

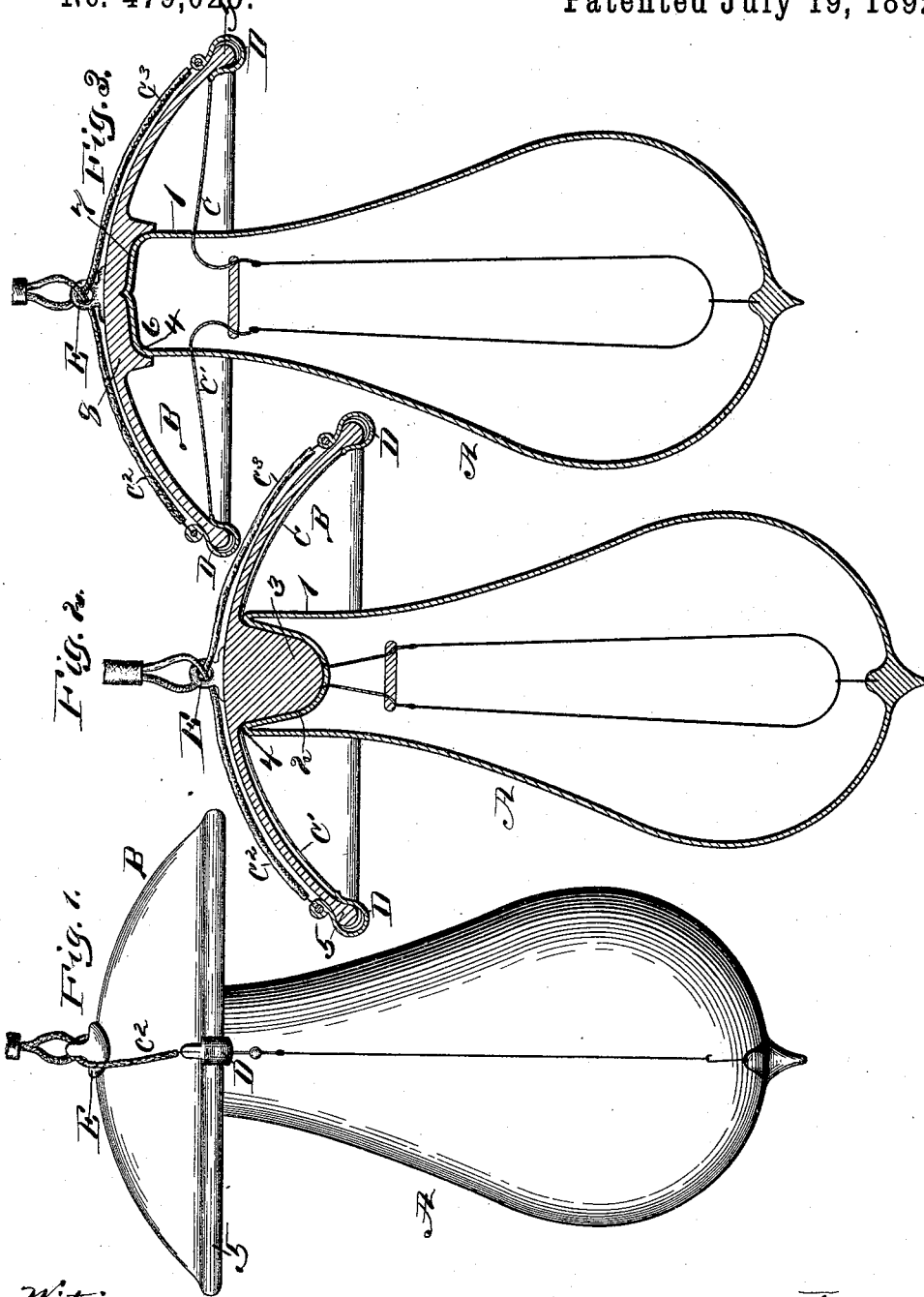
(No Model.)

2 Sheets—Sheet 1.

M. A. RICHTER & J. G. NOLEN.
INCANDESCENT ELECTRIC LAMP.

No. 479,020.

Patented July 19, 1892.



Witnesses.
A. D. Middleton
A. S. Mills

Inventors.
Max A. Richter
James G. Nolen
 By *Chas. G. Page* *Atty*

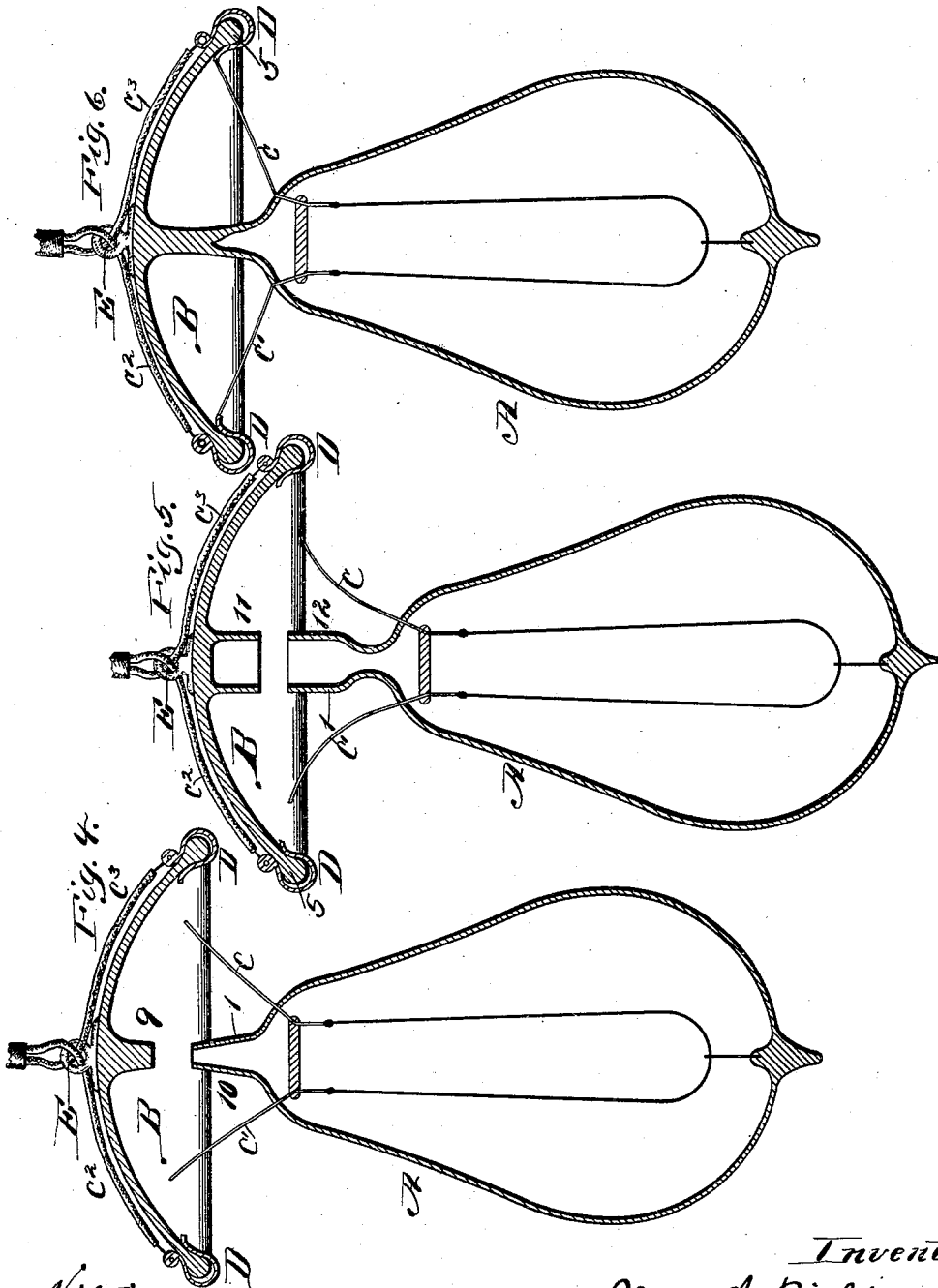
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UNITED STATES PATENT OFFICE.

MAX A. RICHTER AND JAMES G. NOLEN, OF CHICAGO, ILLINOIS, ASSIGNORS
TO THE ILLINOIS ELECTRIC LAMP COMPANY, OF SAME PLACE.

INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 479,020, dated July 19, 1892.

Application filed February 10, 1892. Serial No. 420,954. (No model.)

To all whom it may concern:

Be it known that we, MAX A. RICHTER and JAMES G. NOLEN, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Incandescent Electric Lamps, of which the following is a specification.

The usual construction of incandescent electric lamps involves a glass bulb and a metal socket to which the neck of the bulb is secured, the joint between the two being commonly packed with plaster-of-paris or like substance. Where a shade is employed in connection with a lamp of such construction, the shade is usually fitted upon the metal socket.

The foregoing-described construction involves certain defects, which are particularly noticeable where the lamps are used in breweries, packing-houses, and other like places in which the air contains considerable moisture resulting from steam or the vaporization of water or other liquids employed, since in such instances the moisture not only frequently softens the plaster-of-paris packing as to allow the bulb to drop from the socket, but also invariably finds its way into the neck of the bulb to an extent to short-circuit the current. In such cases the moisture also collects and condenses upon the socket above the shade, if a shade be used, and thence finds its way down between the shade and socket to an objectionable extent.

The objects of our invention are to overcome the foregoing-mentioned and other minor defects in incandescent electric lamps and to render the same water-proof and durable; to entirely dispense with the use of metal sockets, and thereby to simplify and reduce the cost of manufacture of incandescent electric lamps; to provide such lamps with shades better adapted for shedding moisture; to provide a combined lamp and shade without the employment of a metal or other like socket; to hang and wire the lamps in a novel and serviceable way, and to provide certain novel and improved details, as hereinafter set forth.

In carrying out our invention we unite the shade directly to the neck of the bulb of an incandescent lamp, and preferably carry the

wires from the bulb under and over the shade, so as to avoid puncturing the latter.

While we may make the shade of metal or the like, we prefer making it of glass or porcelain or analogous vitreous material, and while we may make the shade integral with the bulb in the first instance, we prefer to make the shade separate from the bulb and then so unite the two that they shall in effect be integral. The union of the shade with the bulb is effected below the top surface of the shade, whereby no opening through the center or any other portion of the shade need be made, and by such construction the shade will effectively shed moisture, and thereby protect the lamp.

In the accompanying drawings, Figure 1 represents in side elevation a combined incandescent lamp and shade embodying our invention. Figs. 2, 3, 4, 5, and 6 severally illustrate vertical central sections through the lamp and shade, the said two elements being in certain figures shown separated from one another, but in condition for union.

The neck of the glass bulb A of the incandescent electric lamp can be united to the shade B in several ways, all of which, however, involve the distinguishing characteristic of a combined bulb and shade united and held together without the employment of a metal or other analogous socket. The shades also present a construction which is characterized by the absence of a central opening, commonly employed as a means for adapting the shade to fit upon a socket.

In Fig. 2 the neck 1 of the bulb has its end portion closed and drawn inwardly, so as to provide a concavity constituting a seat or socket 2, formed by a portion of the bulb and adapted to receive a correspondingly-shaped stem or projection 3, with which the shade is provided at the center of its lower concave side.

The centrally-arranged pendent stem or projection 3 could be made separate from the shade and be secured to the same in any suitable way, but as a preferred construction and matter of further improvement the stem or projection is made integral with the shade. The stem thus provided upon the shade is fitted within the seating concavity in the end

of the bulb-neck and a rigid union between the two attained by means of any suitable moisture-proof cement. The construction thus shown in Fig. 2 is a most desirable one, since both the shade and bulb can be economically made and united, and also a simple, compact, and effective arrangement attained. It will also be seen that the neck can be adapted in length with reference to the depth of the concavity in the bulb-neck, so as to permit the top portion 4 of the neck to set well up to the under side of the shade. The lamp may be wired various ways, and as an illustration of one of such ways we have in Fig. 2 arranged the wires under the shade and in leading them into the lamp we have carried them between the stem 3 and the wall of the concavity in which the stem is fitted. These wires are so fine that their presence between the stem and wall of its allotted seat or socket will not cause a materially-objectionable space between the two opposing surfaces, and such small space as is left between the same will be filled with the cement employed.

Where the shade is made of glass, porcelain, or other non-conducting material, the wires C and C' can connect with clips or holders D, applied to the edge of the shade, and serving, if preferred, as conducting connections between the wires C and C', which lie under the shade, and wires C² C³, arranged upon the shade, although, of course, the upper wires could be directly connected with the lower wires.

As a preferred arrangement and matter of further improvement, the shade is provided on its top with a centrally-arranged loop or eye E, through which the wires are carried (and preferably crossed) and extended toward the rim of the shade so as to connect with the clips D, and thereby also provide simple and reliable means for hanging the combined lamp and shade. In this way there will be no strain upon the lower wires C C', which can be simply attached at their outer ends to the clips. The shade is also preferably provided with a marginal bead 5, which insures connection between the clips and shade and prevents the clips from slipping off.

The simple construction of spring-clip herein shown is a desirable one, although we may employ various other obvious forms and constructions of clips or binding-clamps adapted to serve as holders for the shade and wires.

In Fig. 3 the neck of the bulb is drawn out and closed, as at 6, and a socket or seating concavity 7 (which generally corresponds with the seating concavity 2 in the bulb-neck, Fig. 2) is formed in the under side of the shade and adapted to receive the closed end of the neck. In order to provide for this seating concavity 7, the shade can be thickened at its center, as at 8, and the seating concavity formed in such thickened portion. The bulb and shade thus fitted together can be rigidly united by moisture-proof cement, and, if desired, the wires C C', in place of being carried

between the bulb-neck and wall of the seating concavity in the shade, can be carried from the clips or holders D to and through apertures in opposite side portions of the bulb-neck. The shade in Fig. 3, as well as the shade in succeeding figures, is provided with a loop or eye E for the wires C² C³, and these wires are carried to and connected with clips or holders D, applied to the rim of the shade.

In Fig. 4 the shade is provided with a centrally-arranged short pendent stem 9, and the bulb-neck is drawn upwardly, so as to provide it with a contracted stem portion 10. With this construction the stem 9 of the shade can be united with the neck of the bulb by cementing, welding, or fusing together the stem portion 10 of the bulb-neck and the stem 9 of the shade, and the wires C C' can be carried through openings in opposite side portions of the bulb or bulb-neck.

In Fig. 5 the shade is provided with a centrally-arranged pendent hollow stem 11 and the neck of the bulb is drawn to form a stem 12, and these said two stems can be united by cementing, fusing, or welding, so as to practically make them integral. In said Fig. 5 the wires C C' are also carried through opposite side portions of the bulb or bulb-neck, as in the preceding figure.

Fig. 6 illustrates the shade and bulb of Fig. 4 united.

From the foregoing it will be seen that the shade is united directly and permanently to the bulb in contradistinction to a centrally-apertured shade fitted upon a socket-piece, which is in turn fitted upon the bulb. Thus the shade may be provided with a stem portion which is united to the bulb or the bulb may be provided with a stem portion which is united to the shade, or the shade and bulb may each be provided with a stem portion, and these two stem portions may be united, substantially as hereinbefore set forth, and it will be obvious that modifications in the forms of stem on either or both of said members could be made without departing from the spirit of our invention; but in all such constructions the bulb is so united to the under side of the shade as to permit us to avoid any and all necessity for a central opening through the shade and to further dispense with a joint between the shade and a centrally-arranged socket-piece whereon the shade in the ordinary construction of incandescent electric lamp is commonly fitted.

The "shade," as we have herein termed it, may be either reflecting or non-reflecting, as preferred, since if made of ordinary glass it would subserve the useful purpose of a guard for shedding moisture from the lamp and providing means whereby the lamp can be suspended.

With reference to the possibility of making the shade and its stem separate and then uniting them, so as to provide the shade with a stem or like projection which can be united to the bulb, it will be obvious that although

we may employ such arrangement we find it a simpler matter to make the stem integral with the neck, and where the shade is of glass, porcelain, or the like this can be done without additional cost. It will also be observed that there is an obvious possibility of making the stem separate from the shade and in the form of a plug having at its top end an eye for the wires and in such case providing the shade with a central opening in which the plug could be secured, and with such arrangement the plug or stem could be united with the bulb, for example, in any of the ways hereinbefore set forth. Such construction would obviate the necessity for the usual metal socket-piece, but would necessitate careful closing or sealing of the joint between the plug and shade or guard. We prefer, therefore, an imperforate shade or guard provided with a stem.

What we claim as our invention is—

1. A combined incandescent electric lamp and moisture-shedding shade comprising the imperforate concavo-convex shade B, of glass or analogous vitreous material, and the bulb A, having its body and neck portion thereof of glass and united to the imperforate central portion of the shade as an integral part thereof by a direct union, substantially as set forth, between the glass or analogous vitreous material of the shade and the material forming the glass neck portion of the bulb.

2. A combined incandescent electric lamp and moisture-shedding shade comprising the bulb A and the imperforate concavo-convex

shade B, one of said members being provided with a socket formed directly in the material of which it is composed and the other member being formed with a neck of the same material as the body of the member and fitted and cemented within said socket, substantially as described.

3. A combined incandescent electric lamp and shade comprising the shade provided with a pendent stem and the bulb having its neck drawn to form a seating concavity in which the stem on the shade is secured, substantially as described.

4. The combination, with the imperforate shade having the bulb of an incandescent electric lamp united thereto, substantially as set forth, of clips attached upon the rim of the shade, conducting-wires leading from the clips to the bulb, and conducting and suspending wires attached to the clips so as to suspend the shade without strain upon the wires leading from the clips to the bulb and at the same time electrically connect with said wires.

5. The shade provided upon its top portion with an eye and the bulb of an incandescent electric lamp united to the shade, substantially as set forth, and the suspending and conducting wires arranged to pass through said eye and connect with holders on the rim of the shade.

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