

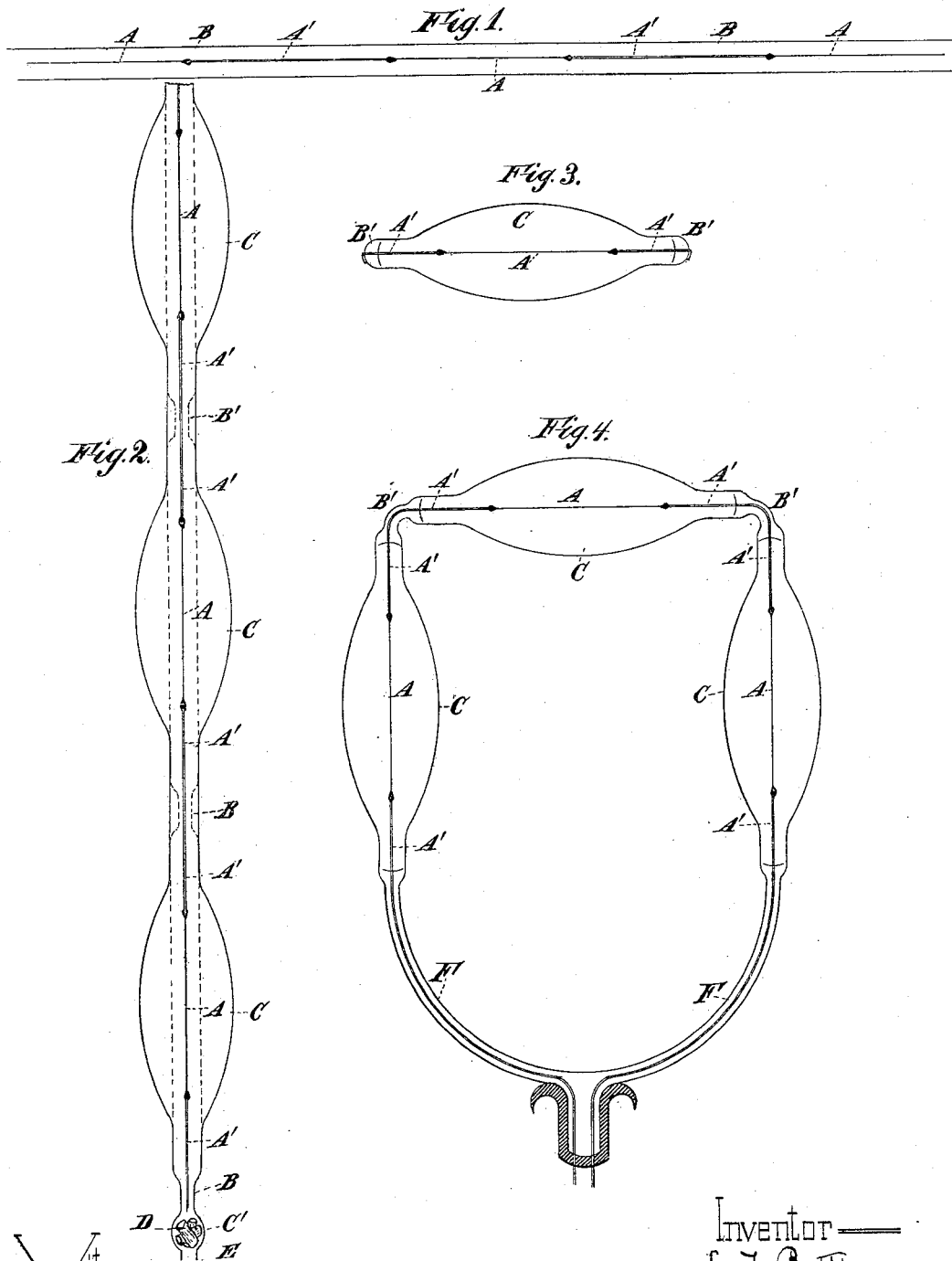
(No Model.)

L. F. BETTS.

MANUFACTURING INCANDESCENT ELECTRIC LAMPS.

No. 263,304.

Patented Aug. 29, 1882.



Witnesses
Charles H. Seaton
L. F. Pierce

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UNITED STATES PATENT OFFICE.

LEWIS F. BETTS, OF MORTON, PENNSYLVANIA.

MANUFACTURING INCANDESCENT ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 263,304, dated August 29, 1882.

Application filed January 23, 1882. (No model.)

To all whom it may concern:

Be it known that I, LEWIS F. BETTS, of Morton, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Manufacturing Incandescent Electric Lamps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates especially to the construction of incandescent vacuum-lamps, and has for its object the production of a number of vacuum chambers or bulbs from one and the same tube of glass, said bulbs being constructed and arranged in such a manner as to be exhausted together by one operation, whereby I am enabled to produce the completed lamps at a much less cost than where the bulbs are made singly.

The completed lamps may be used singly or in series without disconnecting the glass holding them together; and my invention involves certain novel and useful combinations or arrangements of parts and peculiarities of construction and operation, all of which will be hereinafter first fully described, and then pointed out in the claims.

In the drawings, Figure 1 is a side elevation of a glass tube, showing therein the filaments of carbon and their metallic connections. Fig. 2 shows a number of bulbs as blown before sealing. Fig. 3 shows a single completed lamp, and Fig. 4 represents a series of three lamps arranged upon a support.

Like letters of reference, wherever they occur, indicate corresponding parts in all the figures.

In constructing my improved lamps a number of incandescing filaments of carbon, A, and their metallic connections A' are united together alternately, as shown, as many filaments of carbon being used as it is desired to make lamps in the series. A glass tube, B, of the requisite size and quality, is molded or blown into chambers or bulbs, the number made depending only on the length of the tube. These bulbs should be far enough apart to leave sufficient tube therebetween to form the sealed support for the metallic connections from the bulb, and upon disconnecting the lamps leave a portion of the connection extending there-

from. After the bulbs are formed the line of filaments of carbon and metallic connections may be lowered through one end of the tube until each section occupies the requisite position. This operation is easily performed, and there is little danger of breaking the carbon filaments. The small bulb C' at the extremity of the series contains potash, D. The other extremity of the tube is sealed, and the lamps are introduced into a suitable oven, and by attaching the exhausting apparatus to the extremity of the tube containing the potash the whole series of lamps may be exhausted by one operation, while at the same time any moisture present in the carbon or bulbs is expelled therefrom and a substantially perfect vacuum is formed. When the bulbs have been subjected to the above-described process for the requisite length of time the tube may be sealed by heating the glass at E.

If it is desired to disconnect the lamps for use singly, the tube between the bulbs may be heated, and by the use of any suitable instrument pinched together at the extremity of each bulb, sealing the same securely. The metallic connections may be cut and turned over the ends of the bulb, as in Fig. 3, or left projecting for the purpose of connecting with any style of conductor. By thus constructing the lamp there is little danger of breaking the delicate filament of carbon, and as a number of bulbs are made together and exhausted at one time it will be apparent that the cost of producing the completed article is reduced to a minimum.

If desired, any number of lamps may be arranged in series, as shown in Fig. 4, the glass connecting the bulbs being simply bent to the requisite angle, and by uniting a tube, F, to the bottom of each vertical lamp they may be supported in any desired manner.

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. The herein-described method of manufacturing incandescent electric lamps—that is to say, uniting a number of incandescing filaments of carbon and metallic connections together, alternately, passing them into a series of bulbs or globes corresponding to the number of incandescing filaments of carbon, and then exhausting and sealing the lamps, substantially as shown and described.

2. In the manufacture of incandescent electric lamps, the herein-described process of forming a series of vacuum chambers or bulbs from a single tube of glass, placing incandescing
5 filaments of carbon with their metallic connections therein, exhausting the entire series of lamps, substantially as set forth, and then sealing the glass around the connections at the extremities of each bulb and disconnecting

the completed lamps, substantially as shown 10 and described.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

LEWIS F. BETTS.

Witnesses:

F. W. HANAFORD,

A. M. PIERCE.