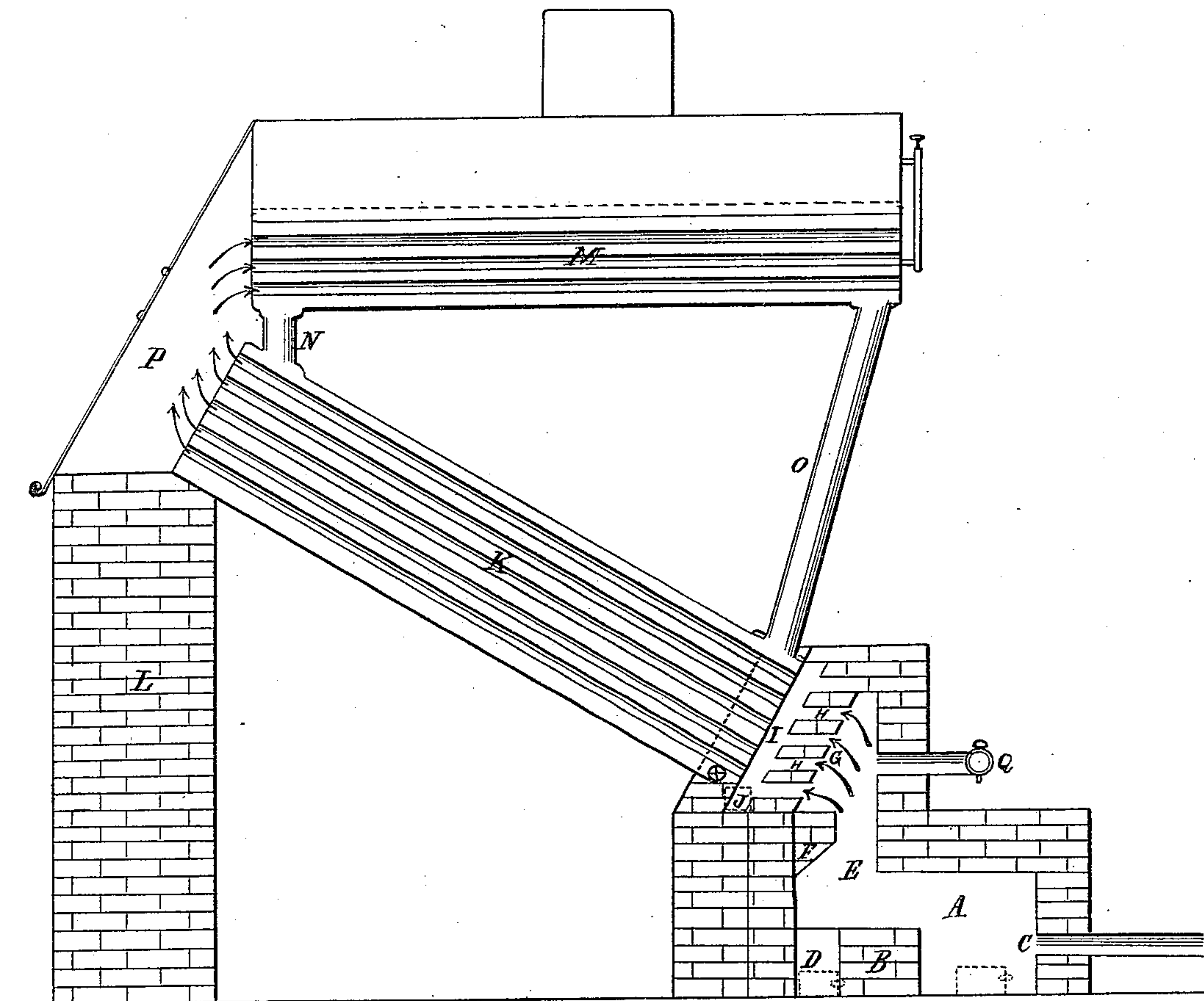


(No Model.)

J. G. McAULEY.  
FURNACE FOR BOILERS.

No. 248,772.

Patented Oct. 25, 1881.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

JOHN G. MCAULEY, OF NEW YORK, N. Y.

## FURNACE FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 248,772, dated October 25, 1881.

Application filed February 2, 1881. (No model.)

*To all whom it may concern :*

Be it known that I, JOHN G. MCAULEY, of the city, county, and State of New York, have invented a new and useful Improvement in Furnaces and Boilers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon forming a part of this specification, in which the drawing is a side elevation and longitudinal section of my improved furnace and boiler.

My invention relates to that class of furnaces and boilers in which granulated, pulverized, or liquid fuel is consumed; and the object of my invention is to equalize the heat in the combustion-chamber and flue, and to protect the head of the boiler from the intense heat, and also to utilize all the heat generated by the arrangement and combination of the boilers, as hereinafter described.

A is the combustion-chamber, which is constructed of fire-brick or other fire-proof material. The top of the combustion-chamber is arched in the usual manner, and has a flue at one end. The bottom is flat, or nearly so, and rising up from the bottom near the flue is a bridge-wall, B. In the opposite end of the combustion-chamber is an air and fuel pipe, C. One or more can be used. In the side or bottom of the combustion-chamber are one or more doors, D, to remove any accumulation of ashes or other deposit that may be made therein. E is a flue from the combustion-chamber to the boilers. In this flue, a short distance above the combustion-chamber, is a deflector, F. The lower side is made at an angle, as shown. Above this deflector the flue is partly closed by the angle-wall G. The wall G can be made at any angle or straight. In this wall are openings for the flame and heat to pass through to the boilers, as shown at H. Between this wall and the boiler is a space, I. In the bottom of this space is a door, J, to remove any deposit that may collect there.

K is a flue-boiler, set at an angle of forty-five degrees, more or less. One end of this boiler rests on the wall of the flue and combustion-chamber, which is made strong for this purpose. The upper end of the boiler rests on a wall, L, or other support arranged for this purpose.

This boiler has the usual openings in the lowest part for cleaning and blowing off.

M is a boiler partly filled with flues, the upper portion being a steam-space. This boiler is set horizontal and directly above the boiler K, to which it is connected by the pipes N and O. The object of connecting them in this manner is to equalize the heat in both boilers by a water circulation. The ends of the boilers K and M nearest together are inclosed, so that the heat and flame passing through the flues in the boiler K will be forced to pass into the flues in the boiler M, as shown at P. This inclosed space has doors to allow the flues to be cleaned and to remove any deposit between the boilers.

On the top of the boiler M is a steam-chest with the usual openings, and on the end or side of the boiler are the usual steam and water gages and water-supply pipes.

The heat or gases from the end of the boiler M can be carried into any suitable stack or chimney. The boilers can be inclosed or covered to prevent loss of heat. Additional supply of air can be given to the combustion-chamber through openings in the end or in the door D, and also to the flue E through the pipe Q, if required. The boiler M can be made with the same number of flues as boiler K by making a larger steam-chest on the top of the boiler, and can be set at one side of the boiler K with sufficient elevation above it to create a water-circulation.

To operate this furnace and boiler fill the boiler K with water, and the boiler M with water up to the dotted line. Place in the combustion-chamber A some light fuel and ignite it. Then force the carbonized air through the pipe C into the combustion-chamber, where it will instantly ignite. The force given to the fuel will cause it to impinge against the bridge-wall B and thence upward against the top of the combustion-chamber, thence against the flue-wall E, thence against the deflector F, thence up against the flue-wall E, thence against the angle-wall G, thence through the openings H into the space I, and thence into the flues in the boilers. The advantages gained by thus breaking up the current is that it makes a perfect combustion of the fuel before it reaches the flues in the boilers. The angle-wall G is to prevent the head of the boiler K burning



out. Another advantage gained by breaking up the current and equalizing the flame is it protects the lining of the combustion-chamber and flues. The intense heat produced by burning pulverized fuel, if concentrated at one point, will melt down any fire-brick at present used. My invention obviates these difficulties.

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

10 1. A furnace for burning pulverized or granulated fuel, constructed of fire-brick or other fire-proof material, having an air and fuel pipe in one end and a bridge-wall near the opposite end, in combination with an upright flue hav-

ing a deflector, F, in said flue, substantially as described. 15

2. The perforated angle-wall G, in combination with the upright flue E and the combustion-chamber A, as described.

3. In a furnace and boilers, the combination of the following elements: the furnace A, the flue E, the angle-wall G, the heat-space I, the combined boilers K and M, and the connecting-chamber P, substantially as described. 20

JOHN G. MCAULEY.

Witnesses:

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