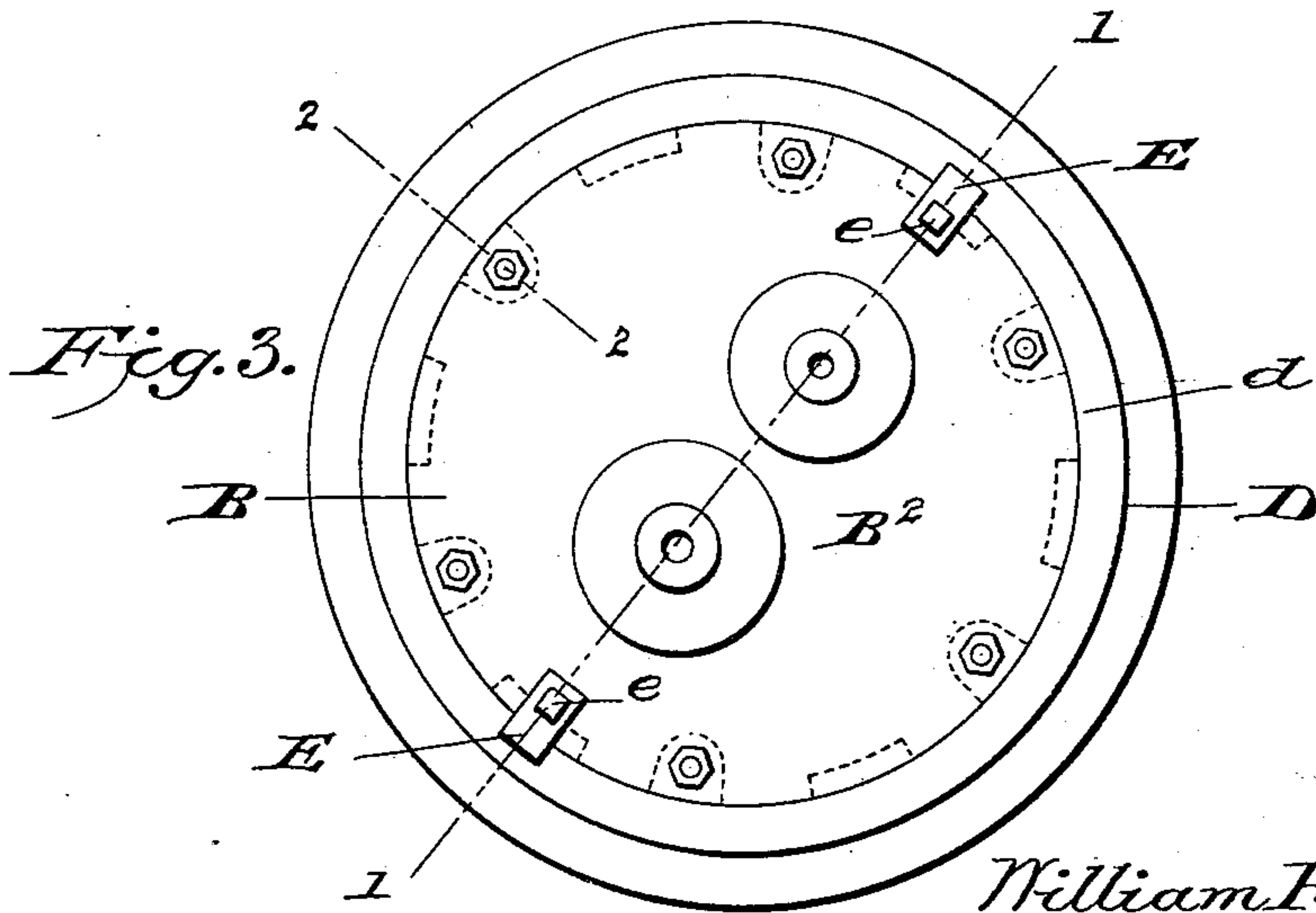
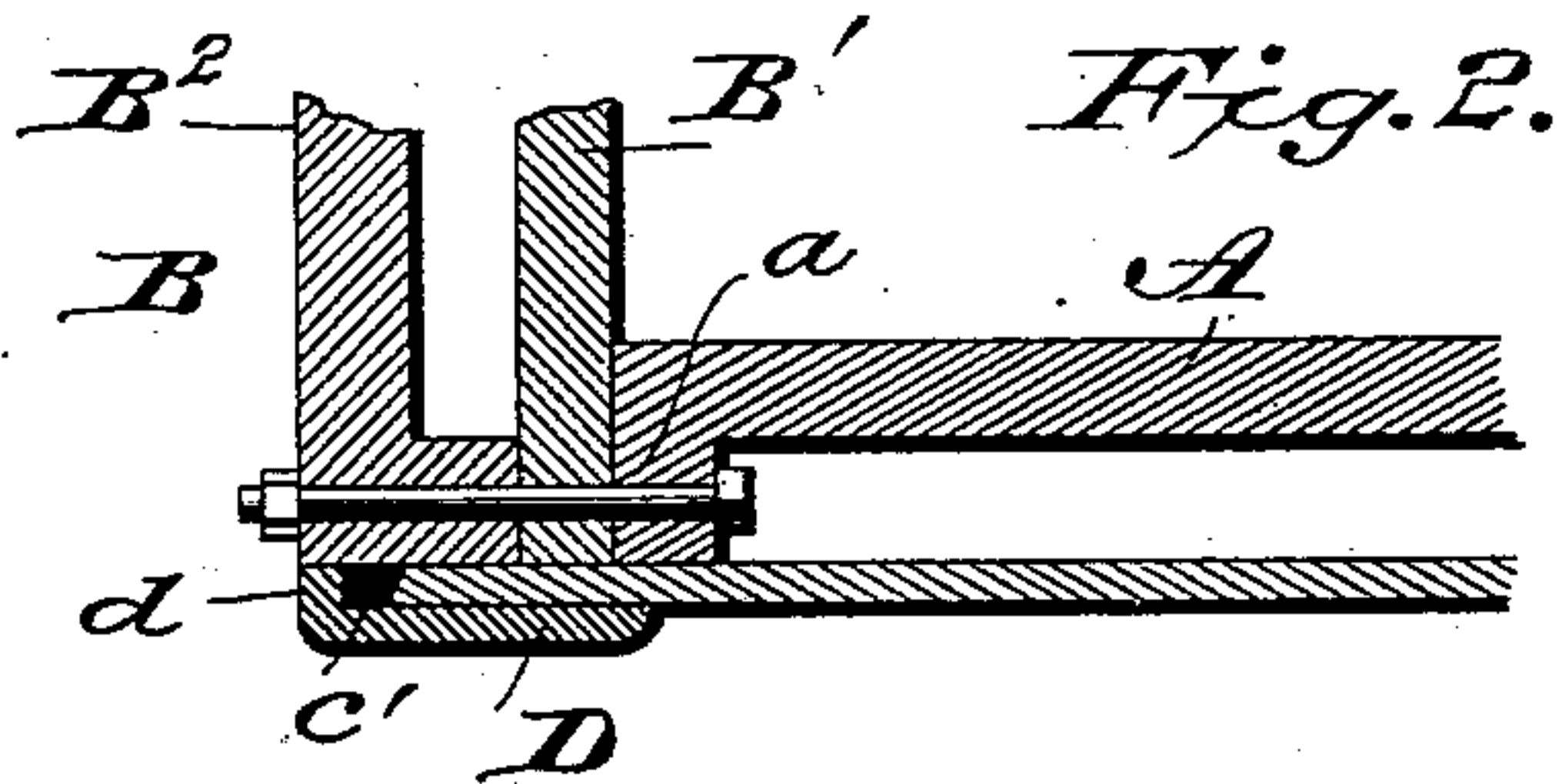
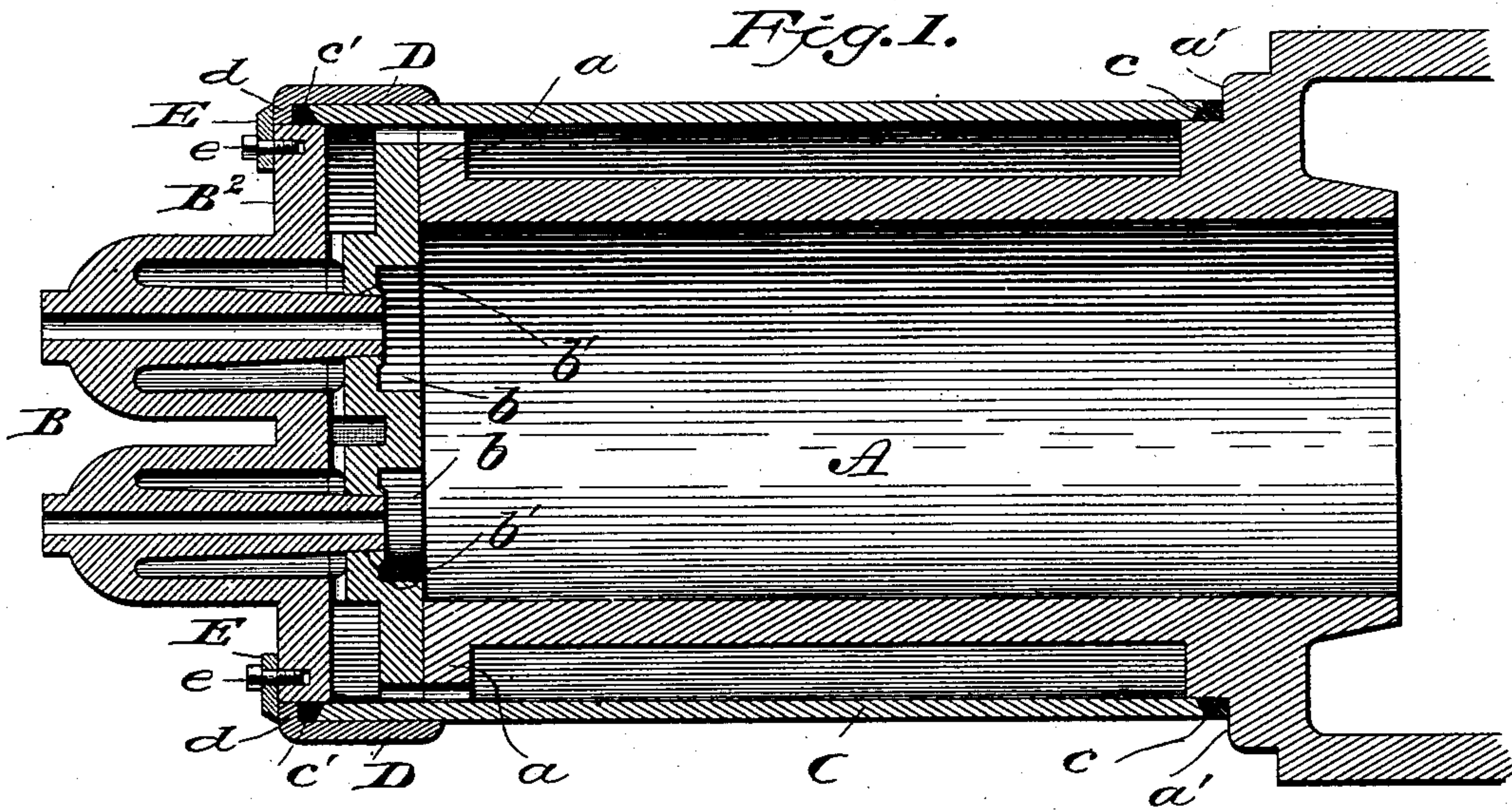


(No Model.)

W. F. DAVIS.  
CYLINDER FOR EXPLOSIVE ENGINES.

No. 563,140.

Patented June 30, 1896.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

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## CYLINDER FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 563,140, dated June 30, 1896.

Application filed February 20, 1896. Serial No. 580,112. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM F. DAVIS, a citizen of the United States of America, residing at Waterloo, in the county of Black Hawk and State of Iowa, have invented certain new and useful Improvements in Cylinders for Explosive-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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in cylinders for gasoline or other explosive engines, the object of the same being to provide such a cylinder with a water-jacket that can be readily removed and in the improved construction of the head, which is made up of two parts of such construction as to provide water-spaces surrounding the openings for the valve-stems and pockets for the valves.

With the above ends in view the invention consists in the construction and combination of the parts, as will be hereinafter fully set forth, and particularly pointed out in the claim.

In the accompanying drawings, forming part of this specification, Figure 1 is a longitudinal sectional view of a cylinder and head for gasoline and other explosive engines constructed to embody my improvements, said section being taken on the line 1 1 of Fig. 3. Fig. 2 is a detail sectional view on the line 2 2 of Fig. 3, and Fig. 3 is a plan view.

A designates the cylinder, which is of the usual type, and is provided at one end with an outwardly-projecting flange *a* and at its other end with a flange forming a shoulder *a'*.

B designates the cylinder-head of the usual type, and this head is made up of two parts, *B'* and *B<sup>2</sup>*, the part *B'* having the valve-pockets *b b* formed therein and openings *b' b'*, in which fit the lower ends of the parts of the disk *B<sup>2</sup>*, having the register with corresponding openings that receive the valve-stems. The parts *B'* and *B<sup>2</sup>* of the cylinder-head are constructed to provide water-spaces, which surround the openings *b'* and pockets *b*, and communicate with a water-space surrounding

the cylinder, as shown. If desired, the part *B<sup>2</sup>* of the cylinder-head may be provided with inlet and outlet openings suitably placed, so that a circulation of water can be kept up in the water-spaces. The cylinder-head *B* is made of suitable metal and is connected to the cylinder by bolts, which pass through solid portions at the outer edge of the parts *B'* and *B<sup>2</sup>* and engage threaded apertures in the flange *a* of the cylinder.

C designates the jacket, which is made up of a cylinder of brass, copper, or iron, and for many reasons it is desired that the strength of this jacket shall be less than the weakest part of the cylinder, so that should the water in the water-spaces freeze, the jacket would be broken or ruptured rather than any part of the head, which is more expensive to manufacture. This jacket is provided with beveled ends, and when it is placed upon the cylinder A, rubber gaskets *c* and *c'* are located at each end of the same, the gasket *c* bearing against the shoulder *a'* while the gasket *c'* bears against the inwardly-projecting flange *d* of a ring D, which is placed over the end of the cylinder for this purpose, as well as to give an ornamental appearance. The jacket is pressed firmly against the rubber gaskets, to make tight joints, by means of plates E, which are clamped or forced down upon the flange of the ring D by bolts *e*, that engage threaded apertures in the part *B<sup>2</sup>* of the cylinder-head.

By the particular construction and arrangement herein shown and described it will be understood that when it is desired to remove the jacket it is only necessary to loosen the bolts *e* and swing the plates E to one side, after which the ring D can be taken off and the jacket removed, for the purpose of renewing the same or cleaning the water-spaces of sediment that is likely to accumulate therein. It will therefore be noted that the jacket can be quickly removed for the purposes hereinbefore mentioned.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the cylinder and head of a gasoline or other explosive engine, of a water-jacket C surrounding the cylinder,

a ring D fitting over one end of the jacket and provided with an inwardly-projecting flange which bears against the end of the same, and a plate or plates E secured in place  
5 so as to bear upon the ring D, substantially as shown and for the purpose set forth.

2. In combination with a gasolene or other explosive engine, of a two-part cylinder-head constructed to provide water-spaces sur-  
10 rounding the valve-pockets and openings for the valve-stems; together with a jacket C surrounding the cylinder, and a ring D which

holds the jacket in place, the water-spaces in the cylinder-head communicating with the water-space surrounding the cylinder, sub- 15  
stantially as shown and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM F. DAVIS.

Witnesses:

CARRIE R. JOHNSON,  
IRA RODAMAR.