

1,011,586.

2 SHEETS—SHEET 1.



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INVENTOR:

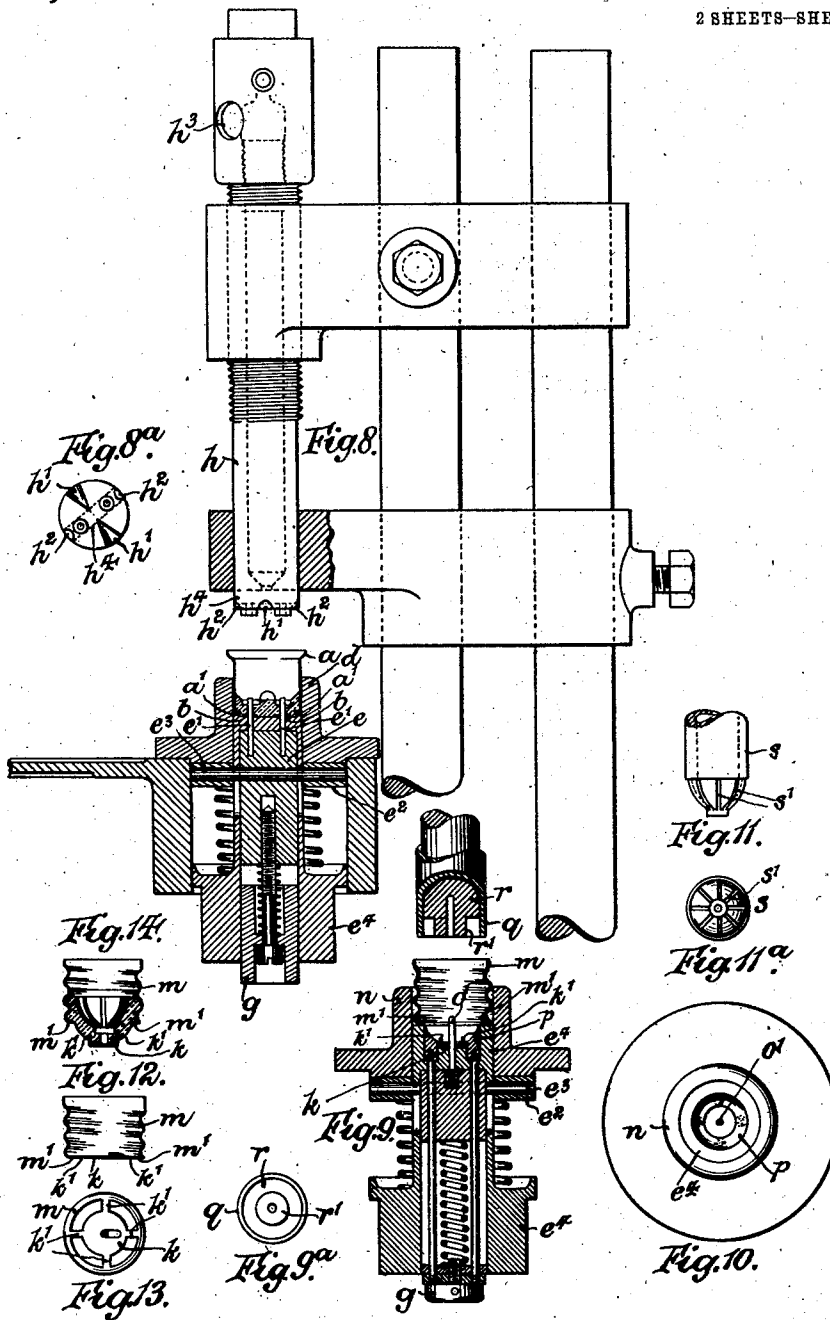
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 APPARATUS FOR MAKING ELECTRIC LAMP BASES.
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2 SHEETS—SHEET 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN EDWARD CRIGGAL, OF WOLVERHAMPTON, ENGLAND, ASSIGNOR TO THE PROVIDENCE GAS BURNER COMPANY, OF PROVIDENCE, RHODE ISLAND.

APPARATUS FOR MAKING ELECTRIC-LAMP BASES.

1,011,586.

Specification of Letters Patent.

Patented Dec. 12, 1911.

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To all whom it may concern:

Be it known that I, JOHN EDWARD CRIGGAL, subject of the King of Great Britain, residing at Colliery Road, Wolverhampton, in the county of Stafford, England, have invented new and useful Improvements in Apparatus for Making Electric-Lamp Bases, of which the following is a specification.

This invention relates to improvements in and relating to the manufacture of bases for electric lamps, wherein two or more separately made metal portions, which constitute the shell and a terminal or the terminals of the electric lamp base when manufactured, are assembled within a socket in correct relative positions, and secured to each other by the solidification of a volume of glass-like material which is directed into the socket in a very fluid condition and molded into close adherence with the metal shell and terminal or terminals. Now in the practical carrying out of this process it is found that the time occupied in the assembly within the mold of the separate metal parts is much greater than that requisite for performing either of the subsequent operations.

Now according to the present invention the metal shell and the metal terminal or terminals are formed integrally, being united to one another by thin bridging strips of metal which, subsequently to the insertion within the mold of the metal parts in their congregated condition, and prior to the addition of the molten glass, are severed by a cutting operation followed by the bending of the bridging strips, in an inward direction relatively to the exterior of the finished base. The socket, which receives the shell and terminal or terminals integrally united, is so formed that, after insertion, the parts are secured from displacement relatively to each other independently of the integral construction so that, after the cutting and bending operation, they are unable to shift their relative positions during the pouring of the molten glass and the subsequent molding under pressure.

On the accompanying drawings two designs of apparatus are shown, as representative examples, whereby the above described improved process can be performed.

In these drawings:—Figure 1 is a part sectional elevation of the contrivance whereby a pair of terminals are severed from a shell and temporarily retained in position pend-

ing their permanent fixation by the admission and consolidation of the insulating medium. Fig. 1^a is an inverted plan of the lower end of the plunger with the assistance of which the severing operation is performed. Fig. 2 is a plan of the socket. Fig. 3 is an elevation partly in section of a shell for a lamp-base, and Fig. 4 is an inverted plan thereof. Fig. 5 is a longitudinal section of a finished lamp-base taken along the deviated line 5—5 of Figs. 6 and 7, Fig. 6 is a plan, and Fig. 7 is an inverted plan thereof. Fig. 8 is a part sectional elevation showing the molding plunger the section of the socket being at right angles to Fig. 1, and Fig. 8^a is an inverted plan of the molding plunger. Fig. 9 is a sectional elevation of a contrivance for producing a lamp-base of the Edison screw type, Fig. 9^a is an inverted plan of the plunger, Fig. 10 is a plan of the socket, Fig. 11 is an elevation of the end of the molding plunger, and Fig. 11^a is an inverted plan thereof. Fig. 12 is a longitudinal section of a shell for a screw lamp-base, and Fig. 13 is an inverted plan thereof. Fig. 14 is a longitudinal section of a finished screw lamp-base.

The chief feature of the invention will be best understood by reference to Figs. 3 and 4 which exhibit the main element of the base in its initial condition as provided for the performance of the improved operation; the type of base being that in which two separately insulated terminals are employed, and then to Figs. 5–7 which exhibit the finished base. In these figures, *a* is a thin metal shell of an electric lamp-base, the bottom of which is, by means of dies, formed with two metal terminals *b b* attached to an inwardly directed flange *a*¹ of the shell by narrow metal strips *b*¹—*b*¹, each terminal being perforated by a small square hole *b*². Into the shell is fitted a pair of pintles *c c* which serve as one element of the bayonet joint for securing the electric lamp to the socket of the carrier. This is the article which is fed into a machine of the type described above, whereby will be avoided the necessity for separately assembling the terminals *b b* truly situated relatively to the pintles *c c* of the shell as hitherto has been requisite. The shell (Figs. 3 and 4), is dropped into the socket *d* with the pintles *c* occupying the slotways *d*¹ in which position pins *e*¹ *e*¹ of square section carried in a

block *e* will enter the square orifices in the terminals *b b* and prevent them from being laterally or angularly displaced after the operation of cutting the strips *b¹ b¹* has been performed. The block *e* is secured to the plate *e²* by a pin *e³*. On the descent of the plunger *f* the terminals *b b* are forced into contact with the bottom of the socket and to a small distance below the level of the inwardly directed flange *a¹* of the shell *a*. Subsequently, by a cam movement, a block *g* is forced upward. This block carries four punches *g¹—g¹* the upper ends of which are guided through orifices formed in the block *e* and sever the strips *b¹—b¹* near their attachment to the before mentioned inwardly directed flange *a¹*, the major portion of the strips being bent upward as indicated in Fig. 5. Recesses *f¹ f¹* are formed in the plunger *f* to receive the extremities of the square pins *e¹* and other recesses *f²—f²* for the reception of the extremities of the severing punches *g¹—g¹*. After the operation of cutting and bending upward the strips *b¹*, the plunger *f* is withdrawn, the punches *g¹—g¹* retire within the block *e*, with their ends flush with the surface of the bottom of the socket, and the socket *d*, with the shell *a* and the parted terminals *b b* held in their proper relative position by the square pins *e¹ e¹*, is displaced to a position in which a definite volume of melted vitreous material is directed into the shell, whereupon a molding plunger *h*, Fig. 8, is thrust into the shell on to the surface of the vitreous material causing it to be pressed into intimate contact, on the one hand, with the terminals *b b* and fangs *b¹—b¹* thereof and, on the other hand, with the bottom of the shell *a* the flange *a¹* and the parted extremities of the strips *b¹—b¹*. The lower face of the molding plunger *h* has hollows *h¹ h¹* formed therein along a diameter, the direction of which corresponds to the positions of the pintles *c c*, permitting an extra quantity of vitreous material to be solidified at the back of the pintles and strengthen their attachment to the shell. Moreover other recesses *h² h²* are formed in the lower face of the molding plunger *h* whereby cooling fluid, admitted at *h³* to the upper end of the hollow molding plunger *h* and conveyed to the lower end, is delivered through a diametral hole *h⁴* to impinge on the extremities of the pins *e¹ e¹* to cool them immediately the plunger *h* commences to withdraw. After the withdrawal of the molding plunger the socket *d* is displaced by the angular rotation of the machine and the completed lamp-base finished as shown in Figs. 5-7 is ejected by the upward thrust of a block *e⁴* which surrounds the block *e*. For the purpose of operating in a similar manner to produce a lamp-base of the Edison type, in which the shell constitutes one of the electric termi-

nals, the other being centrally secured in an insulated manner relatively thereto, a contrivance of simpler construction will serve the required purpose as will be explained with reference to Figs. 9-14.

Figs. 12 and 13 show the shell on which the operations have to be performed, in which the central terminal *k* is formed integrally with the shell *m* and connected thereto by strips *k¹—k¹*. The shell is formed with an impressed screw thread of coarse pitch whereby the lamp-base is secured to the lamp carrier.

Referring to Figs. 9 and 10, the shell *m* is dropped into the loose fitting socket *n* in any angular position, being centered therein by a pin *o¹* secured to the block *e⁴* above which is a portion of the block *e⁴* which carries a cutting-ring *p*. After the insertion of the shell within the socket, a two-part plunger descends into the shell, the lower edge of the sleeve *q* of which plunger secures the inward turned lower flange *m¹* of the shell between itself and the upper outer border of the block *e⁴*, the central portion *r* of the plunger descending farther and forcing the terminal *k* downward while the cutting ring *p* is at the same time forced upward and cuts the strips *k¹ k¹* adjacent to the flange *m¹* of the shell. The upward movement of the cutting ring and the downward movement of the portion *r¹* of the plunger has the effect of bending upward the outer portion of the circular border of the terminal *k* and the severed strips *k¹—k¹* by which it was originally attached to the shell as shown in Figs. 9 and 14. The plunger *q r* is then withdrawn and the cutting ring retires into the position shown in Fig. 9 whereon the socket *n* with the shell *m* is translated to a position to receive the vitreous material and then to a position to receive the molding plunger *s*. By means of this molding plunger the vitreous material is consolidated into close contact with the bottom border of the shell *m* and terminal *k*, the cooling fluid being directed toward the pin *o¹* along the grooves *s¹*, immediately the withdrawal of the molding plunger commences.

I claim:

1. In an apparatus for manufacturing electric lamp-bases, means for severing a terminal from the shell of a lamp-base with which said terminal is integrally connected and means for holding said terminal in proper position relatively to said shell preparatory to their permanent reconnection by insulating material.

2. In an apparatus for manufacturing electric lamp-bases, means for severing the terminals from the shell of a lamp-base with which said terminals are integrally connected and means for holding said terminals in proper position relatively to said shell pre-

paratory to their permanent reconnection by insulating material.

3. In an apparatus for manufacturing electric lamp-bases, a socket for the reception of a lamp-base shell with an integrally connected terminal, a plunger downwardly displaceable into said shell and socket, a pin in said socket engaging a hole in said terminal, a cutter vertically displaceable between said terminal and said shell in said socket, means for molding insulating material in said shell, and means for ejecting said shell and terminal subsequent to their connection by said insulating material.

4. In an apparatus for manufacturing electric lamp-bases, a socket for the reception of a lamp-base shell with integrally connected terminals, said socket having notches for the reception of pintles protruding from said shell, a plunger downwardly displaceable into said shell and socket, non-circular pins in said socket engaging holes in said terminals, cutters vertically displaceable between said terminals and said shell in said socket, means for molding insulating material in said shell, and means for ejecting said shell and terminals from said socket subsequent to their connection by said insulating material.

5. In an apparatus for manufacturing electric lamp-bases, a socket for the reception of a lamp-base shell with an integrally connected terminal, a plunger downwardly displaceable into said shell and socket, a pin in said socket engaging a hole in said terminal, a cutter vertically displaceable between said terminal and said shell in said socket and a block forming the base of and vertically displaceable in said socket.

6. In an apparatus for manufacturing electric lamp-bases, a socket for the reception of a lamp-base shell with integrally connected terminals, said socket having notches for the reception of pintles protruding from said shell, a plunger downwardly displaceable into said shell and socket, non-circular pins in said socket engaging holes in said terminals, cutters vertically displaceable between said terminals and said shell in said socket and a block forming the base of and vertically displaceable in said socket.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN EDWARD CRIGGAL.

Witnesses:

ERNEST BEVANS,
BERNARD LEWIS.