

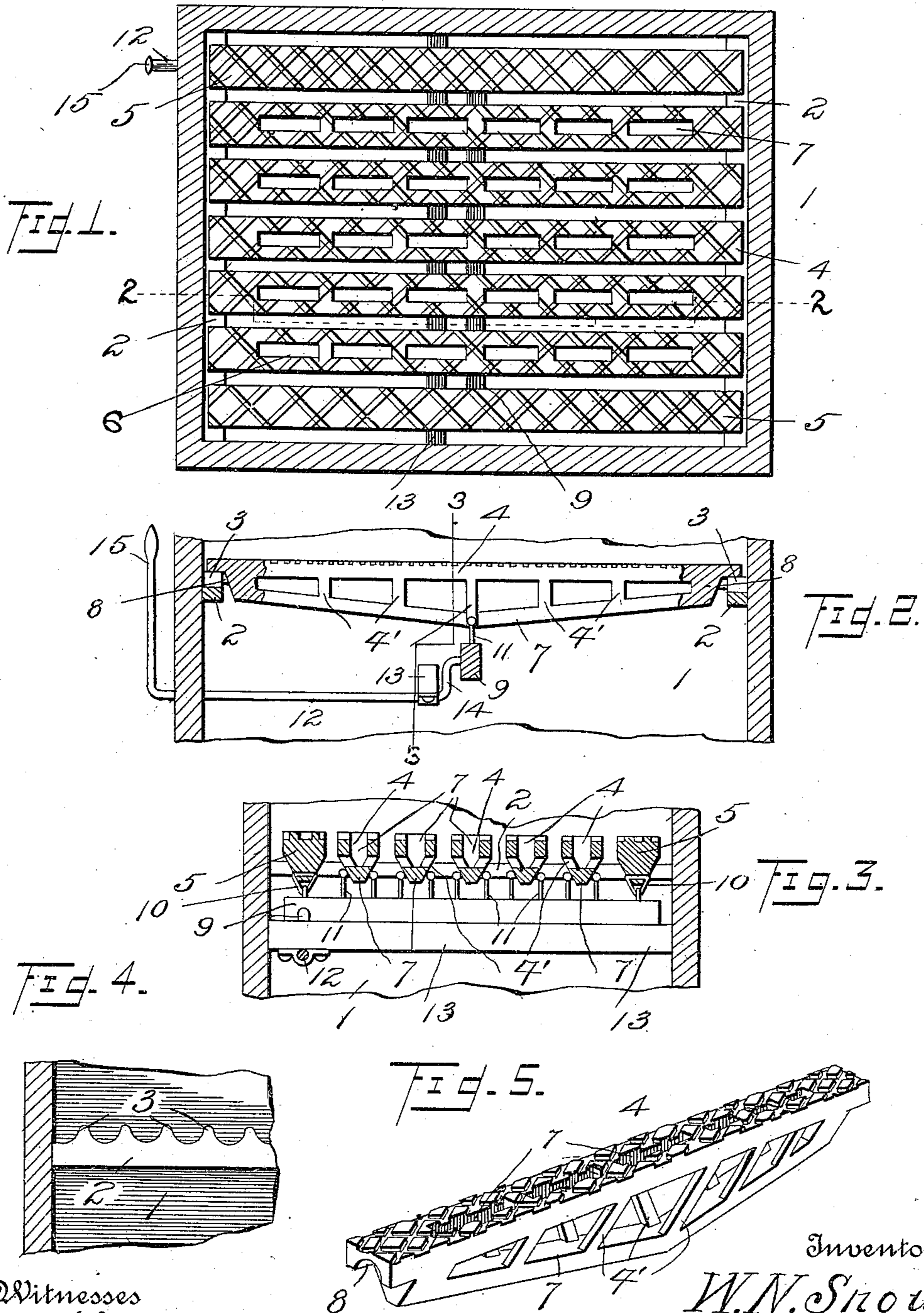
W. N. SNOW.

GRATE.

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976,309.

Patented Nov. 22, 1910.



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# UNITED STATES PATENT OFFICE.

WILLIAM N. SNOW, OF JANESVILLE, WISCONSIN.

GRATE.

976,309.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed April 4, 1910. Serial No. 553,187.

*To all whom it may concern:*

Be it known that I, WILLIAM N. SNOW, a citizen of the United States, residing at Janesville, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Grates; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in grates.

One object of the invention is to provide a grate for steam boiler and other furnaces comprising a series of grate bars mounted to rock and having means whereby the same may be simultaneously rocked, thus breaking the clinkers and shaking the ashes from the fire-box.

Another object is to provide a grate, the bars of which are rigidly braced on their under sides by truss braces and having formed therein longitudinal passages through which the air may readily pass to the fire-box.

With the foregoing and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a plan view of the lower portion of a furnace showing my improved grate arranged therein; Fig. 2 is a vertical longitudinal section of the same taken between the grate bars, one of the latter being broken away at its opposite ends to show the pivotal support for the same the plane of the section being indicated by the line 2—2 in Fig. 1; Fig. 3 is a vertical cross section on line 3—3 in Fig. 2; Fig. 4 is a detail of the pivotal supports for the grate bars; Fig. 5 is a perspective view of one of the bars.

Referring more particularly to the drawings, 1 denotes the lower portion of a furnace, having arranged in its opposite ends grate supporting bars 2, provided on their upper edges with a series of pivot studs or lugs 3 with which are pivotally engaged the bars 4 and 5 of the grate.

The intermediate grate bars 4 have formed therein longitudinally disposed passages 6, through which the finer ashes from the fire-box may pass and through which air is per-

mitted to reach the fire. The bars 4 are rigidly braced on their under side by truss braces 7 and have formed in their opposite ends rounded notches 8, which are engaged with the pivot lugs 3 of the supporting bars 2, whereby said grate bars are pivotally supported and adapted to be rocked or oscillated for the purpose of shaking the fire bed and breaking the clinkers by a suitable operating mechanism hereinafter described.

The end grate bars 5 are preferably of a solid construction but are mounted on and have a rocking engagement with the lugs 3 on the supporting bars, the same as described in connection with the bars 4. Both the bars 4 and 5 are preferably provided with checkered or serrated upper sides, as shown. The grate bars 4 are preferably, though not necessarily, provided with a series of short, diagonal brace bars 4', which are formed integral with and connect the truss braces 7 with the upper portion of the bar, as shown.

The shaking mechanism for the grate comprises a transversely disposed shaking bar 9, which is preferably arranged midway between the opposite ends of the bars and a slight distance below the same. The shaker bar is secured at its opposite ends to the lower edges of the end grate bars 5 by suitable links 10, and said bar is provided on its upper side with a series of grate bar engaging fingers 11, which are arranged in pairs and are engaged with the opposite sides of the truss braces of the grate bars, whereby when said shaking bar is shifted laterally or back and forth across the base, the engagement of the fingers 11 with the truss braces will rock or oscillate all of the grate bars 4 in unison and, by means of the links 10, will also simultaneously rock the end bars 5. By thus rocking the grate bars, the upper portions thereof are brought into more or less close engagement, thereby breaking between themselves the clinkers or cinders, which will not readily pass between the grate bars, and will also remove the ashes from the fire.

The shaker bar 9 is reciprocated or shifted in the lower portion of the furnace by means of a shaker rod or shaft 12, which is revolutely mounted in bearings formed in the front of the furnace and in the bearing bar 13 arranged therein adjacent to the shaker bar 9. The shaker rod or shaft 12 has formed on its inner end a crank 14, which is loosely engaged with the shaker bar and on its outer end said rod or shaft is provided

with a crank handle 15 by means of which the rod is rocked or oscillated, thereby causing the crank 14 on the inner end thereof to reciprocate or shift the shaker bar back and forth, thus rocking the grate bars in the manner described.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention as defined in the appended claims.

Having thus described my invention, what I claim is:—

1. A grate comprising a series of grate bars having longitudinal passages, truss braces secured to and depending from the ends of the bars and extending longitudinally of the same, brace bars depending diagonally from the opposite side edges of the

grate bars to the truss braces, means for supporting the grate bars, and means for rocking the same on said supporting means.

2. The combination of supporting bars having upwardly projecting lugs on their upper sides, a series of grate bars having concave recesses on their under sides at their ends to engage said lugs, said bars being further provided with downwardly converging sides, a shaker bar arranged below the grate bars and transversely thereof, links connecting the ends of the shaker bar and the end grate bars, a plurality of pairs of upwardly projecting pins on the upper side of the shaker bar, the pins of each pair engaging the opposite sides of a single grate bar, and means for reciprocating the shaker bar.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM N. SNOW.

Witnesses:

C. R. THOMSON,  
E. W. MOON.