Jan. 11, 1949. A. E. WIEDENHOEFT 2,458,967

SUPPORT FOR ADJUSTABLE LIGHTING FIXTURES

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Fig. 1.

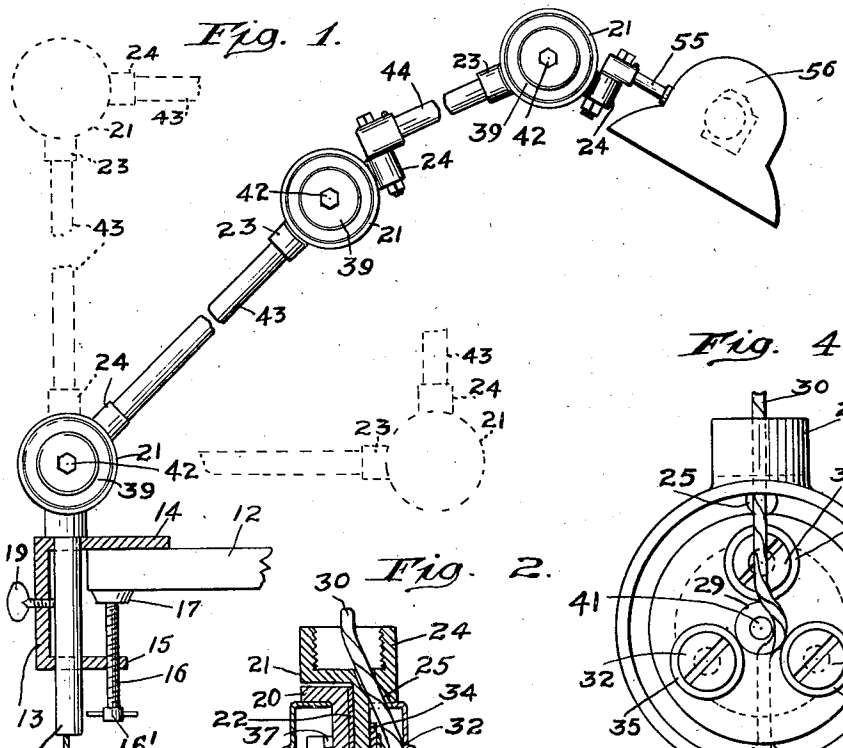


Fig. 2.

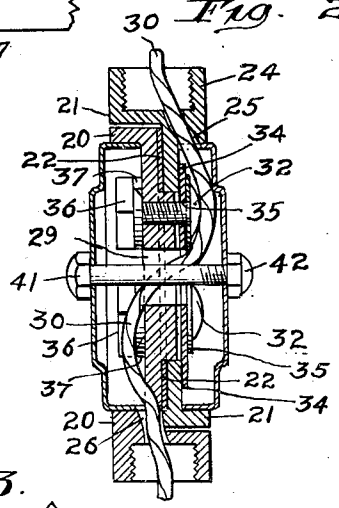


Fig. 3.

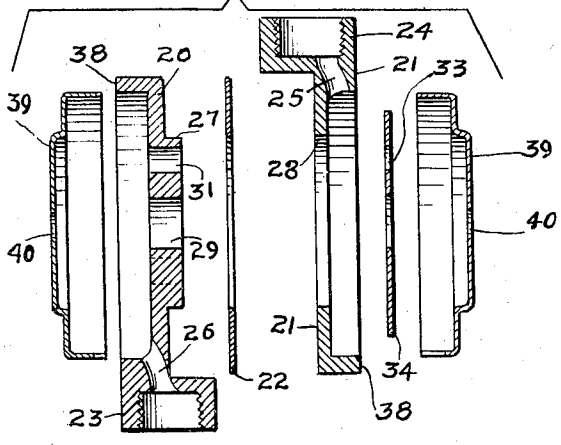
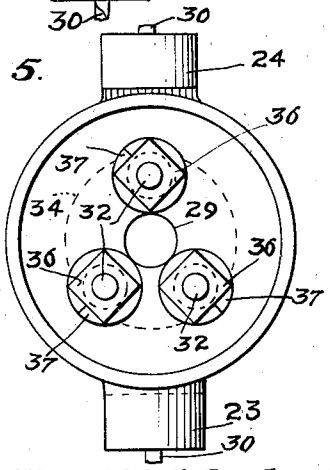


Fig. 4.

Fig. 5.



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Fig. 6.

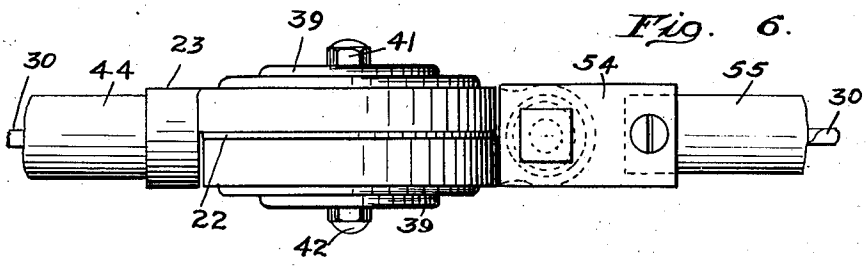


Fig. 7.

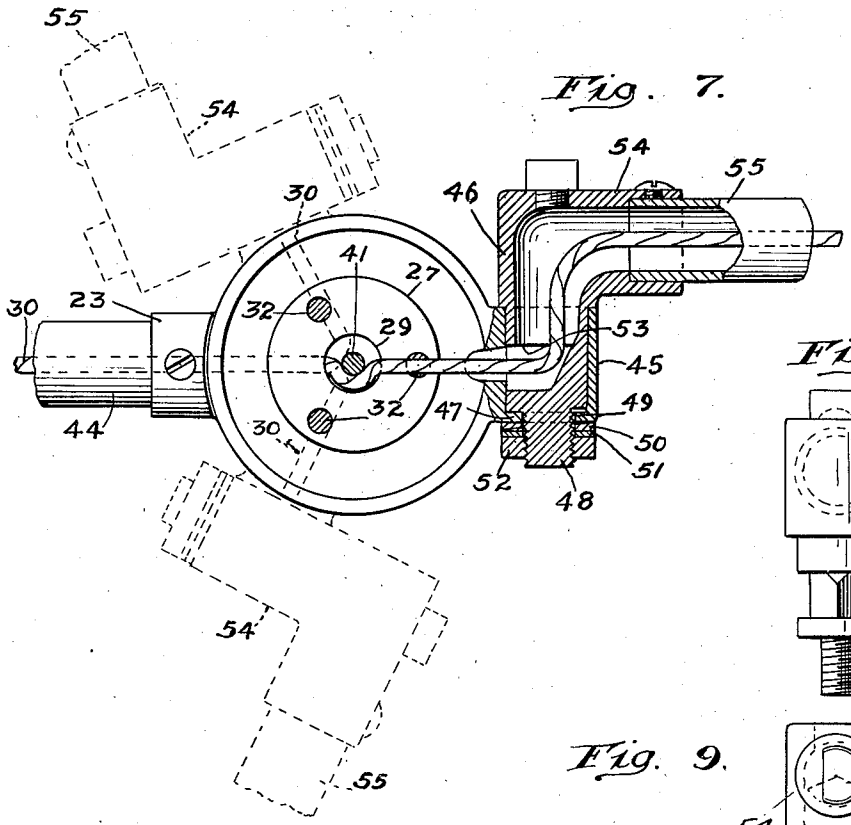


Fig. 8.

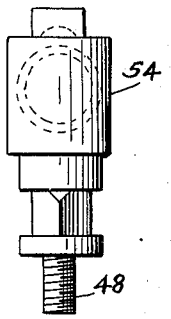
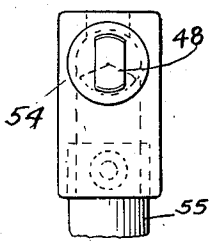


Fig. 9.



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Patented Jan. 11, 1949 2,458,967

UNITED STATES PATENT OFFICE

2,458,967

SUPPORT FOR ADJUSTABLE LIGHTING FIXTURES

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Application October 24, 1944, Serial No. 560,114

3 Claims. (Cl. 248—276)

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This invention relates in general to a lighting fixture having a fixed support or base with a lamp reflector supported by movable connected arms so that the lamp or reflector may be moved or adjusted into any desired or suitable position.

An important object of the invention is to provide a multiple arm supported fixture with joint connections having a limited universal movement.

A further object of the invention is to provide an arm supported fixture with frictional connections which may be adjusted depending upon the weight of the arms, lamps or reflectors to be supported.

A still further object of the invention is to provide a new and improved joint connection between the supporting arms of an adjustable lighting fixture.

Still another object of the invention is to provide a joint connection for connected arms of an electric lighting fixture in which the electrical connectors cannot become twisted or broken.

A still further object of the invention is to provide a joint connection for the arms of an adjustable lighting fixture in which the normally exposed joint and connection is covered or enclosed on opposite sides of the joint by easily removed covers.

Other and further objects of the invention will appear in the specification and will be apparent from the accompanying drawings in which

Fig. 1 illustrates an electric fixture in accordance with this invention as applied to the edge of a table or desk;

Fig. 2 is a sectional view of the joint at the base of the fixture;

Fig. 3 is an exploded view of the parts shown in Fig. 2;

Fig. 4 is a view of one side of the joint shown in Fig. 2 with the cover plate removed;

Fig. 5 is a view of the other side of the joint of Fig. 2 with the cover removed;

Fig. 6 is an enlarged edge elevation of one of the connecting joints between two of the fixture arms;

Fig. 7 is a side elevation of the joint shown in Fig. 6 with some of the parts broken away for clearness;

Fig. 8 is an elevation of one of the parts shown in Fig. 7;

Fig. 9 is a bottom plan view of the part shown in Figure 8.

Adjustable fixtures for drawing, reading, and other purposes have heretofore had arms connected by joints with manually adjustable screws for tightening and loosening the connections.

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The present invention substitutes a frictional joint adjusted for the weight of the fixture so that the arms and connections may be set at different desired angles to bring the lamp and reflector into any desired position by simply moving the arms or parts with respects to each other, and the joint friction being such that it will hold the parts in any set position without manual loosening and tightening of each joint as the adjustment is made. This requires that the frictional engagement be adjustable, easily accessible, and for the best wearing qualities that there be no metal or metal contact between the movable parts.

Referring now more particularly to the drawings, this invention is described as applied to a clamped support type of base as applied to the edge of a table 12 or any other suitable support. The clamp may comprise a yoke 13 having an extension 14 for engaging the upper side of the table, and an extension 15 for the under or opposite side of the table through which a threaded stem 16 is inserted, having a contact piece 17 to engage the under side of the table and a hand nut 16' for operating the threaded stem.

In the upper and lower extensions 14 and 15 are corresponding openings for receiving a hollow pipe or stem 18 held adjustably in place by thumb screw 19 extending through the connecting portion of the yoke 13.

A rotary frictional joint is applied directly to the upper end of the stem 18 and comprises two opposite circular metal plates 20 and 21 with a ring 22 of frictional material such as fiber, or the like, interposed between them. One of the plates 20 has an offset threaded sleeve 23 for receiving the stem 18 with an opening 26 leading to one side of the plate and the other plate 21 has a corresponding threaded sleeve 24 offset with respect to the plate with an opening 25 leading to one side of the plate, the opposite side, the opposite side as related to the two plates 20 and 21 when they are placed together.

As shown more clearly in Fig. 3, the plate 20 has an inner projection 27 adapted to fit into a circular recess 28 of the other plate 21 with the ring 22 of frictional material disposed between them. At the center of the plate 20 is a perforation 29 sufficiently large for an insulated conductor wire or wires 30 to be inserted therethrough and surrounding this central opening are a number of holes 31 for receiving fastening bolts 32 which extend through corresponding holes 33

in a friction disc 34, larger in diameter than the opening 28 in the plate 21. Washers 35 are inserted below the heads of the fastening screws or bolts 32 bearing against the disc 34 and nuts 36 are threaded on the other ends of the bolts after first interposing spring washers 37 between the nuts and the adjacent surface of the plate 20.

With this construction, a conductor or conductors is threaded in through the sleeve 23 of one plate, thence through the central opening 29 to the opposite side of the other plate 21, and thence outwardly through the opening 25 and through the sleeve 24.

With this construction, the conductor wire or wires do not become twisted, knotted, or broken, because the plate does not have a complete rotary motion with respect to each other.

The height of the projection 27 is less than the combined height of the friction ring 22 and the plate 21 so that the disc 34 bears against the adjacent surface of the plate 21 and compresses the ring 22 between the plates, thus avoiding a metal to metal contact between the plates. In order to increase or decrease the frictional resistance between the plates, it is therefore necessary only to tighten or loosen the fastening bolts or screws 32 with respect to their nuts 36.

Both of the plates 20 and 21 are formed with outwardly extending marginal rims 38 extending relatively in opposite directions when the plates are secured together and each forming a seat for an opposite decorative cover 39 which has a central opening 40 for receiving a fastening bolt 41 inserted therethrough and through the central opening 29 of plate 20 with a cap nut 42 threaded on the other end of the bolt outside of the opposite plate and holding them together. This bolt is sufficiently small so that it does not obstruct the opening 29 for the passage conductors 30 therethrough.

Another similar frictional device is connected at the ends of tubular pipes 43 and 44 threaded into the respective sleeves 23 and 24 and a similar frictional device as shown more clearly in Figs. 6 to 9 is formed with a sleeve 45 at right angles to the opposite sleeve 23 so that a hollow stud 46 may be inserted into the sleeve 45 at one side, abutting a shoulder 47 at the bottom and having a threaded stem 48 extending through a hole 49 in the bottom of the sleeve. This stud is held tightly in the sleeve by a spring washer 50 and a frictional washer 51 interposed between the bottom of the sleeve 45 and a fastening nut 52 threaded on the stem 48. The hollow stud has an opening 53 at one side and extending partially around it so that the conductor wire 30 will extend freely in the stud without twisting or bending the wire since the stud is limited to a rotation of less than 180° by an elbow 54 which extends laterally therefrom to provide means for attachment of a tubular connection 55. Thus the stud may be rotated by the frictional joint in either direction above or below the joint as represented in Fig. 7, and the stud itself may be rotated about an axis at right angles to the axis of rotation of the frictional joint. Thus if a reflector 56 is connected to the tubular connection 55, it may be moved upon two axes at right angles to each other for adjusting the position thereof at any desired angle and thus constituting a substantially universal movement, and in addition, the pipes or conduits 43 and 44 may be moved to raise or lower the fixture or to vary the position of the parts as indicated by the dotted outlines in Fig. 1. The entire fixture may also be moved about the axis of the pipe 18 by adjusting the thumbscrew 19, and if more adjustment and movement is desired, another frictional joint having a stud connection at right angles thereto may be substituted for the frictional joint connecting the pipes 43 and 44. Similarly another frictional joint of the type shown in Fig. 7 may be added to the combination as shown in Fig. 1 by adding another tubular pipe similar to 43 or 44.

With this construction, it is apparent that a lighting fixture having universal adjustment is provided in which the frictional joints are adjustable to carry the weight not only of a lamp in the reflector, the reflector itself and the parts of the fixture, but also to hold the parts in any position in which they are set, thus making it unnecessary to manually adjust the friction between the separate pipes in setting up the fixture, and at the same time providing means for varying this friction at the joints if they should become worn or if the weight of the lamp, reflector or other parts is changed.

This construction also prevents damage to the conductor wire or wires, since they are so disposed within and through the joint that they do not become twisted, knotted, or broken because of the movement of the parts. All objectionable features of the connections are encased or enclosed in the covers which add a decorative effect to the joints and to the fixture itself.

Various other changes in the construction, combination, and arrangement of the parts may be made without departing from the spirit and scope of the invention.

I claim:

1. In an adjustable fixture of the enclosed wire frictional holding type a plurality of hollow arms, a pair of rotatable plates each having a hollow sleeve at one side thereof the axis of said sleeves lying in the same plane as axes of said hollow arms and a recess from the hollow sleeve through to one side of the plate, the plates having central wire openings and being rotatable upon a common axis when placed together, clamping means for frictionally fastening the plates together, friction discs disposed between the plates, and between said plates and said clamping means, for varying frictional engagement of the plates, depending upon the load which they are to carry, and the plates being rotatable without twisting the wires enclosed in the joint cover plates receivable into recesses in the rotatable plates, and suitable clamping means for holding cover plates in place.

2. In a lighting fixture of the enclosed wire frictional adjustment type, a rotatable frictional joint comprising a pair of rotatable plates, each having a threaded sleeve extending therefrom and an opening from the sleeve to one side of the plate, one plate having a projection and the other plate having an opening through which the projection extends, a frictional ring interposed between the plates outside of the projection, a plurality of clamping bolts extending through the projection of one of the plates and having a clamping disc for engaging the other plate and holding it against the frictional ring, the plates and disc having central openings through which the wires extend without twisting when the joint is turned, and a spring washer and a tightening nut on each of the bolts at the side of the other plate for varying the tension between the plates.

3. In a lighting fixture of the enclosed wire

frictionally adjustable type, a rotary frictional joint comprising a pair of plates having a common center upon which they are rotatable, a frictional ring inserted between the plates, means for adjustably clamping the plates together, and the plates having an unobstructed center opening through which the wires extend and outer marginal rims, a pair of cover plates inserted in the rims, and a fastening screw for the cover plates inserted through them and through the central opening of the plates.

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