

(No Model.)

2 Sheets—Sheet 1.

I. ADAMS, Jr.

INCANDESCENT ELECTRIC LAMP.

No. 282,030.

Patented July 31, 1883.

Figure 1.

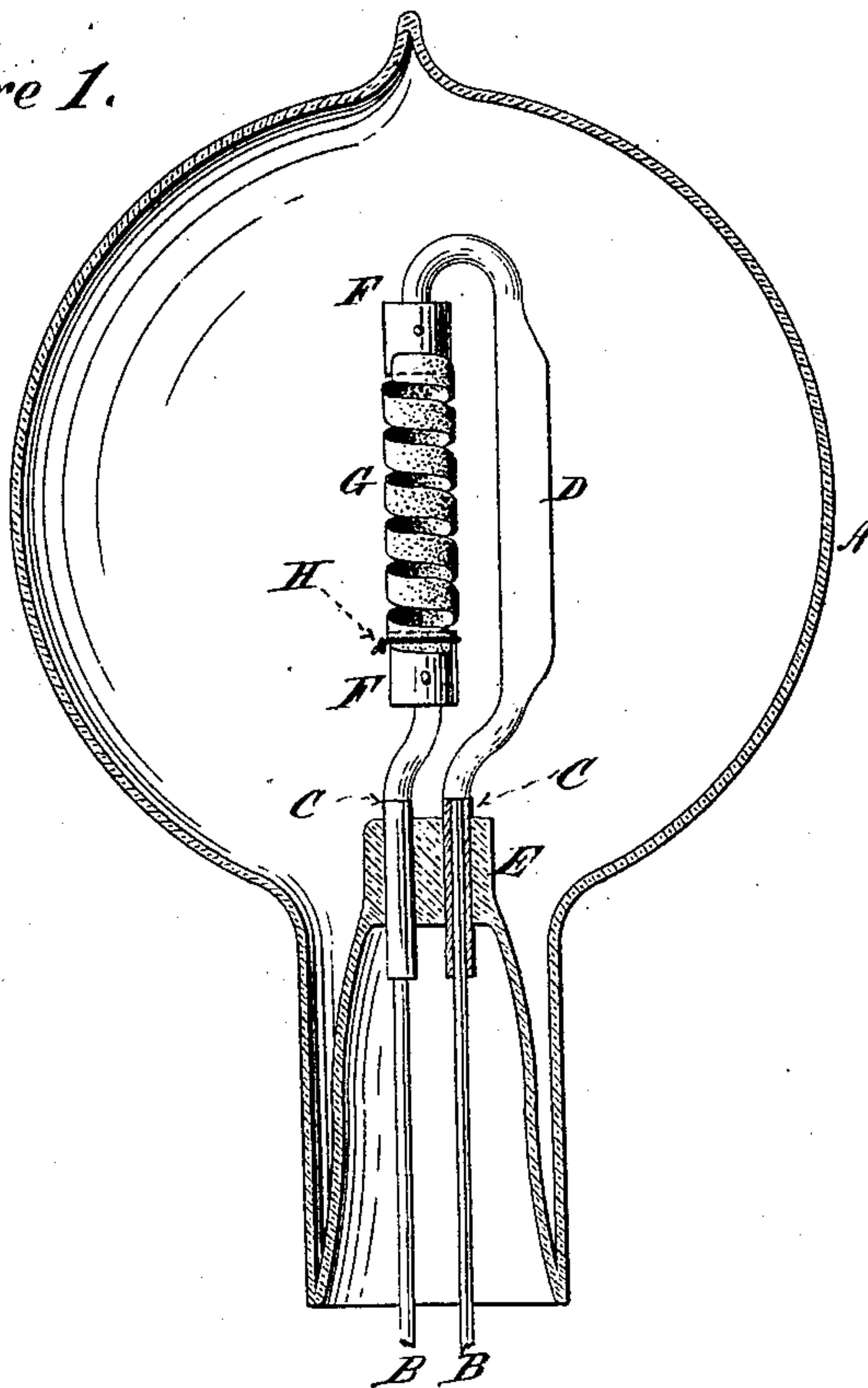
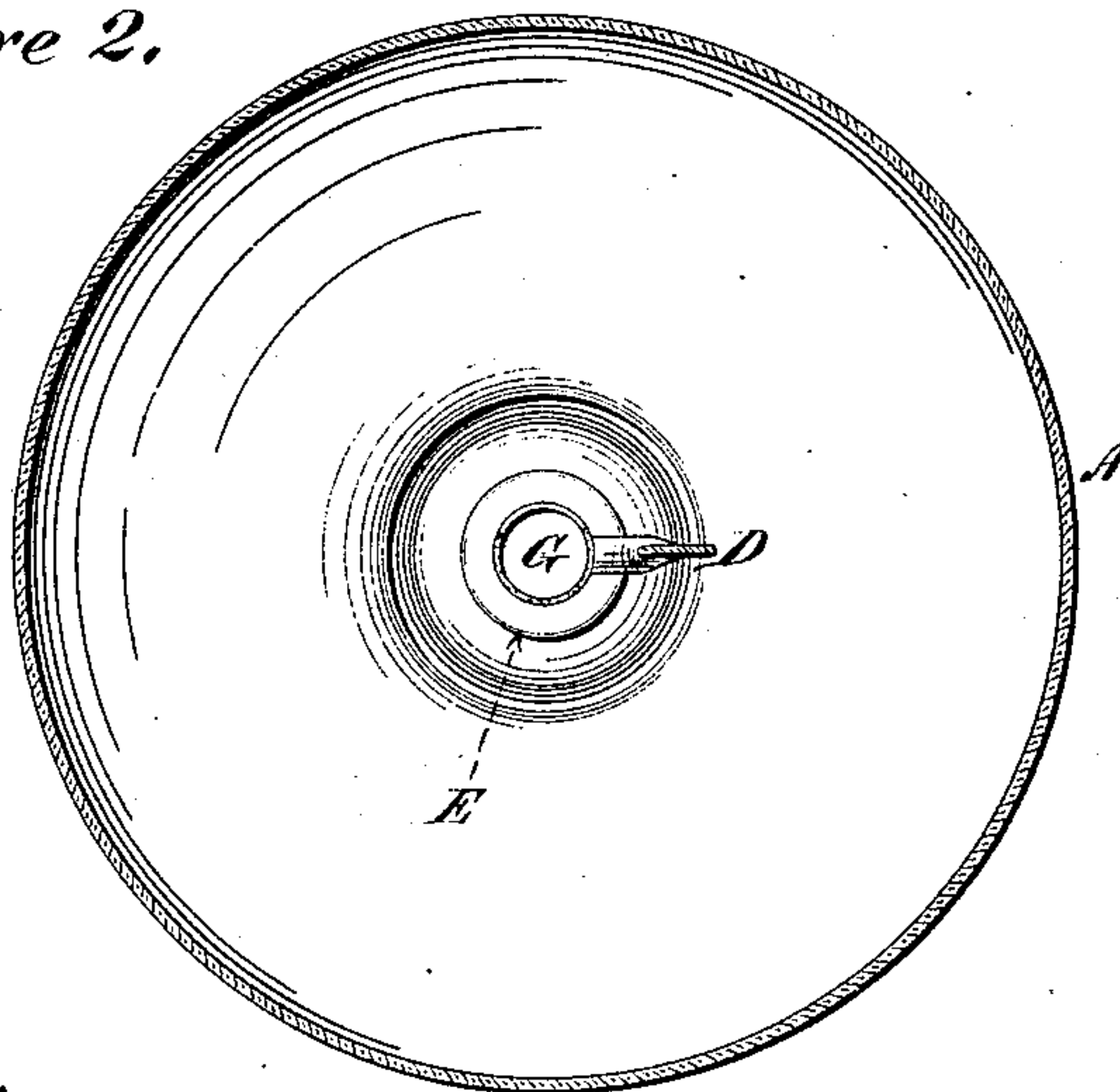


Figure 2.



Witnesses:
Geo. H. Miatt
Anthony Gref

Inventor:
Isaac Adams Jr.
By his Attorney
E. N. Dickerson

(No Model.)

2 Sheets—Sheet 2.

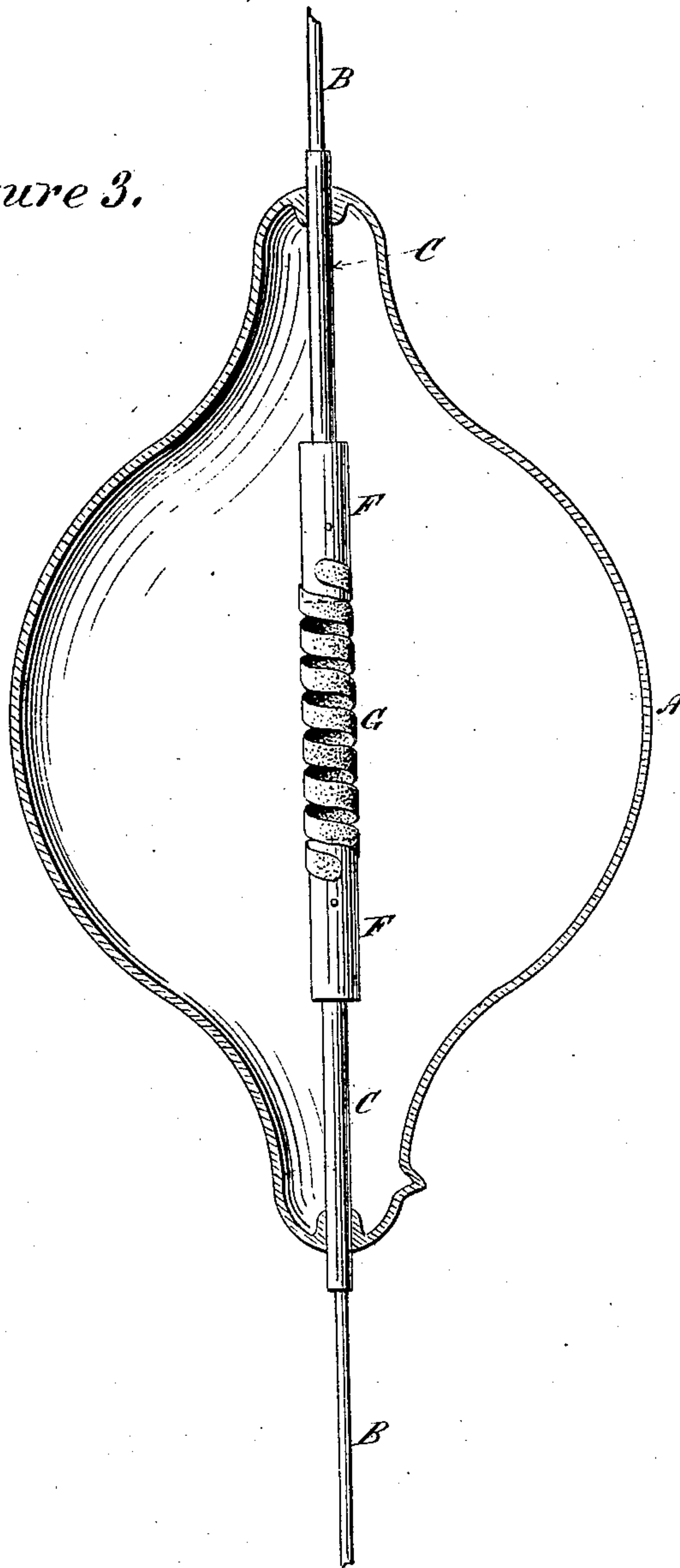
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Figure 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

ISAAC ADAMS, JR., OF BOSTON, MASSACHUSETTS.

INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 282,030, dated July 31, 1883.

Application filed April 4, 1882. (No model.)

To all whom it may concern:

Be it known that I, ISAAC ADAMS, JR., of the city of Boston and State of Massachusetts, have invented a new and useful Incandescent Electric Lamp, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

My improvement relates to an improved electric lamp designed to give light from the heating of carbon or equivalent material by the passage of the electric current; and it consists in improvements in the configuration of the bad conductor to be heated by the passage of the current, and in an improved method of setting the conductors in the glass, and in an improved glass.

It is well-known that one of the principal difficulties in the successful operation of incandescent lights is due to the lack of contact between the conductor and the glass through which it passes, and the consequent rupture through the point of contact and the destruction of the vacuum within the glass. By my improvement I cause the platinum to enter the glass lamp in the shape of a tube instead of as a solid cylindrical conductor, as has heretofore been done, and I find by experience that the hollow or tubular shape of the platinum causes it to yield to the expansion and contraction of the glass, and to better accommodate itself to the varying relation between itself and the glass, so as to present a more certain contact than has before been possible. By inclosing a copper rod within the platinum tube I make the whole a better conductor than if the platinum were solid, and the conductor is likewise less expensive. When, however, I use the improved glass hereinafter described, I may use a solid platinum conductor. It is, furthermore, evident that, other things being equal, the greater the surface of the incandescent carbon the greater will be the light, and therefore it is desirable that the carbon have as much surface as possible in proportion to the area of its cross-section.

My invention will be readily understood from the accompanying drawings, in which Figure 1 represents a view of my lamp, partly in section; Fig. 2, a plan or top view. Fig. 3 represents a modified form.

A represents the glass of the electric lamp, which may be of any convenient shape.

B represents conducting-wires, which are preferably made of copper. Surrounding each is the platinum tube C, through which the conducting-wire B passes. Upon this platinum tube C the cylindrical holders F are riveted.

G represents the carbon, which is in the form of a flat spiral or ribbon. In the form shown in Fig. 1 the conductor C is flattened, as shown at D, so as to interpose as little obstruction as possible to the light from carbon G. The carbons G, if made of suitable size, will generally hold by their own elasticity upon the holders F; but they may be wired or clamped thereon, as shown at H, or otherwise held. By the arrangement of spiral shown, a very great radiant surface is obtained without the necessity of heating a large body of material.

In order to properly hold the platinum tube C in the glass, such glass should be made having from forty-six to forty-eight per cent. of oxide of lead, about ten per cent. of potash or soda, or a mixture of them, and from forty-two to forty-four per cent. of silicate. A glass having this composition possesses about the same coefficient of expansion as platinum, is a good conductor of heat, is fusible, can be readily worked, and is thereby particularly applicable to the manufacture of globes for electric lamps. This glass may be silvered on the inside by pouring a certain amount of silver solution and running it around, so as to make one-half of the glass a reflector.

It is preferable that the wire B and platinum C be united together only at one end. The wire B should be preferably less in diameter than the platinum C, in order to make a loose fit. By this arrangement it will be found that the tube C will yield to the varying relations between itself and the glass, and will maintain a much better contact than would be possible if it were a solid cylinder. It will also be found that for a given amount of electric current a much better result is obtained by heating the carbon spiral G than by heating a solid carbon cylinder. In Fig. 3 the conductors pass out at opposite ends of the globe instead of at the same end. The arrangement is otherwise the same.

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

1. In combination with the globe of an incandescent electric lamp, a tubular platinum

connection passing through and sealed into the globe, whereby a certain connection between the glass and the platinum is secured.

2. A carbon for electric lamps, which consists of a spirally-coiled flat carbon, substantially as shown and described.

3. In an electric lamp, and in combination with the leading-in wires, a globe of glass which contains from forty-six (46) to forty-eight (48) per cent. of oxide of lead, from forty-three (43) to forty-four (44) per cent. of silica, and from eight (8) to ten (10) per cent. of potash or soda, or a mixture of them, substantially as described.

4. In an electric lamp, the combination of a platinum tube with the glass of a lamp, said glass consisting of a composition of oxide of lead, silica, and potash or soda combined, substantially as described.

5. The combination, in an electric lamp, of two platinum tubes passing through the glass globe and sealed therein, the said tubes being provided with enlarged ends or holders, and a spirally-coiled flat carbon, the ends of which clasp or surround the enlarged holders, substantially as described.

6. The combination, in an incandescent lamp, of a hollow platinum tube passing

through the glass and sealed therein, the glass being composed of a compound of oxide of lead, silica, and potash or soda, in substantially the proportions set forth, and a copper conductor passing through the platinum tube, substantially as described.

7. The combination, in an incandescent electric lamp, of two platinum conductors passing through the glass and sealed therein, the said conductors being provided with enlarged ends, and a spirally-coiled flat carbon, the ends of which clasp or surround the enlarged holders, substantially as described.

8. The combination, in an incandescent electric lamp, of two conductors sealed therein, one of the said conductors terminating in an enlarged end, the other being extended to near the top of the globe, bent in a reverse direction and provided with an enlarged end, and a spirally-coiled flat carbon connected to the enlarged ends, the extended portion of the conductor opposite the carbon being flattened, as at D, substantially as described.

ISAAC ADAMS, JR.

Witnesses:

GEO. H. EVANS,
WM. POLLOCK.