

(No Model.)

O. T. X. ADAMS.

SLAG FURNACE.

No. 379,436.

Patented Mar. 13, 1888.

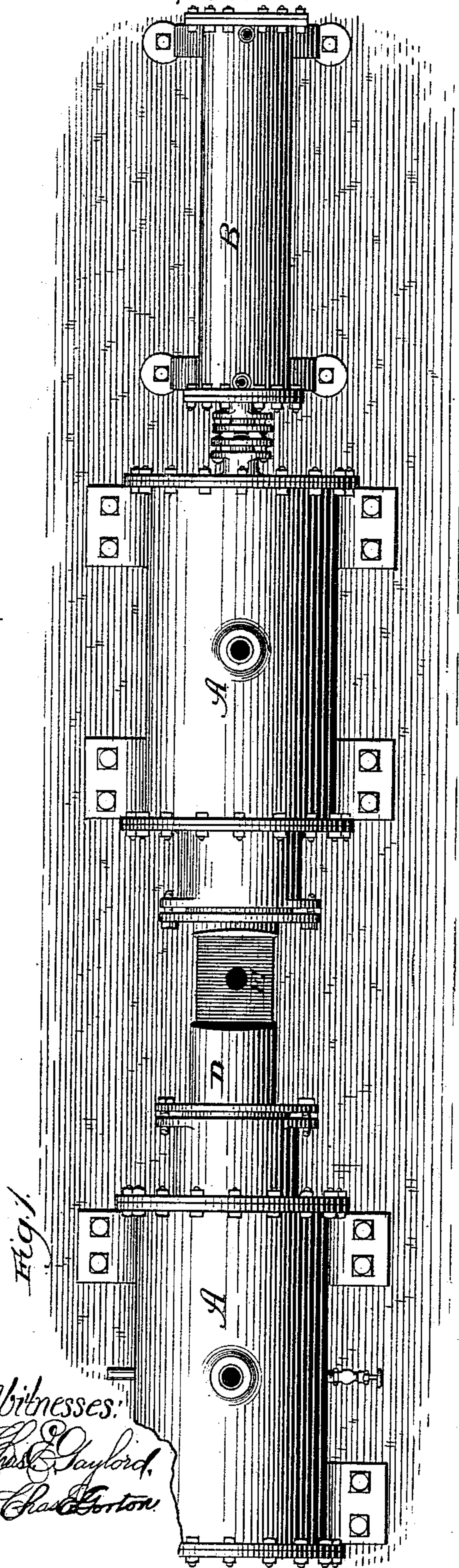


Fig. 1.

Witnesses:  
Chas. Gaylord,  
Chas. Horton.

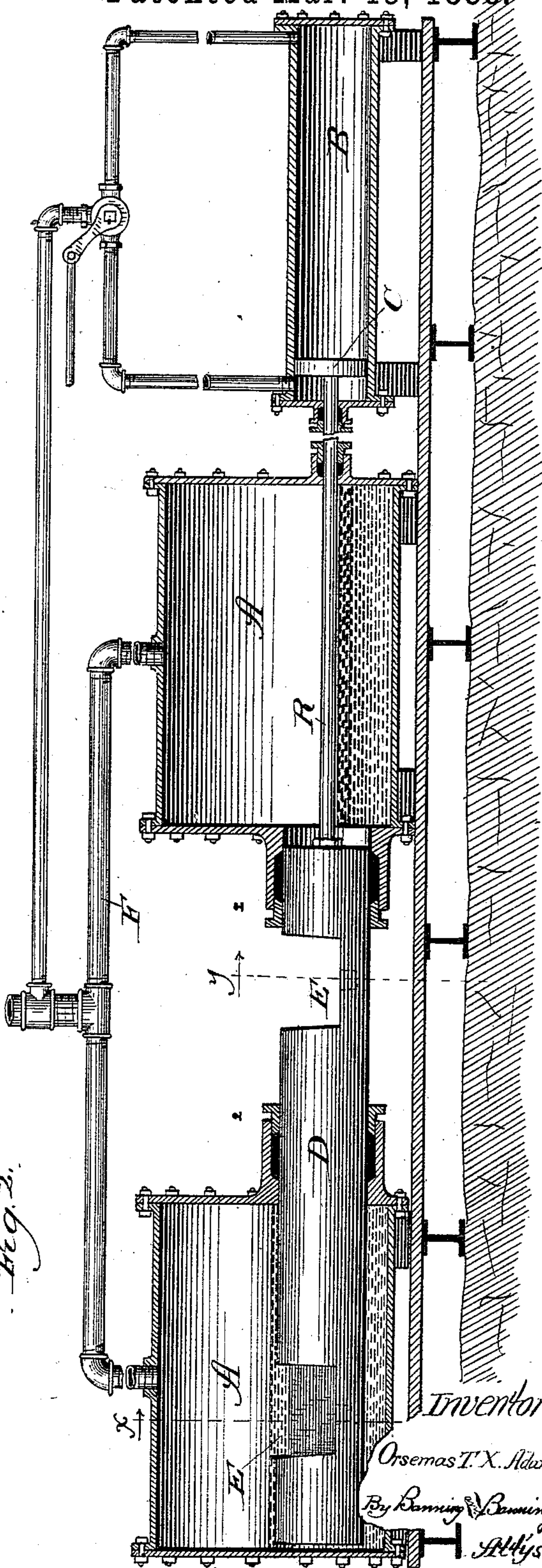


Fig. 2.

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# UNITED STATES PATENT OFFICE.

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## SLAG-FURNACE.

SPECIFICATION forming part of Letters Patent No. 379,436, dated March 13, 1888.

Application filed February 7, 1888. Serial No. 263,311. (No model.)

*To all whom it may concern:*

Be it known that I, ORSEMAS T. X. ADAMS, a citizen of the United States, residing at Chicago, Illinois, have invented certain new and useful Improvements in Slag Steam-Generators, of which the following is a specification.

The object of my invention is to devise means for the generation of steam by bringing the heated slag into direct contact with the water; and my invention consists in the features and details of construction hereinafter described and claimed.

In the drawings, Figure 1 is a plan view of my improved steam-generator, and Fig. 2 is a longitudinal vertical section of the same.

In the drawings, A represents a closed steam-generating chamber; B, a steam-cylinder; C, a piston-head in the same; D, a plunger connected to the piston-head in the cylinder and drawn back and forth by the movements of the piston-head; E, spaces or recesses provided in the plunger for the reception of slag-holding receptacles or vessels, and F steam-pipes for carrying the generated steam to the place of use.

In making my improved steam-generator I make one or more chambers capable of holding a quantity of water to be generated into steam. I prefer to use at least two chambers, placed end to end with a space between them, as shown in the drawings; but the number of chambers may be varied to suit the circumstances of different users. At convenient distance from the end of one of the chambers I locate a steam-cylinder provided with a piston-head adapted to be moved back and forth as the steam is admitted into one end or the other of the cylinder. Extending out from the cylinder is a rod or bar, R, which is carried back and forth with the piston-head. This bar or rod is connected at its outer end to a plunger, D, that is drawn back and forth with the movements of the piston-head. In its movements back and forth it is drawn and pushed through the steam-generating chamber, and where more than one chamber is used through them all. It is provided with one or more spaces or recesses, sunk in its upper side, of a sufficient size to admit a slag-holding receptacle, which is intended to be filled with molten or heated

slag and placed in the space or recess in the plunger to receive it. As the plunger is drawn into the chamber the slag-receptacle will be carried with it, so that the water in the chamber will come into direct contact with the molten slag in the receptacle. This will of course cause the generation of steam, and after the slag has remained in the water as long as desirable the plunger is forced in the opposite direction and the slag contained in the receptacle carried out of the chamber. It may then be removed and another receptacle containing molten slag placed in the space or recess on the plunger and carried in as was the first. Where two chambers are used, as shown in the drawings, the plungers should be provided with two spaces to receive slag-receptacles, so that as one passes in the other will be drawn out, and in this way they will be kept alternating back and forth as long and as often as desired.

It will of course be understood that the openings in the heads of the steam-generating chambers through which the plunger passes and carries the slag in or out will be provided with suitable packing-boxes to prevent the escape of steam. It will also be found desirable to have the bottom of the recesses in which the slag-receptacles are placed about level or below the water-line in the steam-generating chambers. As the plunger is drawn in, the water will of course rise in the chamber and overflow the slag-receptacles, and as it is moved out the water will sink and flow out of the slag-receptacles, so that it will not be carried out of the chamber. The chambers should be provided with pipes to receive the steam and carry it to the place of use.

As shown in Fig. 2 of the drawings, a portion of the steam generated in the chambers is carried to the steam-cylinder and is used to move the piston-head back and forth; but of course it can all be carried to the place of use, if desired; and other steam or other means be employed to drive the piston-head.

While I have described my invention as represented in the drawings, yet I do not wish to be necessarily limited to specific details of construction, the gist of my invention consisting in the idea of carrying a body of heated

or molten slag into the steam-generating chamber without opening the same, so that it will come into direct contact with the water, and then carrying it out again so that another receptacle with fresh slag may be carried in its place. It is obvious that various other arrangements could be adopted to effectuate this idea.

What I regard as new, and desire to secure by Letters Patent, is—

1. In a slag steam-generator, the combination of a closed steam-generating chamber and a slag-holding receptacle, and means for moving the slag-receptacle in and out of the

steam-generating chamber and the water contained therein, whereby steam is generated by direct contact of the slag with the water, substantially as described. 15

2. In a slag steam-generator, the combination of a closed steam-generating chamber, a plunger carrying slag-receptacles moving in and out of the steam-generating chamber, and means for moving the plunger in and out, substantially as described. 20

ORSEMAS T. X. ADAMS.

Witnesses:

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M. F. FAIRBANKS.