

UNITED STATES PATENT OFFICE.

GEORGE W. LEIGHTON, OF FINDLAY, OHIO, ASSIGNOR TO THE DALZELL GILMORE & LEIGHTON COMPANY, OF SAME PLACE.

MANUFACTURE OF GLASSWARE.

SPECIFICATION forming part of Letters Patent No. 402,090, dated April 23, 1889.

Application filed February 1, 1889. Serial No. 298,393. (Specimens.)

To all whom it may concern:

Be it known that I, GEORGE W. LEIGHTON, a citizen of the United States, residing at Findlay, in the county of Hancock and State of Ohio, have invented or discovered certain new and useful Improvements in the Manufacture of Glassware, of which improvements the following is a specification.

The invention described herein relates to certain improvements in the manufacture of glassware, and has for its object the development of a metallic luster upon the surface of glass articles, or upon a raised ornamentation thereon, and also the development of colors having a metallic luster upon the surface of the article, or in a raised ornamentation thereon.

In general terms, the invention consists in the method hereinafter more fully described and claimed.

In the practice of my invention the operator gathers upon his blow-pipe a sufficient quantity of glass having metallic constituents which, when heated, as hereinafter stated, will produce a metallic luster upon the surface of the article. The metallic constituent or constituents of the glass may be such as will in the subsequent treatment of the article produce a change of color, or it may be such as will be unaffected by any subsequent treatment, except as regards the development of the metallic luster. The ball thus gathered is then blown to shape either complete or only partial if a colored ornamentation is to be formed. If a raised and colored ornamentation is desired, the ball is blown in a mold having a matrix adapted to impart a preliminary shape to the ball, but considerably smaller than the desired article.

In the walls of this mold is formed the reverse of the ornamentation, the parts of such reverse ornamentation in the walls of the mold being in closer relation to each other and deeper than the projection which the ornamentation is to have on the surface of the finished article. The complete or partially-finished articles, which have been sufficiently cooled in the mold or otherwise, are then heated in a sulphurous flame, or, when hot,

subjected to the fumes or vapors of sulphur. The reheating to which the articles are thus subjected develops on the surface of the article or in the raised ornamentation a peculiar metallic luster, due, as I now believe, to the action of the sulphur upon the metallic constituent or constituents of the glass. If the metallic constituent or constituents employed are of such a character as will change in color when cooled and reheated, as above stated, the reheating will also develop on the surface of the article, or in the raised ornamentation, a color—*e. g.*, ruby, pink, &c.—dependent upon the constituents of the glass. By properly reheating the articles, whether completed or only partially so, the development of the metallic luster or of the color and metallic luster can be confined to any portion of the surface of the article or to the raised ornamentation, whose parts in the partially-formed article are in such close relation to each other and project such a distance from the surface as to become reheated to the proper degree before the body portion. After this reheating the article, if it has been previously blown to the desired size and shape, is finished in the usual manner and then annealed. The partially-formed article having the raised ornamentation is, after being reheated and subjected to the fumes of sulphur, again blown in a mold having a matrix adapted to impart the finished size and shape to the article. During this completing or finishing operation the parts of the raised ornamentation are spread apart to the desired relation to each other, and also somewhat flattened. After this second blowing the article is finished in the usual manner and then annealed.

I claim herein as my invention—

1. As a step in the manufacture of glassware, the method herein described of producing a metallic luster on the surface of the glassware, which consists in reheating a wholly or partially shaped article formed of glass having a metallic constituent and while hot subjecting the article to the action of sulphurous fumes or vapors, substantially as set forth.

2. As a step in the manufacture of glass-
ware, the method herein described of devel-
oping a metallic luster and a color on the
surface of the glassware, which consists in
5 heating a wholly or partially shaped article
having its surface formed of glass having a
metallic constituent in a sulphurous flame,
substantially as set forth.

In testimony whereof I have hereunto set
my hand.

GEORGE W. LEIGHTON.

Witnesses:

W. H. DUVAL,
JOHN W. GRIMM.