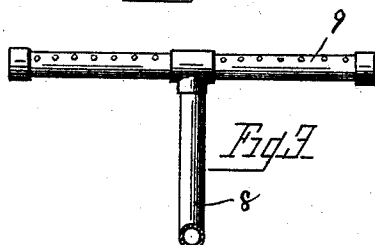
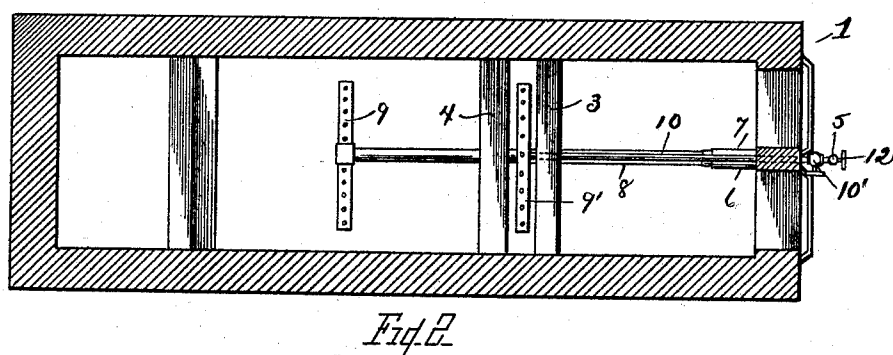
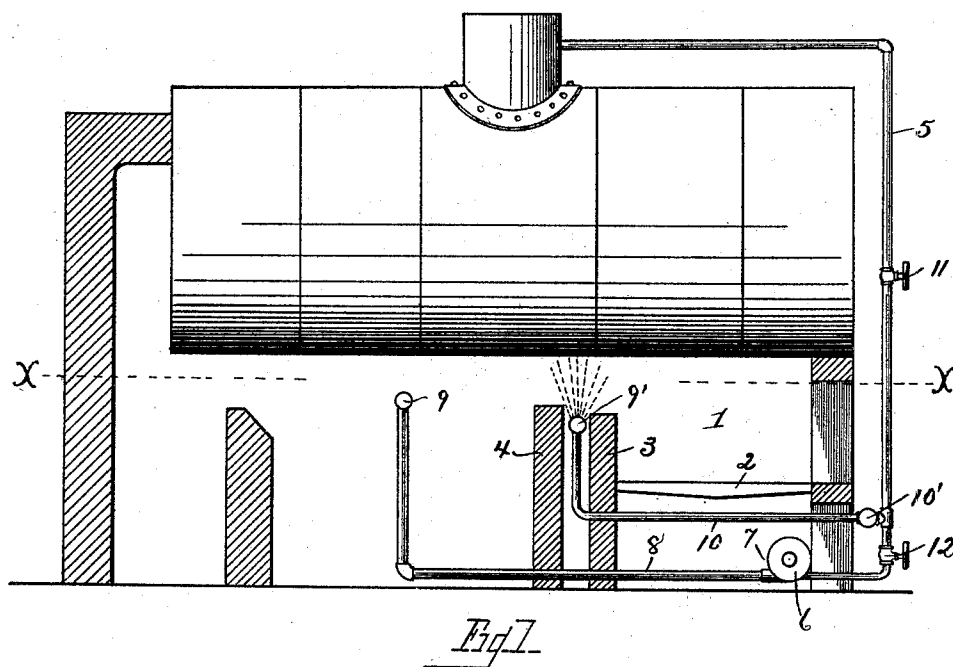


T. T. BECKETT.
SMOKE CONSUMER.

Patented June 6, 1893.



WITNESSES

Carroll J. Webster
Floyd R. Webster.

INVENTOR
Thomas T. Beckett
By William Webster
att'y

UNITED STATES PATENT OFFICE.

THOMAS T. BECKETT, OF TOLEDO, OHIO, ASSIGNOR TO HIMSELF AND
JAMES HOWE.

SMOKE-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 499,004, dated June 6, 1893.

Application filed June 23, 1892. Serial No. 437,800. (No model.)

To all whom it may concern:

Be it known that I, THOMAS T. BECKETT, of Toledo, county of Lucas, and State of Ohio, have invented certain new and useful Improvements in Smoke-Consumers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form part of this specification.

My invention relates to a smoke consumer, and has for its object to provide means for holding the incomplete products of combustion in mechanical suspension, and uniting a supply of hydrogen from a discharge of steam, and oxygen from a forced blast, to cause a complete combustion of heated gases and unconsumed carbon, contained in the smoke or vapor, while on its way to final exit.

The invention consists in the parts and combination of parts, hereinafter described and pointed out in the claims.

In the drawings:—Figure 1 is a side elevation partly in section, of a boiler and furnace. Fig. 2 is a top plan view of the furnace on lines $x-x$ Fig. 1, the grate bars being omitted. Fig. 3 is a detail view of one of the perforated cross pipes through which the steam, or air and steam is delivered.

In carrying out my invention, one great object to be attained is the even discharge of steam and air in the path of travel of the incomplete products of combustion to retard the same, and cause the gases and carbon particles to be consumed. In order to effectually accomplish this result it is necessary to supply, a large amount of oxygen to the incomplete products of combustion, in order to reinforce the same and cause an entire combustion. I have therefore provided for an induced and forced draft of air that shall be in greater than normal proportion to the steam supply.

1 designates the furnace having grate bars 2 and bridge wall 3 preferably formed double by means of a rear wall 4 extending somewhat above the wall 3. Tapped into the boiler 4 located above the surface is a pipe 5 which extends to a point below the grate bars, and

is turned at right angles to enter the ash pit, where it enters the shell 6 of the fan blower 7. Connected with the air egress port of the fan blower is a pipe 8, which extends horizontally below the grate bars and to the bridge wall, to some distance in the rear thereof, and is turned at right angles to a height to approximately that of the bridge wall, there being a perforated cross pipe 9 coupled upon the end thereof.

10 designates a pipe coupled with pipe 5 slightly above the pipe 8 and extends parallel therewith through the bridge wall 3 and vertically between the walls to near the top thereof, and is coupled with a perforated cross pipe 9' of similar construction to pipe 9.

Pipe 5 is supplied with a valve 11 to allow of partially or entirely cutting off the supply of steam to the pipes, and a valve 12 with which to regulate or cut off the supply of steam to the fan blower, and the pipe 10 is supplied with a valve 10' to regulate or cut off the supply of steam to the cross pipe 9'.

In operation fire being started in the furnace, the valves 10 and 11 are opened and steam being admitted to pipe 10 finds egress in a jet through the perforations directly in the path of travel of the incomplete products of combustion with the effect of checking the same, and uniting therewith sufficient hydrogen to cause inflammability of the heated gases, when by opening valve 12, the force of steam impinging upon the blades of the fan of the blower, the fan is revolved and drawing the heated air from below the grate bars the air and steam intimately commingled are delivered in a jet through pipe 9 and the oxygen being united with the heated gases and hydrogen a second combustion takes place, and all of the unconsumed carbon contained in the smoke or vapor is consumed.

It will be seen that the device is simple and inexpensive, and that it can be adapted to furnaces in present use without necessitating any change in the construction. While I have shown and described a double bridge wall the device will operate successfully with but one wall.

While I have shown and described a perforated jet pipe 9, I may omit the same, and by forming an injector with a discharge toward the bridge wall cause the steam and air to

meet the incomplete products of combustion in opposite force, thereby causing a more intimate commingling of the same.

What I claim is—

- 5 1. In a smoke consumer, the combination with a boiler and furnace, of a pipe leading from the boiler and extending to the rear of the bridge wall, a spray pipe secured thereon, a second pipe leading also from the boiler
10 and extending to the rear of the first mentioned spray pipe, and an air blower located beneath the grate of the furnace, and connected with the second pipe from the boiler to produce a current of commingled steam
15 and hot air.

2. In a smoke consumer, the combination

with a boiler and furnace, of a steam pipe leading from said boiler beneath the grate of the furnace to a point to the rear of the bridge wall, a sprayer arranged upon the end of said 20 pipe, and an air blower located within the furnace beneath the grate and connected with the steam pipe to produce a current of mixed air and steam.

In testimony that I claim the foregoing as 25 my own I hereby affix my signature in presence of two witnesses.

THOMAS T. BECKETT.

Witnesses:

WILLIAM WEBSTER,
GRACE E. LEHANEY.