(No Model.)

C. J. VAN DEPOELE.

INCANDESCENT ELECTRIC LAMP.

No. 353,333. Patented Nov. 30, 1886.

Fig. 1.

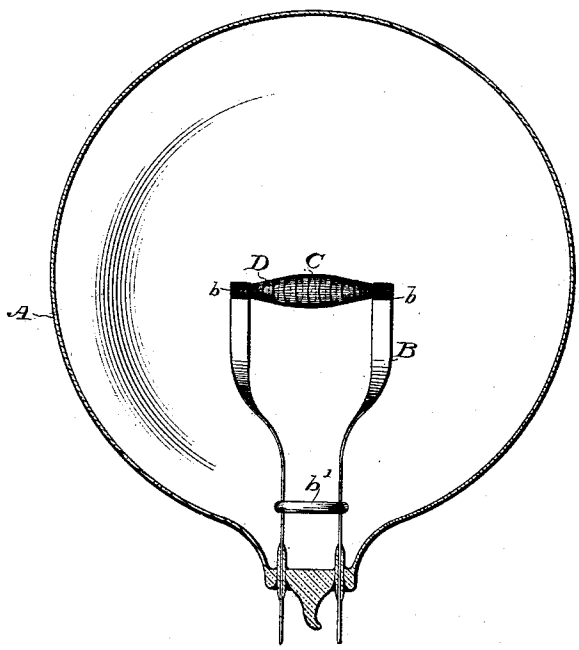

Fig. 2.

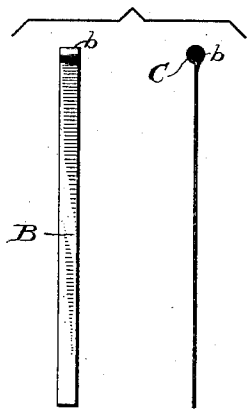

Fig. 4.

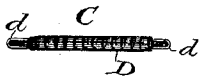

Fig. 3.

Fig. 5.

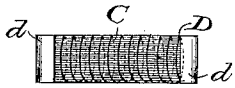

Fig. 6.

Witnesses
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Inventor
Charles J. Van Depoele.
By his Attorneys
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UNITED STATES PATENT OFFICE.

CHARLES J. VAN DEPOELE, OF CHICAGO, ILLINOIS.

INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 353,333, dated November 30, 1886.

Application filed August 1, 1885. Serial No. 173,283. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. VAN DEPOELE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Incandescent Electric Lamps, of which the following is a specification, reference being had to the accompanying drawings.

The present invention is an improvement upon that for which application for Letters Patent was filed by me November 3, 1884; and it consists in certain improvements in the formation and manufacture of filaments for incandescent electric lamps, the details whereof will be hereinafter fully set forth.

Figure 1 shows in elevation an incandescent electric lamp embodying my invention. Fig. 2 is a detail view of the conductors for supporting the same within the lamp. Figs. 3, 4, 5, and 6 are detail views of different forms of the same filament.

Similar letters denote like parts.

A represents a glass bulb or flask, which is of suitable size and may be of any desired shape, the opening through which the air is exhausted being by preference located at the neck, or that portion through which the conductors are inserted.

B represents conductors, which are thin flat strips of a good conducting material—such as platinum—which strips are bent at their upper ends to form a clamp, *b*, for inclosing and retaining the end of the filament, and they are also twisted at a point near where they emerge from the bulb, so as to impart the greatest possible stiffness and rigidity to them as supports for the filament. The said conductors may be united by a small portion of glass, *b'*, and their lower portions are coated with enamel or soft glass before they are sealed into the bulb, this previous coating being for the purpose of diminishing the liability to leakage.

C is the filament, which is composed of a quantity of any suitable fiber—such, for example, as cotton, silk, or flax—which is assembled for carbonization substantially as follows: A small bunch of the fibers has one end wrapped tightly with thread D. This end is then dipped in mucilage or sirup, for the purpose of solidifying it with a carbonizable material. The thread D is then wrapped lightly and loosely around the bunch of fibers C, throughout its desired length, the wrapping being loose toward the center and then tighter toward the extremities, where it is finished by being tightly wound, and then dipped similarly to the other end. As shown in Fig. 1, the complete filament is round in cross-section, the tips of the platinum conductors being clamped into position upon the ends thereof; but as shown in Figs. 4 and 5 the filament is broad and thin, and after having been wrapped, as described, and the ends dipped in mucilage small pieces of paper are placed thereon, forming clamps holding the fibers together, and upon which the metallic conductor is subsequently clamped or otherwise secured.

In Fig. 3 is shown a filament which is formed by taking a small bunch of fiber, tying the ends tightly, then doubling and forcibly twisting the same, so that when released sufficient of the twist will remain to retain the fibers in proximity to each other. As shown in Fig. 6, the bunch of fibers has been tied at one end, then subdivided and loosely plaited, then tied at the other end.

When the variously-formed bunches of fiber have been united or assembled, as above described, whether exteriorly covered by a winding thread or not, they are to be carbonized in the well-known manner, being previously placed between two plates of metal or carbon to prevent their warping and getting out of shape. The pressure of the plates between which they are carbonized should not be sufficient to compress the fibers into a practically solid mass, for that would entirely defeat the object I have in view, which is to assemble a bunch of practically-straight fibers and secure them loosely, and by associating them in imperfect contact with each other to produce a filament or incandescing conductor for incandescent lamps, which, by reason of its want of homogeneity, will, on account of its comparatively large size, convey a very heavy current, and at the same time, on account of its peculiar structure, oppose great resistance to the passage of the current, and thereby be capable of being heated to a very high degree without destruction.

The object in weaving or twisting the material of the filament or protecting the same with the overwound thread is to prevent the small individual filaments or fibers from running out and separating, thus enabling the same to contract and expand without getting out of contact with each other.

I am aware that an incandescing filament has been made out of a bundle of small fibers massed together, so as to form a single conductor, and this I do not claim, the object of my invention being to produce a filament of high resistance by assembling a bundle of small fibers in loose, imperfect, and discontinuous contact with each other.

What I claim is—

1. An incandescent filament composed of an indefinite number of small fibers united at their outer ends and arranged in loose, imperfect, and discontinuous contact with each other throughout the remainder of their length, as described.

2. An incandescent filament composed of a bundle of loose fibers united at each end, as described, and having a loose wrapping along its intermediate portion, as described.

3. An incandescent filament consisting of the combination of a bundle of loose fibers held together by a loose wrapping of thread and provided at its end with clips *d*, substantially as described.

In testimony whereof I hereto affix my signature in presence of two witnesses.

CHARLES J. VAN DEPOELE.

Witnesses:
JOHN EASON,
WARREN S. STEARNS.