G. WEISSMANN.

TUBULAR CONDUCTOR FOR INCANDESCENT ELECTRIC LAMPS.

APPLICATION FILED MAR. 18, 1914.

1,136,384.

Patented Apr. 20, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

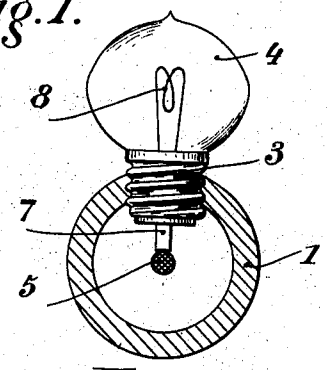


Fig. 2.

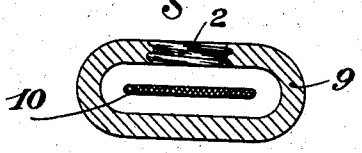


Fig. 3.

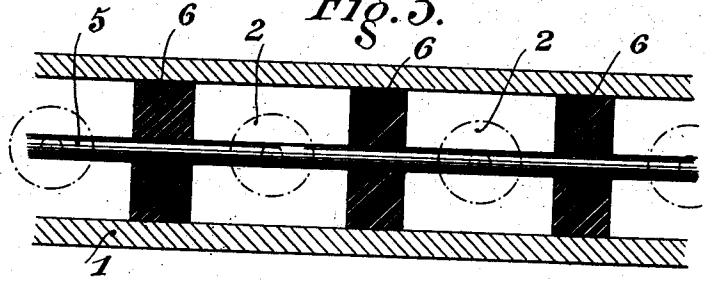
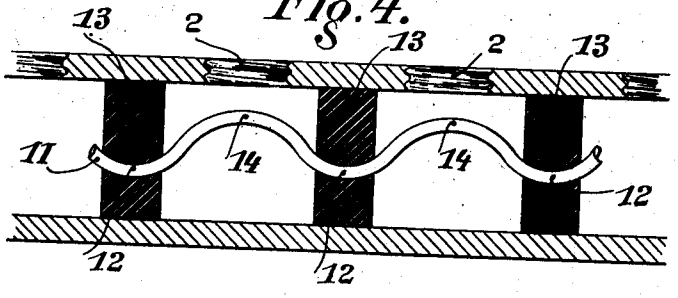


Fig. 4.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 5.

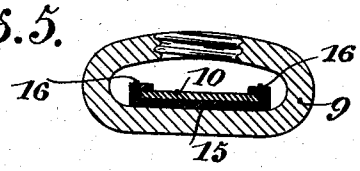


Fig. 6.

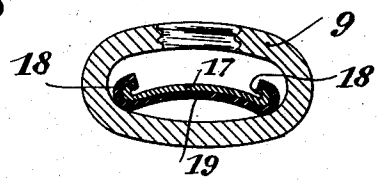


Fig. 7.

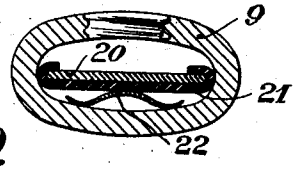


Fig. 8.

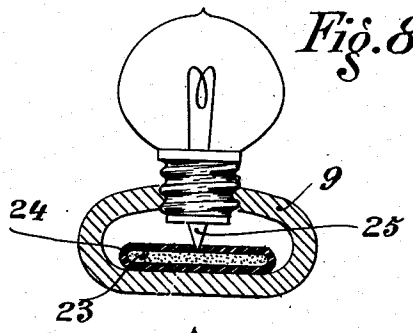


Fig. 9.

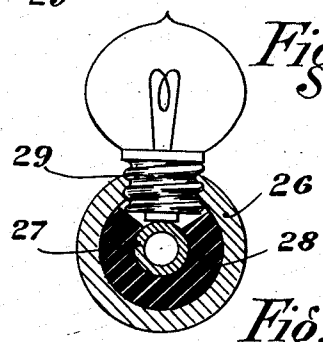


Fig. 10.

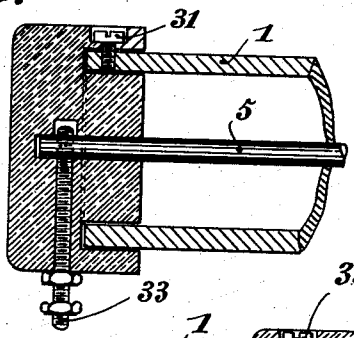


Fig. 11.

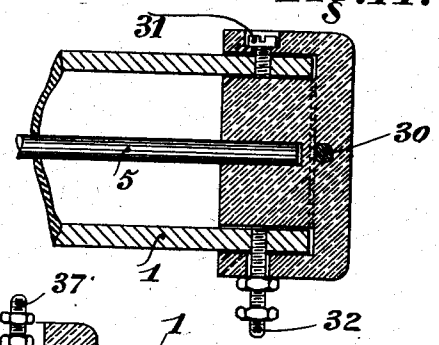
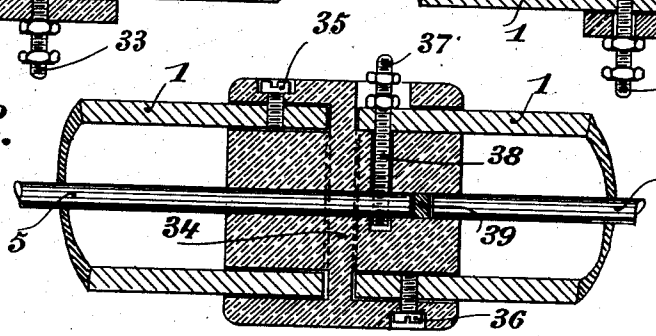


Fig. 12.



Witnesses

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UNITED STATES PATENT OFFICE.

GUSTAVE WEISSMANN, OF PARIS, FRANCE, ASSIGNOR TO ARNOLD B. HEINE, OF NEW YORK, N. Y.

TUBULAR CONDUCTOR FOR INCANDESCENT ELECTRIC LAMPS.

1,136,384. Specification of Letters Patent. Patented Apr. 20, 1915.

Application filed March 18, 1914. Serial No. 825,673.

To all whom it may concern:

Be it known that I, GUSTAVE WEISSMANN, a citizen of the French Republic, residing at Paris, in the Republic of France, have invented certain new and useful Improvements in Tubular Conductors for Incandescent Electric Lamps, of which the following is a specification.

This invention relates to a tubular conductor designed to receive the sockets of incandescent lamps or other terminals. The tubular conductor can for example be used as foot lights or in connection with luminous signs.

It essentially consists of a tube into which the incandescent lamps are screwed and which contains a conductor insulated from the conducting tube. The terminals of the lamps are fed with current by the tube and by the inner conductor.

This device permits of curving the conductor at will in keeping the same absolutely tight.

In the accompanying drawings several forms of construction are shown by way of example.

Figure 1 is a cross section of the tubular conductor. Fig. 2 is a cross section through a second form of construction of a tubular conductor. Fig. 3 is a longitudinal section of the tubular conductor shown in Fig. 1. Fig. 4 is a longitudinal section of a third form of construction of the tubular conductor. Figs. 5 to 9 are cross sections showing each another modified construction of the tubular conductor. Figs. 10 and 11 illustrate the ends of the tubular conductor and the device for closing said ends. Fig. 12 shows in longitudinal section a device for joining two tubular conductors.

The tubular conductor comprises an outer metal tube 1 which has threaded holes 2 designed to receive the sockets 3 of the incandescent lamps 4. In the tube 1 is a conducting wire 5 is arranged which is supported and insulated from the tube 1 by means of partitions 6 of insulating material mounted in said tube 1 and having a central hole for the wire 5. The inner conductor 5 could further be insulated from the outer tubular conductor 1 by means of a tube of insulating material having threaded holes for the sockets 3 of the incandescent lamps. The incandescent lamps 4 have contact pins 7 projecting from their sockets and designed to bear on the inner conductor 5. The outer tubular conductor 1 and the inner conductor 5 are connected each with one of the poles of the source of electricity. The ends of the filament 8 are connected with the contact pins 7 and with the metal sockets 3 of the incandescent lamps. All the incandescent lamps 4 are put in shunt between the conductors 1 and 5.

The outer tube 1 and the inner conductor 5 can be of any convenient shape. For example as shown in Fig. 2, the tubular conductor 9 is of oval cross section and the inner conductor 10 consists of a conveniently insulated metal strip. The inner conductor is not necessarily straight, it could be undulated as shown in Fig. 4. In this case the downwardly undulations 12 of the inner conductor 11 would be situated in the partitions 13, the upwardly directed undulations 14 being situated under the holes 2 of the tube in order to receive the sockets of the lamps in forming an elastic part so that the contact between the inner conductor and the contact pin 7 is insured. The outer tube 1 will of course be insulated either by being painted with an insulating varnish or by means of an insulating sheath whieh has holes for the sockets of the lamps.

As shown in Fig. 5 the inner conductor 10 in the shape of a metal strip is insulated from the outer tubular conductor 9 by means of a strip 15 of canvas or cardboard placed on the bottom of the tubular conductor 9 and having its two edges 16 bent over the edges of the metal strip 10 so that the middle part of the same is ready to receive the contact pins 7 of the lamps. The inner conductor can further be bent so that it is elastic and insures a better contact with the lamp, for example as shown in Fig. 6 the metal strip 17 insulated from the tubular conductor 9 by a strip 19 of insulating material bent over at its edges 18 is slightly curved upward so that it rests on the bottom of the tubular conductor 9 only with its two edges the lamps bearing on the naked middle part and the contact being insured by the elasticity of the metal strip 17. Instead of bending the metal strip a blade spring 22 (Fig. 7) can be arranged under the same in order to insure the perfect elasticity, the metal strip 20 is insulated from the blade spring 22 and from the tubular conductor 9 by an insulating wrapper 21.

The inner conductor can further, as shown in Fig. 8, consist of a band 23 of metal tissue inclosed in an insulating sheath 24 the contact pin 25 of the incandescent lamps being connected so that they can be stuck into and through the insulating sheath in order to come in contact with the conductor band 23. The inner conductor can further consist of a tube 27 separated from the outer tube 26 by an insulating tube 28, this construction permits of inserting a rod or other support for maintaining the support for the incandescent lamps.

In order to make the support for incandescent lamps perfectly tight insulating stoppers 30 are placed over its ends (Figs. 10 and 11), said stoppers having a circular groove designed to receive the end of the outer tube 1 and a central bore for the inner conductor 5, terminals 32, 33 being connected with the outer tube and the inner conductor 5 respectively. The stoppers are fixed on the ends of the tubular conductor 1 by means of set screws 31. If said supports are designed for receiving incandescent lamps of low voltage to which a normal plant of much higher voltage is fed, several of the supports must be mounted in series in order to obtain for the whole plant the required reduction of voltage. In this case the connecting blocks Fig. 12, can be used. In a block 34 of insulating material annular grooves are arranged in either end designed to receive the ends of the tubular conductor 1, a central bore serving for the reception of the inner conductor 5. The fixing screws 35—36 serve for connecting the several parts with one another. The right hand side tube 1 is connected with the left hand side inner conductor 5 by means of a conducting rod 37—38. The two conductors 5 located in the central bore are separated the one from the other by a disk 39 of insulating material.

The outer tube 1 (Fig. 1) can be a flexible metal tube consisting for example of juxtaposed spirals connected with one another in any convenient manner. In this tube convenient apertures for the sockets of the lamps have to be arranged.

It is evidently not necessary that the lamps be arranged as shown in Figs. 3 and 4 on one generating line of the other tubular conductor. They can be arranged on this tube in any convenient manner, there could even be arranged several lamps on one cross section of the tube. The application of the tubular conductor which forms the object of this invention are very numerous, it is particularly designed as an ordinary canalization in buildings and further as a subterranean canalization. The conductors can be used such as they have been described without any modification for forming canalizations in buildings. For the inner and outer conductors brass could be used which is prepared so that the conductors are flexible and can be bent to the required shape in order to fit the conductors to any support. As inner conductor there will be preferably used a tube concentric with the outer tubular conductor. Such a plant presents the following considerable advantages: It can easily be taken to pieces which is very important for temporary plants such as used for example in exhibitions. The material could always be used again as it will have been scarcely worn at all. The plants can be put up very rapidly as there is no splicing necessary wherefrom results a considerable saving of work. The electric conductors can be installed everywhere immediately as it is merely necessary to bore a hole in the tubular outer conductor in order to permit of screwing in the sockets of the incandescent electric lamps.

The electric conductor according to the invention permits to attach an illuminating apparatus such as a chandelier at the end of the conductor as it is merely necessary to connect the poles of the apparatus with the apparatus the one with the outer tube and the other with the inner conductor which can be effected in different manners. Owing to the flexibility of the conductor it is easy to understand that an apparatus can be directly mounted on the end of this conductor whether this end is straight curved or inclined in any position.

If the inner conductor is insulated from the outer tubular conductor by means of incombustible insulating rings for example by means of glass rings the electric plant is perfectly safe against fire. The safety of such plants is perfect owing to the arrangement according to which the tube which forms one of the poles envelops completely the other pole and protects the same against contact. The improved conductor can be used for different lightings. In the outer tubular conductor as many inner conductors are arranged insulated from one another as lightings are required, the holes in the outer tubular conductor being arranged so that the lamps can be connected with the one or with the other of the inner conductors. If luminous effects are to be obtained by the alternating extinguishing and lighting of a great number of lamps which with the known systems requires complicated arrangements of conducting wires, it is merely necessary to make the inner conductor of the improved electric conductor movable and providing in the same apertures which correspond with the time during which the lamps are to be extinguished. If a solid part of the conductor comes in contact with the socket of the lamp this lamp will be lighted and if the aperture registers with said socket the lamp will be extinguished.

With this device the most various combinations can be made and the most beautiful luminous effects can be obtained. There could be arranged in the outer tubular conductor a second conductor consisting of the endless band with apertures or insulating parts which is driven in such a manner that it moved continuously. The conductor which forms the object of this invention can be substituted with subterranean canalizations for the cables actually in use which are very heavy and difficult to join the one with the other. If further the insulating devices are made of glass such a canalization is proof against moisture. The tubular conductors could further be flexible and terminated at one end in such a manner that a lamp or a convenient apparatus can be mounted on this end the other end being closed by a contact plug designed to be inserted into a canalization, said tubes serving for the same purpose as the tubes actually used for connecting a gas apparatus with the gas main.

I claim:—

1. An electric conductor designed principally for luminous signs and similar purposes consisting of a tubular outer conductor having threaded holes for the insertion of the sockets of incandescent electric lamps and an inner conductor located in said tubular conductor, means for insulating the inner conductor from the outer conductor, incandescent lamps placed in the outer conductor in such a manner that one pole of the filament is connected with said outer conductor the other pole being connected with the inner conductor, a curved blade spring under said inner conductor for pressing the same upward, means for connecting the outer conductor with one of the poles of a source of electricity and means for connecting the inner conductor with the pole of electricity, substantially as described and shown and for the purpose set forth.

2. An electric conductor designed principally for luminous signs and similar purposes consisting of a tubular outer conductor having threaded holes for the insertion of the sockets of incandenscent electric lamps and an inner conductor located in said tubular conductor, means for insulating the inner conductor from the outer conductor, incandescent lamps placed in the outer conductor in such a manner that one pole of the filament is connected with said outer conductor the other pole being connected with the inner conductor, means for connecting the outer conductor with one of the poles of a source of electricity and means for connecting the inner conductor with the pole of electricity, and plugs of insulating material in the ends of said tubular outer conductors carrying the means for feeding electricity to said conductors, substantially as described and shown and for the purpose set forth.

3. A device of the character described, comprising a substantially tubular conductor, a second and bare conductor disposed therein and insulating devices interposed between the inner wall of the tubular conductor and the second conductor for maintaining the latter yieldingly in position, the tubular conductor being provided with threaded openings to receive the sockets of lamp filaments, such sockets constituting one pole of each of the filaments and lying in electrical contact with the tubular conductor, and the other pole of each filament being moved into electrical contact with the inner conductor when the sockets are screwed in place.

4. A device of the character described, comprising a continuous integral and substantially tubular conductor, a second conductor disposed therein and insulating devices interposed between the inner wall of the tubular conductor and the second conductor for maintaining the latter in position, the tubular conductor being provided with a series of openings to receive the sockets of lamp filaments, such sockets constituting one pole of each of the filaments and lying in electrical contact with the tubular conductor and the other pole of each filament of each lamp of the series being moved into electrical contact with the common inner conductor when the sockets are in place.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

GUSTAVE WEISSMANN.

Witnesses:
ALFRED FREY,
CHAS. P. PRESSLEY.