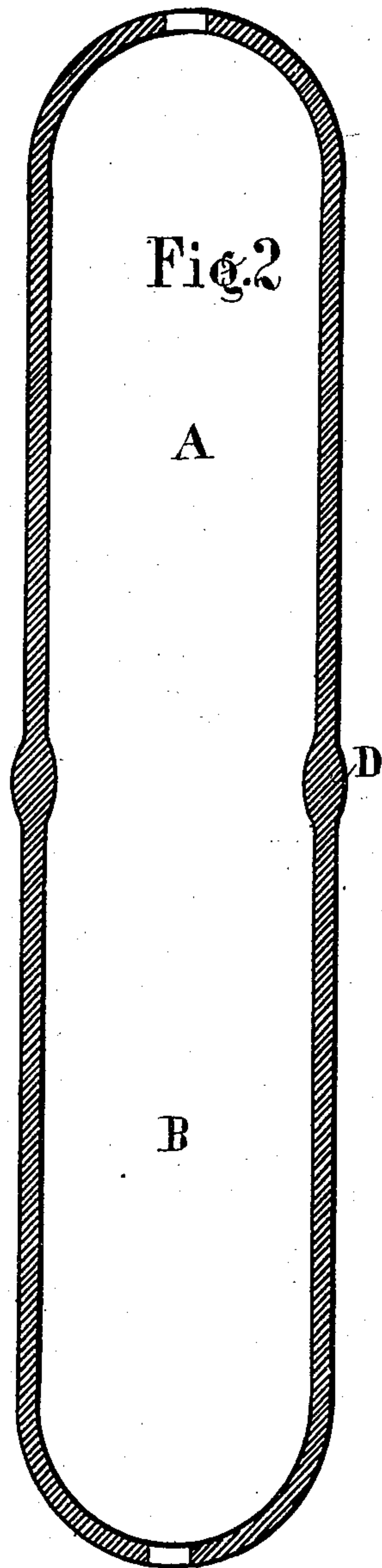
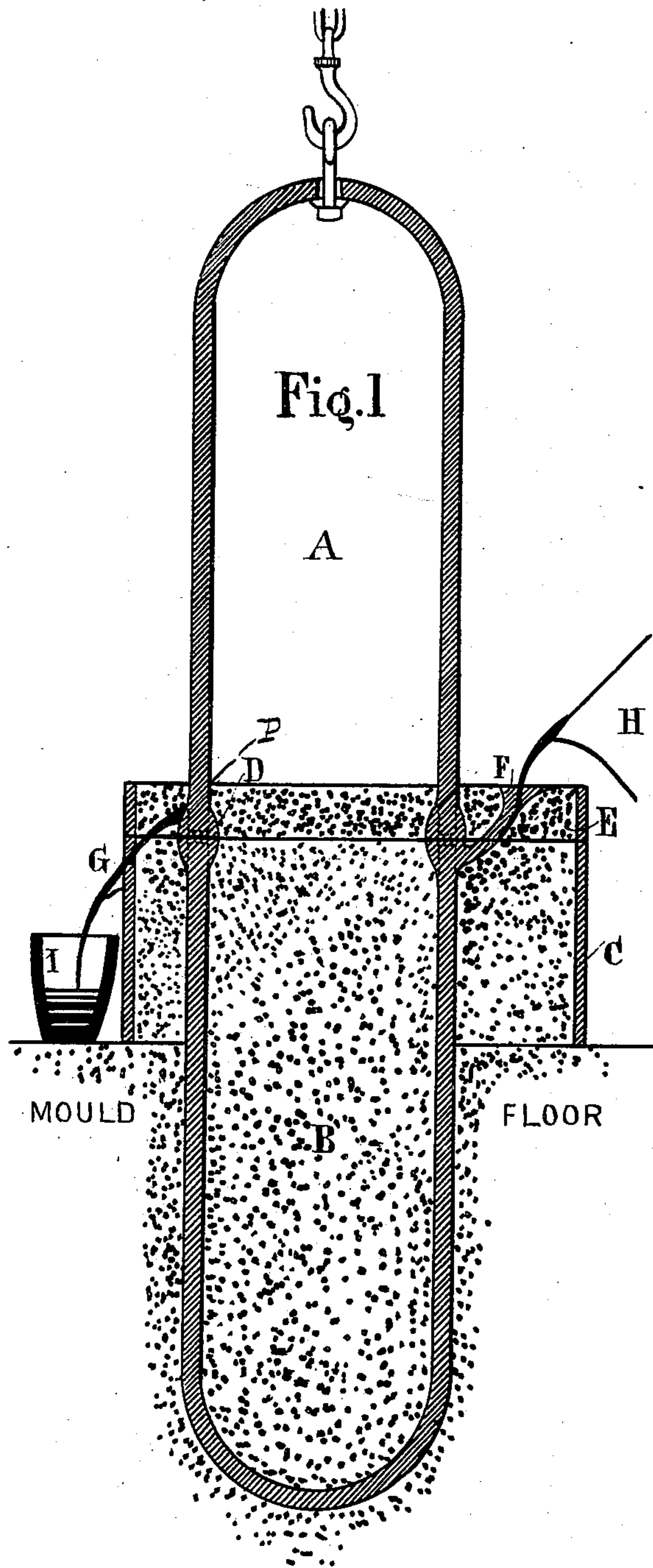


W. T. GARRATT.  
 Method of Uniting the Two Halves of Cylinder.  
 No. 230,413. Patented July 27, 1880.



Witnesses

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# UNITED STATES PATENT OFFICE.

WILLIAM T. GARRATT, OF SAN FRANCISCO, CALIFORNIA.

## METHOD OF UNITING THE TWO HALVES OF CYLINDERS.

SPECIFICATION forming part of Letters Patent No. 230,413, dated July 27, 1880.

Application filed December 17, 1879.

*To all whom it may concern:*

Be it known that I, WILLIAM T. GARRATT, of the city and county of San Francisco, State of California, have invented a new and useful  
5 Method of Uniting the Two Halves of Cylinders, applicable to digesters for soap and candle manufacturers, as fully set forth in the following specification.

10 Digesters are metal cylinders with closed ends, into which fatty matter is placed to be operated upon by steam at high temperature in the process of rendering or refining fatty substances, and are generally constructed of  
15 copper or cast-iron lined with copper, a common size being, say, forty inches in diameter and twenty feet high.

It has heretofore been found necessary to make these cylinders in two or more pieces, and the joints being formed of flanges bolted  
20 together have been found exceedingly troublesome in the matter of maintaining them tight and free from leakage, consequent upon the unequal expansion and contraction they are subject to, as well as the action of the fats and  
25 accompanying acids.

It is the object of the present invention to avoid these joints by making the digesters of cast-brass in one piece, or rather joining two parts thereof by a process of fusion, as follows:  
30 First I cast the two parts of the digester A and B, as shown in Figs. 1 and 2 of the accompanying drawings. I then take the part B, and embed it in the molding-floor to within about a couple of feet of its top. I then cover  
35 the part of the cylinder projecting above ground with a box or flask, C, and fill in with dry sand, leaving an annular gutter or recess around the exterior and interior of the edge of the cylinder to form half of the mold in  
40 which to cast the proposed joint D. The upper half of this joint is molded in a dry-sand cope, E, placed over the lower half, and into which the lower edge of the cylinder A is inserted, as shown in Fig. 1, there being left,  
45 of course, an annular opening, P, in the upper part of the mold to receive the upper part of the cylinder. This upper part, A, of the cylinder is suspended from a crane. The two edges of the cylinder are brought to within

about one-half inch of each other, and the 50 mold, being provided with a gate, F, to pour in the mettle, and two or three runners, G, to allow the metal to run out, is then closed. The hot metal as it is poured in soon melts the edges of the cylinder which project into 55 the mold, and as the metal passes out about as quickly as it is poured in there is no chance for cooling.

As soon as the edges of the cylinder are completely melted the runners G are stopped, 60 and the mold being completely filled is left to cool. After a few minutes, when the metal has thoroughly set, all support which has been given to the upper half of the casting A must be withdrawn, so as to permit the now rapidly- 65 shrinking joint to maintain connection with both halves of the casting. This is a most important feature, for if there be any strain upon the joint when shrinking in cooling cracks will surely occur, perhaps immedi- 70 ately, though possibly not for hours after the work is done. If the work is skillfully done a perfect union will be effected in the above manner, as shown in Fig. 2.

In Fig. 1, H is the ladle from which the hot 75 metal is poured, and I is a pot which may be provided to receive the overflow metal from the runners G.

What I claim as my invention, and desire 80 to secure by Letters Patent, is—

The process of joining the two halves of a brass digester-cylinder, A and B, by a fused joint, D, cast in a mold, which consists in embedding the lower part, B, in the molding-floor, top edge up, then forming the mold for the 85 joint with its suitable gate F, runners G, and annular opening P, then suspending edge down within the mold the upper part, A, then running the hot metal through the mold until complete fusion has taken place, then closing 90 the runners, finally lowering the upper part of the cylinder as the metal at the joint cools, substantially as set forth.

WILLIAM T. GARRATT.

Witnesses:

JOHN RAFFERTY,  
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