

(No Model.)

2 Sheets—Sheet 1.

G. L. GRIFFIN, W. A. SHOUP & J. R. CADE.

ROTARY ENGINE.

No. 297,254.

Patented Apr. 22, 1884.

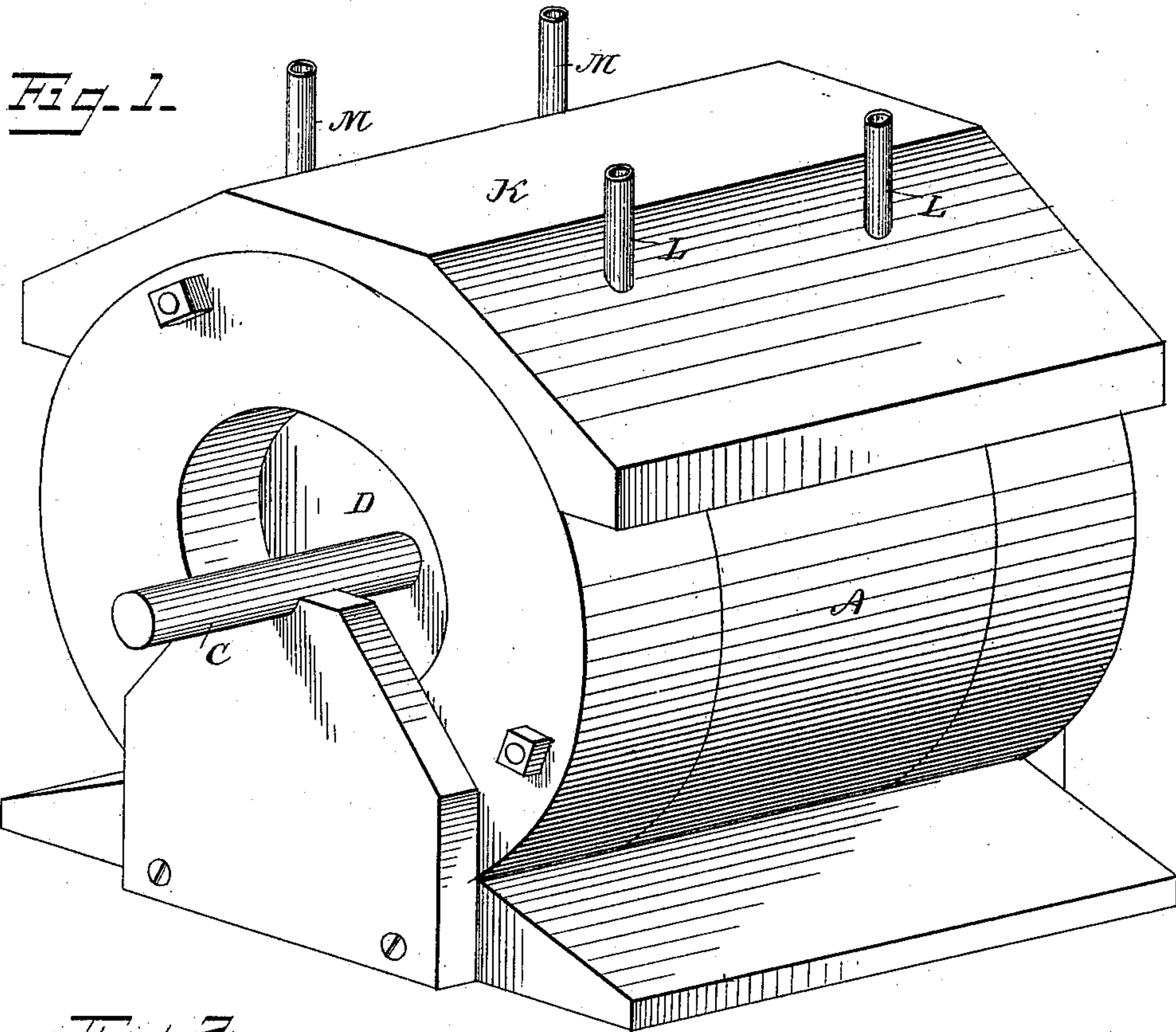
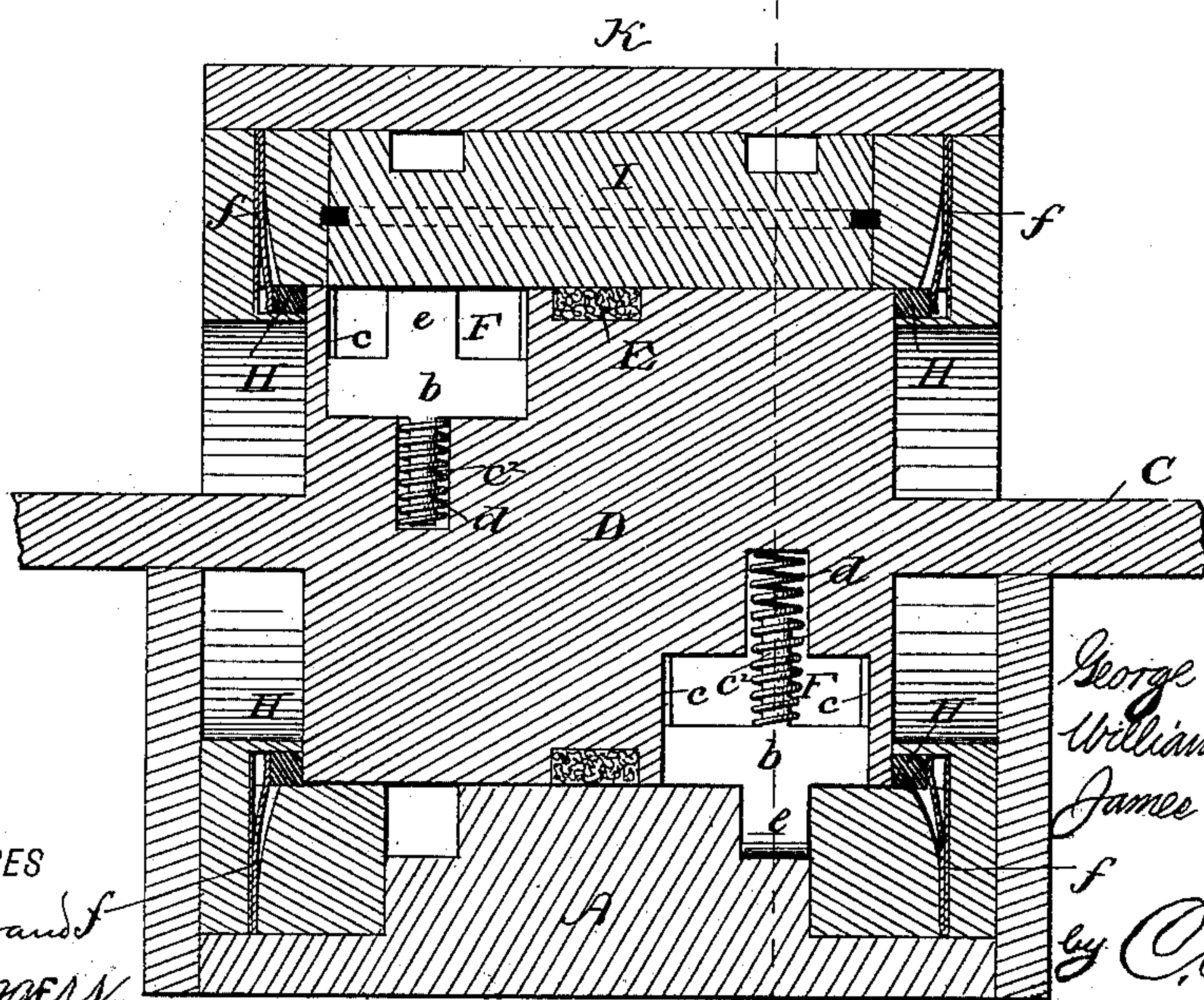


Fig. 2.



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Fig. 3.

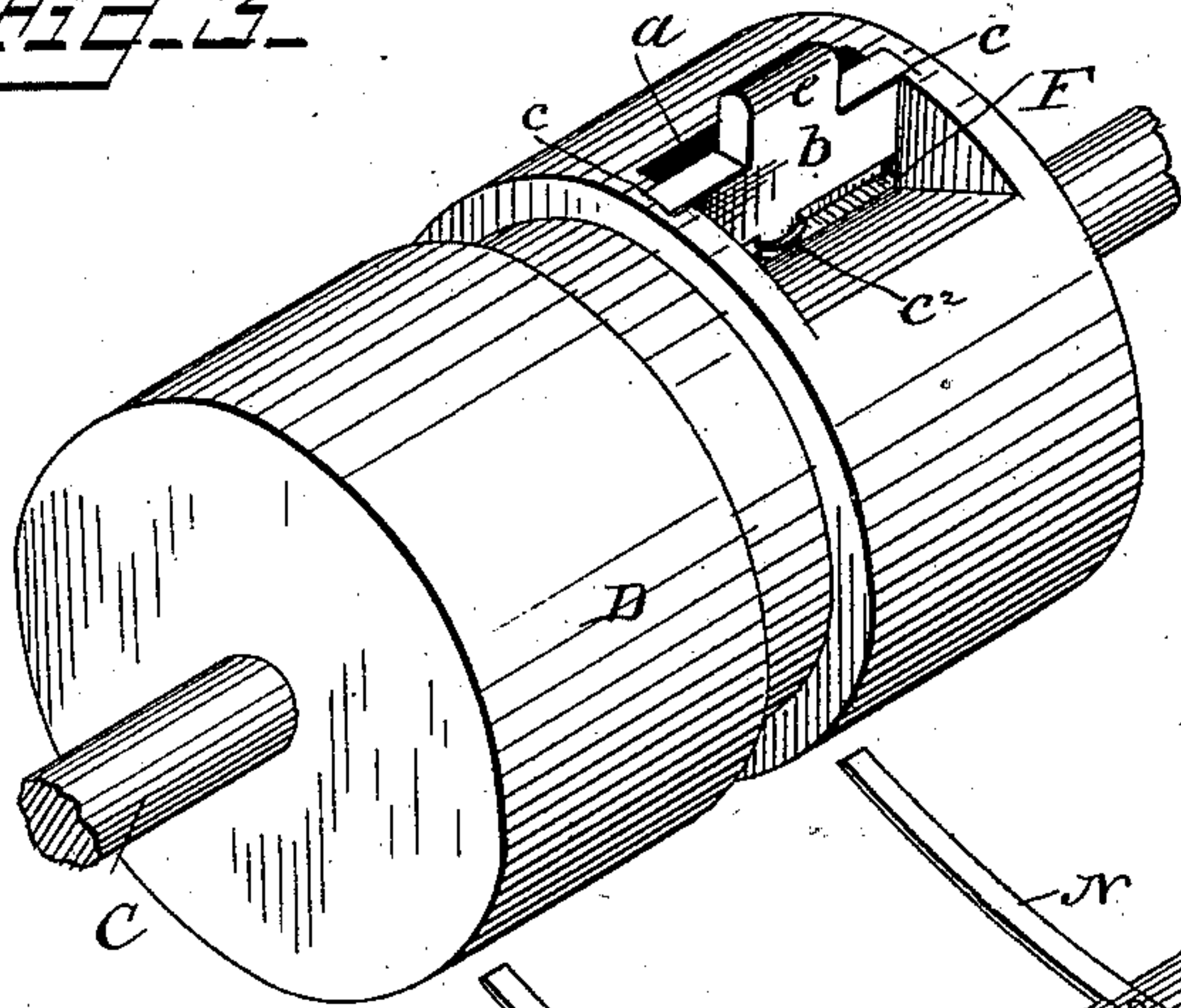


Fig. 4.

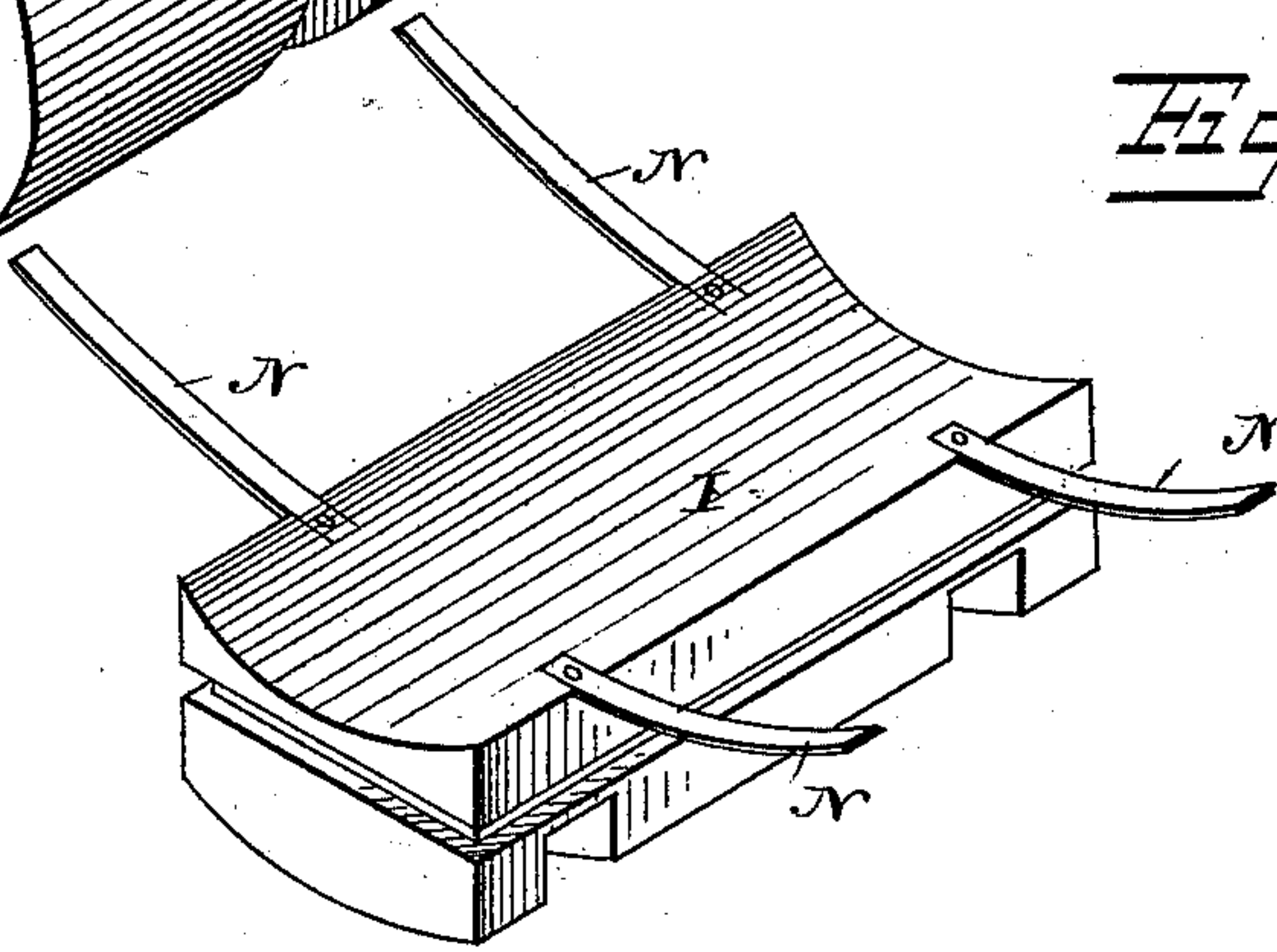
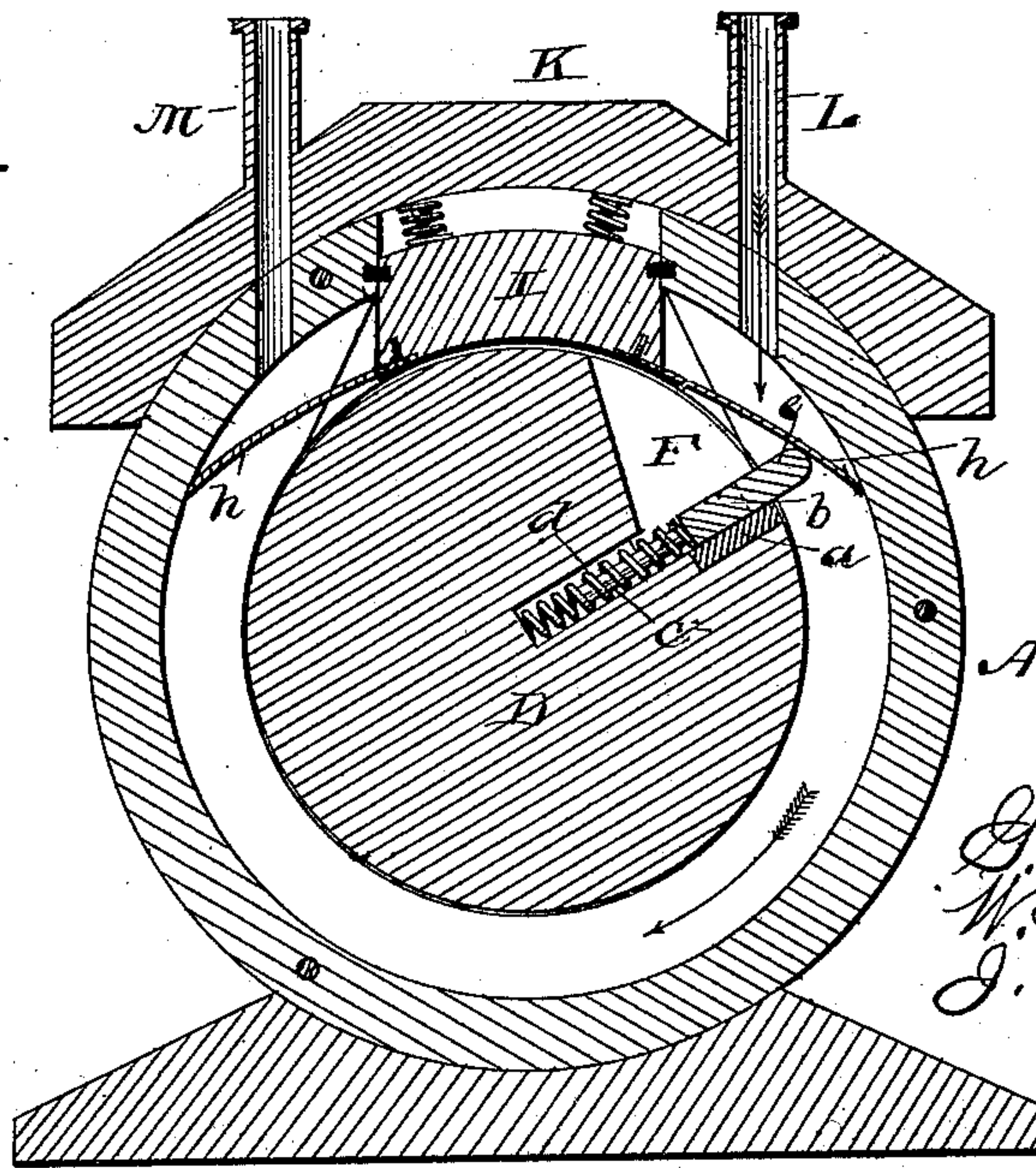


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE L. GRIFFIN, WILLIAM AURELIUS SHOUP, AND JAMES ROBERT CADE, OF HARRISBURG, TEXAS.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 297,254, dated April 22, 1884.

Application filed December 15, 1883. (No model.)

To all whom it may concern:

Be it known that we, GEORGE L. GRIFFIN, WILLIAM A. SHOUP, and JAMES R. CADE, citizens of the United States, residing at Harrisburg, in the county of Harris and State of Texas, have invented a new and useful Rotary Engine, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to certain improvements in reversible rotary engines; and it has for its object to improve the construction and efficiency of this class of engines.

With these and other objects in view our improvements will be hereinafter more fully set forth, and pointed out in the claims.

In the annexed drawings, Figure 1 is an exterior view of our improved rotary engine. Fig. 2 is a partial longitudinal sectional view of the same. Fig. 3 is a view of the rotary piston or cylinder. Fig. 4 is a view of the cut-off, and Fig. 5 is a vertical cross-section of the engine.

A represents a suitable casing for a double-reversible rotary engine, provided with a base-block and journal-bearings for the central rotating shaft, C. Upon the shaft C is fixed the piston or cylinder D, divided into two sections by means of the packing-rings E. Each section of the piston (see Fig. 3) is formed with a chamber, F, having one of its walls vertical and the other inclined. The vertical wall of each chamber is provided with a packing-plate, *a*, suitably secured thereto. Arranged within each chamber F is a sliding valve, *b*, fitting snugly in the vertical side grooves, *c*, and against the packing-plate *a*. These sliding valves are cruciform in shape. The inner extensions or stems, *c'*, are provided with encircling coil-springs *d*, for the purpose of thrusting the valves, when in their chamber, outward and against the inner periphery of the casing. The outer ends, *e*, of the valves work in corresponding-shaped grooves on the inner face of the casing.

H represents packing-rings arranged against the ends of the casing, and pressed forward against the ends of the revolving piston or cylinder D, through the agency of springs *f*, interposed between the said packing-rings

and the ends of the casing. These springs *f* or the packing-rings H may be provided with set-screws or their equivalents for adjusting the packing-rings against the ends of the revolving piston, so as to make a more perfect steam-tight joint.

At the top of the casing is arranged, in a suitable manner, with steam-tight joints, the cut-off I, automatically adjusted for a close connection or contact with the revolving piston by means of tension devices. This cut-off is provided with two spring-arms, *h*, to each chamber of the engine, and extending downward on opposite sides a short distance into the steam-passages of the casing. The office of these spring-arms attached to the cut-off is to force the sliding valves into their pockets as they approach the cut-off, and at the same time to permit an easy outward thrust of the sliding valves as they pass beyond the cut-off.

To the top of the casing may be attached, and, in fact, is preferably, a steam-chest with a sliding valve, for the purpose of admitting and exhausting steam at proper intervals; but for a cheap engine of this class a cap-plate, K, provided with steam-pipes L and exhaust-pipes M, is arranged on top of the engine-casing, to register with the induction and education passages of the casing. The under side of this cap is provided with tension-springs pressing upon the upper surface of the cut-off to compensate the wear upon the same.

The casing or cylinder for the engine may be constructed of two or more parts, suitably connected together by means of packing-rings and bolts; also, by increasing the length of the casing as well as the length of the revolving piston, equipped with the necessary adjuncts, three or more sections or compartments can be formed to obtain increased power.

Operation: By reference to Fig. 5 of the drawings it will be observed that the revolving piston is shown with its sliding valve thrust outward beyond the cut-off, ready to receive steam. By admitting steam in the induction-port it will come in contact with the valve and drive the piston in the direction indicated by the arrow, and as it advances toward the cut-off it will come in contact with the spring-

arm or its equivalent, which will gradually force it into its pocket, so as to easily pass the cut-off, and the dead steam will be exhausted through the exhaust-port.

5 We reserve the right to vary the construction and arrangement of parts without departing from the spirit of the invention.

10 Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a rotary engine, a piston or cylinder formed with a chamber or pocket, F, having one of its walls vertical and the other inclined, in combination with a sliding valve fitted
15 therein and adapted to be thrust outward by means of a spring, substantially as and for the purpose set forth.

2. In a rotary engine, the combination, with the casing formed on its inner periphery with
20 grooves constituting steam-passages, a revolving piston provided with chambers or pockets to which are fitted spring sliding valves and

a cut-off with inclined spring-arms, substantially as and for the purpose set forth.

3. The improved rotary engine herein described, consisting, essentially, of the casing
25 formed with steam-passages, revolving piston, and divided into two sections by means of the packing-ring, and provided with spring sliding valves fitted into pockets thereof, end packing-rings, cut-off with spring-arms arranged
30 on opposite sides thereof, and arranged within the steam-passages of the casing, and cap-plate, with induction and education ports.

In testimony that we claim the foregoing as
35 our own we have hereto affixed our signatures in presence of two witnesses.

GEORGE L. GRIFFIN.
WILLIAM AURELIUS SHOUP.
JAMES ROBERT CADE.

Witnesses:

CHRISTTE SCHULZE,
JOHN EDWARD HOWD. CHAPMAN.