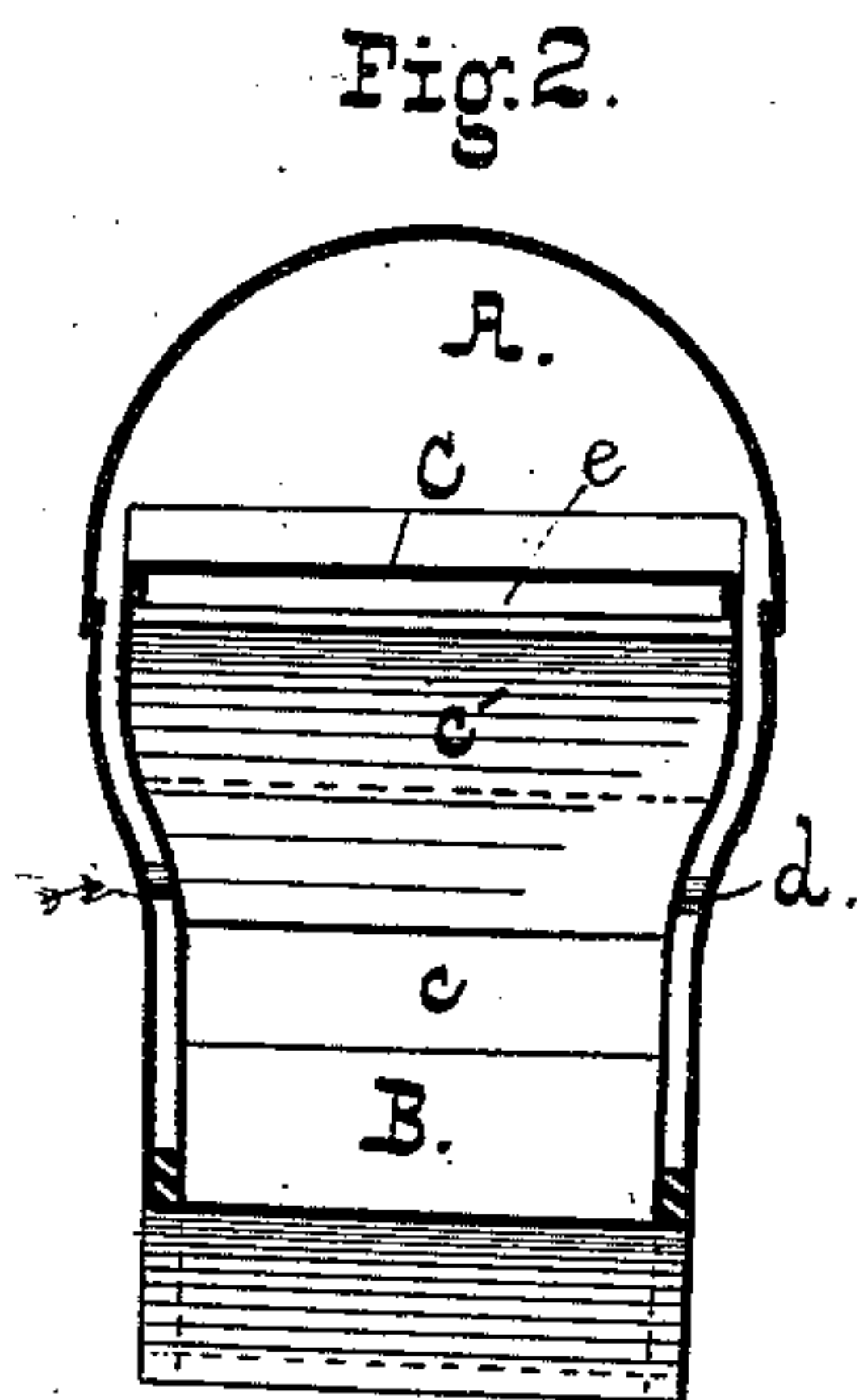
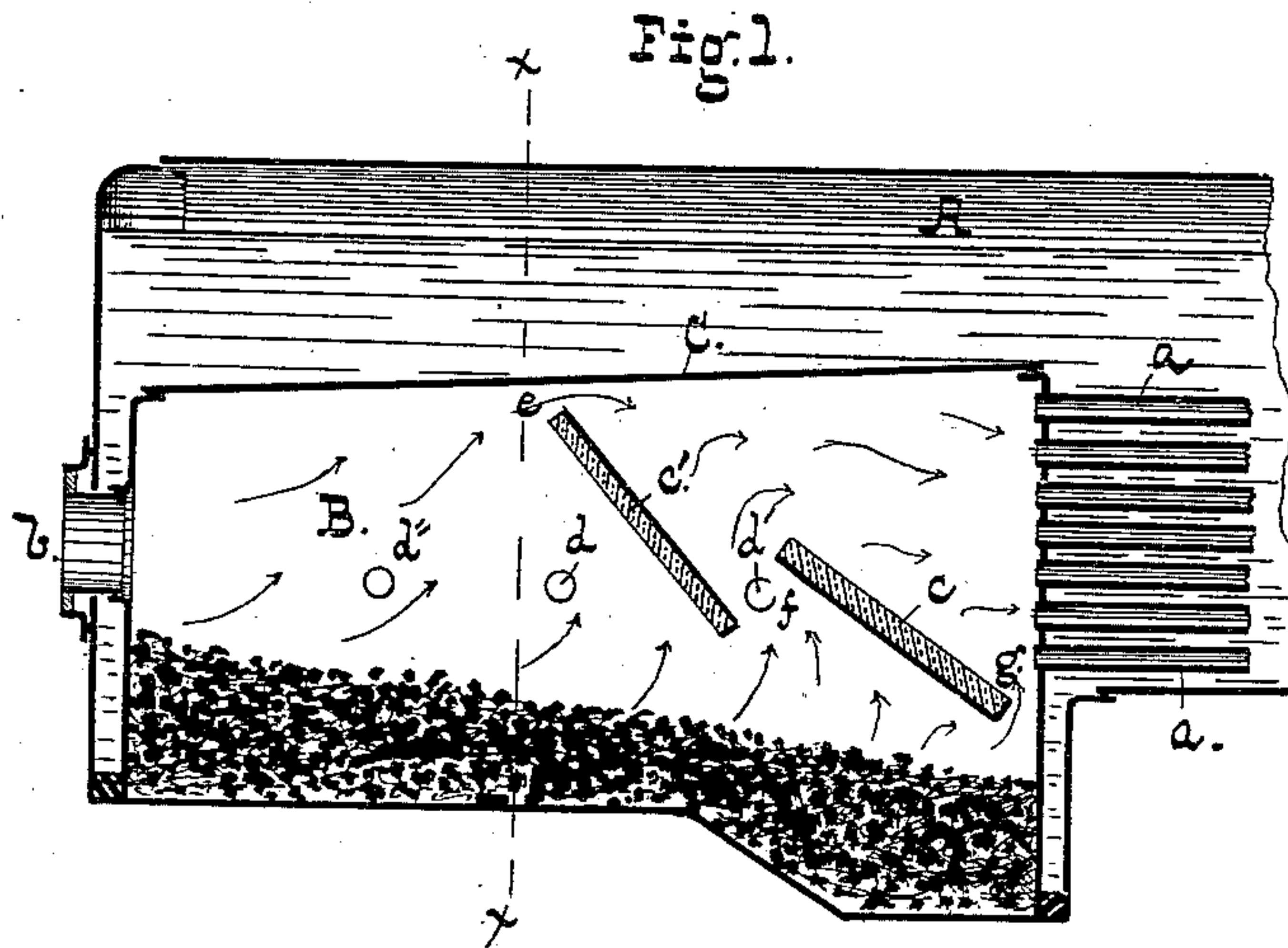


(No Model.)

A. J. CROMWELL.  
LOCOMOTIVE FURNACE.

No. 259,294.

Patented June 13, 1882.



Witnesses  
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# UNITED STATES PATENT OFFICE.

ANDREW J. CROMWELL, OF BALTIMORE, MARYLAND.

## LOCOMOTIVE-FURNACE.

SPECIFICATION forming part of Letters Patent No. 259,294, dated June 13, 1882.

Application filed March 7, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, ANDREW J. CROMWELL, of Baltimore city, State of Maryland, have invented certain new and useful Improvements in Locomotive-Furnaces; and I hereby declare the same to be fully, clearly, and exactly described as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a central vertical sectional view of a locomotive-furnace embodying my present invention, and Fig. 2 is a transverse sectional view on the line *x x* of Fig. 1.

My invention relates in general to boiler-furnaces, and in particular to those of locomotive-engines adapted to burn what is known as "slack" or fine coal, and it has for its object to economize the consumption of fuel and to render the combustion more uniform than heretofore; and it consists in a pair of baffle-plates arranged in the furnace, as hereinafter set forth.

In devices of the same general class to which mine relates it has heretofore been customary to obstruct the direct draft into the tubes by means of a baffle-plate, which expedient, while it measurably secured the desired end, was open to the objection that the draft was still localized around the sides of the plate, causing the fuel to burn much more rapidly at certain portions of the bed than at others, and causing a considerable quantity of ignited and unconsumed coal to pass through the tubes. This unburnt coal was wholly lost so far as calorific effect in the furnace was concerned, and required to be removed from time to time from the extension-front of the boiler.

In the drawings, A is the boiler, having tubes *a a*. B is the furnace, having door *b* and air-holes *d d' d''*, and *c c'* are the baffle-plates, made preferably of fire-brick, though they may be constructed in the form of water-boxes. These plates are arranged as shown, the front plate, *c*, having its front edge just

below the lowest tier of tubes, leaving a space, *g*, between the plate and the front of the furnace. The plate extends upward to a point just above the air-holes *d'* at an inclination of about thirty degrees. The lower edge of the rear plate, *c'*, is located to the rear of and below the holes *d'*, leaving a space, *f*, between the plates *c c'*, and the plate *c'* extends upward at an angle of about forty-five degrees, nearly to the crown-sheet C at *e*.

By the construction and arrangement shown the draft is equalized, the bed of coal burns away uniformly, and the heat is intensified in the furnace. This latter fact is due principally to the fact that the kind of coal burned in the furnace is somewhat bituminous in its nature and gives off large quantities of gas, which heretofore passed quickly through the tubes and stack and were lost. In my furnace these gases, in transit to the openings, pass the air-holes *d d' d''* and are consumed in the furnace, yielding an intense heat.

The plates may be applied to furnaces already in use at a small cost, and their use results in a great saving of fuel and labor, as the extension-fronts require to be cleaned only about one-third as often as is necessary in engines not equipped with them.

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

In combination with the furnace having the rearwardly and upwardly inclined plates *c c'*, with draft-spaces at their horizontal edges, the air-hole *d'*, located opposite the draft-space between the plates, and adapted to supply air to the combustible gases on their escape between the plates in order to consume them in the furnace, as set forth.

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Witnesses:

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