

J. C. McNEIL.
Boiler-Furnace.

No. 219,106.

Patented Sept. 2, 1879.

Fig. 1.

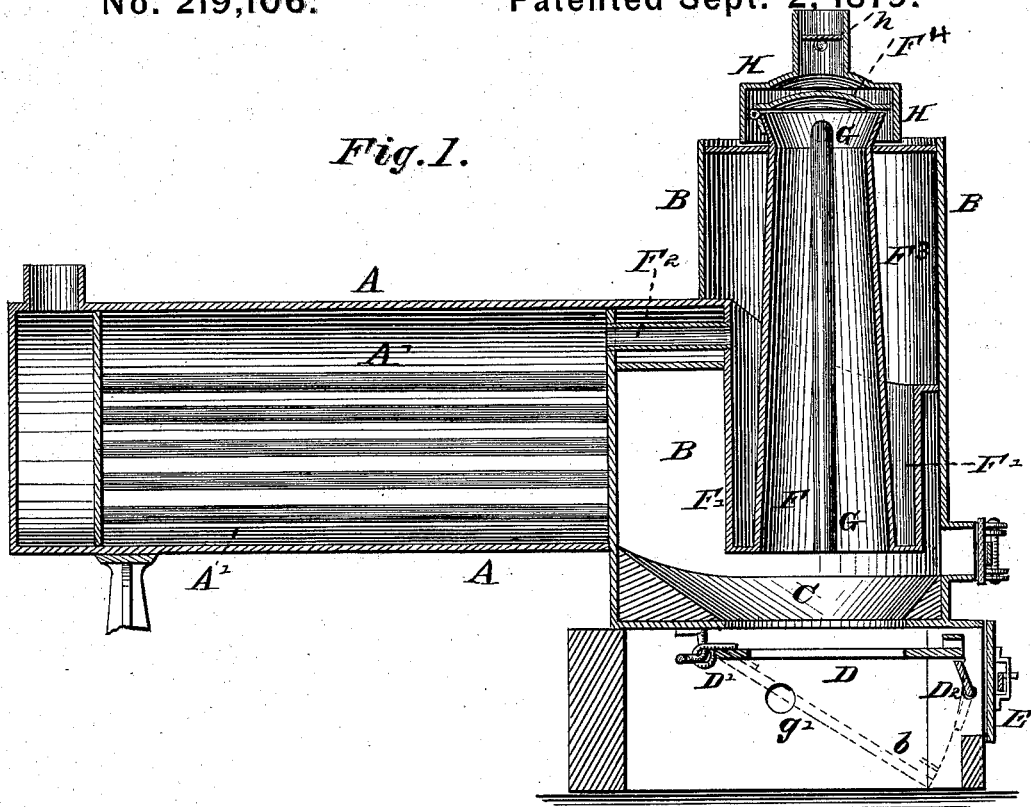
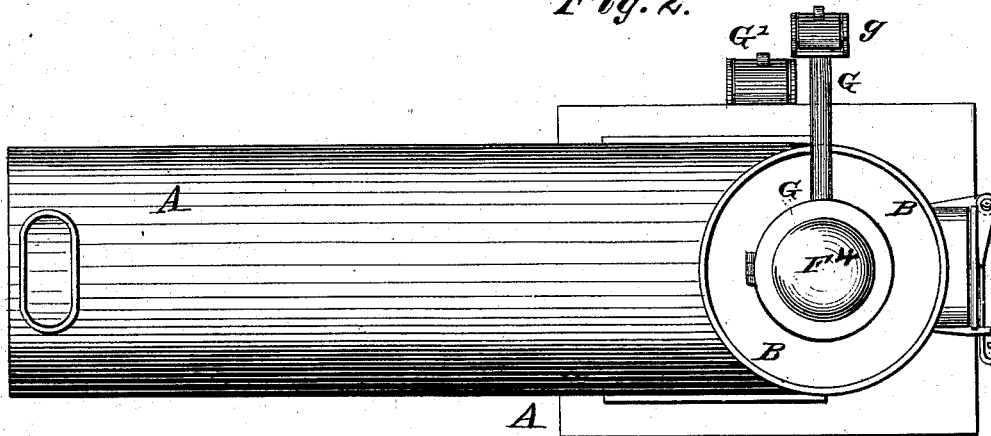


Fig. 2.



Witnesses:

Am. Brought
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UNITED STATES PATENT OFFICE.

JAMES C. McNEIL, OF AKRON, OHIO.

IMPROVEMENT IN BOILER-FURNACES.

Specification forming part of Letters Patent No. **219,106**, dated September 2, 1879; application filed May 28, 1879.

To all whom it may concern:

Be it known that I, JAMES C. McNEIL, of Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Boiler-Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in boiler-furnaces; and it consists of the parts and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a longitudinal central section of a boiler and boiler-furnace embodying my improvements. Fig. 2 is a plan view of the boiler.

In the said drawings, A is the boiler; B, its furnace-space; C, the fire-pot; D, the grate, suspended by links D¹, or by any other suitable support at its rear end, which will permit it to vibrate, and supported at its forward end by suitable mechanism D², whereby it may be held up in proper place, may be dropped down sufficiently far to rake away clinkers, or be altogether dumped, as may be desired. E is the door to the ash-pit.

The lower portion of the upright fuel-magazine F is inclosed by an annular water-jacket, F¹, which communicates, by any suitable passage F², with the boiler. The upper portion of this fuel-magazine is inclosed by the steam-chamber F³. F⁴ is a cover to the magazine.

G is an air-tube, which leads from the exterior of the boiler down through the center of the fuel-magazine, and discharges air into the body of the fuel at or near the base of the magazine, so as to supply a quantity of oxygen at that point sufficient to render the fuel at that point incandescent, so that when the magazine feeds downward it will not throw a mass of raw fuel upon the hot coals and smother them, but will throw out a mass of ignited or incandescent coal.

g is a trap-door, which serves as a valve to

regulate the supply of air through the pipe G. G' g' is a similar air-conduit for supplying air beneath the grate-bars.

The water-space F¹ surrounding the magazine prevents the heat of the furnace from igniting the coal up in the magazine, and also preserves the magazine against burning out at its base.

The pipe G, by reason of entering from above and passing through the mass of coal in the magazine, is kept cool and prevented from burning out, as would be the case if it entered from below. I therefore prefer that the pipe shall enter as above described, though I do not limit myself in this respect to such a construction, for the pipe might be made of refractory material and rise from beneath the grate, so as to discharge its air at the same point in the body of the coal.

I do not limit myself to any particular construction at the back of the grate, though I prefer to suspend the back portion of the grate by suitable links. It might, however, at this point rest upon suitable supports and guides, the object being that there shall be such construction as to permit the grate to be shaken.

So, also, at the front edge of the grate any suitable mechanism may be employed which will support the grate when in use, and which will permit it to be dropped partially down for the purpose of raking out the clinkers, or be dropped altogether for the purpose of dumping. One such construction is shown in Fig. 1, at b.

H is an adjustable cap to set over the cover of the magazine. This cap may, by suitable pipe-connection, be connected with the chimney-flue. A suitable damper, h, may be employed to cut off any tendency to a draft through the cap H when not in use.

The grate mechanism herein shown and described is not claimed in this patent, and the right to make a separate application for patent thereon is hereby reserved.

What I claim is—

In a boiler-furnace, the combination, with upright fuel-magazine F and annular water-

jacket F¹, which incloses the lower portion of the latter and communicates with the boiler, of steam-chamber F³, which incloses the upper cylinder portion, and pipe G, whose lower extremity discharges air at or near the cylinder-base, the main portion of said pipe extending through the cylinder, and its upper extremity having valve-communication with the open air, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES C. McNEIL.

Witnesses:

JNO. CROWELL, Jr.,
WILLARD FRACKER.