(No Model.)

J. R. FISH.

FURNACE GRATE.

No. 266,801. Patented Oct. 31, 1882.

Fig 1

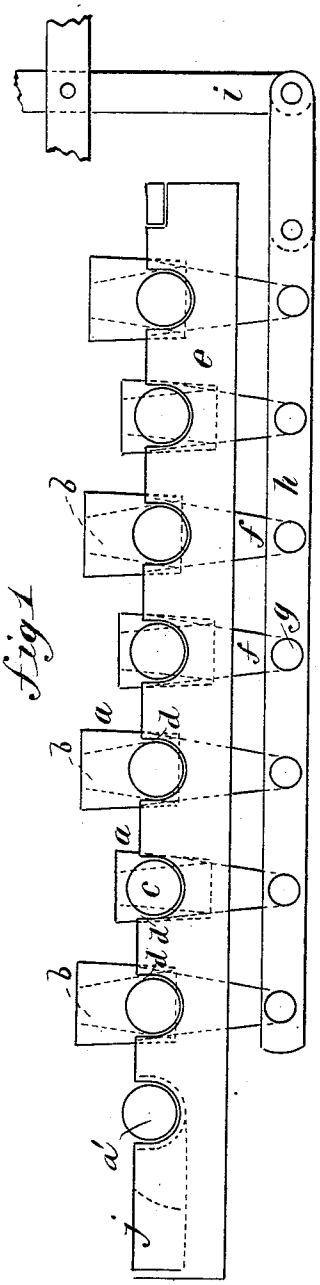
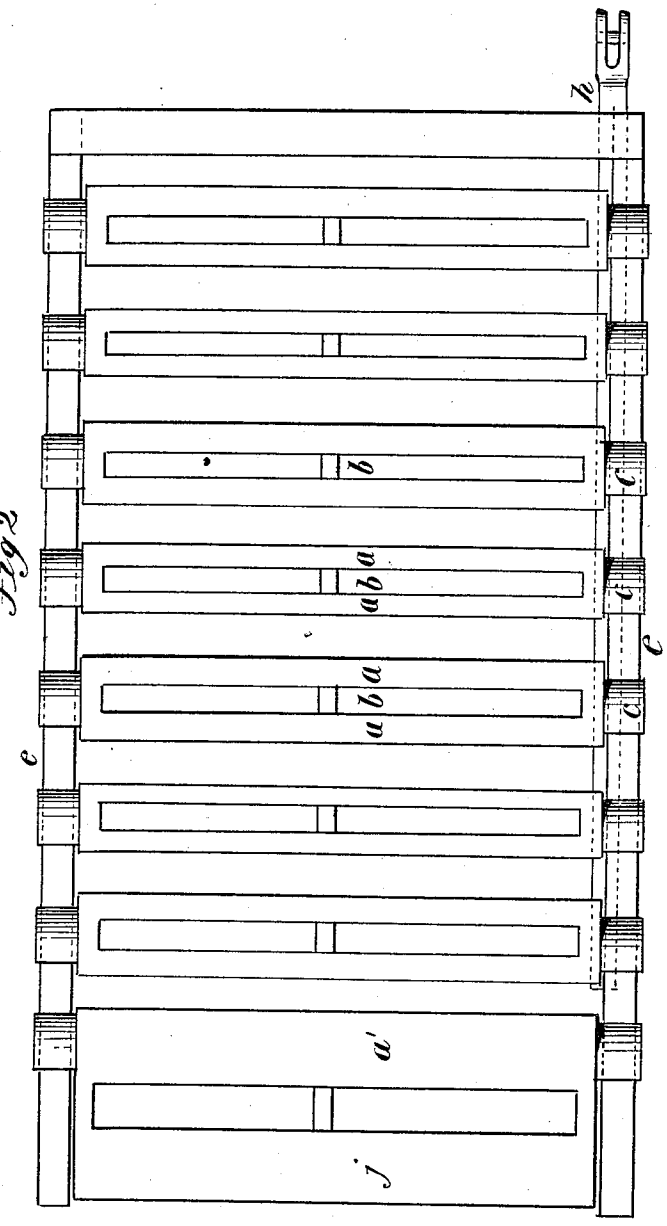


Fig 2



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JOHN R. FISH, OF GRAND RAPIDS, MICHIGAN.

FURNACE-GRATE.

SPECIFICATION forming part of Letters Patent No. 266,801, dated October 31, 1882.

Application filed September 2, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. FISH, of Grand Rapids, in the county of Kent and State of Michigan, have invented a new and Improved Furnace-Grate, of which the following is a full, clear, and exact description.

My invention consists of an arrangement of rocking grate-bars, so that the bars are alternately higher and lower with respect to each other to the extent of an inch and a half or thereabout, the object being to provide grate-bars for burning coke in locomotives whereof the higher bars will project upward into the bed of fire, so that they will break the fused cake or crust which forms in the bottom of coke fires, so as to obstruct the air to such an extent that the upper portion of the fire fails to get the due supply of air for good combustion, as hereinafter fully described.

Reference is to be had to the accompanying drawings forming part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a side elevation of a fire-grate contrived according to my present invention, and Fig. 2 is a plan view.

For the bars *a* of the grate I prefer to use the double form of bar represented in the drawings, made by casting them with a longitudinal and vertical space, *b*, and having trunnions *c* to rest in bearings *d* of the furnace-walls, or bars *e*, attached to said walls for the support of the bars *a*, said bars also having dependent arms *f* extending into the ash-pit and connecting by pivots *g* with the shaking-bar *h*, to be worked by the hand-lever *i*. For the purpose of effectually breaking up the cakes that form in the burning of coke by the partial fusion of the lower portion and prevent the proper admission of the air, I propose to arrange these or other approved bars alternately higher and lower at the upper surfaces by making half of the bars of greater height from the axis than the others, thus enabling the higher bars to project sufficiently into the fire-bed above the short ones to enable them to break up the crusts or cakes forming on them. For the rear portion of the grate I propose to have a dump-bar, *a'*, with an extension, *j*, at the back, to be worked by any suitable means, for discharging the fire or any large masses of clinker when desired.

With this form of grate coke may be successfully burned in locomotives, in which it fails to give satisfactory results with other forms of grates.

In my patent, No. 248,155, granted October 11, 1881, there is one low bar between two high ones, and all the bars are provided with vertical ribs or flanges to prevent snow from accumulating on the under side of grate and the formation of ice; also to admit of the use of fine coal; but for my present purpose, which is to facilitate the economical and convenient use of coke, I have changed both the construction of the grate-bars and their relative arrangement.

Hence what I now claim as new, and of my invention, is—

A rocking grate having each alternate bar higher than the one next it and spaces between the bars, as shown and described, whereby the cakes or lumps, which form in burning coke and obstruct the ingress of air to support combustion, may be broken up when the grate is rocked.

JOHN R. FISH.

Witnesses:
JOHN J. DE JONGE,
JOHN A. BOSSLER.