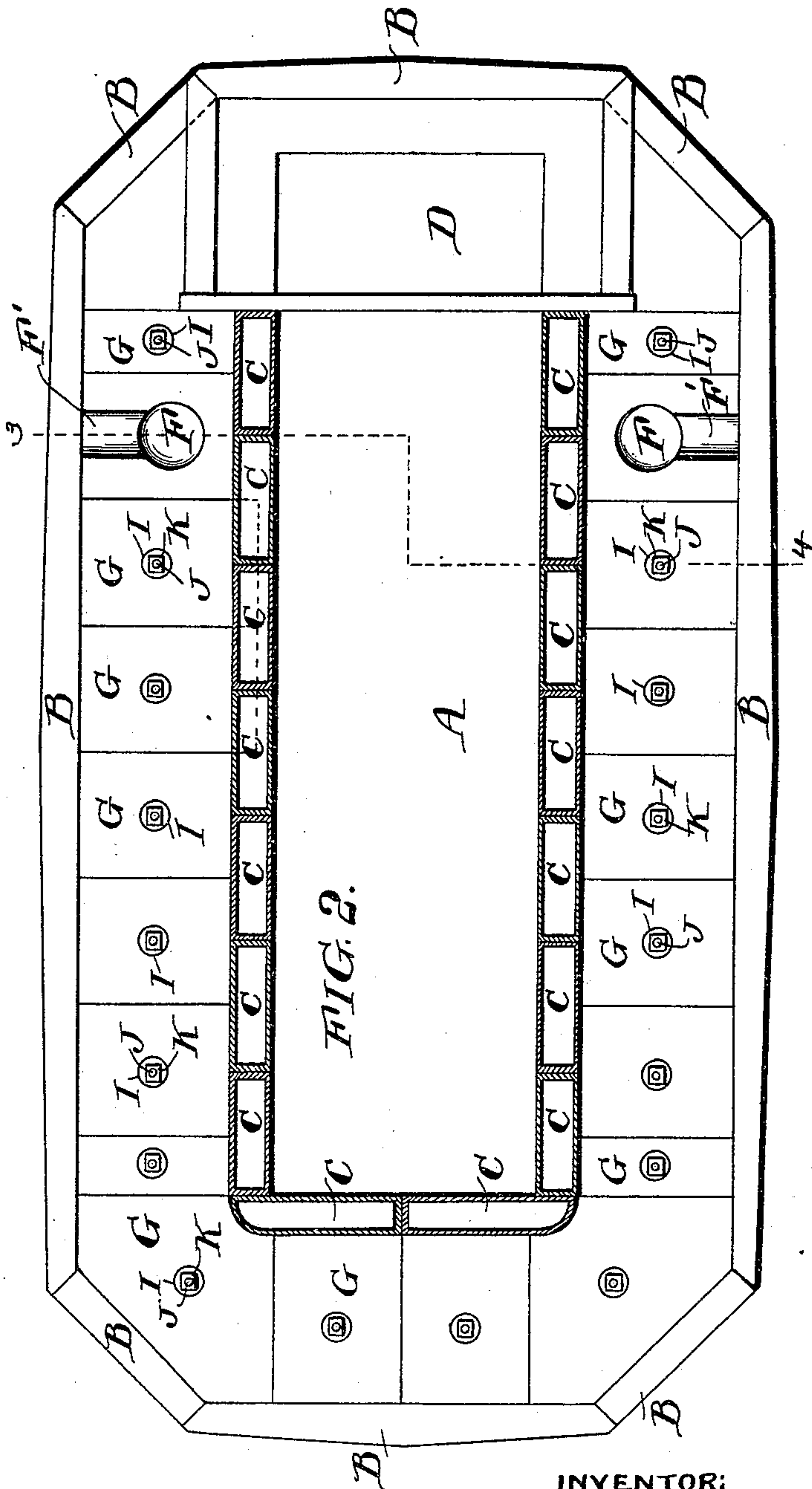
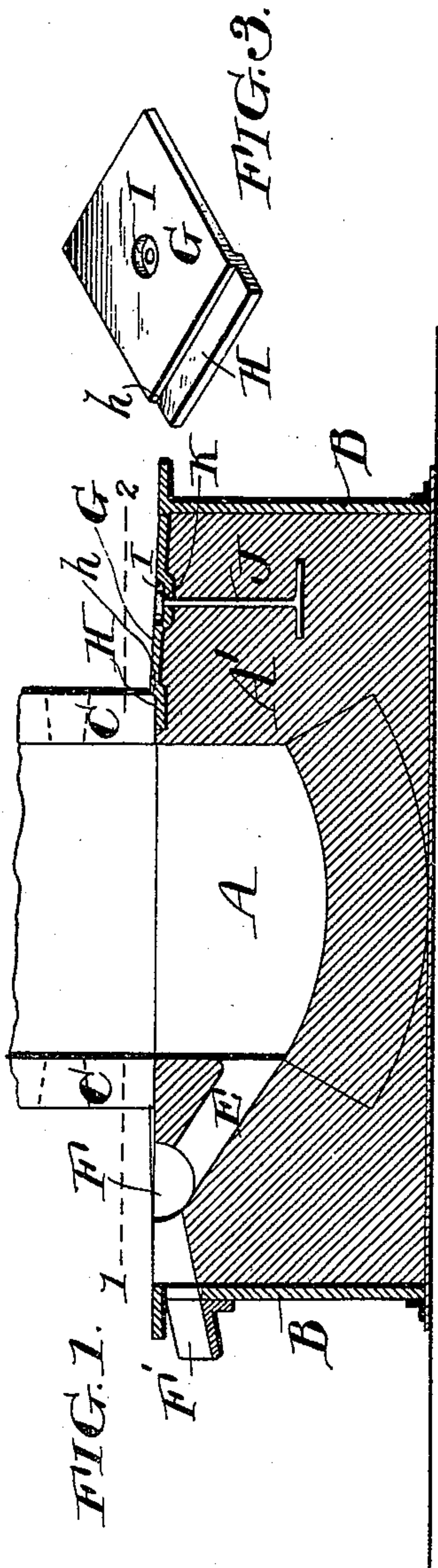


(No Model.)

M. W. ILES.  
BLAST FURNACE.

No. 481,950.

Patented Sept. 6, 1892.



WITNESSES:

Henry Denny  
J. W. Russell.

**INVENTOR:**

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

# UNITED STATES PATENT OFFICE.

MALVERN W. ILES, OF DENVER, COLORADO.

## BLAST-FURNACE.

SPECIFICATION forming part of Letters Patent No. 481,950, dated September 6, 1892.

Application filed June 7, 1892. Serial No. 435,833. (No model.)

*To all whom it may concern:*

Be it known that I, MALVERN W. ILES, of Denver, county of Arapahoe, State of Colorado, have invented a certain new and useful  
5 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 of this specification.

My invention relates to blast-furnaces, and  
10 has for its object to protect the crucible-walls, and at the same time insure the proper alignment and position of the water-jackets set above the crucible, and this I accomplish by covering the crucible-walls with iron plates  
15 suitably secured in place and having on their edges next to the crucible a notch or depressed flange, in which the water-jackets rest and are supported. In this way I make  
20 it easy to keep the top of the crucible clean and protect it from the water falling on it from the water-jackets, and at the same time I firmly secure the water-jackets in position, preventing them from bulging out at the  
25 sides, as they are apt to do, especially in long furnaces. This arrangement also makes it easier to replace water-jackets when it becomes necessary.

Reference is now had to the drawings which illustrate my invention, and in which—

30 Figure 1 is a cross-section on the line 3 4 of Fig. 2; Fig. 2, a plan on section-line 1 2 of Fig. 1, and Fig. 3 a perspective view of one of my cover-plates.

A A indicate the crucible, and A' its walls.

B B, &c., are the plates used in staying or  
35 supporting the crucible.

C C, &c., are sectional water-jackets.

D is the fore-hearth.

E is a tap leading from the crucible to the lead-well F, from which lead conduits F'.  
40

G G, &c., are my cover-plates, preferably made of cast-iron and formed with a notch or depressed flange H, upon which the water-jackets C rest, with their outer corners against the shoulders h. An anchored bolt J extends  
45 through a hole in each plate and serves to secure the plate in position, a nut K screwing on the end of the bolt and resting in a countersunk hole or depression I on the face of plates G.  
50

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

In combination with the crucible-walls of a blast-furnace, cover-plates G, anchored to the  
55 top of the crucible-walls and having a depressed flange H on their edges next to the crucible, and water-jackets C, set on the depressed flanges H, substantially as and for the purpose specified.

MALVERN W. ILES.

Witnesses:

JOHN M. WALKER,  
JOHN S. WILLIAMS.