G. A. BU MILLER.

FURNACE FOR STEAM BOILERS.

APPLICATION FILED SEPT. 17, 1908.

911,473.

Patented Feb. 2, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

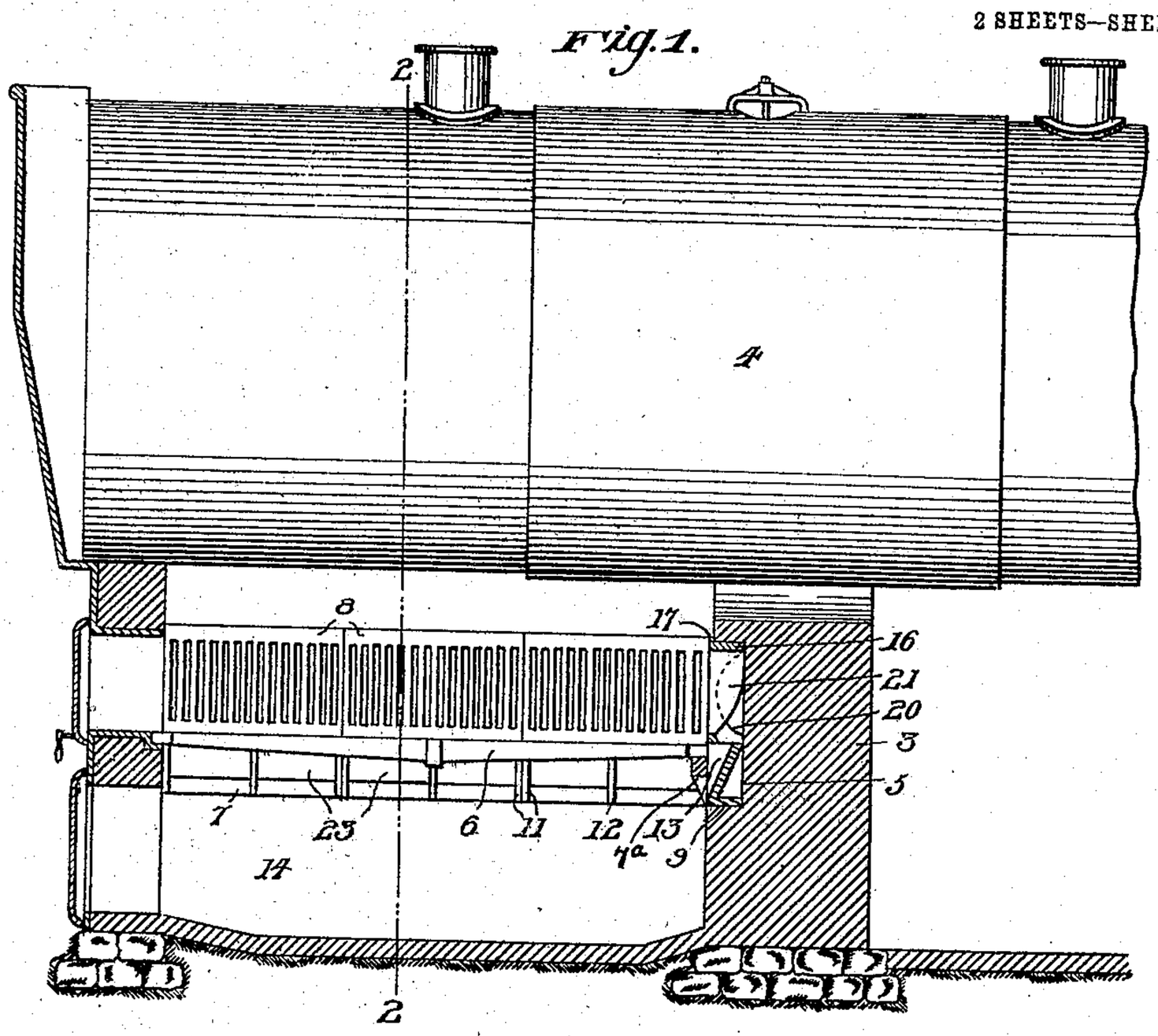
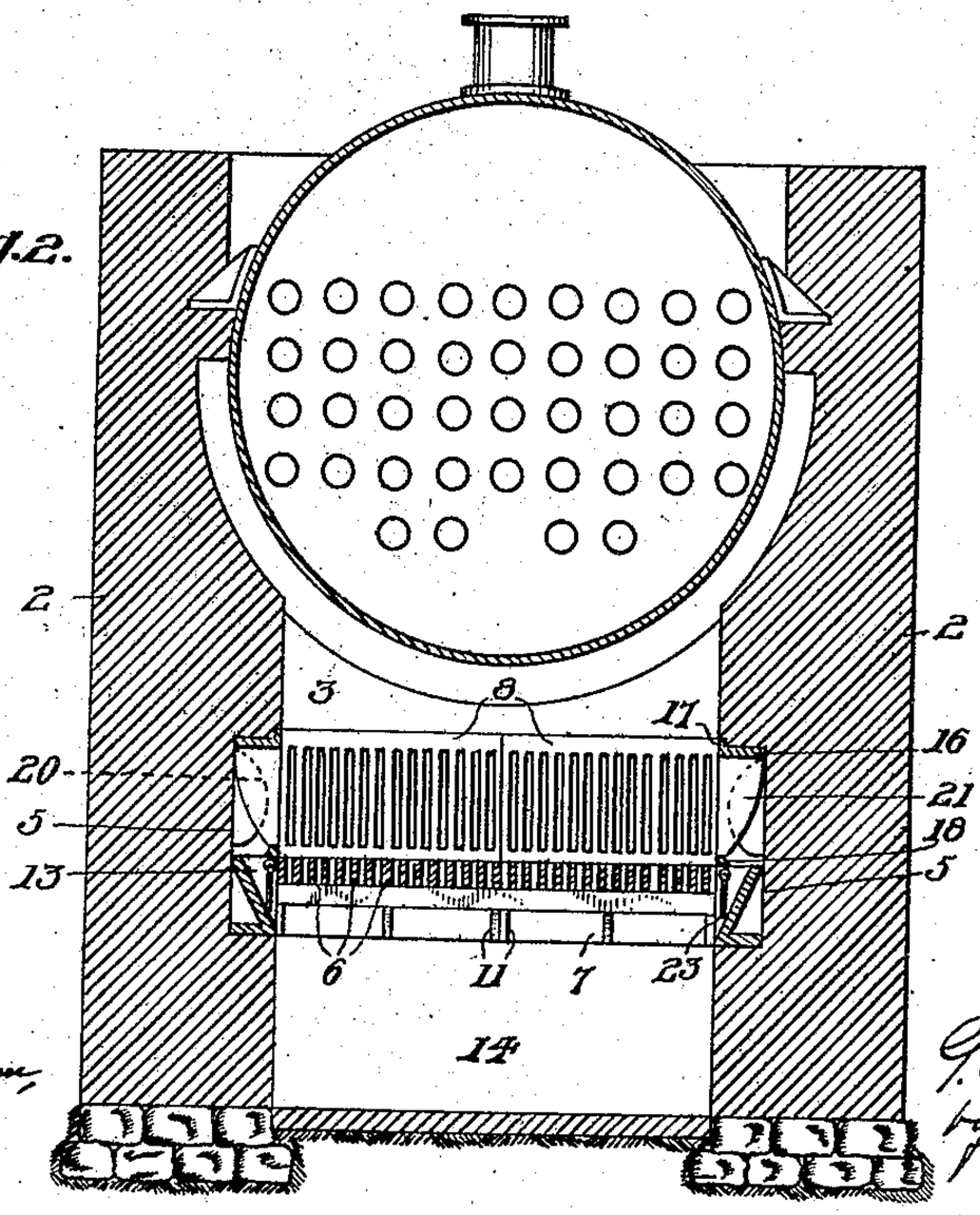


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 4.

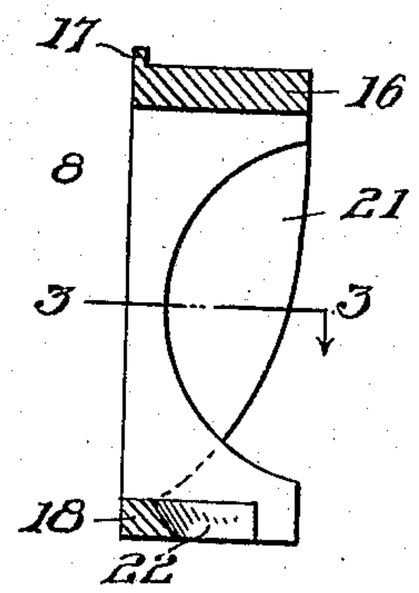


Fig. 3.

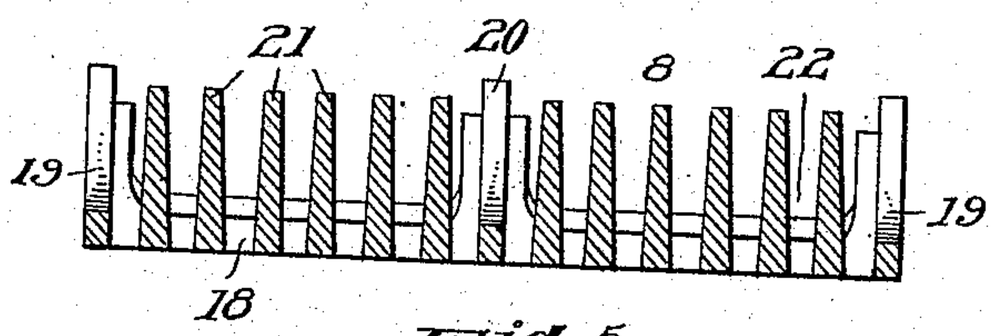
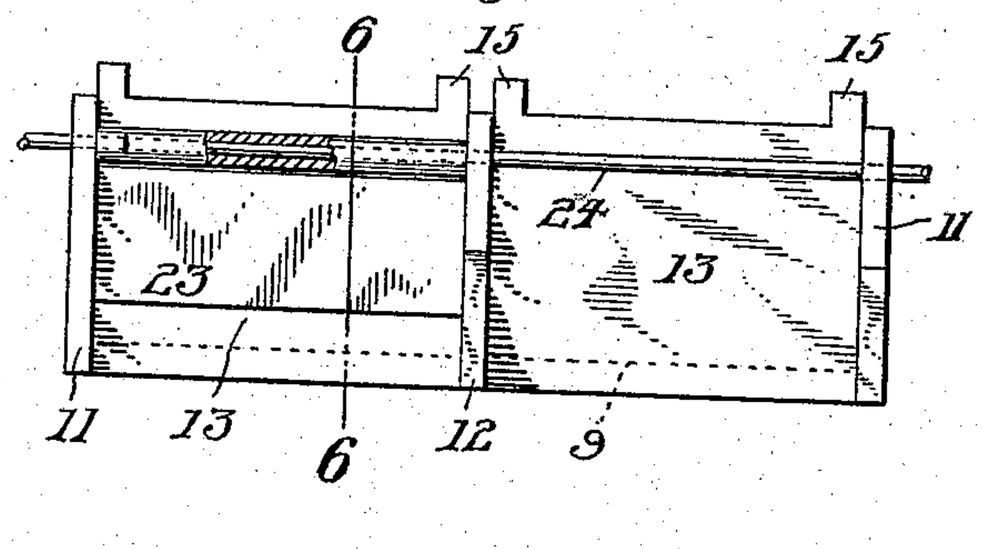


Fig. 5.



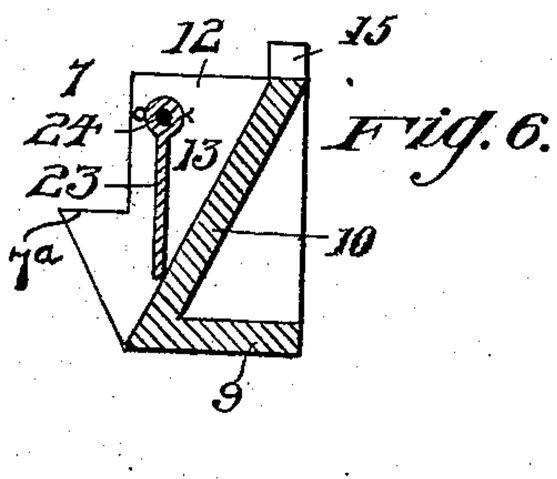
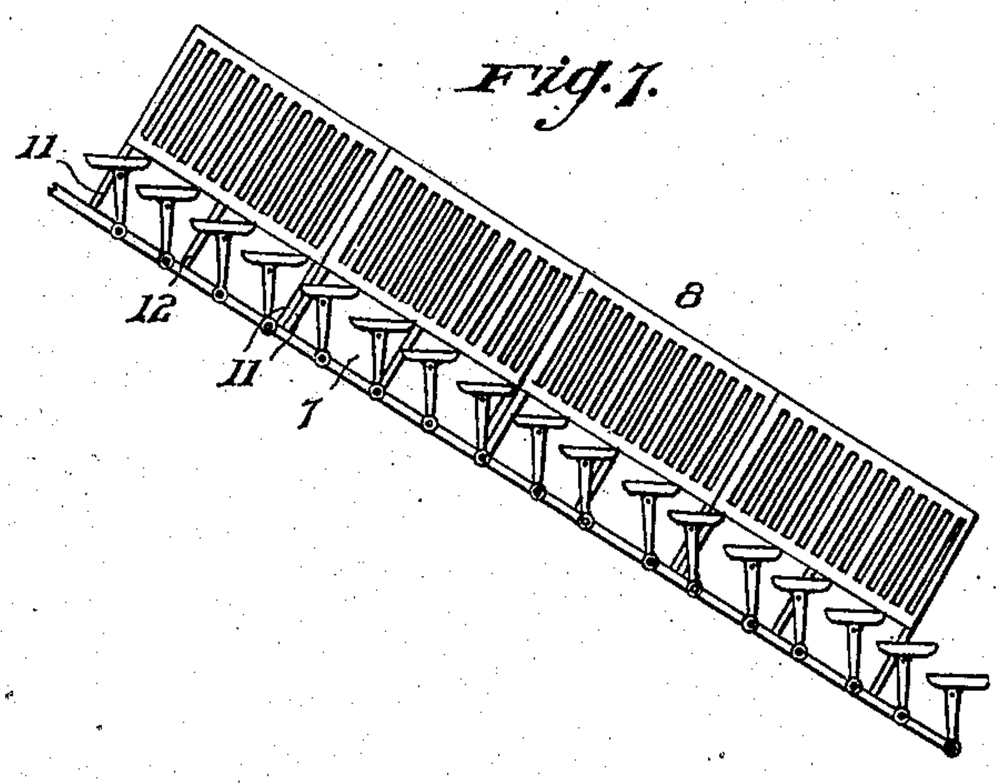


Fig. 6.

Fig. 7.



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UNITED STATES PATENT OFFICE.

GEORGE A. BU MILLER, OF PITTSBURG, PENNSYLVANIA.

FURNACE FOR STEAM-BOILERS.

No. 911,473. Specification of Letters Patent. Patented Feb. 2, 1909.

Application filed September 17, 1908. Serial No. 453,445.

To all whom it may concern:

Be it known that I, GEORGE A. BU MILLER, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Furnaces for Steam-Boilers, of which the following is a specification.

This invention relates to a new and improved furnace for steam-boilers and the prime objects of my invention are, to increase the efficiency of furnaces of this class and to prevent the escape of smoke.

In the accompanying drawings, which illustrate applications of my invention, Figure 1 is a longitudinal sectional view of a furnace constructed in accordance with my invention showing a boiler in side elevation; Fig. 2 a vertical transverse section; Fig. 3 a longitudinal sectional view of grated-casting, the section being taken on line 3—3 of Fig. 4; Fig. 4 a vertical section of the grated-casting; Fig. 5 an elevational view of a supporting-casting; Fig. 6 a vertical sectional view of the supporting-casting; and Fig. 7 a diagrammatic view showing an embodiment of my invention with an inclined grate.

Referring to the drawings, the furnace, as illustrated and as preferred, comprises the side-walls 2 and a rear bridge-wall 3 designed to support a boiler 4. The walls 2, as well as the rear-wall 3, are cut-away or recessed as shown at 5, thus forming a recess in each of said walls extending above and below the fire-bars or grate 6. The front of the grate illustrated is supported by the front wall of the furnace and its rear on the projection 7^a.

Located in the recesses 5 of each of the walls and arranged flush with the surfaces of said walls, I employ a supporting-casting 7 and a grated-casting 8. In practice these castings are made in sections of any desired length, although a single supporting-casting and a single grated or ventilating-casting may be employed in each recess. The supporting-castings 7 comprise a base-portion 9, an inclined plate or portion 10, upright end-members 11, and a partition-wall or member 12. This construction provides in each casting two air-ducts or passages 13, formed by the sloping or inclined plate, the end-members and the dividing-wall 12. Said ducts or passages 13 are in open communication with the ash-pit 14 of the furnace below the grate and are designed to permit heated air from the ash-pit to pass up to and through the grated or ventilating-casting 8 and permit the ashes from the fuel bed to pass through said supporting-casting to the ash-pit. In addition to the parts mentioned, the supporting-castings are formed with end and central engaging-lugs 15 designed to engage the grated-castings when the latter are placed in position on the lower or supporting-castings.

The upper or grated-castings, as preferred, each comprises a top-member 16 having a flanged-portion 17, a bottom-member 18, end-members 19, central-member 20, said end-members and central-member joining the top and bottom-members, and a series of vertically extending curved and tapering bars or plates 21. Bars or plates 21 join the top and bottom-members and are particularly designed with a view of preventing said bars or plates from being burned away or destroyed by the burning fuel in contact therewith. The lower-member of casting 8 is cutaway, as shown, to form an air-passage 22 for the passage of air from the air-ducts 13 of the supporting-castings.

The admission of air to the side grated-castings may be regulated by means of dampers. As shown, I employ a series of dampers 23 mounted on a rod 24 and arranged to control the passage of air from the ash-pit to the ducts of the supporting-castings. The base portion 9 of the supporting-casting is arranged below the furnace grate and the inclined portion extends upwardly from the base to the top of said casting or to the grated-casting. By forming the grated-casting with the passage 22 in its bottom member, and arranging said passage or opening in register with the passages 13 of the supporting-casting any ashes and other matter that may be passed through the grated-casting from the bed of fuel, will slide down the inclined wall 10 of the passage or passages 13 and be discharged into the ash-pit below the grate. With this construction there is no danger of the air-passages becoming clogged or stopped up as has heretofore been the case in furnaces of the class to which my invention relates.

What I claim is:

1. In a furnace the combination with a grate, a furnace wall formed with a recess extending above and below the grate, a supporting-casting in the recess comprising a base portion and an inclined plate extending

upwardly and rearwardly from the inner edge of the base portion and arranged to form a passage at the side of the grate, said passage being in communication with the ash-pit below the grate, and a grated casting on the supporting-casting having its base cut away to form a passage registering with the first mentioned passage.

2. In a furnace the combination with a grate, side walls each formed with a recess extending above and below the grate, of a supporting-casting in each recess comprising a base portion located below the grate and an inclined portion extending from the base to the top of said casting arranged to form passages at the sides of the grate, said passages in communication with the ash-pit below the grate, and a grated casting resting upon each of the supporting-castings and formed with a passage registering with the passage of its supporting-casting.

3. In a furnace the combination with a grate, a furnace wall formed with a recess extending above and below the grate, of a supporting-casting in the recess comprising a base portion and an inclined plate arranged to form a passage at the side of the grate, and a grated casting resting upon the supporting-casting comprising a top-member, a bottom-member, and a series of curved and tapering bars or plates joining the top and bottom members, said bottom-member cut away to form a passage registering with the first mentioned passage.

4. In a furnace the combination with the grate-bars, of a furnace wall formed with a recess extending above and below the grate bars, a removable supporting-casting in the recess comprising a base portion located below the grate bars, an inclined portion extending upwardly from the base portion, said supporting-casting arranged to form a passage between the grate and its inclined portion, a removable grated-casting resting upon the supporting-casting and having its base cut away to form a passage registering with the first mentioned passage thereby forming a passage from below the grate-bars to the bed of fuel on the grate-bars.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE A. BU MILLER.

Witnesses:
STELLA R. BULHART,
W. G. DOOLITTLE.