

which has engaging-lugs d_{12} , d_{12} , which are coincident with the perforations in the central grate-bar, and a front grate-section D , which has a single pair of engaging-lugs d_{12} , whereby, when an operating lever is applied in connection with the perforation d and the lugs d_{12} , the two grate-sections may be agitated simultaneously whereby, when the lever engages the perforation d and the lugs d_{12} , only the front section alone of the grate will be moved, and whereby when the lever is inserted in the perforations d in connection with the lugs d_{12} , the rear grate-section D may be reciprocated while the front grate-section will remain at rest. 23rd. The combination, with a central longitudinal grate-bar of two grate-sections, each of which has a connecting-web and transverse bars upon the middle portion of its flat upper surface of each of which is a longitudinal transversely A-shaped or pyramidal agitating projection. 24th. The combination, with a central longitudinal grate-bar D , of the reciprocating grate-sections D_1 and D_2 , each of which includes a longitudinal connecting-web, and transverse bars upon the middle portion of the flat upper surface of each of which is a continuous unobstructed transversely A-shaped or pyramidal longitudinal projection d_{12} . 25th. In a grate, a grate-bar which is provided in the middle portion of its flat upper surface with a longitudinal agitating projection d_{12} , which in transverse section is pyramidal or A-shaped. 26th. In a grate, a grate-bar, the main portion of which is flat upon its upper surface, and which diminishes downwardly to the bottom of the bar, and which in the middle portion of such flat upper surface is provided with a transversely pyramidal or A-shaped portion, which extends unobstructedly from end to end of the bar. 27th. In a grate, the combination, with a connecting web of a grate bar, the main portion of which is flat upon its upper surface, and which diminishes downwardly from such surface to the bottom of the bar, and which in the middle portion of the flat upper surface is provided with a pyramidal double-inclined or A-shaped portion which extends in uniform dimensions from end to end of the bar. 28th. The combination, with a central longitudinal grate-bar, of a grate-section which is provided with a connecting-web, and with a series of bars which are arranged crosswise upon such web and at right angles to the central bar, and each of which in its main portion diminishes in transverse extent from top to bottom. 29th. The combination, with a central longitudinal grate-bar D of a grate-section which embraces a connecting-web, and a series of grate-bars which extend across the connecting-web, and each of which in its main portion diminishes in transverse extent from top to bottom. 30th. The combination, with a central longitudinal grate-bar D , of a grate-section which embraces a connecting-web, and a series of bars, each of which in its main portion diminishes in transverse extent from top to bottom, and each of which upon its flat fuel-supporting surface is provided with a transversely pyramidal or A-shaped portion, which extends centrally along the bar from end to end thereof. 31st. The combination, with a central longitudinal grate-bar of a grate-section which is provided with a series of transverse bars, each of which is in its main portion tapered from top to bottom, and each of which is at its ends of rectangular form. 32nd. The combination, with a central longitudinal grate-bar D , of a grate-section D_1 , which is provided with a series of transverse bars d_{12} , each of which is in its main portion tapered from top to bottom, and each of which has end portions d_{12} of rectangular form, as and for the purpose described. 33rd. The combination of a central longitudinal grate-bar, a grate-section which is provided with a series of transverse bars, each of which is in its main portion tapered from top to bottom, and each of which is at its ends of rectangular form in transverse section, and series of supporting-lugs corresponding with the transverse bars, and each diminishing in transverse extent from the top downwardly. 34th. The combination of a reciprocating grate, with a vertical end-plate, which is provided with a helving projection, which is coincident with the surface of the grate when the grate is in its operative position. 35th. The combination of a reciprocating grate, with a fuel-chamber, the end-plate of which is provided with a shelving projection, which is coincident with the surface of the grate when the grate is in its reciprocating position. 36th. The combination of a reciprocating grate, with a fuel-chamber, the end-plate of which is provided with a shelving clearing-projection, the upper surface of which inclines from the top downwardly and inwardly toward the centre of the fuel chamber, and the lower surface of which is perpendicular to the vertical face of the end-plate, and projects over the ends of the grate at a point but a short distance above the same. 37th. The combination, with a central longitudinal grate-bar, of two oppositely-placed grate-sections, and an end-plate which is provided with a shelving projection which closely overhangs each of the two grate-sections. 38th. The combination, with a central longitudinal grate-bar D , and two reciprocating grate-sections D_1 and D_2 , each resting upon the central longitudinal bar, of an end-plate A , of the fuel-chamber which is provided with a shelving projection a_3 , which closely overhangs the central supporting bar and each of the two grate-sections. 39th. The combination, with an end-plate which is provided with an overhanging projection, which is coincident with the projection upon the end-plate, and a reciprocating grate-section which is closely overhung by each of the two projections. 40th. The combination, with an end-plate A which is provided with an overhanging projection a_3 , of a grate-front or basket-portion E which is provided with an overhanging projection e_5 , which is coincident with the projection a_3 upon the end-plate, and a reciprocating grate-section D which is closely overhung by each of the two projections. 41st. A grate, the front or basket portion E of which is provided with an overhanging projection e_5 , which operates in connection with the reciprocating portion of the grate to clear the surface of the same. 42nd. The combination, with a reciprocating grate, of a vertical end-plate, which is provided upon its interior face with a projection, the upper surface of which is inclined from the top downwardly, and the lower surface of which is perpendicular to the vertical face of the end-plate. 43rd. The combination, with a fuel-chamber having a vertical grate-front, of a front-supporting rail which inclines from the top downwardly toward the rear, and which is provided with discharge-openings, and with pivoted weighted valves which operate to automatically discharge into the space below such portions of the contents of the fuel chamber as may be precipitated upon such supporting rail. 44th. The combination, in a grate, of a rear recip-

rocating grate-section, a front reciprocating grate-section and an intermediate fixed grate bar, the grate-sections resting respectively at front and rear upon the grate bar. 45th. The combination, in a grate, of a rear reciprocating grate-section D_1 , a front reciprocating grate-section D_2 , and intermediate fixed grate-bar D . 46th. The combination, in a grate, of a rear reciprocating grate-section, a front reciprocating grate-section, and an intermediate fixed grate-bar which supports the front of the rear grate-section, and which supports also the rear of the front grate-section. 47th. The combination, with a grate which embraces a longitudinal connecting-bar or web, and a series of transverse grate bars, the ends of which have vertical sides of a fuel chamber, which embraces a series of supporting-lugs, which correspond with the transverse grate-bars, and which at their ends are diminished from the top to the bottom. 48th. A grate-bar which is provided with a lateral supporting-lug, the main upper surface of which is horizontal and which has at its outer extremity an upturned projection or engaging hook. 49th. In a fire-grate, a grate bar D , which is provided with a lateral supporting-lug d_5 , the main upper surface of which is horizontal, and which has at its outer extremity an upturned projection or engaging hook d_5 . 50th. In a fire-grate, a grate-bar which is provided with a lateral supporting-lug which has a flat horizontal upper surface, and an upturned hook, in combination with a grate-section, which has a bottom hook, which engages with and turns pivotally upon the supporting-lug of the grate bar. 51st. The combination, with the grate-bar D , provided with the supporting lugs d_5 , d_5 , of the grate-section D_2 , provided with end bottom hooks d_{12} , d_{12} , whereby it is adapted to engage and turn pivotally upon the supporting-lugs d_5 , as described. 52nd. A grate which is provided with a pair of downwardly extending bottom engaging lugs, and with a corresponding pair of flaring guide lugs contiguous to the engaging lugs, whereby, when an operating lever is applied it is directed with certainty to its engaging position. 53rd. The combination, with the grate-bar D having a transverse opening extending through the same from front to rear, of a rear grate-section D_1 , which is provided upon its under surface with engaging-lugs and with flaring guide lugs, substantially as and for the purposes set forth. 54th. The combination of a rear grate-section, a central grate-bar, a front grate-section, a supporting-rail which is provided with a slot, and an operating lever which engages with both the grate-sections, the central grate-bar, and the slotted supporting-rail. 55th. The combination, in a grate, of a central grate-bar provided with a transverse perforation, a front grate-section, a rear grate-section, a fuel chamber which is provided with supporting-lugs for the front grate-section and for the rear grate-section, a supporting-rail which has a longitudinal slot, and a coincident adjustable stop, and an operating lever which engages with the walls of the slot in the supporting rail with each of the two grate-sections, and with the central perforated grate bar, substantially as described. 56th. The combination, with a fuel-chamber which is provided with front and rear supporting-lugs, of a central grate-bar which has transverse perforations, a front reciprocating and dumping grate-section, a rear reciprocating and dumping grate-section, a supporting-rail which has longitudinal slots and coincident adjustable stops, and an operating lever which engages the central perforated grate-bar, the front grate-section, the rear grate-section and the slotted supporting rail, whereby when the operating lever is applied in one of the slots in the supporting rail, the two grate-sections may be dumped simultaneously, or the front grate-section may be dumped by itself, and whereby when the operating lever is applied in the other slot of the supporting-rail, the rear grate-section only may be dumped. 57th. The combination, with a reciprocating and dumping grate, and a supporting rail, which is provided with operating-slots, and with slidable stops which are adjustable either within or out of the slots, of a central bar which is fixed in position and which is provided with operating openings, and an operating lever which engages with the grate with the supporting rail and with the central bar, substantially as and for the purposes set forth. 58th. In a grate, a grate-bar, which is provided with a transverse perforation to receive an operating lever, with lateral agitating fingers and lateral supporting lugs, substantially as and for the purposes set forth. 59th. In a grate, a grate-bar D which is provided with a transverse perforation d to receive an operating lever, and with lateral agitating fingers d_1 and d_5 , and lateral supporting lugs d_2 and d_4 , as set forth. 60th. The combination of a reciprocating and dumping grate, which is pivotally supported at its rear, a vertical grate-front, and a front-supporting rail which is provided with a longitudinal slot, the walls of which serve as a bearing for an operating lever. 61st. The combination of a reciprocating and dumping grate, a vertical grate front E , and a front-supporting rail A_3 , which is provided with a longitudinal slot a_1 or a_2 , the walls of which serve as a bearing for an operating lever. 62nd. In a grate, a series of transverse bars, each of which is in its main portion tapered from top to bottom, and is at its ends of rectangular form. 63rd. In a grate, a series of transverse bars d_{12} or d_1 , each of which is throughout its main portion tapered from top to bottom, and each of which is at its ends of rectangular form. 64th. The combination, with the grate-front E , of the supporting-rail A_3 having arms A_4 secured, as described, to the lower portion of the grate-front, and forming in connection therewith an opening at for the passage of ashes and clinkers. 65th. The combination, with the grate-front E , of the supporting rail A_3 secured by its ends to the face-plates A , A , and having arms A_4 which are secured to the lower portion of the grate front, and which form in connection therewith the openings at for the passage of ashes and clinkers. 66th. The combination, with the grate front E , of the supporting rail A_3 having openings at for an operating lever, and supported at its ends by the face plates A and intermediately by the connection of its arms A_4 with the lower portion of the grate front, as set forth. 67th. The combination, with the supporting rail A_3 , of the grate-front E , the arms A_4 having bearings a_{12} , and the valves a_1 having eccentrically-placed journals a_{12} , as and for the purposes set forth. 68th. The combination of vertical end plates A , A , horizontally-projecting supporting lugs a_7 upon the end plates, upwardly-projecting hooks a_{11} upon the supporting lug, and a grate-section, which is provided on its lower rear portion with a downwardly-projecting lug which terminates in a horizontally-projecting hook which engages behind the upwardly-projecting hook of the supporting lug, as and for the purposes specified. 69th. The combination of vertical end plates A , A ,