

Aug. 9, 1932.

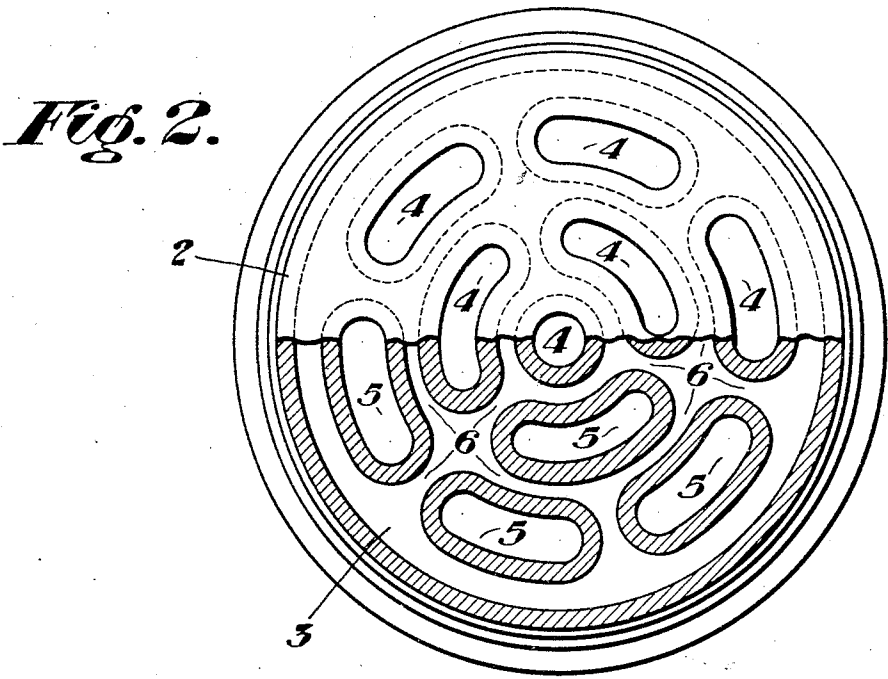
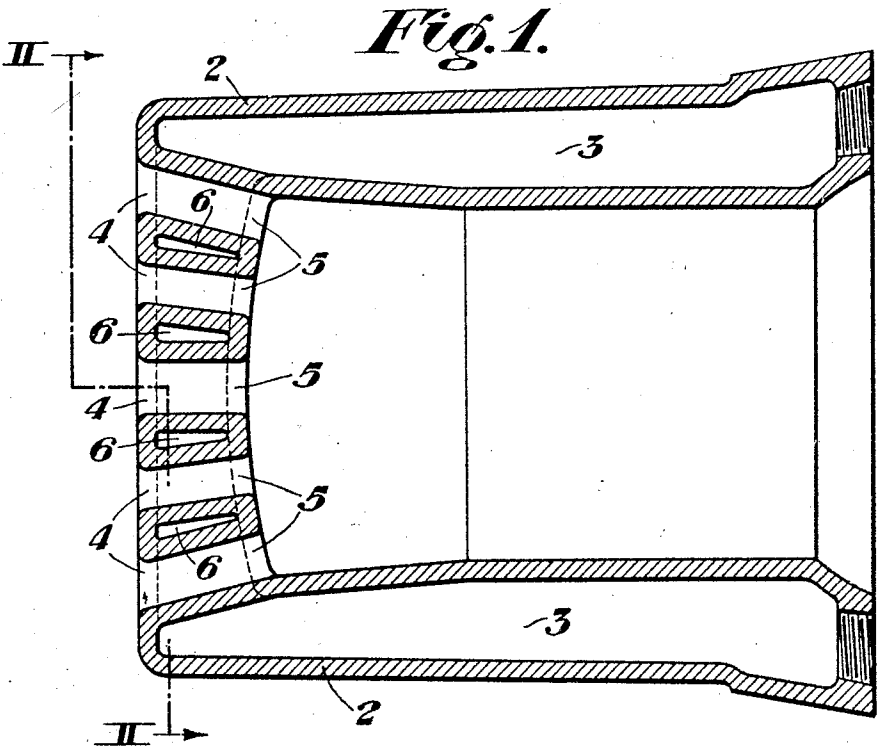
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1,870,511

TUYERE

Filed Aug. 28, 1931

2 Sheets-Sheet 1



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Fig. 3.

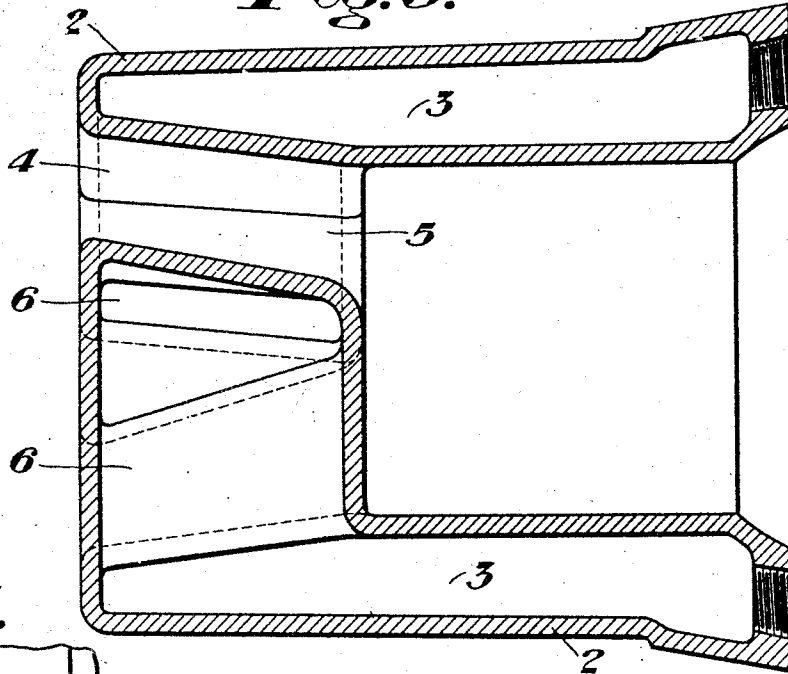


Fig. 5.

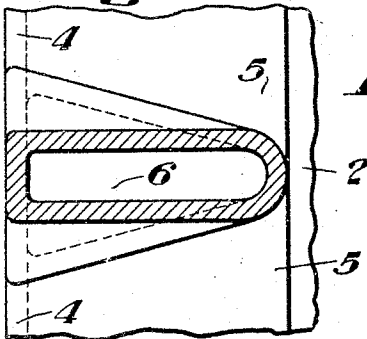


Fig. 4.

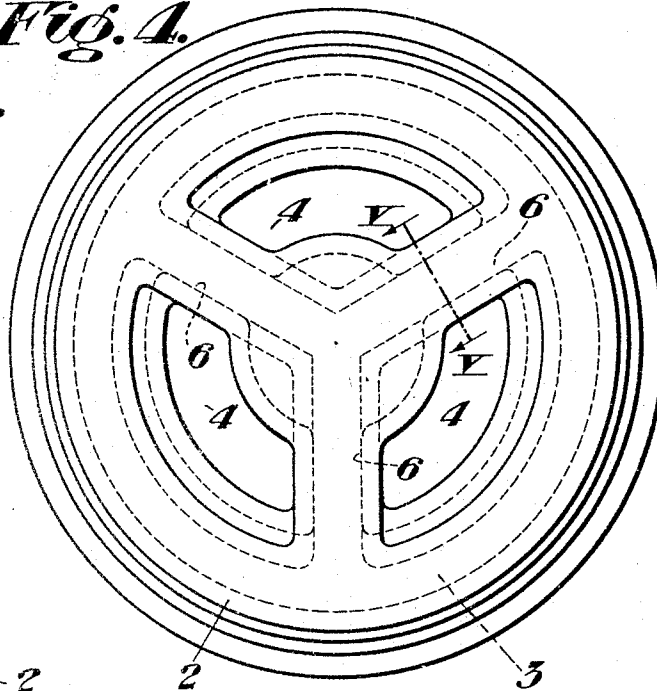
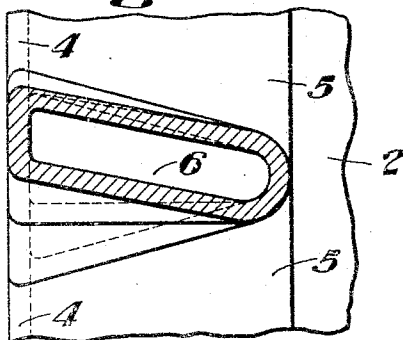


Fig. 6.



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UNITED STATES PATENT OFFICE

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TUYÈRE

Application filed August 23, 1931. Serial No. 560,029.

This invention relates to blast furnace tuyères. Such tuyères are made with but one gas passageway which directs the gas into the furnace in the form of a solid blast. This has a tendency to leave inactive spots between adjacent tuyères, where the furnace reactions take place slower than in the region of the blast, the gas tending to pass through the furnace charge at the tuyère level in as many solid streams as there are tuyères. It is the inventor's intention to provide a tuyère which will eliminate this undesirable condition. Other objects may later become apparent.

Broadly speaking, a tuyère constructed in accordance with this invention is characterized by having a plurality of discharge orifices opening from angular passageways so that gas is discharged into the furnace in a number of streams traveling in different directions. An example of such a construction is shown by the accompanying drawings, of which:

Figure 1 is a longitudinal cross-section.

Figure 2 is a cross-section taken on the line II—II of Figure 1.

Figure 3 is a longitudinal cross-section of another form of the invention.

Figure 4 is an end view of the form shown in Figure 3.

Figure 5 is a cross-section on the line V—V of Figure 4.

Figure 6 is a modified form of the section shown in Figure 5.

Having reference to these drawings, there is shown a tuyère having the usual body portion 2 and water chambers 3. This tuyère does not have the single gas passageway generally provided but has, instead, a plurality of discharge orifices 4 communicating with short gas passageways 5. It will be noticed that these gas passageways are angularly inclined with respect to the axis of the tuyère body. This construction results in the discharge of a number of fine streams of gas in the furnace covering a wide spread area. Water chambers 6 are arranged around each of the passageways 5 and are in communication with the water chambers 3, adequate cooling of the various parts thereby being assured. In this particular instance the in-

clination of the passageways 5 does not necessarily directly produce the spreading action of the gas but the large number of discharge orifices breaks up the solid stream of gas.

However, Figures 3 and 4 show a construction in which the passageways 5 are featured by their length, so that the inclination of these passageways directly results in a number of distinctly directed small streams of gas or blasts which penetrate to every portion of the furnace.

This last construction might be further modified as suggested by Figure 6, in which the walls of the passageways 5 are given a swirl, the discharged gas having a rotative motion as well as being broken up.

Various other shapes will readily suggest themselves to one who has read the foregoing and, in view of this, it is to be understood that the specific examples here shown are in accordance with the patent statutes, and are not shown with the intention of limiting this invention exactly thereto, except as is defined in the appended claims.

I claim:

1. A tuyère comprising a double walled hollow body portion forming a water jacket and a double walled nose portion integral with said body portion and communicating therewith to permit the circulation of cooling water through said body portion and said nose portion, said nose portion having a plurality of passageways extending therethrough and communicating with said hollow body portion.

2. A tuyère comprising a double walled hollow body portion forming a water jacket and a double walled nose portion integral with said body portion and communicating therewith to permit the circulation of cooling water through said body portion and said nose portion, said nose portion having a plurality of passageways extending therethrough and communicating with said hollow body portion, at least some of said passageways being disposed at an angle to the axis of said tuyère.

3. A tuyère comprising a double walled hollow body portion forming a water jacket and a double walled nose portion integral

with said body portion and communicating therewith to permit the circulation of cooling water through said body portion and said nose portion, said nose portion having a plurality of passageways arranged radially around the central axis of said tuyère and extending through said nose into communication with the hollow body of said tuyère.

4. A tuyère comprising a double walled hollow body portion forming a water jacket and a double walled nose portion integral with said body portion and communicating therewith to permit the circulation of cooling water through said body portion and said nose portion, said nose portion having a plurality of passageways arranged radially around the central axis of said tuyère and extending through said nose into communication with the hollow body of said tuyère, and another passageway extending through said nose on the axis of said tuyère.

In testimony whereof, I have hereunto set my hand.

JOHN C. HOPKINS.

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