

(No Model.)

D. GARRETT.

PROCESS OF MANUFACTURING HEAD LIGHT REFLECTORS.

No. 282,879.

Fig. 1. Patented Aug. 7, 1883.

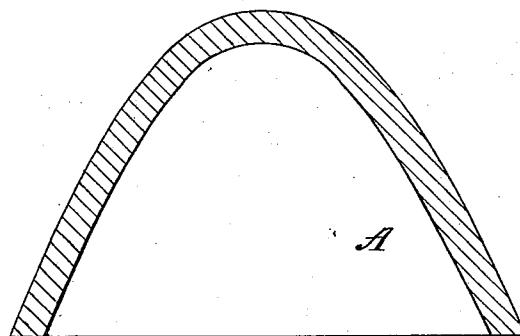


Fig. 2.

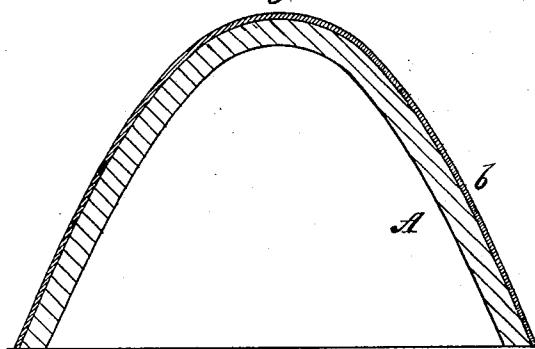
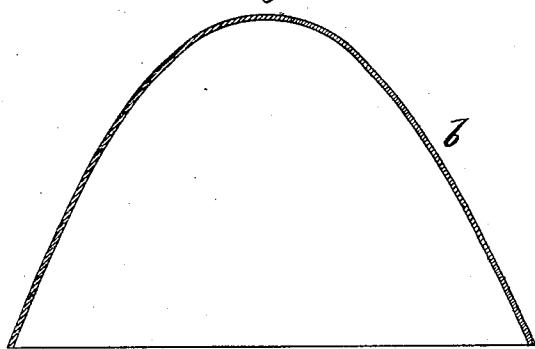


Fig. 3.



Witnesses:-

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UNITED STATES PATENT OFFICE.

DAVIS GARRETT, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF
TO ALEXANDER GORDON, OF SAME PLACE.

PROCESS OF MANUFACTURING HEAD-LIGHT REFLECTORS.

SPECIFICATION forming part of Letters Patent No. 282,879, dated August 7, 1883.

Application filed June 9, 1882. (No model.)

To all whom it may concern:

Be it known that I, DAVIS GARRETT, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in the Process 5 of Manufacturing Head-Light Reflectors; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use 10 the same, reference being had to the accompanying drawings, which form a part of this specification, in which—

Figure 1 is a sectional view of my mold. 15 Fig. 2 shows the same with the copper blank formed thereon, and Fig. 3 a section of the blank after melting out the mold.

This invention has for its object a cheap and economical method of producing the blanks 20 or shells for open-ended articles by electro-deposition—that is, large articles, which hitherto have been found impossible to produce commercially by the galvanic process, such as the large parabolic reflectors used for head-lights. The well-known wax-matrix process 25 cannot be adopted because of the impossibility of obtaining a uniform coating by reason of the tendency to most energetic deposition at the points where the circuit-wires join the surface of the matrix. It has been attempted to make large surface deposits on a metal mold, and afterward separate the mold from the deposited shell by mechanical manipulation; but it is found that such separation cannot be 30 effected so reliably as to enable a commercial success to be accomplished. Hence it is found in the manufacture of such articles as head-light reflectors that success can be reached only by hammering or spinning the copper 35 blank to an approximately perfect shape, and then smoothing out the hammer-marks or spinning-tool lines, which inevitably mar the inner surface of the blank.

My improvement consists in first making a 40 mold or matrix of a metal or alloy fusible at a lower temperature than the metal to be deposited, such mold having its outer surface as true and smooth as the reflector is desired to be, then coating the end of the mold corresponding to the mouth of the reflector with a

non-conductor of electricity—such as wax—then electrically depositing the copper or other metal on the uncoated surface to the required thickness, and finally melting out the fusible mold by heat; and, further, in the article so produced, as hereinafter described and claimed. 55

More particularly, my invention is as follows: I make a mold, A, of type-metal or other metallic alloy fusible at a lower temperature than the metal to be deposited—preferably fusible at the temperature of live steam, or thereabout—and having its outer surface exactly conforming to the reflecting-surface desired. I make the mold A hollow for purposes of 60 lightness, and have its outer surface highly finished. This fusible mold or “negative” A is formed by casting it in a metal flask or “positive” whose melting-point is higher than that of the metal used for the negative, and whose surface is first turned to true lines, 65 and then finished by grinding and polishing, or such other method as will reduce the positive mold or flask to the same condition of smoothness and perfect uniformity of surface as is required in the reflector or shell to be 70 produced. From such a flask I can cast a large number of the fusible matrices. I then coat the end of the matrix or mold A at the part corresponding to the mouth of the desired reflector-blank with wax, asphaltum, or 75 other conveniently applied non-conductor of electricity, after which I place the mold A in the plating-solution, connect it to the generator in the usual manner, and deposit the metal b to the usual thickness. The mold A, 80 being of solid metal, becomes an electrode of uniform conductivity, and hence the metal deposits uniformly and regularly over its surface, none, however, depositing on its coated portion. When the desired thickness has been 85 attained, the mold and adherent deposit are removed from the plating-bath, and the fusible mold is melted out, leaving a reflector-blank 90 of perfect form with a finished inner surface, which is at once ready for buffing, if it is to be used without silvering, or for silver-plating. 95

I use no grease, plumbago, or other substance to prevent adhesion of the deposit in order to facilitate the subsequent separation, but, on the contrary, use a clean surface, free 100

from grease or plumbago, so that the resulting positive is perfect in all respects.

By the above process I can make the deposit heaviest when strength is needed—*i. e.*, at the 5 eye of the reflector. This I effect by placing the mold with the small end downward in the bath, and by setting the anode nearer the mold at that end, so that the electrolytic action will be more energetic at that end and the deposit 10 thicker.

I claim as my invention—

The process of manufacturing head-light reflectors consisting in preparing a positive flask or mold having its concave surface reduced to the condition of smoothness and uniformity required for the reflectors, then cast- 15

ing therein a negative mold of a metal or alloy fusible at a lower temperature than the reflector metal, whereby the surface of the negative obtains its finish without further manipulation, then coating the mouth end of the negative with a non-conductor of electricity, then electro-depositing the reflector metal directly upon said negative, and finally melting away the negative, substantially as described. 20 25

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

DAVIS GARRETT.

Witnesses.

T. J. McTIGHE,
D. E. DAVIS.