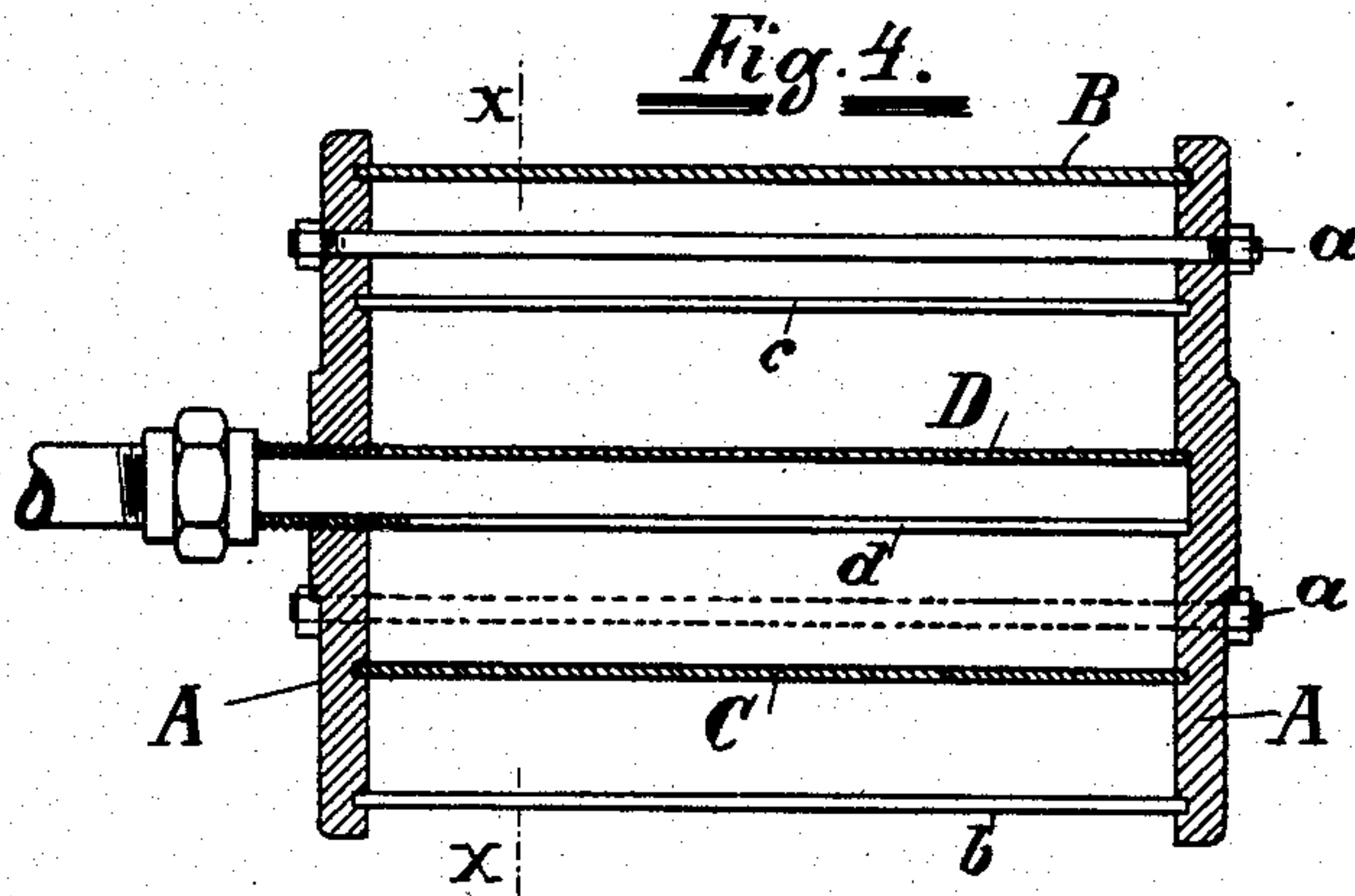
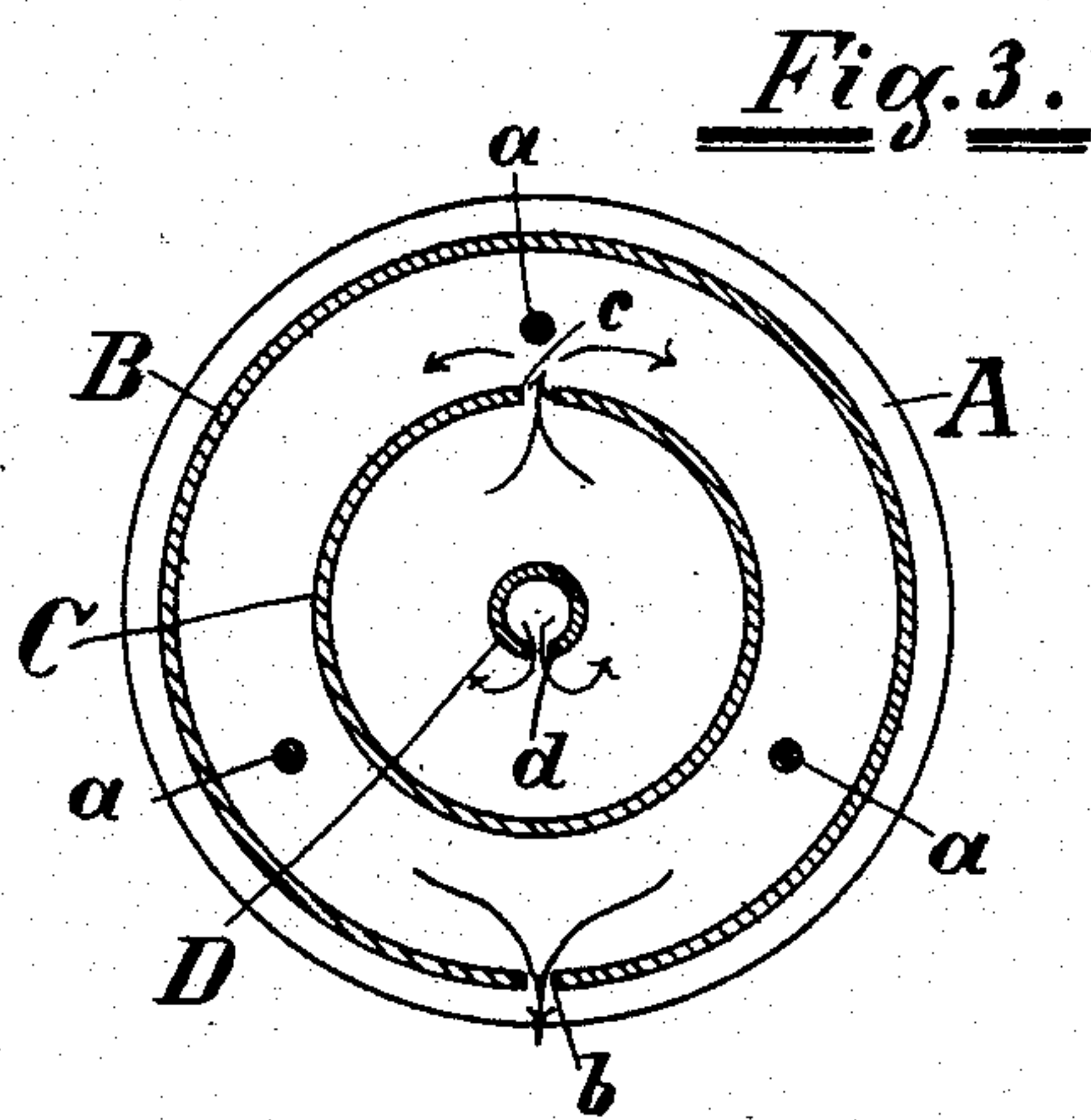
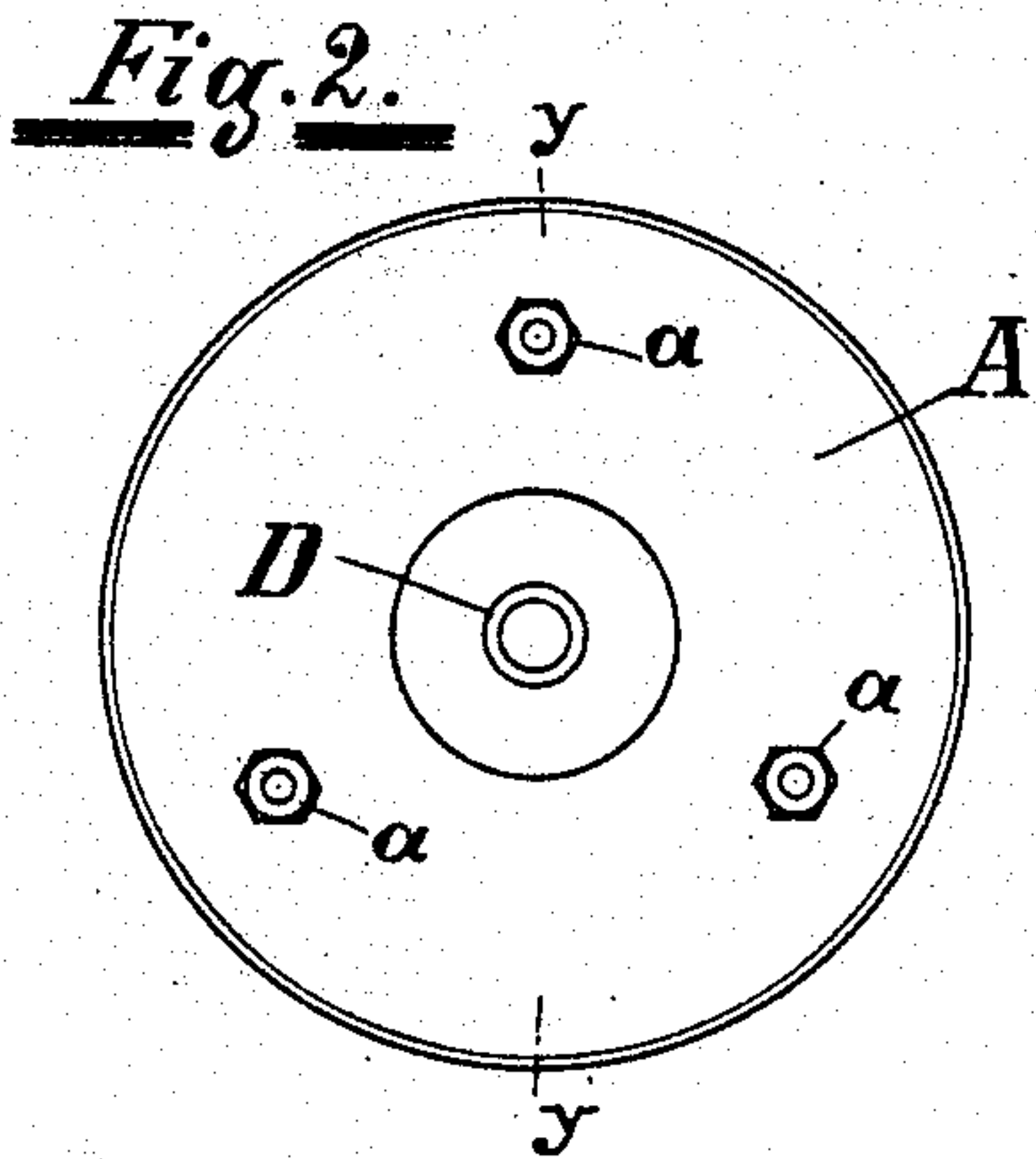
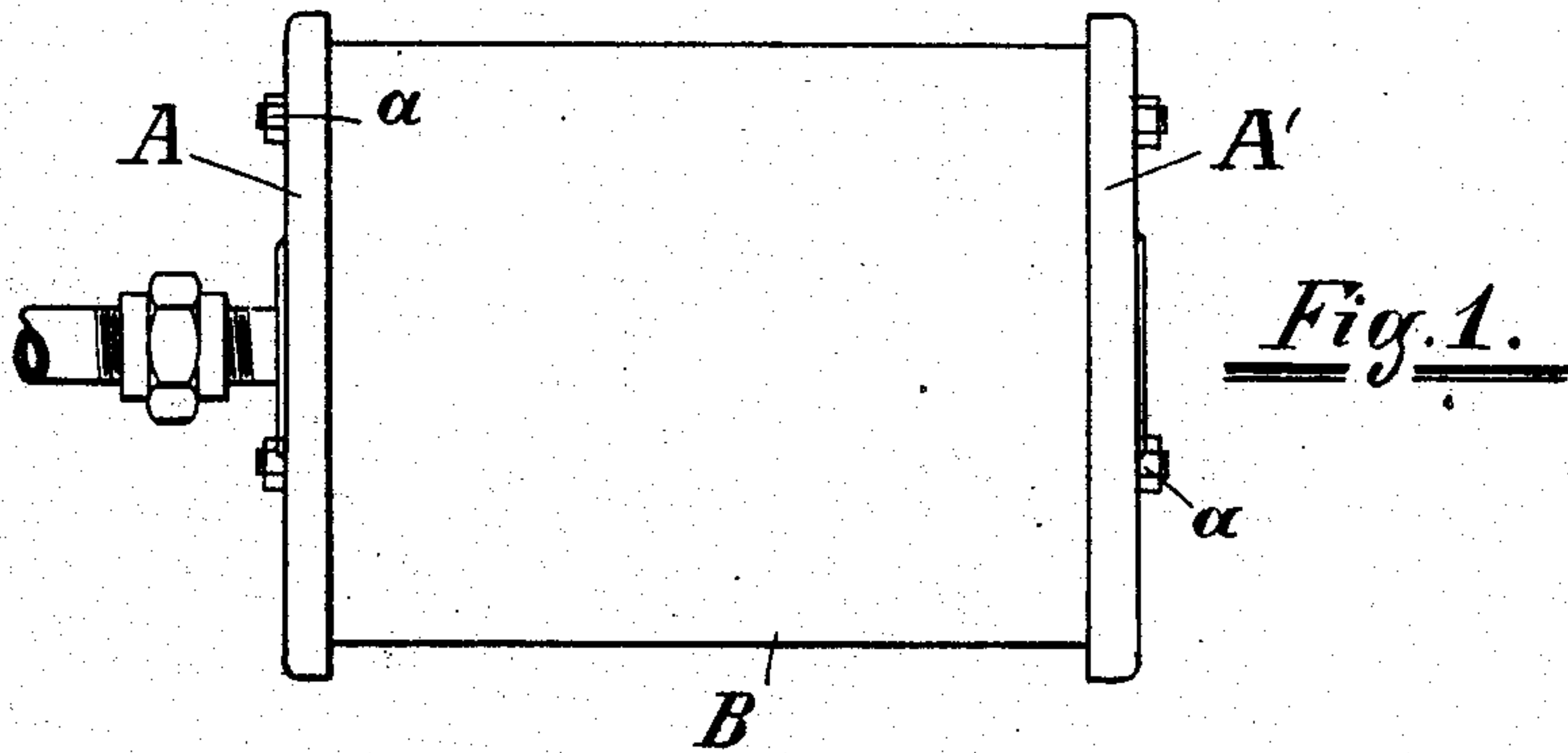


No. 675,498.

Patented June 4, 1901.

H. M. QUICK.  
MUFFLER FOR ENGINES.  
(Application filed Feb. 26, 1901.)

(No Model.)



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

HIRAM M. QUICK, OF PATERSON, NEW JERSEY, ASSIGNOR OF ONE-HALF TO  
HENRY B. KING, OF SAME PLACE.

## MUFFLER FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 675,498, dated June 4, 1901.

Application filed February 26, 1901. Serial No. 48,928. (No model.)

*To all whom it may concern:*

Be it known that I, HIRAM M. QUICK, a citizen of the United States of America, residing at No. 214 Van Houten street, in the city of Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Mufflers for Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

One object of my invention is to provide a means for muffling or deadening the sound of the exhaust of an engine in which the motive force is produced by the explosion of a gaseous body, which is usually effected by or through the medium of an electric spark.

A further object of the invention is to obtain a simple and effective muffling device that will be durable and inexpensive.

The invention consists of two or more tubes, cylinders, or conduits of suitable size and shape adapted to be held and fit the smaller within the larger, leaving an annular space between the larger and the smaller, the innermost being provided with a longitudinal slot in the bottom thereof and the next larger one being provided at the top with a similar longitudinal slot or opening, and the outermost, if there are three concentric cylinders or tubes, as shown in the accompanying drawings, is provided underneath with a longitudinal slot or opening also, so that the exhaust has to pass from the exhaust-pipe to the innermost cylinder of the muffler, thence to the next cylinder, then to the outer one, and thence to the atmosphere.

Means may be provided for cleaning the cylinders of unconsumed matter passing from the exhaust-pipe into the muffler, if desired; but the arrangement of receptacles or chambers of any suitable shape provided with oppositely-located openings to facilitate the passage of the exhaust to the atmosphere, said receptacles being located the one within the other, leaving a space between the larger and the smaller, is what I wish to limit myself to and which will be more definitely indicated hereinafter in the claim. It is obvious that said receptacles may be of various forms—for instance, octagonal, square, cylindrical, conical, or funnel-shaped—increasing gradu-

ally in size from the point where the exhaust-pipe connects with the muffler, and I do not wish to limit the scope of my invention to any size or formation, while only one—the cylindrical formation—is shown in the drawings. It is deemed sufficient to illustrate the nature and essential principle of my invention.

In the drawings, in which similar letters of reference indicate like parts in the various views, Figure 1 is a front view of my muffler connected with the exhaust-pipe. Fig. 2 is an end view where the muffler is connected with the exhaust-pipe. Fig. 3 is a sectional view through line *xx* in Fig. 4, showing exit for exhaust from the innermost, intermediate, and outer cylinders. Fig. 4 is a longitudinal sectional view through muffler on line *yy* in Fig. 2.

A and A' are the ends of the muffler, which are held together by screw rods and nuts *a a* or by other suitable means.

B is the outer tube or cylinder, and *b* the longitudinal opening or slot therein to permit the escape of the exhaust, which passes to the atmosphere as indicated by the arrow in Fig. 3.

C is the intermediate cylinder, and *c* the longitudinal slot or opening therein to permit the escape of the exhaust therefrom into the outer cylinder, as indicated by the arrow in Fig. 3.

D is the innermost tube, which is connected with the exhaust-pipe, and *d* is the slot or opening which permits the passage of the exhaust therefrom to the intermediate cylinder, as shown in Fig. 3.

Instead of the longitudinal slots *b*, *c*, and *d* it is obvious that perforations in the various cylinders may be substituted without departing from the essential principles or scope of my invention.

With this description of my invention, what I claim is—

In a muffler for explosion-engines, two heads provided on their inner faces with concentric annular grooves, one of said heads having a central aperture, in combination with a tube passing through the central aperture in one head, and into one of the annular grooves in the opposite head, said tube



being provided with a longitudinal slot in  
the bottom thereof, a cylinder of larger di-  
ameter than said tube, each end of which is  
adapted to fit into one of said annular grooves  
5 around said inner tube, said cylinder being  
provided with a longitudinal slot in the top  
thereof, and a still larger or outermost cylin-  
der fitting in like manner into annular grooves  
on the opposite heads, around said last-men-  
10 tioned cylinder, and provided with a longi-  
tudinal slot in the bottom thereof, to permit

the passage of the exhaust through said tube,  
and through said cylinders to the atmosphere,  
and means for securing said tube and cylin-  
ders in position between said heads, substan- 15  
tially as set forth.

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

HIRAM M. QUICK.

Witnesses:

JOHN F. KERR,  
STELLA A. HUGHES.