

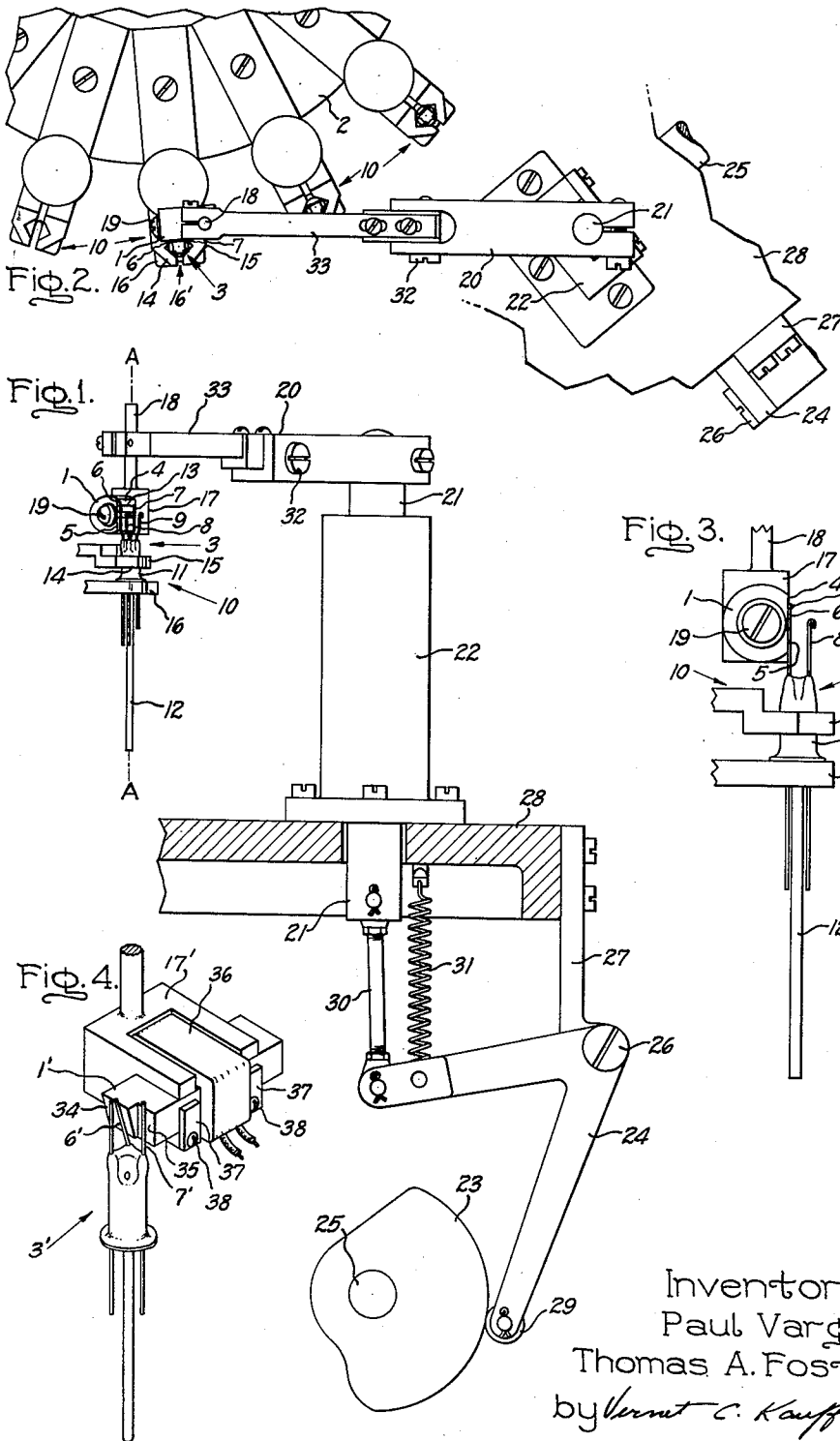
June 1, 1954

P. VARGO ET AL

2,679,918

LAMP MOUNT POSITIONING DEVICE

Filed Nov. 30, 1951



Inventors:
Paul Vargo,
Thomas A. Foster, Jr.
by *Vernon C. Kauffman*
Their Attorney.

UNITED STATES PATENT OFFICE

2,679,918

LAMP MOUNT POSITIONING DEVICE

Paul Vargo, Lyndhurst, and Thomas A. Foster,
Jr., Cleveland, Ohio, assignors to General Elec-
tric Company, a corporation of New York

Application November 30, 1951, Serial No. 259,158

6 Claims. (Cl. 198—33)

1

Our invention relates to apparatus for manufacturing electric incandescent lamps, discharge devices and other similar electrical devices, and more particularly to means for assisting in the loading and positioning of stems and mounts in apparatus of that type. Such stems and mounts comprise a vitreous stem tube as the main support body thereof and having metal lead-in wires sealed therethrough for supporting the filament or other electrical element of the electrical device.

Heretofore difficulty has been experienced in loading stems and mounts into manufacturing apparatus where the lead-in wires must occupy a definite predetermined position or orientation in the apparatus. The feeding operation is made difficult by the relatively low strength of the lead-in wires in that the use of mount relocating means often results in said lead-in wires being bent out of place rather than said mount being relocated. When a filament or other electrical element is mounted on the lead-in wires, still more care must be exercised to avoid damaging said element.

Accordingly, one object of our invention is to provide a device in combination with the work carrying heads of manufacturing apparatus which will aid in loading stems or mounts into said heads at high speeds without bending or deforming the lead-in wires, and which will fix the position of the stems or mounts so that the lead-in wires are arranged at definite positions in said apparatus.

Another object of our invention is to provide means for accurately positioning a stem or mount during the loading thereof in manufacturing apparatus, which means is capable of orienting said stem or mount to a position where the lead-in wires thereof are in a definite plane with respect to said apparatus. Said means comprises a magnet located at a specific position within the manufacturing apparatus and adapted to attract the lead-in wires of a stem or mount presented to one face thereof during the loading operation to hold the mount in a definite relationship to the magnet and to other elements of the apparatus.

The use of stem and mount positioning means in accordance with our invention makes certain that the lead-in wires of said stem and mount will register properly with the various elements of the manufacturing apparatus and, accordingly, contributes to successful operation of the entire manufacturing apparatus. The positioning means also eliminates any rebending operations that would ordinarily be required to fix the

2

position of the lead-in wires in the manufacturing apparatus and avoids the difficulties of successfully bending said wires without damage thereto or to the vitreous stem. In instances when the stem and mount is carried to various sections of the manufacturing apparatus by a carrier or conveyor, the positioning device also allows said stem and mount to be loaded with less difficulty and greater speed and reduces to a great extent damage thereto during the overall loading operation. The latter advantage is of particular importance in the manufacture of the more complex mounts where the mount is being introduced into apparatus for a final operation, as for instance the mounting of a second filament, and is of still further importance in that in said final operation, the second filament will then be mounted at definite relation to the first without considerable difficulty.

Still other objects and advantages of our invention will appear from the following description of species thereof and from the drawing.

In the drawing, Fig. 1 is a side elevation of a mount positioning means comprising our invention in its operative association with one of the work carrying heads of a filament mounting machine and with a properly arranged incandescent lamp mount retained by said machine; Fig. 2 is a plan view of said mount positioning means in its associated relation to the filament mounting machine and a mount; Fig. 3 is a side elevation of the magnet of the positioning means, a head of the mounting machine and a mount, on an enlarged scale and in a direction offset from Fig. 1; and Fig. 4 is a perspective view of a modified magnet and mount.

The species of our invention shown in Figs. 1-3 of the drawing provides a permanent magnet 1 at the loading station of an indexed turret type carrier 2 for advancing an incandescent lamp mount 3 to the various elements (not shown) of a filament mounting machine. The magnet 1 is preferably made from a strongly magnetic aluminum-nickel-cobalt alloy in horse shoe form with the pole pieces represented by the end faces 4 and 5 thereof and is arranged at a position permitting faces 4 and 5 to attract and hold two of the four ferro-magnetic nickel lead-in wires 6, 7, 8, and 9 of said mount 3 at the time of its introduction into a head 10 of the carrier 2. Other parts of the mount 3 comprise the vitreous stem tube 11 which is sealed about intermediate portions of the lead-in wires 6, 7, 8, and 9 and which forms the main support body thereof, the vitreous exhaust tube 12 and the

3

coiled filament 13 which is connected between the ends of the lead-in wires 6 and 7.

The apparatus functions first when a head 10 of the mounting machine is advanced to the loading station by one of the regularly occurring indexing movements of the carrier 2, and the mount 3 is being inserted into said head 10. At that time, an operator inserts the mount 3 between, and in the axis A—A of, the open holder jaws 14 and 15 of the head 10 with the mount in a tilted position and the lead-in wires 6 and 7 foremost so that they are brought within the flux field of the magnet 1 and are pulled into place by the attraction of said magnet 1 for said lead-in wires 6 and 7. The operator retains control over the mount 3 during the loading operation, by holding the exhaust tube 12, and he guides the stem tube 11 and the exhaust tube 12 between the jaws 14 and 15 and the end slot 16 in positioning plate 16 of the head 10. The force of the magnet 1 continues to pull on the lead-in wires 6 and 7 throughout the loading operation and finally causes said wires 6 and 7 to seat tightly against the flat faces 4 and 5 of the pole pieces thereof. Finally, the operator pulls the mount 3 downward until the flared lower end of the stem tube 11 seats upon the top surface of the positioning plate 16. In this manner, the pairs of lead-in wires 6-7 and 8-9 are oriented in predetermined planes relative to the vertical axis of the jaws 14, 15 inasmuch as the faces 4 and 5 bear a predetermined angular relationship to said axis.

Subsequent operations of the mounting machine provide for the jaws 14 and 15 to close upon and grip the stem tube 12, and the magnet 1 to be raised away from operative relation to the head 10, so that the lead-in wires 6 and 7 are not rubbed across the face of said magnet 1 in the subsequently occurring indexing movements of the head 10. The faces 4 and 5 of the magnet 1 may be shaped to conform to the curvature of the path of movement of the mount 3 and the head 10, and the magnet 1 may then be allowed to remain at a fixed position throughout the operation of the mounting machine. In such case it is preferred that the jaws 14 and 15 of the head 10 be so shaped as to tilt the mount 3 very slightly away from the magnet 1 so that the lead-in wires 6 and 7 are out of direct contact with said magnet faces 4 and 5, or that the lead-in wires 6 and 7 be made so stiff as to resist bending when drawn across the face of said magnet 1.

The magnet 1 is attached by a brass screw 19 to a mounting block 17 of an essentially non-magnetic material carried by a rod 18. This assembly is moved vertically by an arm 20 attached to a slide 21 within the standard 22. Operating means including the cam 23 and the lever 24 provide for the actuation of the arm 20 and slide 21 in timed relation to the movements of the heads 10 of the filament mounting machine in that the cam 23 is turned at the rate of one revolution per index of the carrier 2 and heads 10 by the main drive shaft 25 of the mounting machine. The lever 24 is operated about a pivot screw 26 in bracket 27 extending from the stationary frame 28 of the machine in accordance with the variations in shape of the portions of the cam 23 engaged by the roller 29, and transfers its motion through the link 30 to the lower end of the slide 21. A spring 31 connected between posts on the frame 28 and the lever 24 keep said lever 24 biased toward the cam 23. The downward

4

movement of the magnet 1 which positions it at operative relation to the head 10 in the succeeding cycle of operation occurs with a further rotation of the cam 23 when the head 10 is being advanced to the loading station.

Means are also provided for protecting the operator and the apparatus from possible injury and damage during the downward movement of the magnet 1. This means appears in the pivot 32 for the outer end 33 of the arm 20 which pivot 32 allows said end 33 and the magnet 1 to swing up should be operator's fingers or some material be improperly positioned between the head 10 and the magnet 1.

It is also apparent that a modified form of the magnet 1, as for instance the electro magnet 1' in Fig. 4, could be used in the apparatus and that the operating face thereof must have a different form when used with certain mount forms. The modified magnet 1' appearing in Fig. 4 has an inclined face 34 for engaging a correspondingly inclined lead-in wire 6' of a mount 3' and an offset face 35 for engaging a second lead-in wire 7'. The faces 34 and 35 are shaped a second lead-in wire 7'. The faces 34 and 35 are shaped on an end of the magnet 1' representing one magnetic pole thereof and exert a relatively strong pulling force on said lead-in wires 6' and 7' inasmuch as said magnet 1' is under the magnetic influence of an electric current passing through a coil 36 about the midportion thereof. The magnet 1' is clamped in a cross slot in the non-magnetic mounting block 17' by the tabs 37 held by screws 38.

It will be understood that while only two of the many useful forms of the invention have been shown and described in detail, the specific construction and arrangement of the various elements, including the magnet, may be modified within the spirit and scope of the invention as defined by the appended claims.

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

1. The combination with apparatus of the class described and comprising a rotatable indexing carrier having thereon a plurality of holders comprising jaws adapted to grip the stem of a mount assembly having lead-in wires of magnetic material extending therefrom, and means to index said carrier to bring the holders successively to a loading station with the said jaws open to receive a stem, of a magnet, and means mounting said magnet at said loading station adjacent to a holder thereat and with a face thereof bearing a definite predetermined orientation with respect to the axis of said holder so that a mount presented to said holder will have its lead-in wires attracted to the said face of the magnet and thereby oriented to a predetermined position in said holder, and means for closing the jaws of said holder upon the stem prior to indexing of the holder away from said loading station.

2. The combination with apparatus of the class described and comprising a rotatable indexing carrier having thereon a plurality of holders comprising jaws adapted to grip the stem of a mount assembly having lead-in wires of magnetic material extending therefrom, and means to index said carrier to bring the holders successively to a loading station with the said jaws open to receive a stem, of a magnet, and means mounting said magnet at said loading station adjacent to a holder thereat and with both poles thereof in a common plane and defining a face located in a plane substantially parallel to and bearing a

5

definite predetermined orientation with respect to the axis of said holder so that a mount presented to said holder will have its lead-in wires attracted to the said face of the magnet and thereby oriented to a predetermined position in said holder, and means for closing the jaws of said holder upon the stem prior to indexing of the holder away from said loading station.

3. The combination with apparatus of the class described and comprising a rotatable indexing carrier having thereon a plurality of holders comprising jaws adapted to grip the stem of a mount assembly having lead-in wires of magnetic material extending therefrom, and means to index said carrier to bring the holders successively to a loading station with the said jaws open to receive a stem, of a magnet having a face with offset portions, and means mounting said magnet at said loading station adjacent to a holder thereat and with the face thereof bearing a definite predetermined orientation with respect to the axis of said holder so that a mount presented to said holder will have its lead-in wires attracted to respective offset portions of the said face of the magnet and thereby oriented to a predetermined position in said holder, and means for closing the jaws of said holder upon the stem prior to indexing of the holder away from said loading station.

4. The combination with apparatus of the class described and comprising a rotatable indexing carrier having thereon a plurality of heads each including a holder comprising jaws adapted to grip the stem of a mount assembly having lead-in wires of magnetic material extending therefrom, and means to index said carrier to bring the holders successively to a loading station with the said jaws open to receive a stem, of a magnet, and means mounting said magnet at said loading station occupied by said heads with a face of the magnet bearing a definite predetermined orientation with respect to the axis of a holder at said station so that a mount presented to said holder will have its lead-in wires attracted to the said face of the magnet and thereby oriented to a predetermined position in said holder, said magnet face having a curvature conforming to that of the path of movement of said holders, and means for closing the jaws of said holder upon the stem prior to indexing of the holder away from said loading station.

5. The combination with apparatus of the class described and comprising a rotatable indexing

6

carrier having thereon a plurality of heads each including a holder comprising jaws adapted to grip the stem of a mount assembly having lead-in wires of magnetic material extending therefrom, and means to index said carrier to bring the holders successively to a loading station with the jaws open to receive a stem, of a magnet, and means mounting said magnet at said loading station occupied by said heads with a face of the magnet bearing a definite predetermined orientation with respect to the axis of a holder at said station so that a mount presented to said holder will have its lead-in wires attracted to the said face of the magnet and thereby oriented to a predetermined position in said holder, means for closing the jaws of said holder upon the stem prior to indexing of the holder away from said loading station and means for moving said magnet away from and into operative relation to the head at said loading station in synchronism with the indexing of said carrier.

6. The combination with apparatus of the class described and comprising a rotatable indexing carrier having thereon a plurality of heads each including a holder comprising jaws adapted to grip the stem of a vertically disposed mount having lead-in wires of magnetic material projecting upwardly therefrom, and means to index said carrier to bring the holders successively to a loading station with the said jaws open to receive a stem, of a magnet, means mounting the magnet above a holder at said loading station with a vertical face of the magnet bearing a definite predetermined orientation with respect to the vertical axis of the holder so that a mount presented to said holder will have its lead-in wires attracted to said face of the magnet and thereby oriented to a predetermined position in the holder, means for closing the jaws of said holder upon the stem prior to indexing of the holder away from said loading station and means for lifting the magnet to a retracted position out of the path of movement of the mount in synchronism with the indexing of said carrier.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
963,234	Marshall	July 5, 1910
2,079,893	Bain et al.	May 11, 1937
2,425,127	Schafer	Aug. 5, 1947