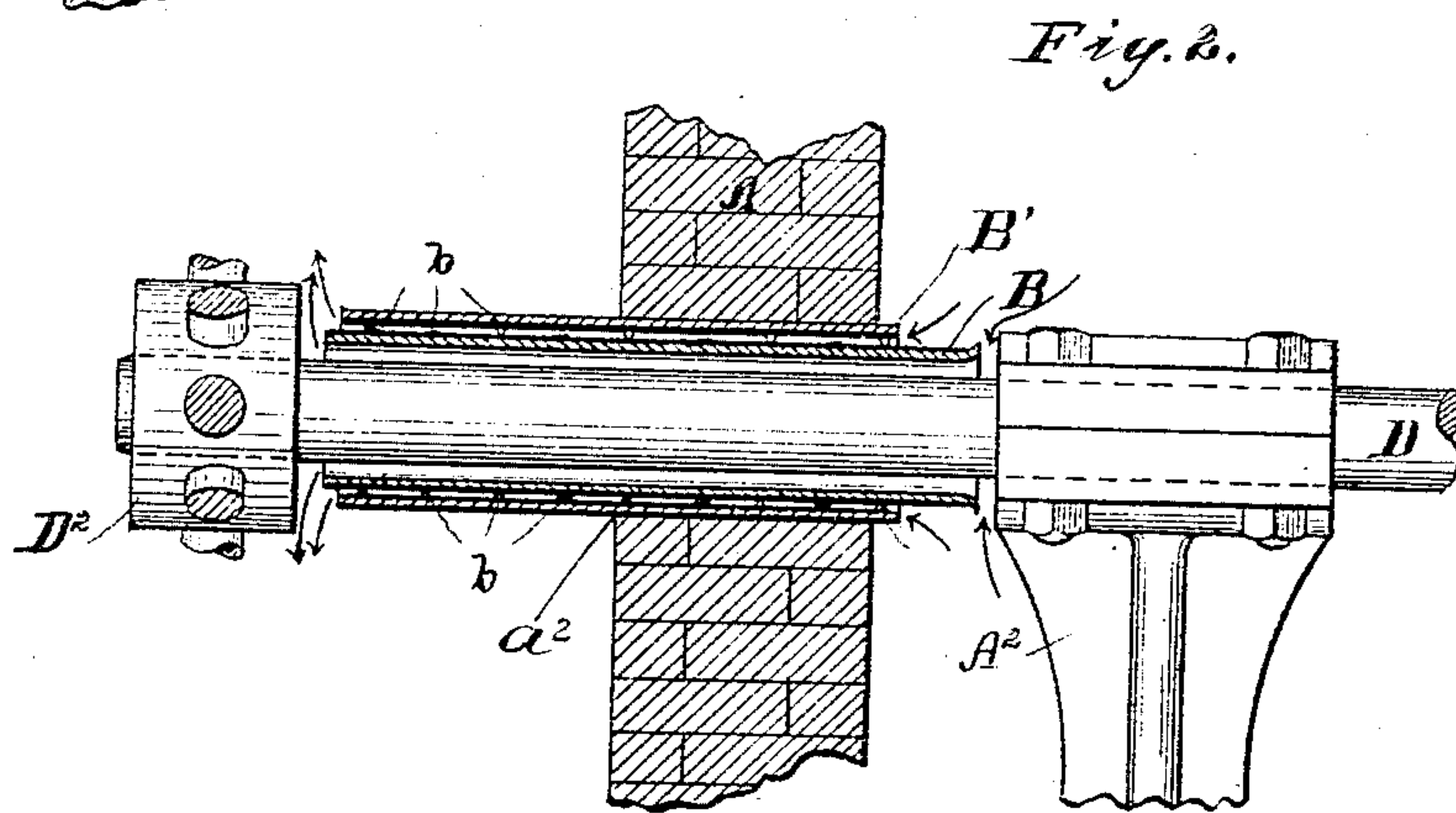
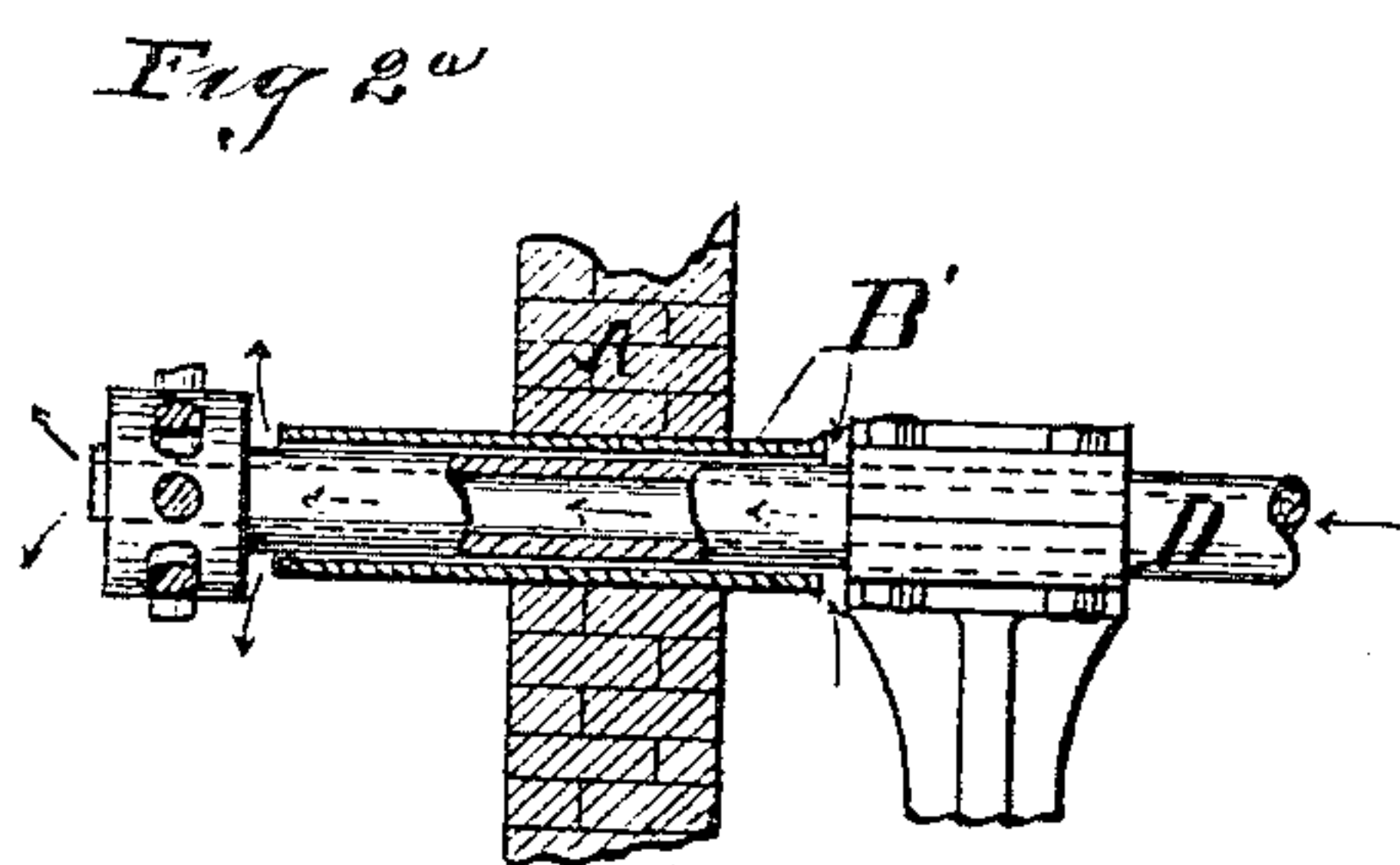
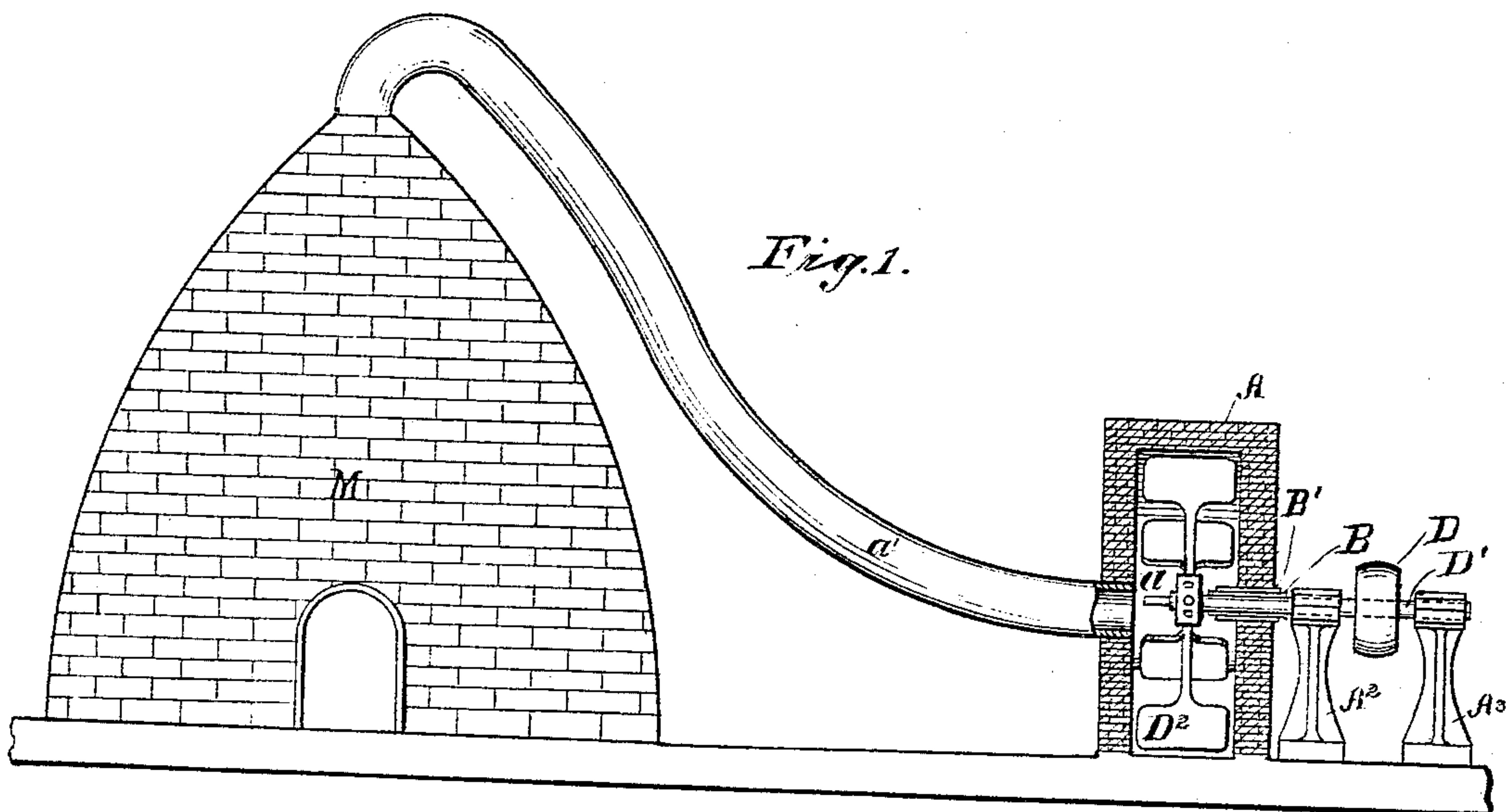
No. 616,590.

J. M. SEYMOUR, JR.  
EXHAUSTER.

Patented Dec. 27, 1898.

(Application filed Feb. 1, 1898.)

(No Model.)



Witnesses

R. H. Newman.  
J. B. Clautice

Inventor

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# UNITED STATES PATENT OFFICE.

JAMES M. SEYMOUR, JR., OF NEWARK, NEW JERSEY.

## EXHAUSTER.

SPECIFICATION forming part of Letters Patent No. 616,590, dated December 27, 1898.

Application filed February 1, 1898. Serial No. 668,708. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES M. SEYMOUR, Jr., a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Exhausters, of which the following is a specification.

A centrifugal blower used as an exhauster is very efficient in the uptake of a kiln or other furnace or in a chamber properly connected with such uptake to promote the draft of the fire in the furnace by acting on the hot gases after they have performed their duties. In such situations the exhauster-fan and its adjuncts necessarily assume and maintain a high temperature.

My invention relates to that class of constructions designed to aid in preventing the high temperature from being communicated to the bearings of the exhauster-shaft.

I will describe the invention as applied to an overhung shaft carrying a large and rapidly-revolving exhauster mounted within a brick casing and so conditioned that the exhauster and the immediately adjacent portion of the shaft are red-hot.

I extend through the wall two concentric horizontal pipes, the innermost a little larger in diameter than the shaft, entirely out of contact with the same and nearly the full length of the overhang, and allow the external air to move inward through the annular space between the innermost and the shaft and also in smaller quantity between the innermost and the outermost pipes, which maintains the bearing perfectly cool.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is an elevation, partly in vertical section, showing the entire novel portions of the apparatus. Fig. 2 is a vertical section of a portion on a larger scale. Fig. 2<sup>a</sup> is a corresponding section, on a smaller scale, showing a modification.

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

A is the brick wall of an exhauster-chamber  $a$ , and  $a'$  the flue through which the hot gases are drawn from a kiln M. It will be under-

stood that the hot gases acted on by the powerful revolutions of the exhauster are thrown out in the ordinary manner through a tangential passage and caused to flow rapidly up a stack. (Not shown.)

A hole at the point (designated by  $a^3$ ) opposite to the flue is a little larger than the shaft of the exhauster and receives a horizontal pipe B open at both ends.

$A^2$  and  $A^3$  are the pedestals which support the bearings of a shaft D, driven by a belt (not shown) running on a pulley D' and having a long overhung end extending through the pipe B and carrying an efficient centrifugal exhauster D<sup>2</sup>. The external air at ordinary temperatures is drawn inward through the unobstructed annular space between the exterior surface of the shaft D and the inner surface of the pipe B. The air is drawn in a thin but steady stream into the center of the exhauster-chamber, conveying with it the heat which it has absorbed from the surface of the shaft. Its open outer end, slightly trumpet-mouthed, lies near the nearest bearing  $A^2$ , and its open inner end lies near the hub of the exhauster. The air entering through it cools the whole of the inclosed portion of the shaft. An outer pipe B' of nearly the same length is mounted concentrically around the pipe B, the thin space between being maintained by slight spurs  $b$ , extending outward from the inner pipe B or inward from the outer pipe B'. The function of this outer pipe is to defend that portion of the inner pipe B which extends into the chamber  $a$  against the reception of so much heat as it would otherwise receive from the surrounding gas. The inner end of the exterior pipe will become red-hot. The little space between this pipe and the inner pipe B retards the transmission of heat, and the axial motion of the air in such thin space contributes to the effect.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. The proportions may be varied. Parts of the invention may be used without the whole. I can omit the slight trumpet-mouth at the outer end of the pipe B. The space between the outer pipe B' and the inner pipe B may be greater or less than shown. The outer pipe may be omitted



entirely, the inner pipe alone being set directly in the wall A.

In the form shown in Fig. 2<sup>a</sup> the shaft is a little larger in diameter and hollow, the interior affording a liberal passage through which the air flows with a corresponding effect. When this form of the invention is used, I prefer to provide also a passage for the air on the exterior of the shaft, and have represented the pipe B' as thus employed. The invention may be used with some success with only the air-passage through the interior.

I claim as my invention—

1. In an exhauster for acting on hot gases, the chamber A, having an opening  $a^2$  in one of its walls, a shaft sustained by a bearing external to and independent of the chamber, said shaft extending through said opening into the chamber and carrying an exhaust-fan, in combination with inner and outer tubes spaced by spurs, the inner being larger in diameter than the fan-shaft to form an unobstructed annular space and extended to also

incase the overhang thereof, substantially as specified.

2. In an exhauster for acting on hot gases, the chamber A, having an opening  $a^2$  in one of its walls, a shaft sustained by a bearing external to and independent of the chamber, said shaft extending through said opening into the chamber and carrying an exhaust-fan, in combination with inner and outer tubes spaced by spurs, the inner being larger in diameter than the fan-shaft to form an annular unobstructed space and extended to incase the overhang thereof, the outer end of said inner tube being in proximity to the bearing and flared, substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

JAMES M. SEYMOUR, JR.

Witnesses:

J. B. CLAUTICE,  
M. F. BOYLE.