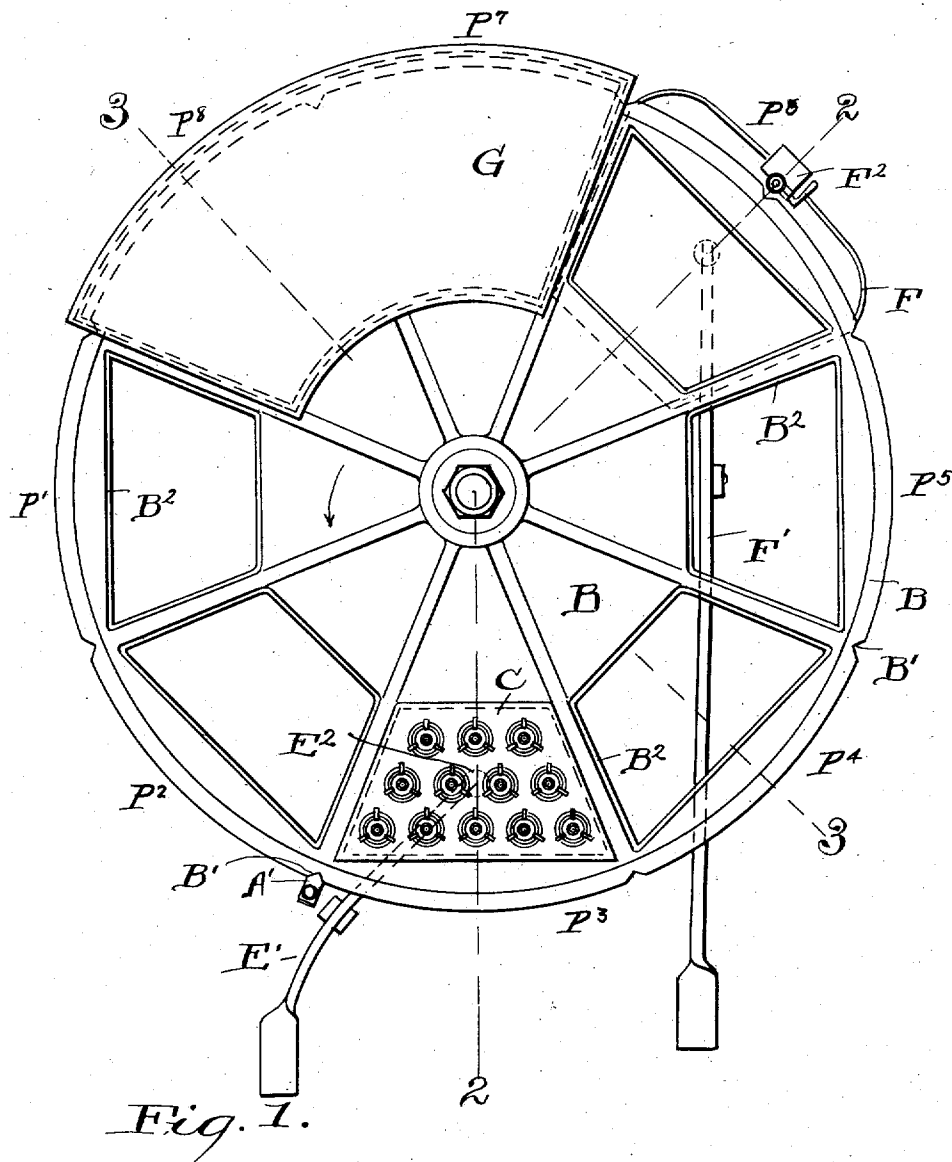


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 APPARATUS FOR TREATING INCANDESCENT MANTLES.
 APPLICATION FILED MAR. 23, 1908.

989,166.

Patented Apr. 11, 1911.

2 SHEETS—SHEET 1.



Witnesses
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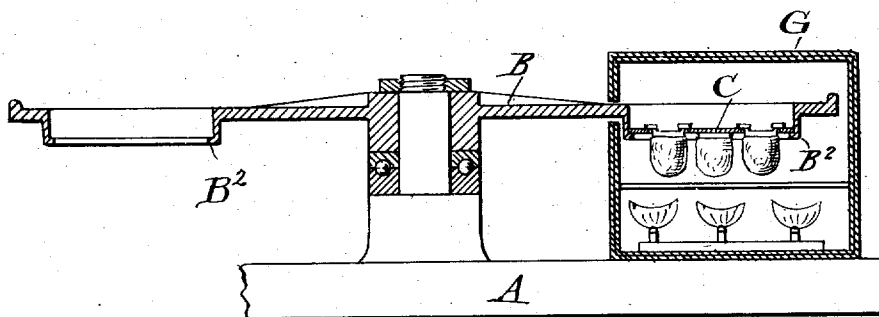
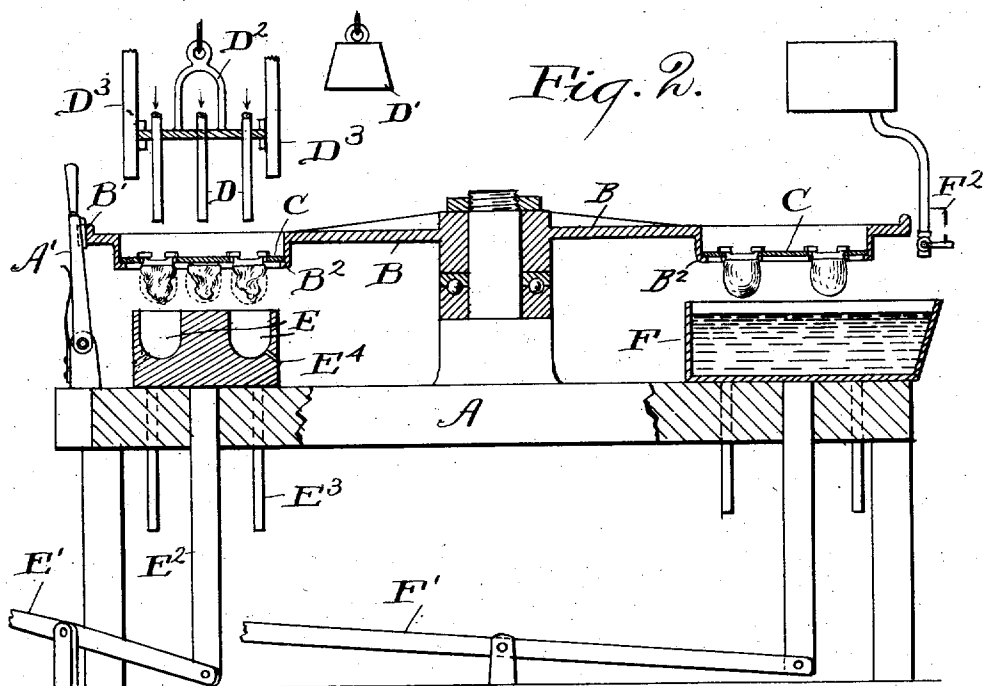


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN T. LISTER, OF CLEVELAND, OHIO, ASSIGNOR TO THE CLEVELAND GAS MANTLE AND SUPPLY COMPANY, A CORPORATION OF OHIO.

APPARATUS FOR TREATING INCANDESCENT MANTLES.

989,166.

Specification of Letters Patent.

Patented Apr. 11, 1911.

Application filed March 23, 1908. Serial No. 422,721.

To all whom it may concern:

Be it known that I, JOHN T. LISTER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Apparatus for Treating Incandescent Mantles, of which the following is a full, clear, and exact description.

The object of the present invention is to provide apparatus for the treating and coating of incandescent lamp mantles, in multiple groups, after the fabric of which said mantles are composed has been formed and saturated with the lighting fluid.

More particularly, my object has been to produce apparatus whereby a large number of the high grade mantles may be mounted in multiple groups in suitable trays or receivers which are placed in a machine and subjected simultaneously in such groups, to the several processes of treatment without requiring the individual attention which has hitherto been given such mantles.

The above and other objects are attained by the apparatus forming the subject of this application as will be understood from the following specification describing an embodiment of my invention, reference being had to the accompanying drawings, in which:

Figure 1 is a plan of the apparatus. Fig. 2 is a vertical section taken on line 2—2 of Fig. 1; and Fig. 3 is a detail section partly broken away on the line 3—3 of Fig. 1.

It will be noted that in the various figures, I show a table A supported at a proper height for the operator and having thereon a revolving spider B provided on its periphery with notches B', or other means to assist stopping the spider at the proper points in its revolution; the stopping being achieved by means of the spring-pressed detent A' dropping into said notches. The mantles are mounted in groups on suitable, apertured trays or carriers, each adapted to carry a plurality of mantles suspended in the apertures. The drawings show trays adapted to carry twelve mantles, but a greater or less number may be used as found desirable or necessary. The said spider is provided in the present instance with eight sub-divisions or openings having supporting flanges B² on

which the carrying trays C for the mantles may be held during the rotation of the table. It will be seen that these sub-divisions are such that the mantles hang below the trays and the spider which supports them, for the purpose of making them accessible for such treatment, as will be subsequently described.

Carried above the spider over one of the spaces occupied by a tray, when the table is held by the aforesaid detent in the proper position, are a number of inverted Bunsen burners D operated under a suitable gas pressure. These burners are properly spaced to be centrally over the openings in the tray from which the mantles are hung, the mantles in the present instance being shown as the ordinary inverted kind, each secured to its ring support. The group of burners may be held so as to be vertically adjustable by any well known means, such as a counter-weight D' attached to the spacing frame D², the spacing frame sliding in vertical guide ways D³.

Beneath the spider and in alinement with the burners just mentioned are a set of refractory pockets E which may be made of one block of suitable material, as shown in the drawings, if so desired. These pockets are properly spaced so as to aline with the burners, as above stated, and to be immediately under the mantles hanging from the carrying trays when the table is stopped at the proper point in its rotation. This group of pockets is mounted so as to be raised and lowered toward and from the spider so that the individual mantles may pass into them and be inclosed and protected from drafts thereby upon the lifting of the pockets. Such lifting is accomplished in the instance shown by means of a foot lever E', and the pockets are guided in their movement by means of the supporting shaft E² which may be square in cross section, or additionally by guide pins E³ passing through the table.

The pockets are raised to surround the mantles and the burners are lowered to direct their flames into the mantles, or I may choose to operate the pockets to lift the mantle tray up to the burners without lowering the latter. The refractory material, of which the pockets are made is subjected to nearly continuous action of the Bunsen burn-

ers, and remain constantly highly heated and will reverberate the heat and flames back onto the mantles so that their exterior is subjected to practically the same heat treatment as their interior.

5 The Bunsen burners project well into the mantles and their direct flames attack most strongly the lower sides and bottoms of their interior surfaces. As the flames pass
10 through the webbing of the mantle they impinge upon and are turned back by the walls of the pocket and flow toward its open end. In this return passage the heat attacks the outer surfaces of the mantle, particularly at
15 its upper end, above the field of the first and strongest action of the fire on the interior lower surfaces. This not only insures that the exterior surfaces, but particularly the upper portions of the mantle, close to its
20 crown or supporting ring are thoroughly baked and crystallized, thus strengthening the mantle at its point of connection with its top support. This constitutes a great improvement over most of the mantles now on
25 the market, a large proportion of which are extremely weak and fragile at this point.

It will be noted that the pockets are shown in the drawing as perforated at E⁴ so as to allow free ingress of the outer air
30 should it be needed for supporting combustion. These pockets are preferably shaped to the desired form of the mantle, but made larger, and during the first part of the heat treatment the blast of the flame blows the
35 then ductile residuum of the mantle fabric into the shape of a finished mantle. Under the continued influence of the heat the mantle is changed from its soft pliable state into a hard resistant condition. After the
40 hardening operation, the refractory pockets are lowered, and the spider advanced an eighth revolution, a tray bearing a group of fresh mantles coming under the burners and the hardening operation carried on with
45 these mantles, the same as before. I would call attention to the fact that when the mantles are subjected to this shaping and hardening process, they are entirely surrounded and protected by the pockets of
50 my invention, and not therefore exposed to chance drafts or passing gusts of air, and the entire product of this part of the machine is therefore more perfectly "baked" and brought into uniform shape than it has
55 been possible to produce where this operation is performed in the open and the Bunsen flames subjected to drafts that cause them to waver more or less and therefore to act unevenly upon the mantles. With my
60 invention, more perfect baking and uniformity of product is insured than can possibly be attained by the most skillful operator when treating even one mantle at a time, as is now the most prevalent practice.

65 As the hardened mantles are carried

around by the spider they stop at one interval over a pan of collodion F which is used for coating the hardened mantles. This pan is vertically reciprocated by means of a foot
70 lever F' and guided in any preferred manner during its reciprocation. When the pan is raised the collodion bath envelops the depending ends of the group of mantles and they become sized with this coating material
75 within a few seconds. The pan is then lowered, so as to allow the coated mantles clearance upon further continued rotation of the spider. Some suitable automatic measuring
80 valve F² may be employed for feeding a quantity of collodion into the pan equivalent to the amount taken from it by each coating treatment. After the dipping or
85 coating has taken place, the mantles are carried by the spider into a drying oven G where they are subjected to a proper temperature for the purpose of completing the
90 coating operation. From the drying oven they again pass into a cooling stage, and the tray is then taken off and a tray bearing a fresh supply of mantles takes its place.

By the method and apparatus above described, it will be seen that a single skilled operator seated in front of the table at a
suitable point for manipulating the various
95 operating mechanisms may be simultaneously hardening a large number of mantles and conduct the coating operation of mantles which have been previously hardened.

In operation it takes, approximately, two
100 minutes to shape and crystallize the mantles by the Bunsen burners and the pockets at station P³ and the duration of the pauses of the table are governed thereby. A freshly
105 charged tray is inserted in a receptacle B² of the spider, and the movement of the spider carries this tray to the station P³ where the mantles are subjected to the shaping and crystallizing process of the Bunsen burners and the reverberatory cups. At the next
110 two pauses of the tray at stations P⁴ and P⁵, the mantles and particularly the tray are cooling off preparatory to the collodion bath to which the mantles are subjected at
115 their next pause at station P⁶. From this bath, the tray passes into the drying oven G (stations P⁷ and P⁸) where the collodion coating is thoroughly dried preparatory to the removal of the tray and its mantles from
120 the spider, and the substitution of a fresh tray at the point of starting, P'.

My apparatus, however, it will be seen, is absolutely certain in its results, the heating
flame being thoroughly protected against
125 drafts, and, furthermore, it halves the time of heat treatment for each mantle, since the reverberatory pocket gives the outside of the mantle its heat at the same time that the inner portion of the mantle is being heated. This last feature is of particular importance, 130

since the heating of the outside of the mantle has been done hitherto, if at all, by a hand manipulated burner.

From the above it will be seen that I have attained the objects of invention sought, and have produced an apparatus having a capacity of output for each operation exceeding anything previously known in the art.

Having thus described my invention, I claim:

1. Apparatus for treating incandescent mantles comprising a series of movable apertured trays each adapted to sustain a group of mantles suspended in said apertures, an intermittently rotatable carrier mounted on a vertical axis and having a series of apertures near its periphery adapted to receive and support said trays with their suspended mantles, means for hardening and then coating said hardened mantles in groups and so located along the path of the trays that at each pause of the carrier several of the groups of mantles may be treated simultaneously by the different steps of the processes, with suitable means for presenting the groups of mantles for treatment by the several processes.

2. In apparatus for treating incandescent mantles, a horizontally disposed support apertured and adapted to sustain a group of mantles suspended in said aperture, a group of refractory pocket receptacles below and in alinement with said mantles, means for the relative reciprocation of said groups of pockets and the mantles whereby the mantles will be brought into said pockets, a group of gas burners also in alinement with said mantles with means for the relative reciprocation of said burners and the mantles, whereby the group of burners may be made to project into the group of mantles when the latter are in and protected by said pockets.

3. Apparatus for preparing incandescent mantles comprising a support for a plurality

of mantles, a plurality of burners mounted so as to be in alinement with the mantles carried by the support and heat refractory means for inclosing said mantles.

4. Apparatus for preparing incandescent mantles comprising a support for a plurality of mantles, a plurality of burners mounted so as to be in alinement with the mantles carried by the support, and individual pockets of refractory material for inclosing said mantles.

5. Apparatus for preparing incandescent mantles comprising a support for a plurality of mantles, a plurality of burners mounted so as to be in alinement with the mantles carried by the support, pockets of refractory material in alinement with said burners, and means for obtaining relative reciprocation between said mantle support and said pockets.

6. Apparatus for preparing incandescent mantles comprising a support for a plurality of mantles, a plurality of burners mounted so as to be in alinement with the mantles carried by the support, pockets of refractory material in alinement with said burners, means for obtaining relative reciprocation between said mantle support and said pockets, said pockets being perforated to allow communication with the outside air.

7. For use in treating incandescent mantles in groups, a tray adapted to be supported when used in substantially horizontal position and support a group of mantles, a series of closely spaced apertures arranged in multiple parallel rows in said tray, and means for holding the mantles suspended in said apertures.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

JOHN T. LISTER.

Witnesses:

E. B. GILCHRIST,
H. R. SULLIVAN.