

M. S. Bringier,

Steam Generator,

No 98,021.

Patented Dec. 21, 1869.

Fig. 1.

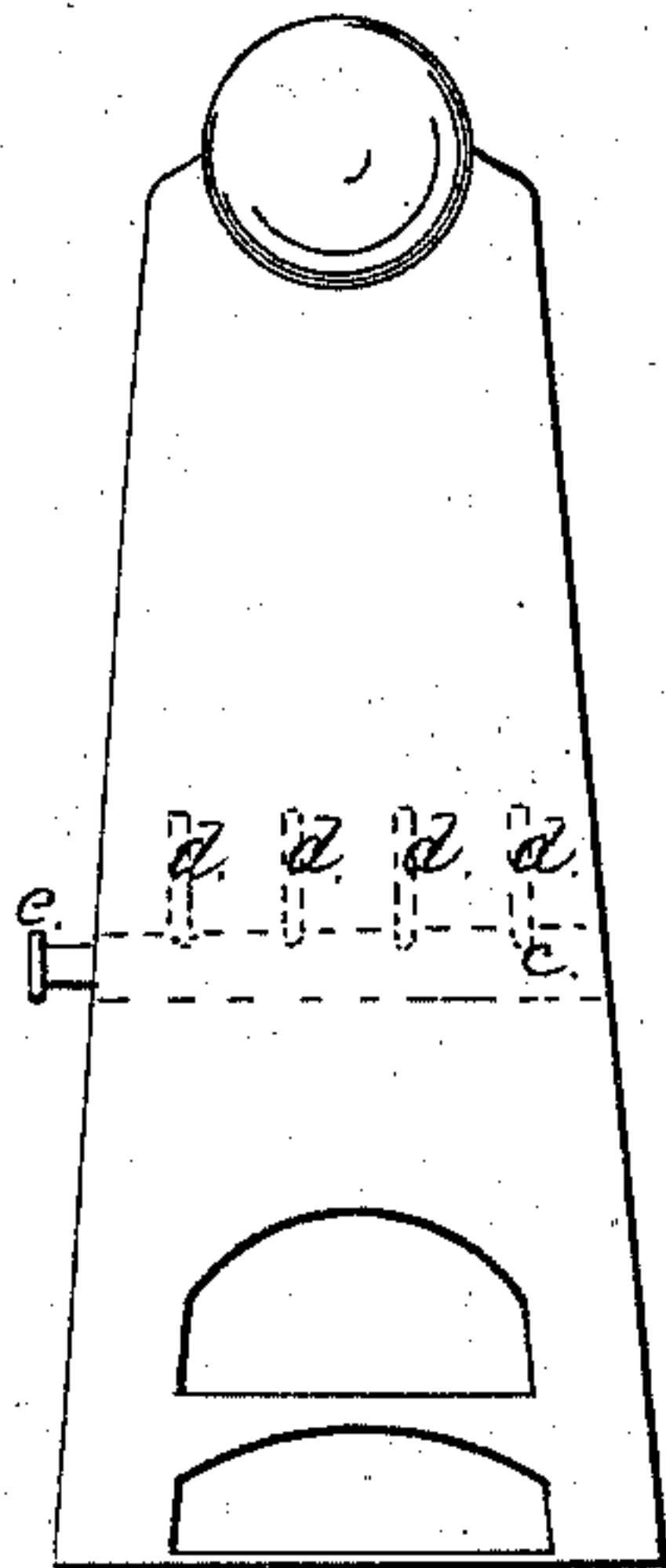
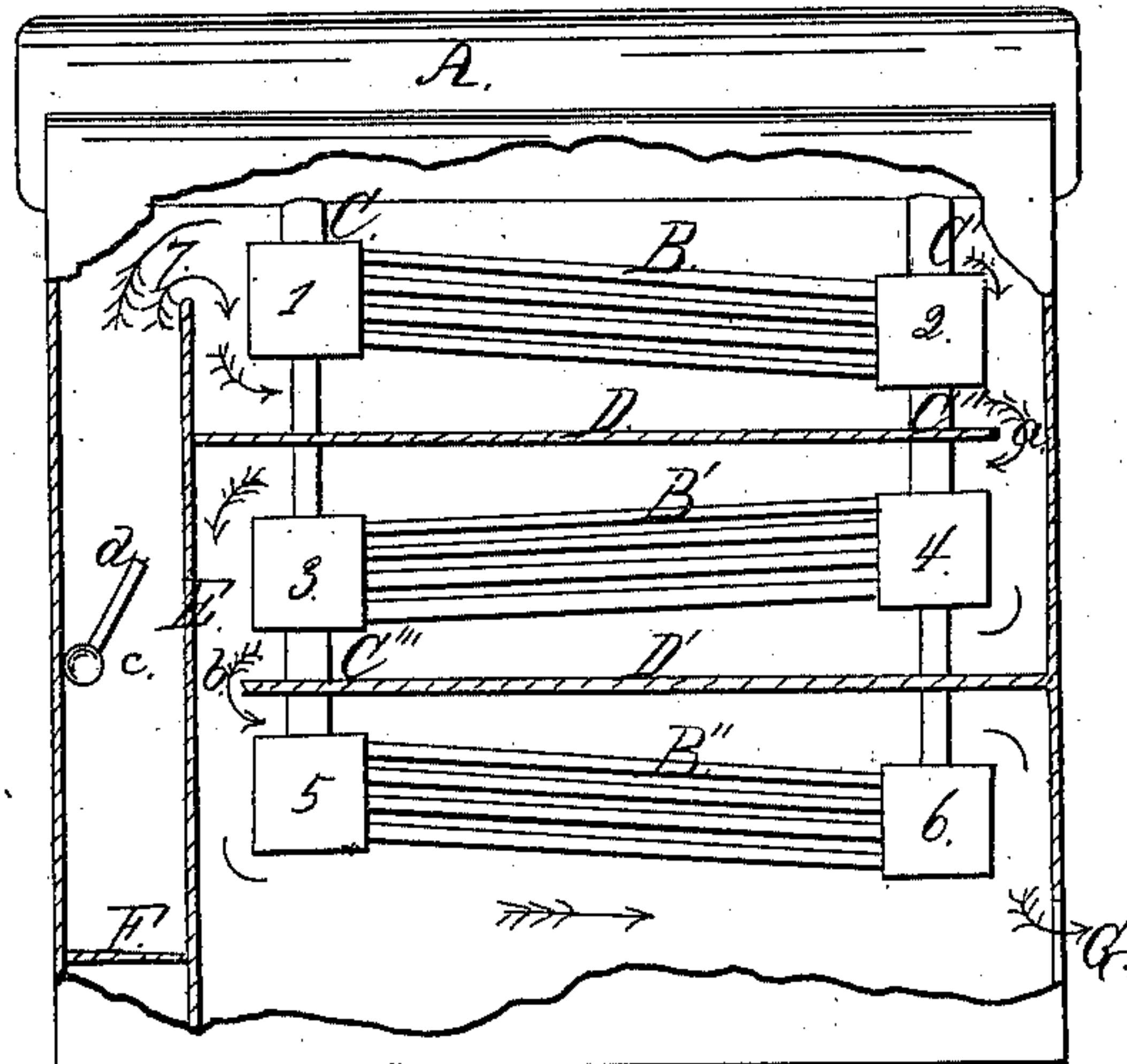


Fig. 2.



Witnesses;
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United States Patent Office.

M. S. BRINGIER, OF ASCENSION PARISH, LOUISIANA.

Letters Patent No. 98,021, dated December 21, 1869.

IMPROVEMENT IN STEAM-GENERATORS.

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

To all whom it may concern :

Be it known that I, M. S. BRINGIER, of the parish of Ascension, State of Louisiana, have invented a certain new, useful, and improved Mode of Increasing the Evaporation and Vaporization in Steam-Generators or Boilers; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawing, making a part of this specification.

My improvement refers especially to my "improvement in evaporation and vaporization," as patented on the 12th day of November, 1867, on which it is an improvement, and is designed to increase the efficiency of said improvement, by applying the waste steam from the boilers or cylinders, after heating the same at the front of the furnace, to increase the draught therein, and thus quicken the combustion of the fuel, and correlatively the evaporation and vaporization of the water or other liquid in the boiler or evaporating-vessel, to which the furnace pertains, whatsoever may be its nature or the object of the evaporation, whilst, at the same time, enabling me to control the direction and power of the draught at my pleasure.

But my invention will be better understood by referring to the drawings.

At Figure 2, A represents what is usually denominated a cylinder-boiler, for the generation of steam, and

B B' B'', three groups of pipes connected therewith, on the plan indicated in my said patent of November 12, 1867.

It will be observed, that as delineated, group B is connected with the boiler A by short vertical pipes C C', and to group B' by a similar pipe, C'', whilst B'', in its turn, communicates with group B''' by another like pipe, C''', which said pipes enter the box-chambers 1, 2, 3, 4, 5, 6, into which the pipes that make up the several groups B B' B'' enter, and are secured at their two extremities.

It will moreover be noticed, that B and B'' incline a few degrees out of a true horizontal line or plane in one and the same direction, whilst the intermediate group B' is placed at the same angle or inclination in the opposite direction. The object of this arrangement is to facilitate the uprising of the steam through the tubes into the boiler, and the filling of the same with water from the boiler whilst the vaporization is going on.

In the construction of the furnace to be used in connection with my boiler, when made on the plan above described, a horizontal plate, D, separates group B from group B', whilst a similar plate, D', separates the latter group from group B''. These plates, how-

ever, do not extend the whole length of the furnace, but stop sufficiently short to provide openings at *a b*, for the free passage of the heat and flame from the fire-bed, (in a downward direction, as shown by the arrows,) at the opposite ends thereof.

The plate D is connected, at its front end, with a vertical plate and transverse wall, E, as shown, which said wall extends upwardly above said plate, just as far as is compatible with an allowance of a sufficient space, *f*, above its top, for the ready passage of the products of combustion from the fire-bed F, which consists of any proper arrangement of grates.

This arrangement, it will be observed, carries the heat and flame from the fire in the first place, so as to bring it in direct contact with the water-surfaces of the boiler, and cause it to envelop group B of the pipes; thence through opening *a*, at the rear end of plate D, below this plate and around group B'; thence through opening *b*, below plate D', and hence in contact, upon all sides of the same, with group B''; and thence through a suitable opening or flue, at G, to the chimney, provided to carry off the products of combustion, which chimney, forming no part of my invention, I have not shown on the drawings. So that it will be perceived, instead of providing for the gradual ascent of the heat and flame, from the fire-bed, as in ordinary cases, I reverse the current of the same, and compel it to descend from the boiler until it passes into the chimney to be carried off and wasted, or used in connection with one of my evaporators.

To produce a sufficient draught, under the circumstances, I combine with the boiler and furnace, when constructed as described, a means for surcharging with heat, all the waste steam of the engines, and then throwing it into the front end of the furnace with the accumulated force that is due to its enormously expansive power. This means consists of a large pipe or drum, *c*, placed transversely across the furnace, some distance above the fire-bed, as shown, which is provided with a number of small pipes or nipples, *d*, that point upwardly at an angle of about forty-five degrees, so as to throw the steam that issues from them very nearly in the same direction with the current of the products of combustion from the fire-bed at F.

The waste steam being brought from the engine, by any proper conduit, connected, at *e*, fig. 2, with the pipe *c*, into the latter, it is there surcharged with heat by the flames of the furnace, and hence rushes with tremendous force through the nipples *d*, and thence through the open spaces at *f*, *a* and *b*, and thus secures my object.

To guard against too great a draught, although this can scarcely ever occur, the conduit for the steam, that leads into pipe *c*, may be provided with a regu-

lating-cock or valve, at any proper point. The steam being carbonized will itself burn, and add greatly to the heat of the furnace proper.

My invention may be usefully applied to boilers, whatsoever may be the character of the engine for which they provide steam, but it is in an especial manner adapted to the use of locomotive-engines and the like.

Having thus described my invention,

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

1. The application of the waste steam, to increase and control the draught of the furnace of a boiler or evaporator, constructed substantially as herein described, when the same is done by the means and in

the manner substantially as herein described, for the purpose set forth.

2. The combination of the boiler A, groups of tubes B B' B'', and connecting vertical pipes C C' C'' C''', when used in connection with a furnace, provided with a vertical wall, E, and horizontal divisional plates D D', with a pipe or drum, c, when the latter is provided with the issue-pipes or nipples d, and the several parts are constructed, arranged, and operated substantially as and for the purpose specified.

M. S. BRINGIER.

Witnesses:

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