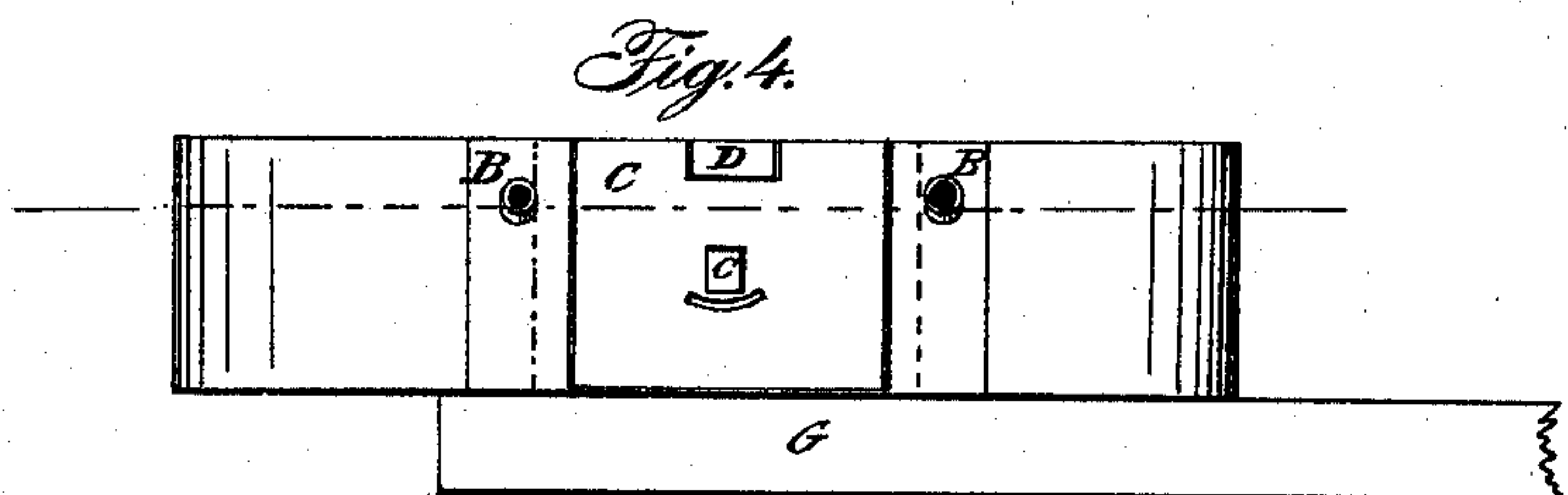
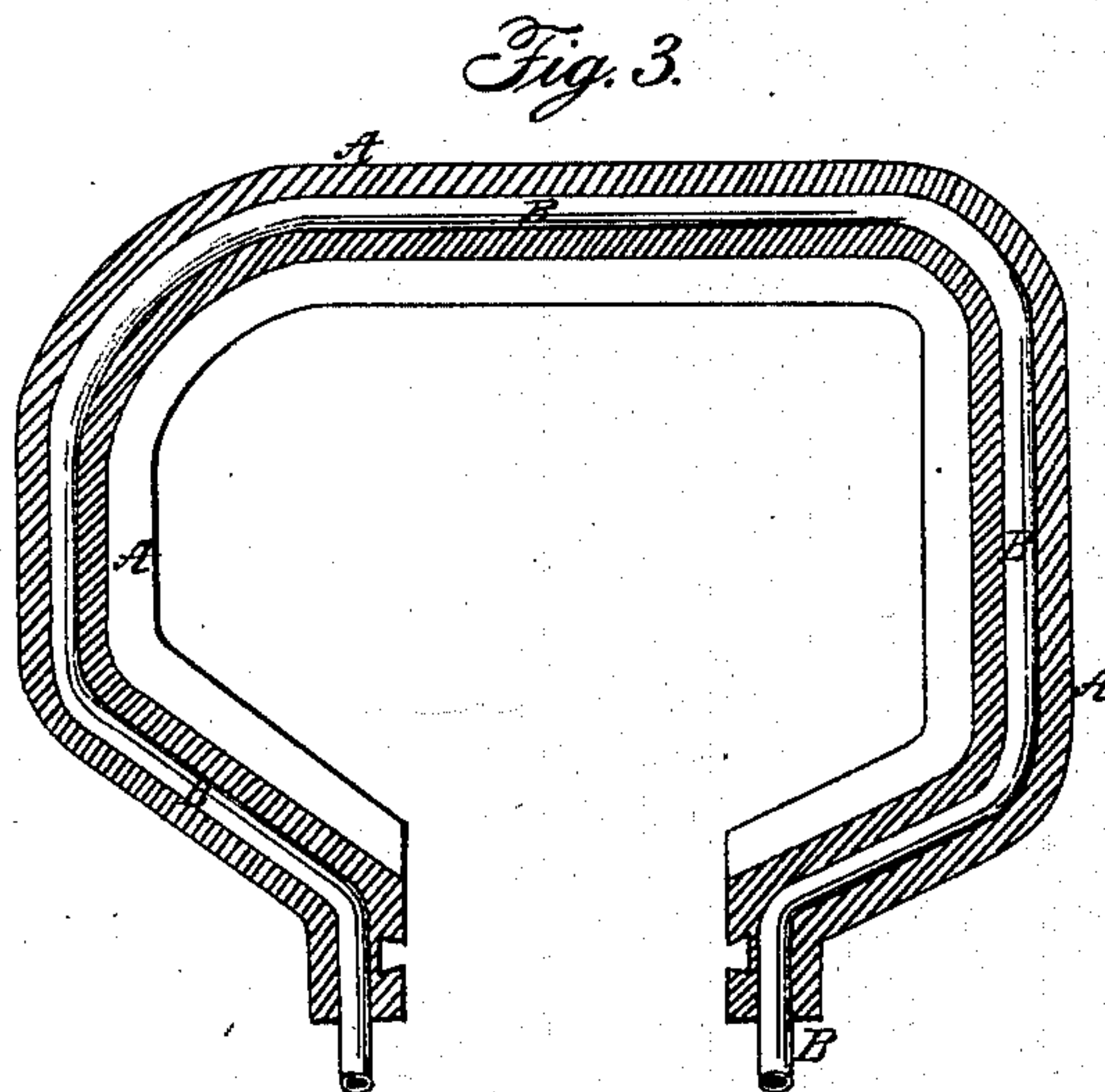
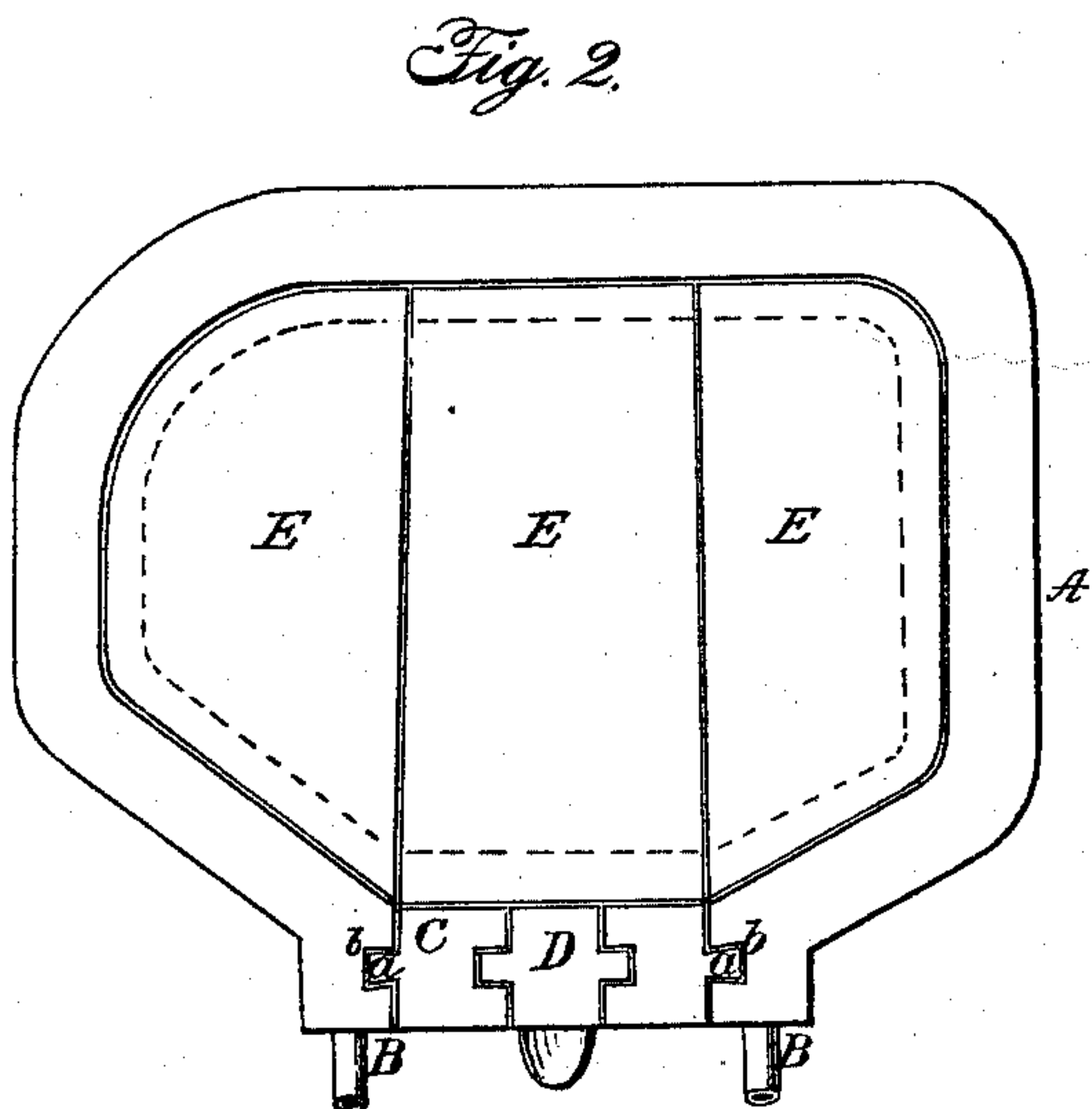
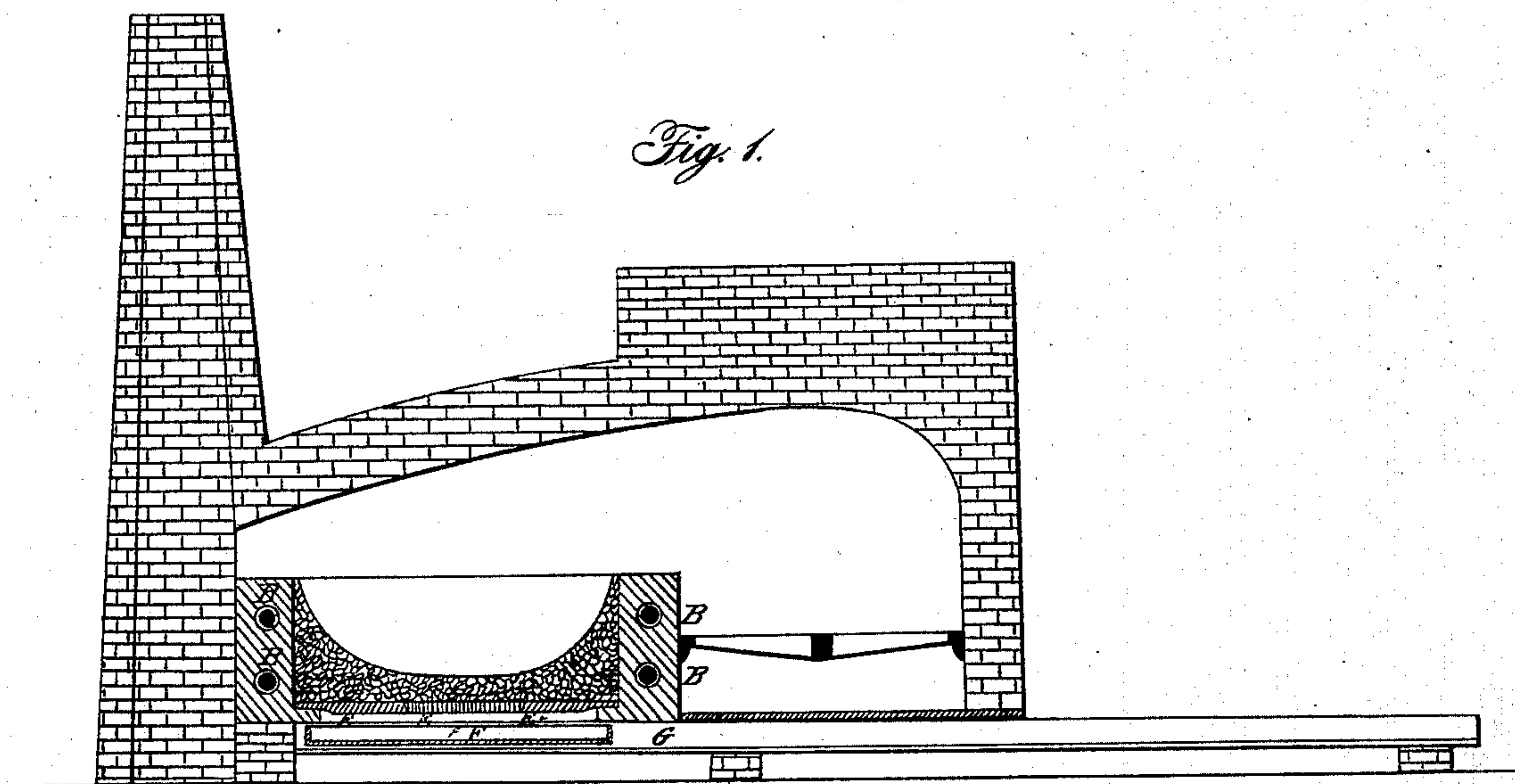


W. BATTY.
Protecting Furnaces.

No. 69,063.

Patented Sept. 24, 1867.



Witnesses:

Edw. Schuyler
John Kingston

Inventor.

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Attest: Fenwick Lawrence

UNITED STATES PATENT OFFICE.

WILLIAM BATTY, OF LAWRENCEBURG, PENNSYLVANIA.

IMPROVEMENT IN BOSHES OF HEATING AND PUDDLING FURNACES.

Specification forming part of Letters Patent No. **69,063**, dated September 24, 1867.

To all whom it may concern:

Be it known that I, WILLIAM BATTY, of Lawrenceburg, in the county of Armstrong and State of Pennsylvania, have invented a new and useful Improvement in Boshes for Heating or Puddling Furnaces for manipulating ores and metals; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical central section, showing my invention in connection with a furnace-arch and stack and grate. (The furnace-arch, stack, and grate constitute no part of my invention, being merely shown to illustrate the application of my invention.) Fig. 2 is a top view of my improved bosh. Fig. 3 is a horizontal section of the bosh. Fig. 4 is a front view of the bosh.

Similar letters of reference in the several figures indicate corresponding parts.

The nature of my invention consists, first, in strengthening and cooling the bosh by casting the metal of which the bosh is composed upon a wrought-iron pipe or pipes, and circulating water through such pipe or pipes; second, in applying a removable water-chamber under the bottom of the puddling or heating chamber for the purpose of cooling the bottom of the same; third, in fitting the front plate of the bosh in position by tongues and grooves, and in such manner with respect to the bottom of the heating or puddling furnace that, by removal of the front plate, the bottom may be very conveniently removed for replacement by a new bottom or for other purpose; fourth, in fitting the fore plate of the bosh upon which the metal or ore is fed into the heating or puddling chamber in position by means of tongues and grooves, so that it may be readily removed and replaced by a new one whenever wear from long usage renders it necessary.

The object of my invention, in the main, is to render the bosh very durable and effect a large saving in plates, bricks, and other fixtures. Another object is to render easy and convenient the repair of such parts of the bosh as wear out sooner than others, my arrangement avoiding the tearing out of the whole bosh whenever the bottom or feed portion becomes im-

paired or worn, so as to require replacement by new ones.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A is the bosh; B, the wrought-iron tube, upon which the metal thereof is closely cast; C, the removable front plate of the bosh; and D the fore plate, upon which the metal passes in its entrance into the puddling or heating chamber. E is the removable bottom of the puddling or heating chamber, and F the removable water-chamber placed upon rails G G under the bottom E, as shown. The bosh proper is in its vertical section at any point in form of an L, and the horizontal portion of the L serves as a ledge, upon which the plates which form the bottom E are mainly supported.

It will be seen that one, two, or more tubes may be employed as a basis upon which to cast the bosh, such tube or tubes serving, as before stated, a twofold purpose, viz., of strengthening the cast metal of the bosh, and as a means by which to circulate water for keeping the bosh cool during the puddling or heating of ore or metals. The ends of each tube protrude out beyond the front of the bosh near each edge of front plate, as shown. If two or more tubes are employed, as illustrated in Fig. 1, a vertical leg or legs may connect them in a proper manner to insure a circulation through all the tubes, notwithstanding the water is introduced at but one point and discharged at the terminus of the lowest pipe of a series.

The front plate C of the bosh is cast separate from the bosh proper, and has dovetail tongues *a* on its edges. There are corresponding shaped grooves *b b* cast in the jaws of the bosh for the reception of the dovetails *a a*. These grooves are closed at their bottom, so as to form a support to the front plate, but are left open at top, so that the front plate may be slipped in and out whenever necessary. This fore plate is in vertical section in form of an L, and the horizontal portion of the L serves as a ledge, upon which the front ends of the bottom plate of heating or puddling chamber rest—that is, so much of said ends as are not supported by the ledge of the

bosh proper. The fore plate D is cast separate in form of a cross, or nearly so, and fits into a corresponding recess cast in the top of the front plate, as shown. The front plate has a passage at c for the withdrawal of refuse substances which collect on the bottom of the heating or puddling chamber.

The water-chamber is fitted to slide in and out on the rails G G under the bottom of the furnace, and thus may be readily adjusted for being replenished with water whenever it becomes empty from evaporation.

I am aware that water-tubes have been placed outside of a bosh. I also am aware that hollow chambers of cast metal alone are not new for many purposes; but I believe it is new to have hollow wrought-iron tubes embedded into the mass of metal which forms the main portion of the bosh of puddling or heating furnaces for metal or ores, such bosh being cast in one piece upon the tube or tubes, as shown in my drawings.

It may be proper to state that the puddled metal or the ore heated in my furnace-chamber is removed through a door arranged above the upper edge of the front plate in the ordinary manner.

It may be fully understood by those skilled in the art that it is very important to keep the bosh as cool as possible during the intense heat necessary in puddling metal or treating ores. This result I attain by circulating water through the wrought-iron tubes which I employ for strengthening the bosh. The water, in passing through these tubes, is caused to

evaporate and pass off through the pores of the metal composing the bosh, and, of course, in its passage cool the metal by absorbing a portion of the heat thereof, or, if this is not the case, the body of water in the tube or tubes directly absorbs a greater portion of the heat of the metal, and by constantly bringing circulating water of a cool temperature in contact with the hot metal the heat of the bosh is greatly reduced.

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

1. The bosh of a puddling or heating furnace cast upon a wrought-metal water-circulating tube or tubes, substantially as and for the purpose described.

2. The water-chamber of a puddling or heating furnace arranged on rails or ledges under the bottom of the puddling or heating chamber, substantially as for the purpose described.

3. The removable front plate of the bosh, connected by tongues and grooves to the bosh, substantially in the manner and for the purpose described.

4. The removable fore plate D, fitted in a recess in the top of the front plate, and held in place by tongues and grooves, substantially as and for the purpose described.

WILLIAM ^{his} + BATTY.
mark.

Witnesses:

JOHN KINGDON,
R. W. FENWICK.