UNITED STATES PATENT OFFICE.

DAVIS GARRETT, OF KANSAS CITY, KANSAS, ASSIGNOR OF ONE-HALF TO JAMES CLARK, OF SAME PLACE.

PROCESS OF ELECTRO-DEPOSITION.

SPECIFICATION forming part of Letters Patent No. 428,087, dated May 20, 1890.

Application filed December 4, 1888. Serial No. 292,648. (No model.)

To all whom it may concern:

Be it known that I, DAVIS GARRETT, a citizen of the United States, residing at Kansas City, in the county of Wyandotte and State of Kansas, have invented certain new and useful Improvements in the Process of Electro-Deposition; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form part of this specification.

This invention relates to the formation of a base-metal blank by electro-deposition, and to the production of a finished and exact copy of a positive in a base-metal body and gold or silver exterior or surface.

The invention consists in the production of gold, silver, or other plated articles by first making a mold or matrix of fusible metal, then depositing a thin coating of bright metal (copper, nickel, brass, &c.) upon said matrix or mold, next depositing the gold, silver, or other surfacing-metal upon said thin metal coating, then depositing copper upon the said surfacing-metal to a suitable thickness, next separating the whole from the original matrix by fusion of the latter, and finally removing the primary thin coating of bright metal by buffing or otherwise.

As my invention is especially intended for the manufacture of large head-light reflectors, I will illustrate by describing such.

On account of the difficulty of separating the blank from the mold by reason of the shape and large size of these objects, recourse is always had to the process of forming the blank mechanically from sheet-copper by hammering or spinning, the latter for the lighter and cheaper reflectors and the former for those of heavier weight and higher price. Whichever plan is adopted, the marks of the hammer or spinning-tool will be found on the surface and have to be removed by stoning and brushing—called "finishing"—which is a very tedious and expensive operation. The reflector is then ready for silver-plating, after which it is burnished and buffed.

By my process I first produce a matrix or former of similar shape to those used for spinning the reflectors; but I make it of a metal fusible at a lower temperature than copper. An alloy of lead, tin, and antimony is well suited for the matrix. This I finish and polish on the exterior, or if it be cast in a properly-finished metallic mold its surface will need no further finishing.

When the reflector is to be silvered while being produced on the fusible matrix, it is necessary to prevent the amalgamation of the mold with the silver during the subsequent melting-out process. This I do by depositing on the fusible mold a very thin coating of "bright metal," and then coating with silver sufficiently, and finally depositing the body copper on the silver to the desired thickness. The thin film of bright metal thus interposed between the mold and the silver prevents the lead or other metal of the mold from attacking the silver in melting out, which is the next step in the process. This thin film of bright metal is subsequently removed by simply buffing the reflector, leaving the lustrous and polished silver surface so desirable without the expense of burnishing. The interposed thin coating of bright metal is used only when the fusible mold is to be silver or gold plated, so as to prevent the lead or fusible alloy from attacking the silver or gold in the melting-out operation.

The process is adapted to the production of articles in any metal capable of electro-deposition, but is especially fitted for the production of large articles which are to have a finished surface of precious metal and a backing or body of base metal, such as parabolic reflectors, waiters, cake-baskets, five-fronts, vases, and similar articles. It is obvious that in all such articles the base-metal backing deposited on the lining of precious metal may itself be covered with an exterior coating of the same or other metal.

I claim as my invention—

The herein-described process of manufacturing articles having a base-metal body and a precious-metal surface by electro-deposition, consisting in first making a mold or matrix of a metal or alloy fusible at a lower temperature than either of the metals to be deposited; second, depositing a thin film of bright metal on said matrix or mold; third,

depositing the precious metal on said thin film of bright metal; fourth, depositing the base-metal body on said coating of precious metal; fifth, melting away the fusible mold or matrix, and finally removing the preparatory film of bright metal by buffing, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 30th day of November, 1888.

DAVIS GARRETT.

Witnesses:
JAMES CLARKE,
F. T. STUDLEY.