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G. G. CRAWFORD

1,727,337

TUYÈRE

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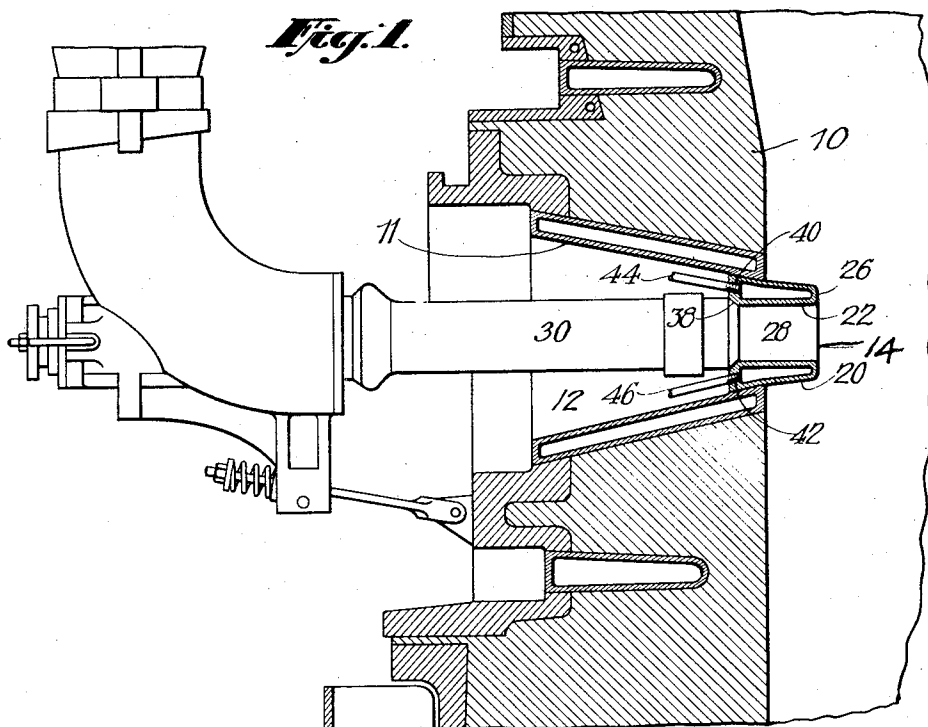
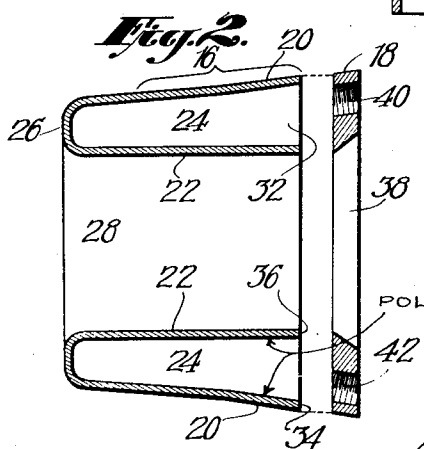
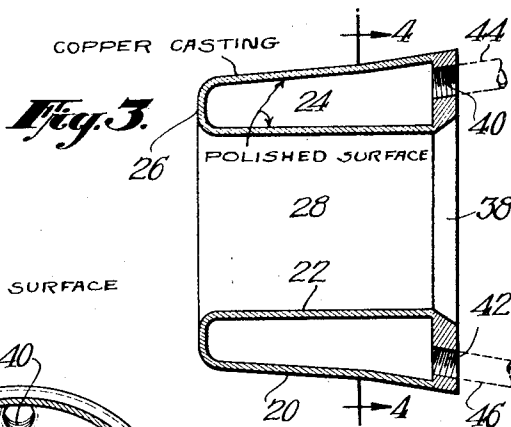
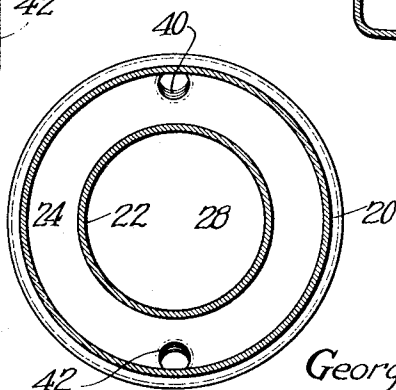


Fig. 4.



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TUYÈRE.

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This invention relates to an improved type of tuyère. The invention will be understood from the following specification when read in connection with the accompanying drawings and the points of novelty will be pointed out with particularity in the appended claims.

In the drawings Fig. 1 is a vertical section of a portion of a blast furnace showing my improved tuyère installed therein;

Fig. 2 is a detail section illustrating two component parts of the tuyère before assembly;

Fig. 3 is a section through the complete tuyère; and

Fig. 4 is a section on line 4—4 of Fig. 3.

Referring in detail to the drawings, 10 is a portion of a blast furnace which is provided with a suitable cooler 11 having an opening 12 for the tuyère which is indicated as a whole by numeral 14.

The tuyère is made in two separately formed parts 16 and 18. The larger part 16 which I call the body portion comprises an outer shell 20 which is inclined with respect to the inner shell 22 so as to form an annular chamber 24 for the circulation of suitable cooling medium. The shells 22 and 20 are united at the inner end by a wall 26 which is preferably integral with the walls 20 and 22. The parts are preferably though not necessarily made of cast bronze or copper. The form of the tuyère is such that a central blast opening 28 is provided and the air blast for the furnace is directed there-through from a suitable blast pipe 30 as shown.

The body 16 of my tuyère is so shaped that the cores used in casting or dies used in drawing sheet metal can be very easily and quickly removed. This feature is of importance because in blast furnace operations the tuyères must be frequently renewed. Where the hollow tuyères are cast entirely integral, it is extremely difficult to remove the sand cores after the casting is made. As shown in Fig. 2, it will be seen that the chamber 24 is entirely open at 32 so that any core used in casting my tuyère can be readily removed. The open end also permits

the smoothing and polishing the water chamber part of the tuyère which will minimize the deposit of sediment from the water and improve the efficiency of the cooling of the tuyère.

When manufactured in this manner, the walls of the tuyère will be of uniform thickness and will therefore transmit equal amounts of heat per unit surface to the cooling water and will therefore prevent hot spots in the tuyère and accomplish the most efficient cooling for any given wall thickness.

To close the opening 32, I preferably braze or weld a plate 18 of cast bronze or the like to the edges 34 and 36 of the respective walls 20 and 22. This joint may be formed in various ways such as by electric, arc or oxy-acetylene welding; the important point being that a water tight joint be secured between the abutting surfaces.

The plate 18 is formed with a tapered central opening 38 which approximately registers with the central passage 28 in the body of the tuyère. Suitable threaded openings 40 and 42 are formed in the plate 18 for the reception of pipes 44 and 46 through which the water or other medium used for cooling the tuyère is circulated.

The term tuyère is intended to include coolers, cinder notches, bosh plates and similar blast furnace appurtenances.

While I have described in detail the construction and method of making the tuyère illustrated, it is to be understood that the drawings and specifications are to be construed in an illustrative rather than a limiting sense since various modifications may be made by those skilled in the art without departing from the invention as defined in the appended claims.

What I claim is:—

1. A blast furnace tuyère comprising two separately formed parts, one of which is a copper casting having a chamber formed therein for the circulation of a cooling medium, the other part being a cover united to said casting by a fused metal joint, said chambered casting having walls of uniform thickness, the interior surfaces of said walls

being polished so as to present an extremely smooth surface so as to minimize the deposit of sediment.

2. In combination with a blast pipe, a
5 blast furnace tuyère comprising two separately formed parts integrally united by a welded joint, one being a chambered cast copper body portion whose inner walls are polished to prevent the precipitation of sedi-
10 ment thereon, said body portion being formed with a central blast opening, the outer part comprising a plate of greater thickness than the walls of said body portion, said plate having a central opening therein
15 matching the blast opening in the body portion but flared outwardly to form a seat for said blast pipe.

In witness whereof I have hereunto signed my name.

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GEO. G. CRAWFORD.