

No. 640,705.

Patented Jan. 2, 1900.

L. J. RUTH.  
ACETYLENE GAS APPARATUS.

(Application filed Aug. 10, 1898.)

(No Model.)

2 Sheets—Sheet 1.

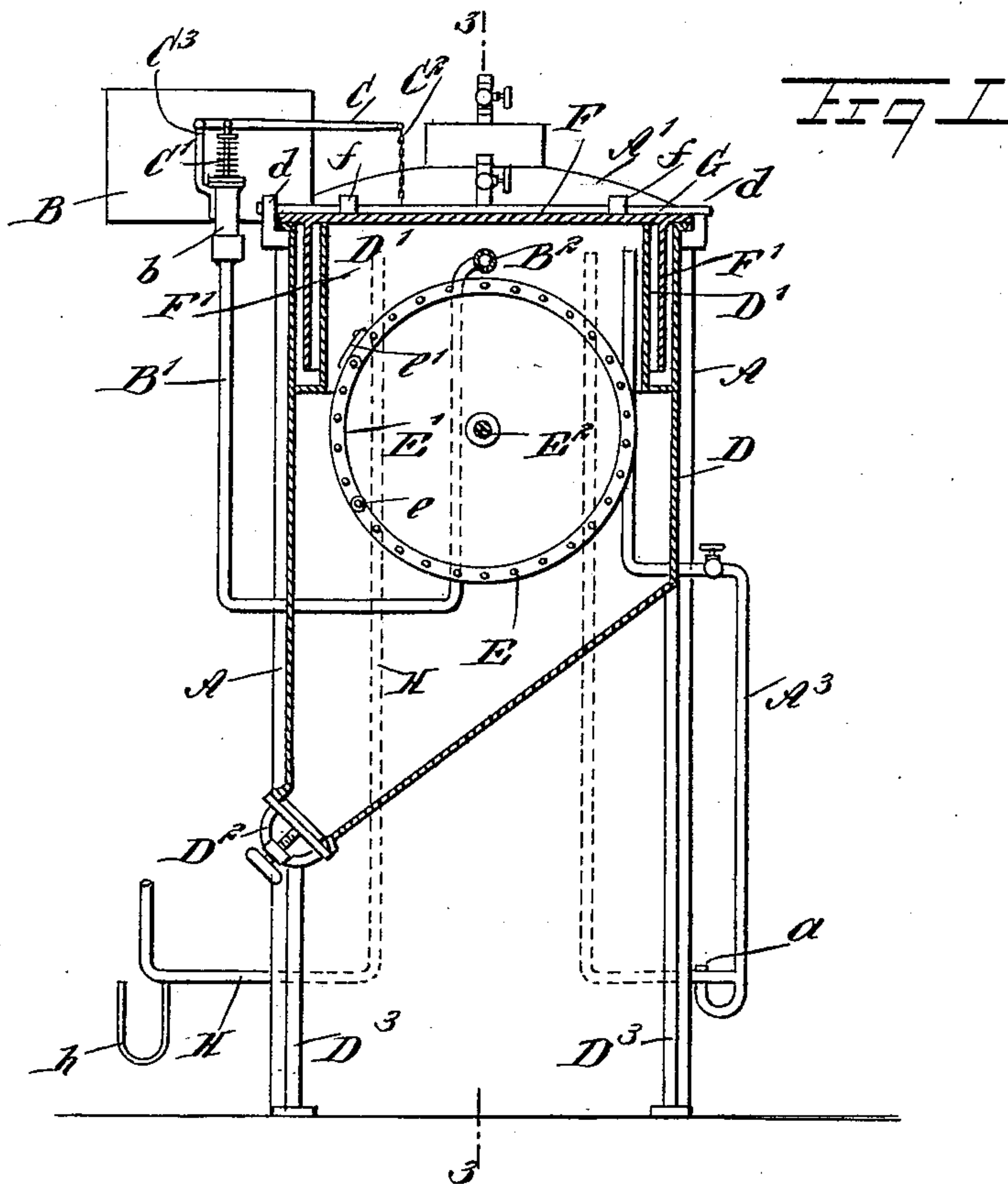
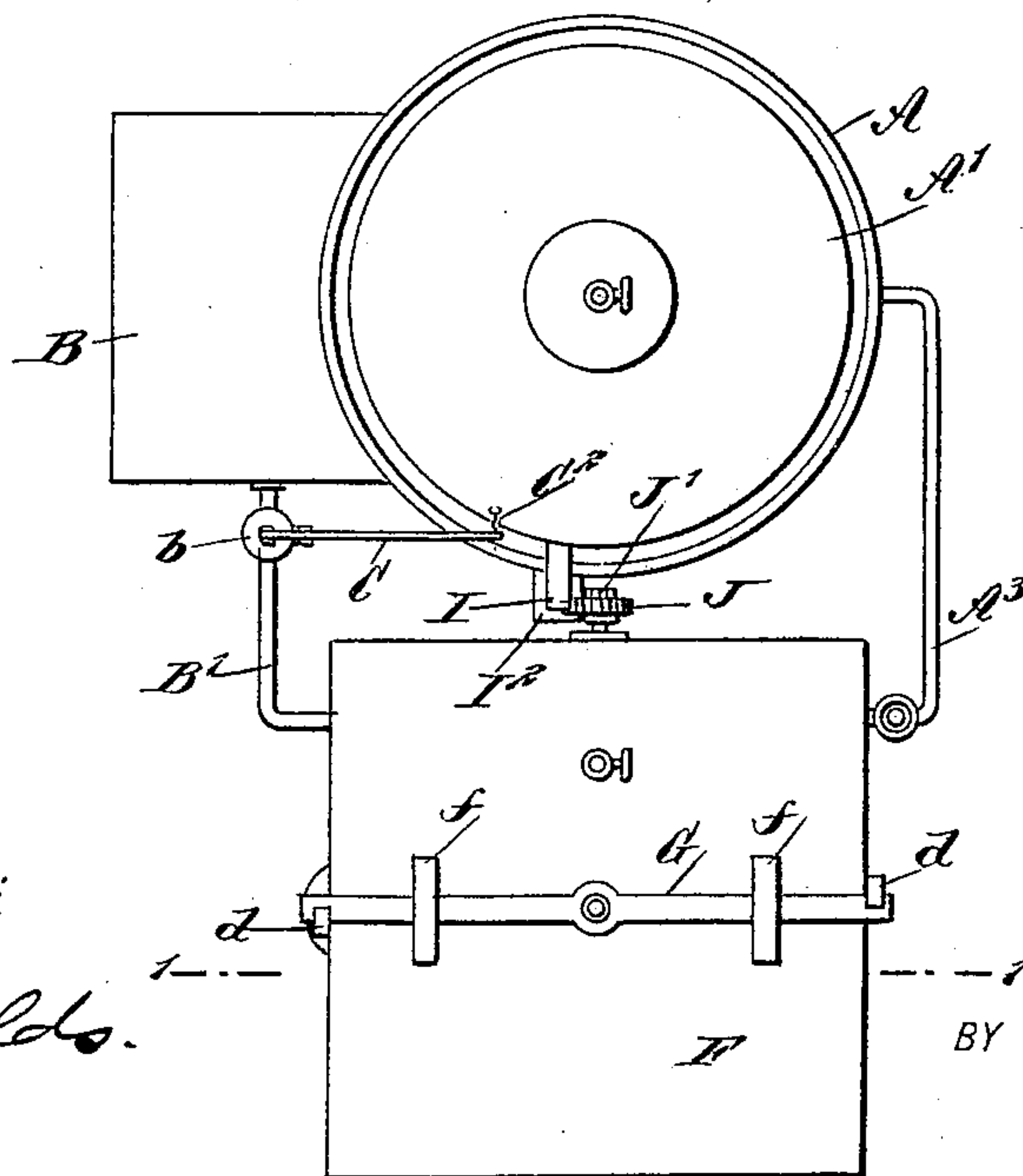


Fig 2



WITNESSES:

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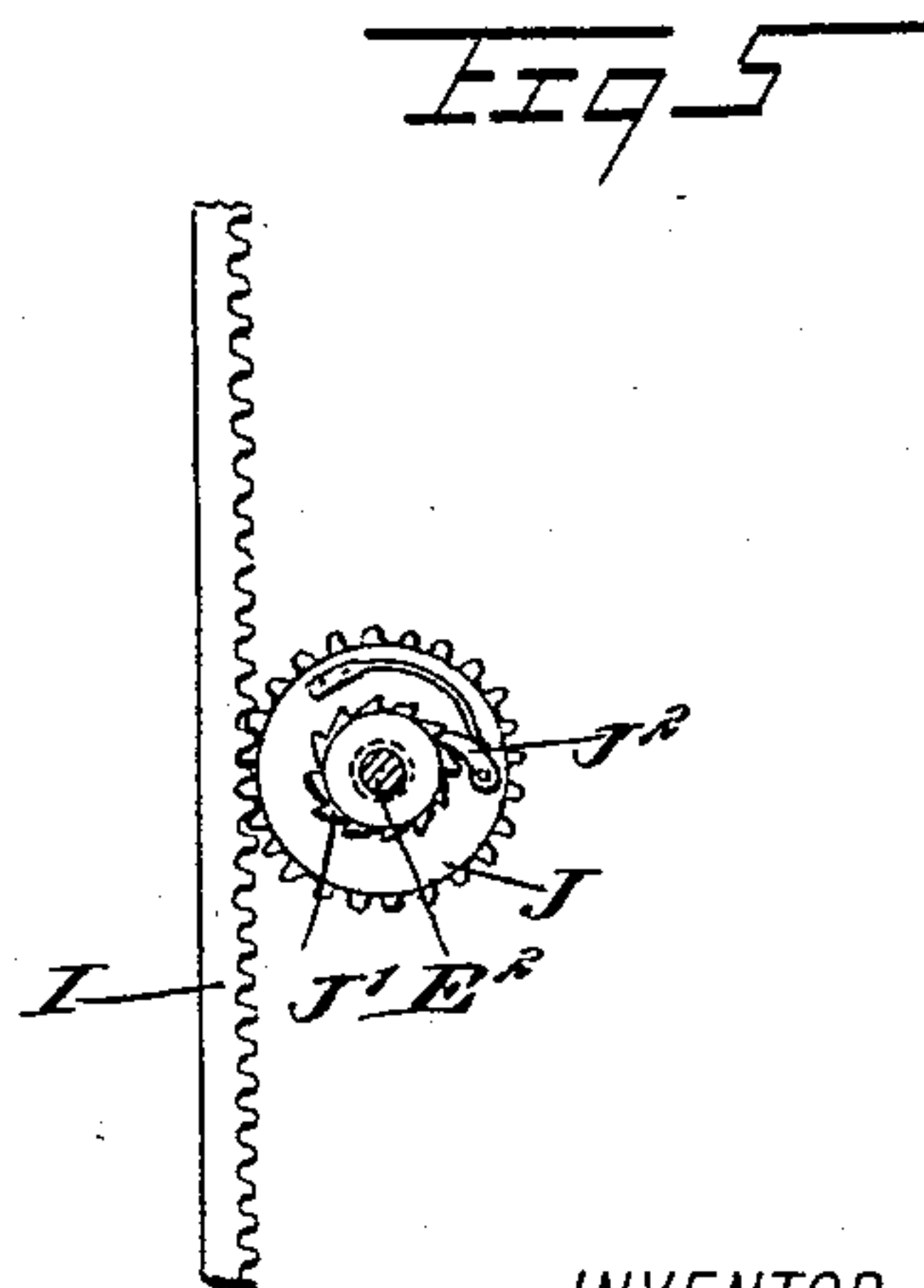
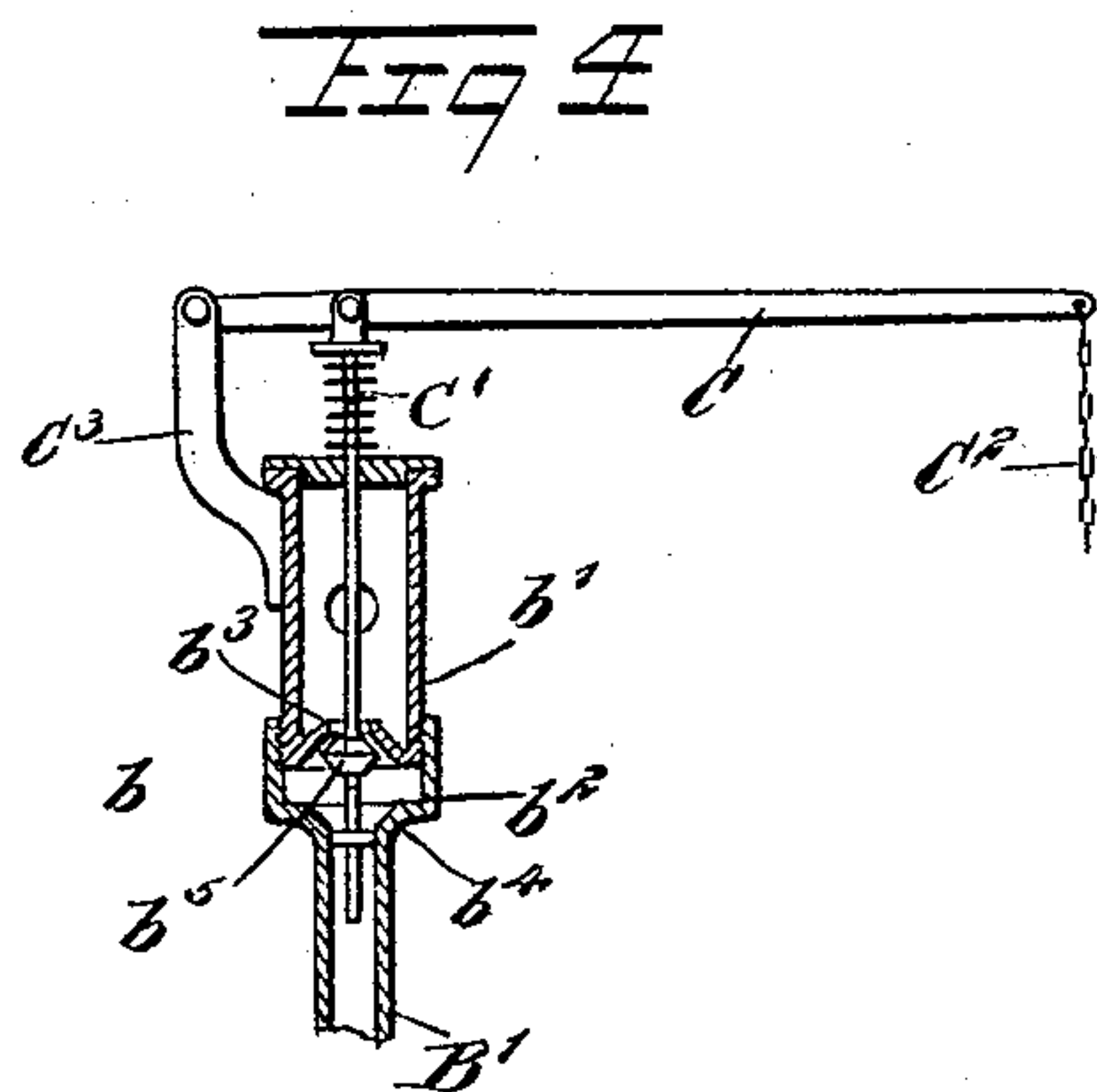
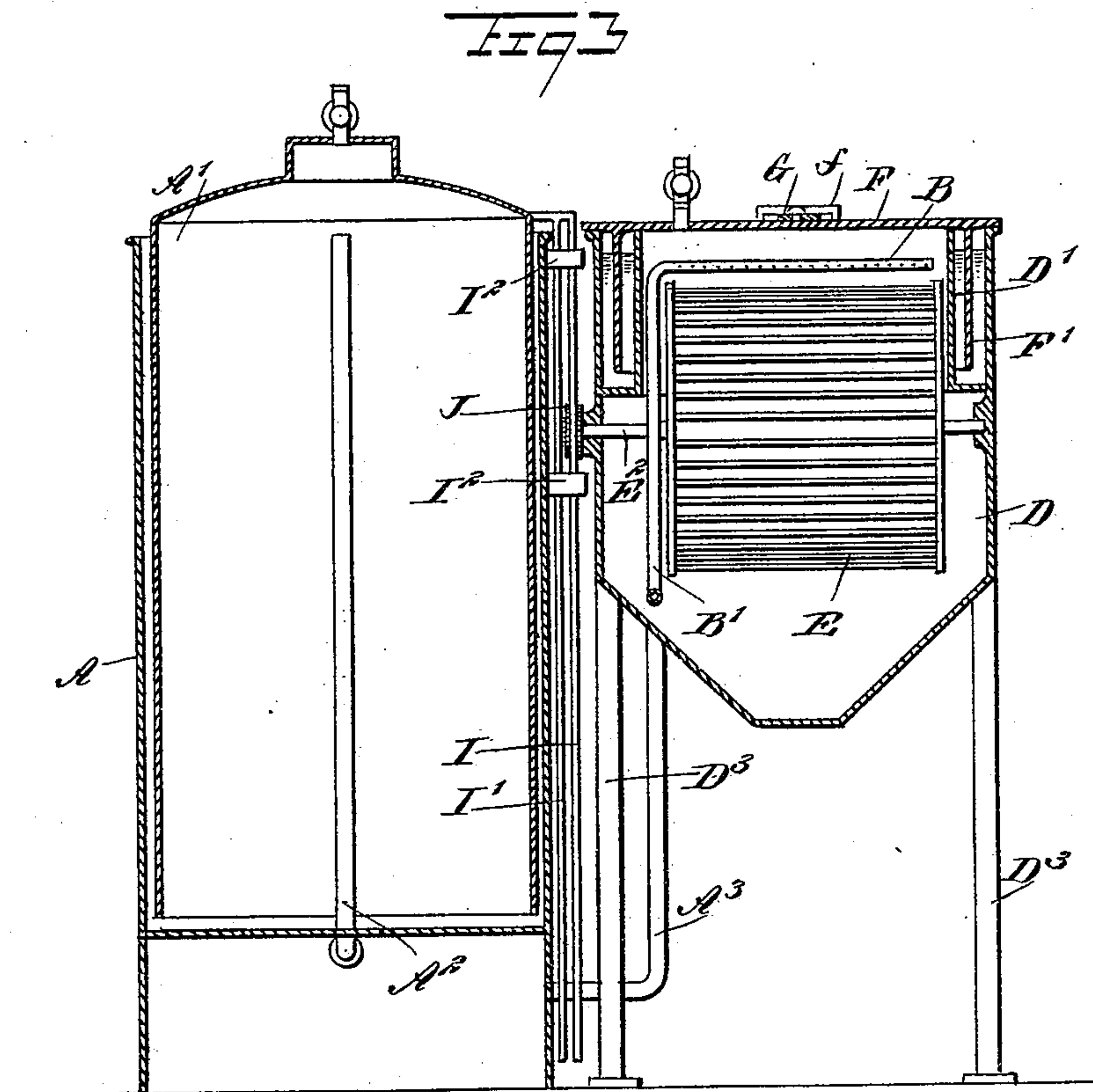
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# UNITED STATES PATENT OFFICE.

LEWIS JACOB RUTH, OF LEAMINGTON, CANADA.

## ACETYLENE-GAS APPARATUS.

SPECIFICATION forming part of Letters Patent No. 640,705, dated January 2, 1900.

Application filed August 10, 1898. Serial No. 688,294. (No model.)

*To all whom it may concern:*

Be it known that I, LEWIS JACOB RUTH, of Leamington, in the Province of Ontario and Dominion of Canada, have invented a new and Improved Acetylene-Gas Apparatus, of which the following is a full, clear, and exact description.

My invention relates to improvements in the construction of acetylene-gas generators.

My invention comprises the novel features hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation taken through the generator upon the line 1 1 of Fig. 2. Fig. 2 is a top plan view of the apparatus. Fig. 3 is a sectional elevation taken upon the line 3 3 of Fig. 1. Fig. 4 is a sectional elevation taken through the valve for controlling the water-supply, and Fig. 5 is an outside elevation showing the mechanism for turning the carbide-containing cylinder.

My invention relates to that class of acetylene-gas apparatus in which the generator and gasometer are separated and the carbide is placed within a perforated or grated cylinder, which may be revolved, and the water is supplied thereto by means of a perforated pipe or spray located above the cylinder. The gasometer is of the usual form, consisting of a tank A, open at the top, and a bell A' of smaller size within the tank A and rising and falling with the generation and use of the gas. The gas is introduced to the gasometer by means of a pipe A<sup>2</sup>, which connects with another pipe A<sup>3</sup>, leading from the gasometer to the generator. The generator is contained within the receptacle D, which is, as herein shown, of a square outline, having a tapered and sloping bottom terminating in an orifice normally closed by the clamping device D<sup>2</sup>. The generator is open at the top and is closed by a water-seal device. At its upper end the generator-chamber is provided with a second wall D', forming between itself and the outer wall of the generator a space adapted to receive water and to form a water seal.

The cap F is provided with a downwardly-extending flange F', adapted to enter this annular space and reaching nearly to the bottom

thereof. When the cap F is placed in position and the space between the outer wall of the generator and the part D' thereof is filled with water, the generator will be tightly closed.

Upon the upper surface of the cap F is pivoted a bar G, which is further held in place by means of guides f. The ends of the bar G extend beyond the sides of the top F. Projecting upward from the generator are lugs d, formed as hooks and adapted to be engaged by the projecting ends of the bar G. These hooks project in opposite directions, so that when the cap is placed in position and the bar G is given a slight rotation upon its pivot the ends of the bar will be forced beneath the hooks d and the top is prevented from rising.

It is evident that the generator may be made of circular outline, as well as rectangular. The construction would differ in no essential features if this were done.

The pipe A<sup>3</sup>, connecting the generator with the gasometer, extends upward within the generator to near the top thereof. Mounted within the generator is a cylinder E, as herein shown, formed of two heads connected by a series of rods placed closely together. These rods are placed close enough together to prevent the carbide from dropping through. The cylinder is provided with a door E', which is hinged at e and provided upon its opposite side with a button e' or other device for securing the same. The shaft E<sup>2</sup> of this cylinder extends outside the generator, passing through a stuffing-box on the way.

Upon that portion of the shaft outside of the generator is mounted a pinion J. This pinion is loose upon the shaft, but is provided with a spring-held pawl J<sup>2</sup>, adapted to engage the teeth of a ratchet-wheel J', which is secured to the shaft. By this means rotation of the pinion in one direction will rotate the shaft, while rotation in the other direction will have no effect upon the shaft. The pinion is turned by engagement with the rack I, which is connected at its upper end with the gasometer-bell A' and rises and falls therewith. Connected with the same support is a guide-bar I', which is parallel with the rack I. Both of these bars pass through guides I<sup>2</sup>, secured upon the outer tank A of the gasometer.

The water for generation of the gas is con-



tained in a tank B, which is mounted above the generator. From this tank leads a pipe B'. This pipe enters the generator and has an upwardly-extending arm terminating in a horizontal section B<sup>2</sup> of perforated pipe, located above the cylinder E. When the water flows through the pipe B', it is thus deposited upon the carbid within the cylinder in the form of a spray or in fine jets. Between the generator and the tank B a valve b is inserted in the pipe B'. This valve is shown in detail in Fig. 4. It comprises a chamber b', located above the valve proper and terminating at its lower end in a partition or diaphragm containing a valve-seat b<sup>3</sup> on its under side. This diaphragm is also provided with a central opening, through which the water flows. Connected to the lower end of the cylinder b' is a second cylinder b<sup>2</sup>, having a valve-seat b<sup>4</sup> in its lower portion. Between these two valve-seats is the valve b<sup>5</sup>, which is adapted to be seated upon either valve-seat. The continuation of the pipe B' is attached to the cylinder b<sup>2</sup>. The stem of the valve extends outward through the upper end of the cylinder b' and is connected to a lever C. This lever is supported at one end upon a standard C<sup>3</sup> and at the opposite end is connected to a chain C<sup>2</sup>, which extends downward to a connection with the gasometer-bell A', so that when the gasometer-bell has fallen to a certain point the valve b<sup>5</sup> will be lowered from the seat b<sup>3</sup> and water admitted to the pipe B' and conducted to the generator.

Surrounding the outer portion of the valve-stem is a spiral spring C', which normally holds the valve raised against the seat b<sup>3</sup> and the lever C raised. It therefore acts in opposition to the gasometer-bell when the latter is pulling down upon the chain C<sup>2</sup>. Should the gasometer-bell continue in its downward course, it will finally seat the valve upon the lower seat b<sup>4</sup>.

When in use, the lime formed by the decomposition of the calcium carbid will be sifted out of the carbid by the turning movement given to the cylinder E when the gasometer-bell rises. This lime will fall upon the inclined bottom of the generator and may be removed when desired by removing the clamp D<sup>2</sup>. When the gasometer falls, the valve b<sup>5</sup> will be opened to admit water to the perforated pipe B<sup>2</sup>. This will discharge the water upon the carbid within the cylinder E. Gas generated thereby will cause the gasometer-bell to rise, and the admission of water will thus be cut off. The water seal at the

upper end of the generator permits ready access to the generator and at the same time secures a perfect seal, so that there can be no leaking of gas.

Connected to the pipe A<sup>3</sup>, which conducts the gas from the generator to the gasometer, is a drip-pipe a. A similar pipe h is connected to the pipe H, which conveys the gas away from the gasometer. These pipes are of U shape, connected at one end with the gas-pipes and having their other end open to the atmosphere. These drip-pipes are filled with water, forming a trap to prevent escape of the gas and at the same time collecting any water which may be contained in the pipes. The generator is supported at the proper elevation upon legs D<sup>3</sup>.

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

1. In an acetylene-gas apparatus, the combination with a gasometer, and a generator containing a carbid-holder, of a water-tank above the generator, a valve-chamber connected with the tank and having oppositely-arranged valve-seats, a valve in the said chamber between the seats and having its stem projecting through the top of the chamber, a lever to which the valve-stem is pivoted, a spring surrounding the valve-stem between the lever and the valve-chamber, a flexible connection between the lever and the gasometer-bell, and a pipe leading from the valve-chamber into the generator above the carbid-holder, substantially as described.

2. An acetylene-gas apparatus, comprising a gasometer, a generator-casing, an open-work carbid-cylinder mounted in the generator-casing, means for revolving the carbid-cylinder from the gasometer-bell, a water-tank, a valve-chamber connected with the tank and having oppositely-arranged valve-seats, a valve in the chamber between the seats and having its stem projecting through the top of the chamber, a pivoted lever to which the valve-stem is secured, a spring surrounding the valve-stem between the lever and valve-chamber, a flexible connection between the lever and the gasometer-bell, and a pipe leading from the valve-chamber into the generator-casing above the carbid-cylinder, substantially as described.

LEWIS JACOB RUTH.

Witnesses:

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W. T. EASTON.