

(No Model.)

A. BORNHOLDT.

MANUFACTURE OF INCANDESCENT ELECTRIC LAMPS.

No. 441,127.

Patented Nov. 25, 1890.

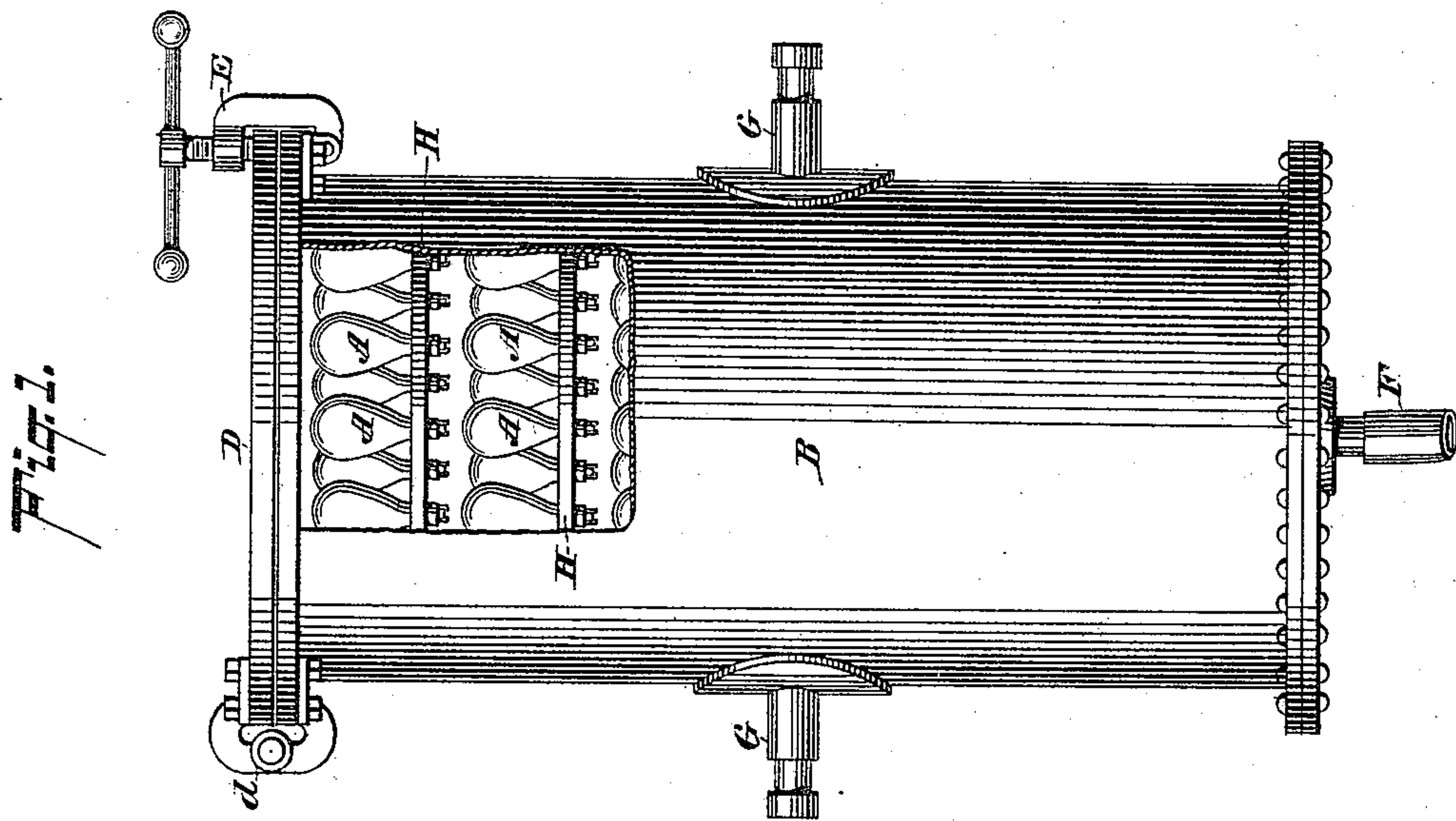
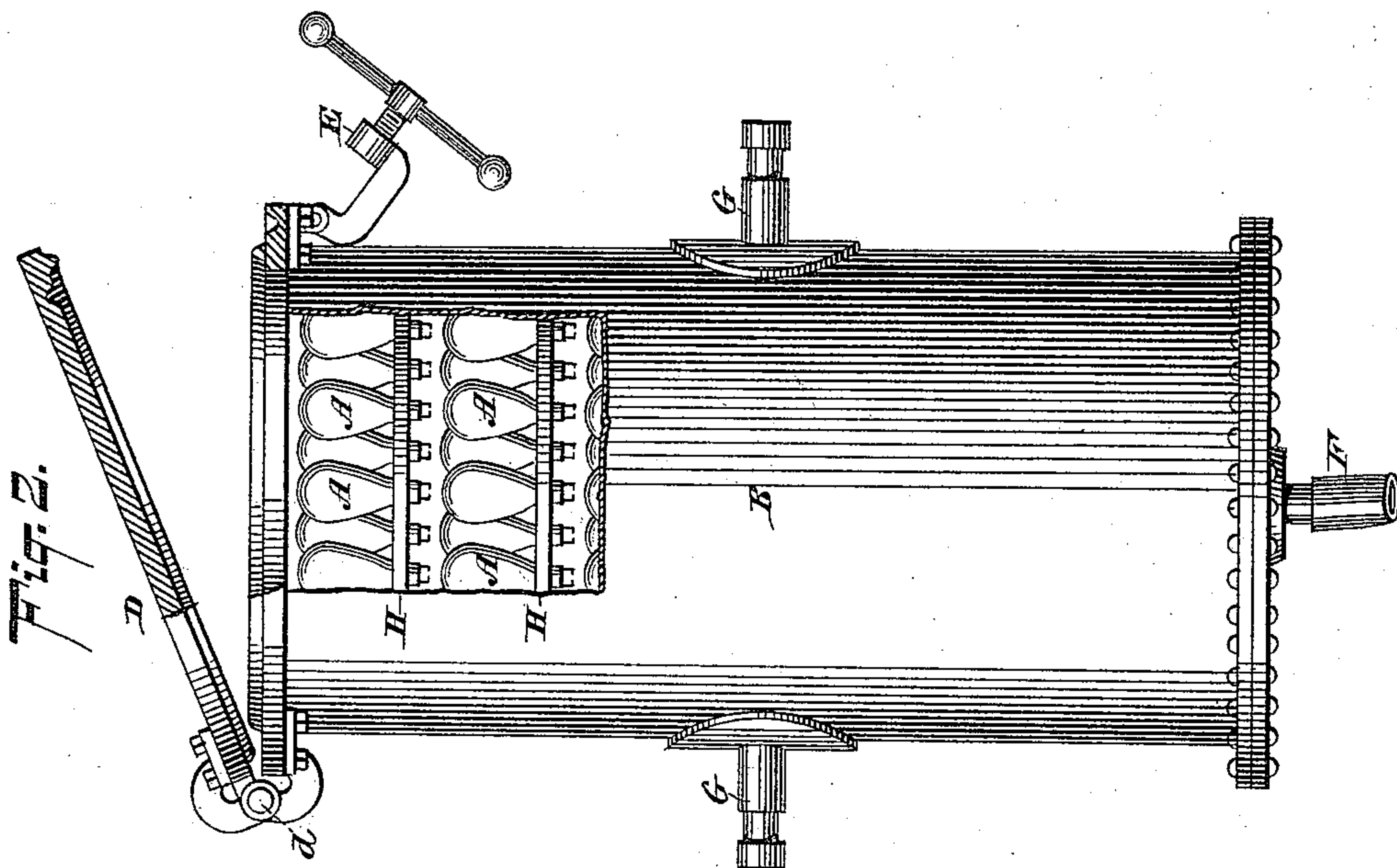
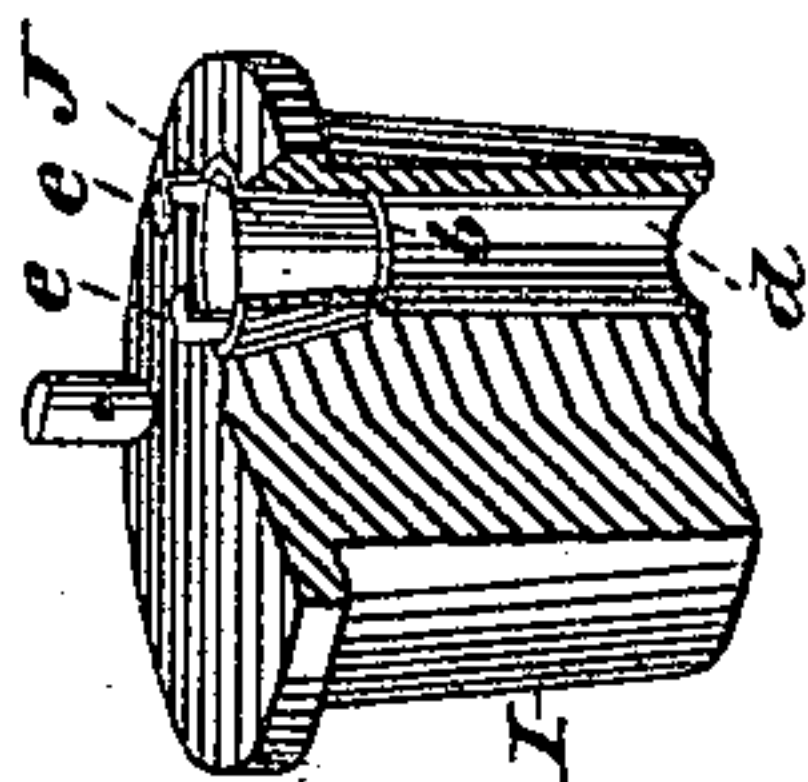


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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MANUFACTURE OF INCANDESCENT ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 441,127, dated November 25, 1890.

Application filed March 19, 1890. Serial No. 344,499. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH BORNHOLDT, a resident of the city of Brooklyn, Kings county, State of New York, have invented an Improved Process of Exhausting Air from Electric-Light Bulbs and other Vessels, of which the following is a specification, reference being had to the accompanying drawings, forming part of same, wherein—

Figure 1 represents a side view, partly in section, of a vacuum-cylinder containing series of electric-light bulbs, showing the position for receiving the vacuum. Fig. 2 represents a similar view of said vacuum-cylinder, showing it opened after the vacuum has been created. Fig. 3 is a sectional view, on a larger scale, of the stopper used by preference in the vessels to be operated upon.

The object of this invention is to facilitate or improve the manner of constructing a vacuum in electric-light bulbs and other vessels. Heretofore in creating a vacuum in an electric-light bulb the mouth of said bulb had to be closed by a stopper carrying the electric conductors, and opposite the mouth there was an opening left in the bulb through which the appliances for creating the vacuum were applied, which opening afterward had to be closed by sealing the glass, an operation expensive, tedious, and resulting in innumerable breakages.

My invention consists in the process of creating a vacuum with the aid of a multiple stopper—that is, one stopper within the other—the process consisting in first holding the vessel in inverted position, thus allowing the auxiliary stopper to drop open, in then applying the vacuum process, withdrawing the air from the vessel, and in then reversing the vessel, so as to cause the auxiliary stopper to close the passage through which the air was exhausted, thereby sealing the vessel against the introduction of atmospheric air, all as hereinafter more fully described.

In the drawings, the letters A A represent electric-light bulbs to be subjected to my process. Each bulb or vessel A is supplied with a stopper I, (see Fig. 3), which has a tubular passage *a*, into which fits an auxiliary or gravity stopper J. This gravity-stopper is of tapering form to fit a corresponding tapering portion of the passage *a*, and rests, when on

its seat, as in Fig. 3, on a support *b*, that traverses the passage *a*. The upper part of the stopper proper I has lugs *e* or other obstructions placed in the way of the auxiliary or gravity stopper J in such manner that when the stopper I is inverted the stopper J can drop as far as the obstruction *e* will allow away from its inner support *b*, thereby producing communication of the external atmosphere with the passage *a*.

I do not here claim anything relating to this stopper I, because that part of my invention which relates to the construction thereof is made the subject of another independent application for patent, Serial No. 344,500, filed by me March 19, 1890.

The vessels A A, each containing a stopper I, such as has hereinabove been described, are placed into a vacuum-cylinder B, which contains suitable racks H for holding these vessels A A in inverted position. While in this position the gravity-stopper J of each vessel A drops open. The cylinder C, being tightly closed, is now connected by a pipe F with an air-pump and air withdrawn from the cylinder and from each of the vessels A A to the desired extent. Thereupon the aperture at *f* of the vacuum-cylinder must be closed, and the cylinder with its contents is then turned half around on its trunnions G G, so as to bring the stoppers to the tops of the vessels A A, thus causing the gravity-stoppers J to drop to their seats, as in Fig. 3, and to thus seal each vessel A. Air is now by suitable means admitted to the vacuum-cylinder, so that atmospheric pressure will bear upon each gravity-stopper J, holding it in place, even if thereafter the cylinder B should again be turned into the position shown in Fig. 1 to allow the convenient removal of the bulbs from the racks, as in Fig. 2. Thus without inconvenience I am enabled to create a vacuum to the desired extent within each vessel A and treat a great many vessels of the same kind at the same time and to insure the proper sealing of each automatically and without risk of breakage or the necessity of extra labor.

Having now described my invention, what I claim is—

The process herein described of creating a vacuum within an electric-light bulb or other

vessel A, having a gravity-stopper J, which process consists in first placing each vessel A in inverted position into a vacuum-cylinder, and then while the gravity-stopper is open
5 withdrawing the air from each vessel A, and in then inverting each vessel A, thereby causing the gravity-stopper to drop to its seat,

and in thereupon admitting atmospheric air to the outside of each vessel A, substantially as herein shown and described.

ADOLPH BORNHOLDT.

Witnesses:

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