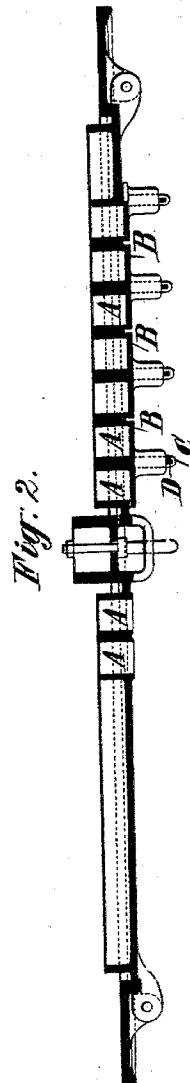
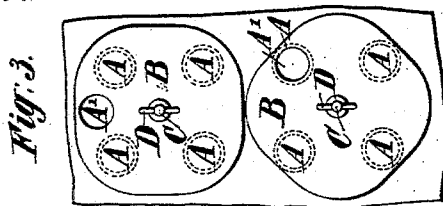
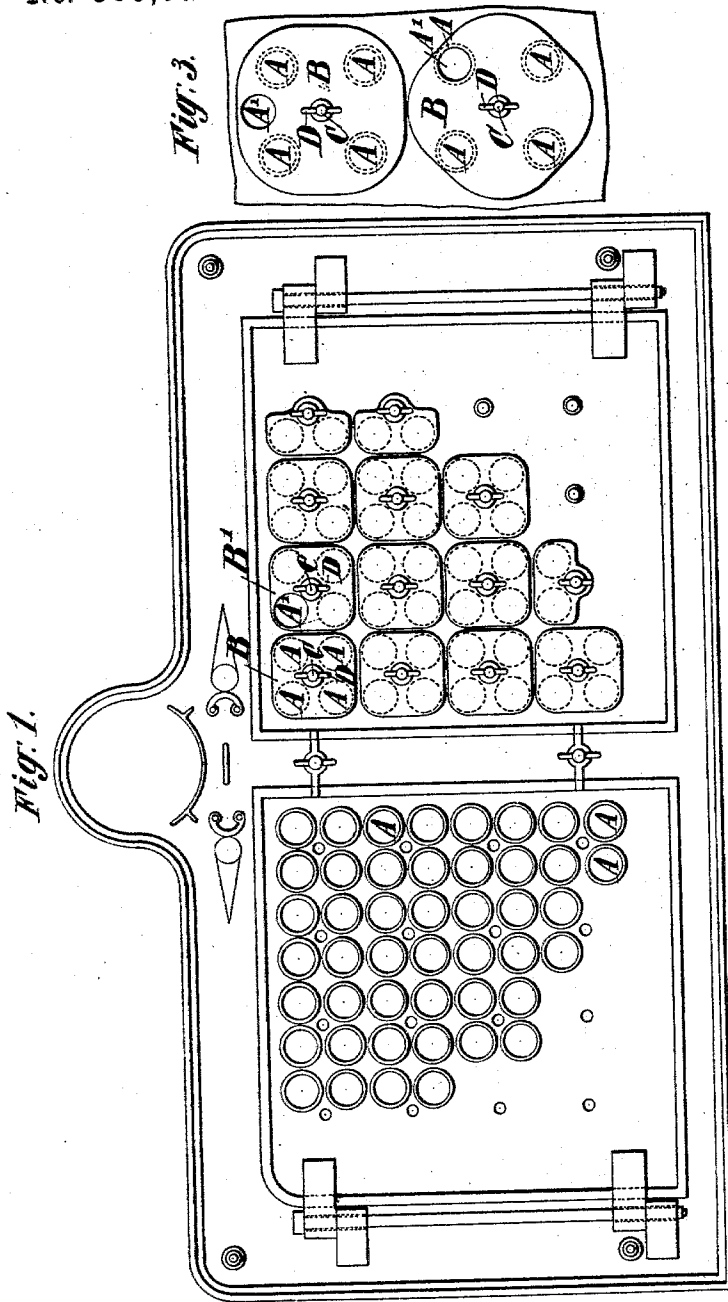


(No Model.)

J. HARTMANN.
PERFORATED DOOR FOR STEAM BOILERS.

No. 569,872.

Patented Oct. 20, 1896.



WITNESSES.

Julius Lutz
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Munich

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UNITED STATES PATENT OFFICE.

JEAN HARTMANN, OF MULHOUSE, GERMANY.

PERFORATED DOOR FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 569,872, dated October 20, 1896.

Application filed May 23, 1896. Serial No. 592,769. (No model.) Patented in France December 14, 1894, No. 243,630; in Luxemburg December 14, 1894, No. 2,197; in Belgium December 15, 1894, No. 113,199; in Germany January 25, 1895, No. 82,402; in Russia July 27, 1895, No. 15,980, and in England May 23, 1896, No. 14,499.

To all whom it may concern:

Be it known that I, JEAN HARTMANN, a subject of the Emperor of Germany, residing in Mulhouse, (Alsace,) Germany, have invented
5 a Perforated Door for Steam Boilers or Generators, (for which patents have been obtained in France December 14, 1894, No. 243,630; in Belgium December 15, 1894, No. 113,199; in
10 Luxemburg December 14, 1894, No. 2,197; in Germany January 25, 1895, No. 82,402; in Russia July 27, 1895, No. 15,980, and in Great Britain May 23, 1896, No. 14,499,) of which the following is a specification.

The subject of this invention is a perforated
15 door which enables the soot or dust deposited by the gases upon the walls of tubes or on partitions in steam boilers or generators (whether heated with gas or coal) or in other tubular
20 or partitioned heating apparatus to be swept out or off without involving any diminution of the intensity of the fire.

The invention will be best understood by reference to the accompanying drawings, in which—

25 Figure 1 is a front view of a door constructed in accordance with this invention. Fig. 2 is a horizontal section thereof, and Fig. 3 is a partial elevation of the door of a steam-boiler the tubes of which are arranged at certain distances apart.

30 This door may consist of one or more hinged leaves and be provided with perforations A, corresponding to the position of the tubes or of the intermediate spaces between the tubes where the flame surrounds the several tubes.
35 The perforations A are covered or concealed by a series of cover-plates B, each of which generally covers a number of perforations at once and is retained by a central pin or pivot C and a peg or key D. Besides the aperture
40 in which the said pin or pivot C engages the plate referred to has only one perforation A', and as it turns on its pivot it uncovers the perforations of the door, one by one, and thereby affords a ready passage for the insertion
45 of a brush or other cleaning instrument.

The perforations in the doors are often so close together as not to admit of the employment of a perforated plate, and where this
50 arrangement, which is shown in Figs. 1 and

2, is adopted the operator may use a single plate B', provided with one perforation, substituting it for each of the non-perforated plates B in succession while he cleans each tube or each intermediate space between the
55 tubes of the boilers, one by one, in rotation. This substitution of plates may also be obviated by providing the doors entirely with the plate B', the hole of which is then covered by a small lid. In certain cases, moreover,
60 each hole A may be covered separately by a plate.

This method of boiler-tube cleaning offers the following advantages: Inasmuch as the steam-generating power of a boiler is in no
65 way interfered with or retarded by the cleaning process, this process may be repeated more frequently than it could be hitherto. The surfaces of the tubes and other heating-surfaces may therefore always be kept
70 entirely free from the soot or dust of combustion-gases, whereby the useful effect of the boiler will be increased, while a saving is effected in the consumption of fuel. Besides,
75 the currents of cold air, which, where the cleaning operation is performed through doors as usually constructed, are allowed to come into contact with the boiler, are here effectively kept away from the same. These
80 cold drafts have up to the present proved to be one of the most powerful destructive agencies that have been at work in attacking tubular or partitioned boilers. The present arrangement therefore renders boilers of this class more durable than they have heretofore
85 proved to be and enables them to operate satisfactorily for a longer period, while leakages, cracks, or groovings or other faults necessitating repairs are effectually obviated.

It will be seen that in each of the constructions shown I employ a door having a series
90 of apertures in combination with plates or caps movably connected to the door and arranged to cover the apertures in the door, one of said plates, as in the constructions illustrated by Figs. 1 and 2, or all of them, as in
95 the construction shown in Fig. 3, being provided with an aperture adapted to register with those of the door. With the construction shown in Fig. 1 it is necessary to remove
100

the apertured plate or cap from the door in order to turn said plate, while with the construction shown in Fig. 3 every one of the plates may be turned about the pivot or pin C.

5 What I claim is—

A door for a boiler or other tubular apparatus, having a number of perforations corresponding to the situation of the several tubes, or spaces between the tubes, of the said apparatus, in combination with plates each of

which serves to cover over one or more perforations; substantially as and for the purposes specified, and illustrated in the drawings.

In testimony whereof I have signed my name to this specification in the presence of 15 two subscribing witnesses.

JEAN HARTMANN.

Witnesses:

GEORGE GIFFORD,

FRÉDÉRIC ZIMMERMANN, Jr.