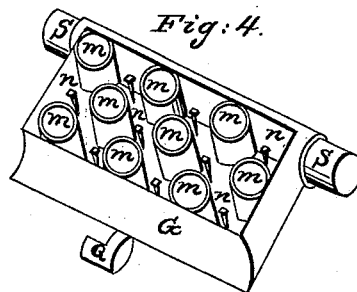
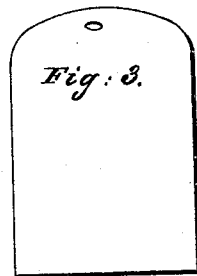
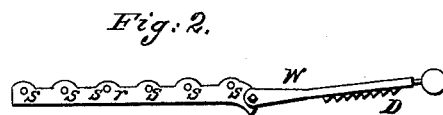
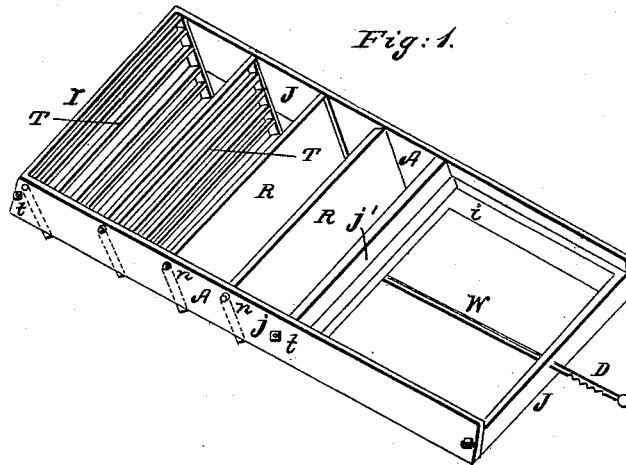


W. B. HILL.
Grate for Furnaces.

Patented July 30, 1841.

No. 2,206.



UNITED STATES PATENT OFFICE.

WM. B. HILL, OF BELLEVUE, MICHIGAN.

CONSTRUCTION OF GRATES FOR LIME-KILNS, &c.

Specification of Letters Patent No. 2,206, dated July 30, 1841.

To all whom it may concern:

Be it known that I, WILLIAM B. HILL, of Bellevue, in the county of Eaton and State of Michigan, have made certain improvements in the manner of constructing the grates for sustaining the fuel in kilns for the burning of lime, in furnaces for the manufacture of potash or of salt, in the furnaces of steam-boilers, and in others in which a considerable and a regulated heat is required; and I do hereby declare that the following is a full and exact description thereof.

I construct my grates by first making a suitable frame of cast, or of wrought, iron, of such length and width as may be necessary to adapt it to the kiln, or furnace, to which it is to be applied. Instead of employing grate bars of the ordinary construction in this frame, I use wide bars, or fire supports, for the fuel, composed in part of iron, and in part of fire-clay, or other earthy compound which will sustain a high degree, and is a bad conductor, of heat; said fire-clay, or earthy compound, being intended to protect the iron bars, or fire supports, with which it is combined, from being burned out. These compound bars, or supports, are each furnished with pivots, or gudgeons, at their ends, and close to one of their edges, which pivots are received within holes adapted to them in the sides of the grate frame; the bars, or supports, when in place, hang like the swinging slats of the blinds used in breweries, and in other structures, and are capable, like them, of being simultaneously opened and closed by means of a connecting rod, or bar, attached by pivots, staples, or otherwise, to the swinging edges of the bars, or supports, opposite to those edges from which the pivots project, and on which the bars are hung. The swinging bars, or supports, I sometimes cast, or make, so that each of them shall consist of a series of separate bars, or slats, the spaces between which are to be filled in with the earthy fire-proof composition; in this case the draft from the ash-pit will be admitted to the fire between the separate bars, or supports, only. This manner of construction is particularly adapted to the burning of wood; but where coal is used as fuel, I make round, or other formed, tubular openings, through each of the compound bars, or supports, in such manner as to admit a sufficient

draft through them to keep up the combustion when the said supports are closed so as not to allow a draft to pass freely through between their contiguous edges.

In the accompanying drawing, Figure 1, is a representation of my grate frame, with the bars, or fire supports, attached thereto.

A, A, are the sides of the frame, and R, R, T, T are the swinging bars or supports, suspended by pivots at *n, n*, passing into said side pieces. The supports T, are shown as consisting of separate bars, or slats, not filled in with the fireproof composition; and R, R, are shown as each forming one continuous plane, by being filled in therewith.

W, is a rod jointed to each of the lower edges of the fire supports, so as to act upon, and to open or close, them simultaneously. D, is the outer end, or handle, of this rod, furnished with catches to hold it in any required position. Fig. 2, is a representation of this rod, disconnected from the frame and supports; S, S, S, being the eyes, or loops, by which it may be jointed to the swinging edges of said fire supports; *i, i*, Fig. 1, are grooves for receiving a dead plate, Fig. 3, which may occupy the front of the furnace, to any required extent, and which may be renewed at pleasure.

In Fig. 1, the frame is shown as consisting of five separate pieces; the sides A, A; the ends *j, j*, and an intermediate piece *j'*; these being joined together by nuts and screws, at *t, t, t*.

Fig. 4, shows one of the fire supports, to be used when the fuel consists of coal. S, S, are the pivots by which the supports are to be hung within the frame.

m, m, m, are tubular openings through the supports, which are sustained upon a plate on the under side of the support, cast with, and making a part of, it. The spaces between the tubular openings *m, m*, are to be filled in with the fire-proof composition; and to hold this the more firmly, headed spikes *n, n*, may be inserted in the flask in casting, if deemed necessary. The front edge G, of the fire supports may be made to fit closely against the rear edge of the contiguous support, when closed, so that no more draft shall be admitted than that which passes through the tubular openings *m, m*.

Q, is a pivot which is to be received into

openings in the governing rod, Fig. 2, by means of which the respective fire supports are opened, or closed, simultaneously.

Having thus fully described the nature of my invention, and shown the manner in which the same is carried into operation, what I claim therein as new, and desire to secure by Letters Patent, is—

The forming the combined bars, or fire supports, arranged and constructed as described, in part of metal, and in part of fire-proof, earthy compound, substantially in the manner, and for the purpose, set

forth, and the combining of said compound fire supports with each other by means of a suitable frame, and of a rod, or bar, to which the swinging edges of each of them is jointed, as described, for the purpose of opening, or closing, them in any required degree, by which means the draft may be regulated, and ashes, or other matter, may be readily discharged.

WM. B. HILL.

Witnesses:

THOS. P. JONES,
FREEMAN RAWDON.