

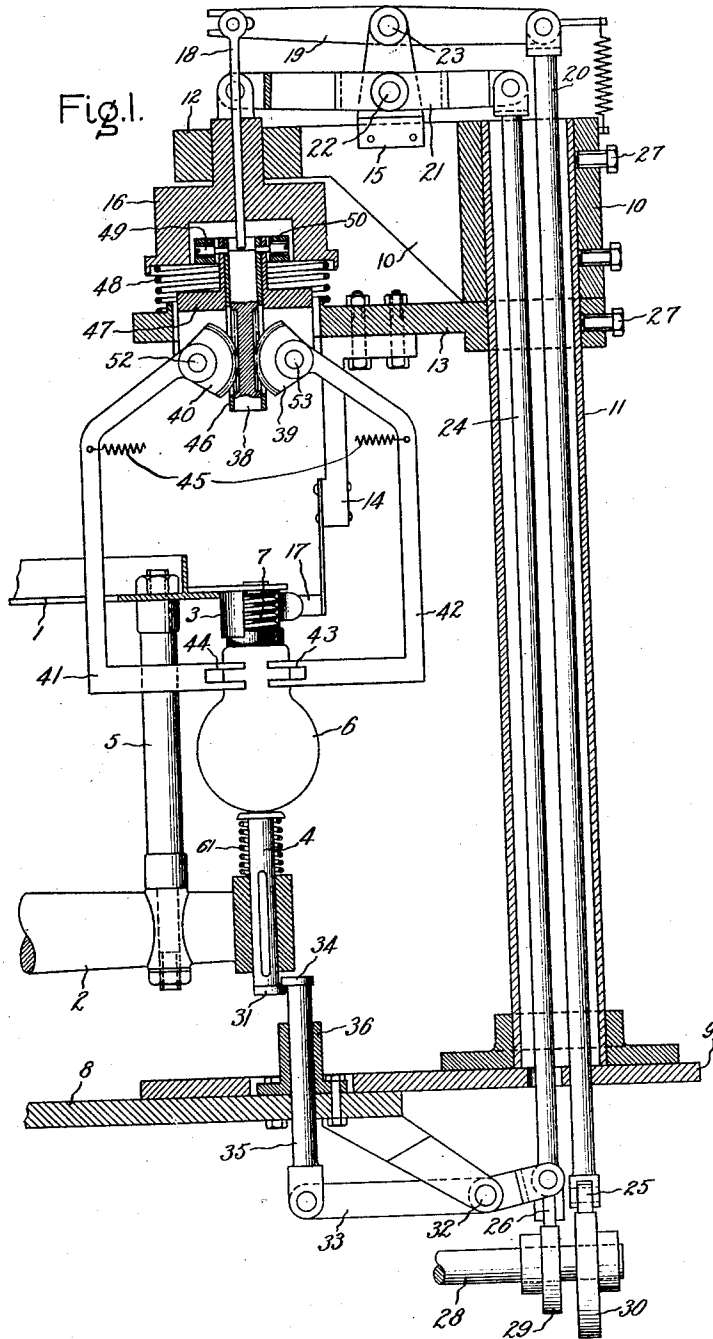
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M. WILDEBOER
BASE CENTERING DEVICE

1,832,677

Filed May 1, 1926

2 Sheets-Sheet 1



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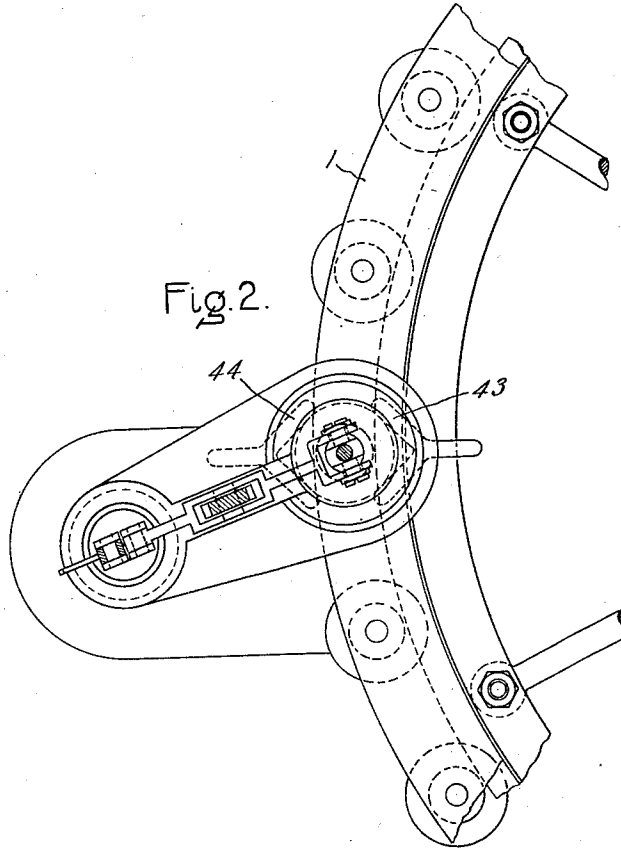


Fig. 3.

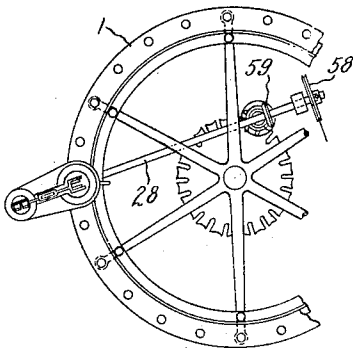
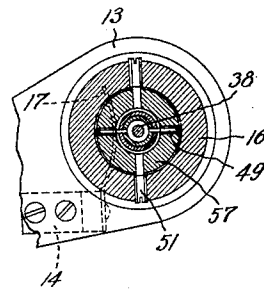


Fig. 4.



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UNITED STATES PATENT OFFICE

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BASE CENTERING DEVICE

Application filed May 1, 1926, Serial No. 106,167, and in the Netherlands June 12, 1925.

This invention relates to means for aligning or centering bases and bulbs of electric lamps and similar devices with reference to each other, so that the base will be straight on the bulb, and more particularly to means for centering or aligning the bulb and base with reference to each other before they are cemented together in a basing machine.

At present, the centering or positioning of the base on the bulb is usually done by hand, and the result depends entirely on the operator who inserts the bulb and bases in the basing machine. When this work is not given the proper attention, much waste will occur during the manufacture of the lamps because of bases which have not been properly centered and therefore are crooked on the neck of the bulb.

To meet this difficulty there is, in accordance with this invention, affixed to the basing machine a centering device which will center or position the separate parts of the lamp or similar article with reference to each other after they have been inserted in the basing machine. To this end two holders, one for a tubular part, such as a base, and the other for an article having a neck, such as the bulb, may be provided, these holders being movable with reference to each other and being biased to move automatically so as to bring into alignment the longitudinal axes of the base and bulb held in the two holders.

Theoretically, the base and bulb are centered or aligned in the best way with reference to each other when their longitudinal axes exactly coincide, or else are close together and parallel, in which case the point of intersection of these longitudinal axes is at infinity. Since this theoretical centering involves difficulties in construction, the centering device is built in such a way that these longitudinal axes substantially coincide, or else their point of intersection is located as far as possible from the base and the bulb.

Both the holder for the base and the holder for the bulb may be made movable, but in accordance with the invention, one holder, such as the base holder, is preferably immovable, while the other or bulb holder can

swing or move in every direction about a point of suspension or support which is shiftable along the longitudinal axis of the immovable base holder. The bulb holder is biased, preferably by the force of gravity, to swing about the point of suspension as a center and to assume automatically a position where the bulb is aligned with the base. Means may be provided to move the point of suspension of the movable bulb holder in one direction only, while this point is returned to its initial position by an independent source of power. Thus the movable holder moves first in one direction and subsequently in the opposite direction, and thus is returned to its original position, preferably by an independent source of power.

In order to position and center the bulb with reference to the base it is, in accordance with the invention, held fast in a movable bulb holder preferably suspended in such a way that the longitudinal axis of the neck of the bulb always goes through the point of suspension or support of the bulb holder. The bulb holder may be constructed as a pair of fingers with means for opening and closing them, all suspended to swing in all directions about a point of suspension and arranged in such a way that the longitudinal axis of the bulb, held between these fingers, always extends through the point or center of suspension of the bulb holder. The fingers may be pivoted on a head and provided with gear sectors which mesh with a gear rack movable up and down inside a tube on the head, which is preferably supported on gimbals, so as to be in effect suspended from a point in alignment with the axis of the immovable base holder.

A practical example, constructed in accordance with the invention, is shown in detail in the attached drawings, in which

Fig. 1 is a cross-section of a device affixed to a basing machine for centering or positioning bases on bulbs of electric lamps;

Fig. 2 is a plan view of the device of Fig. 1;

Fig. 3 is a plan view of the driving mechanism of the basing machine combined with the device of Fig. 1; and

Fig. 4 is a view, on a larger scale, of the gimbals or suspension device for the bulb holders.

One form of device embodying the invention is shown in Fig. 1 as a device for centering or positioning bases on bulbs of electric lamps, and is affixed to a basing machine. The basing machine spider comprises a ring 1 provided with base holders 3 for a lamp base, and a second ring 2 in which resiliently mounted bulb press rods 4 are positioned to cooperate with the base holders 3, the two rings being rigidly held together by bolts 5. The press rod 4 presses the lamp bulb 6, on which the base 7 is to be positioned, into the base 7 in the holder 3.

The bulb positioning mechanism for placing the bulb substantially in alignment with the longitudinal axis of the base is mounted on the frame of the basing machine on plates 8 and 9. A tubular post 11 on top of the plate 9 supports at its upper end brackets 10 and 13 adjustably mounted on the post 11 by set screws 27, the bracket 13 having in its free end a round hole through which bulb holding mechanism for holding the bulb in place with reference to the base may move up and down. This mechanism comprises a reciprocating tubular sleeve 16 slidable lengthwise in a journal 12 on the free end of the bracket 10 and resiliently supported on a coil spring 48 which rests on the bracket 13. The sleeve 16 is moved toward the bracket 13 and against the spring by a lever 21 mounted on a pivot 22 and connected to a push rod 24 which has a cam roller 26 riding on the cam 29. A rod 18 movable up and down through the tubular sleeve 16 is moved by a lever 19, which rocks on a pivot 23 mounted in a pedestal 15 on the bracket 10. The lever 19 is rocked by a push rod 20, which has a cam roller 25 to cooperate with a cam 30 mounted on the shaft 28. The bulb press rod 4 is controlled by a lever 33 which rocks on a pivot 32 and is connected to the push rod 24, which moves the sleeve 16, and also to a slide 35 provided on its upper end with a latch 34 for catching a toe 31 on the bulb press slide 4 as the slide 35 moves up and down.

The bulb holding mechanism comprises two cooperating bulb holding fingers 41 and 42 provided with V shaped bulb jaws 43 and 44 (see Fig. 2) preferably arranged to grip the neck of the bulb between them, and pivotally mounted on a head 47 to swing on pivots 52 and 53 carried by the head. The head 47 is suspended from the sleeve 16 by a universal joint or gimbals 50 so that the head and the bulb holding fingers on it are free to swing in every direction about its point of suspension. This head has a central tube 46 inside of which a freely movable gear rack 38 is movable up and down by the rod 18, and is in mesh with gear sectors 39 and 40 on the ends of the bulb holding fingers

41 and 42. As the rod 18 moves downward it positively opens these fingers against the tension of a spring 45 which closes them and also at the same time returns the gear rack 38 to its original position when the rod 18 moves upward and permits the spring 45 to contract.

The operation of the device is as follows: The operator inserts in the basing machine a bulb usually with the base in approximate position on it and quite loose on the bulb, by pressing the bulb rod 4 downwards, placing the base in the holder 3, and subsequently allowing the push rod 4 to move upwards into contact with the bulb. The base 7 is held fast in the base holder by being pressed firmly into place in the base holder 3 by a resilient arm or spring 17 fastened to a support 14 on the platform 13 to project into the bore of the base holder through a side slot or opening. The bulb fingers 41 and 42 are open during the insertion of the bulb into the basing machine, but are closed immediately thereafter as the push rod 20 moves downward, raising the rod 18 and permitting the spring 45 to close the fingers 43 and 44 upon the bulb. After the fingers have closed, the push rod 24 is moved upwards by the cam 29, rocking the lever 21 and causing downward movement of the sleeve 16 and of head 47, together with the pivots 52 and 53 and the fingers 41 and 42 mounted on the pivots. In this way the bulb 6 will be pressed down and out of the base 7, which is held fast in the base holder 3. Now the bulb, free from the base and held in the bulb jaws 43 and 44 of the bulb holder, is suspended and can swing freely in every direction about its point of suspension in the sleeve 16, and since the bulb holder is biased by the force of gravity to move into alignment with the base, it will now move automatically by its own weight into a position where the bulb is directly below the point of suspension or center of the gimbal 50 with its longitudinal axis going through that point. As this center of suspension is in alignment with the axis of the base the bulb in the freely suspended bulb holder is by gravity positioned straight below and in alignment with the base. The push rod 24 and lever 21 now move back, and the sleeve 16, head 47, and bulb fingers 41 and 42 rise as the spring 48 expands, moving the bulb holder with the positioned bulb straight up and resiliently pressing it into the base 7. This upward movement of the bulb may be accentuated by the press rod 4, which is connected to and moved up and down with the sleeve 16 by the push rod 24, lever 33, and slide 35. When the bulb fingers 41 and 42 move downwards this bulb press rod 4 will be lowered to free the bulb 6, but when the fingers 41 and 42 again move upwards the bulb press rod 4 will follow and engage the bulb 6, seating it in the base 7 by the pressure

of the spring 48 of the sleeve 16 and also of spring 61 of the bulb press rod 4.

Pulling of the bulb out of the base as a preliminary step to automatically inserting it in the base in proper position may be avoided by so varying the relative position of the cams 29 and 30 that the sleeve 16 is lowered and the bulb holding fingers held open while the bulb is being placed in position on the press bulb rod. After the fingers close and the entire bulb holding mechanism swings into place with the bulb held in the fingers and in alignment with the base in the base holder, the sleeve 16 rises, so that the first time the bulb is inserted in the base the insertion is done automatically by the machine and the inserted bulb is properly centered or aligned with reference to the base.

As disclosed more in detail in Fig. 4, the sleeve 16 carries on a universal joint or gimbals 50 the bulb holding fingers 41 and 42 by pivot pins 51 mounted in the sleeve to carry a ring 57, which in turn has pivot pins 49 for the head 47 which carries the tube 46 and the pivots 52 and 53 for the bulb holding fingers. This construction enables the closed bulb holding fingers 41 and 42 to move in all directions about the point of suspension at the center of the ring 57, so that the bulb holding fingers can swing into any position while holding the bulb.

Fig. 3 shows how the driving mechanism of the basing machine may serve at the same time to actuate the centering device. To this end the shaft 28 is driven by a pulley 58, which also drives intermittent gearing through a bevel gear 59, thereby causing a certain periodical angular or step by step movement of the spider of the basing machine.

My invention is not restricted to applying bases to the bulbs of incandescent lamps and similar articles, but is useful for accurately positioning any tubular member on a cylindrical object, particularly where it is desirable that the tubular member be put on straight, and, therefore, my invention is not restricted to the particular embodiment illustrated in the drawings, but may be embodied in many other forms which are within the scope of the appended claims.

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

1. A basing device for incandescent lamps and similar devices comprising a base holder, a cooperating bulb holder universally pivoted to be freely movable in every direction about a point in alignment with the longitudinal axis of a base in said holder, and means for moving said bulb holder to shift said point along said axis.

2. A basing device for incandescent lamps and similar devices comprising a base holder, a cooperating bulb holder suspended to swing freely in every direction about a point

of suspension above said base holder and in alignment with the longitudinal axis of a base in said holder, means for moving said bulb holder along said axis in one direction, and other means for moving it back along said axis.

3. A basing device for incandescent lamps and similar devices comprising a base holder, and a cooperating bulb holder universally pivoted to move freely in every direction about a point of support and constructed to so hold the bulb that its extended longitudinal axis passes through said point.

4. A basing device for incandescent and similar devices comprising a base holder and a cooperating bulb holder suspended to swing freely in every direction about a point of suspension above and in alignment with a base in said base holder, said bulb holder comprising a pair of bulb holding fingers and actuating means for opening and closing said fingers whereby a bulb held between said fingers swings into position below said base holder with its longitudinal axis extending through the axis of the base in said base holder and also through said point.

5. A basing device for incandescent lamps and similar devices comprising a base holder and a cooperating bulb holder comprising a tubular head, a pair of bulb holding fingers pivoted on said head and having gear sectors adjacent the pivots, a gear rack in mesh with said sectors and longitudinally movable in said head, gimbals for suspending said head to allow free movement thereof in every direction about the point of suspension at the center of said gimbals, and means for moving said rack to actuate said fingers.

6. In a device of the character described the combination of a holder for a tubular part, and an article holder for an article having a neck which fits into said tubular part, said article holder being mounted to swing freely into position to bring the neck of said article into registry and alignment with the bore of said tubular part and comprising article holding jaws resiliently mounted to move bodily relatively to said part holder and to swing automatically into position to bring the neck of the article in said jaws into registry and alignment with the bore of said tubular part, and actuating means for moving said article holder into said position and resiliently moving it relatively to said part holder to place the neck of the article in said tubular part while maintaining it in registry and alignment with said part.

In witness whereof, I have hereunto set my hand this twelfth day of April, A. D. 1926.

MARINUS WILDEBOER.