May 8, 1962 H. D. ROWAN ETAL 3,033,242

ELECTRIC LAMP MOUNT MAKING APPARATUS

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Fig. 1.

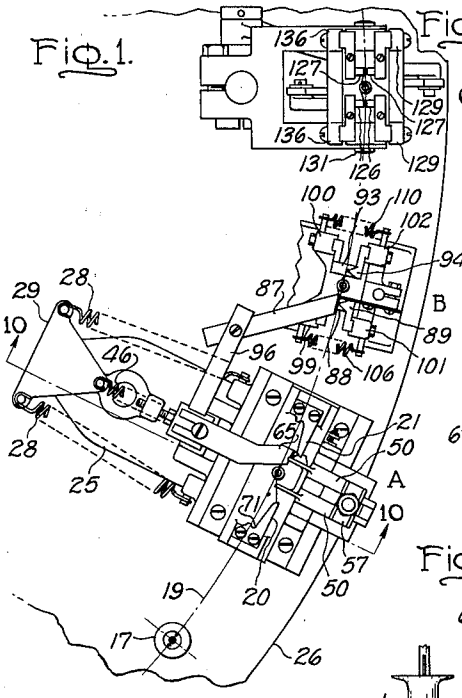

Fig. 2.

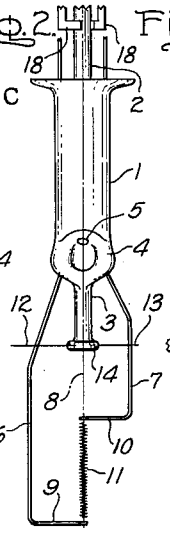

Fig. 3.

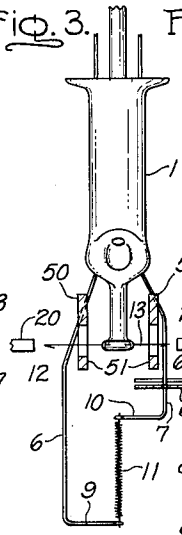

Fig. 4.

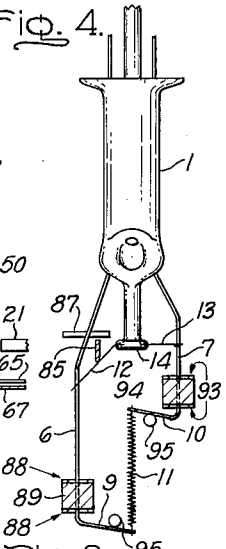

Fig. 6.

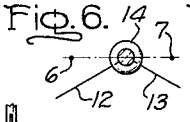

Fig. 7.

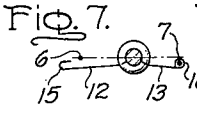

Fig. 8.

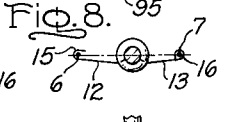

Fig. 10.

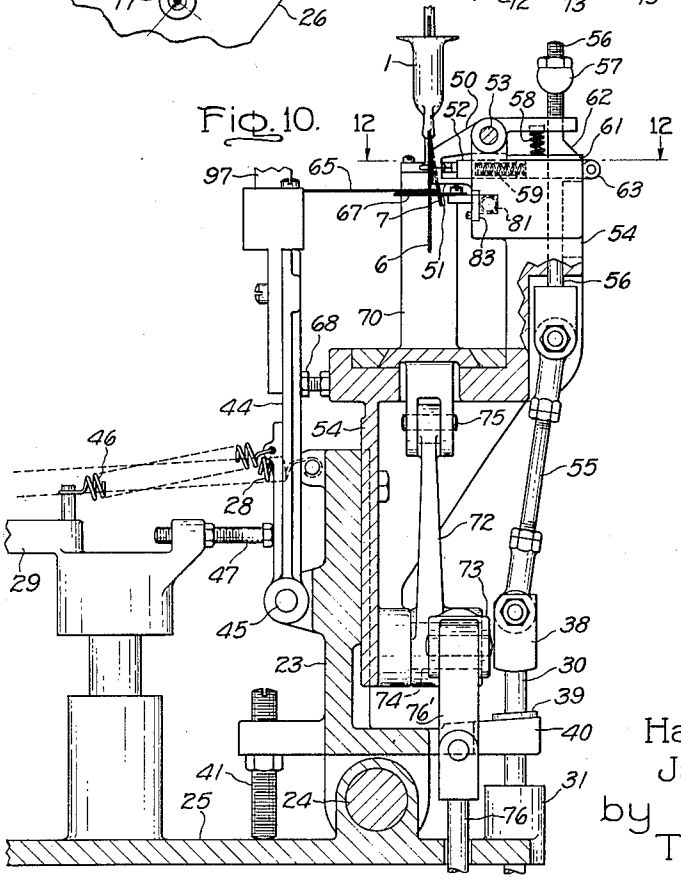

Fig. 5.

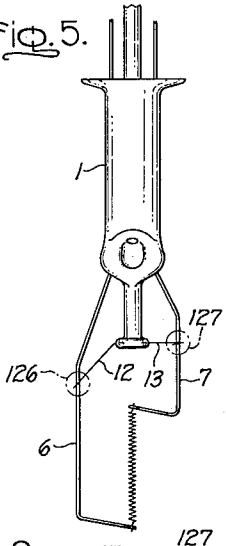

Fig. 9.

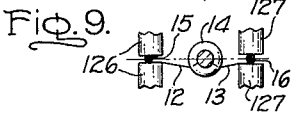

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Fig. 12.

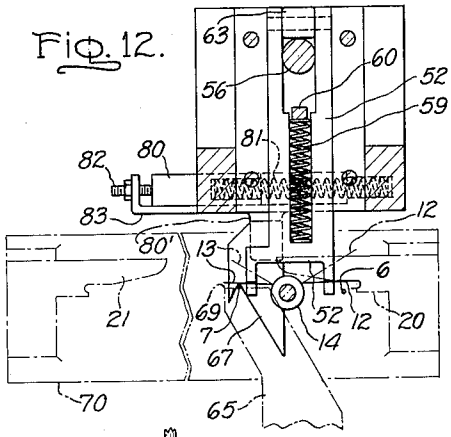


Fig. 11.

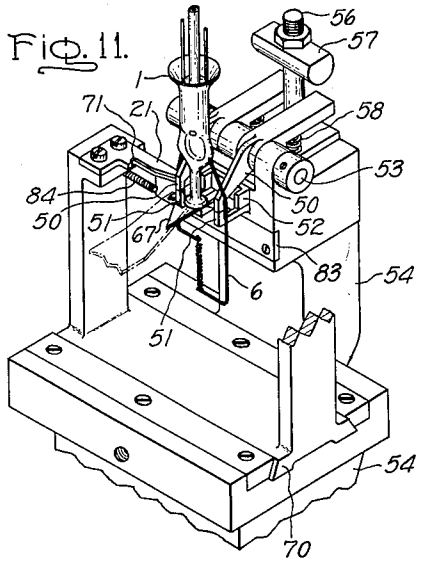


Fig. 13.

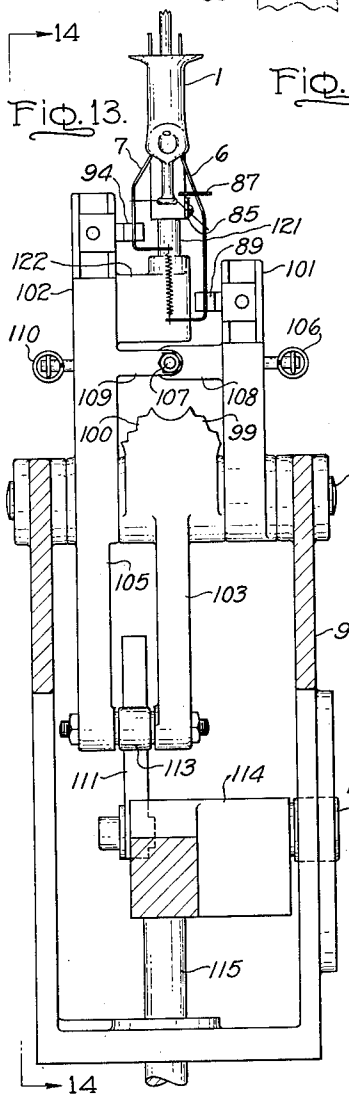


Fig. 14.

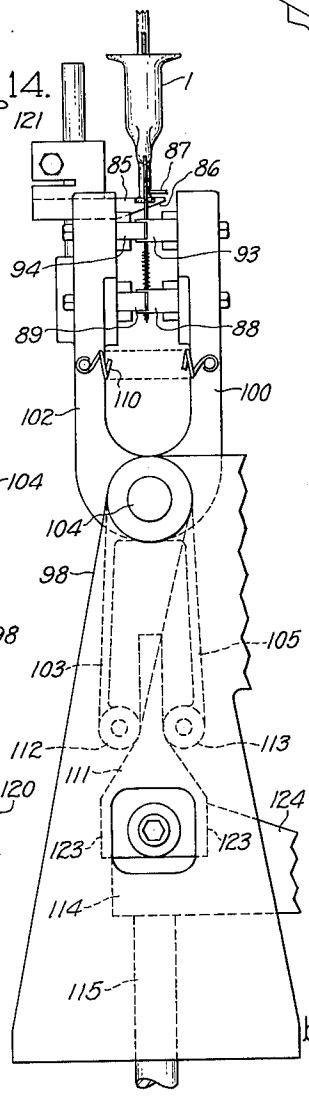
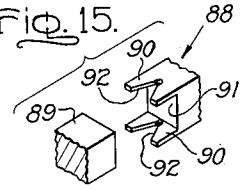


Fig. 15.



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ELECTRIC LAMP MOUNT MAKING APPARATUS

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Fig. 16.

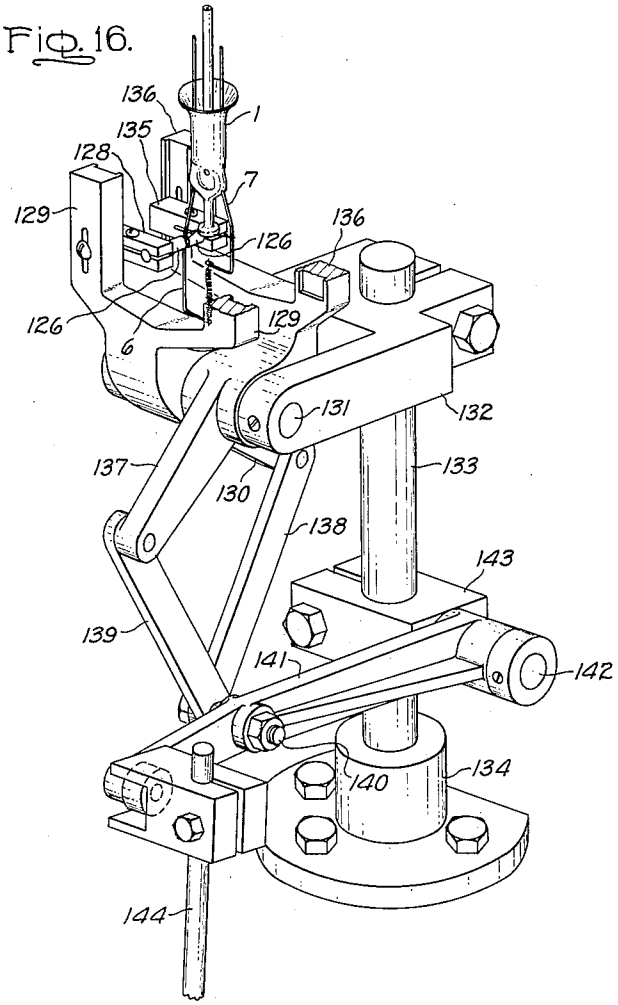
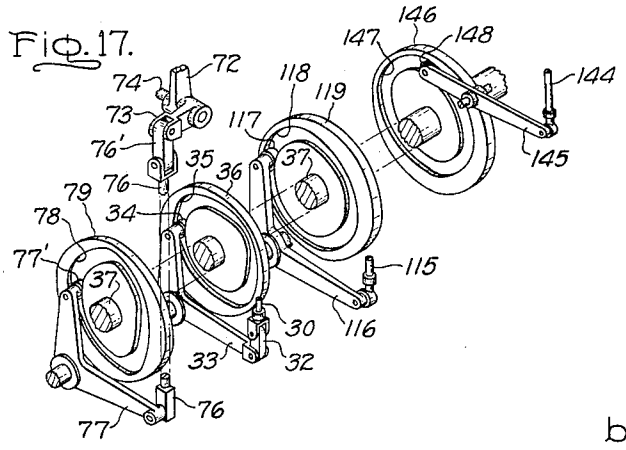


Fig. 17.



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United States Patent Office

3,033,242
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3,033,242

ELECTRIC LAMP MOUNT MAKING APPARATUS

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11 Claims. (Cl. 140—71.6)

Our invention relates generally to apparatus for making mounts for electric lamps.

There has recently been developed an electric incandescent lamp mount embodying a so-called vertical or axial filament wherein a coiled-coil filament is arranged with its axis substantially coincident or parallel to the longitudinal or vertical axis of the mount whereby the filament is capable of operation at increased efficiency and life as compared with similar filaments arranged horizontally or laterally of the mount axis. The mount comprises generally a conventional stem tube arranged to be vertically disposed with a press or seal portion at its lower end from which extends axially a glass arbor having a button portion at its lower end. A pair of lead wires extend generally downward from the press portion along opposite sides of the stem or mount axis and for different distances beyond the arbor button with their free end portions bent laterally toward said axis where they are secured to the coiled-coil filament which extends along said axis between said end portions of the leads. In order to secure the leads against distortion upon shock or vibration, they are braced by anchor or tie wires extending from the button on said arbor. One of the anchor wires extends horizontally to the shorter lead wire and has its end formed into a loop embracing that lead wire, the other (longer) anchor wire extends downwardly at an acute angle from the button and terminates in a loop embracing the longer lead wire at a location below the level of the button and at a point more nearly midway of its length whereby to improve the strength of the mount. Such a structure is disclosed and claimed in patent application Serial No. 568,218 of Paul Jordan, filed February 28, 1956, now abandoned, and assigned to the same assignee as the present invention.

The assembly of the mount, particularly that portion involving attachment of the anchor wire to the long lead wire, is complicated by the lack of space available to accommodate the necessary tools involved in the formation of the mount and making it rather impracticable to provide the necessary equipment for curling the angularly extending anchor wire about the long lead wire. It is therefore an object of our invention to provide a unique apparatus for effecting attachment of the anchor wire to the long lead wire.

Generally speaking, we attain the aforesaid object by preliminarily forming an open hook on the end of the longer anchor wire which extends horizontally outward from the arbor button a substantial distance beyond the associated longer lead wire, and we subsequently bend the said lead wire downwardly to bring the said hook into engagement with the lead wire, after which the hook is preferably clamped to close it upon the lead wire. While the other, or shorter, anchor wire may be similarly attached to its associated shorter lead wire, we prefer to attach it thereto in a conventional manner by simply curling the end thereof about the lead wire.

Further features and advantages of our invention will

appear from the following detailed description of a species thereof and from the drawings wherein:

FIG. 1 is a fragmentary plan view of a mount making machine showing mechanism at three stations for forming and securing the anchor wires to the lead wires;

FIGS. 2 to 5 are elevations of a lamp mount showing various stages in the forming and attachment of the anchor wires to the lead wires;

FIGS. 6 to 9 are fragmentary plan views of the mount showing it in the various stages of completion corresponding to FIGS. 2 to 5, respectively;

FIG. 10 is an elevation, partly in section, along the line 10—10 in FIG. 1, of anchor wire curling mechanism at station A in FIG. 1;

FIG. 11 is a fragmentary perspective view of the curling mechanism;

FIG. 12 is a horizontal section of a portion of the curling mechanism along the line 12—12 in FIG. 10, and also showing, in dot-dash lines, the curling dies and a lead wire pusher member;

FIGS. 13 and 14 are rear and side elevations, respectively, of mount re-forming mechanism at station B in FIG. 1;

FIG. 15 is a fragmentary perspective view of jaw members comprised in the re-forming mechanism of FIGS. 13 andn 14;

FIG. 16 is a perspective view of anchor wire hook closing mechanism at station C in FIG. 1; and

FIG. 17 is a perspective view of the main driving cams for the mechanisms A, B and C of FIG. 1.

Referring to FIG. 2 of the drawing, the partially completed mount, as it arrives at station A in FIG. 1, comprises a glass stem tube or flare 1 with coaxially arranged exhaust tube 2 and arbor rod 3 sealed and pinched together to form a press portion 4 with an exhaust opening 5 therethrough communicating with the exhaust tube 2. A pair of lead wires 6 and 7 have portions thereof sealed in said press portion 4 and extend generally downward from said press portion along opposite sides of the axis 8 of said mount and for different distances, the end portions 9 and 10 thereof being bent to extend substantially horizontally toward said axis 8 where they are clamped about the end of a coiled (or coiled-coil) filament 11 extending generally along said axis. A pair of anchor or tie wires 12 and 13 extend horizontally from a button 14 at the end of arbor 3 at acute angles to the vertical plane including the lead wires 6, 7 and mount axis 8, as best seen in FIG. 6. The tie wire 12 is longer than wire 13 in order that, in the finished mount, it may extend downwardly at an acute angle to the mount axis 8 as shown in FIGS. 4 and 5.

In accordance with the present invention, the longer anchor wire 12 is attached to the lead wire 6 by preliminarily forming an open hook 15 (FIG. 7) at the end thereof. For this purpose, the curling mechanism at station A also bends the wire 12 from the angular position shown in FIG. 6 to a position more nearly parallel to the plane including the stem axis 8 and the lead wires 6 and 7. At the same time, the shorter anchor wire 13 is also bent toward the said plane and preferably, in accordance with standard practice, the shorter lead wire 7 is bent forwardly out of said plane while a loop 16 is formed in the end of anchor wire 13 completely encircling the said lead wire 7.

In the next step, as illustrated in FIGS. 4 and 8, the longer anchor wire 12 is bent downwardly and slightly

inward toward the plane including stem axis 8 and lead wire 6, to bring it to the position shown in FIG. 4 with the hook 15 embracing the lead wire 6. At the same time, the shorter lead wire 7 is bent back into the said plane including stem axis 8 and lead wire 6, the said lead wire 6 having remained in its initial position during the aforesaid steps.

As a final step, the hook 15 is preferably clamped or pinched tightly on the lead wire 6 as illustrated in FIGS. 5 and 9.

During the assembly of the mount, it is carried by a head represented at 17 in FIG. 1 and including a pair of jaws 18 (FIG. 2) which clamp the exhaust tube 2 therebetween. The machine comprises a plurality of heads 17 mounted on the periphery of a turret (not shown) which indexes the heads in steps to a plurality of stations as is well known in the art, the mount being carried along a circular path of travel 19 with its axis 8 and leads 6 and 7 in a plane tangent to said path. The mount is brought by a head 17 to a Station A (FIG. 1) at which is located the anchor wire curling mechanism which is also shown in FIGS. 10, 11 and 12.

The curling mechanism is a modification of that shown in Patent No. 2,085,578, John Flaws, Jr. The principal operating parts are carried by a bracket frame 23 that is pivoted about a pin 24 carried by a bracket 25 that is fixed to a table 26 (FIG. 1), so that it can be swung crosswise of the path of travel 19 of the mount in head 17. The bracket frame 23 is biased toward the left in FIG. 10 by springs 28 connected to a fixed support 29, but can be swung to the right by the downward pull of an actuating rod 30 which is slidable vertically in a boss 31 on bracket 25 and is connected by a link 32 at its lower end to one arm of a lever 33 (FIG. 16) having at its other end a roller 34 controlled by the track 35 in a face cam 36 on cam shaft 37. The cam shaft 37 is synchronized with the indexing cam shaft (not shown) so as to make one revolution during each complete indexing cycle of mount holder 17. The rod 30 swings bracket 23 to the right upon engagement of the lower surface of its yoke head 38 with a washer 39 on a forked portion 40 projecting from bracket frame 23. A suitable stop spud 41 is provided to limit movement of bracket frame 23 to the left.

At the time the mount of FIG. 2 is indexed by head 17 to station A, the bracket frame 23 is in a position swung to the right with the actuating rod 30 in its lowermost position, and an arm 44 pivoted on bracket 23 at 45, is at that time swung to the left about its pivot, being biased in that direction by a spring 46 connected to the fixed support 29 so as to be held against a stop stud 47 on said support 29 when bracket 23 swings to the right. The operating parts or tools at the upper end of bracket 23 and arm 44 are thereby held clear of the path of travel of the mount when it enters Station A.

Also at this time, the movable jaws 15 of an anchor wire clamp comprising also fixed jaws 51, are held open; and an anchor wire pusher bar 52 is in an advanced position with its forwardly projecting finger-like ends against upstanding ends of fixed jaws 51. The movable jaws 50 are pivoted on a pin 53 in a portion 54 of bracket 23, and jaws 51 are fixed to said bracket portion 54, whereas pusher bar 52 is slidable in ways therein. These relationships of jaws 51 and pusher bar 52 are maintained by a link rod 55 (FIG. 10) pivotally connected at one end to actuating rod 30 and at its other end to a rod 56 slidable in a guide bore in bracket portion 54. With the actuating rod 30 depressed to hold brackets 23, 54 to the right in FIG. 10, the rod 56 is in a lowered position where at the cross piece 57 thereon bears against the outer arm of jaws 50 to hold them open against the action of springs 58, and pusher bar 52 is held in its advanced position by a spring 59 housed in a bore in bar 52 and acting against a projection 60 (FIG. 12) fixed to a cover plate 61 secured over the ways for bar 52. The advanced position of bar 52 is due to the fact that, with the rod 56 depressed, a cam portion 62 of said rod 56 is below, and therefore disengaged from, a roller 63 carried by the forked rear end of the bar 52.

As the mount comes to rest at station A, the curling mechanism is actuated upon upward movement of the rod 30 to cause springs 28 to swing the bracket 23 to the left while the arm 44 swings to the right to the position shown in FIG. 10. As the arm 44 is swinging to the right, a pusher plate 65 supported thereby engages the shorter lead wire 7 and bends it forward about its point of emergence from the stem press 4 to the position shown in FIG. 10. The lead wire 7 is then engaged by the divergent side of a guide or wedge plate 67 carried by the bracket portion 54 and terminating in a V notch 69 to receive the lead wire which is firmly held therein by the pusher plate 65. Due to the shape and location of the guide plate 67, the lead wire 7 is also bent slightly to the right as viewed in FIG. 3. A supplementary stop stud 68 may be provided on bracket portion 54 to be engaged by arm 44 to prevent it from whipping to the right when bracket 23, 54 is stopped by engagement of stud 41 with bracket 25.

Toward the end of the swinging movement of bracket 23 to the left in FIG. 10, the pusher bar 52 engages the anchor wires 12 and 13 and bends them from the position shown in dot-dash lines in FIG. 12 (and in full lines in FIG. 2) to the position shown in full lines (also shown in FIG. 3), whereby they lie more nearly in a line and across the upper surfaces of the stationary jaws 51. The anchor wire 13 then also lies across or against the lead wire 7, whereas the anchor wire 12 is still spaced somewhat from the lead wire 6 which has not been displaced as has the lead wire 7.

After the bracket 23 has reached its upright position, with stop stud 41 bearing on bracket 25, the actuating rod 30 continues to move upward to carry link 55 and rod 56 upward, whereby the cross piece 57 on rod 56 moves upwardly away from the ends of jaws 50 to permit them to be closed by springs 58 to clamp the anchor wires 12 and 13 against the fixed jaws 51. Also, the pusher bar 52 is retracted to the right in FIG. 10 when the cam 62 on rod 56 engages the roller 63 on the end of said bar 52, thereby providing room for the subsequent movement of the curling dies 20 and 31 (see FIG. 12). It is also to provide clearance for the curling dies past the arbor button 14 so that the lead 7 and the anchor wires 12 and 13 are arranged to extend to one side of a plane through the mount axis.

With the lead wire 7 firmly clamped in the V notch of guide plate 68 by pusher plate 65, and the anchor wires 12 and 13 firmly clamped by jaws 50 and 51, the free ends of the anchor wires are curled by the curling dies 20 and 21 (FIGS. 1, 11 and 12). The dies are so adjusted that the ends of the shorter anchor wire 13 is curled by die 21 into a closed loop 16 (FIG. 7) completely encircling the lead wire 7, whereas the end of the longer anchor wire is curled by die 20 only sufficiently to form an open hook 15 lying in a horizontal plane.

The said dies 20 and 21 are mounted on the ends of a dovetail slide 70 arranged to slide in ways on bracket portion 54 tangent to the path of travel 19 of the mount. In themselves, the guides are similar to those disclosed in Patents 2,085,578 and 1,907,532 to John Flaws, Jr. Each die 20 and 21 has a sloping face with a hollow or groove therein for engaging the end of the anchor wire 12 or 13 as shown in FIG. 11, and progressively bending or curling it as the die moves forward. The sloping face terminates in a semi-circular notch 71 adapted to form the wire into a hook or loop. The setting or spacing of the respective dies 20 and 21 with respect to the ends of the anchor wires 12 and 13 is such that the die 21 forms the wire into a complete loop around the lead 7 as the notch 71 comes up to the lead, whereas the

die 20 comes forward sufficiently only to form the wire into an open hook.

For reciprocating the slide 70 in its ways on bracket 54, there is a lever with a vertical arm 72 and a lateral arm 73 (FIGS. 10 and 17) pivoted on a stud 74 on bracket portion 54. Its vertical arm 72 is forked to engage around a pivot pin 75 in a clevis on the bottom of slide 70, and its lateral arm 73 is pivoted to the end of a link 76' which is pivoted at its other end to an actuating rod 76 (FIG. 17) connected to one arm of a lever 77 carrying a roller 77' on its other arm engaging with a track 78 in cam 79 on shaft 37. The actuating rod 76 is reciprocated by cam 79 to oscillate lever 72, 73 and reciprocate slide 70, thus bringing first one curling die and then the other against the end of its associated anchor wire.

During completion of the loop 16 in anchor wire 13, a slight movement of the lead 7 is desirable. To permit such movement, the guide blade 67 is mounted on a lug 80' (FIG. 12) projecting from a slide block 80 movable in ways in the bracket portion 54. The slide block 80 is urged outward by a spring 81 and its normal position is determined by engagement of its outer end with a stop screw 82 in a bracket portion on the end of a cover plate 83 that retains the slide in its ways. As the die 21 approaches the end of its curling movement, a screw 84 (FIG. 11) adjustably secured in the end of the slide 70, engages the aforesaid lug 80' on the slide block 80 and displaces it slightly inward against spring 81, thus deflecting the lead 7 in harmony with the movement of the loop 16 as it is formed around the lead wire.

Thereupon, the bracket 23 is swung to the right in FIG. 10 by downward movement of actuating rod 30, and arm 44 swings to the left to thereby remove the operating elements at the upper end thereof from engagement with the mount to permit the mount, now appearing as in FIGS. 3 and 7, to be indexed away from station A to station B. In the initial stages of downward movement of rod 30, and before the bracket 23 is pivoted, the movable jaws 50 are opened by engagement therewith of cross piece 57 on rod 60 to thereby release the anchor wires 12 and 13, the pusher bar 52 also being moved to the left by movement of cam 62 on rod 56 away from (below) roller 63.

At station B the mount is re-formed, as shown in FIGS. 4 and 8. In one operation, the longer anchor wire 12 is bent downward at an acute angle and slightly back toward the lead 6 so that the hook portion 15 of the anchor wire enbraces the lead 6 at a point below the arbor button 14. The bending of the anchor wire 12 is effected by a camming or wedging finger or blade 85 (FIGS. 4 and 14) which moves endwise toward the mount from the front thereof; an oblique or inclined cam face 86 (FIG. 14) on the under side of the finger 85 engages the anchor wire 12 and bends it toward and against the lead wire 6 and downward to the position shown in FIG. 4. During the bending of anchor wire 12, the lead 6 is backed up near its upper end, by the front edge of a blade 87 which is moved toward the mount from the back thereof; the lead 6 is also securely clamped near its lower end between jaw members 88 and 89 to assist in holding it securely in place, as well as to properly align it in case it is for some reason misaligned. As shown in FIG. 15, the jaw 88 comprises spaced finger portions 90 projecting beyond the face 91 thereof and providing with a V notches 92 to gather in the lead 6 which is clamped against the face 91 by the face of the cooperating jaw 89.

In another operation of the re-forming mechanism at station B, the shorter lead wire 7 is bent back into the vertical plane including the stem axis 8 and the lead wire 6, as shown in FIG. 8. That operation is effected by cooperating jaws 93 and 94 which are of the same design as jaws 88 and 89, respectively.

In another operation which may be carried out at station B, the filament 11 is stretched and set to a desired pitch by bending the lateral end portions 9 and 10 of the leads 6 and 7 in opposite directions as shown in FIG. 4. This operation may be effected by a pair of finger jaws 95 which may be operated by mechanism not shown herein but fully described in application Serial No. 732,957, filed May 5, 1958, by John W. Anthony et al.

Referring more particularly to the structure of the re-forming mechanism at station B, the backing blade 87 is carried by an arm 96 (FIG. 1) which is attached to a post 97 (FIG. 10) on the upper end of the arm 44 . Thereby, just after the mount has been indexed into station B, the backing blade 87 is moved forwardly into operative relation to the mount by the swinging of arm 44 to the right in FIG. 10 about its pivot pin 45.

The camming finger 85 and jaws 88, 89 and 93, 94, on the other hand, are supported from a bracket 98 (FIGS. 13 and 14) that is fixed to table 26, and are carried by opposed pairs of upright lever arms or jaws comprising a back pair 99—100 and a front pair 101—102. The arms 99—100 constitute, in effect, the upper forked arm of a lever having a lower arm 103 and pivoted on a pin 104 in bracket 98. The front pair of arms 101—102 are independent members also pivoted on pin 104, the arm 102 being part of a lever having a lower arm 105, and the arm 101 being coupled with arm 102 by a spring 106 extending between arms 101 and 99 so that arm 101 is held to arm 102 by engagement of a lateral extension 108 of arm 101 (FIG. 13) with an adjustable screw stud 107 on a lateral extension 109 on arm 102. The pairs of arms 99—100 and 101—102 are biased toward each other by said spring 106 and a similar spring 110 interconnecting arms 100—102.

The opening and closing of said arms 99—100 and 101—102 is controlled by a wedge cam 111 which is in engagement with rollers 112 and 113 on the lower ends of arms 103 and 105. The cam 111 is carried by a block portion 114 at the upper end of a vertically reciprocal connecting rod 115 which is pivotally connected at its lower end to one arm of a lever 116 (FIG. 17) which carries on its other end a roller 117 which rides in the track 118 of a cam 119 on shaft 37. The block 114 is held in proper angular position by a roller 120 thereon engaging in a vertical slot in a wall of bracket 98.

The back lead wire clamping jaws 88 and 93 are carried by the respective back arms 99 and 100; the front lead clamping jaws 89 and 94 are carried by the front arms 101 and 102, respectively; and the camming finger 85 is supported from a post 121 carried by a laterally extending boss 122 on front arm 102. During the indexing of the amount into station B, the working elements thereat are in a retracted position from that shown in FIGS. 13 and 14, the pairs of arms 99—100 and 101—102 being held in an open position by virtue of the fact that the actuating rod 115 is in a raised position so that the high vertical sides 123 of wedge cam 111 (FIG. 14) are in engagement with rollers 112 and 113.

In the operation of the mechanism at station B, the first operation to occur is movement of the backing blade 87 forwardly toward the lead wire 6, the motion for this member being derived from the mechanism at station A by virtue of its being connected through arm 96 to the arm 44 (FIG. 10). In the meantime, the actuating rod 115 is moved downward by cam 119 to withdraw the high sides 123 of wedge cam 111 from between rollers 112 and 113 to cause the pairs of arms 99—100 and 101—102 to move toward the closed position shown in FIGS. 13 and 14. During this closing movement, the camming finger 85 on arm 102 engages the longer anchor wire 12 to push it back toward the lead wire 6 and to bend it down to an acuate angle as shown in FIGS. 4 and 13 with the hook 15 on said anchor wire embracing

the lead wire 6. Also, as the arms 99—100 and 101—102 close, the jaws 88—89 and 93—94 engage and firmly clamp the lead wires 6 and 7 therebetween, the lead 7 being thereby bent back to its original position, as shown in FIG. 8, from its angular position shown in FIGS. 7 and 10. The actuating rod 115 then continues to move downward and, through an arm 124 (FIG. 14) extending laterally from block 114 on said rod 115, causes the spreader fingers 95 (FIG. 4) to spread apart to bend the laterally extending ends 9 and 10 of lead wires 6 and 7 and thereby stretch the filament 11, through mechanism not shown herein but fully described in the aforesaid co-pending application of John W. Anthony et al., Serial No. 732,957, now Patent No. 3,000,407 filed May 5, 1958.

The anchor wire 12 is preferably more firmly connected to the lead wire 6 by pinching or clamping the hook 15 securely thereabout. This operation is performed at station C by the clamping mechanism illustrated in FIGS. 1 and 16 wherein the hook 15 (see also FIG. 9) is clamped between faces of a pair of stud-like jaws 126. There may also be provided a second pair of jaws 127 which are so mounted that in their "closed" position they are spaced apart a distance approximately equal to the diameter of loop 16 in anchor wire 13 and serving to assure correct alignment or position of the lead wire 7 in case it has sprung out of position after being released by the jaws 93—94 of the mechanism at station B.

One jaw of each pair of jaws 126 and 127 is mounted on a lateral extension 128 of a forked upper arm portion 129 of a lever having a lower arm 130 and pivoted on a pin or shaft 131 in a bracket 132 carried by a post 133 supported by a flange 134 mounted on table 26. The other jaw of each pair of jaws 126—127 is similarly mounted on a lateral extension 135 of a forked upper arm portion 136 of a lever having a lower arm 137 and pivoted on said shaft 131. The lever arms 130 and 137 are pivotally connected to the ends of respective lins 138 and 139 having their other ends connected to a pivot pin 140 in an arm 141. The said arm 141 is pivoted at one end on a pin 142 in a bracket 143 fixed to post 133 and is pivotally connected at its other end to a connecting rod 144 which is actuated through a lever 145 (FIG. 17) by a cam 146 having a track 147 engaged by roller 148 on lever 145.

During indexing of a mount into station C, the lever arms 129—136 and their jaws 126—127 are in a retracted or open position, and during the dwell of the mount at said station the said arms 129—136 are closed by cam 146 to cause the jaws 126 to pinch or clamp the hook 15 on anchor wire 12 while jaws 127 close upon the loop 16 in anchor wire 13.

While we have shown and described in detail a preferred embodiment of our invention, it will be obvious to those skilled in the art that various modifications, omissions and substitutions may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

The mount making method disclosed herein is claimed separately in our application Serial No. 54,458, filed September 7, 1960, which is a division of the present application.

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

1. In a mount making machine for a mount comprising a glass stem having an arbor projecting axially downward from the lower end thereof, at least one lead wire extending downward from said lower end of the stem and longitudinally of the axis of said stem beyond the free end of said arbor, and at least one anchor wire having one end fixed to said free end of the arbor and extending substantially horizontally from said stem axis in a direction generally toward and a distance substantially beyond said lead wire, the combination of support means for holding said mount, mechanism for preliminarily forming an open hook in the free end of said anchor wire comprising a curling member and means mounting said curling member for movement to engage the end of said anchor wire and form a hook therein beyond said lead wire, bending mechanism for subsequently bending said anchor wire laterally against and downwardly along said lead wire to extend downwardly at an acute angle to the said stem axis with said hook embracing said lead wire and including means engageable with said lead wire to support it at a predetermined position and means for moving said last named means into engagement with said lead wire, said bending mechanism further comprising a bending tool and means mounting said tool for movement to engage said anchor wire and bend it as aforesaid, and means for actuating said mechanism in proper time relation.

2. In a mount making machine for a mount comprising a glass stem having an arbor projecting axially downward from the lower end thereof, at least one lead wire extending downward from said lower end of the stem and longitudinally of the axis of said stem beyond the free end of said arbor, and at least one anchor wire having one end fixed to said free end of the arbor and extending substantially horizontally from said stem axis in a direction generally toward and a distance substantially beyond said lead wire, the combination of support means for holding said mount, mechanism for preliminarily forming an open hook in the free end of said anchor wire comprising a curling member and means mounting said curling member for movement to engage the end of said anchor wire and form a hook therein beyond said lead wire, bending mechanism for subsequently bending said anchor wire laterally against and downwardly along said lead wire to extend downwardly at an acute angle to the said stem axis with said hook embracing said lead wire and including means engageable with said lead wire to support it at a predetermined position and means for moving said last named means into engagement with said lead wire, said bending mechanism further comprising a bending tool and means mounting said tool for movement to engage said anchor wire and bend it as aforesaid, mechanism for thereafter pinching said hook upon said lead wire comprising clamping jaws and means mounting said jaws for movement to engage said hook and pinch it as aforesaid, and means for actuating said mechanisms in proper time relation.

3. In a mount making machine for a mount comprising a glass stem having an arbor projecting axially downward from the lower end thereof, at least one lead wire extending downward from said lower end of the stem and longitudinally of the axis of said stem beyond the free end of said arbor, and at least one anchor wire having one end fixed to said free end of the arbor and extending substantially horizontally from said stem axis in a direction generally toward and a distance substantially beyond said lead wire, the combination of support means for holding said mount and carrying it along a definite path of travel, mechanism adjacent said path of travel for preliminarily forming an open hook in the free end of said anchor wire comprising a curling member and means mounting said curling member for movement to engage the end of said anchor wire and form a hook therein beyond said lead wire, bending mechanism also adjacent said path of travel for bending said anchor wire laterally against and downwardly along said lead wire to extend downwardly at an acute angle to the stem axis with said hook embracing said lead wire and including means engageable with said lead wire to support it at a predetermined position and means for moving said last named means into engagement with said lead wire, said bending mechanism further comprising a bending tool and means mounting said tool for movement to engage said anchor wire and bend it as aforesaid, and means for actuating said mechanisms in proper time relation.

4. In a mount making machine for a mount comprising

a glass stem having an arbor projecting axially downward from the lower end thereof, at least one lead wire extending downward from said lower end of the stem and longitudinally of the axis of said stem beyond the free end of said arbor, and at least one anchor wire having one end fixed to said free end of the arbor and extending substantially horizontally from said stem axis in a direction generally toward and a distance substantially beyond said lead wire, the combination of support means for holding said mount and carrying it along a definite path of travel, mechanism adjacent said path of travel for preliminarily forming an open hook in the free end of said anchor wire comprising a curling member and means mounting said curling member for movement to engage the end of said anchor wire and form a hook therein beyond said lead wire, bending mechanism also adjacent said path of travel for bending said anchor wire laterally against and downwardly along said lead wire to extend downwardly at an acute angle to the stem axis with said hook embracing said lead wire comprising a bending tool and means mounting said tool for movement to engage said anchor wire and bend it as aforesaid, mechanism also adjacent said path of travel for pinching said hook upon said lead wire and including means engageable with said lead wire to support it at a predetermined position and means for moving said last named means into engagement with said lead wire, said bending mechanism further comprising clamping jaws and means mounting said jaws for movement to engage said hook and pinch it as aforesaid, and means for actuating said mechanisms in proper time relation.

5. In a mount making machine for a mount comprising a glass stem having an arbor projecting axially downward from the lower end thereof, at least one lead wire extending downward from said lower end of the stem and longitudinally of the axis of said stem beyond the free end of said arbor, and at least one anchor wire having one end fixed to said free end of the arbor and extending substantially horizontally therefrom in a direction generally toward and a distance substantially beyond said lead wire, the combination of support means for holding said mount and carrying it along a path of travel to successive stations, curling mechanism at one of said stations comprising a horizontally disposed curling die, means mounting said curling die to be located in alignment with the anchor wire of a mount carried to said one station by said support means, means for actuating said curling die toward and away from the axis of the mount in said support means to engage the end of said anchor wire, said die being arranged to form an open hook in the end of said anchor wire beyond its associated lead wire, bending mechanism at another one of said stations including means engageable with said lead wire to support it at a predetermined position and means for moving said last named means into engagement with said lead wire, a bending tool and means mounting said tool for movement to engage said anchor wire and bend it laterally against and downwardly along said lead wire to extend downwardly at an acute angle to the stem axis and with said hook embracing the said lead wire, and means for actuating said mechanisms in proper time relation.

6. In a mount making machine as set forth in claim 5, a clamping mechanism at another one of said stations subsequent to the station occupied by said bending mechanism and comprising jaw members and means mounting said jaw members for movement to engage and pinch the said hook upon the lead wire of a mount located at the clamping station.

7. In a mount making machine as set forth in claim 5, said bending tool comprising a finger member having a camming surface along its bottom edge inclined downwardly from the front end of the finger, and means mounting said tool for forward movement transversely across and over the said anchor wire to effect the bending of said anchor wire.

8. In a mount making machine for a mount comprising a glass stem having an arbor projecting axially downward from the lower end thereof, a pair of lead wires extending downward from the lower end of said stem at opposite sides of the axis of said stem and beyond the free end of said arbor, and a pair of anchor wires each having one end fixed to the said free end of the arbor and extending substantially horizontally therefrom in opposite directions generally toward and across respective lead wires, one of said lead wires being longer than the other to extend substantially farther beyond its associated lead wire, the combination of support means for holding said mount and carrying it along a path of travel to successive stations, curling mechanism at one of said stations comprising horizontally opposed curling dies, means mounting said curling dies to be located in alignment with the respective anchor wires of a mount carried to said one station by said support means, means for actuating said curling dies for alternate movement toward and away from the axis of the mount in said support means to engage respective anchor wires and curl the ends thereof, the arrangement of the curling dies being such that the die engaging the shorter anchor wire curls it about its associated lead wire whereas the die engaging the longer anchor wire forms an open hook in the end thereof beyond its associated lead wire, bending mechanism at another one of said stations including means engageable with said longer lead wire to support it at a predetermined position and means for moving said last named means into engagement with said longer lead wire, a bending tool and means mounting said tool for movement to engage said longer anchor wire and bend it laterally against and downwardly along said longer lead wire to extend downwardly at an acute angle to the stem axis and with said hook embracing the associated lead wire, and means for actuating said mechanisms in proper time relation.

9. In a mount making machine as set forth in claim 8, a clamping mechanism at another one of said stations subsequent to the station occupied by said bending mechanism and comprising jaw members and means mounting said jaw members for movement to engage and pinch the said hook upon the associated lead wire of a mount located at the clamping station.

10. In a mount making machine as set forth in claim 8, said bending tool comprising a finger member having a camming surface along its bottom edge inclined downwardly from the front end of the finger, and means mounting said tool for forward movement transversely across and over the said longer anchor wire to effect the bending of said anchor wire.

11. In combination with means for supporting a mount comprising a glass stem having an arbor projecting axially downward from the lower end thereof, at least one lead wire extending downward from said lower end of the stem and longitudinally of the axis of the stem beyond the free end of said arbor, and an anchor wire having one end fixed to said free end of the arbor and extending substantially horizontally therefrom in a direction generally toward and a distance substantially beyond said lead wire and having an open hook portion at its free end, bending mechanism adjacent said support means comprising a backing member, means mounting said backing member for movement into engagement with said lead wire at an elevation slightly above that of the said anchor wire, a pair of arm members located to straddle the mount in said support means and mounted for pivotal movement on a horizontal axis, a bending finger mounted on one of said arms to extend generally horizontally in apposition to and at an elevation slightly below said backing member, said bending finger having a camming surface along its bottom edge inclined downwardly from the front end of the finger, opposed jaw members on respective said arm members arranged to engage the said lead wire adjacent its lower end, and

means for pivoting said arm members from open to closed position upon movement of said backing member into engagement with said lead wire whereby said backing member and jaw members serve to support said lead wire at a predetermined position and the camming surface of said bending finger moves transversely across and over said anchor wire to bend it laterally against and downwardly along said lead wire so as to extend downwardly at an acute angle to the stem axis and with its hook portion embracing the lead wire.

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