

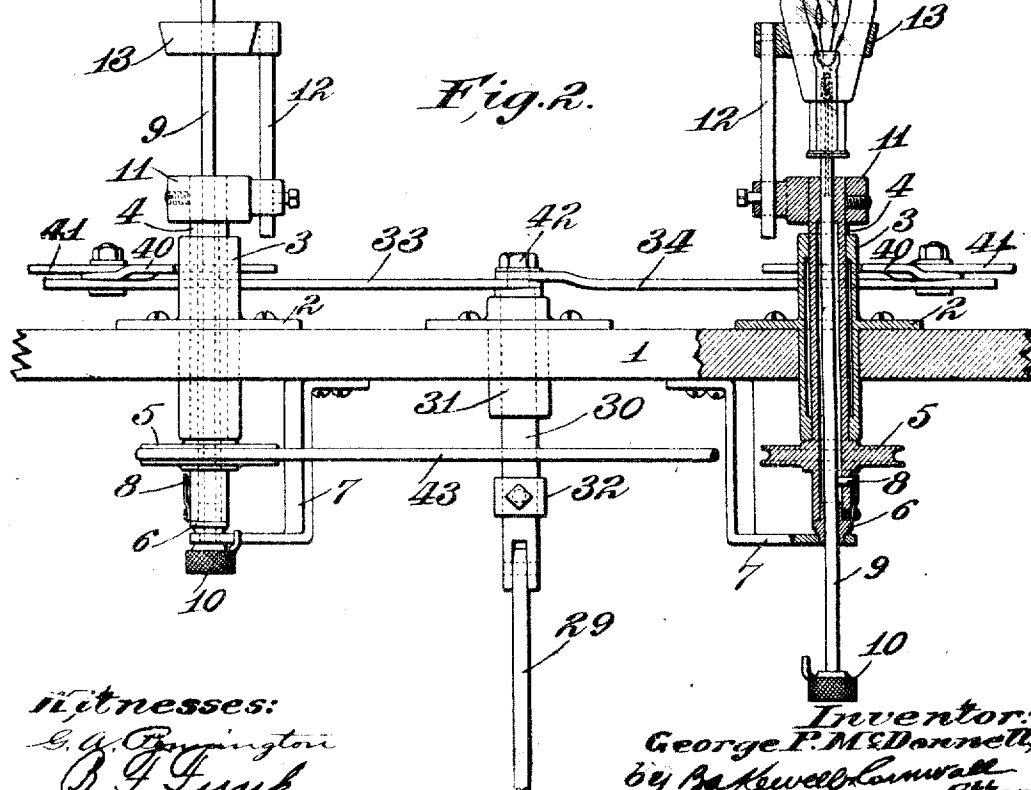
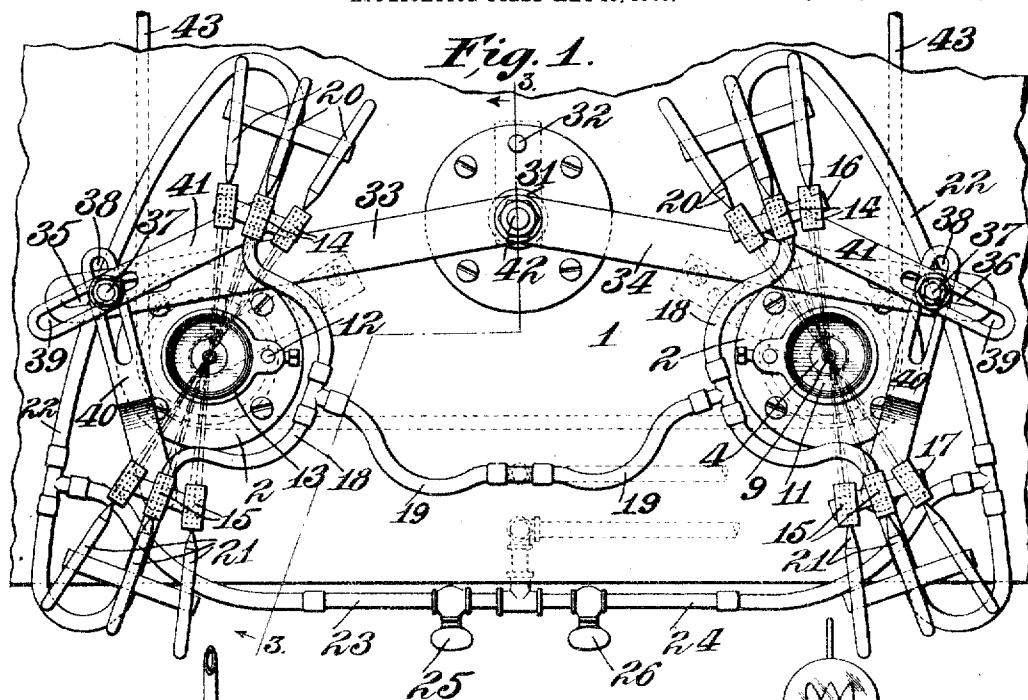
No. 829,538.

PATENTED AUG. 28, 1906.

G. P. McDONNELL.
MACHINE FOR SECURING FILAMENT HOLDERS INTO THE GLOBES
OF INCANDESCENT LAMPS.

APPLICATION FILED MAY 16, 1905.

3 SHEETS—SHEET 1.



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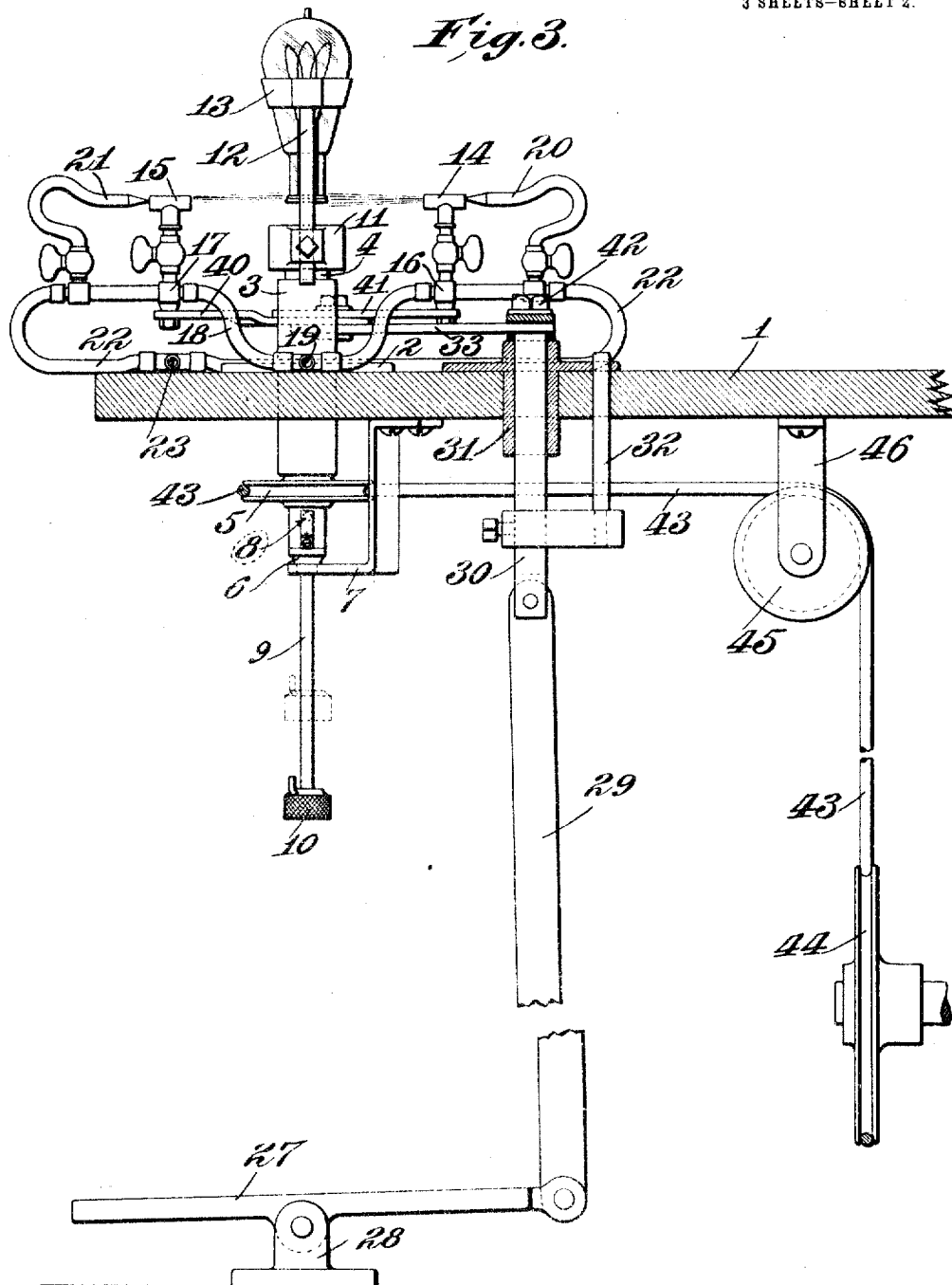
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3 SHEETS—SHEET 2.



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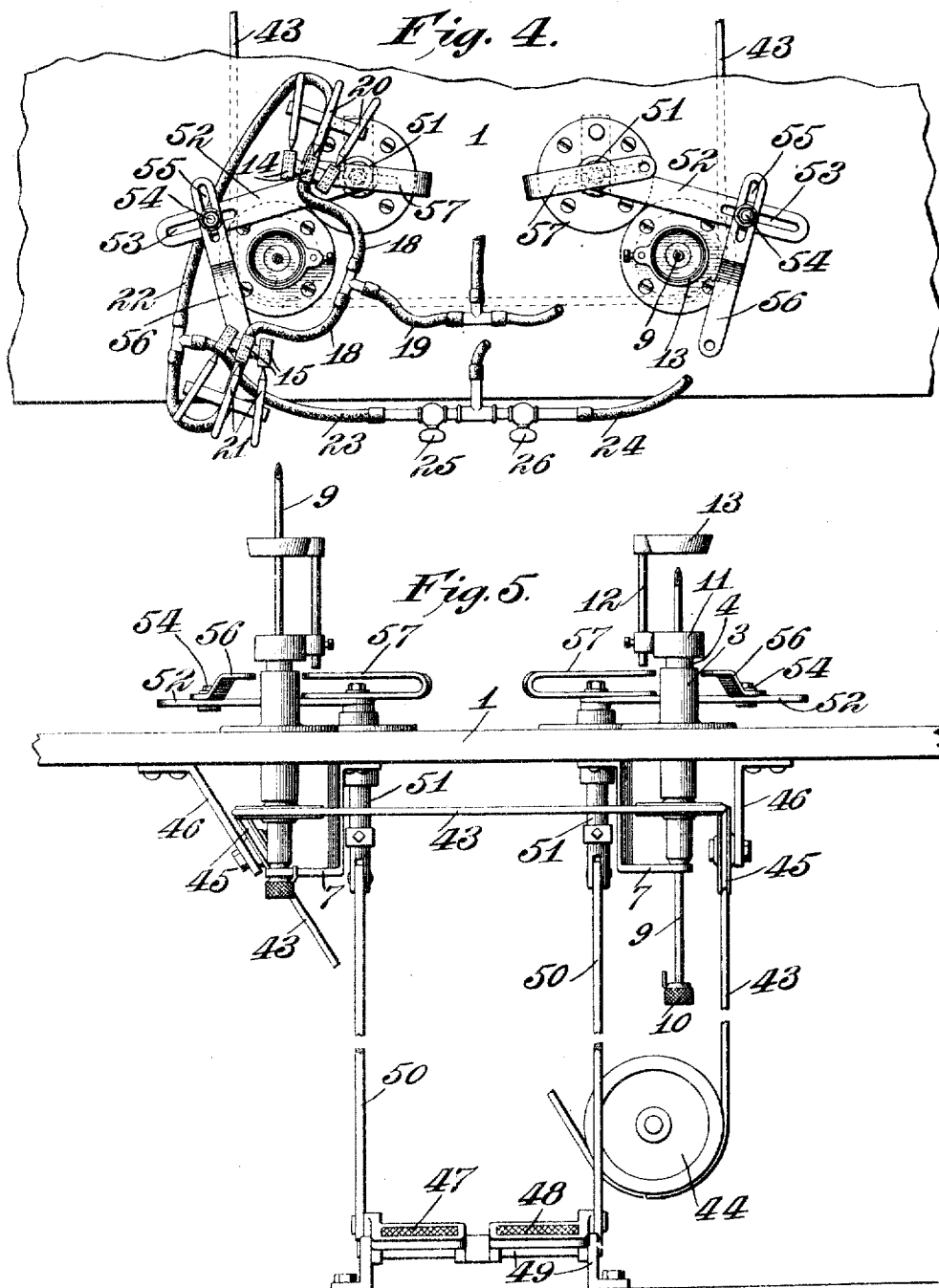
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR SECURING FILAMENT-HOLDERS INTO THE GLOBES OF INCANDESCENT LAMPS.

No. 829,538.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed May 16, 1905. Serial No. 280,478.

To all whom it may concern:

Be it known that I, GEORGE P. McDONNELL, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Machines for Securing Filament-Holders into the Globes of Incandescent Lamps, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view of a machine for securing filament-holders into bulbs of incandescent lamps constructed in accordance with my invention. Fig. 2 is a view of the machine, partly in section and partly in elevation. Fig. 3 is an elevational view, partly in section, on the line 3 3 of Fig. 1. Fig. 4 is a fragmentary plan view of a slightly modified form of machine, and Fig. 5 is a front elevational view of the same.

This invention relates to a machine for securing filament-holders into the bulbs of incandescent lamps.

One of the objects of the invention is to provide means whereby the filament-holder may be sealed into the lamp-bulb in an efficient manner through the medium of heat, whereby the parts are fused together.

Another object of the invention is to provide means for adjusting the flame to suit various conditions.

A still further object of the invention is to provide means whereby the burners may be positioned in proper relation to the parts to be fused, so as to obtain the best results; and another object of the invention is to arrange the mechanism so as to be most conveniently accessible and easily controlled by the operator.

Referring now to the drawings, 1 designates a suitable base on which may be secured one or more mechanisms for sealing the filament-holder in the bulb of the lamp. In the present instance I have illustrated two sets of mechanism arranged in multiple, whereby both sets may be operated by a single treadle. At convenient points on the table I arrange duplicate castings 2, comprising flanges secured to the table or base 1, and having central vertically-arranged tubular bearings 3,

which at their respective ends bear against a hollow shaft 4, confined within the tubular bearings, each of said shafts carrying a pulley 5. The lower extremities of the hollow shafts 4 are provided with plugs 6 resting in bearings in brackets 7, which bearings in the brackets take up the end-thrusts of the respective shafts 4. The hollow shafts 4 carry spring-pressed friction-pins 8, which bear against vertically-adjustable and frictionally-held filament-holder spindles 9, which comprise elongated rods projecting through the hollow shafts 4 and having on their lower ends knobs or buttons 10, the upper ends of said rods being beveled, as shown in the drawings, and provided with a bore or opening to receive the leading-in wires of the filament, as shown in dotted lines in Fig. 2.

On the upper extremities of the shafts 4 are collars 11, which support adjustable bulb-holders 12, having seats 13 for the reception of the glass bulbs. These seats are arranged so that if a filament-holder is supported on the end of one of the spindles 9 and a bulb is supported within the seat 13 of one of the bulb-holders said filament-holder and bulb will be caused to aline in such a manner that by applying heat to their respective lower extremities they will be fused together. The heat is preferably applied by two sets of burners 14 and 15 diametrically opposite each other and carried by T connections 16 and 17 in communication with the pipes or tubes 18, connected to a suitable fuel supply, the intermediate portions of the tubes, as at 19, being of some suitable flexible material.

In order to obtain the best results, it is desirable to concentrate the heat at a particular point, and this is done through the medium of the blowpipe-nozzles 20 and 21, one set for each set of burners, which nozzles are connected to a suitable air-supply through the medium of the pipes or tubes 22, connected to the branches 23 and 24. In each branch is provided a valve designated by the numerals 25 and 26, respectively, and by manipulating the valves the air-supply may be controlled. Means is provided for permitting the vertical adjustment of the heating apparatus just described, which means is best illustrated in Figs. 2 and 3.

By reference to Fig. 3 it will be observed that a treadle 27 is fulcrumed at 28, and at

one end of the treadle is a pitman 29, connected to an adjusting-rod 30, which adjusting-rod passes through a vertical guide 31 and is also guided by an auxiliary guide 32, passing through an opening in the table or base. On the upper end of the adjusting-rod 30 are oppositely-disposed arms 33 and 34, having in their ends elongated slots 35 and 36, through each of which a pivot-fastening device 37 projects, which fastening device also projects through elongated slots 38 and 39 in the pivoted burner-carrying arms 40 and 41, also supporting the blowpipe-nozzles. Thus it will be seen that by depressing the forward end of the treadle 27 the heating mechanisms may be simultaneously raised, and their weights will be sufficient to lower them when pressure is relieved on the treadle. By providing the elongated slots in the arms 33 and 34 and fastening the slotted burner-carrying arms 40 and 41 thereto the fulcrum of any of the arms may be moved toward or away from the axis of the lamp-carrying mechanism, and the arms may be swung on either fulcrum, so as to adjust the burners and blowpipe-nozzles toward or away from the lamp, as occasion may demand. The adjustment may further be controlled by swinging either of the arms 33 or 34 on their pivot-fastening device 42.

In operation the hollow shafts 4 are driven through the medium of a belt 43, which passes around a drive-pulley 44, driven by suitable power, said belt also passing over an idler 45, preferably suspended from a bracket 46, supported by the base or table 1, and thence around the pulleys 5 on the respective hollow shafts 4.

It will be understood that the shafts 4 rotate continuously, and accordingly the spindles 9 also rotate continuously, due to their frictional connection with said shafts. When placing a bulb and a filament-holder in operative position, the operator grasps the knob 10 on the lower end of the spindle 9 and moves said spindle upwardly until the upwardly-projecting stop on said knob engages a portion of the bracket 7, as shown at the left of Fig. 2, whereby said spindle is held at rest while the shaft 4 continues to rotate. The operator then takes a filament-holder with the leading-in wires projecting downwardly therefrom and places it on the upper end of the spindle 9, which is at rest, the beveled upper end of said spindle aiding the operator greatly in guiding the leading-in wires into the bore of said spindle. After the filament-holder has been placed in position the knob 10 is again grasped and the spindle 9 pulled downwardly, the operator taking a lamp-bulb in her other hand and dropping it into the constantly-rotating bulb-holder 13 over the filament-holder, the spindle 9 at the same time being raised or lowered to properly position the filament-holder thereon

with reference to the neck of the lamp-bulb, the spindle 9 being then released, so that it will rotate with the shaft 4.

From the foregoing description it will be seen how important the frictional connection between the spindle 9 and the shaft 4 is, for it enables the operator to hold said spindle at rest while she is placing the filament-holder thereon and also enables her to quickly and accurately position said filament-holder relatively to the neck of the lamp-bulb.

If desired, the stop on the knob 10 may not be used, as the operator can hold the spindle 9 at rest with one hand while she places a filament-holder thereon with the other hand. In placing the lamp-bulb in position the shaft may or may not be stopped; but if it is desired to prevent rotation of the shaft this can be done by securely holding the shaft, because the belt which drives it is merely a friction-belt, and one shaft may be stopped without affecting the movement of the other. In view of the fact that the shaft contains a spring-pressed friction-pin 8, the spindle 9 will be held in any vertical adjustment and vertical movement may be imparted thereto with ease and convenience.

In Figs. 4 and 5 I have illustrated a slightly-modified form of controlling mechanism, and while the piping, burners, and blowpipe-nozzles are all arranged similar to the constructions illustrated in Figs. 1 to 3 the mechanisms are so arranged that vertical movement may be imparted to the burners and blowpipes for one bulb-holder without affecting those coöperating with the other holder.

The treadles 47 and 48 are supported by a suitable base 49, and each treadle is connected to a pitman 50. The upper extremity of each pitman is connected to a vertically-movable burner-support 51, having an arm 52 pivoted thereto, and at its end distant from the burner-support 51 said arm is provided with an elongated slot 53, through which projects a pivot-fastening device 54, also extending through an elongated slot 55 in one end of a burner-supporting arm 56, which also supports the blowpipe-nozzles. A bracket 57 is carried by the arm 52 to support the opposite set of burners and blowpipe-nozzles. The belt for driving the shafts 4 used in the form illustrated in Figs. 4 and 5 is substantially the same as that applied to the construction shown in Figs. 1 to 3, and it is therefore not deemed necessary to specifically describe it again.

The essential difference between the constructions illustrated in Figs. 4 and 5 and the construction illustrated in Figs. 1 to 3 is that the form illustrated in Figs. 1 to 3 contains the burner mechanisms arranged in multiple, while the construction shown in Figs. 4 and 5 illustrates these mechanisms as being separately operable.

I am aware that changes in the construction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without departing from the principle and nature of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for securing filament-holders to the bulbs of incandescent lamps, the combination with a bulb-holder rotating around a fixed axis, a filament-holder support alining with said bulb-holder, and means for applying heat to the bulb comprising burner-supports on opposite sides of the bulb, said burner-supports having a pivot common to all of them, burners carried by said supports and said supports being longitudinally adjustable on the pivot and having swinging movements around the axis of the pivot toward and away from the bulb-support; substantially as described.
2. In a machine for securing filament-holders to the bulbs of incandescent lamps, the combination of a bulb-holder rotatable around a fixed axis, a filament-holder support carried by the bulb-holder, and means for applying heat to the filament-holder and bulb to fuse them together, said means comprising an arm, a pivot on said arm, burner-supports having longitudinal slots engaged by said pivot, and burners carried by said supports; substantially as described.
3. In a machine for securing filament-holders into the bulbs of incandescent lamps, the combination with a non-rotatable support or base, of a continually-rotating bulb-holder mounted in fixed bearings in said base, of a filament-holder support adjustably mounted in the bulb-holder and frictionally connected thereto, and means for applying heat to the filament-holder and bulb to fuse them together; substantially as described.
4. In a machine for securing filament-holders into the bulbs of incandescent lamps, the combination with a rigid base, of a rotatable bulb-holder carried by said base, a filament-holder support rotatable with the bulb-holder, a vertically-movable bar, a pivot carried by said bar, and burner-supports longitudinally swingingly adjustably engaged by said pivot; substantially as described.
5. In a machine for securing filament-holders into the bulbs of incandescent lamps, the combination with a rigid base, of a continually-rotating bulb-holder carried by said base, a filament-holder support rotatable with the bulb-holder, means for applying heat to the bulb, and means for varying the position of said heating means relatively to the bulb-holder, in both a horizontal plane and in a vertical plane; substantially as described.
6. In a machine for securing filament-holders into the bulbs of incandescent lamps, the

combination with a rigid base, of a rotatable bulb-holder carried by said base, a vertically-movable frictionally-held filament-holder support carried by said bulb-holder, a horizontal vertically-movable arm above the base, and pivoted burner-carrying arms adjacent to the bulb-holder and supported by said horizontal and vertically-movable arm; substantially as described.

7. In a machine for securing filament-holders into the bulbs of incandescent lamps, the combination with a rigid base, of rotatable bulb-holders carried by said base and in fixed bearings, a filament-holder support carried by each bulb-holder, vertically-movable means for applying heat to the lamp-bulb and filament-holder, and means for regulating the heat applied to one bulb-holder irrespective of the other; substantially as described.

8. In a machine for securing filament-holders into the bulbs of incandescent lamps, the combination with a rigid base, of rotatable bulb-holders in fixed bearings in the base, a filament-holder support in axial alinement with the bulb-holder, means for applying heat to the respective bulb and filament holders, and means for independently adjusting the heating means horizontally and vertically; substantially as described.

9. In a machine for securing filament-holders into the bulbs of incandescent lamps, a bulb-holder carried by a rotating shaft, a spindle for supporting a filament-holder, means for frictionally connecting said spindle and shaft together whereby said spindle may be moved longitudinally of said shaft and also held at rest while the shaft continues to rotate, and means for applying heat to the bulb and filament holders to fuse them together; substantially as described.

10. In a machine of the class described, a shaft carrying a bulb-holder, a spindle for supporting a filament-holder, frictional means for connecting said spindle and shaft together, and means for holding the spindle at rest while the shaft continues to rotate; substantially as described.

11. In a machine for securing filament-holders into the bulbs of incandescent lamps, a rotating shaft having a bulb-holder mounted thereon, a spindle for supporting a filament-holder and provided at its upper end with a bore to receive the leading-in wires of the filament, the end of said spindle being beveled, and means for frictionally connecting said spindle to said shaft; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 12th day of May, 1905.

GEORGE P. McDONNELL.

Witnesses:

B. F. FUNK,
GEORGE BAKWELL.