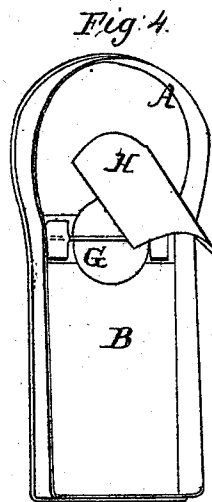
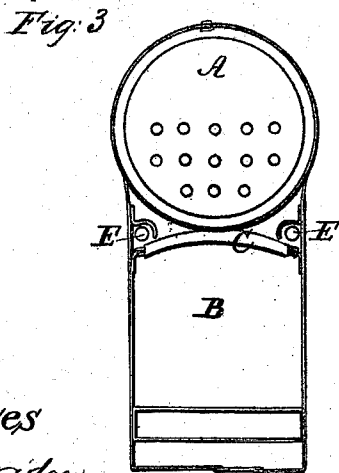
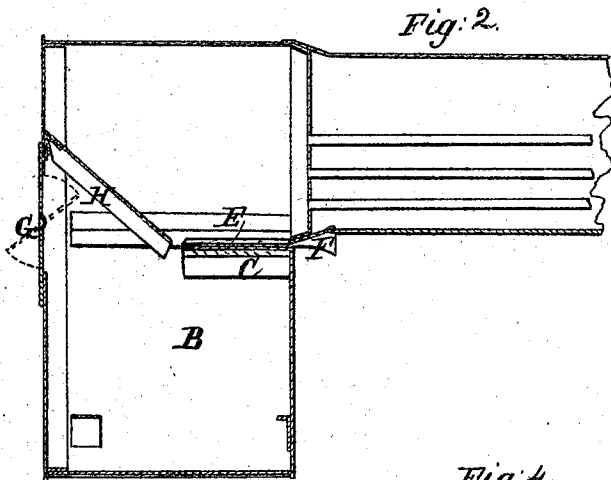
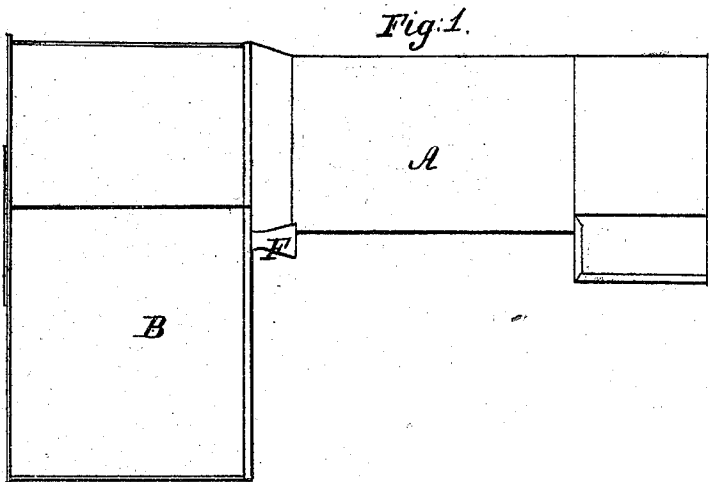


G. W. Wyne & W. McGrove.
Steam Boiler

N^o 105,617.

Patented Jul. 19, 1870.



Witnesses
J. H. Burridge
D. L. Humphrey

Inventor;
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per Burridge
Atty

United States Patent Office.

GEORGE M. WYNE AND WILLIAM MAC GROVE, OF DENNISON, OHIO.

Letters Patent No. 105,617, dated July 19, 1870.

IMPROVEMENT IN FURNACES FOR STEAM-ENGINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, GEORGE M. WYNE and WILLIAM MAC GROVE, of Dennison, county of Tuscarawas and State of Ohio, have invented a certain new and improved Steam-Engine Furnace for Burning Smoke; and we do hereby declare that the following is a full, clear, and complete description of the same, reference being had to the accompanying drawing making part of this specification, in which drawing—

Figure 1 is a side elevation of a steam-boiler.

Figure 2, a vertical section.

Figure 3, an end view of the boiler and furnace.

Figure 4, a perspective view of the inside of the front of the furnace.

Like letters of reference refer to like parts.

Description.

This improvement relates to certain arrangements of devices for the purpose of consuming smoke and other inflammable gases generated in the furnace of a steam-boiler, and to cause the cold air entering the furnace-door to be heated and brought in contact with the eliminated gases and smoke before being impinged upon the roof, sides, or flues of the furnace. These devices are not in themselves, separately considered, held as new, but the combination thereof, as hereinafter set forth.

The furnace is supplied with a current of cold air from the outside by pipes or conductors, thereby aiding in the combustion of fuel, smoke, &c.

In fig. 1—

A represents an ordinary tubular boiler, and

B the fire-box or furnace in connection therewith, and which is or may be constructed in the ordinary way.

Partially over the furnace, and immediately under the end of the boiler, is an arched roof or deflector, C, figs. 2 and 3, the purpose of which is to throw the smoke and gas generated by the consuming coal back over and upon the fire, thereby preventing it from escaping directly into the flues of the boiler.

The smoke and gas thus thrown back over the burning coals are ignited and burned, thereby adding to the heat of the furnace, and the consequent more rapid generation of steam.

By this means none or but little smoke escapes to the outside, as nearly all the combustible matter it contains is consumed, together with the gas, by thus being thrown back over and upon the bed of burning fuel, thereby saving largely in the consumption of wood and coal.

The door of the furnace is provided with a deflector or shield, H, by means of which the air entering the door G is directed down in contact with the generated gases and smoke before it is brought in contact with the flues and crown-sheet of the boiler.

This prevents not only a cold current of air from being impinged upon the boiler-plates on opening the door, but causes an additional supply to aid in consuming the increased quantity of smoke and gases

caused by the introduction of new fuel. Thus the shield aids in directing a new supply of air at the important moment when needed, and, at the same time, prevents it from being impinged upon the side-plates of the boiler before being heated, as it is well known that the cold air through the door, when directly thrown upon the plates and flues of the boiler, rapidly lowers the condition of steam in the boiler, to which there are serious objections.

In concert with the preceding, increased draught and consumption of smoke is further effected by the side drafts or air-pipes E, figs. 2 and 3, which, as will be seen, are located along the sides of the furnace above the fire.

Said pipes open upon the under side and discharge into the space, immediately over the bed of coals, a current of air from the outside, with which the tubes communicate by their passing through the back of the furnace, and terminating with a funnel-shaped mouth, F, fig. 1.

By thus supplying to the partially consuming smoke and gas a full proportion of oxygen, a more complete consumption of the smoke is effected and the draught of the entire furnace augmented, so that a more immediate and intensified heat is supplied to the boiler for the generation of steam.

It is well known to engineers that on opening the furnace doors for the purpose of throwing in fuel, that a large amount of cold air is admitted into the furnace, which flows back upon the end of the boiler, thereby immediately reducing its temperature many degrees and more; especially is this the case in very cold weather.

To prevent this is the purpose of the deflector or shield H referred to, which, as will be seen, covers the door upon the inside. Hence, when the door is opened, the cold air rushing therein strikes upon the shield or deflector, and is at once deflected down upon the fire and heated before reaching the end of the boiler.

By this means the temperature of the boiler remains without material change during the time of supplying the fire with fresh fuel, and, therefore, no loss of heat occurs to the boiler, nor injury, consequent of a sudden strain exerted thereon occasioned by its unequal temperature producing sudden and unequal contraction.

Claim.

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

The arrangement of the air-pipes E, and deflector C, in combination with the shield and furnace conjointly, for the purposes set forth, and in the manner substantially described.

GEORGE M. WYNE.
WILLIAM MAC GROVE.

Witnesses:

W. H. BURRIDGE,
OLIVE A. MILONE.