

J. T. BEECHLYN.
 BALL CLUTCH FOR ARC LAMPS.
 APPLICATION FILED JULY 17, 1908.

948,293.

Patented Feb. 1, 1910.

Fig. 1

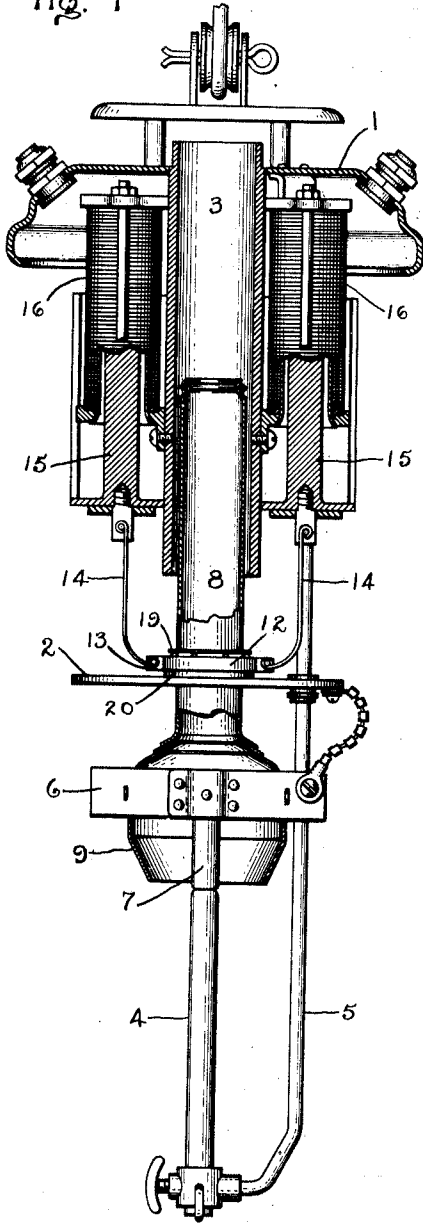


Fig. 2

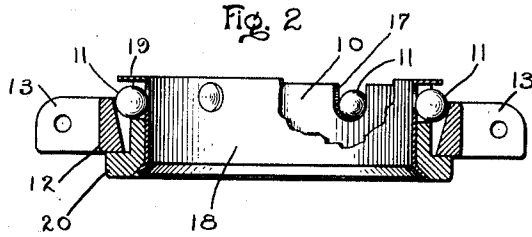


Fig. 3

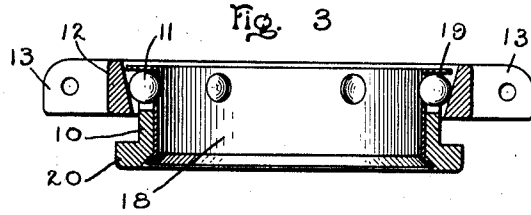


Fig. 4

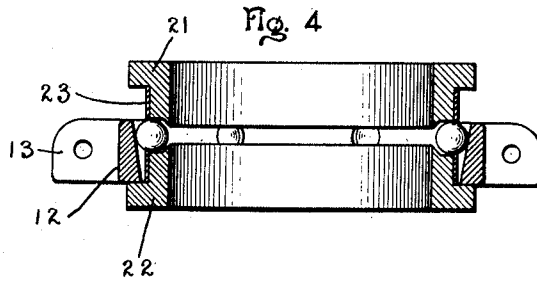
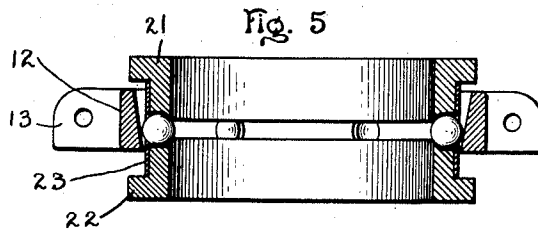


Fig. 5



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN T. BEECHLYN, OF LYNN, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

BALL-CLUTCH FOR ARC-LAMPS.

948,293.

Specification of Letters Patent.

Patented Feb. 1, 1910.

Application filed July 17, 1908. Serial No. 443,975.

To all whom it may concern:

Be it known that I, JOHN T. BEECHLYN, a subject of the King of Denmark, residing at Lynn, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Ball-Clutches for Arc-Lamps, of which the following is a specification.

This invention relates to electric arc lamps, and especially to those in which a flaming or luminous arc is employed. Such lamps produce quantities of fumes which are carried up through the lamp mechanism by a chimney.

It has been found convenient to utilize the chimney to support the upper electrode, and since this is the negative, which consumes and requires to be fed downward at intervals, the chimney is made in two sections, the upper one stationary, and the lower one movable and telescoping into the upper. The mechanism for feeding the upper electrode is applied to the movable section of the chimney, and the present invention aims to improve the clutch by which said chimney is lifted to strike the arc, the object being to provide a clutch which will engage with the chimney on all sides simultaneously so as to prevent it from canting to one side and jamming in the upper section, and also to prevent any possibility of the two electrodes getting out of line. In pursuance of these ends I provide an annular clutch consisting of a collar sliding easily on the chimney and carrying a plurality of loose balls, held inside of a conical clutch ring, by which they are forced inwardly into gripping relation with the chimney when said ring is lifted by the lamp magnet. The result is that the chimney is engaged at a plurality of points around its circumference, and at all such points simultaneously, so that the chimney is lifted vertically, and the negative electrode is kept accurately in line with the lower electrode.

In the accompanying drawing, Figure 1 is a sectional elevation of a flaming arc lamp embodying my invention; Figs. 2 and 3 are diametrical sections of one form of ball clutch, open and closed, respectively; and Figs. 4 and 5 are similar views of a modified form of clutch.

The lamp frame comprises a hood 1, a tripping platform 2 and a central tubular mem-

ber 3 which is secured to the hood and constitutes the upper or stationary section of the lamp chimney, its upper end terminating above the hood. The lower positive electrode 4 is supported by a holder 5 beneath the platform 2, in axial alinement with the chimney 3. The negative electrode 6 is preferably in the form of a horizontal bar, having a depending extension 7 axially alined with the lower electrode. The bar 6 is carried within the lower end of the lower section 8 of the chimney which is arranged to telescope inside the upper section. This movable or floating section preferably has a bell-shaped portion 9 at its lower end below the platform 2, while its body portion extends up through an opening in said platform, and into the upper section 3, whose lower end is located a little distance above said platform.

Surrounding the floating chimney just above the platform is the ball clutch which constitutes my present invention. A tripping collar 10 encircles the chimney loosely so that the chimney can easily slide through it. Balls 11 are located in openings in the collar so that they can project through into contact with the chimney. They can be forced inwardly by an annular follower or clutch ring 12 surrounding the collar, whose inner surface is that of an inverted frustum of a cone. The clutch ring has lugs 13 to which are attached links 14 connecting said ring with the cores 15 of the solenoids 16 constituting the regulating electromagnet which is in circuit with the electrodes.

A convenient mode of securing the balls in place in the collar is shown in Figs. 2 and 3. The collar has a plurality of U-shaped slots or notches 17 in its upper edge, in which the balls rest. A sheet metal retainer or bushing 18 has holes registering with said notches, and an outwardly projecting flange 19 at its upper end. Its lower end is swaged outwardly to engage a chamfer in the lower end of the collar. An external flange 20 at this end of the collar keeps the clutch ring always in engagement with the balls even when in its lowest position, with the clutch open; while the flange 19 on the retainer prevents them from escaping over the top of the ring.

When the lamp is not burning, the floating chimney drops down until the upper

electrode rests upon the lower electrode. In this position the tripping collar rests on the platform, and the clutch ring on the flange 20, with the balls backed away from the chimney, the parts being as shown in Fig. 2. When the current is turned on, the regulating solenoids are energized and, acting through the cores and links, lift the clutch ring. Its conical inner surface crowds the balls inwardly against the floating chimney until the friction is sufficient to grip said chimney. By this time the ring has reached the position shown in Fig. 3 and upon being lifted still farther by the solenoids, it carries up with it the collar, the chimney and the upper electrode, thereby striking the arc. Inasmuch as the ring acts upon all the balls simultaneously, the floating chimney is engaged on all sides at the same instant, so that there is no tendency to tilt it to one side and cause it to bind in the upper section 3. Moreover it is maintained in a central vertical position, so that as it feeds down by the weakening of the solenoids the upper electrode keeps accurately in line with the lower one.

Figs. 4 and 5 show a modified construction of the clutch in which the collar is made in two parts, an upper one 21 and a lower one 22, arranged with a space between their beveled adjacent edges to receive the balls, and connected by an outer sheet metal jacket or ball retainer 23 having holes to space the

balls apart. The operation is the same as in the case of the clutch shown in Figs. 2 and 3. 35

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. In an arc lamp, the combination with a floating chimney carrying the upper electrode, of a clutch comprising a tripping collar loosely encircling said chimney and having a flange at its lower end, a plurality of balls engaged by and projecting through said collar, a ball retainer applied to said collar and having holes to receive said balls, a regulating electromagnet, and a clutch ring supported on the flange of the tripping ring and connected with the electromagnet so that it can be actuated thereby for forcing said balls into simultaneous engagement with said chimney. 40 45 50

2. A ball clutch for flaming arc lamp chimneys, comprising a tripping collar having slots in its upper edge, balls in said slots, a sheet metal ball retainer inside of said collar having an external flange at its upper end, and a clutch ring surrounding said collar and having an inverted conical inner surface. 55

In witness whereof, I have hereunto set my hand this fifteenth day of July, 1908. 60

JOHN T. BEECHLYN.

Witnesses:

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