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COATING MACHINE

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Fig. 1.

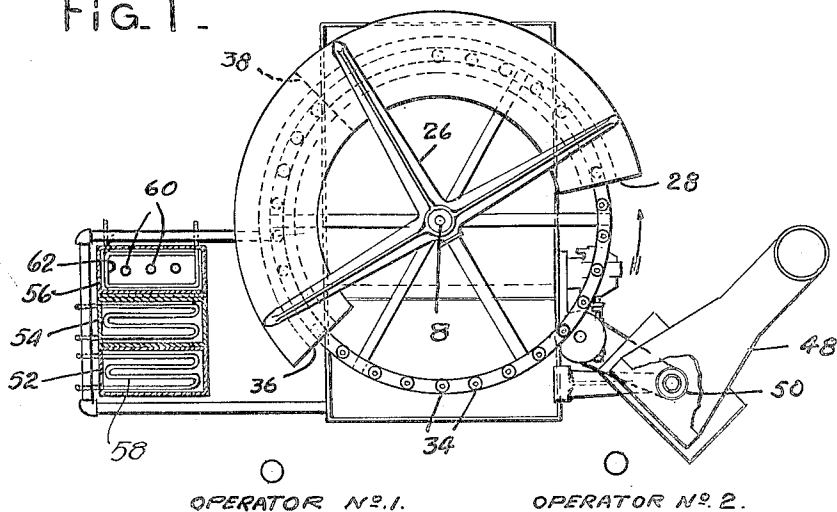
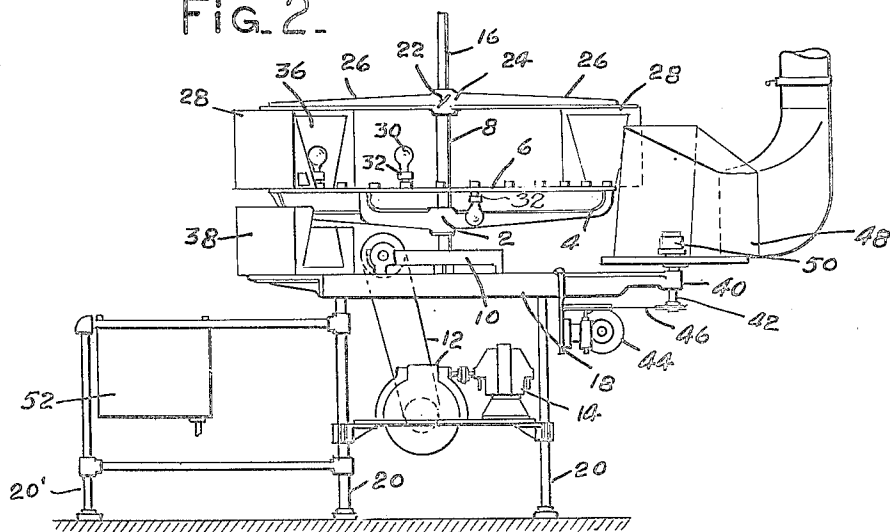


Fig. 2.



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COATING MACHINE.

Application filed March 17, 1924. Serial No. 699,613.

This invention relates to a machine for applying a coating to a glass article or the like and more particularly relates to a machine whereby vitreous coatings may be readily affixed to electric incandescent lamps.

It is an object of this invention to provide a machine and unitary combination of apparatus whereby coatings for electric lamp bulbs, containing sodium silicate, may be efficiently applied to a lamp.

It is a further object to provide a machine of the class described together with accessory apparatus pertaining thereto in such arrangement that a single operator may efficiently handle a maximum production of coated bulbs per unit of time.

Other objects will be readily apparent from a perusal of the description and claims and from the drawing in which,

Fig. 1 is a top plan view of the machine and appurtenances thereof embodying a species of our invention; and,

Fig. 2 is a figure in front elevation of the machine and appurtenances shown in Fig. 1.

As fully described in the copending application of Albert F. Lindstrom, Serial No. 573,440 filed July 7, 1922, method of coating materials and assigned to the Westinghouse Lamp Company, it has been found that the most desirable and cheapest expedient that may be employed to diffuse the light rays emanating from an incandescent lamp when lighted is a mixture or paint consisting of a pigment, a filler and a binder or vehicle of a solution of a soluble silicate.

In utilizing this coating material, it has been found necessary to apply it in such manner that a uniform thickness of coating will result on the lamp and it has also been necessary to cause a change in the physical and chemical condition of the coating so that it will adhere to the bulb of the lamp with sufficient tenacity to be resistant to heat as well as to the solvent action of moisture conditions to which the lamp may be subjected in practical usage. To do this, it has been found necessary to heat the bulb prior to its being coated and to heat it again after the coating has been applied as is more fully set forth in the copending application above referred to. Furthermore, it is desirable to provide for a more rapid application of the coating, obviating the necessity for giving bulbs several coatings to obtain the final

thickness of coating desired, by pre-heating the surface to be coated so that the coating sets quickly when applied. If this be done, the coating will harden or set almost instantaneously upon striking the heated surface. This permits the application of the desired thickness of coating in one depositing period and as the coating is most easily sprayed upon the bulb while the bulb is rotated, it will be readily seen that a coating of almost any desired thickness may be built up upon the bulb by a single spraying operation without any danger of the coating "creeping" or running.

Our invention, taking into consideration the requirements noted above, provides a machine whereby electric lamps cleaned in any suitable manner, may be quickly dried of any moisture residing upon their exterior surface and heated to the requisite temperature to receive and quickly dry the coating to be applied thereon, and whereby the lamp after being sprayed may be thoroughly and effectively dried and the coating affixed by a second baking operation before subjected to the solutions necessary to fixing the coating permanently upon them.

The machine therefore, comprises a turret adapted to receive and support electric lamps by their bases, suitable ovens to pre-heat the lamps and to bake the coatings thereon, a prime mover or prime movers with transmission means to drive the turret to carry the bulbs through the oven in suitable time relation and to drive a spindle for rotating the bulb while being sprayed, the spindle being situated in front of a hood for carrying off excess spray, debris and the like and an adjacent support for fixing and washing solutions or mediums. We are aware of machines such as those shown in the patent to Hume #487,571, December 6, 1892, and as shown in the patent to Provandie #1,220,552, March 27, 1917, which we distinctly do not claim, and from which our invention clearly distinguishes.

Referring to the drawings, the machine comprising a turret, generally designated 2, and comprising radially projecting arms supporting a ring member 6, is keyed or otherwise secured to a spindle or hollow shaft 8 and adapted to be driven through said shaft by means of a suitable gear wheel secured to the shaft 8 and enclosed in a casing

10. The gear wheel on the shaft 8 is in mesh with another gear wheel which is enclosed in a housing and is driven through suitable power transmitting means 12 by a prime mover 14. Through the hollow shaft 8, which is suitably journaled for rotation, passes a stationary shaft 16 secured relatively to the table 18 mounted on standards 20. To this shaft 16 is keyed, by key 22, a hub 24 from which radiate a plurality of arms 26 adapted to support an arcuate oven 28 so arranged and constructed that lamps 30 secured in suitable sockets 32, fitting in recesses 34 formed in the ring member 6, may pass through the recess 36. Upon the table 18 is mounted an oven 38 similar to the oven 28 and opposed thereto but of shorter arcuate length for a purpose hereinafter specified.

On the right of the turret as shown in the figures, a bracket 40 supports and journals a spindle 42 driven by a prime mover 44 and suitable transmission means 46 but as will be readily understood, prime mover 14 might be adapted to drive spindle 42 in addition to spindle 8. Above the bracket is mounted a hood 48 for the purpose of removing excess spray and debris by means of air suction apparatus not shown. The spindle 42 projects through the bottom of this hood and has attached to its inner end a suitable recessed socket 50 for the purpose of receiving the removable socket 32 in which the lamp is positioned.

On the left hand side of the turret and secured suitably adjacent the table 18 on standards 20 of which there are two (one not shown) are a plurality of baths, in this instance shown three in number, designated 52, 54 and 56, the first carrying a fixing solution heated by steam coils 58 for fixing the sodium silicate, the second carrying water spray means for removing any fixing solution remaining upon the lamp, the third being a dry bath having jets 60 in the bottom thereof for hot air and steam coils 62 to aid in drying.

While as before stated, a single operator might operate the machine efficiently, we prefer to have two operators stationed at the positions according to the legend of Fig. 1. Operator Number 1, receives the washed lamps and places them on the under side of the ring or rim 6, in sockets 32 provided for the purpose and adapted to sit within the recesses 34 in said ring. The turret revolving in the direction of the arrow shown in Fig. 1, carries the lamp slowly through the oven 38 wherein they are heated to the desired degree of temperature and upon emerging therefrom in front of the position of operator Number 2, are removed from the under side of the ring 6 together with their socket 32 and inserted in the receiver 50 on the spindle 42 which is main-

tained rapidly revolving while this operator sprays the desired coating thereon.

Upon completion of the spraying operation, the lamps together with their sockets 32 are again placed on the ring 6 by operator 2, but this time in the recesses on the upper side thereof for passage through drying oven 28. When the dried lamps emerge from the oven 28 they are removed by operator 1 who sets them in suitable sockets of rubber fastened upon an immersion board or other device and immersed, first in the fixing bath 52 and subsequently in the washing and drying baths 54 and 56 respectively.

While we have described a specific embodiment or form which our invention may take, it is easily conceivable that many changes may be made in the arrangement and construction as well as in detail without departing from the spirit of the invention as defined by the claims appended.

What is claimed is:

1. A machine for coating incandescent electric lamps comprising a common carrier for moving uncoated lamps through an oven for preheating and coated lamps through another oven for baking and means for actuating said carrier.

2. A machine for coating incandescent electric lamps comprising a rotatable turret having upper and lower lamp holders positioned adjacent the periphery thereof, means for rotating said turret and heating means adjacent the path of movement thereof to simultaneously preheat uncoated lamps and bake coated lamps.

3. A machine for coating incandescent electric lamps comprising a rotatable carrier, lamp holders positioned in spaced relation along the upper and lower edge of said carrier, means adjacent to the path of movement of lamps positioned in the upper and lower holders to simultaneously heat the said lamps.

4. A machine for coating incandescent electric lamps comprising a common carrier for moving uncoated lamps through an oven for preheating and coated lamps through a baking oven, means adjacent to said carrier to receive preheated bulbs for a coating operation and means for rotating the last mentioned means.

5. A machine for coating incandescent electric lamps comprising a common carrier for moving uncoated lamps through an oven for preheating, means adjacent to said carrier to receive preheated bulbs for a coating operation, means for rotating the last mentioned means, means to receive coated bulbs for passage through a baking oven and means for treating the bulbs when removed from the baking oven.

6. In a machine for coating incandescent electric lamps, a rotatable support, lamp holders disposed in spaced relation adjacent

the upper and lower edge of said support, means for creating an independent heat zone in each of the paths of movement of lamps held in said upper and lower supports and
5 means for actuating said support to carry said lamps through said heat zones.

tioned adjacent to the edge of said support¹⁰ and means for heating articles held in said holders.

In testimony whereof, we have hereunto subscribed our names this 14th day of March, 1924.

7. A machine for coating incandescent electric lamps comprising a rotatable support, upper and lower lamp holders posi-

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