2 Sheets—Sheet 1.

H. SWINDELL.

TRANSVERSE ROCKING GRATES.

No. 181,221. Patented Aug. 15, 1876.

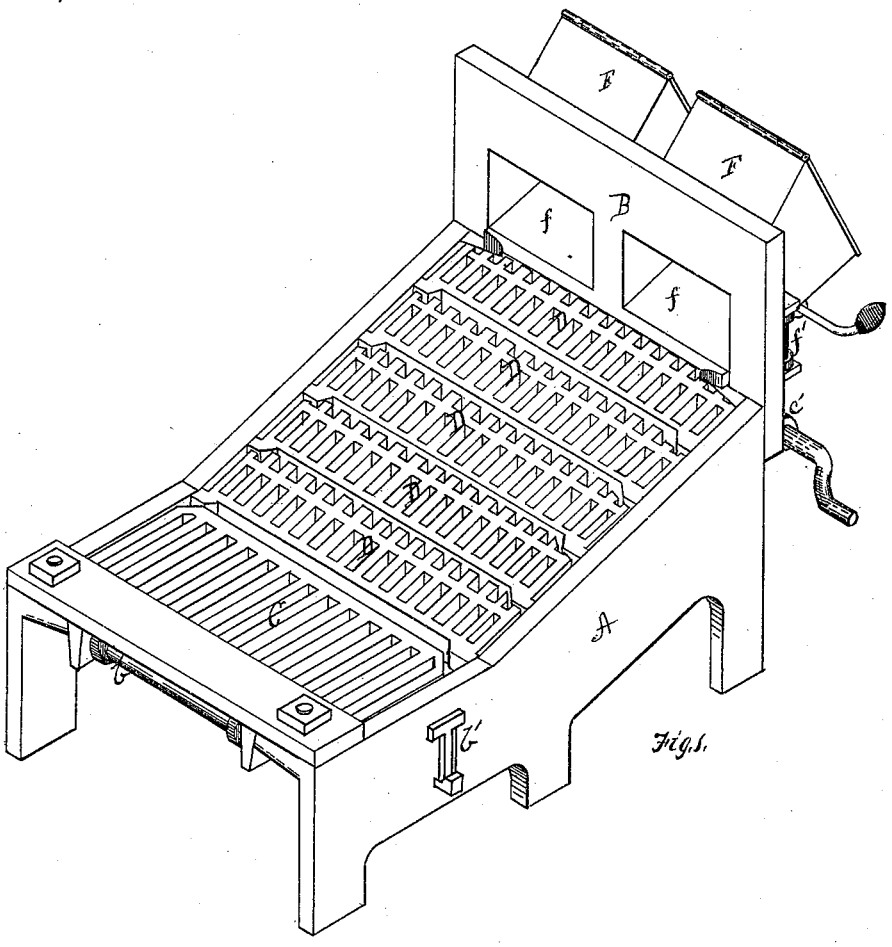

Fig. 1.

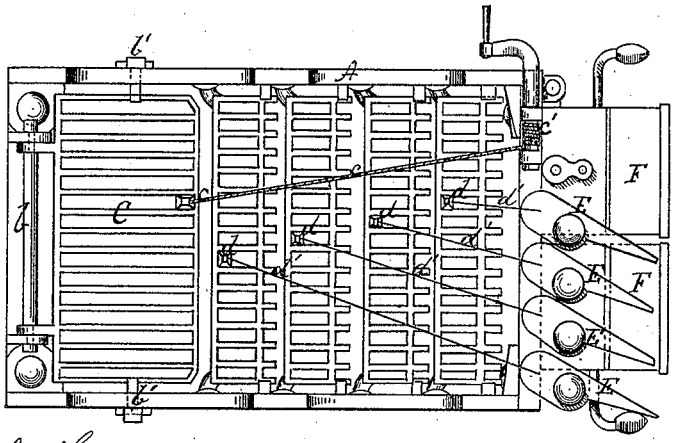

Fig. 2.

Witnesses.

James L. Kay

R. H. Wrenshall

Inventor

Henry Swindell

by Bakewell & Kerr

Attys

2 Sheets—Sheet 2.

H. SWINDELL.

TRANSVERSE ROCKING GRATES.

No. 181,221. Patented Aug. 15, 1876.

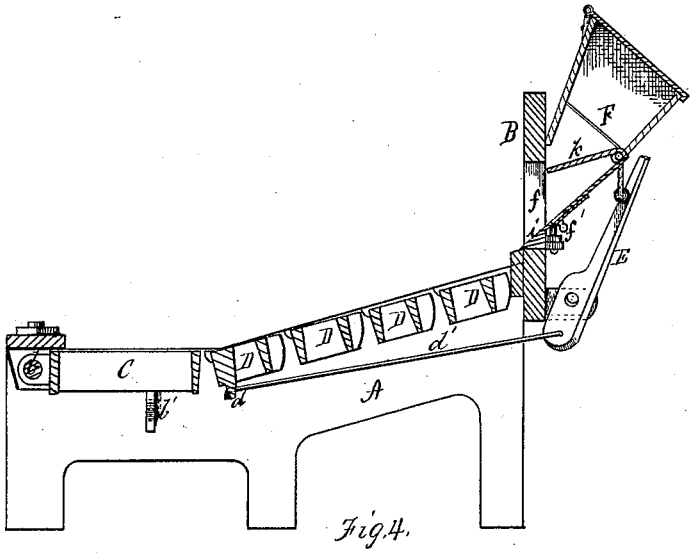

Fig. 4.

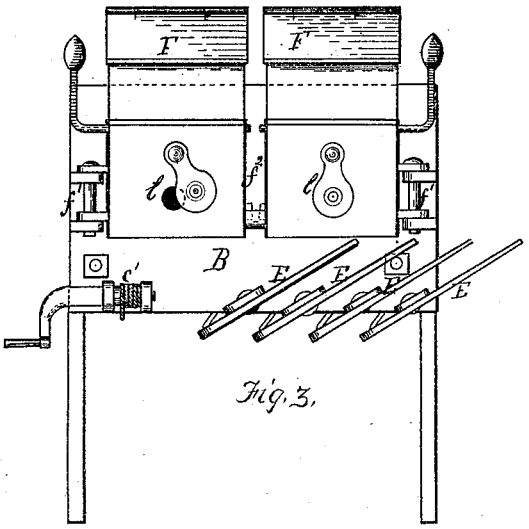

Fig. 3.

WITNESSES

James L. Kay

R. C. Wenschall

INVENTOR

Henry Swindell

by Bakewell & Kerr

Attys.

UNITED STATES PATENT OFFICE.

HENRY SWINDELL, OF ALLEGHENY, PENNSYLVANIA.

IMPROVEMENT IN TRANSVERSE ROCKING GRATES.

Specification forming part of Letters Patent No. **181,221**, dated August 15, 1876; application filed May 26, 1876.

To all whom it may concern:

Be it known that I, HENRY SWINDELL, of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Grates; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a rear perspective view of a grate embodying my improvements. Fig. 2 is a view of the under side or bottom of the grate. Fig. 3 is a front view, and Fig. 4 is a longitudinal vertical section.

Like letters refer to like parts wherever they occur.

My invention relates to the construction of grates for furnaces, gas-generators, &c., and is especially adapted to the coking and gradual combustion of fuel.

In conjunction with a dumping-grate, I employ a series of grates arranged to form an inclined or feeding surface, and mechanism for agitating the supplemental or inclined grates, so as to loosen up and feed the fuel forward upon the main or dumping grate.

I will now proceed to describe my invention by referring to the drawing, so that others skilled in the art to which it appertains may make and use the same.

A indicates the frame or casing in which the grates are set, and B the front plate. C is the main or dumping grate, hinged as at *b*, or pivoted at the center, if preferred, and sustained in a horizontal position by a series of latches, *b'*. Connected to the forward part of grate C, preferably to a lug or arm on the under side of the grate, is a chain, *c*, rod, or equivalent means for lifting and agitating the grate. In this connection a chain, as shown, is most desirable, as it may be wound and unwound from a winch, *c'*, in raising, lowering, or agitating the grate. D D are a series of supplemental or feeding grates, pivoted in the frame A, and supported by a series of lugs, *a a*. These grates D are arranged to form an inclined feeding-surface, the inclination of the grates being determined by circumstances, such as the quality of the feed employed, or the depth of fuel to be maintained on the main grate C. From the under surfaces of the supplemental grates D D, and preferably on a line coinciding with the pivoting, project lugs or arms *d d*, connected, by chains or rods *d' d'*, with a series of agitating-levers, E E, pivoted on the frame or front plate A B, one or more levers for each grate, forming the inclined feeding-surface, so that the fuel upon any part of the incline may be loosened up and fed forward at pleasure. In the front plate B, on a level with the incline formed by the grates D D, are a series of feed-openings, *f f*, closed by hoppers F F, hinged as at f^1, and locked by a catch, f^2, opposite the hinge. The lower plates of the hoppers F are extended down, as shown at *i*, or otherwise formed to shut within the feed-opening, and direct the contents of the hopper upon the inclined grates. The hoppers are also supplied with the usual valves *k k*, and may be provided with openings *l l*, closed by slides, to serve as spy-holes or draft openings, as desired.

The operation of these devices is as follows: The fuel, being introduced through the feed-openings in the usual manner, or by means of the hoppers, passes down the incline, and banks upon the main or dumping grate until a sufficient bed of coals is obtained. This bed of fuel can be changed from time to time, as it becomes expended by agitating or dumping the main grate C, and the subsequent charges of fuel introduced may be broken up transversely, and gradually worked down in successive portions to the main grate, by operating the several grates of the incline by means of their respective levers. As the fuel passes down the incline, it receives an increased supply of air, the fuel at the top of the incline receiving the minimum, so that the fuel gradually cokes before it reaches the main grate, the gases being carried along through the incandescent fuel on grate C. In the coking process, should the mass become agglomerated, it can be readily broken up or forced down the incline by tilting the grates D D. Should the upper part of the inclined grate-surface become clogged, the hoppers may be swung back and an instrument introduced to break up the mass. The hoppers may also be swung back when a draft through or over the fuel on the incline is desired.

By my improved devices, fuel of various

qualities may be employed and the full effect obtained therefrom, the grates may be readily cleaned, and the fires relieved of ashes at pleasure.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a furnace, the combination of the series of transverse grates D D, arranged to form pivoted sections of an inclined feed-surface, substantially as specified.

2. The combination of the series of transverse grates D D, arranged to form pivoted sections of an inclined feed-surface, and the horizontal pivoted dumping-grate C, substantially as specified.

In testimony whereof I, the said HENRY SWINDELL, have hereunto set my hand.

HENRY SWINDELL.

Witnesses:

JAMES I. KAY,

WILLIAM SWINDELL.