C. J. EAMES.

APPARATUS FOR SUPERHEATING STEAM.

No. 186,465. Patented Jan. 23, 1877.

Fig. 1.

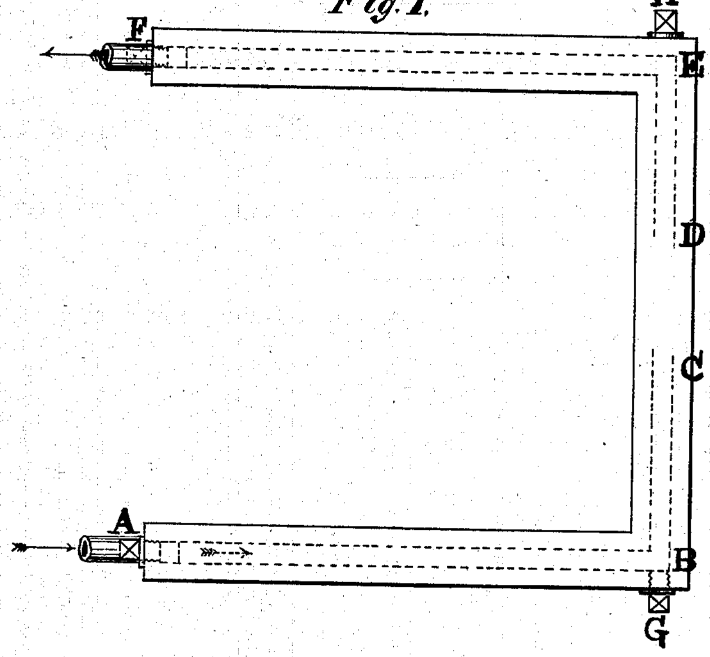
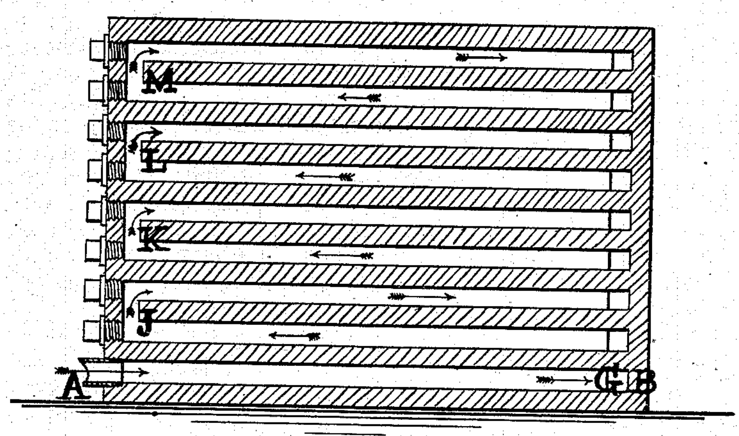


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES J. EAMES, OF NEW YORK, N. Y.

IMPROVEMENT IN APPARATUS FOR SUPERHEATING STEAM.

Specification forming part of Letters Patent No. **186,465**, dated January 23, 1877; application filed November 16, 1876.

To all whom it may concern:

Be it known that I, CHARLES J. EAMES, of New York, in the county and State of New York, have invented a new and useful Improvement in the Construction of Apparatus for Superheating Steam, of which the following is a specification:

My invention consists in converting the walls of a fire-box or fire-place, which contains burning fuel, into a superheater, by casting the same in iron, in one piece, with cores so introduced in the mold as to leave, when removed, a series of parallel horizontal channels nearly surrounding the fire, which series is then, by a further device, connected into one continuous channel, circumventing the fire many times in succession.

Such a casting may be made to form two sides of a vertical triangular prism, four sides of a pentagonal, five sides of a hexagonal, or three sides of a rectangular prism, one side being always left open, for reasons which will appear; but in practice it is found preferable that it should have the form of three sides of a rectangular or square prism or box, which is to hold the fire.

Figure 1 is a horizontal section of this channeled fire-box, and Fig. 2 a vertical section through the right-hand wall, looking into the open side of the box.

In Fig. 1 the dotted lines A B C on the right-hand side represent sectionally the bottom channel in Fig. 2, while the dotted lines D E F on the left-hand side of the same represent the reverse part of the top channel in Fig. 1.

The mode of inserting the cores into the mold to form these channels is as follows: For each of the series of horizontal channels represented in Fig. 2 two cores are inserted, passing, in Fig. 1, from A to the point B, and from F to the point E, so that, after removal of these cores, all these channels remain open in front, on both the right-hand and left-hand sides, though all closed in the rear. Moreover, each alternate one of these right and left hand side cores has a small vertical branch or projection close to the front end, passing up to the next core above, as indicated in Fig. 2 by J, K, L, and M, so that after removal connecting channels are left on the right-hand side between the second and third, fourth and fifth, sixth and seventh, eighth and ninth, channels, counting from the bottom, no such connections existing in the intervals between these. In the case of the left-hand side, however, reverse to Fig. 2, the projections or branches begin with the bottom core and form vertical connecting-channels from the first to the second, the third to the fourth, the fifth to the sixth, and the seventh to the eighth. The rear portions of these channels are formed in each case by cores passing all the way through, as from G to H in Fig. 1, leaving an opening at each end.

The method of converting the whole series of channels into one continuous channel is simply to put stoppers into all the external openings left after the removal of the cores, both those left in front on both sides, and those left at both ends of each of the rear cores, as at G and H in Fig. 1, excepting only into the initial and final openings at A and F. The course of the steam while passing through the whole series will thus be alternately in opposite directions round each horizontal channel, entering at the bottom on the right-hand, and going out at the top on the left-hand, side, as indicated by the arrows.

For stopping all these openings I prefer to use screw-plugs, as represented in the drawings.

I claim—

A superheater for steam, cast in one piece, forming two or more sides of the box to hold the fire, and perforated with channels formed by cores having branches connecting contiguous ends alternately, in combination with stoppers, as shown, so as to form one continuous channel between the induct and educt openings.

CHARLES J. EAMES.

Witnesses:
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