

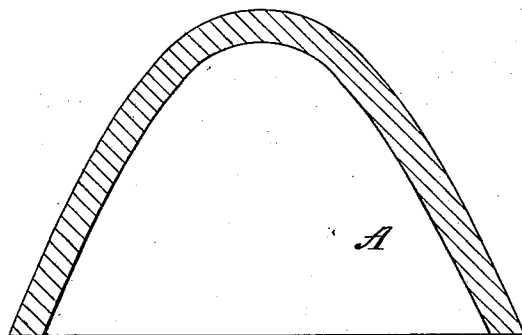
(No Model.)

D. GARRETT.  
PROCESS OF MANUFACTURING HEAD LIGHT REFLECTORS.

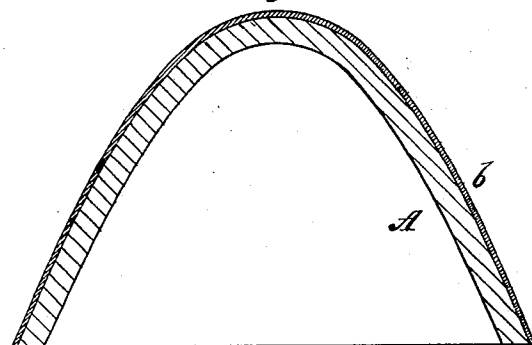
No. 282,879.

Patented Aug. 7, 1883.

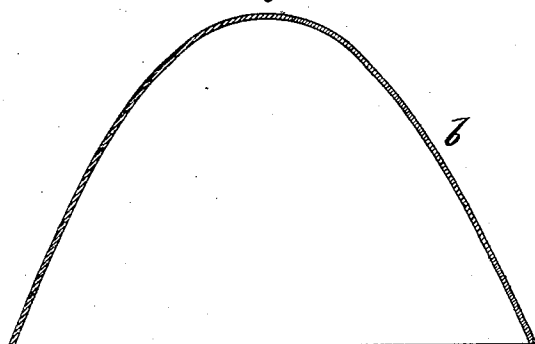
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses:—  
T. J. Patterson  
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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  
Pittsburg, in the county of Allegheny and  
State of Pennsylvania, have invented certain  
5 new and useful Improvements in the Process  
of Manufacturing Head-Light Reflectors; and  
I do hereby declare that the following is a  
full, clear, and exact description of the in-  
vention, which will enable others skilled in  
10 the art to which it appertains to make and use  
the same, reference being had to the accom-  
panying 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 hith-  
erto have been found impossible to produce  
commercially by the galvanic process, such as  
the large parabolic reflectors used for head-  
25 lights. The well-known wax-matrix process  
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 sur-  
30 face of the matrix. It has been attempted to  
make large surface deposits on a metal mold,  
and afterward separate the mold from the de-  
posited shell by mechanical manipulation; but  
it is found that such separation cannot be  
35 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  
40 blank to an approximately perfect shape, and  
then smoothing out the hammer-marks or spin-  
ning-tool lines, which inevitably mar the inner  
surface of the blank.

My improvement consists in first making a  
45 mold or matrix of a metal or alloy fusible at a  
lower temperature than the metal to be de-  
posited, such mold having its outer surface  
as true and smooth as the reflector is desired  
to be, then coating the end of the mold corre-  
50 sponding 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  
55 produced, as hereinafter described and claimed.

More particularly, my invention is as fol-  
lows: I make a mold, A, of type-metal or other  
metallic alloy fusible at a lower temperature  
than the metal to be deposited—preferably fusi-  
60 ble at the temperature of live steam, or there-  
about—and having its outer surface exactly  
conforming to the reflecting-surface desired.  
I make the mold A hollow for purposes of  
lightness, and have its outer surface highly  
65 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,  
70 and then finished by grinding and polishing,  
or such other method as will reduce the posi-  
tive mold or flask to the same condition of  
smoothness and perfect uniformity of surface  
as is required in the reflector or shell to be  
75 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 de-  
sired reflector-blank with wax, asphaltum, or  
80 other conveniently applied non-conductor of  
electricity, after which I place the mold A in  
the plating-solution, connect it to the gener-  
ator in the usual manner, and deposit the  
metal *b* to the usual thickness. The mold A,  
85 being of solid metal, becomes an electrode of  
uniform conductivity, and hence the metal de-  
posits uniformly and regularly over its sur-  
face, none, however, depositing on its coated  
portion. When the desired thickness has been  
90 attained, the mold and adherent deposit are re-  
moved from the plating-bath, and the fusible  
mold is melted out, leaving a reflector-blank  
of perfect form with a finished inner surface,  
which is at once ready for buffing, if it is to be  
95 used without silvering, or for silver-plating.

I use no grease, plumbago, or other sub-  
stance 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.