

C. M. EAST.
TRAVELING GRATE.
APPLICATION FILED JAN. 23, 1911.

1,009,655.

Patented Nov. 21, 1911.

3 SHEETS—SHEET 1.

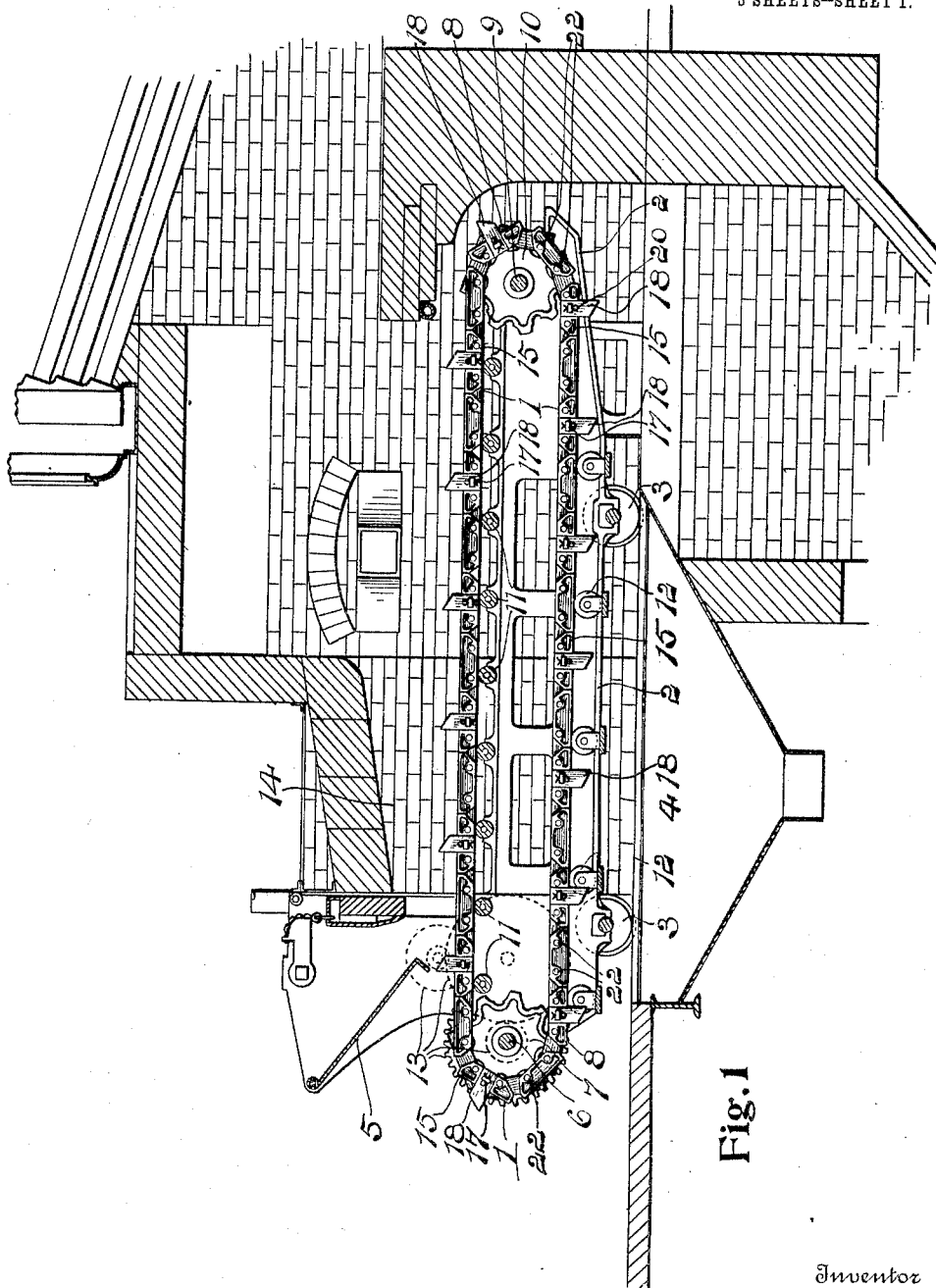


Fig. 1

Witnesses
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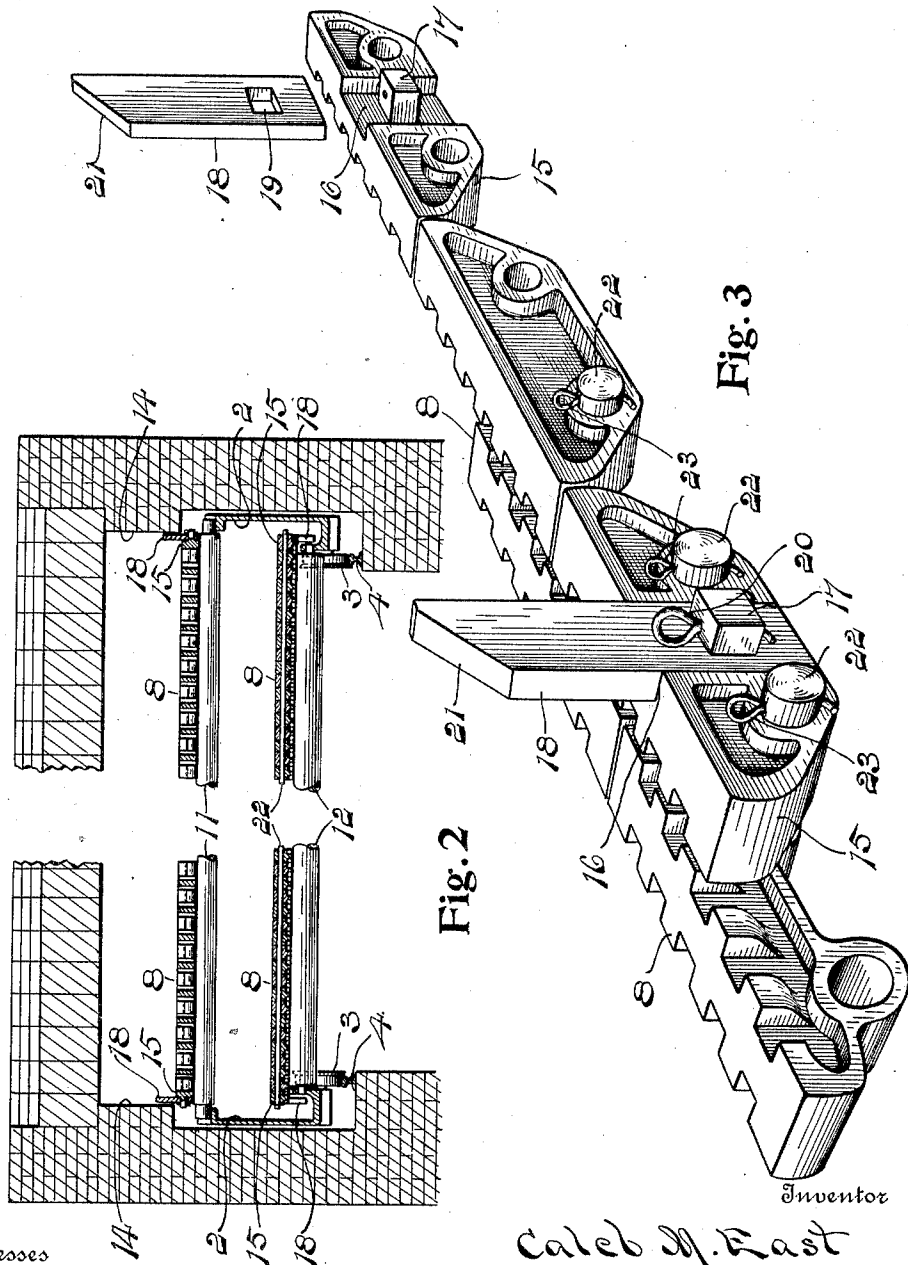
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3 SHEETS-SHEET 2.



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3 SHEETS-SHEET 3.

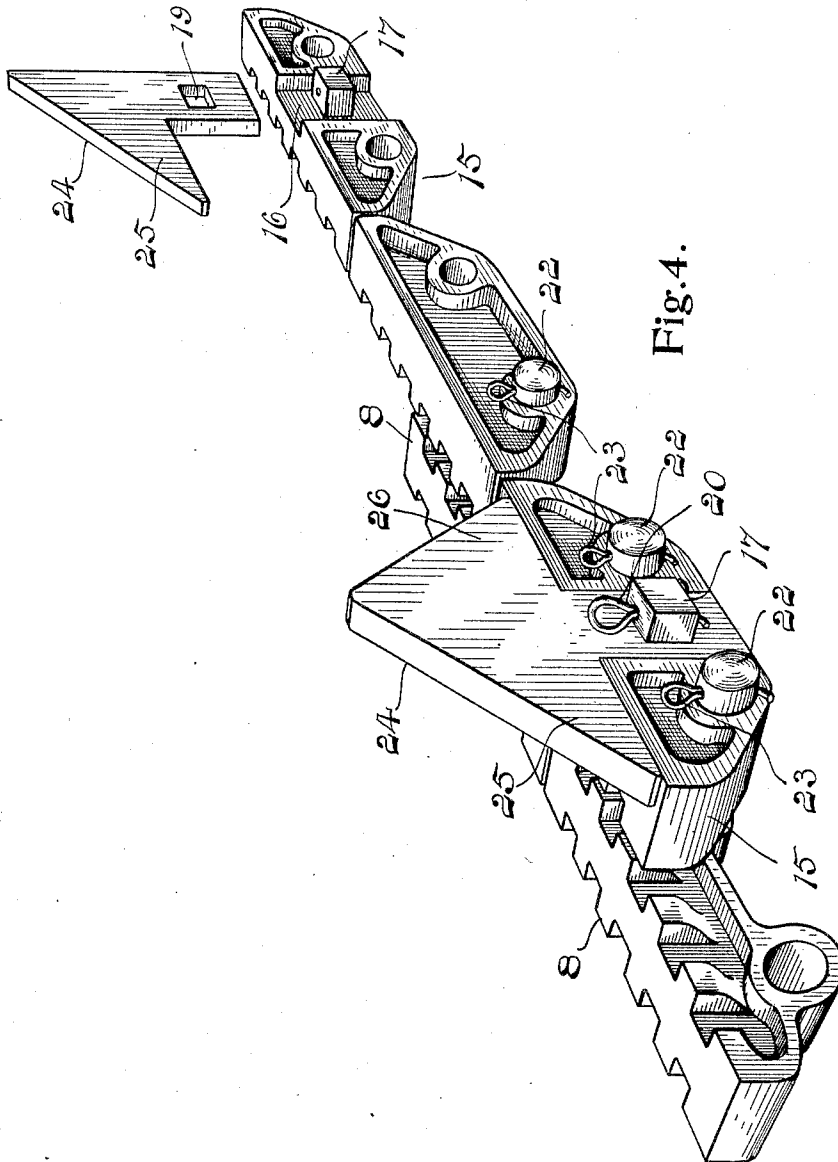


Fig. 4.

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UNITED STATES PATENT OFFICE.

CALEB M. EAST, OF DETROIT, MICHIGAN, ASSIGNOR TO MURPHY IRON WORKS, OF
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TRAVELING GRATE.

1,009,655.

Specification of Letters Patent.

Patented Nov. 21, 1911.

Application filed January 23, 1911. Serial No. 604,016.

To all whom it may concern:

Be it known that I, CALEB M. EAST, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Traveling Grates, of which the following is a specification, reference being had therein to the accompanying drawings.

15 This invention relates to improvements in traveling grates and more particularly to an attachment for grate structures of the longitudinally movable or continuous chain grate type.

15 The object of the invention is to provide a continuously moving grate structure with means for cleaving or breaking from the side walls of the furnace adjacent to which the grate travels, the residue from the fuel which, in furnaces of this character, is liable to adhere to and accumulate on said side walls and prevent the efficient operation of the furnace by projecting over the edges of the grate.

25 To this end the invention consists in the matters hereinafter set forth and more particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

30 Figure 1 is a longitudinal vertical section through a furnace provided with a grate structure embodying the invention; Fig. 2 is a transverse vertical section through the same; and Fig. 3 is an enlarged perspective view of a portion of the chain grate embodying the invention; and Fig. 4 is a similar view showing a modified construction.

35 The chain grate 1 embodying the invention may be carried and driven in any convenient and well known manner, but for convenience of illustration the same is shown as supported upon a suitable carriage 2 mounted upon wheels 3 traveling upon a track 4. The forward end of the carriage is provided with a hopper 5 abutting the front end of the furnace arch into which hopper the coal may be fed in any suitable manner.

40 Mounted in suitable bearings on the front end of the carriage is a driving shaft 6 provided with a series of sprocket wheels 7 to engage the links 8 of the chain grate and

support and actuate the grate. This shaft 6 is located below and just forward of the hopper 5 so that the grate in its travel 55 around the sprocket wheels will pass through the furnace front where easy access may be had thereto to repair or replace any of its parts.

Mounted in suitable bearings on the extreme rear end of the carriage is a shaft 9 60 provided with a series of sprocket wheels 10 to engage and support the chain. Between the front and rear sprocket wheels, the upper run of the grate is supported by a 65 series of rolls 11 mounted upon the carriage transversely thereof and the lower run of the chain grate is supported in its travel by a series of rolls 12 on the carriage engaging the lower side of the run. The shaft 70 6 is rotated to actuate the grate, by a suitable train of gearing 13 indicated in dotted lines in Fig. 1, said train being driven in any suitable manner.

In the operation of a furnace provided 75 with a chain grate it is found that the residue from the fuel burned, will adhere to the side walls 14 of the furnace and will gradually accumulate thereon forming a ledge or shelf extending some distance 80 inward over the edges of the grate. This accumulation prevents the fuel from being carried along by the grate, sweeping the grate clean and allowing air to blow up through the grate between its edges and the 85 wall. The accumulation also reduces the effective area of the grate surface. To break or cleave this accumulation from the walls of the fire chamber and keep said walls free from accumulation, certain of the outer or 90 edge links 15 of the grate are each formed with a recess 16 in its outer side and with a laterally projecting stud 17 within the recess. A bar 18 of suitable length and of a width to fit within the recess 16 is provided 95 with a hole 19 to receive the studs 17. These bars 18 are slipped into the recesses over the studs 17 with their upper ends projecting a considerable distance above the upper surface of the grate and are detachably 100 held by suitable keys 20 engaging openings in the studs 17. The upper ends of the bars 18 are preferably beveled or inclined at 21 in the direction of travel of the grate and

said bars, being located at the extreme edges of the grate structure, travel, as shown in Fig. 2 close to the side walls 14 of the furnace and scrape or shear any accumulation from the walls that may adhere thereto. These several shear bars may be easily and quickly removed when they become burned, by the removal of the keys 20 as the grate travels around the forward sprocket wheels 7 and new bars slipped into place, it being unnecessary to stop the grate for such purpose.

In the construction of chain grate shown, the several links are pivotally connected by rods 22 held in place by keys 23 engaging the edge links of the structure and the several links forming the structure are notched along their edges to form air flues through the grate to maintain combustion, but the form or structure of the grate forms no part of this invention as the detachable cleavage bars 18 may be provided upon any longitudinally movable grate structure, the side members being formed to receive and hold the bars.

In Fig. 4, the side links of the grate structure are shown provided with cleavage members 24 which are formed with triangular projections 25 and 26 at the sides, the bases of which projections rest upon the upper surface of the link. The upper edge of the projection 25 at the forward side forms an inclined shearing edge extending from the upper surface of the grate to the top of the member to cleave the accumulation from the side wall of the furnace, and the projection 26 at the rear side fills in the angle and forms a brace to strengthen the member. The projection 26 may be omitted, as shown in the view of the detached member, if it is found that the members are sufficiently strong to do the work without this reinforcement.

What I claim is,

1. In combination with a furnace wall a longitudinally movable grate structure, a member on said structure adjacent to the margin thereof projecting above the plane of the grate surface and movable with said structure adjacent to the furnace wall to cleave from said wall residue of fuel adhering thereto.

2. The combination with furnace walls, of a longitudinally movable grate structure formed of a series of members adjacent to said walls with side members provided with recesses, and members secured in said recesses and projecting above the surface of the grate adjacent to the edges thereof to engage and remove accumulation on the adjacent furnace walls.

3. In combination with furnace walls, a longitudinally movable continuous grate structure between said walls and a series of spaced cleavage members detachably se-

cured to said structure at its edges and extending upward therefrom to move therewith adjacent to the walls and remove accumulation from said walls.

4. In combination with the walls of a furnace, a continuous chain grate between said walls, a series of cleavage members spaced apart along each edge of said grate throughout the length thereof, and means for detachably securing said members to said grate.

5. The combination with the walls of a furnace, of a longitudinally movable grate structure formed of a series of members, and a series of upwardly extending bars secured at intervals along the edges of said structure adjacent to said walls and each bar having an edge extending at an angle to the upper surface of the structure to engage and cleave from said walls the residue of fuel adhering thereto.

6. The combination with the side walls of a furnace, of a longitudinally movable grate structure between said walls formed of a series of pivotally connected members, a series of cleavage bars on the members forming the edges of the structure, extending upward from the plane of the upper surface of the grate along each edge thereof.

7. The combination of a continuous longitudinally movable chain grate formed of a series of pivotally connected members with the members forming the edges of the grate provided with recesses, bars in said recesses extending beyond the surface of the grate and adapted to shear accumulation of residue of fuel from adjacent furnace side walls, and means for detachably securing said bars in said recesses.

8. The combination with the walls of a furnace of a continuous longitudinally movable grate comprising a series of pivotally connected members with the members forming the edges of the grate formed with recesses in their outer sides, cleavage bars fitting within said recesses with their outer side surfaces in the plane of the side edges of the grate adjacent to said walls and formed with inclined upper ends above the upper surface of the grate to cleave from said walls the residue of fuel adhering thereto, and means for detachably securing said bars in place within said recesses.

9. The combination of a continuous longitudinally movable grate comprising a series of pivotally connected members with members forming the edges of the grate provided with recesses in their outer sides and studs within said recesses projecting outward from the members, a series of bars having openings to receive said studs and fitting within said recesses with their upper ends projecting above the upper surface of the grate to engage and shear from adjacent furnace walls the residue of fuel ad-

hering to said walls, and means engaging said studs to hold said bars in place thereon.

accumulation of residue of fuel from adjacent furnace side walls.

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

CALEB M. EAST.

Witnesses:

JOHN R. FORTUNE,

ARCHIE CHAVEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."