

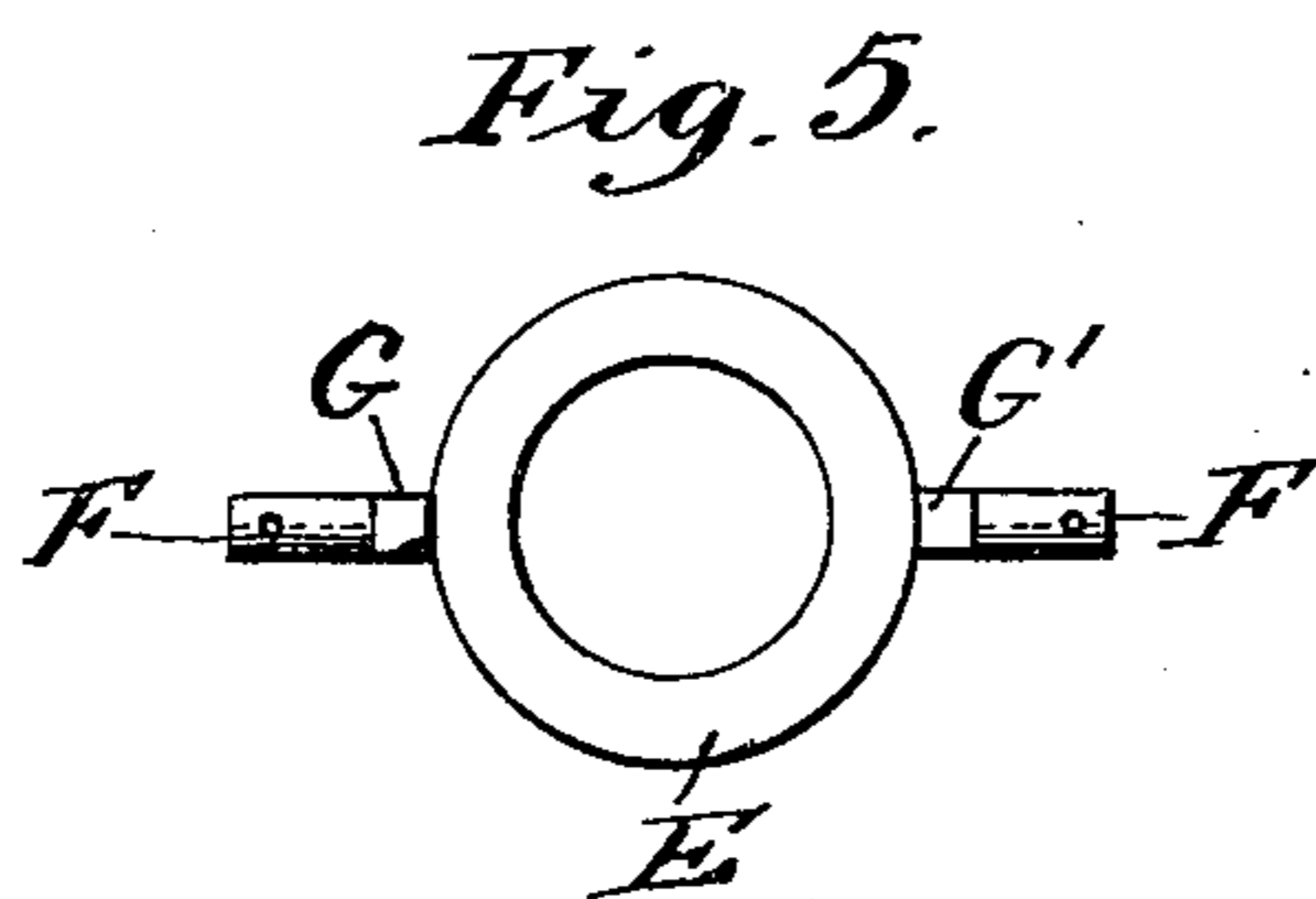
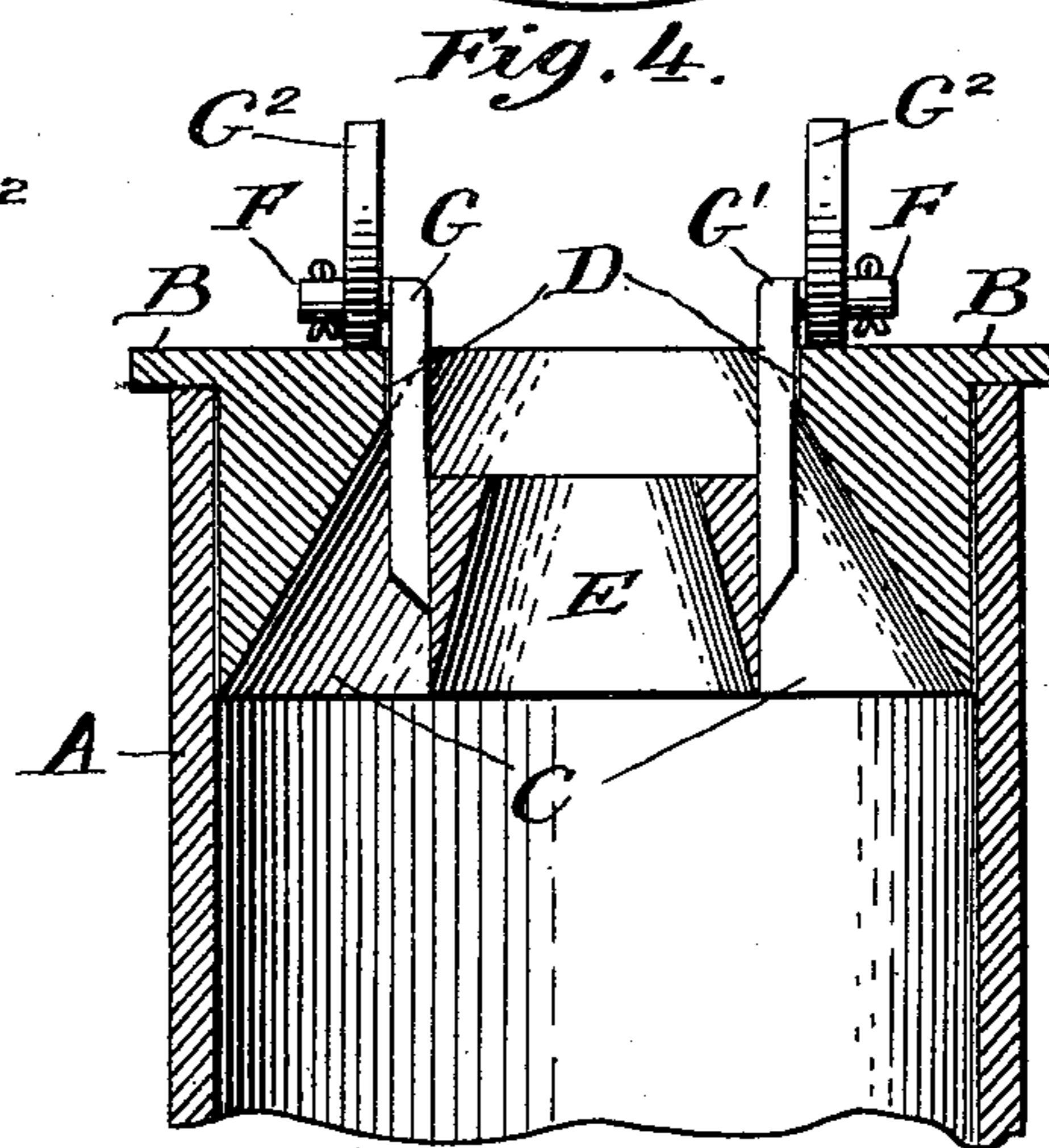
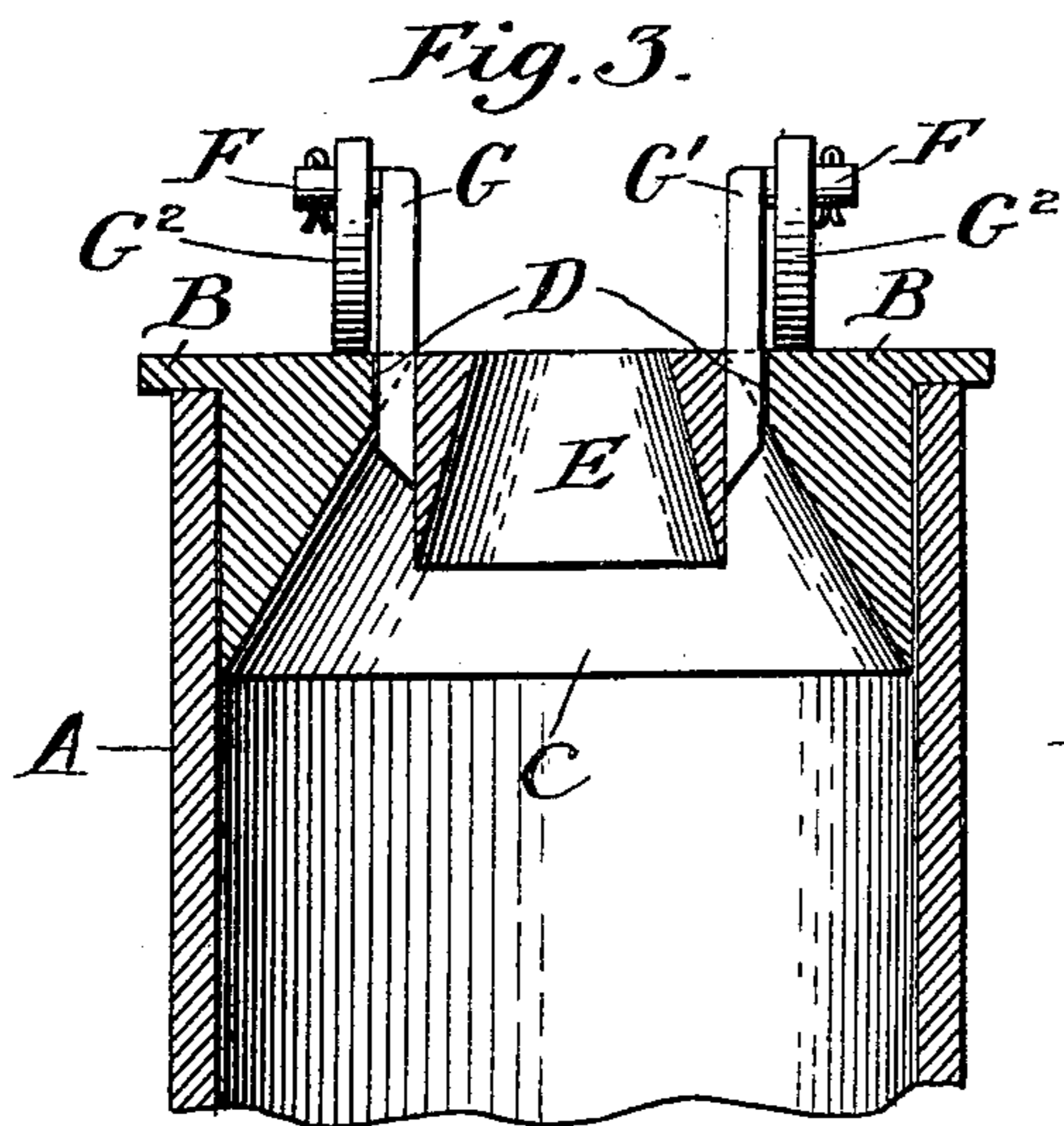
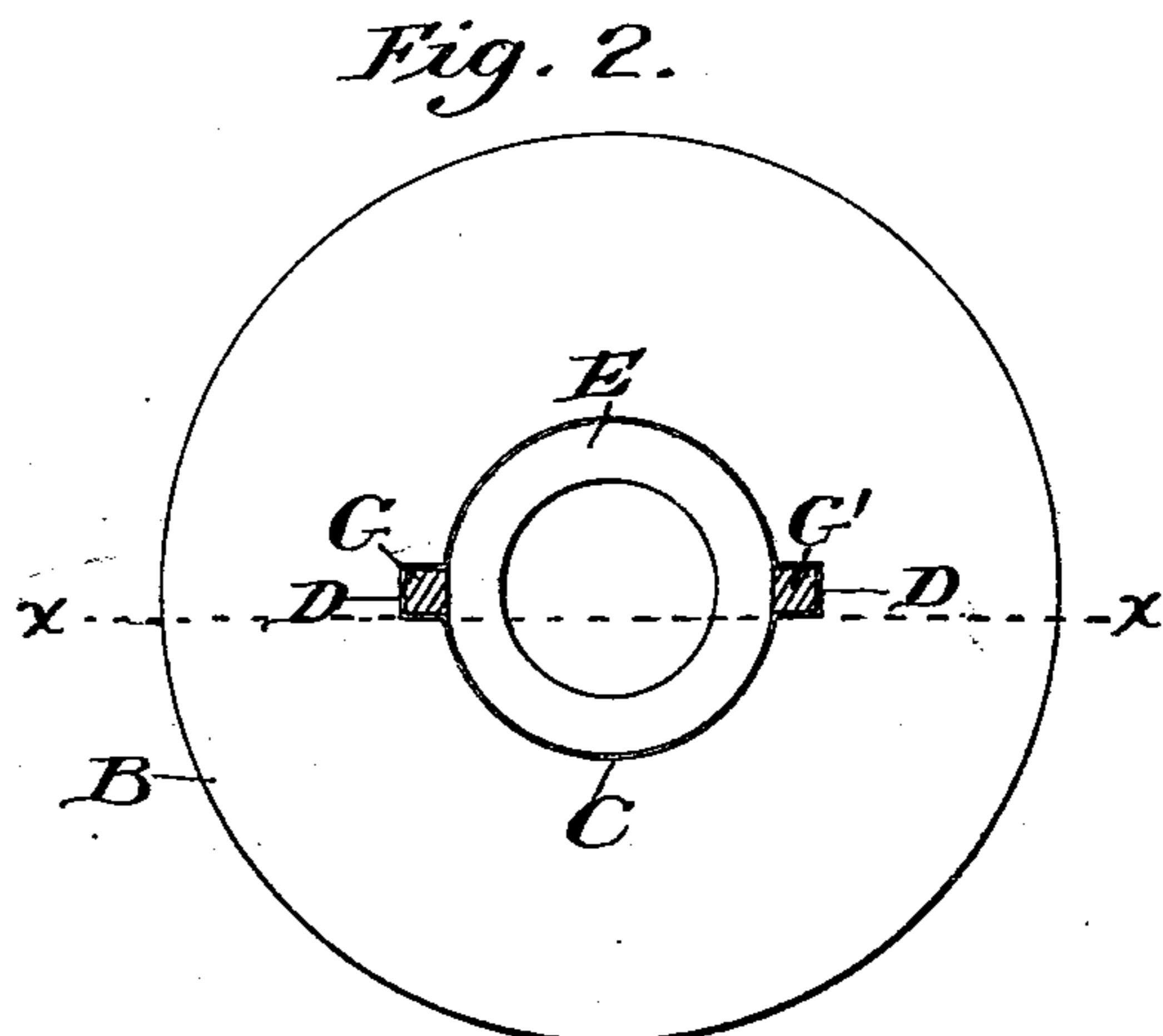
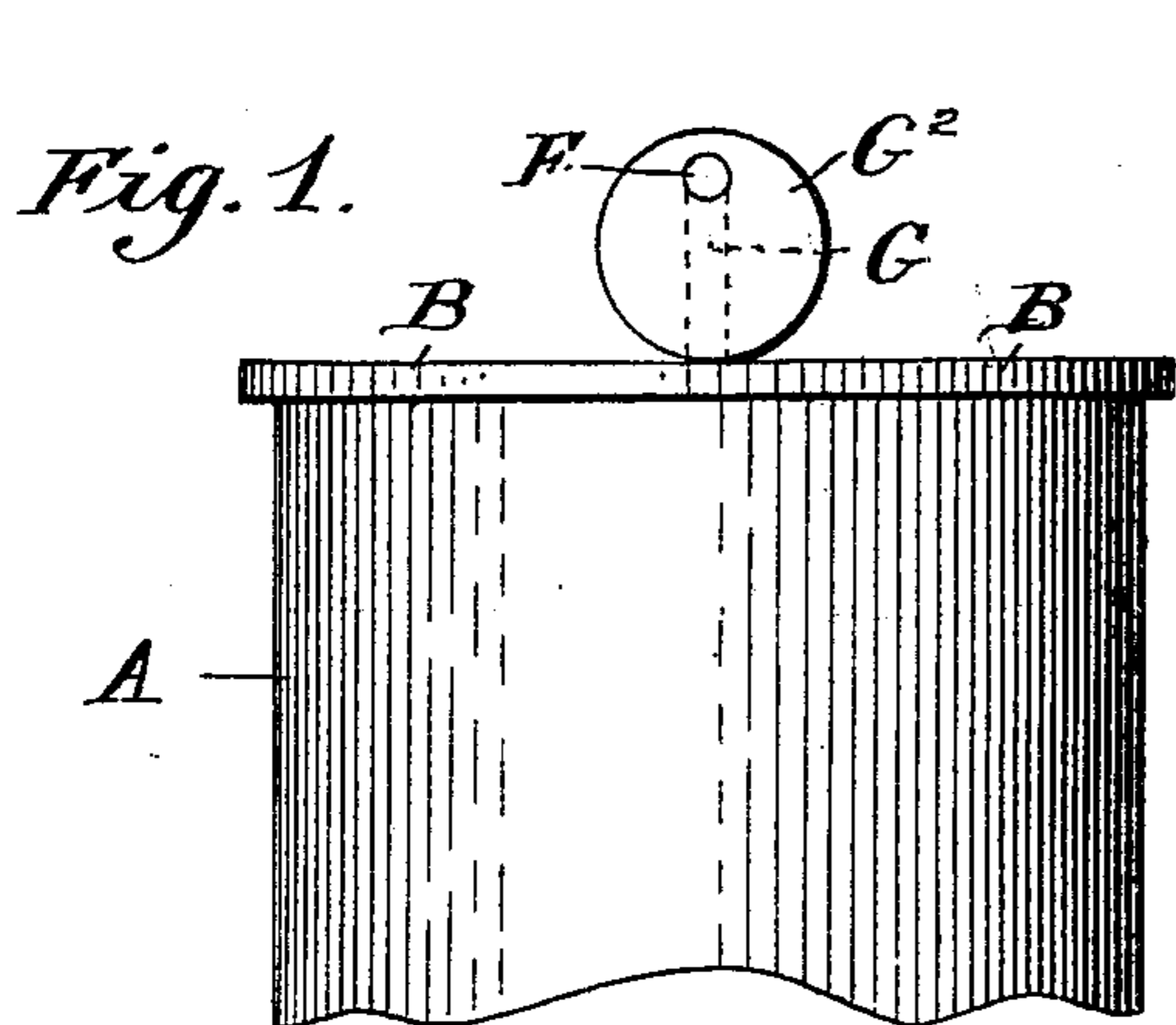
No. 682,107.

Patented Sept. 3, 1901.

W. W. MORROW.
EXHAUST NOZZLE FOR ENGINES.

(Application filed Mar. 20, 1901.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

WESLEY W. MORROW, OF SPRINGFIELD, ILLINOIS, ASSIGNOR OF ONE-HALF
TO WILLIAM E. KILLEN, OF JACKSONVILLE, ILLINOIS.

EXHAUST-NOZZLE FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 682,107, dated September 3, 1901.

Application filed March 20, 1901. Serial No. 52,056. (No model.)

To all whom it may concern:

Be it known that I, WESLEY W. MORROW, a citizen of the United States, residing at Springfield, in the county of Sangamon, State of Illinois, have invented certain new and useful Improvements in Exhaust-Nozzles for Engines, of which the following is a specification.

My invention relates to an improvement in exhaust-nozzles for engines, and has for its object to provide a device which will regulate the opening of the exhaust-pipe, and thereby increase or diminish the exhaust of steam into the smoke-stack for the purpose of regulating the blast on the fire, and also to provide a device which is very simple and inexpensive in construction and easy and effective in operation.

The invention consists in the several features and combination of features, as hereinafter more fully described and claimed.

Referring to the drawings, Figure 1 is a side elevation; Fig. 2, a top plan, partly in section; Fig. 3, a central vertical section on line *x x* of Fig. 2, showing the movable tip in its closed position; Fig. 4, a similar view showing the movable tip in its open position; Fig. 5, a top plan view of the movable tip.

In the drawings, in which like letters of reference denote like parts throughout the several views, A represents the exhaust-pipe of a locomotive, and B a stationary tip fixed in the top thereof and having an annular opening C in the center, the wall of which converges toward the top. D represents slots in the upper edge of said opening C.

E is a movable tip mounted in the opening C of the tip B and having an annular opening in the center, the wall of which converges toward the top.

G G' are vertical arms on which the tip E is suspended, said arms adapted to work in and be guided by the slots D, and each having its upper end provided with a pintle F. G² represents cams mounted on the pintles F and bearing on the top of the tip B.

It will be seen that by having the inner walls of each of the tips converge toward the top of the same the exhaust of steam will always be directed toward the center.

I do not limit myself to the exact construction herein described, as it comes within the spirit of my invention to vary it somewhat.

The operation is as follows: To increase the exhaust of steam into the smoke-stack for the purpose of increasing the blast on the fire, the cams are operated to raise the movable tip, thereby contracting or closing the opening between the tips and increasing the vacuum in the smoke-box. To decrease the exhaust of steam into the smoke-stack for the purpose of decreasing the blast on the fire, the cams are operated to lower the movable tip, thereby opening or increasing the opening between the tips and decreasing the vacuum in the smoke-box.

Having thus described my invention, what I claim is—

1. An exhaust-nozzle provided with a stationary tip having guideways, and a movable tip therein provided with arms adapted to slide in said guideways and support and guide the movable tip, and means for engaging said arms to operate said tip, substantially as described.

2. An exhaust-nozzle provided with a stationary tip having an interior wall inclined inward toward the top, and guideways, a movable tip therein having an interior wall inclined inward toward the top, and arms adapted to slide in said guideways and support and guide the movable tip, and means for raising and lowering said movable tip, substantially as described.

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

WESLEY W. MORROW.

Witnesses:

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WM. NORMAN.