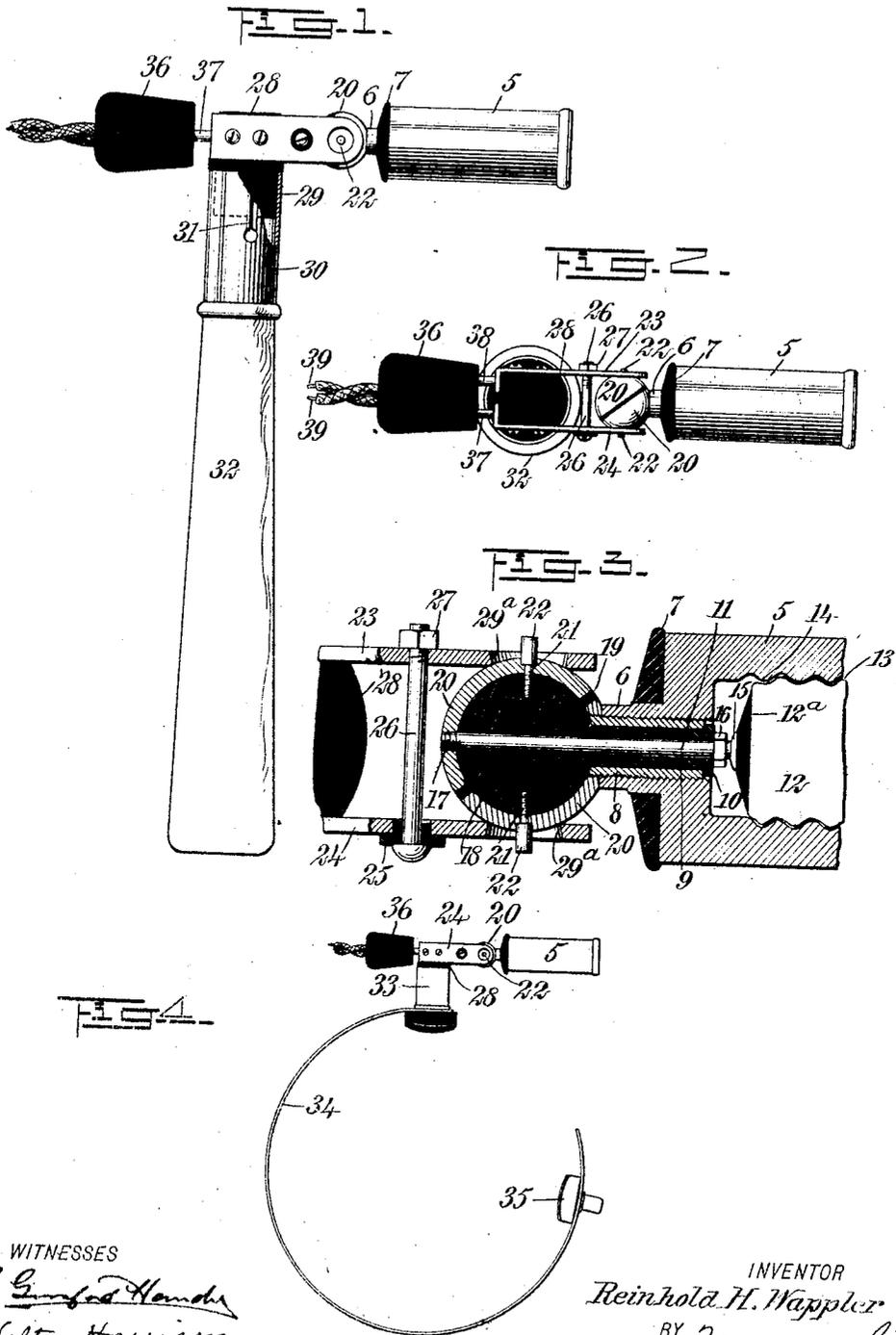


No. 856,321.

PATENTED JUNE 11, 1907.

R. H. WAPPLER.  
ELECTRICAL CONTACT JOINT.  
APPLICATION FILED JUNE 21, 1906.



WITNESSES  
*L. Sanford Hendon*  
*Walton Harrison*

INVENTOR  
*Reinhold H. Wappler*  
BY *Mum Co*  
ATTORNEYS

# UNITED STATES PATENT OFFICE.

REINHOLD H. WAPPLER, OF NEW YORK, N. Y.

## ELECTRICAL CONTACT-JOINT.

No. 856,321.

Specification of Letters Patent.

Patented June 11, 1907.

Application filed June 21, 1906. Serial No. 322,732.

*To all whom it may concern:*

Be it known that I, REINHOLD H. WAPPLER, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Electrical Contact-Joint, of which the following is a full, clear, and exact description.

My invention relates to electrical contact joints, my more particular object being to produce a type of joint suitable for use in connection with miniature lamps employed in surgery, dentistry, watch-making, and various other professions and avocations in which it is necessary to manipulate the lamp by hand, or to secure it upon the operator's head, as the case may be.

Among the objects sought to be accomplished by my invention are the following: 1. To insure perfect electrical communication through the joint, notwithstanding its mobility; 2. To enable the operator to readily adjust the pressure between the contact members through which the current flows; 3. To limit the degree of displacement which may take place between contiguous contact portions movable relatively to each other; 4. To compensate for wear upon the fixed and movable contact joints where the same actually engage each other; 5. To produce a type of joint in which the contact members tend to remain clean, and in which they may readily be cleaned if accidentally soiled or coated with grease; and 6. To enable the joint to be readily transposed from one support to another so as to enable the lamp to be used for different purposes.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation showing my improved joint supporting a small electrical lamp socket upon a handle; Fig. 2 is a plan view of the same; Fig. 3 is an enlarged horizontal section through the center of the ball and socket connection shown in Fig. 1 and elsewhere; and Fig. 4 is a reduced plan view showing my improved joint as supporting a lamp socket upon a spring band to be mounted upon the operator's head.

The lamp socket is shown at 5 and is pro-

vided with a sleeve 6 integral therewith, and encircling this sleeve is an annular button 7 of insulating material. The sleeve 6 is threaded internally, and fitting into it is a removable sleeve 8 threaded externally. A tube 9 of ebonite or other insulating material is mounted within the sleeve 8 and is provided at one of its ends with an annular flange 10. A metallic stem 11 extends longitudinally through the tube 9.

At 12 is shown the neck of an incandescent lamp. This neck is provided at 13 with threads which engage mating threads 14 bounding the inner surface of the socket 5. This enables the neck 12 of the incandescent lamp to be screwed into position substantially in the usual manner. The neck 12 of metal constitutes the so-called outer contact of the lamp. The so-called inner contact is shown at 15, these parts being insulated from each other by a sleeve 12<sup>a</sup> of hard rubber or other insulating material. A nut 16 engages the stem 11. This stem is provided with a thread 17 and passes axially through a ball 18 of insulating material. This ball is provided with an annular portion 19 integral therewith and serving as an insulating gasket. Two hemispheres 20 of metal are fitted upon opposite sides of the ball 18. Screws 21 pass directly through the metallic hemispheres 20 and into the ball 18 of insulating material. These screws are provided with elongated cylindrical heads 22 which are sunken about half-way through the thickness of the hemispheres 20. The hemispheres 20 are thus in effect metallic shells insulated from each other and having a ball form. A pair of clamping plates 23, 24 are fitted upon opposite sides of the composite sphere thus built up and directly engage the hemispherical shells 20. An annular sleeve 25 of insulating material is fitted into the clamping plate 24. A bolt 26 passes through this sleeve 25 of insulating material and extends across to the clamping plate 23, passing directly therethrough. This bolt is threaded externally and revolvably mounted upon it is a threaded nut 27. By loosening or tightening the nut 27, or what is practically the same thing, by turning the bolt 26 relatively to the nut 27, the clamping plates 23, 24 are drawn toward each other or allowed to move apart, according to the direction of rotation of the nut 27. The pressure of the clamping plates

23, 24, upon the composite ball is therefore regulated at will. A base 28 of insulating material supports the clamping plates 23, 24 which are secured thereupon. The base 28 is provided with a projecting portion 29 which is adapted to enter a metallic sleeve 30, the latter being provided with a slot 31 in order to receive it and exert such a gentle pressure upon it as will hold it securely in place but render it readily removable. The sleeve 30 is fitted upon a handle 32, whereby the device may be manipulated at the will of the operator. Instead of being mounted upon this handle the base 28 may be similarly fitted into a metallic sleeve 33 carried by a spring band 34 having a pressure plate 35 so as to be secured upon the operator's head. By withdrawing the portion 29 from the sleeve 30, or the sleeve 33, as the case may be, the device may be shifted from one form of holder to another. A plug handle 36 is provided with plugs 37, 38 insulated from each other and connected with wires 39 whereby current is supplied to the pressure plates. The pressure plates 23, 24 are provided with eyes 29<sup>a</sup> through which the elongated cylindrical heads 22 of the screws 21 pass as shown in Fig. 3.

My invention is used as follows:—The clamping plates 23, 24, being adjusted as above described exert pressure upon opposite sides of the composite balls, and thus hold the same with some little degree of rigidity in any desired angular position permitted by the screw heads 22 moving within the eyes 29<sup>a</sup>. The pressure of the clamping plates upon the metallic hemispheres 20 insures continuous metallic contact between these parts. The portion 29 being tolerably large as shown, it almost necessarily follows that some part of the surface bounded by the portion is in good metallic engagement with the adjacent hemisphere, even if the contact is not good at every point of the circle represented by the boundary of the eye.

It will be noted that if the ball be turned upon a vertical axis, according to the view shown in Fig. 3, the lamp may be turned within wide limits, probably not less than 190 to 200 degrees. By being moved in a vertical plane, however, the range is limited by the elongated screw heads 22 reaching the boundaries of the eyes 29<sup>a</sup>. The elongated screw heads being sunken within the hemispherical shells 20 they have good anchorage and cannot be easily broken or displaced. The insulation between the hemispherical shells 20, is necessarily good at all times and no displacement of any part can occasion short circuiting. By adjusting the pressure plates 23 relatively to each other, the operator can render the angular movement of the ball relatively to the pressure plates as easy or as difficult as he chooses. By drawing the pressure plates toward each other, he

increases the perfection of the electrical contact, but diminishes the mobility of the movable parts.

The device permits of a wide range of adjustment, thus rendering it suitable for a considerable number of independent objects.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In an electrical contact joint, the combination of a plurality of members flexibly connected together, and provided with electrical fittings, one of said members being provided with a boss, and a plurality of independent supports of different character each provided with a sleeve for engaging said boss for the purpose of rendering said supports interchangeable relatively to each other.

2. An electrical contact joint, comprising pressure plates, electrical connections therefor, a substantially spherical member mounted intermediate of said pressure plates, said member being provided upon opposite sides with contact surfaces insulated from each other, and electrical connections for said contact surfaces.

3. An electrical contact joint, comprising a pair of contact members, means for adjusting the same relatively toward each other, a substantially spherical member disposed intermediate of said contact members and provided with contact faces insulated from each other, and electrical connections for said contact faces.

4. The combination of a pair of pressure plates, means for supporting the same, a ball of insulating material disposed intermediate of said pressure plates, hemispherical metallic shells mounted upon opposite sides of said ball of insulating material, said shells being insulated from each other, and electrical connections for said hemispherical shells.

5. The combination of a ball of insulating material, metallic contact members of substantially hemispherical form mounted thereupon and insulated from each other, members connected with said metallic contact members and projecting therefrom so as to engage said pressure plates and serve as limiting stops for said ball and said contact members, electrical connections for said contact members, and electrical connections for said pressure plates.

6. The combination of a ball of insulating material, a metallic stem passing axially therethrough and serving as an electrical connection, a contact member of substantially hemispherical form mounted upon said ball and engaging said metallic stem, another contact member of substantially hemispherical form mounted upon said ball and disposed oppositely to said contact member first mentioned, an electrical connection for said second-mentioned contact member, pressure

plates disposed upon opposite sides of said ball and engaging respectively said contact members, and electrical connections for said pressure plates.

5 7. The combination of a revoluble member of rotund form provided with contact members, pressure plates engaging said contact members, means for adjusting said pressure plates relatively to each other so as to  
10 exert a greater or lesser pressure upon said

contact members, electrical connections for said pressure plates, and electrical connections for said contact members.

In testimony whereof I have signed my name to this specification in the presence of 15 two subscribing witnesses.

REINHOLD H. WAPPLER.

Witnesses:

JOHN KEIM, Jr.,  
TERESA KEIM.