C. E. BALL.

Gas-Burner.

No. 161,091. Patented March 23, 1875.

Fig. 1.

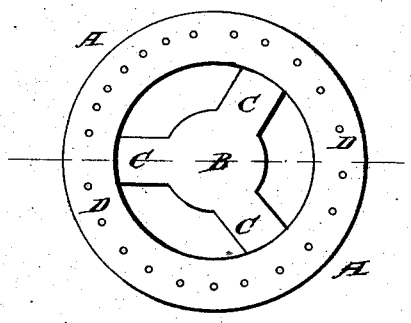


Fig. 2.

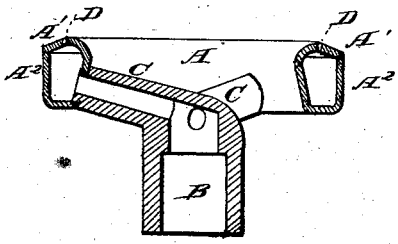


Fig. 3.

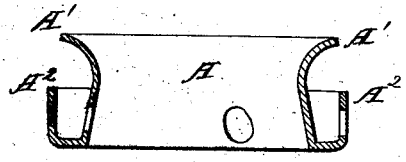
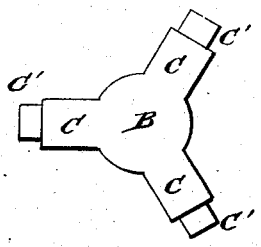


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES E. BALL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO JAMES W. CARSON, OF SAME PLACE.

IMPROVEMENT IN GAS-BURNERS.

Specification forming part of Letters Patent No. **161,091**, dated March 23, 1875; application filed August 11, 1874.

To all whom it may concern:

Be it known that I, CHARLES E. BALL, of the city and county of Philadelphia, and State of Pennsylvania, have invented a certain new and useful Improvement in Argand Gas-Burners; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings and letters of reference marked thereon.

The nature of my invention consists of a burner, the annular portion of which is formed of a single plate of ductile metal, and united to the spider or branched tubular portion of the burner by riveting or expanding the ends of the branches in apertures formed in the ring, and afterward closing the seam of the ring by compressing the edges together, and afterward perforating jet-apertures in the usual manner.

Figure 1 shows a plan of the completed burner; Fig. 2, a sectional elevation of the same in the plane indicated by the dotted line in Fig. 1. Fig. 3 shows, in vertical section, the burner before the seam in the annular portion is closed; and Fig. 4 shows the branched tube before it is inserted in the ring.

The same letters of reference apply to the same parts in the several figures.

A represents the annular portion of the burner; B, the screwed tube for attaching it to the gas-fixtures, and C the branches for conveying the gas from the tube B to the annular tube A. The ring A of the burner is formed by spinning in the form shown in Fig. 3, and being perforated for the insertion of the branches C. The branches C are shouldered down, as shown at C′ in Fig. 4, the metal of the ring A surrounding the several branches C of the tube B being firmly clamped between the shoulders C′ and the expanded ends of the tubes C, so that any changes of temperature in the ring A do not loosen the joints formed between the tubes C and the ring A.

While expanding tubes of itself is an old and well-known thing or process, it has never been applied to argand gas-burners of any class, because the branches C of the central tube B were longer on opposite sides of the tube than the diameter of the ring, and the ring would not admit of the tubes being inserted therein.

To accomplish this, I bend the various branches downward a sufficient distance to allow them to be inserted in the holes in the ring, and then press the tube B downward, which forces the ends of the branches C into the ring A, after which they are expanded; and the ring A being left open on the outside, an expanding device may be placed in the ends of the branches C on the inside of the ring and the branches expanded, when the ring is closed, as described.

After the branches C are inserted in the ring A the ends of the branches are expanded by forcing a tapering steel punch into them, the seam in the ring A being left open for the purpose of introducing the punch.

After the branches are fastened in the manner stated, the upper edge A^1 is pressed down into close contact with the edge A^2, as shown in Fig. 2, and the perforations D for the delivery of the gas are drilled.

The advantages of the burner so made are, that the soldering process can be dispensed with, and the burner, being not liable to obstructions from solder in the tubes, can be made smaller, thus economizing material, and rendering the burner practicably saving in cost of production by diminishing the labor required to make it.

I claim—

In an argand gas-burner, the ring A, constructed as described, to open on the outside, in combination with the tube B, having branches C, provided with shoulders C′, expanded into the ring A, all substantially as and for the purpose herein set forth.

CHAS. E. BALL.

Witnesses:

JAMES P. PETIT,

EDGAR E. PETIT.