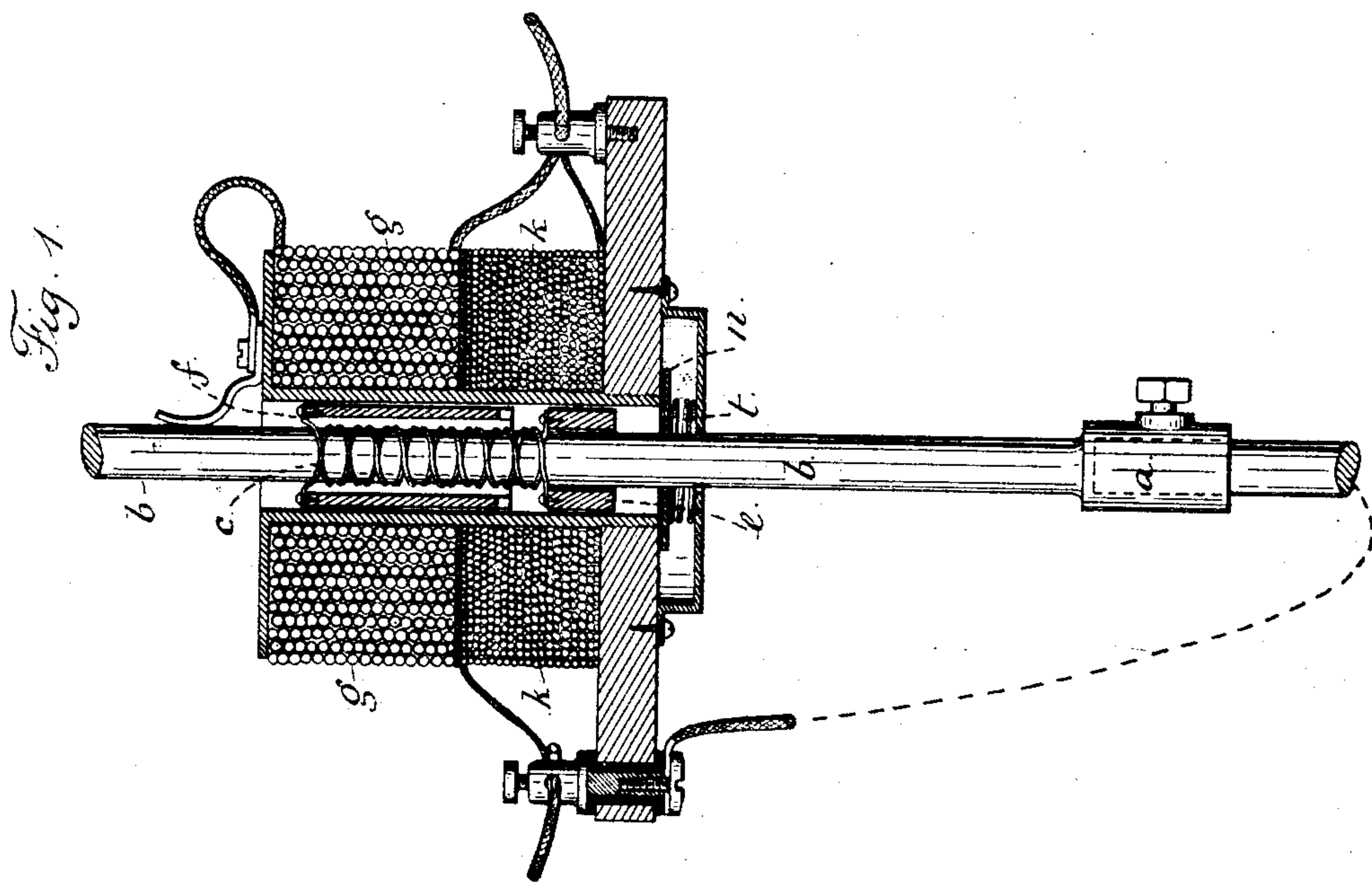
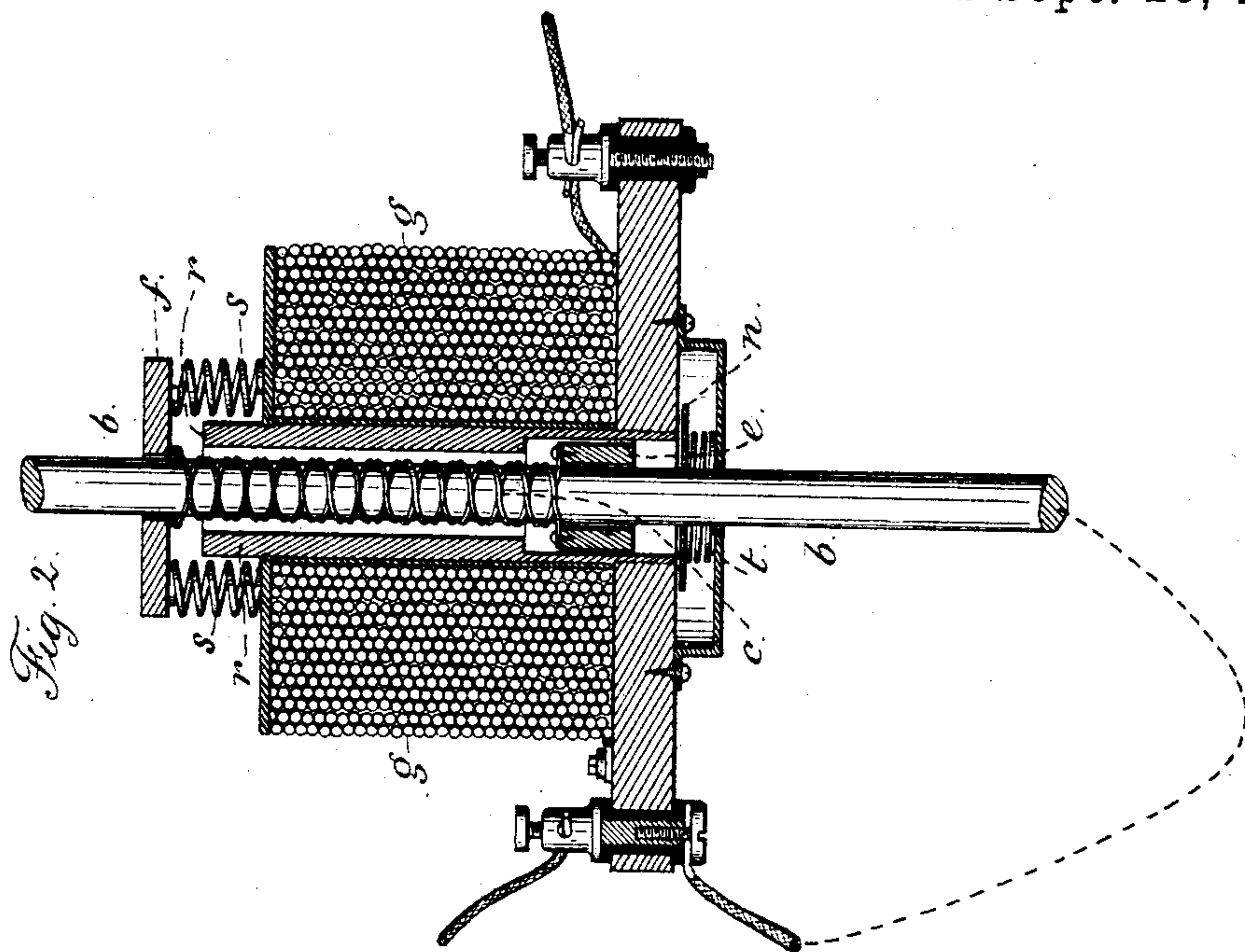


(No Model.)

J. B. TIBBITS.
ELECTRIC ARC LAMP.

No. 285,445.

Patented Sept. 25, 1883.



Witnesses:
J. Haib
Chas H. Smith

Inventor:
John B Tibbits
per Lemuel W. Serrell atty

UNITED STATES PATENT OFFICE.

JOHN B. TIBBITS, OF HOOSIC, NEW YORK.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 285,445, dated September 25, 1883.

Application filed September 27, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. TIBBITS, of Hoosic, in the county of Rensselaer and State of New York, have invented an Improvement in Electric Lamps, of which the following is a specification.

Electric lamps have been made with the movable carbon secured to a rod or holder, and around this has been a clamping-ring, that serves to raise the carbon when said clamp is lifted at one side, thereby causing the ring-clamp to bind upon the rod. In this instance the ring-clamp sometimes fails to catch and hold the rod.

My present invention relates, especially, to a clamp that can be employed in place of the said ring-clamp, and is more reliable in its action.

I surround the carbon-holder with a helix of fine wire or similar material, the said helix having one or more turns or coils, and either being single or double, the coils, when double, passing in opposite directions. The lower end or ends of the helical clamp are connected to a traveler, and the upper end or ends to an armature, or any suitable device that is acted upon by an armature or solenoid core, and when the weight of the carbon-holder is supported by the helical clamp the friction between the surface of the holder and the said clamp causes the helix to be distended in length and contracted in diameter to grasp the carbon-holding rod to support the same; but when the lower traveler of the helical clamp rests upon a stop, the downward movement of the armature or core shortens the length of the helix and causes its diameter to increase, and finally to allow the carbon-holding rod to slide through the helix and feed the carbon downwardly. This peculiar helical clamp may be employed in numerous ways in electric lamps.

In the drawings, Figure 1 represents a double helix with the parts connected thereto, and Fig. 2 is a similar view with a single helix; and I remark that this clamp may be used in electric lamps where the carbon-feed is effected by one or more electro-magnets, and where the differential action of magnets in the main circuit and in the shunt are employed, but my

improvement not being confined to any particular lamp or arrangement of magnets.

a represents the carbon-holder; *b*, the rod for the same, which preferably is a cylinder of uniform size from end to end; but it may be prismatic, the other parts being made to correspond.

The helix *c* is of wire, of any suitable size and material. I prefer to make the same of soft steel, as a fine spring wound up of a size very slightly larger than the rod *b*, so as to slip over the same, but so as to grasp said rod firmly when the helix is elongated, and hence slightly contracted in diameter. The traveler *e* is connected to the lower end of this helix, and its weight is sufficient to distend the helical clamp. At the upper end of the helix an armature core or ring, *f*, is connected.

g represents an electro-magnet, which, when energized, tends to act upon the portion *f*.

In Fig. 1 the helical clamp is represented within a compound or differential magnet, with a tubular solenoid-core, *f*. The solenoid magnet-helix *k* is of fine wire in the shunt between the + and - binding-posts, and the solenoid-helix *g* is of coarser wire in the main circuit of the lamp. The solenoid-core is of such a length in relation to these helices *k* and *g* and the length of the helical clamp *c* that the core and clamp will be moved down and fed by the increase of current in the fine-wire helix *k*, and when the traveler *e* is arrested by the stop *n* and the helical clamp lessens its hold sufficiently, the carbon and holder will move downwardly by gravity. The preponderance of electric energy will then be in the coarse-wire helix *g* in the lamp-circuit, and the carbons will be drawn apart the required distance to re-establish the standard length of arc.

In Fig. 2 only one magnet-helix, *g*, is shown, the same being in a shunt between the + and - binding-posts of the lamp. The armature *f* is raised by the springs *s* and drawn down by the magnet-helix *g* acting either through a stationary soft-iron tubular core, *r*, or else through the core, if attached to the armature *f* as a solenoid. In either case the springs *s* are sufficient to sustain the weight of the carbon-holder and armature, and the parts are drawn down

by the magnetism as the current increases in the shunt. When the helical clamp is liberated by the traveler *e*, resting on the stop *n*, the holder-rod *b* slips through the clamp *c*, and the current, passing mostly through the carbons, lessens the magnetism of *g*, and the clamp is lifted by the springs *s* and the carbon-holder and carbon raised up. It is preferable to allow the traveler *e* to be arrested upon a washer or stop, *n*, that is supported by a spring, *t*, so that there will not be any concussion as the traveler comes into contact with its support.

I do not claim a frictional clamp formed of a strip of metal wound up as a volute within which the carbon-holder slides.

I claim as my invention—

1. The combination, with the carbon-holder and its rod, in an electric lamp, of a helical clamp around the carbon-holding rod, and the mechanism, substantially as set forth, for actuating the helical clamp, as specified.

2. In an electric lamp, a helical clamp, in combination with the carbon-holder and a rod around which said helical clamp passes, substantially as set forth.

3. The combination, in an electric lamp, of a helical clamp, a carbon-holding rod, a helix and its core operating said clamp, said helix being in a shunt-circuit, within which is placed said helical clamp, substantially as set forth.

4. The combination, with the carbon-holding rod, in an electric lamp, of a helical clamp, an armature or moving device to which the upper end of the helical clamp is attached, a traveler at the lower end of such helical clamp, and a stop below the same, substantially as set forth.

5. The combination, with the helical clamp and the carbon-holding rod, of the armature *f*, traveler *e*, stop or washer *n*, and spring *t*, substantially as set forth.

Signed by me this 22d day of September, A. D. 1882.

J. B. TIBBITS.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.