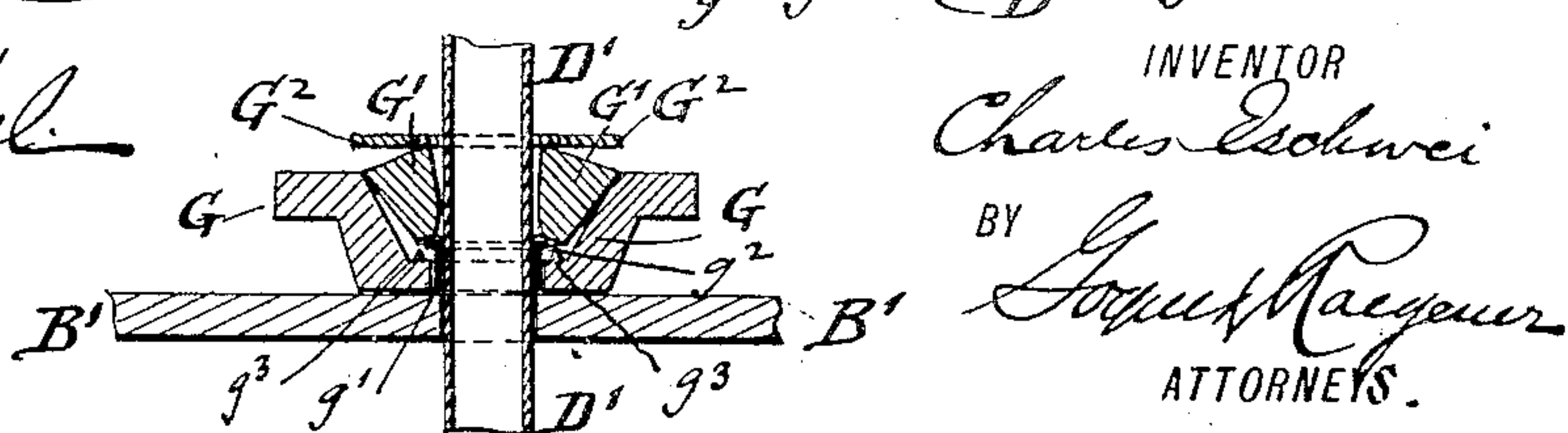
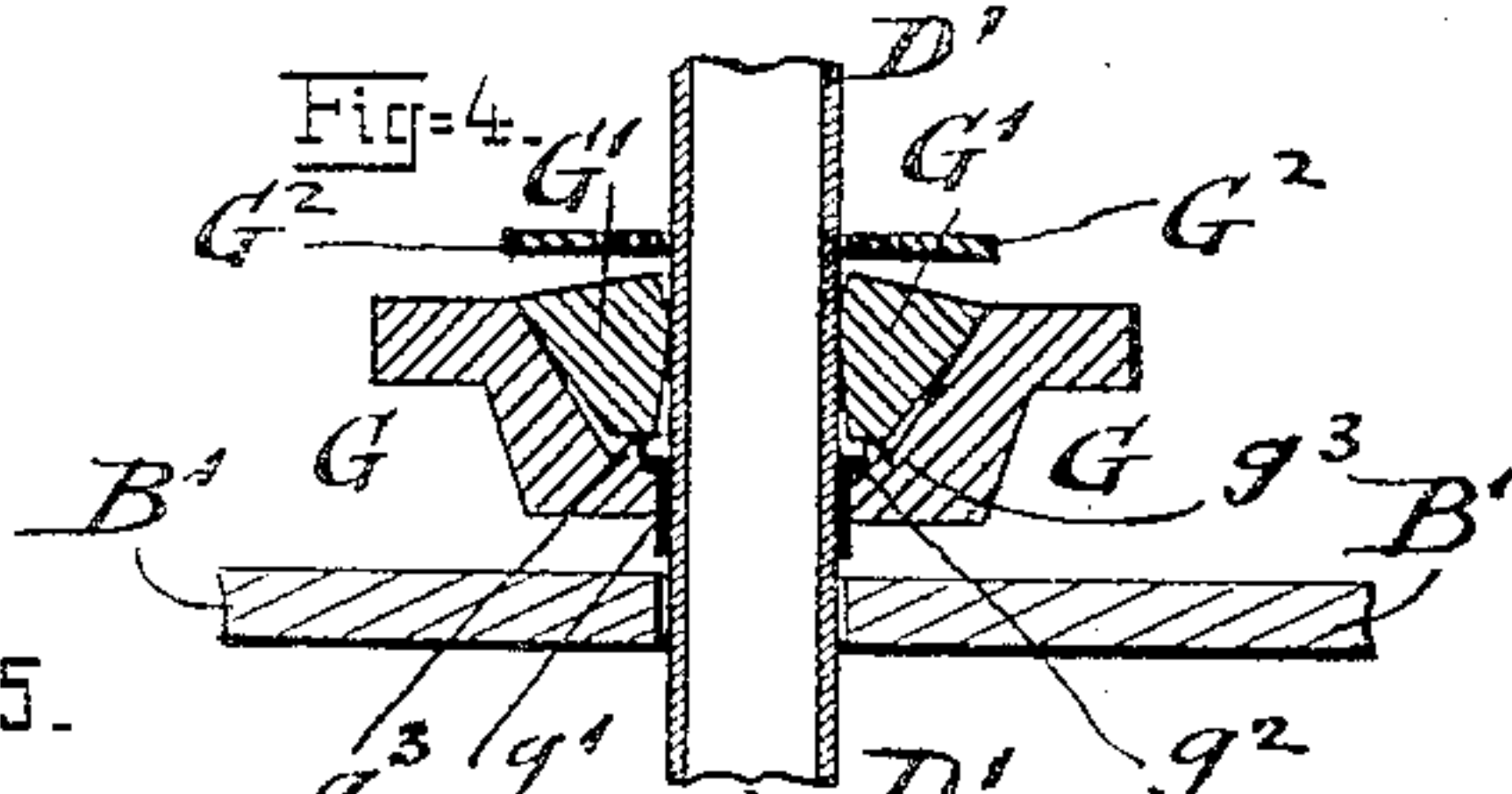
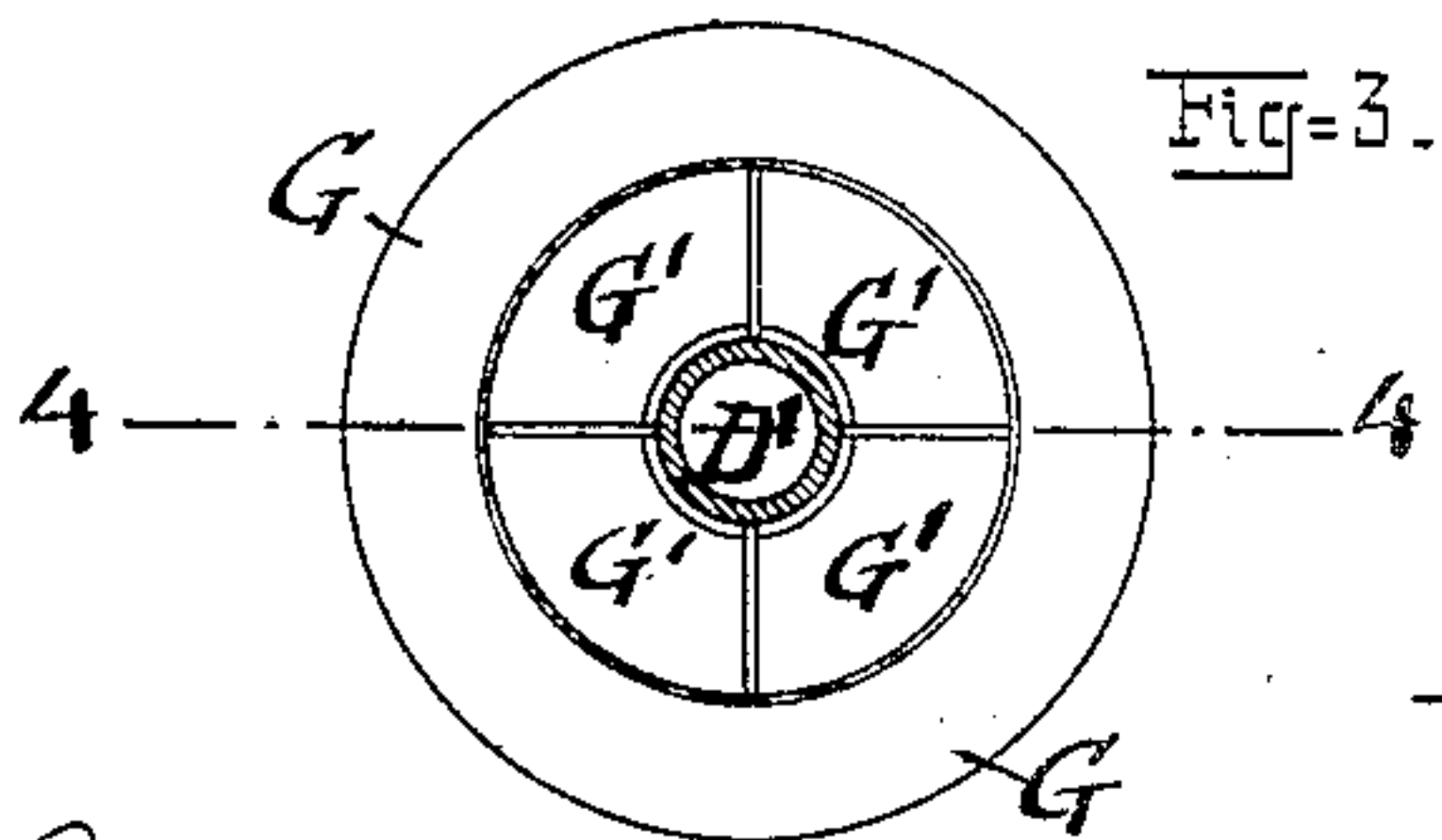
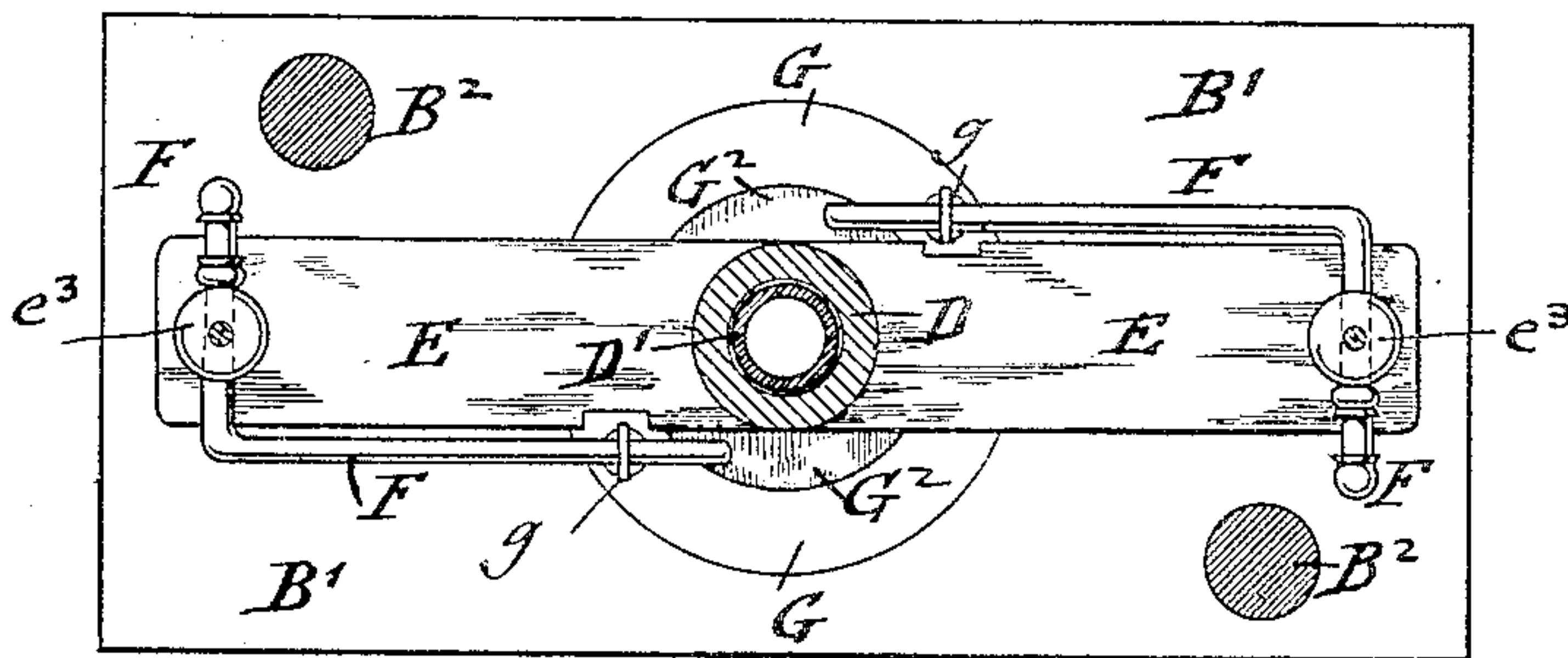
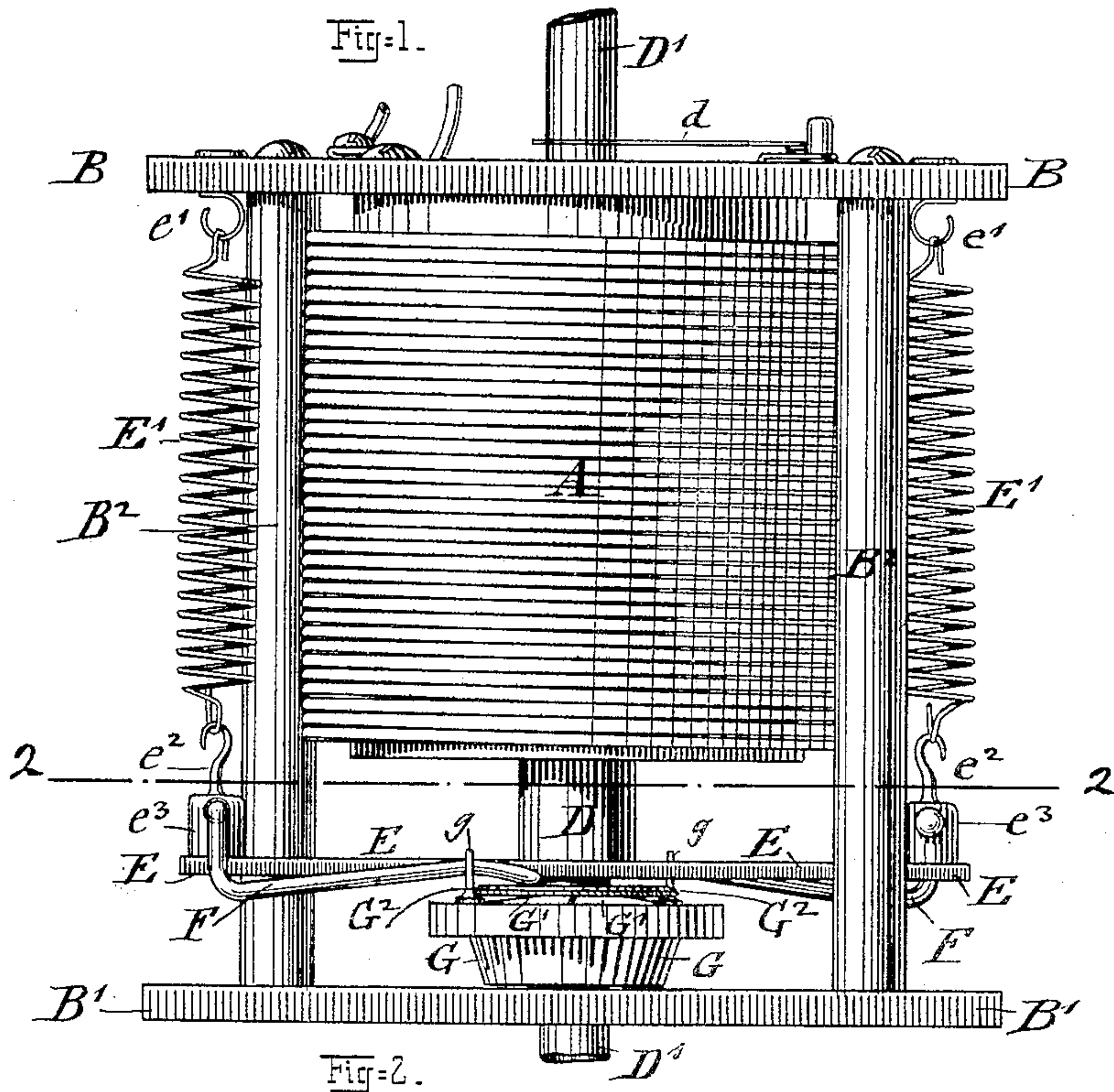


(No Model.)

C. ESCHWEI.  
ELECTRIC ARC LAMP.

No. 571,946.

Patented Nov. 24, 1896.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

CHARLES ESCHWEI, OF LONG ISLAND CITY, NEW YORK.

## ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 571,946, dated November 24, 1896.

Application filed September 11, 1896. Serial No. 605,463. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES ESCHWEI, a citizen of the United States, residing at Long Island City, in the county of Queens and State of New York, have invented certain new and useful Improvements in Electric-Arc Lamps, of which the following is a specification.

This invention has reference to certain improvements in electric-arc lamps in which the upper carbon is fed by gravity, but raised by the action of a solenoid on a magnet, which is connected by intermediate mechanism with a clutch that engages or releases the upper-carbon holder in consequence under the increasing or decreasing resistance of the arc; and the invention consists of an electric-arc lamp which comprises a solenoid, a tubular magnet in the same, a carbon-holder in said magnet, a bracket-plate attached to the lower end of said magnet, said plate being suspended from suitable springs, and a clutch device suspended from said bracket-plate by means of suitable arms and composed of an exterior socket, interior quadrantal clutch members, and a ring-shaped top plate that rests on the members of the clutch and acts on the same as soon as the magnet is drawn into the solenoid, so as to cause the gripping of the carbon-holder by the clutch and the raising of the upper carbon.

The invention consists, further, of certain details of construction, which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of my improved electric-arc lamp for multiple-arc circuits. Fig. 2 is a horizontal section of the same on line 2 2, Fig. 1. Fig. 3 is a detail top view of the clutch employed in my improved lamp; and Fig. 4 is a vertical transverse section of said clutch on line 4 4, Fig. 3.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a solenoid which is attached to the oblong top plate B of the supporting-frame of my improved electric-arc lamp, said frame being formed of the top plate B, a bottom plate B', and two connecting-posts B<sup>2</sup>. In the core of the solenoid A is arranged a tubular magnet D, in which the upper-carbon holder D' is

guided, against the upper part of which presses a friction-spring *d*, by which the too-free movement of the upper-carbon holder under the influence of gravity is prevented. To the lower end of the tubular magnet D is attached a horizontal bracket-plate E, which is suspended from helical springs E', the ends of which are applied by means of hooks *e'* *e*<sup>2</sup>, respectively, to the top plate B and bracket-plate E, as shown in Fig. 1. The hooks *e*<sup>2</sup> are preferably arranged on short studs or posts *e*<sup>3</sup>, located at opposite ends of the bracket-plate E, said posts serving for receiving the shorter ends of angular arms F, which ends turn freely in said sockets, while the longer portions of the arms F extend parallel with the bracket-plate E to opposite sides to the tubular magnet D and through eyes *g* on the rim of a clutch-socket G.

The socket G is provided in its bottom with a central opening for the passage of the upper-carbon holder D' and with a conically-tapering recess in which are arranged four quadrantal clutch members G', that serve to clamp the upper-carbon holder when the magnet D is raised, but that release the upper-carbon holder when the socket G forms contact with the bottom plate B' by the action of a sleeve *g'*, of insulating material, that is arranged in the bottom opening of the socket G and that projects below the under side of the socket G when the latter is lifted away from the bottom plate B', as shown in Fig. 4. The upper end of the insulating-sleeve *g'* is provided with a rim *g*<sup>2</sup>, that rests on the bottom of the socket G and by which the detaching of the sleeve from the socket is prevented. The quadrantal clutch members G' are made tapering at their outer circumference, so as to fit into the tapering recess of the socket G.

The lower parts of the clutch members G' rest on a sharp ring-shaped rib *g*<sup>3</sup> on the bottom of the socket G, which rib extends around the rim of the sleeve *g'*, as shown in Fig. 4. The inner faces of the quadrantal clutch members G' are made slightly convex, so as to bear on the upper-carbon holder and clamp the same whenever pressure is exerted on the top of the clutch members. On the top of the clutch members G' is arranged a ring-shaped top plate G<sup>2</sup>, on which press the downwardly-bent ends of the longer portions of the angular



arms F, as shown in Fig. 1. As soon as the tubular magnet D and its bracket-plate E are raised by the influence of the current passing through the solenoid A the ring-shaped top plate G<sup>2</sup> presses again on the clutch members and causes thereby the convex faces of the quadrantal clutch members G' to grip the upper-carbon holder, so as to firmly clamp the same and raise it, together with the carbon attached thereto, and the clutch-socket G. As soon as the current in the solenoid is diminished the tubular magnet D begins to slide down slowly until the clutch-socket G arrives in the bottom plate B', which, acting on the projecting end of the insulating-sleeve g', lifts the clutch members G' and releases them from the upper-carbon holder, so that the same is free to slide down under the influence of gravity until arrested by the action of the solenoid on the magnet D by the increased current passing through the solenoid.

The increasing and decreasing resistance formed by the greater or smaller size of the arc between the carbons and the consequent decrease and increase of the current passing through the coil of the solenoid produces the alternating raising and lowering of the magnet with its bracket-plate and clutch, and thereby the alternating clutching and liberating of the upper-carbon holder by the mechanism described, so that a very effective and sensitive electric-arc lamp is obtained in which the arc is kept at a uniform size by the quick and responsive action of the solenoid and the clutch mechanism operated thereby.

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

1. In an electric-arc lamp, the combination of a solenoid, a tubular magnet in said solenoid, a bracket-plate attached to the lower end of said magnet, a carbon-holder guided in said magnet, a clutch located below the

bracket-plate and formed of a socket and clutch members, a ring-shaped plate resting on the clutch members, and angular pivot-arms applied to the bracket-plate and socket and adapted to exert pressure on said clutch members and cause them to grip the carbon-holder as soon as the tubular magnet is drawn into the solenoid, substantially as set forth.

2. In an electric-arc lamp, the combination of a solenoid, a tubular magnet extending into the same, a bracket-plate attached to the lower end of said magnet, springs for suspending the magnet and bracket-plate, a carbon-holder guided in said magnet, a clutch composed of a tapering socket and tapering clutch members in said socket, a ring-shaped plate above said clutch members, and angular arms pivoted to sockets of said bracket-plate and extending through eyes of the clutch-socket over the ring-shaped plate so as to engage the latter and produce the engagement of the carbon-holder by the clutch as soon as the magnet is drawn into the solenoid, substantially as set forth.

3. In an electric-arc lamp, the combination, of a solenoid, a tubular magnet in the same, a carbon-holder guided in said magnet, a bracket-plate at the lower end of said magnet, a clutch formed of a tapering socket and tapering members in said socket, a ring-shaped plate extending over the clutch members, arms pivoted to the bracket-plate and extending over the ring-shaped plate, and a rimmed sleeve located below the clutch members and extending through the bottom of the socket, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

CHARLES ESCHWEI.

Witnesses:

PAUL GOEPEL,  
GEO. W. JAEKEL.