

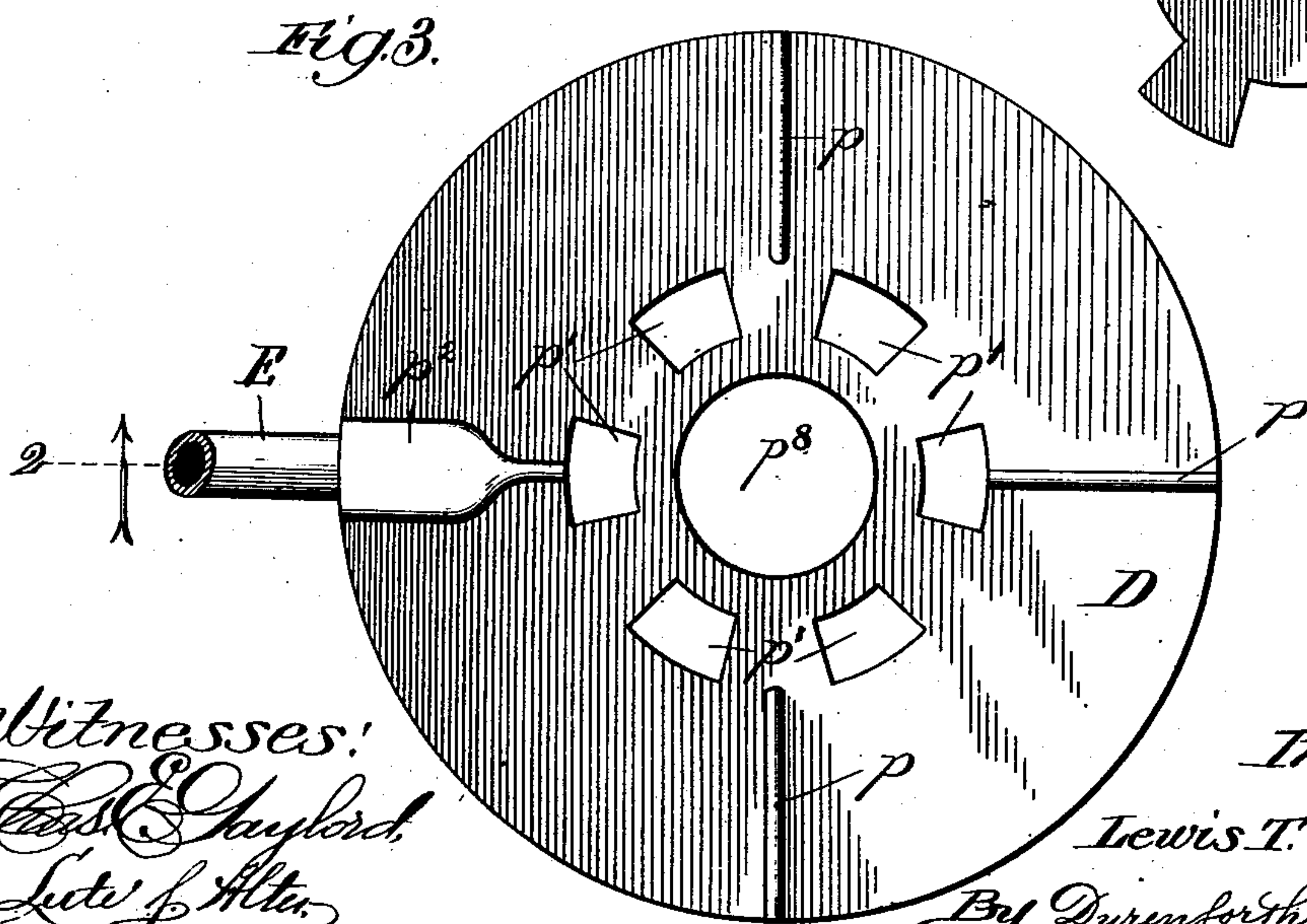
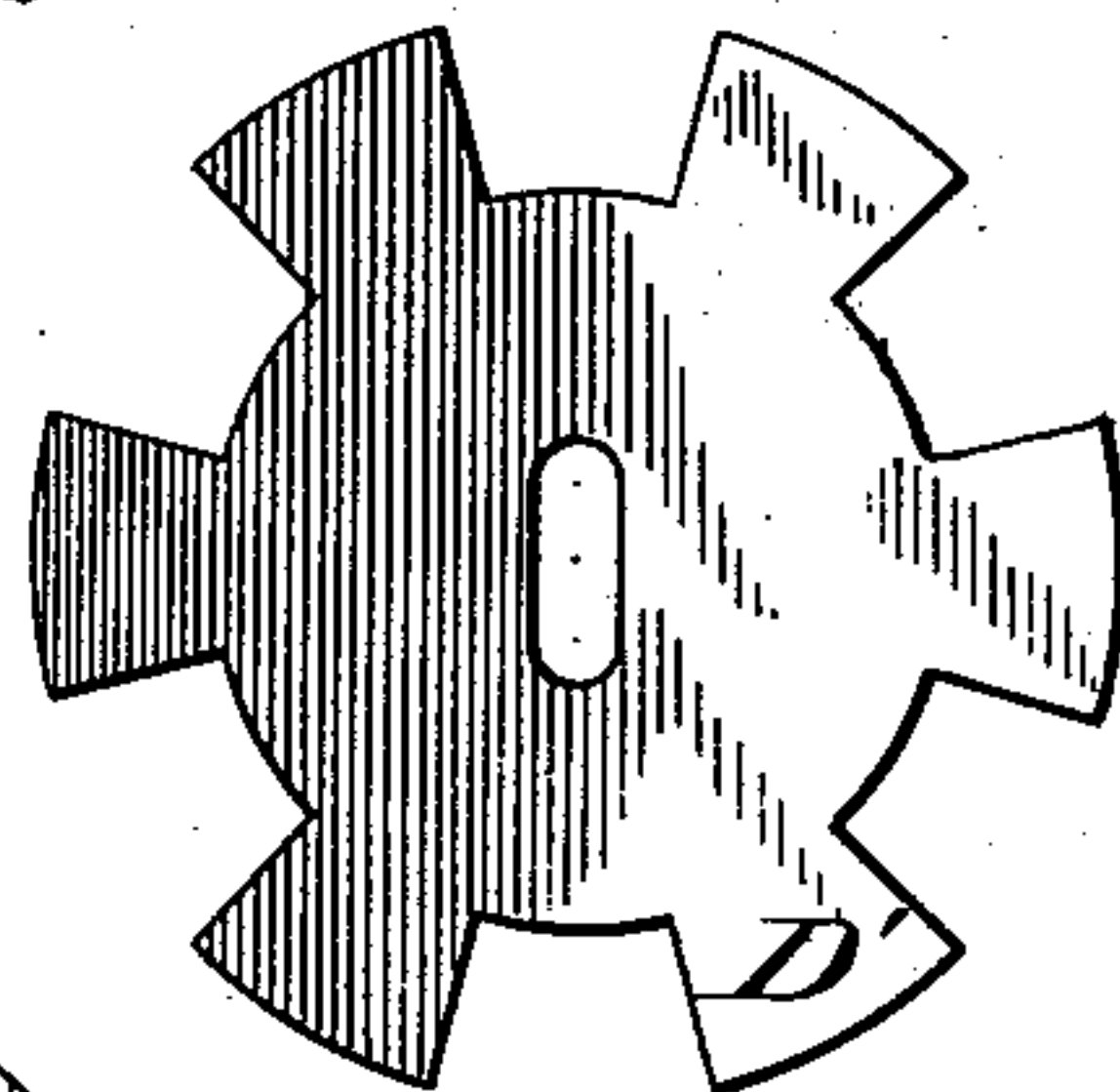
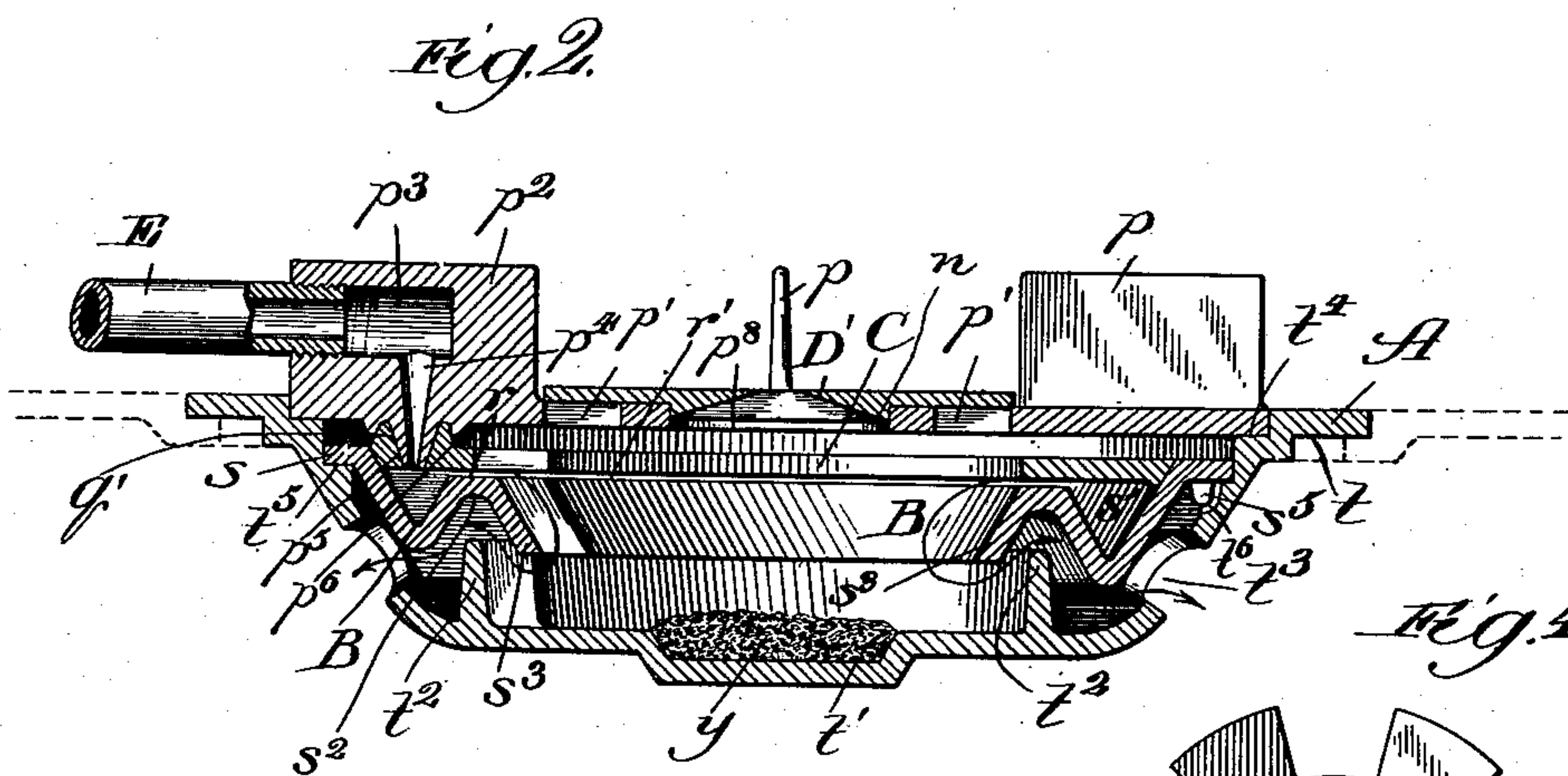
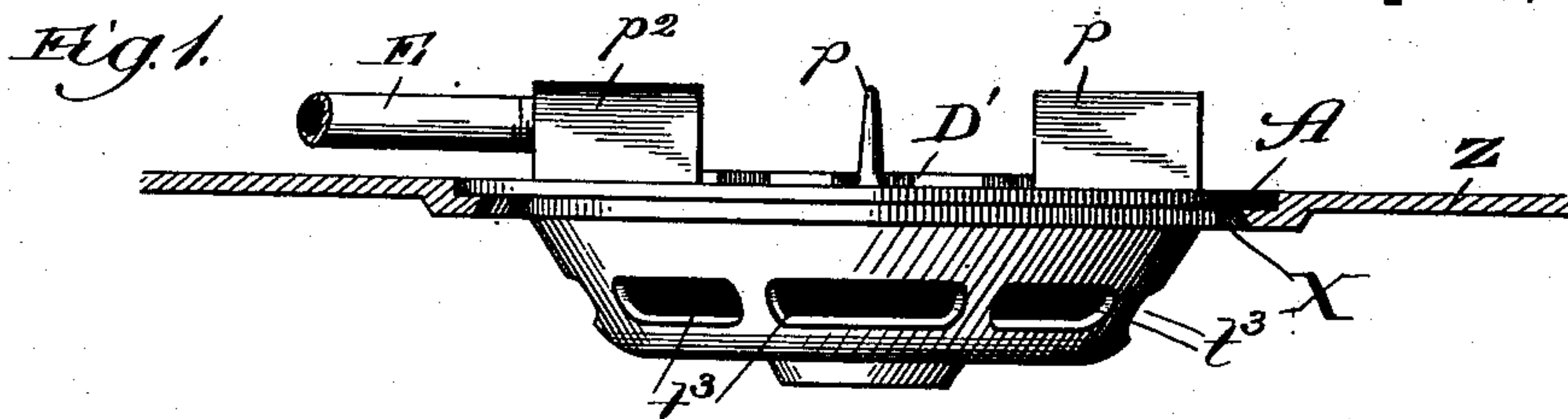
(No Model.)

2 Sheets—Sheet 1.

L. T. CORNELL.
HYDROCARBON BURNER.

No. 536,779.

Patented Apr. 2, 1895.



Witnesses:
 Chas. C. Gaylord,
 Secy of M. A.

Inventor:
Lewis T. Cornell,
By Dyrenforth & Dyrenforth,
Attys.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 5.

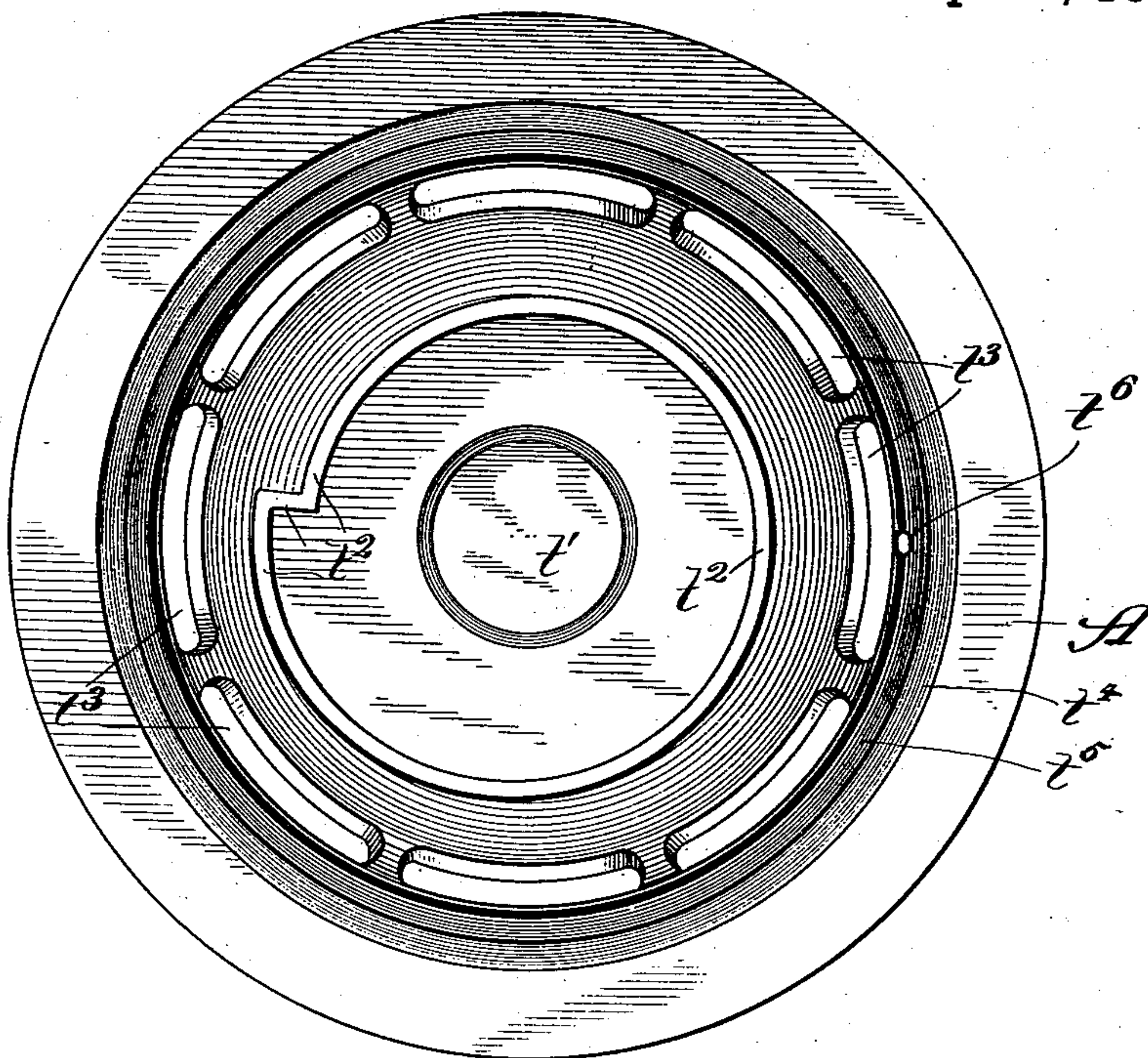


Fig. 7.

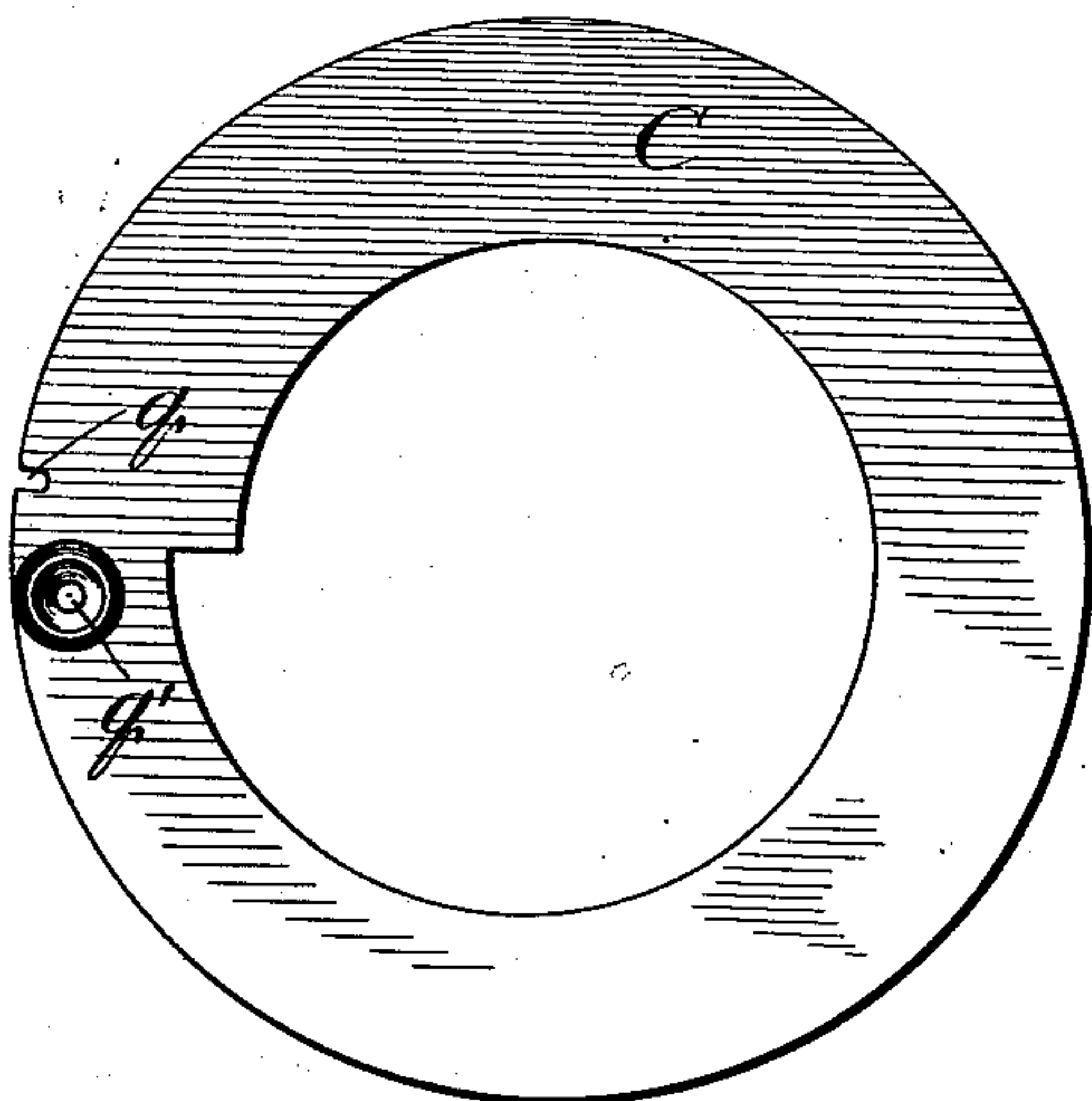
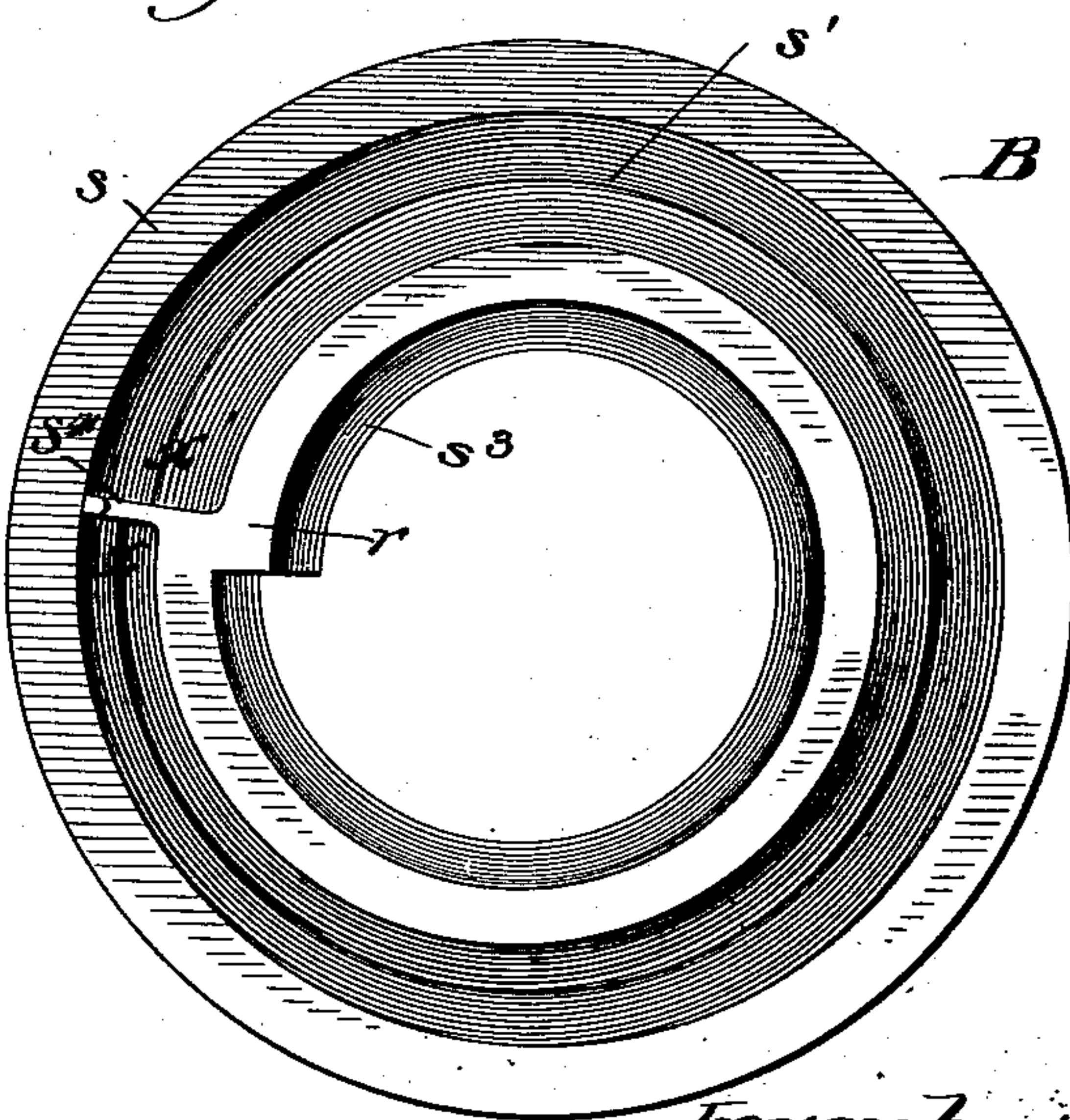


Fig. 6.



Witnesses:

Charles E. Gaylord
Lute J. Allen

Inventor:

Lewis T. Cornell
By Dyrenforth & Dyrenforth
Attys.

UNITED STATES PATENT OFFICE.

LEWIS T. CORNELL, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ANTHONY J. SCHUETT, OF SAME PLACE.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 536,779, dated April 2, 1895.

Application filed September 26, 1894. Serial No. 524,167. (No model.)

To all whom it may concern:

Be it known that I, LEWIS T. CORNELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Hydrocarbon-Burners, of which the following is a specification.

My invention relates to improvements in burners for use where hydrocarbon oil, gas or vapor is employed as the fuel.

My objects are, first, to provide a burner of the above class of an improved construction adapted for use in connection with stoves generally, though more especially to cooking-stoves or ranges, primarily constructed to burn wood or coal, and to fit one of the stove-holes, and be readily removable and replaceable at will; second, to provide a burner of the above description consisting of close-fitting adjustable and replaceable parts which may be readily separated from each other for purposes of cleaning; and, third, to provide a construction which will have comparatively great heating capacity, be simple and durable, and economical both in construction and use.

To the above ends my invention consists in the general construction of my improved burner, and also in details of construction, and combinations of parts, all as hereinafter described and claimed.

In the drawings—Figure 1 is a broken view showing my improved burner in side elevation applied to a stove-hole, the top of the stove being in section; Fig. 2, an enlarged vertical section of my improved device, the section being taken on line 2 of Fig. 3; Fig. 3, a top-plan view of the burner with the damper detail removed; Fig. 4, a detail view of the damper; Fig. 5, a plan of the body-portion of my improved burner, the other details being removed; Fig. 6, a plan view of a spirally grooved plate; and Fig. 7, a covering plate therefor.

A is a dish-shaped lower casing or base portion provided at its upper side with an annular rim or flange t adapted to fit into a stove-hole and rest therein after the manner of the ordinary stove-plate. At the center of the part A is a recess or depression t' surrounded by a spiral upward projecting wall t^2 .

Around the annular side portion of the base A is a series of openings t^3 . On the inner side of the part A at the rim t is an annular socket presenting a shoulder t^4 and just below the latter is a second annular socket presenting a shoulder t^5 .

B is a lower annular burner plate having an outer flange or rim s to fit snugly over the shoulder t^5 in the part A.

The plate B is formed with a V-shaped groove or gutter s' in its upper side at the inner edge of which is a flat surface r ; and the under side of the plate is formed with a V-shaped groove s^2 , concentric with the gutter s' , and the inner side of which is formed by an annular downward projecting flange s^3 . The gutter s' commences at a partition wall s^4 , at the point indicated, and becomes gradually wider and deeper from that point as it extends around the circle. Thus the shallowest and narrowest part of the gutter s' is at x and the widest and deepest part at the point x' , and the flange s^3 and surface r are rendered spiral.

On the under side of the plate B is a pin or lug s^5 adapted to fit into a recess t^6 in the part A, to hold the parts against independent sliding when they are fitted together.

C is an annular cover or upper burner-plate which fits at its circumference against the annular surface of the outer wall of the gutter s' , and conforms at its inner circumference with the inner spiral edge of the surface r .

When in position the cover C is close to but out of contact with the surface r of the plate B to afford a narrow annular burner-opening r' . In the edge of the plate C is a socket q which when the plate is in position fits over the partition s^4 ; and extending through the plate C is a walled opening q' , which is directly over the shallow part x of the gutter s' .

D is a top-plate of the burner provided on its upper side with spacing-lugs p , and a central damper-bearing opening p^8 surrounded by draft openings p' .

On one side of the plate D is a lug p^2 having an opening p^3 affording a chamber and having a downward tapering passage p^4 . Around the reduced end of the passage p^4 on the under side of the plate D is a conical projecting part p^5 which fits into the opening q' of the

plate C; and an outer flange p^6 to fit over the edge of the wall which surrounds the opening q' . The opening or chamber p^3 is threaded, as shown at p^7 , to receive the threaded end of a pipe E.

D' is a damper which rests upon the upper surface of the top-plate B. It has a central annular projection n on its under side to fit the opening p^8 , and may be turned to regulate the sizes of the draft-openings p' .

The construction shown and described is designed more especially for vaporizing and burning hydrocarbon oil, which is fed through the pipe E. In practice the pipe E extends beyond one edge of the stove to which the burner is applied and is there connected, preferably, by means of a flexible rubber hose with an oil supply tank, placed at any safe and convenient distance from the stove at an elevation with relation to the burner. In practice I prefer to provide a small quantity of asbestos Y in the recess t' . When the oil is turned on at the pipe E it flows into the chamber p^3 and thence through the funnel-shaped opening p^4 to the gutter s' at the shallow part thereof. The gradually deepening shape of the gutter causes the oil to flow around the circle to the point x' . Initially the oil is allowed to fill the gutter and overflow through the opening r' and saturate the asbestos Y. A match is then applied to the asbestos and the oil ignited. The natural tendency of the draft is toward the outlet flue of the stove. Consequently, air to supply combustion, enters through the draft-openings p' and the products of combustion pass over the wall t^2 to the outlets t^3 and there escape into the stove. As the products of combustion pass over the wall t^2 they strike the lower V-shaped surface of the plate B and soon heat the gutter-portion of the latter to a high temperature. As a consequence the oil entering the gutter and flowing around the same is quickly vaporized and caused to escape in the form of vapor and gas through the annular burner opening r' . Thus while air enters the chamber formed by the gutter s' and its covering plate C it is immediately vaporized and more or less gasified and fills the chamber throughout and escapes equally through all parts of the burner-opening r' . Consequently, a sheet of flame of equal size and intensity is directed radially inwardly from the burner-opening and is carried downward under the flange s^3 , over the wall t^2 and under the gutter s' to the outlets t^3 , whence the products of combustion move backward in the stove, filling the flue-chambers or passages and heating all parts of the stove in the same way as when coal or wood are employed as the fuel. The size of the flame may be readily regulated by regulating the supply of oil flowing through the pipe E, a suitable valve, of course, being provided for that purpose. The ingress of air to supply combustion may be easily and effectively regulated by means of the damper D', so that the

heat may be easily and effectively controlled at all times.

If it is desired to employ hydrocarbon gas, either natural or manufactured, instead of oil as the fuel, the pipe E is connected with the gas supply, by means of a rubber hose or otherwise, and in the pipe E is interposed an air inlet valve, which may be on the principle of the Bunsen burner, to admit a desired quantity of air with the gas to the chamber s' . The gas is heated in the chamber s' to a high temperature before it escapes from the burner-opening r' , and its combustion and heating qualities thus greatly augmented.

The parts A B C D and D' are not secured together and may therefore be readily separated for purposes of cleaning and as readily replaced.

My improvement is adapted for cooking stoves and ranges generally, and, as before stated, fits into a stove-hole X of the stove or range-top Z. The vaporizing of the oil before it escapes from the burner opening r' , and the down draft which prevents the escape of fumes through the top of the stove, makes the burner odorless; and it is, furthermore, perfectly safe, and economical. The spacing lugs p prevent a vessel, imposed upon the burner, from interfering with the draft.

While I prefer to construct my improvements in every way as shown and described, they may be modified in the matter of details of construction without departing from the spirit of my invention as defined by the claims.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a hydrocarbon burner, the combination of a dish-shaped casing having a circumferential flange at its upper side to fit a stove-hole, upper and lower annular burner plates fitting into said casing and affording an annular vaporizing chamber above the base of the casing, and provided with a narrow continuous inner-circumferential burner-opening, a top plate upon the casing having an oil supply passage leading to said burner, and a central draft opening, a damper at the draft opening, and outlet openings in the casing about the lower burner plate, whereby products of combustion pass from the burner opening around the vaporizing chamber to heat the latter, substantially as described.

2. In a hydrocarbon burner, the combination of a dish-shaped base A, having a circumferential flange at its upper side, to fit a stove-hole, outlet-openings below the flange, and an inner annular wall t^2 , a top-plate having a draft opening, and a burner, mounted in the base A, having an annular chamber provided at the top with an inner-circumferential burner opening, and an inner circumferential downward extending flange s^3 , the top-plate having a supply passage leading to said chamber, substantially as described.

3. A hydrocarbon burner comprising, in

combination, a dish-shaped base portion A provided with a flange t , adapted to fit into a stove hole, and openings t^3 around the side, a lower annular burner plate B having a gutter s' , an upper annular burner-plate C fitting upon the plate B affording therewith a burner opening r' , and having an opening q' , a top-plate D having a supply passage p^4 registering with the said opening q' , and draft openings p' , and a damper D' on the top-plate, the whole being constructed and arranged to operate substantially as and for the purpose set forth.

4. In a hydrocarbon burner, the combina-

tion of the lower burner-plate B, having a spiral gradually widening and deepening gutter s' , and an annular burner surface r , and the upper annular burner-plate C fitting upon the plate B to afford therewith a chamber having narrow annular burner opening r' at the surface r , the plate C having a supply opening q' at the shallow end of the gutter, substantially as and for the purpose set forth.

LEWIS T. CORNELL.

In presence of—

J. H. LEE,

M. J. FROST.