

(No Model.)

T. MACE.

LIGHT EMITTING BODY AND METHOD OF PRODUCING SAME.

No. 574,358.

Patented Dec. 29, 1896.

Fig: 1.

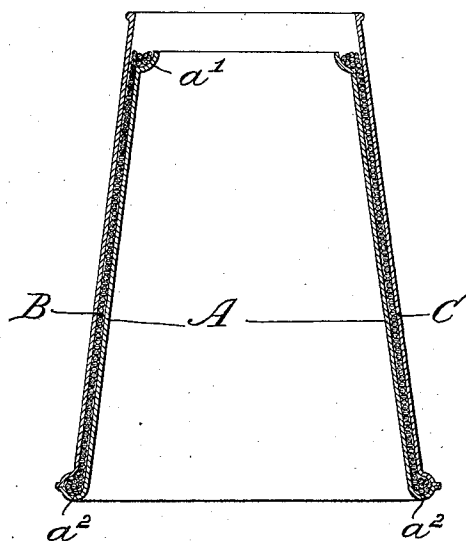


Fig: 2.

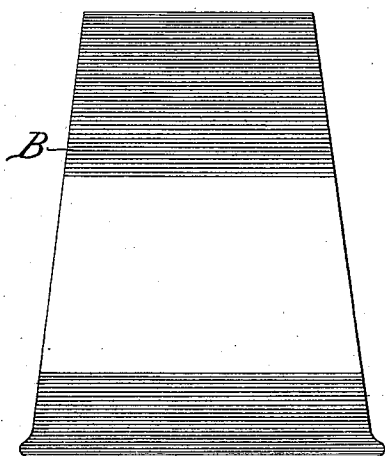
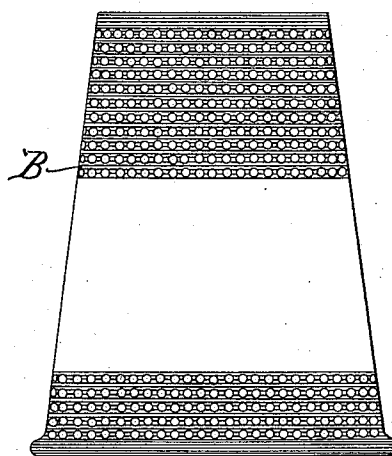


Fig: 3.



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UNITED STATES PATENT OFFICE.

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LIGHT-EMITTING BODY AND METHOD OF PRODUCING SAME.

SPECIFICATION forming part of Letters Patent No. 574,358, dated December 29, 1896.

Application filed July 1, 1896. Serial No. 597,720. (No model.)

To all whom it may concern:

Be it known that I, THEODORE MACE, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Light-Emitting Bodies and Methods of Producing the Same, of which the following is a specification.

My invention has relation to the production of a light-emitting body adapted to be brought to a state of incandescence in the presence or path of a gas or similar flame, and it also relates to the method of producing such bodies for the said purposes.

The principal objects of my invention are, first, to provide a light-emitting body adapted in the presence or path of a gas or other flame to increase the illuminating power of the same by the incandescence of the body in the shape or form of a mantle or hood located in the path or presence of the flame; second, to provide a mantle or hood for a gas or other flame adapted to enhance the illumination of the same by the incandescing property thereof, the mantle or hood being composed of a pulpy or gelatinous mass, such as cellulose in threads, sheets, or other forms cast, molded, or pressed into the required shape or configuration and perforated or drawn out into threads and wound around a former to constitute a hood or mantle like structure, and by chemical treatment and impregnation of metallic salts therewith brought to a state or condition in which in the presence of a flame it is adapted to assume a high state of incandescence and to thereby greatly enhance the ordinary illuminating effect of such flame; third, to provide a mantle or hood by molding or casting in any suitable form from a pulpy or gelatinous mass capable of being permeated with a salt or refractory oxid of a metal to cause the same to be transformed into a state in which a high state of incandescence is obtainable without destructive action of the body or structure in the presence of a gas or other flame, and, fourth, to provide a suitable method for the compounding of such a mantle or hood.

Hitherto mantles or hoods have been constructed of a base of woven material treated

with chemicals to bring them to a state in which they were adapted in the presence of a gas flame to become incandescent, or the ordinary illuminating effect of a gas-flame was enhanced in the use thereof, but such are expensive and have relatively a short life, due to their characteristic formation.

My invention is designed to avoid the use of a base of woven fibrous material or the like and to construct a mantle or hood of a pulpy or gelatinous mass adapted to be transformed into threads or other forms by certain treatments and then worked into the particular shape or configuration as a structure designated as a "mantle" or "hood," in which cheapness in the production of the structure is had, greater uniformity in size, thickness, and quality, and a relatively longer life insured from the use thereof and far greater incandescence and illuminating effects derived therefrom.

My invention, stated in general terms, consists of a mantle or hood produced from a pulpy or gelatinous mass transformed into such a structure by the winding or molding of threads, ribbons, or sheets of such mass around a former and applying a certain chemical or chemicals to afford the thorough saturation or impregnation of a metallic salt or oxid therewith, so as to be adapted to withstand the heat of a gas or other flame, and to greatly increase in its finished state for use the illuminating effect ordinarily derived from such flame by assuming in application a state of high incandescence.

My invention further consists of the method of producing such a mantle or hood, substantially as hereinafter described and claimed.

The nature and general objects of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, illustrating one form of my invention, and in which—

Figure 1 is a vertical sectional view through a mold with threads of pulp or cellulose wound around the same and with a former applied to said mold to cause said threads to be pressed closely against one another and to assume a substantially conical structure. Fig. 2 is an elevational view of the mantle or hood produced according to my invention in one

form thereof, and Fig. 3 is the completed structure in its perforated condition for the admission of the necessary oxygen to complete combustion and to afford heat arising from the flame to be liberated therefrom through the openings or perforations of the mantle or hood.

In order that others may understand my invention, I will now proceed to describe one mode of carrying the same into effect.

A mass or batch of wood, paper pulp, or cellulose of required consistency is introduced into a perforated plunger-press and the same forced through the perforations thereof in thread-like strips or other form and wound around a conical-shaped mold A in any suitable manner until the entire outer surface of the same is covered therewith, as illustrated in Fig. 1. In the upper part of the mold A is formed externally thereof a recess a' and in the lower part of the mold a projection a^2 , the object of this being to increase the thickness of the formed mantle at the top by contracting it slightly, as shown in Fig. 1, and enlarging it at the lower end to form a base thereat, so that the same may be adapted to snugly fit the holder of a lamp, and a substantial support at the base of the mantle or hood B will be provided. Moreover, the formation of the mantle or hood, as explained, prevents buckling or curling thereof and avoidance in the use of the mantle of supporting devices or rods for maintaining the same in required position surrounded or concealed by the gas or other flame of the lamp. While the pulp or cellulose threads or strings, arranged in the form illustrated in Fig. 1 of the drawings, are mounted upon the mold A, a complementally - arranged conical-shaped former C is applied thereto to permit of the pressing of the series of the wound threads or strings around said mold A into close contact with one another by drawing or pressing down upon the former C, whereby a substantial structure is secured. The mantle or hood B thus formed is subjected to a bath of hydrochloric acid and then washed in cold water. It is then immersed for a certain time in a bath of metallic salt or refractory oxid, such as acetate of aluminium, in the proportion of ten (10) per cent., more or less, of said salt in solution and the mantle then permitted to dry. The mantle or hood is then removed and is ready for use.

It may be here remarked that when the hood has been subjected to the foregoing treatment and prior to the drying thereof the same may be perforated by any suitable tool, so as to assume the form clearly illustrated in Fig. 3 of the drawings.

The former C may be made of glass, porcelain, rubber, or other non-corrosive substance.

It may be here remarked that after subjecting the cellulose, pulpy, or gelatinous mass to the influence of hydrochloric or other acid it will absorb or take up a metallic salt or oxid

eagerly, and thus be brought subsequently readily to an oxid state.

In the preparation of the pulp or cellulose it may be here remarked that hydrochloric acid, with or without sulfuric acid, may be introduced into the same at a certain step of the formation of the structure for the purpose of more readily opening the pores or body of the cellulose in its particular form to permit of the more thorough saturation subsequently of the metallic salts or oxids therewith. After a hood or mantle has passed through the foregoing treatment and been dried it may be coated lightly with shellac or other suitable substance to insure a better preservation of the same for handling or for the protection thereof in transportation.

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

1. A mantle or hood formed from a pulpy or gelatinous mass saturated with a salt or oxid of a metal so that under the influence of a gas or other flame the same is adapted to become incandescent, substantially as and for the purposes described.

2. A mantle or hood formed from a pulpy or gelatinous mass into threads and caused to assume a substantial structure by the intimate union or winding of said threads, the structure being perforated and saturated or impregnated with a salt or oxid of the metals, substantially as and for the purposes described.

3. A mantle or hood formed of a pulpy or gelatinous mass and transformed into required shape saturated or impregnated with a salt or oxid of a metal substantially as and for the purposes described.

4. The method of making a mantle or hood for a gas or other flame, which consists in subjecting a pulpy or a gelatinous mass, such as cellulose, to the influence of pressure to cause the same to assume thread-like form, casting or molding the threads into a structure, saturating or impregnating the structure with the salt or oxid of a metal and drying the same, substantially as and for the purposes described.

5. The method of making a mantle or hood, which consists in converting a pulpy or gelatinous mass, such as cellulose, into ribbons or sheets, casting or molding into a structure, subjecting to the influence of hydrochloric or other acid, saturating or impregnating with a salt or oxid of a metal and drying the same, substantially as and for the purposes described.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

THEODORE MACE.

Witnesses:

J. WALTER DOUGLASS,
THOMAS M. SMITH.