

Tiffany & Heermance,
Steam-Boiler Furnace,

No. 31,938.

Patented Apr. 2, 1861.

Fig. 2.

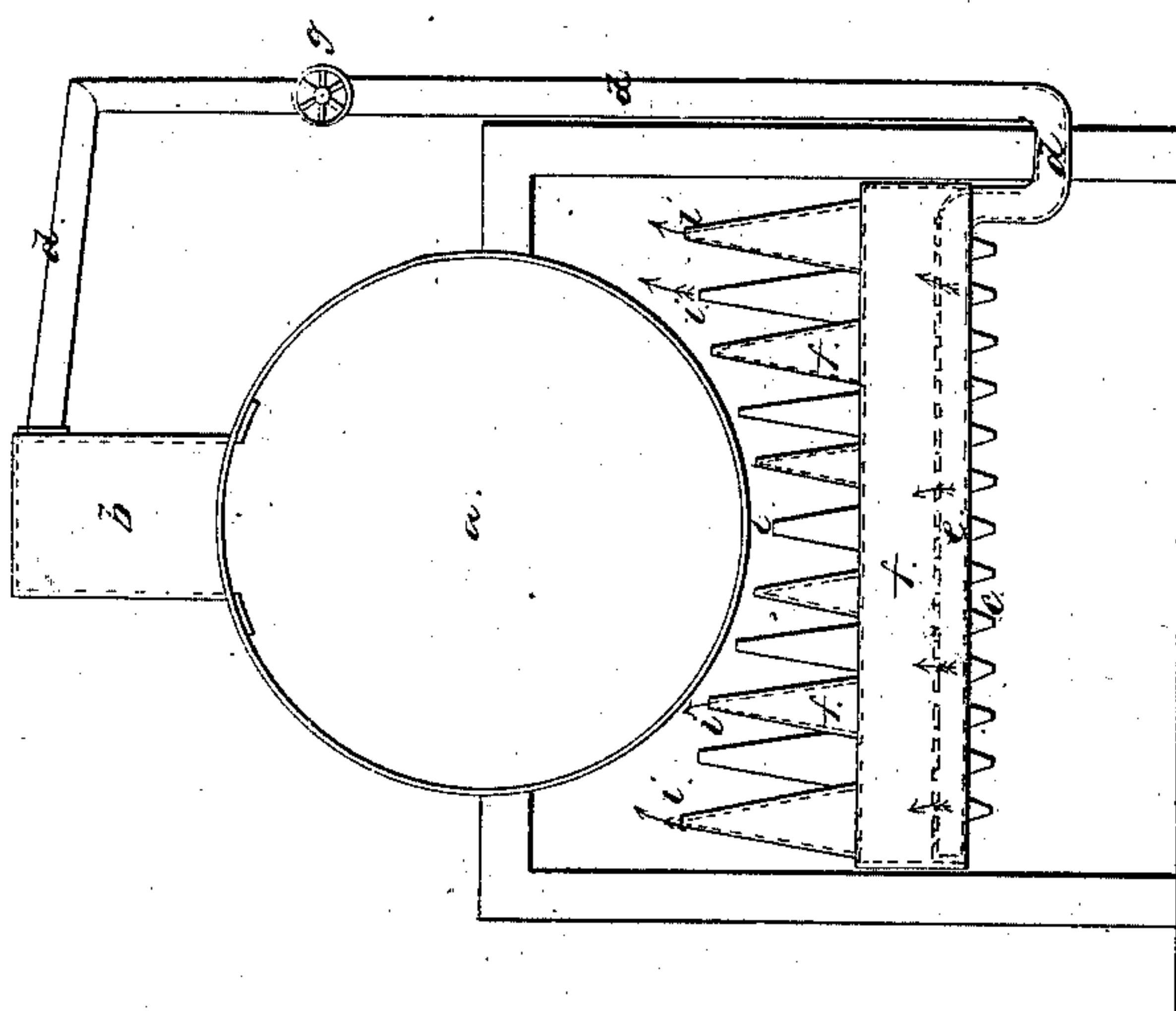


Fig. 1.

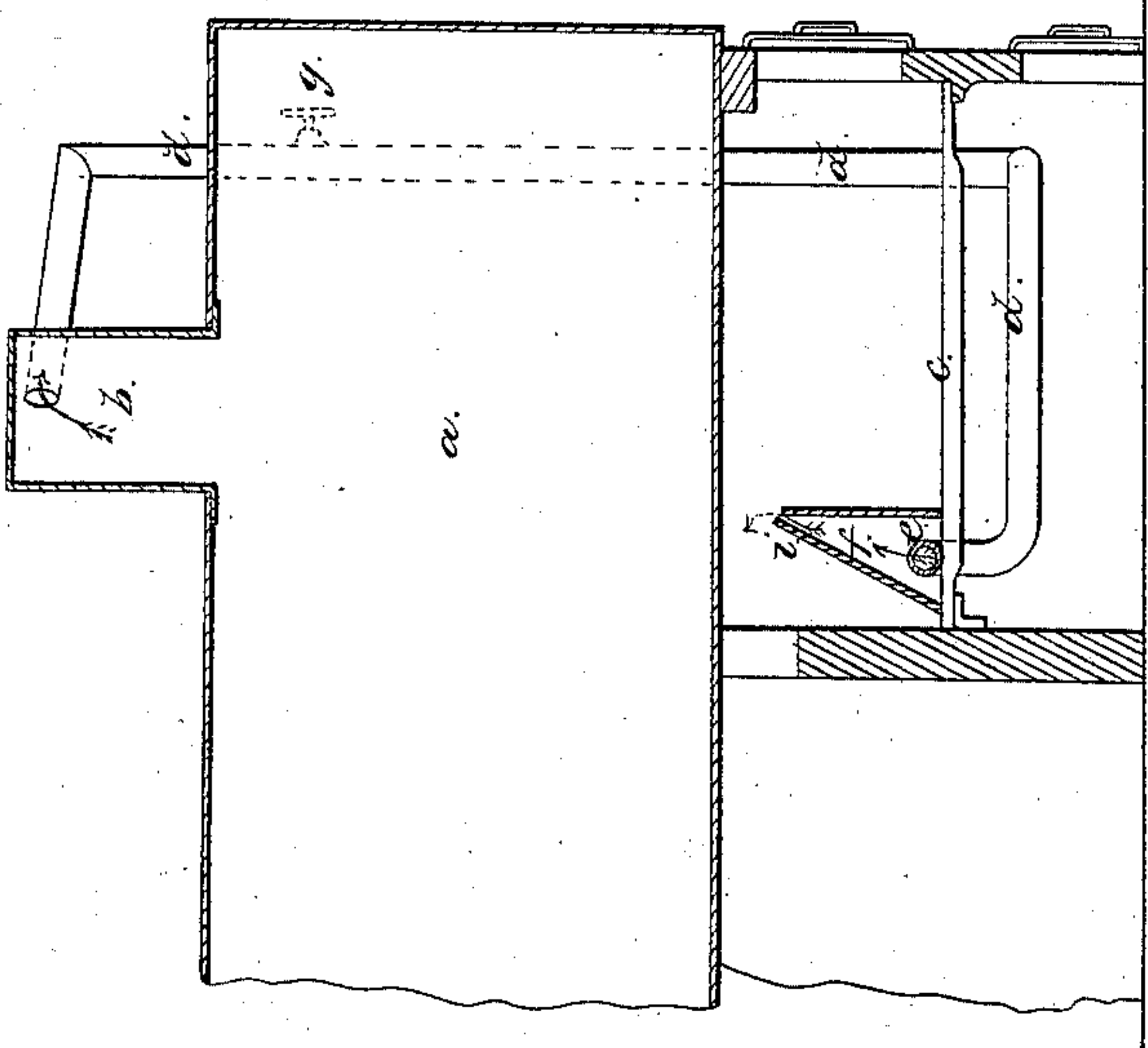


Fig. 3.

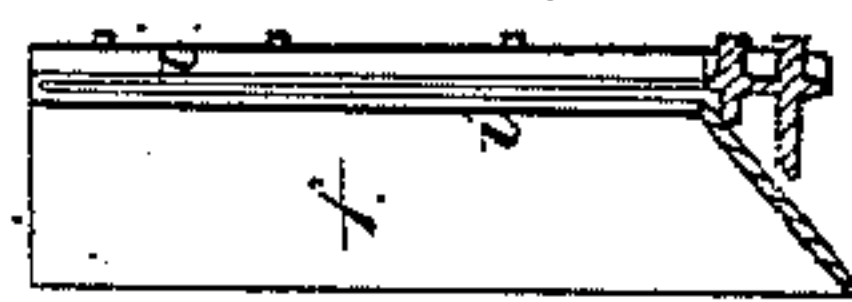
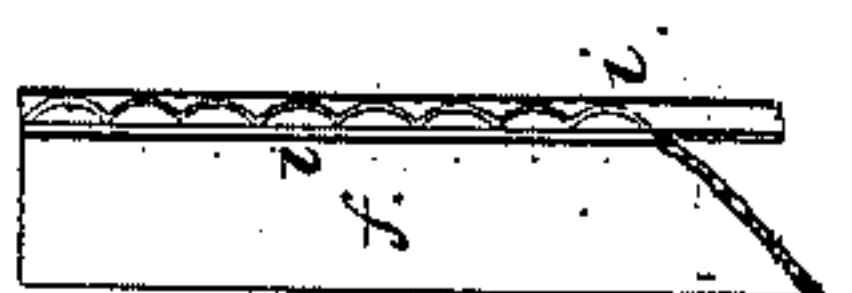


Fig. 4.



Fig. 5.



Witnesses:

Lemuel W. Serrell
Chas. H. Smith

Inventor:

Joseph C. Tiffany
Garret G. Heermance

UNITED STATES PATENT OFFICE.

JOSEPH C. TIFFANY, OF NEW YORK, AND GARET G. HEERMANCE, OF HUDSON, NEW YORK.

MEANS OF PROMOTING COMBUSTION IN THE FURNACES OF STEAM-BOILERS.

Specification of Letters Patent No. 31,938, dated April 2, 1861.

To all whom it may concern:

Be it known that we, JOSEPH C. TIFFANY, of the city and State of New York, and GARET G. HEERMANCE, of Hudson, in the county of Columbia and State of New York, have invented, made, and applied to use a certain new and useful Improvement in Means for Promoting Combustion in Furnaces for Steam-Boilers, &c.; and we do hereby declare that the following is a full, clear, and exact description of the nature of our said invention, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1, is a vertical section of a boiler fitted with my said invention. Fig. 2, is a cross section of the furnace.

Similar marks of reference denote the same parts.

The nature of our said invention consists of a heated chamber, through which air passes, combined with a pipe within said chamber supplying a regulated amount of steam according to the size of the furnace, which steam and air unite in said heated chamber and pass off to the fire through a suitable opening or openings so as to combine with the unconsumed products of combustion as they pass off from the fire. This heated chamber not only causes the steam and air to commingle and combine so as to be adapted to promoting the combustion as aforesaid, but protects the steam pipe from injury by direct contact with the fire, as has heretofore been the case when applied and used by others.

In the drawing we have represented the boiler *a*, and steam dome *b*, and grate bars *c*, as usual.

f is a hollow box forming a heated chamber supplied from the ash pit or blower with air, and *d* is a pipe and regulating cock *g*, for the admission of steam through the perforated pipe *e*, within the chamber *f*, located at the rear of the furnace.

i is an opening through which the air and gases or steam escape as they become heated in said chamber. The plates forming this chamber are to be kept apart by any suitable tie bars, and the narrow opening *i*, at the top allows the vapors to pass out and combine with the unconsumed gases evolved from the

coals producing a perfect combustion. This air chamber *f*, also forms the guard to the perforated pipe *e*, so that the fire will not burn the same out. Perforations may be substituted for the narrow opening *i*, as represented in Figs. 4 and 5, or any suitable openings may be provided, and the amount of air admitted may be regulated by a damper if desired. The side of the chamber *f*, next the fire is shown in Fig. 5, as corrugated and coated with fire clay and sand to resist the action of the heat, and in Fig. 3, we have represented the side next the fire as formed with lugs on the outside and spikes projecting in the inside, the outer projections serving to hold on a coating of fire clay and sand and the inner projections aiding to heat the air and steam passing through the chamber before going to the fire.

It will be seen that if the pipe *d*, was filled with coils of iron wire or iron chips the steam would be more fully decomposed and if desired a small stream of water may be substituted for steam from a boiler, the heat converting said water instantly into steam.

The front plate of the chamber *f*, shown in Fig. 3, may be either straight or corrugated and formed with the lugs as represented, and the opening or openings in the pipe *e*, may be of any desired character.

What we claim and desire to secure by Letters Patent is—

1. The heated chamber *f*, through which air passes combined with the pipe *e*, within said chamber supplying a regulated amount of steam or vapor which combines with the air in said heated chamber and passes off to the fire through a suitable opening or openings as and for the purposes herein specified.

2. The construction of the chamber *f*, represented in Fig. 3, with the lugs and spikes for the purposes and as set forth.

In witness whereof we have hereunto set our signatures this second day of November, 1860.

JOSEPH C. TIFFANY.
GARET G. HEERMANCE.

Witnesses:

LEMUEL W. SERRELL,
CHAS. H. SMITH.