(No Model.)

G. SELDEN.

STEAM BOILER FURNACE.

No. 353,595. Patented Nov. 30, 1886.

Fig. 1.

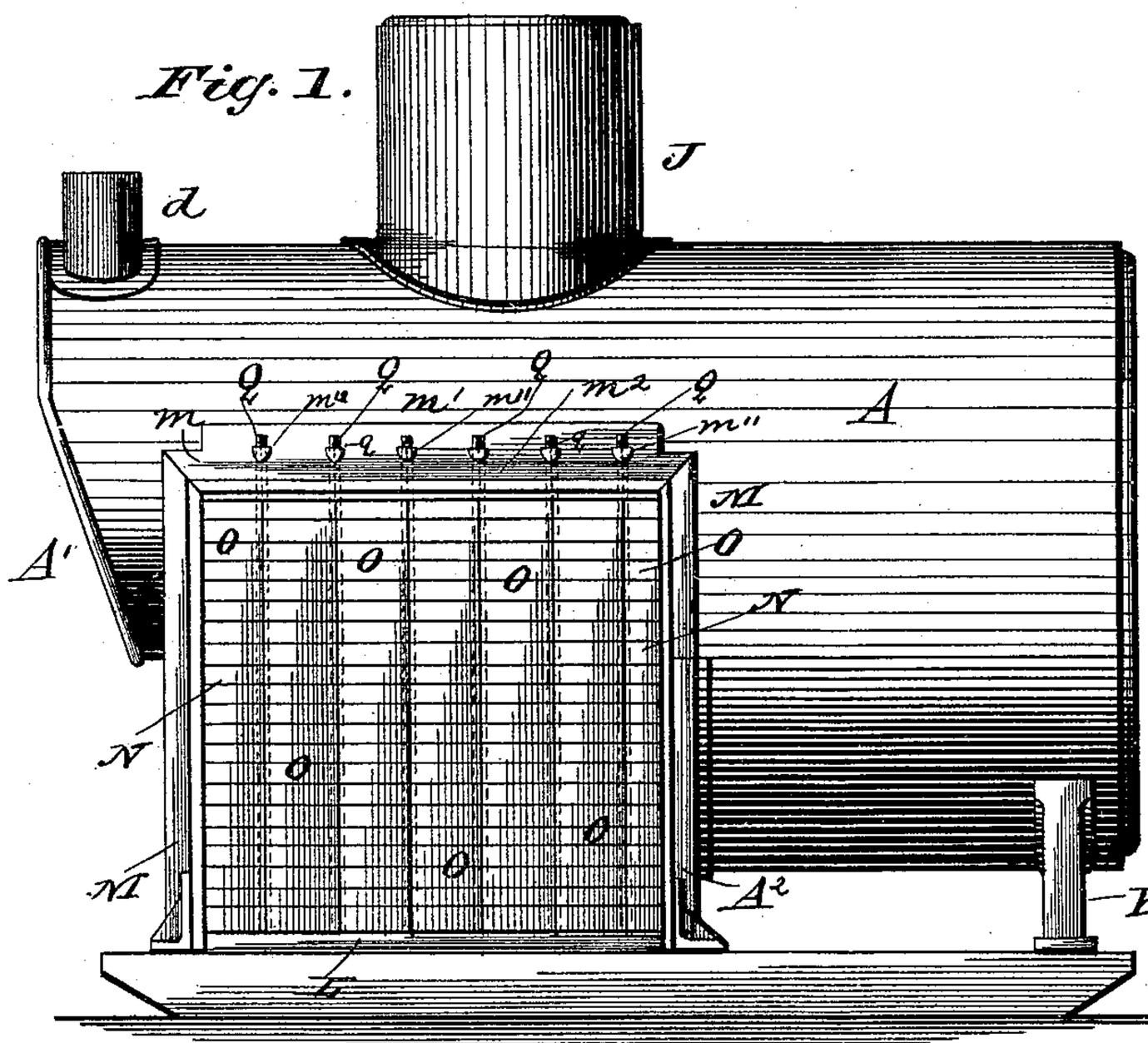


Fig. 2.

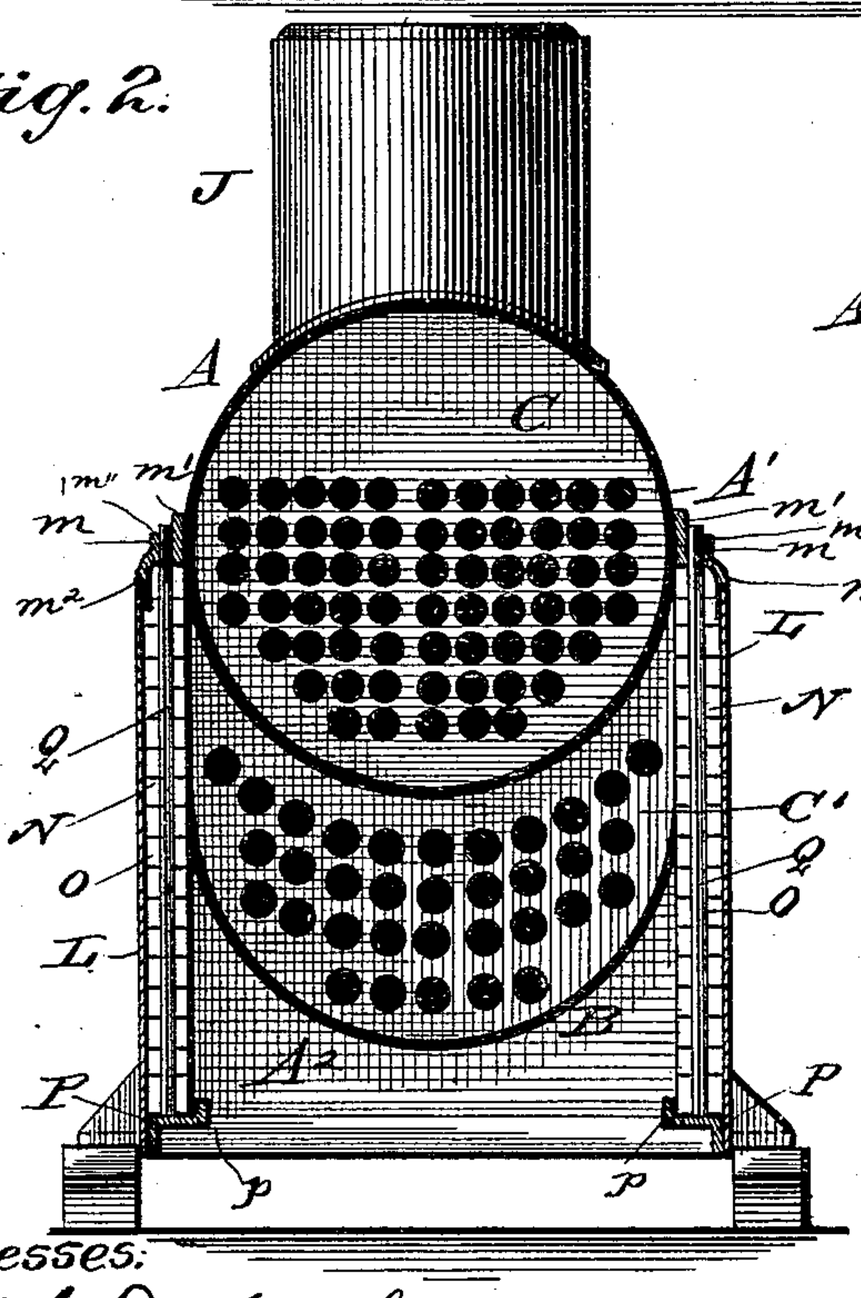


Fig. 3.

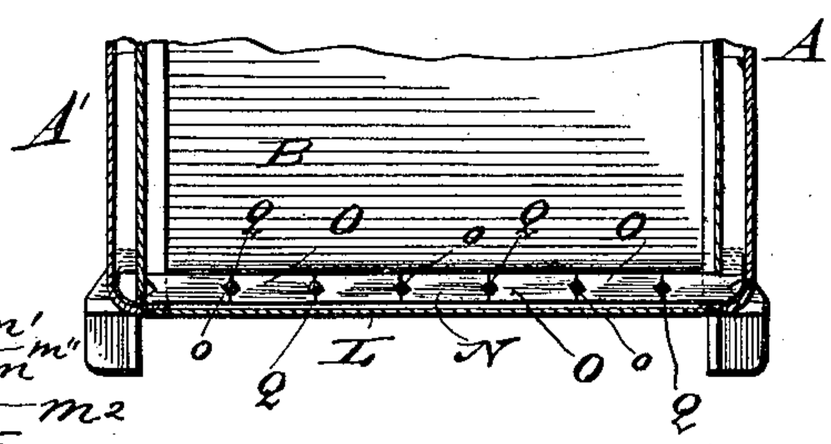


Fig. 4.

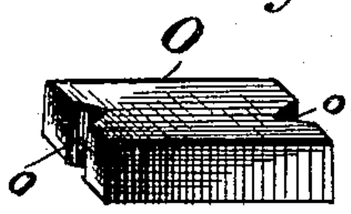
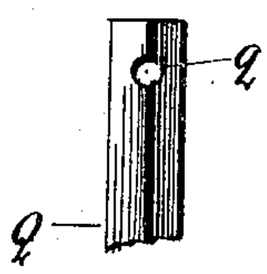


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE SELDEN, OF ERIE, PENNSYLVANIA.

STEAM-BOILER FURNACE.

SPECIFICATION forming part of Letters Patent No. 353,595, dated November 30, 1886.

Application filed September 6, 1886. Serial No. 212,771. (No model.)

To all whom it may concern:

Be it known that I, GEORGE SELDEN, of Erie, county of Erie, and State of Pennsylvania, have invented a new and useful Improvement in Steam-Boiler Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to the linings of steam-boiler furnaces, and, while it is applicable to all kinds of such furnaces, it is particularly designed for use in connection with the class of boilers shown and described in Letters Patent No. 318,128, granted May 19, 1885, to William Moran, for improvements in portable tubular boilers and other portable boilers which have brick-lined detachable furnaces.

The object of my invention is to produce a furnace-lining which may be readily renewed either wholly or in part, and which shall perfectly resist all tendencies to warp or lose shape under the action of the fire.

To the above purposes my invention consists in the combination, with a boiler-furnace, of a lining composed of bricks laid in successive courses one above the other, and held by rods extending vertically through notches or recesses in the ends of the bricks, and a peculiarly-constructed frame or casting for retaining the bricks in proper position, and having sockets to receive and retain the vertical rods, as hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a boiler with my improved lining applied thereto, the outer shell being removed to expose the structure of the lining. Fig. 2 is a transverse vertical section of the same. Fig. 3 illustrates in horizontal section a portion of the fire-box and its lining. Fig. 4 is a detached perspective view of one of the lining-bricks, and Fig. 5 shows the upper end of one of the removable rods or bars.

In the said drawings, A designates the shell of the boiler, which, in its forward portion, A′, overlying the fire-pot B, is cylindrical in form, its lower surface constituting the crown-sheet of the fire-pot, while the portion A^2 in rear of the latter is extended downward to form the rear wall of the fire-pot. The forward end of the part A′ is provided with a perforated head or tube sheet, C, cylindrical in form, and to the lower side of the rear end of the cylindrical portion A is secured a crescent-shaped perforated head or tube sheet, C′, forming the forward end of the portion A^2, pendent below the part A′, and in part also the rear wall of the fire pot. The boiler is provided at J with a steam-dome, of the usual or any preferred construction, and is adapted to receive the smoke-stack, as shown at *d*. At its rear end the boiler is supported in an angular bracket, K. The above features of construction are substantially of the character shown and described in the patent of William Moran, previously referred to.

L designates the lateral walls of the fire-pot or furnace, said walls being preferably of the rectangular form shown, and consisting of heavy rolled metal plates, as is usual in this class of boilers. These plates are bolted to the outer side of a rectangular casting, M, which rests upon the base or setting of the boiler in the usual manner, and can be readily removed to facilitate relining or repairing the furnace-lining. The upper part, *m*, of the casting M is formed with an upwardly-extending flange, *m′*, by means of which the casting is secured to the shell of the boiler, and said portion *m′* is formed with an offset, m^2, or is bent outward, as shown, so as to afford an increased width to the fire-pot, and so, also, as to accommodate the fire-brick lining N without decreasing the heating-surface of the furnace.

The lining N is composed of a number of fire-bricks, O, each of which is formed at its ends with notches or recesses *o*, said bricks being laid in courses one above the other, and resting upon a pair of brackets or feet, P, secured to the inner side of the walls or plates L, and extending horizontally inward thereform, as shown. At their inner ends each of these brackets or feet is formed with an upturned flange, *p*, which serves to retain the lower course of bricks in proper position. The upper portion, *m*, of the casting M is formed with a series of sockets or holes, *m″*, to receive a corresponding series of rods or bars, Q, which extend vertically downward between the contiguous

ends of the bricks O and within their notches or recesses *o*, the lower ends of said rods resting upon the feet or flanges P. By virtue of this arrangement the bricks are held securely in proper position, and are prevented from becoming dislocated in consequence of the expansion and contraction due to variations in heat of the furnace, or when being transported in cars or otherwise.

In order to provide for the ready removal of the lining either wholly or partially, the rods Q are provided at their upper ends with holes *q* to receive a pin or rod, by means of which said bars may be readily lifted upward out of the sockets *m''* and removed from between the contiguous ends of the bricks, and the rectangular plates removed from the outside of the furnace. Thus provision is made for easily renewing the lining or any particular part thereof in case of burning out or from other causes.

The entire structure is extremely simple and durable, and increases the wear of the lining by avoiding the necessity of removing the entire lining when any particular part therof becomes worn out.

It is to be particularly observed that by virtue of the peculiar form of the casting M the upper part of the lining is caused to perfectly protect the shell at the point of juncture with the casting, so that no exposure of the boiler to the action of the furnace occurs at this point, as has been the case heretofore with this class of linings.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the shell of a steam-boiler, of a series of fire-bricks having notched or recessed ends and disposed in successive layers or courses, a series of rods extending downward between the contiguous ends of each pair of said bricks and within their notches or recesses, and a casting or frame having a series of sockets to receive said rods, substantially as described.

2. An improved frame for holding fire-brick linings for boiler-furnaces, having a series of holes to receive the binding-rods of said lining and extended outward from the shell of the boiler, and a removable rectangular plate bolted to the outside of the furnace, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand this 30th day of August, A. D. 1886.

GEO. SELDEN.

Witnesses:
J. F. McCONNELL,
G. L. McCONNELL.