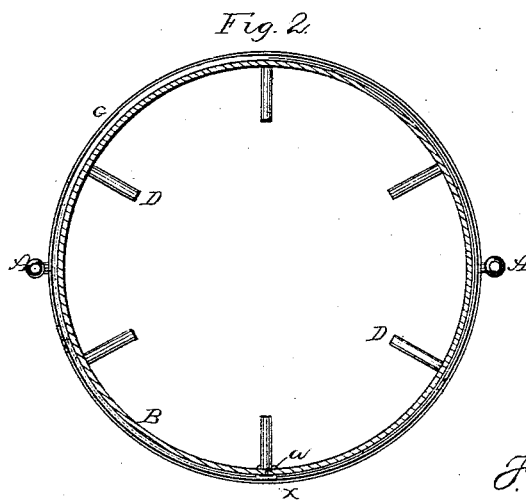
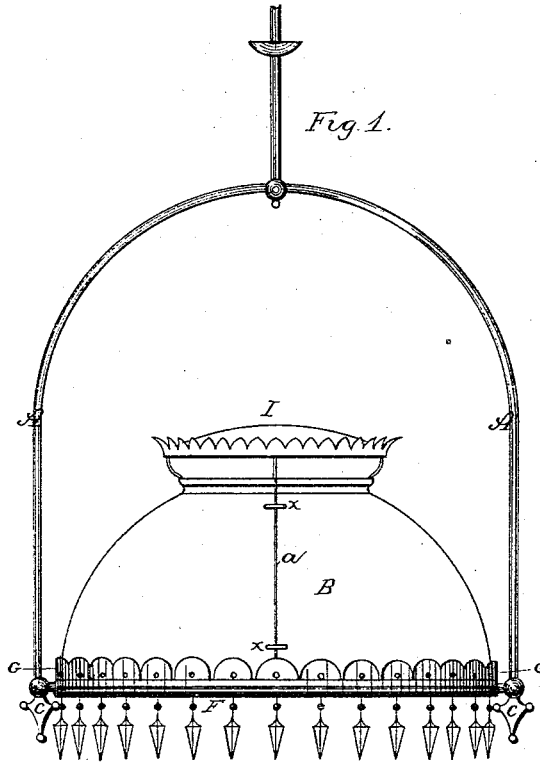


F. S. SHIRLEY.  
Glassware.

No. 212,158.

Patented Feb. 11, 1879.



Witnesses:

J. W. Garner?  
H. S. D. Wainwright

Inventor:

F. S. Shirley  
per  
F. A. Lehmann,  
att'y

# UNITED STATES PATENT OFFICE.

FREDERICK S. SHIRLEY, OF NEW BEDFORD, MASSACHUSETTS.

## IMPROVEMENT IN GLASSWARE.

Specification forming part of Letters Patent No. **212,158**, dated February 11, 1879; application filed December 20, 1878.

*To all whom it may concern:*

Be it known that I, FREDERICK S. SHIRLEY, of New Bedford, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in the Manufacture of Glassware; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in the manufacture of glassware; and it consists in separating or dividing the article down one side and placing a suitable elastic and non-combustible cushion between the edges thus separated, whereby the article is rendered more expansible when heated, and less liable to be broken by sudden expansions and contractions, as will be more fully described hereinafter.

Figure 1 is a side elevation of my invention. Fig. 2 is a detail view of the same.

A represents the gas-pipe, which is divided into two or more branches, to form a supporting-frame for the heat-deflector or dome B, and the lower ends of these branches are provided with stop-cocks C, so that the gas can be turned off or on at pleasure from the burners D, that project inwardly from the ring F. Around the top of this ring is placed an ornamental border, G, which serves to keep the deflector in place, and from the ring or border may depend a series of prisms, so as to add beauty to the apparatus.

Upon the top of the dome is placed a heat-deflector, I, which is supported by a light metal frame at a sufficient distance above the top of the dome to allow the heated air to freely escape.

Where a number of burners are used under the reflector, the heat becomes so intense that the deflector is constantly breaking, owing to some parts becoming more heated than others. In order to obviate this unequal expansion and contraction of parts, the deflector is ruptured or divided along the line *a* by any suitable means, and then a non-combustible elastic cushion of any suitable material is placed between the edges thus separated, which permits expansion of the glass without leaving a gap or opening. This cushion also prevents any jar from damaging the edges. For this

cushion I use asbestos-paper, or asbestos which has been reduced to a very thin sheet, and then sized.

Of course the thickness of the material will vary according to the thickness and size of the glassware; but in the smaller articles a very thin sheet is sufficient. The sizing serves to keep the cushion rigid.

Should I desire to make a vessel that is sufficiently strong for boiling liquids or suitable for heating purposes, I make the article from a suitable quality of glass, and make a slit or opening down one side and then insert the lining or cushion. The vessel can then be rapidly heated without the slightest fear of breakage, and as the cushion is elastic it adapts itself to all the changes of the glass, and thus prevents leakage. This cushion is especially useful in chimneys and other such articles used for creating a draft, as it prevents any air from passing in through the slit and fissure, and thus destroying perfect combustion.

In order to strengthen the article of glass thus slit, metallic clamps *x* may be used to connect the separated edges together, and thus prevent them from spreading too far apart at any time, sufficient play being given the edges to allow a certain amount of expansion.

I am aware that articles of glassware slit or cracked down one side are not new.

Having thus described my invention, I claim—

1. An article of glassware or other similar material having a slit or slits made in it, and a cushion inserted between the edges thus separated, substantially as shown.

2. In combination with an article of glassware that is slitted or cracked on one of its sides, a cushion for glassware, made of asbestos, or its equivalent, substantially as set forth.

3. An article of glassware that is slit down one side, and has a cushion interposed between the edges thus separated, in combination with the loops *x*, for holding the separated edges together, substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand this 23d day of May, 1878.

FREDK. S. SHIRLEY.

Witnesses:

R. M. BARR,  
F. A. LEHMANN.