

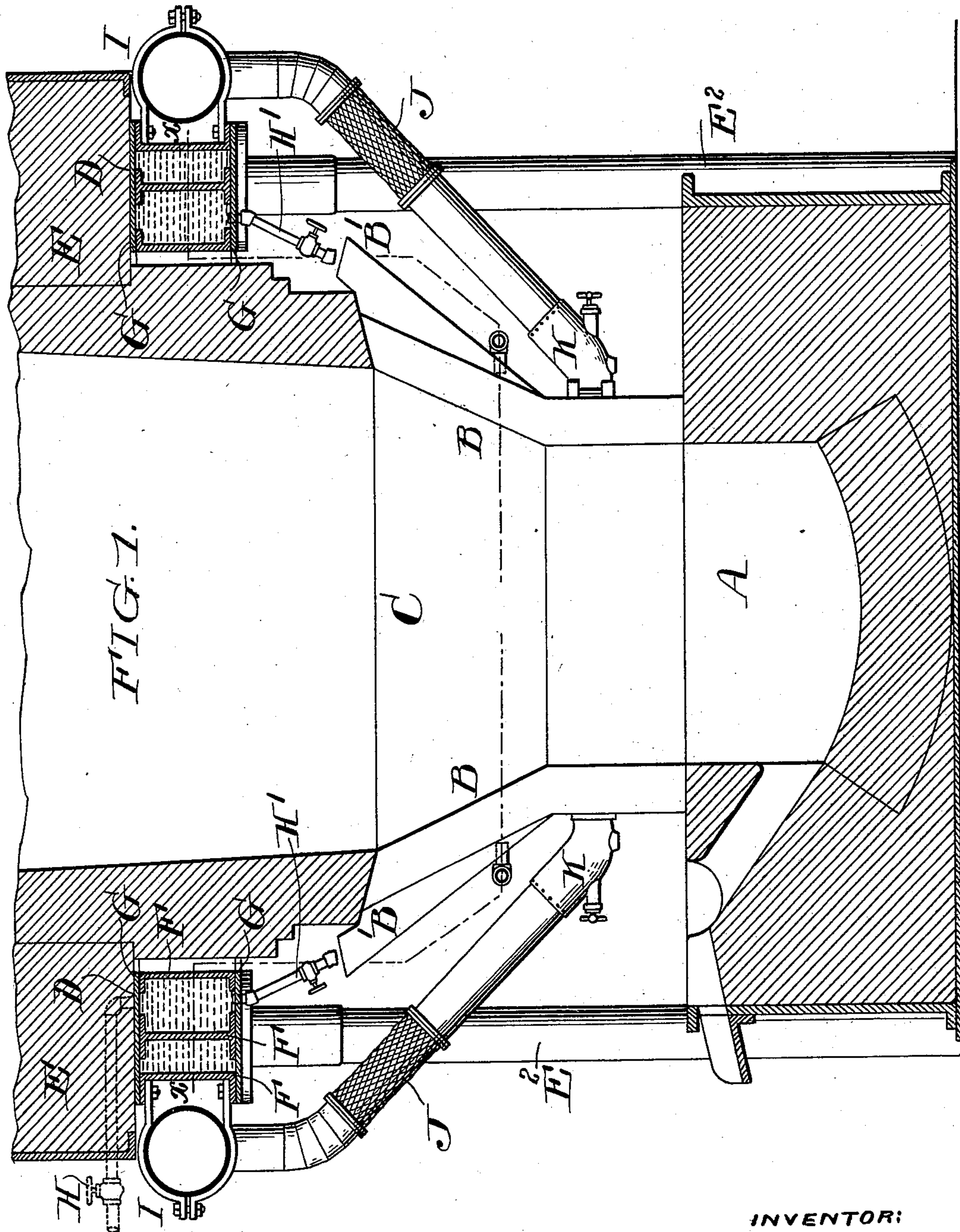
(No Model.)

2 Sheets—Sheet 1.

M. W. ILES.
BLAST FURNACE.

No. 557,127.

Patented Mar. 31, 1896.



WITNESSES:

Henry Dwyer
Edw. F. Ayres,

INVENTOR:

Malvern W. Iles
by his atty.
Francis T. Chambers

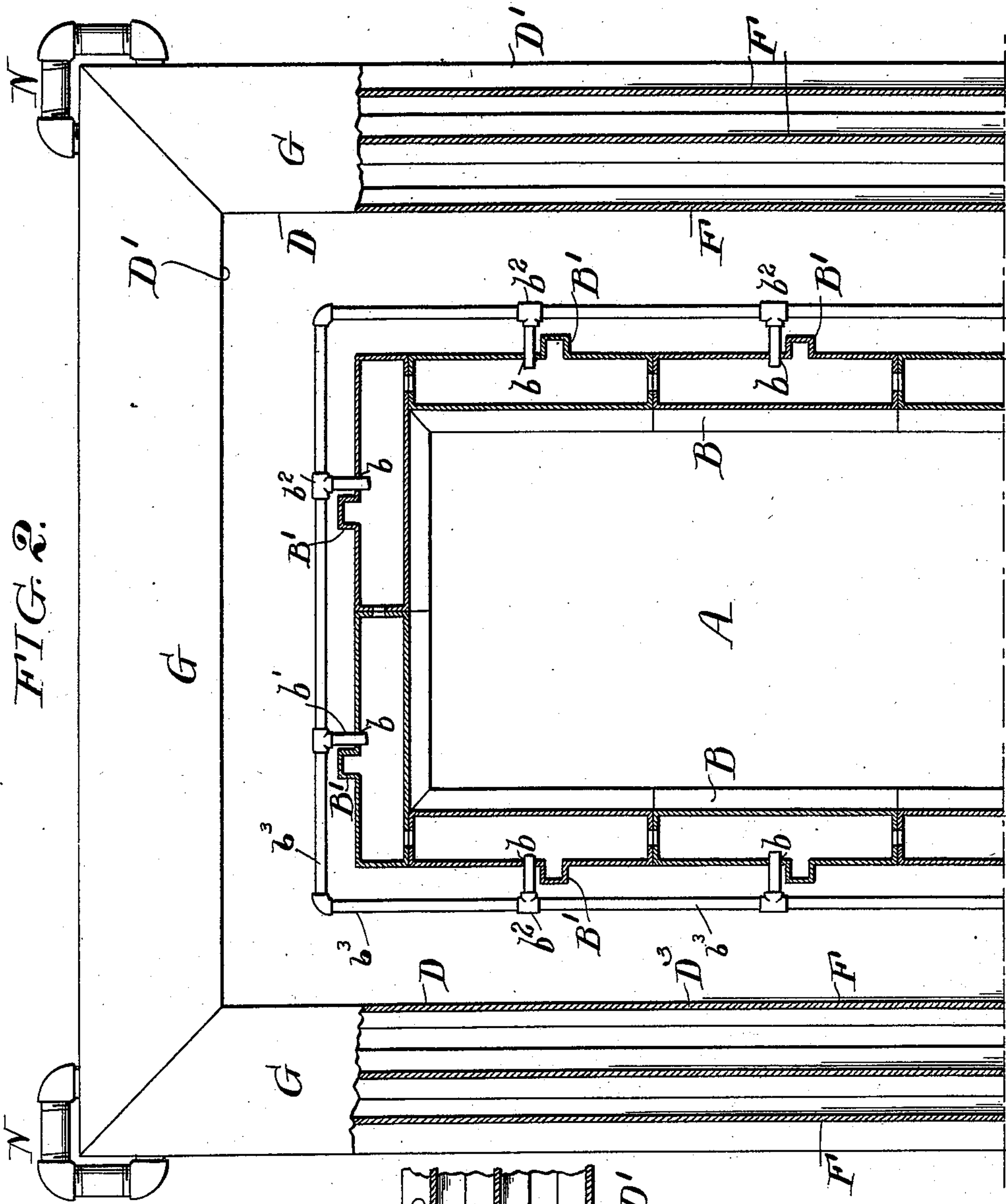
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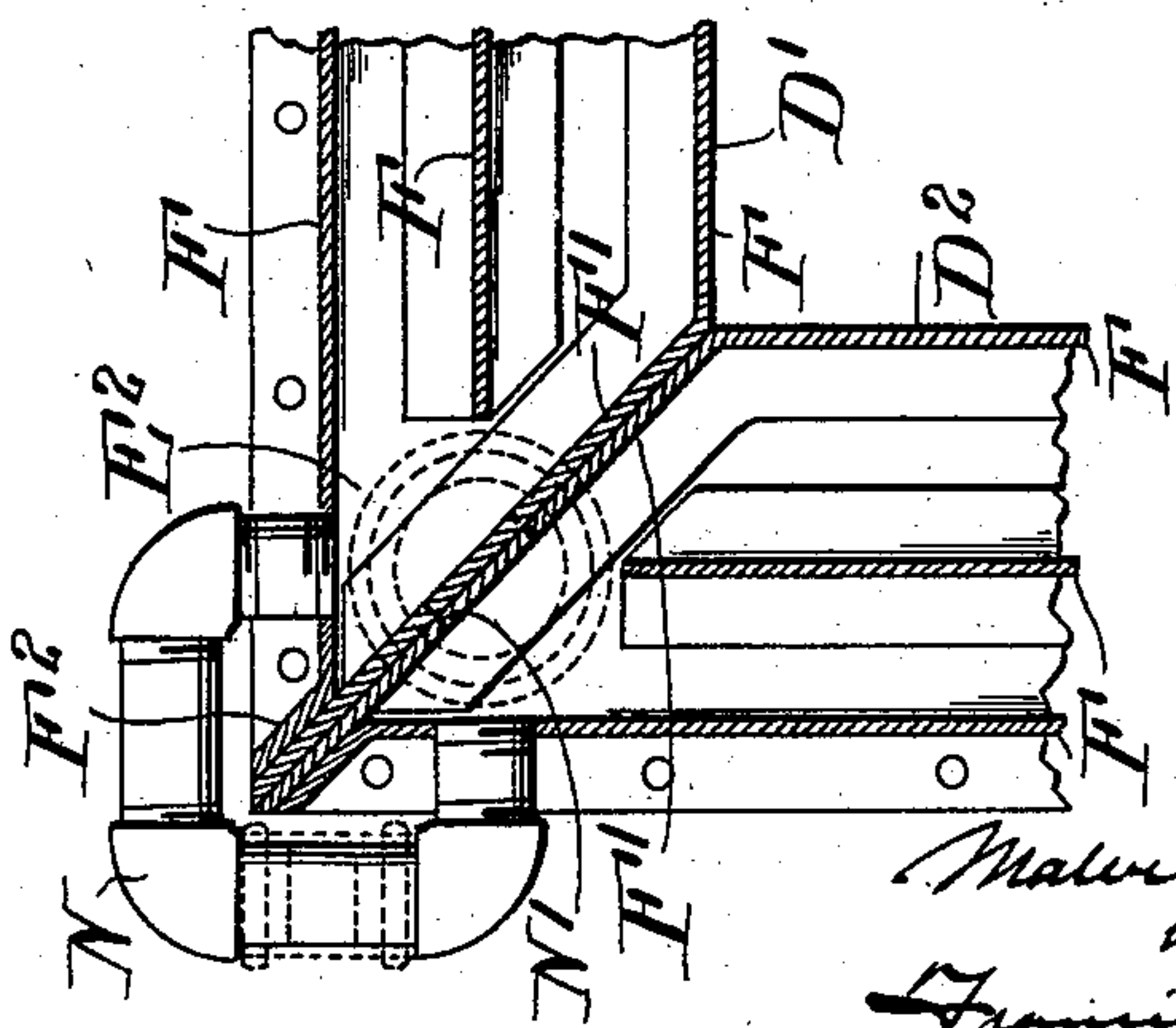


WITNESSES:

Henry Dury

Edw. J. Hayes.

FIG. 3.



INVENTOR:

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UNITED STATES PATENT OFFICE.

MALVERN W. ILES, OF DENVER, COLORADO.

BLAST-FURNACE.

SPECIFICATION forming part of Letters Patent No. 557,127, dated March 31, 1896.

Application filed September 20, 1894. Serial No. 523,556. (No model.)

To all whom it may concern:

Be it known that I, MALVERN W. ILES, a citizen of the United States, residing in the city of Denver, in the county of Arapahoe, in the State of Colorado, have invented a certain new and useful Improvement in Blast-Furnaces, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to the construction of blast-furnaces, and particularly to the deck-plates and water-jackets of such furnaces and the parts adjacent thereto; and it consists, first, in the particular construction by which the deck-plate takes the place of a water-pipe around the furnace, and, further, in the arrangement of the blast-pipe relatively to the deck-plate, and in a novel construction of the water-jackets.

My invention will be best understood as explained in connection with the accompanying drawings, in which—

Figure 1 is a sectional view of a blast-furnace provided with my improved deck-plate and water-jackets, and showing the blast-pipe secured to the flanges of the deck-plate. Fig. 2 is a fragmentary view taken on the line xx of Fig. 1 and with the air-blast pipe removed; and Fig. 3 is a detail view of a corner of the sectional deck-plate, showing the preferred construction.

A indicates the crucible of the furnace.

B B are water-jackets, preferably provided with projecting mouthpieces B' , through which the water is fed into them.

C indicates the body of the furnace.

E E indicate the walls of the furnace, which are supported on the deck-plate D.

The deck-plate is composed of a number of sections D' D^2 , &c., each of which is made up of beams, as indicated at F F F. To the top and bottom of these beams are riveted plates G, forming water-tight joints with the outer beams, or with all the beams. The end of each section, where it abuts against the next section, while it may be constructed in any convenient manner, I prefer to build in the manner shown in Fig. 3, by bending the inner beams F to form the ends F' and securing these ends F' by bolts or otherwise to the outer beams F at F^2 . Each section will there-

fore consist of a water-tight conduit, and, while there may be of course as many sections as are deemed desirable, I prefer to employ but four, one for each side of the furnace, which is usually rectangular. By this construction, it will be noted, a very strong deck-plate is provided, the corners where the deck-plate is supported on columns, as E^2 , being reinforced by the ends F' .

In order that water-inlets to each individual section of the deck-plate may be dispensed with, I provide suitable conduits for water connecting the sections. These conduits may consist of registering holes, as indicated at N' , formed in the abutting end plates F' ; but I prefer to form the conduits by means of pipes N, each of which taps two adjacent sections.

One or more inlets for water, as indicated at H, are provided, as are also water-outlets H' , and, in use, a current of water is constantly kept circulating through the deck-plates, keeping their temperature down, and through them cooling the masonry in immediate contact therewith.

The outlets H' are preferably arranged so as to deliver water from the deck-plate into the water-jackets B, though, of course, the supply of water for the jackets may be supplied directly from the water-supply pipe, if desired.

It sometimes happens that the water-supply pipe leading to one section becomes clogged, or that the water-supply to a particular section is turned off through carelessness, and to prevent injury to a water-jacket section from such cause I provide a connection from one section to the next. This connection is preferably made, as shown in Fig. 2, by boring a hole, as b , at or near the center of each section on the outside. Into each hole is inserted a sleeve b' , which is provided with a T, as shown at b^2 . A suitable hose or pipe b^3 is connected to each opening of the T, so that all the sections are connected, and if water in one section becomes low it is supplied from the other sections, thus preventing the burning of the jackets.

The action of the water-entablature or deck-plate is to prevent the undue heating of the masonry in its vicinity, and therefore the air-blast pipe I can be placed close to the fur-

nace, and, as shown, is secured to the outer flanges of the deck-plate, thus saving valuable space. This forms an important feature of my invention and is entirely distinct from
5 any particular construction of the deck-plate.

J J indicate delivery-pipes leading from the blast-pipe I to the twyers K.

Having now described my invention, what I claim as new, and desire to secure by Letters
10 Patent, is—

1. In combination with a blast-furnace, a deck-plate independent of and situated above the water-jackets, said deck-plate being formed of flanged iron beams and plates riveted together to form a water-tight conduit,
15 said beams being set vertically to support the superstructure a water-supply leading into said conduit, a water-exit leading therefrom, and an air-blast conduit secured around said
20 deck-plate as described and so that the deck-plates intervene between it and the furnace.

2. In combination with a blast-furnace, a deck-plate independent of and situated above the water-jackets, said deck-plate consist-
25 ing of a number of sections, each formed of flanged iron beams and plates riveted together

to form a water-tight conduit, said beams being set vertically to support the superstructure a water-supply leading into one or more of said sections, a water-exit leading there-
30 from, and conduits for connecting the sections together so that water can flow freely from one section to the other.

3. In combination with a blast-furnace, a deck-plate independent of and situated above
35 the water-jackets, said deck-plate consisting of a number of sections each formed of flanged iron beams and plates riveted together to form a water-tight conduit, said beams being set vertically to support the superstruc-
40 ture a water-supply leading into one or more of said sections, a set of sectional water-jackets inclosing the furnace, coupling-pipes for connecting each section with the next, an outlet
45 pipe or pipes leading from the deck-plate and serving as an inlet or inlets to the water-jackets, all substantially as specified.

MALVERN W. ILES.

Witnesses:

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