

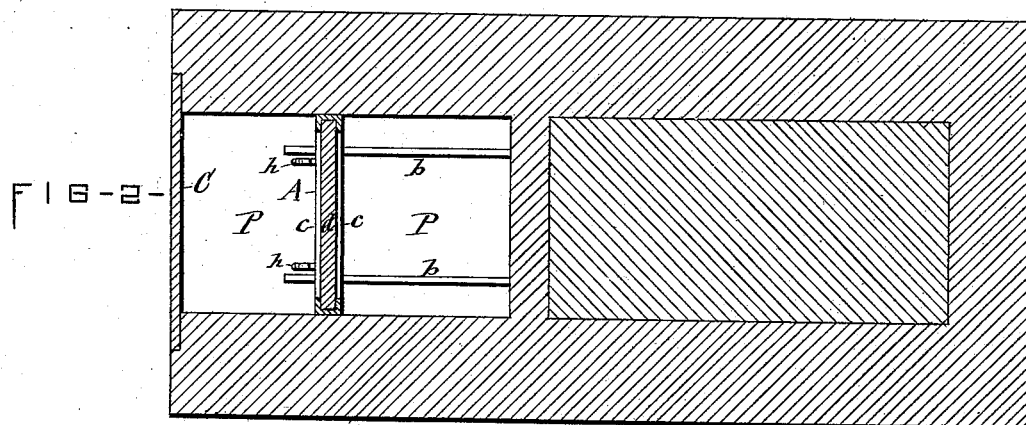
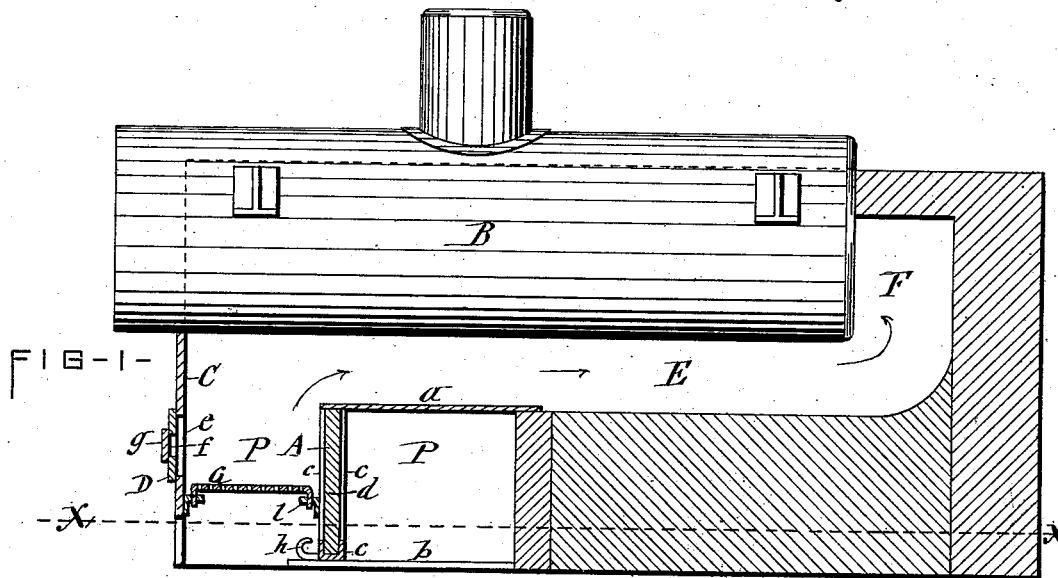
(No Model.)

F. W. MERRIAM.

VARIABLE FIRE ARCH FOR STEAM BOILERS.

No. 261,469.

Patented July 18, 1882.



# UNITED STATES PATENT OFFICE.

FREDERICK W. MERRIAM, OF OSWEGO, NEW YORK.

## VARIABLE FIRE-ARCH FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 261,469, dated July 18, 1882.

Application filed March 9, 1882. (No model.)

### *To all whom it may concern:*

Be it known that I, FREDERICK W. MERRIAM, of Oswego, in the county of Oswego, in the State of New York, have invented new and useful Improvements in Variable Fire-Arches for Steam-Boilers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

The object of this invention is to render the fire-arch of a steam-boiler adjustable or variable in capacity, and thus adapt the same for burning either coal, wood, straw, or other fuel, as may be most convenient or desirable; and the invention consists essentially in the combination, with a steam-boiler, of a pit communicating with the fire-door of the furnace or fire-arch, and a bridge-wall arranged movable intermediately of the length of said pit; and it also consists in certain peculiarities of the details of the aforesaid arrangement, all as hereinafter fully explained, and specifically set forth in the claims.

In the annexed drawings, Figure 1 is a longitudinal section of a steam-boiler provided with my improvements, and Fig. 2 is a horizontal section of the same on line *x x*.

Similar letters of reference indicate corresponding parts.

B represents a return-flue boiler, arranged in the usual manner over a fire-arch and over a fire-flue, E, which conveys the products of combustion to the combustion-chamber F at the rear end of the boiler, from whence they pass through the internal flues of the boiler to the smoke box and stack at the forward end of the boiler, the latter arrangement being so well understood by the public as not to require an illustration in this case.

Under the front end of the boiler I construct a prolonged pit, P, the depth of which is extended from the top of the ordinary bridge-wall to the bottom of the ash-pit. Across this pit I place a movable bridge-wall or partition, A, preferably formed of a double-flanged metallic frame, C, of the depth and breadth of the pit, and fire-brick or tile *d*, set in said frame. This bridge-wall is mounted on track-rails *b b*, placed longitudinally on the bottom of the pit P, so as to allow said bridge-wall to be

readily moved backward or forward in the pit, as may be desired. A movable plate, *a*, is extended from the top of the movable bridge-wall A to the bottom of the fire-flue E, and covers that portion of the pit P which is back of the fire-arch. The base of the bridge-wall frame C is provided with hooks *h*, to which another hook or suitable tool may be connected for pushing or drawing the bridge-wall into the desired position.

To the front of the bridge-wall A is secured horizontally an angle-iron, forming a horizontal ledge, *l*, which is perforated to receive downward-projecting lugs on the rear end of the grate G. Said grate, being connected in a similar manner with a ledge on the front plate, C, serves to sustain the bridge-wall A in its position. The feed-opening *e* in the front plate, C, is of the ordinary size and adapted for passing through it coal or wood. The door D over the opening *e* is provided with a smaller opening, *f*, which is closed by a supplemental door, *g*, connected to the door D, said smaller opening, *f*, being designed for feeding straw and analogous light fuel to the furnace or fire-arch. For burning straw the bridge-wall A is drawn forward to reduce the capacity of the fire-arch, and a perforated plate is substituted for the ordinary grate-bars.

When it is desired to use coal or wood as fuel the bridge-wall is moved back to increase the capacity of the fire-arch, and the requisite grate-bars are used in lieu of the perforated plate.

Having described my invention, what I claim is—

1. The combination, with a steam-boiler furnace, of a variable fire-arch consisting essentially of a prolonged pit communicating with a fire-door, and a bridge-wall arranged movable intermediately of the length of said pit, substantially as set forth.

2. The combination, with the boiler B and its furnace, of the pit P, the movable bridge-wall A, and movable plate *a*, as shown and set forth.

3. In combination with the boiler B and its furnace, the pit P, track *b*, movable bridge-wall A, and movable plate *a*, as described and shown.

4. In combination with the boiler B, its furnace, and pit P, the track *b*, metallic frame C, mounted movably on said track and provided with the ledge *l*, the fire-brick or tile *d*,  
5 movable plate *a*, grate G, and feed-door D, as shown and set forth.

5. In combination with the boiler B, its furnace, pit P, and movable bridge-wall A, the front plate, C, provided with the feed-opening  
10 *e*, the door D, provided with a smaller feed-opening, *f*, and the supplemental door *g* over the

opening *f*, substantially as and for the purpose specified.

In testimony whereof I have hereunto signed my name and affixed my seal, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 28th day of February, 1882.

FREDERICK W. MERRIAM. [L. s.]

Witnesses:

C. H. DUELL,

WM. C. RAYMOND.