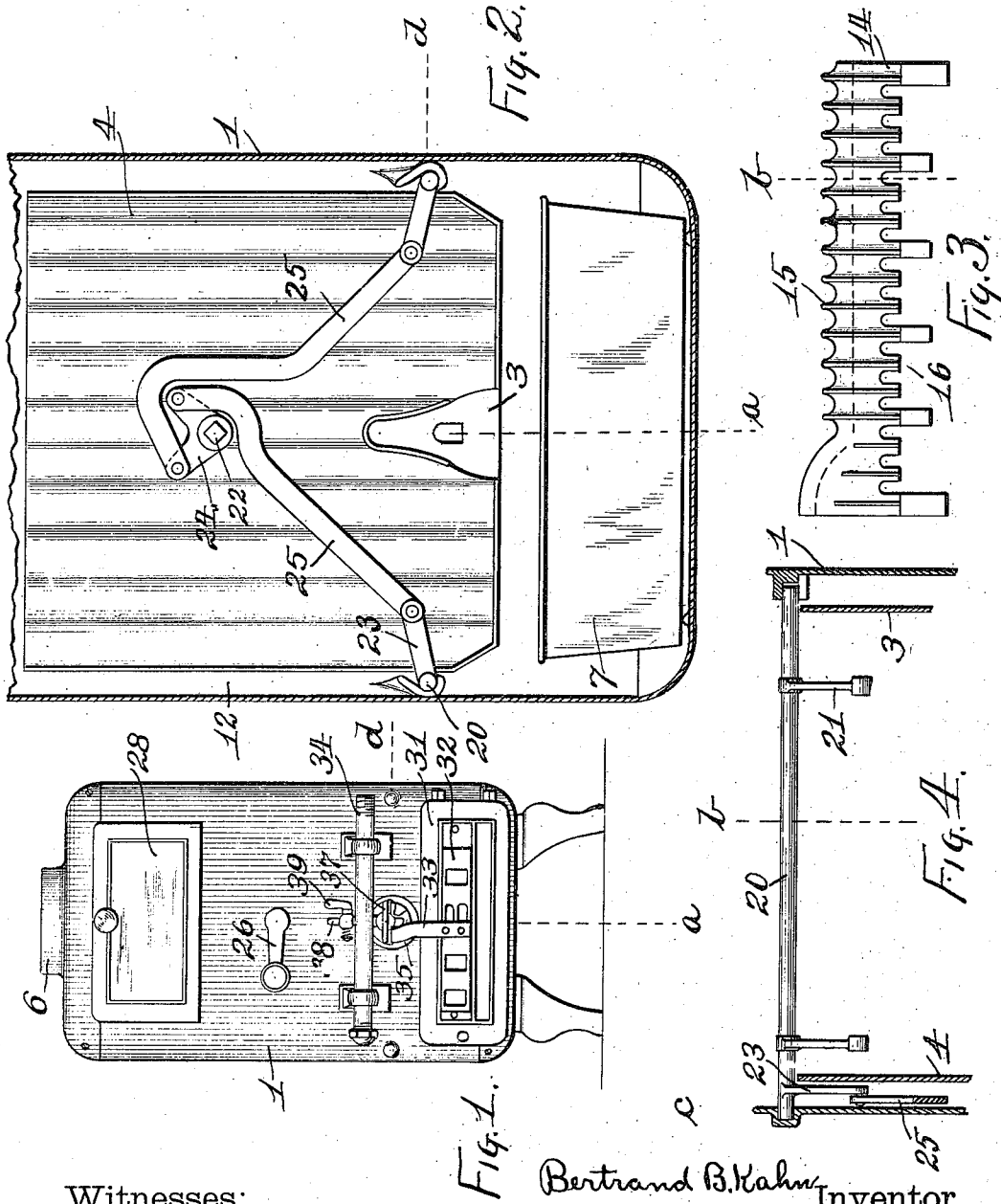


1,156,691.

Patented Oct. 12, 1915.
2 SHEETS—SHEET 1.



Witnesses:
Elmer R. Shipley,
M. S. Belden.

Fig. 1. Bertrand B. Kahn, Inventor
by James W. See
Attorney

B. B. KAHN.
INCINERATOR.

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2 SHEETS—SHEET 2.

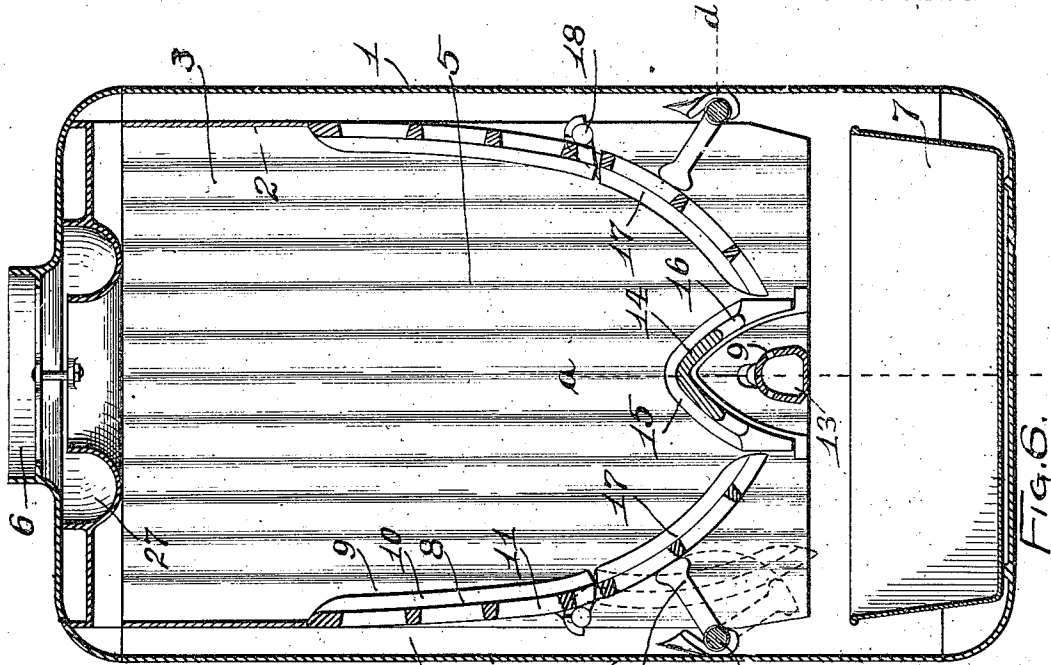


Fig. 6.

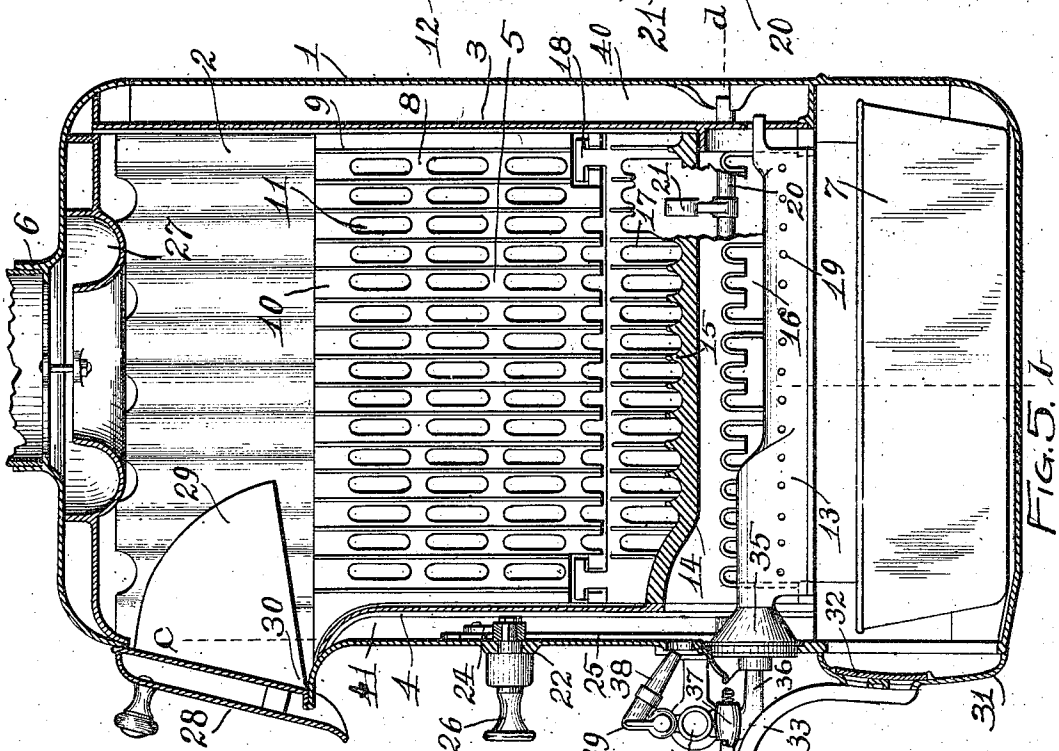


Fig. 5.

Witnesses:
Elmer R. Shipley.
M. S. Belden.

Inventor
Bertrand B. Kahn,
by James W. See
Attorney

UNITED STATES PATENT OFFICE.

BERTRAND B. KAHN, OF CINCINNATI, OHIO, ASSIGNOR TO THE ESTATE STOVE COMPANY, OF HAMILTON, OHIO.

INCINERATOR.

1,156,691.

Specification of Letters Patent.

Patented Oct. 12, 1915.

Application filed March 29, 1915. Serial No. 17,645.

To all whom it may concern:

Be it known that I, BERTRAND B. KAHN, a citizen of the United States, residing at Cincinnati, Hamilton county, Ohio, have invented certain new and useful Improvements in Incinerators, of which the following is a specification.

This invention, pertaining to incinerators designed with particular reference to the incineration of garbage, but applicable to the incineration of other materials, will be readily understood from the following description taken in connection with the accompanying drawings, in which:—

Figure 1 is a front elevation of an incinerator exemplifying my invention: Fig. 2 a vertical section of a portion thereof in the plane of line *c* of Fig. 5: Fig. 3 a side elevation of the stationary central grate section: Fig. 4 a horizontal section of one of the dumping shafts, contiguous parts appearing in horizontal section in the plane of line *d* of Figs. 1, 2, 5 and 6: Fig. 5 a vertical section in the plane of line *a* of Figs. 1, 2 and 6: and Fig. 6 a vertical section in the plane of line *b* of Figs. 3, 4 and 5.

In the drawings:—1, indicates the outer casing of the incinerator, preferably of cubical shape and formed of separate metallic sections suitably united: 2, side lining plates preferably ribbed disposed at some distance inward from the sides of the casing and extending from near the top thereof to a point some distance below the top: 3, the back lining plate disposed within the casing and extending from near the top thereof to a point below the incinerating chamber: 4, the front lining plate disposed within the casing and extending from the feed door down to a point below the base of the incinerator chamber: 5, the incinerator chamber: 6, the chimney outlet from the top of the casing and incinerator chamber: 7, the removable ash-pan in the base of the casing: 8, downward continuations of side linings 2, these downward continuations constituting stationary side grates extending from the side linings downward to a point some distance above the base of the incinerating chamber, these side grates being inwardly curved so as to give to the sides of the incinerating chamber a convergence downwardly: 9, vertical ribs formed on the inner faces of side grates 8, these ribs being disposed about an inch apart: 10, vertical flues

formed between these ribs, these flues having their inner sides open and their rear sides formed by the plates of the side grates: 11, perforations through the plates of the side grates placing the flues 10 in communication with the spaces at the sides of the incinerator-chamber: 12, the spaces between the sides of the casing and the sides of the incinerator chamber: 13, a gas burner disposed in the base of the incinerator chamber at its center of width and extending from the front to the rear thereof: 14, a fixed hood disposed above the burner and entirely clear of the burner and extending from the front to the rear of the incinerating chamber, this hood having a cross-section represented by a central ridge and downwardly sloping sides: 15, transverse ribs upon the hood, the same being substantially in line with the ribs 9 of the side grates: 16, openings through the lower edges of the hood, the side walls of the hood thus presenting a series of prongs projecting downwardly below the top of the burner: 17, dumping grates having the same general form, as to ribs and perforations, as the side grates 8, these dumping grates extending from the bases of side grates 8 down to close proximity with the sides of the hood, and being so formed as to produce downwardly inwardly curved prolongations of the side grates to the hood: 18, hinges uniting the upper edges of the dumping grates with the bases of the side grates 8, these hinges permitting the dumping grates to occupy an operative position with their bases close to the hood, as indicated in full lines in Fig. 6, or to swing downwardly so as to leave dumping room between their bases and the hood as indicated in dotted lines in Fig. 6: 19, the gas ajutages in the burner, these ajutages being in such position as to aline with the flues 10 formed between the ribs of the side grates and dumping grates so that the tendency of the flame-jets coming from these ajutages is to shoot up the flues: 20, rockshafts journaled in the front and rear walls of the casing at the inner sides of the casing and some distance below the hinges uniting the dumping grates to the side grates: 21, arms projecting from the rockshafts and adapted to have their ends engaging the outer surfaces of the dumping grates when the dumping grates are in operative position, as indicated in the drawings, these

arms being disposed along the length of the rockshafts preferably in position to engage the dumping grates near the rear and front of the latter: 22, a spindle journaled in the front of the casing: 23, an arm projecting inwardly from each rockshaft in the space between the front of the casing and the front wall of the incinerating chamber: 24, a bellcrank fast on spindle 22: 25, links connecting the extremities of the arms of the bellcrank with the extremities of arms 23: 26, a crank, outside the front of the casing, to permit of the turning of spindle 22: 27, an annular water-catching pan disposed below the periphery of chimney-opening 6 and having its top open to the chimney-opening: 28, the feed-door disposed in one wall of the casing and serving, when open, to permit material to be delivered into the incinerating chamber: 29, segmental wings carried by the sides of the door and having their outer extremities fairly close to the top of the door-opening, the outer portions of these wings being struck from a center represented by the lower portion of the feed-door: 30, the lower portion of the feed-door, the same resting on an outward projection from the front wall of the casing and against an upward ledge on this projection, the door, in being swung open, pivoting on this engagement between the door and projection and being prevented from upward displacement therefrom by the upper edges of the wings in conjunction with the top of the door-opening: 31, the ash-door, closing the front of the ash-pit and permitting the removal therefrom of the ash-pan: 32, a sliding register in the ash-door: 33, an upwardly projecting prong from this register: 34, the gas supply-pipe: 35, the mixer at the front end of the gas burner: 36, the gas-supply nozzle placing the gas-supply pipe in communication with the mixer: 37, the gas-supply cock disposed between the gas-supply pipe and nozzle 36 and having its handle in such position relative to the position of prong 33 that the handle cannot be turned to open the supply-cock when the register is closed, or the register closed when the cock is open: 38, the pilot tube terminating at an accessible point at the front of the casing and adapted to deliver flame into the front end of the hood, over the burner, this pilot tube being in communication with the gas-supply pipe: 39, a cock in the pilot tube: 40, the space at the rear of the incinerator chamber, between the rear wall of the incinerator chamber and the rear wall of the casing: and 41, the space at the front of the incinerator chamber between the front wall of that chamber and the front wall of the casing.

All of the interior parts of the incinerator are preferably so constructed and united that they may be separated from each other

and removed from the casing through the door-openings, and without the use of tools. In my present practice in constructing the incinerators for domestic use for the incineration of garbage or other waste, the device is intended as a substitute for the usual garbage or waste can into which garbage may be placed from time to time until the incinerator chamber is filled up to a point somewhat above the level of the base of the feed-door. When the device contains this quantity of garbage, and a small domestic size may, when thus filled, contain about three-quarters of a bushel, everything is ready for the incineration of the charge. While the device is standing idle and serving merely as a receptacle for the garbage, both doors and the register are closed and the burners unlighted, the feed-door being opened as occasion requires for putting the garbage into the incinerator. No attention need be given to the drying of the garbage being charged into the incinerator as the incinerator will drive off all the moisture before consuming the garbage, but it will of course be obvious that the greater the quantity of water carried by the garbage the greater will be the consumption of gas employed in its incineration. It is, of course, to be understood that, when the device is not in use as an incinerator, the dumping grates will be in closed position, as indicated in full lines in Fig. 6. As the garbage is from time to time charged into the incinerator, if the garbage is in specially wet condition, water will drain from it into the ash-pan. The keeping of the register closed before the incinerator is put into operation, is important in preventing the escape of odors, if chimney draft is weak. With strong chimney draft the register may be left open to permit a drying circulation.

The incinerator having been charged to the proper height, it is in order to proceed with the incinerating operation, and before this is done it is desirable that the top of the mass be poked into reasonably level condition. The register is now to be slid open; the cock of the pilot light is now to be opened and the pilot burner lighted; the sliding open of the register has freed the handle of the gas-supply cock which is now to be opened; the gas jets from the burner are ignited by the flame from the pilot burner; the cock of the pilot burner is now to be shut off; the products from the burner apertures now pass up the flues on the inner surfaces of the fixed and dumping grates, and between the ribs on plates 2 if those plates be ribbed, and through the flues over the hood, and heated gases pass up through the mass; the first effect of the heat is to evaporate the moisture from the garbage, the vapor passing out through the chimney outlet; in the early stages of the incineration

some of the vapor may be condensed and drop down into the annular water-pan; the lower portion of the mass, being closer to the heat, will finally go itself into combustion; when this combustion has proceeded to a proper degree it may be depended upon for the completion of the incinerating process, and the gas burner may be shut off; the incineration proceeds till the mass is reduced to ash; the ash drops down through the grate and into the ash-pan and forms good fertilizing material; if the mass shows a tendency toward arching, the use of a poker will be in order; the incinerating process will be expedited by opening the ash-door somewhat but this door and its register should always be closed when incineration is not going on; when the mass is completely reduced then the dumping handle is operated and the dumping grates swung side-wise, as indicated in Fig. 6; remaining ashes and incombustible matters then fall to the ash-pit; the grates are to be closed for new charges; the ash-pan is then to be removed and emptied.

While it is preferable that the beginning of the incinerating process should be delayed till the incinerator chamber has been fully charged, the burner may be lighted and the charge incinerated, no matter what may be the quantity contained in the incinerator so long as it is worth while.

The dropping of liquid from the charges results in a deposit of water in the ash-pan, and a condensation of vapors in the chimney connection above the incinerator results in the deposit of water in the annular water-pan. However, when the charge has been fully incinerated it will be found that the heat of the lower portion of the incinerator chamber has evaporated the water from the ash-pan, the vapor therefrom passing up the passages at the sides of the incinerator chamber and going to the chimney, while the waste heat from the top of the incinerator chamber evaporates the water from the annular water-pan, this water-pan and the ash-pan being generally found dry at the end of the incinerating operation.

Generally the garbage will arch over the flues formed between the vertical ribs of the fixed grates and dumping grates so as to permit upward passage of the heated products from the burner. But mushy portions of the mass may, instead of arching across these flues, go into and fill up the flues. Such mushy matters present themselves at the ports in the grates and become subjected to heat rising from the base of the apparatus through the flues 12 at the sides of the incinerator; this heat drying and incinerating the material occupying the ports.

The prong on the register prevents the supply-cock being opened while the register

is closed and prevents the closing of the register while the cock is open.

I claim:—

1. An incinerator comprising, an incinerator chamber, a grate therefor, vertical ribs disposed on the inner surface of chamber walls to hold the material inwardly and form vertical flues between the material and the walls for the upward passage of heat, and a gas-burner disposed across the chamber parallel with the ribbed chamber-walls and having gas ajutages adapted to deliver flames to said flues, combined substantially as set forth.

2. An incinerator comprising, an incinerator chamber, grate portions of the walls of such chamber, ribs disposed on the inner surface of said grate portions and adapted to form flues to receive the heat from the gas burner, and a gas-burner disposed across the chamber parallel with the ribbed chamber walls and having gas ajutages adapted to deliver flames to said flues, combined substantially as set forth.

3. An incinerator comprising, a casing provided with a feed-door and an ash-door and a chimney outlet, an incinerator-chamber disposed within the casing and having its walls separated from the casing by side passages communicating with the chimney outlet, grate portions for the walls of the incinerator-chamber, a gas burner disposed at the base of the incinerator-chamber, ribs disposed on the inner surface of such grate portions and adapted to form flues to receive the heat from the gas burner, and ports through the grate portions between said ribs and placing said flues in communication with said side passages, combined substantially as set forth.

4. An incinerator comprising, a casing provided with a feed-door and an ash-door and a chimney-outlet, an incinerator-chamber disposed therein and having its walls separated from the walls of the casing by side passages in communication with the chimney-outlet, fixed grate portions forming parts of the side walls of the incinerator-chamber, a gas burner disposed across the incinerator-chamber, a hood over and free from the gas burner, dumping grate sections hinged at their tops and forming downwardly and inwardly curved prolongations of the fixed grate portions and having their lower edges normally contiguous to said hood, and mechanism for swinging the lower edges of said dumping grates downwardly away from said hood, combined substantially as set forth.

5. An incinerator comprising, a casing provided with a feed-door and an ash-door and a chimney-outlet, an incinerator-chamber disposed therein and having its walls separated from the walls of the casing by side passages in communication with the

chimney-outlet, fixed grate portions forming parts of the side walls of the incinerator-chamber, a gas burner disposed across the incinerator-chamber, a hood over and free from the gas burner, dumping grate sections hinged at their tops and forming downwardly and inwardly curved prolongations of the fixed grate portions and having their lower edges normally contiguous to said hood, mechanism for swinging the lower edges of said dumping grates downwardly away from said hood, and downwardly projecting prongs provided at the sides of the hood at their points of contiguity with the lower edges of the dumping grates, combined substantially as set forth.

6. An incinerator comprising, a casing provided with a feed-door and an ash-door and a chimney-outlet, an incinerator-chamber disposed within said casing and having its side walls separated from the casing by passages having their upper ends in communication with the chimney-outlet, a gas burner extending from the front to the back of the incinerator-chamber, a hood disposed over and free from the burner and having downwardly projecting prongs at the base of its sides, transverse ribs upon the hood, fixed grates forming portions of the sidewalls of the incinerator-chamber, ribs upon the interior surfaces of said fixed grate portions in alinement with the ribs upon the hood, dumping grates having their upper edges contiguous to the lower edges of the fixed grate portions and having their lower edges in contiguity to the prongs of the hood, ribs upon the inner surfaces of the dumping grates in alinement with the ribs on the fixed grate portions and hood, hinges supporting the upper edges of the dumping grates, and mechanism for swinging the lower edges of the dumping grates downwardly away from the hood, combined substantially as set forth.

7. An incinerator comprising, a casing provided with a feed-door and an ash-door and a chimney-outlet, an incinerator-chamber disposed within said casing and having its side walls separated from the casing by passages having their upper ends in communication with the chimney-outlet, a gas burner extending from the front to the back of the incinerator-chamber, a hood disposed over and free from the burner and having downwardly projecting prongs at the base of its sides, transverse ribs upon the hood,

fixed grates forming portions of the side walls of the incinerator-chamber, ribs upon the interior surfaces of said fixed grate portions in alinement with the ribs upon the hood, dumping grates having their upper edges contiguous to the lower edges of the fixed grate portions and having their lower edges in contiguity to the prongs of the hood, ribs upon the inner surfaces of the dumping grates in alinement with the ribs on the fixed grate portions and hood, hinges supporting the upper edges of the dumping grates, rock-shafts at the sides of the dumping grates between them and said casing, arms carried by said rock-shafts and adapted to swing the dumping grates to normal position or to permit them to swing to dumping position, an arm on the end of each rock-shaft, a spindle journaled in the front of the casing, means for turning said spindle, a bell crank fast on said spindle, and links connecting the arms of the bell crank with the arms on the ends of the rockshafts, combined substantially as set forth.

8. An incinerator comprising, a casing provided with a feed-door and an ash-door and a vertical chimney-outlet at the top of the casing, an incinerator-chamber disposed within said casing, a gas burner disposed at the base of the incinerator-chamber, and an annular water-catching pan disposed below the periphery of said chimney-outlet and exposed to the action of the heated gases rising to the chimney-outlet and adapted to deliver vapor to the chimney outlet, combined substantially as set forth.

9. An incinerator comprising, an incinerator chamber, side-swinging dumping grate-members at the base of the chamber, a casing surrounding the chamber, a spindle journaled in the wall of the chamber above its base with its axis parallel with the axis of the swinging motion of the grate-members, a bell-crank fast on the spindle, rockshafts at the sides of the swinging grate-members, arms on the rockshafts and engaging the swinging grate-members, actuating arms on the rockshafts, and links connecting the arms of the bell-crank with said actuating arms whereby the dumping grate-members move in and out in unison, combined substantially as set forth.

BERTRAND B. KAHN.

Witnesses:

GEORGE SCHELHORN,
M. S. BELDEN.