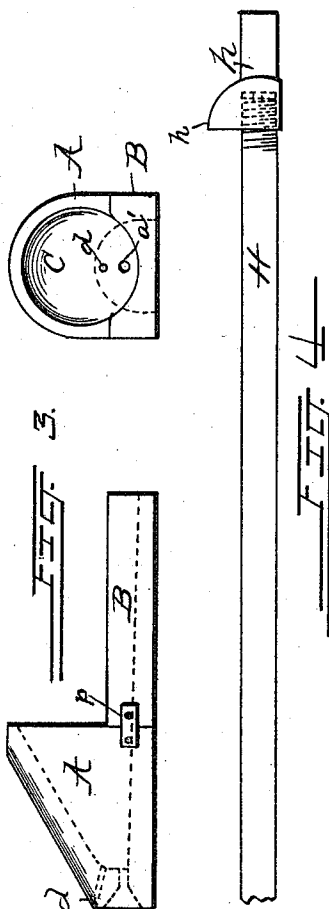
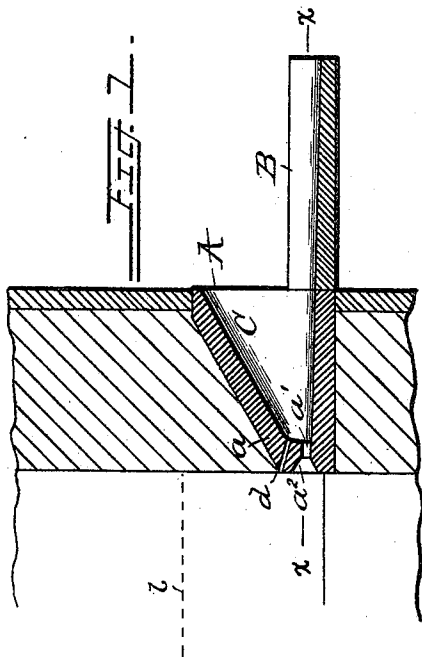
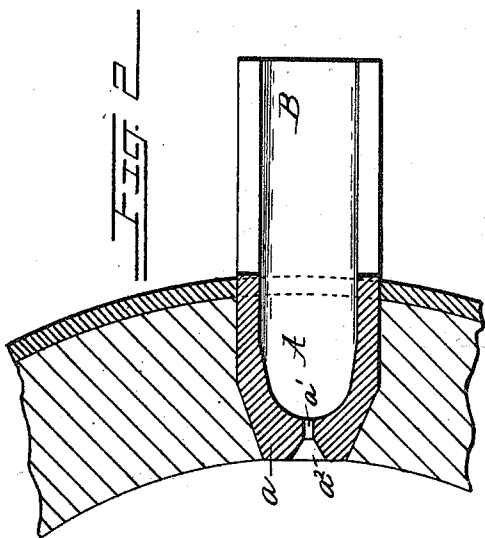


(No Model.)

G. W. MOORE.
CUPOLA OR FURNACE BREAST.

No. 585,275.

Patented June 29, 1897.



Witnesses
Carrie Kelly.
William Kelly

George W. Moore, Inventor

By Attorney *E. J. Selig*

UNITED STATES PATENT OFFICE.

GEORGE W. MOORE, OF PHILADELPHIA, PENNSYLVANIA.

CUPOLA OR FURNACE BREAST.

SPECIFICATION forming part of Letters Patent No. 585,275, dated June 29, 1897.

Application filed August 18, 1896. Serial No. 603,101. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MOORE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Cupola or Furnace Breasts; 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 appertains to make and use the same.

This invention relates to improvements in cupola-breasts, and is intended for use in cupolas and furnaces from which molten metal is drawn.

Heretofore breasts have been made very complicated and provided with coils of cold-air or cold-water pipe for cooling the breast while the metal is being tapped, and in some cases breasts have been made of soft clay, which use requires a new breast to be placed in the cupola each day.

The object of my present invention is to overcome these objections, and I accomplish it by making a breast of a material that is but slightly effected by the heat of the metal and of such construction that the hole through which the metal runs will not enlarge nearly as rapidly as in those now in use, thus producing a breast that can be used continuously for six weeks.

The invention is fully set out in the accompanying drawings and clearly described in the following specification.

In the drawings, Figure 1 is a sectional view of a portion of a cupola-wall embodying my invention. Fig. 2 is a sectional view on line *x x* of Fig. 1. Fig. 3 shows the breast in detail. Fig. 4 is an enlarged view of the plugging-bar and plug.

A is the breast, and B an extension thereof, the same being made of the same material as and ordinarily not secured to, but merely placed against, the said breast. If desirable, however, the extension may be secured to the breast by means of plates *p*, as shown in Fig. 3. This extension may be of any desired length and is intended to carry the molten metal to the point where it is desirable to catch it in the ladles.

The breast A is preferably semicircular in

form and tapered at the inner end *a*. The opening C in the breast is also tapered, so as to keep the thickness of the material about the same at all points, and at its small end there is an opening *a'*, through which the metal runs. This opening is flared on the inside at *a''*, where the metal rests before tapping. As shown in Fig. 1, the inner end of the breast is flush with the inside of the cupola-wall, and when the liquid is ready to be tapped the plug *h* on the end of the bar H, which has previously been inserted into the opening *a'*, is withdrawn and the liquid will flow freely. On account of the flaring opening *a''* into the cupola the metal will not clog when tapped, and it is evident also that the hole *a'* will not readily enlarge, as the material at this point presents a large wearing point or surface.

When it is desired to stop the flow of metal, the plug *h* is covered with a lump of wet clay *h'* and inserted into the opening *a'*. This operation can be repeated any number of times without any injury to the opening, as the clay will securely seal it against the flow and will easily break when the bar is withdrawn.

The breast is made of a composition of plumbago and is adapted to withstand the effect of the metal better than the old style of clay or metal breasts with cooling apparatus.

The simplicity of my invention is very evident and its effectiveness is far in advance of any breast heretofore used.

The economy of using a cupola-breast of cheap construction fifty times as long as the clay ones at once shows its advantage.

Just above the opening *a'* I provide a small signal-hole *d*, leading from the furnace, and which is maintained open. The object of this hole is to warn the attendant that the metal in the furnace is melting and is within a few inches of the twyers, the horizontal plane of which is indicated by the dotted line *z*, Fig. 1. The signal-hole *d* may be located at any point in the top wall of the breast above hole *a''*, but preferably just above the latter, as illustrated in the drawings.

Having thus fully described my invention, what I claim is—

1. A cupola or furnace breast consisting of a tapering body formed of plumbago and pro-

vided with an extension and having inlet and signal holes or openings formed in the walls thereof, as set forth.

2. A cupola or furnace breast consisting of
5 a semicylindrical tapering body formed of plumbago and having an inlet hole or opening and an extension, a signal hole or opening being also formed in the wall thereof, above said inlet hole or opening, substantially
10 as set forth.

3. A cupola or furnace breast consisting of a semicircular body formed of plumbago and provided with an extension, said body being

tapered at one end and provided with a tapered space in the large end thereof, and having a flared opening in its narrowed portion adapted to be closed by a plug, a signal hole or opening being formed in said body above said latter opening, substantially as set forth.

In testimony whereof I affix my signature 20 in presence of two witnesses.

GEORGE W. MOORE.

Witnesses:

HARRY J. FRANZ,
WILLIAM DEISS.