

No. 683,086.

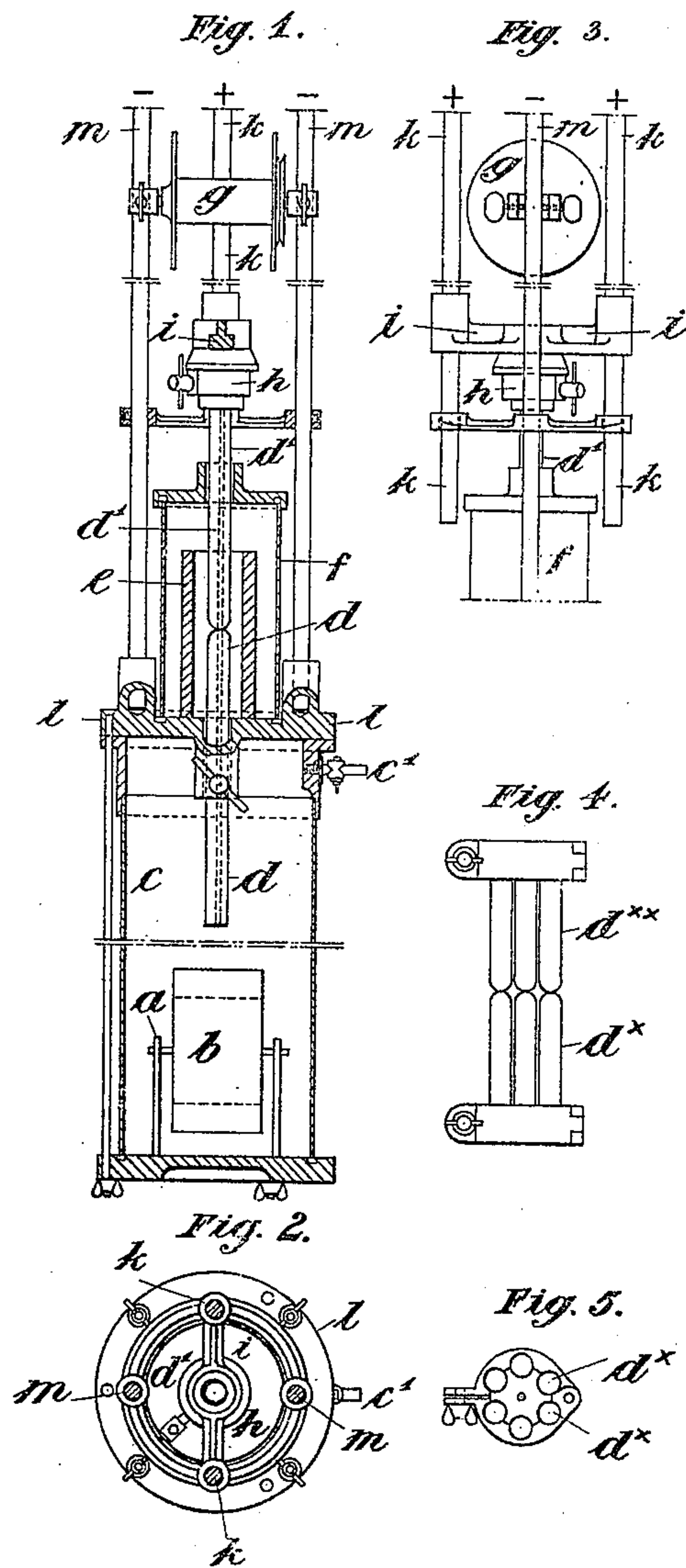
Patented Sept. 24, 1901.

W. L. VOELKER.

MANUFACTURE OF FILAMENTS FOR INCANDESCING ELECTRIC LAMPS.

(Application filed Nov. 19, 1900.)

(No Model.)



Witnesses:
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MANUFACTURE OF FILAMENTS FOR INCANDESCING ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 683,086, dated September 24, 1901.

Original application filed July 30, 1900, Serial No. 25,337. Divided and this application filed November 19, 1900. Serial No. 37,092. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM LAWRENCE VOELKER, a citizen of the United States of America, residing at 42 Bernard street, Russell Square, London, England, have invented new and useful Apparatus for Use in the Manufacture of Filaments for Incandescing Electric Lamps, (in respect whereof I have applied for a patent in Great Britain to bear date June 22, 1900, No. 11,344,) of which the following is a specification.

This invention relates to apparatus for employment in the manufacture of carbid filaments, such as described in my application for Letters Patent filed July 30, 1900, Serial No. 25,337, and whereof the present application is a division; and it consists in improved means for passing a carbonized filament through an electric arc for the purpose of converting the same into a carbid.

In the accompanying drawings, Figure 1 is a vertical section of apparatus for use in passing a carbonized thread or filament through an electric arc. Fig. 2 is a corresponding plan, and Fig. 3 a side view, of the upper portion of the said apparatus. Figs. 4 and 5 illustrate in elevation and plan a multiple-electrode arc-producing device.

Apparatus adapted for carrying out my invention comprises a spool-holder *a* for the spool, whereon the carbonized filament *b* is wound, the spool being mounted in a chamber or container *c*. Into this container enters one of a pair of longitudinally-perforated carbon electrodes *d d'*. These electrodes are mounted axially in line with one another and are capable of being moved apart. The carbonized thread or filament *b* is drawn from the spool and passed through the two longitudinally-perforated carbon electrodes *d d'*. If desired, however, several carbon pencils *d^x d^{xx}* may be arranged about a central passage, through which the filament is led, (see Figs. 4 and 5,) the carbons being connected in such manner as to produce a multiple arc. The space to be occupied by the arc is in either case immediately surrounded by a cylinder *e*, composed of the metal intended to form the metallic base of the carbid or composed of the carbid itself, this cyl-

inder being in turn inclosed within a tight-fitting globe or vessel *f*, formed of glass or of the same substance as the cylinder. A small electric arc is struck between the extremities of the carbons *d d'*, so as to produce a high-heating effect without much pressure, the globe or vessel *f* being meanwhile charged with hydrogen or carburated hydrogen or with vapor of a hydrocarbon or of the metal intended to form the metallic base of the carbid. The spool from which the filament *b* is drawn is preferably mounted in the gas-tight container *c*, to which the hydrogen or other gas is admitted by way of a cock *c'*, the said gas passing from the container *c* through the perforation in the carbon *d* into the interior of the cylinder *e* and globe or vessel *f*. The extremity of the carbonized thread or filament having been passed through the carbon electrodes and carried to the drum or reel *g*, the thread or filament is drawn through the electric arc at a speed depending upon the strength of the current employed. The carbid resulting has a metallic appearance and although of a highly crystalline nature may when cut into the required lengths be readily bent into horseshoe form and mounted in incandescing lamp-globes in the ordinary manner. The temperature which should be employed at the final stage of converting the filament into carbid will vary slightly when working with different kinds of metals. The temperature appropriate may, however, be determined by that at which incipient fusion of the metallic oxid or oxids takes place. The carbons *d d'* may be mounted in a similar manner to those in an ordinary electric-arc lamp and their regulation effected by suitable mechanism or by hand. In the accompanying illustration the carbon *d'* is held in a socket *h*, carried by a transverse bar *i*, the latter being supported by rods *k k*, while the carbon *d* is carried by the plate *l*, in which the supporting-rods *m m* terminate.

The apparatus hereinbefore described is well adapted for use in the manufacture or production of incandescing lamp-filaments of the character set forth in my divisional applications filed concurrently herewith and referring, respectively, to the preparation of

filaments from graphite and from carbon; also, where uranium, titanium, zirconium, or beryllium, either singly or in combination or in combination with other metals, is employed as the metallic base of the carbide.

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

For employment in the manufacture of carbide filaments for incandescing electric lamps, the herein-described apparatus constructed substantially as set forth comprising a pair of longitudinally-perforated carbon electrodes, a cylinder composed of the metal or

metals forming the metallic base of the carbide and arranged about the opposed extremities of the electrodes, an inclosing vessel and means for drawing the filament through the arc. 15

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 20

WILLIAM LAWRENCE VOELKER.

Witnesses:

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