

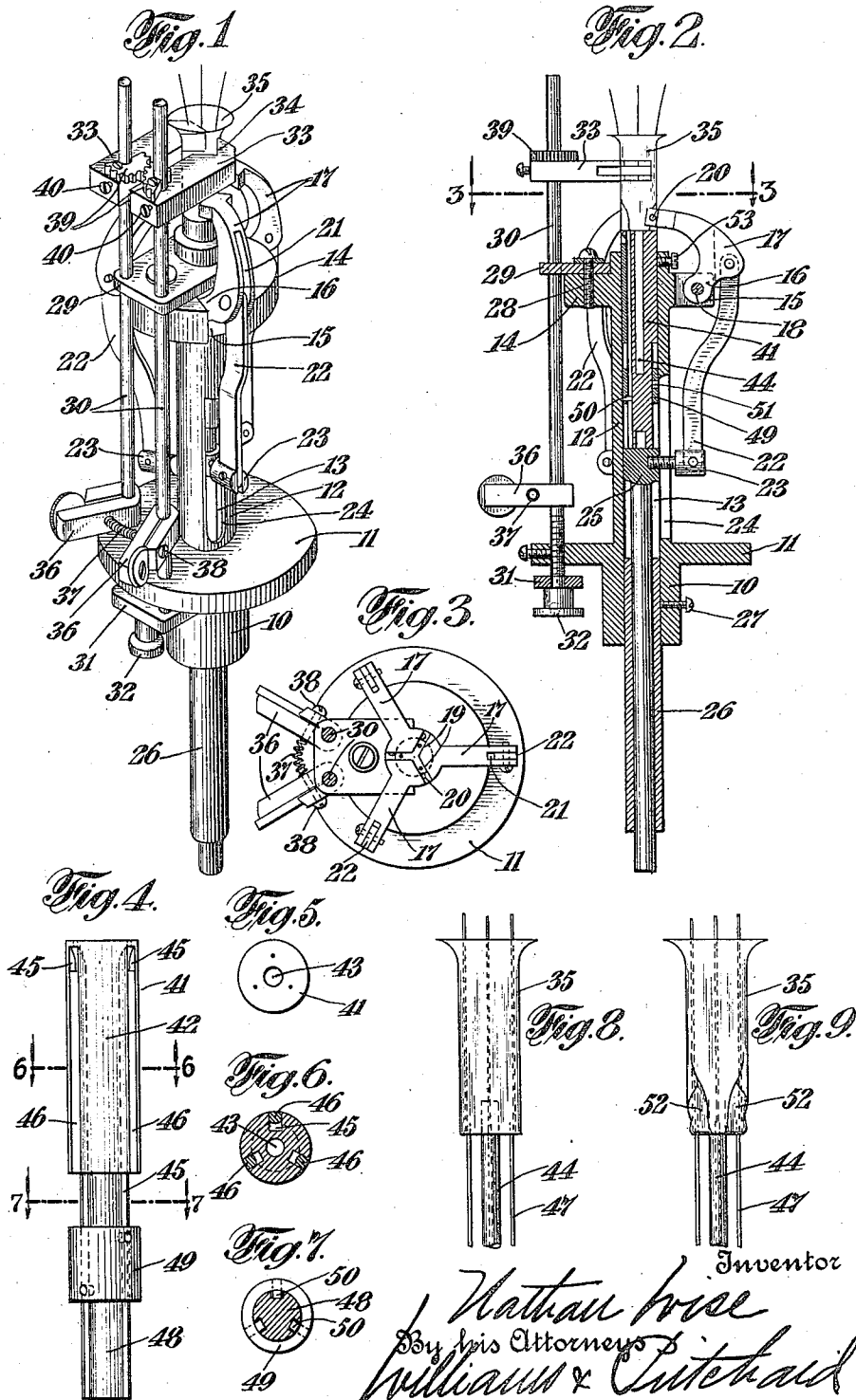
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STEM MAKING MACHINE

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STEM-MAKING MACHINE.

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To all whom it may concern:

Be it known that I, NATHAN WISE, a citizen of the United States of America, residing at Mount Vernon, county of Westchester, and State of New York, have invented certain new and useful Improvements in Stem-Making Machines, of which the following is a specification.

This invention relates to electric lamp and other stem making machines and has for its primary object the provision of a machine of this type in which the various co-operating elements thereof are so constructed and arranged as to make possible efficient production of an improved type of stem so formed as to provide at one end thereof a plurality of radially disposed lobes through which the filament leads or other conductors pass in such a manner as to so distribute the stresses set up therein due to the contraction or expansion of the conductors or the surrounding portion of the stem as to eliminate undue breakage during the process of manufacture or after the lamp is put into use.

A further object of the invention is to provide in a machine of the above mentioned character a means whereby certain desirable adjustments of various elements thereof may be made to meet varying conditions under which the machine may be required to operate.

Other objects and advantages of the invention will become apparent from the following description taken in connection with the accompanying drawings in which,

Figure 1 is a perspective view of the device embodying my invention.

Figure 2 is a central vertical sectional view of the device, certain elements thereof being shown in elevation.

Figure 3 is a horizontal sectional view taken on line 3—3 of Figure 2.

Figure 4 is an elevation of a removable conductor wire retaining and supporting head.

Figure 5 is a plan view of the removable head.

Figure 6 is a transverse sectional view taken on line 6—6 of Figure 4.

Figure 7 is a transverse sectional view taken on line 7—7 of Figure 4.

Figure 8 is a view, more or less diagrammatic, showing the relative position of several elements prior to their being united to form a lamp stem.

Figure 9 is a view similar to that of Fig-

ure 8 in which the several elements are shown as having been united to form the stem.

The device embodying my invention comprises a tubular base 10 having a table-like flange 11 formed thereon and provided with a vertically extending guide 12 which is centrally bored to provide therein a chamber 13 adapted to receive certain elements of the device hereinafter more particularly referred to. The upper end of the guide 12 is formed with a head 14 having radially extending notches 15 formed therein, which are equally spaced from each other and adapted to receive the angularly disposed feet 16 of arcuate shape lobe forming elements 17 pivotally connected to the head 14 by means of pins 18 passed through the angularly disposed feet 16 as clearly shown in Figure 2. The lobe forming elements 17 are at their free or contact ends provided with angularly disposed faces 19 which are prevented from contacting with each other by means of screws 20 which may be adjusted to limit the inward movement of the lobe forming arms 17 and thereby vary the thickness of the lobes which are formed upon the stem by the action of the lobe forming elements 17 upon the tubular element hereinafter referred to. Grooves or slots 21 are provided in the lobe forming elements 17 relatively near their pivotal ends to receive the upper ends of actuating links 22, the links 22 being connected at their lower ends to radially disposed screw threaded lugs 23 which operate within longitudinally disposed slots 24 and are connected to the end of a reciprocating plunger 25 which is arranged within the chamber 13 and extends downwardly through an elongated bearing or sleeve 26 held within the base 10 by means of a screw indicated by the numeral 27.

To the upper face of the head 14 there is connected as by means of a screw 28, a bearing plate 29 through which a pair of vertically arranged gripper operating shafts 30 extend, these shafts being passed also through the flange 11 and journaled to a plate 31 adapted to be vertically adjusted by means of a thumb screw 32 having screw threaded connection with the flange 11 as shown in Figure 2. A pair of gripping jaws 33 are adjustably connected to the operating shafts 30 at the upper ends thereof, the jaws being notched or cut away as shown at 34 in order that the flare or tubular glass body

35 may be effectively held in axial alignment with the chamber while being acted upon by the crimping or lobe forming arms 17 as will hereinafter more clearly appear.

5 To enable the operator to easily manipulate the gripping elements 33, I provide a pair of operating arms 36 which are secured to the shafts 30 and normally urged apart by means of a coiled spring 37 carried by pins 10 38 suitably connected to the arms 36. In order that the shafts 30 may be rotated through equal arcs when the operating arms 36 are moved against the influence of the spring 37, I provide a pair of gear segments 15 39 which are secured to the upper face of the gripping elements 33 and at all times maintained in engagement with each other. The vertical adjustment of the shafts 30 afforded by the thumb screw 32 enables me to so position the gripping elements 33 as to accom- 20 modate various lengths of tubular glass elements 35, but should this adjustment in any case be insufficient, I am enabled to further adjust or change the position of the gripping elements 33 upon the shafts 30 by reason of the fact that they are slidably mounted thereupon and are adapted to be held in a given position by means of set screws 40 25 which may be run down into engagement with the shafts 30 as will be readily appreciated from Figure 1.

Within the vertically disposed guide 12 at the upper end thereof, there is arranged a conductor wire supporting head 41 which 35 comprises an elongated element 42 having a central passage 43 adapted to receive a filament support 44, the element 42 being provided with longitudinally disposed grooves 45, extending substantially throughout the 40 length of the same, carrying inserts 46 which are tapered outwardly at their upper ends, as shown in Figure 4, and spaced an appreciable distance from the bottom of the grooves 45 to permit the insertion of con- 45 ductor wires 47 adapted to be retained in a spaced relation about the axis of the flare or tubular element 35. Upon the reduced end 48 of the element 42 there is arranged a vertically adjustable conductor wire sup- 50 porting element 49, having radially disposed pins 50 carried thereby which project into the grooves 45 and serve, not only to prevent rotation of the adjustable support 49 with respect to the reduced portion 48, but also as a means for supporting the con- 55 ductor wires 47 when they are inserted into the grooves 45. In order to secure the supporting ring 49 in any desired position upon the reduced portion 48, I provide a set screw 60 51 which is carried by the ring and adapted to engage the reduced portion 48 as may be readily understood from Figure 2. By providing an adjustable head 41 I am enabled to so position the same as to insure a proper 65 position of the tubular member 35 with re-

spect to the crimping or lobe forming arms 17 when said arms are moved into engagement therewith to form the radially disposed lobes 52 at the proper location upon the finished stem. In order to retain the 70 head 41 in any desired position within the chamber 13, I provide a set screw 53 which is carried by the vertically disposed portion 12 and adapted to be run down radially into firm engagement with the head 42 as clearly 75 shown in Figure 2.

In operation a plurality of the devices embodying my invention, and hereinbefore described, are mounted upon the usual ro- 80 tatable table which enables the operator to successively insert the flares or tubular glass members 35, the filament supports 44, and the several conductor wires 47, the flares 35 being gripped by the gripping elements 33 to retain the same in position, whereas the 85 conductor wires 47 are supported by the supporting ring 49 and are retained in a spaced relation about the axis of the tubular element 35 by reason of the fact that they are carried within the grooves 45. As the 90 table is rotated, the device embodying my invention are independently rotated in the usual manner and are carried successively through a plurality of flame jets which play against the ends of the tubular elements. 95 Upon a sufficient softening of the glass to permit the same to be readily distorted, the operator, by suitable mechanism not shown, actuates the reciprocating plunger 25 causing the crimping arms to move radially to- 100 ward the axis of the tubular element 35, whereupon the softened glass at the end thereof is acted upon by the crimping arms to produce the radially disposed lobes 52 within which the conductor wires 47 are 105 simultaneously embedded and to which the end of the filament support 44 is united. After the last mentioned step in the course of manufacture of each article, the operator removes the finished product from the ma- 110 chine.

Having thus described my invention, I claim:

1. In a machine for making from a tubu- 115 lar glass body a stem having a plurality of lobes formed thereon at an angle with respect to each other, a plurality of lobe forming arms adapted to operate within inter- 120 secting planes, and means for forcing the ends of said arms into contact with the glass body to produce a radially impinging effect thereupon whereby the glass body is dis- 125 torted to produce a plurality of radially disposed lobes.

2. In a machine for making from a tu- 130 bular glass body a stem having a plurality of conductor carrying lobes formed thereon at an angle with respect to each other, a plurality of lobe forming members adapted to operate within planes intersecting each

other within the boundary of the glass body and to move radially toward the axis of the glass body, said lobe forming members being provided with angularly disposed faces, and means for moving said lobe forming members toward the axis of said body to produce thereupon a radially impinging effect whereby the glass body is distorted and shaped to form between the faces of said member a plurality of radially disposed lobes.

3. In a machine for making from a tubular glass body a stem having a plurality of lobes formed thereon at an angle with respect to each other and carrying conductor wires, means for supporting a tubular glass body, means for supporting a plurality of conductor wires in an arcuately spaced relation within said body and about the axis thereof, and means operating in different planes intersecting each other within the confines of said body for forcing inwardly portions of the glass body intermediate said wires whereby lobes are formed surrounding said wires.

4. In a machine for making from a tubular body a stem having a plurality of lobes formed thereon at an angle with respect to each other, means for supporting a tubular body, a plurality of lobe forming arms arranged in planes intersecting each other on the axis of said body, said arms being adapted to be moved radially toward the axis of said tubular body and provided with angularly disposed faces, means for actuating said arms whereby the ends thereof are moved radially toward the axis of said tubular body to produce radially disposed lobes thereupon, and means for limiting the movement of said arms toward the axis of said body.

5. In a machine for making from a tubular body a stem having radially disposed lobes at an angle with respect to each other and carrying conductor wires, means for holding the tubular body in position to be acted upon, means for retaining a plurality of conductor wires in a spaced relation about the axis of said body, and means operating in different intersecting planes for acting radially upon said body intermediate said wires to depress said body at various points whereby a plurality of lobes are formed about said wires.

6. In a machine for making from a tubular body a stem having a plurality of radially projecting conductor wire carrying lobes formed thereon at an angle with respect to each other, a plurality of radially movable lobe forming arms arranged in planes intersecting each other on the axis of said body, means for holding a tubular body in position to be acted upon by said arms, means for retaining a plurality of conductor wires in a spaced relation about the axis of said body, adjustable means for supporting said wires, and means for forcing

the ends of said arms radially toward the axis of said body to form about said wires radially disposed lobes.

7. In a machine for making from a tubular glass body a stem having a plurality of conductor carrying lobes, means for supporting a tubular body adapted to receive a plurality of conductor wires, a vertically disposed element having a chamber formed therein, a wire supporting head having grooves formed therein, inserts carried within said grooves and spaced from the bottoms thereof to provide passages adapted to receive said conductor wires, a plurality of radially movable lobe forming arms, and means for moving said arms radially inwardly upon said tubular body to distort the end thereof whereby radially disposed lobes are formed surrounding said wires.

8. In a machine for making from a tubular glass body a stem having a plurality of conductor carrying lobes formed thereon, means for supporting a tubular glass body adapted to receive a plurality of conductor wires, a wire supporting head having grooves formed therein, inserts carried within said grooves, said inserts being spaced from the bottoms of said grooves to provide passages adapted to receive said wires, a plurality of radially movable lobe forming elements, and means for actuating said elements whereby the ends thereof are moved radially toward the axis of said tubular body to impinge the same and produce thereupon a plurality of radially extending lobes surrounding said wires.

9. In a machine for making from a tubular glass body a stem having a plurality of conductor carrying lobes formed thereon, means for supporting a tubular glass body adapted to receive a plurality of conductor wires, a wire supporting head having grooves formed therein, inserts carried within said grooves, said inserts being spaced from the bottoms of said grooves to provide passages adapted to receive said wires, and adjustable means associated with said head for supporting said wires.

10. In a machine for making from a tubular glass body a stem having a plurality of conductor carrying lobes formed thereon, means for supporting a tubular glass body adapted to receive a plurality of conductor wires, a wire supporting head having grooves formed thereon, inserts carried within said grooves, said inserts being spaced from the bottoms of said grooves to provide passages adapted to receive said wires, and adjustable rings carried by said head, said rings being adapted to support said wires.

11. In a machine for making from a tubular body a stem having a plurality of lobes formed thereon at an angle with respect to each other, means for supporting a tubular body, a plurality of lobe forming arms arranged in different intersecting

planes and adapted to be moved radially toward the axis of said tubular body, and means for simultaneously moving said arms convergingly toward the axis of said tubular body to produce a plurality of radially disposed lobes thereupon, said lobes lying in different intersecting planes.

12. The method of manufacturing from a tubular glass body a stem having a plurality of electric wire carrying lobes formed thereon which consists in arranging a plurality of conductor wires about the axis of the tubular body, heating the tubular body, and subjecting the heated body to forces directed toward the axis of the tubular body, the forces being directed in different intersecting planes to produce a plurality of radially extending lobes surrounding said conductors and lying in different intersecting planes.

13. The method of manufacturing from a tubular glass body a stem having a plurality of conductor carrying lobes formed thereon which consists in arranging a plurality of conductor wires about the axis of the tubular body, heating one end of the

tubular body, and forcing the heated material radially inwardly at points lying in different intersecting planes to produce radially extending lobes surrounding said conductors.

14. The process of manufacturing from a tubular glass body a stem having a plurality of conductor carrying lobes formed thereon and a filament support connected thereto which consists in arranging a plurality of conductor wires in a spaced relation about the axis of the tubular body to be acted upon, so placing a filament support with respect to the tubular body that one end of the support projects slightly into said tubular body, heating said tubular body to soften the same, and forcing said body radially inwardly at points about the axis thereof lying in different intersecting planes to unite the body with said support and produce a plurality of radially disposed lobes surrounding said wires.

In testimony whereof, I have affixed my signature to this specification.

NATHAN WISE.