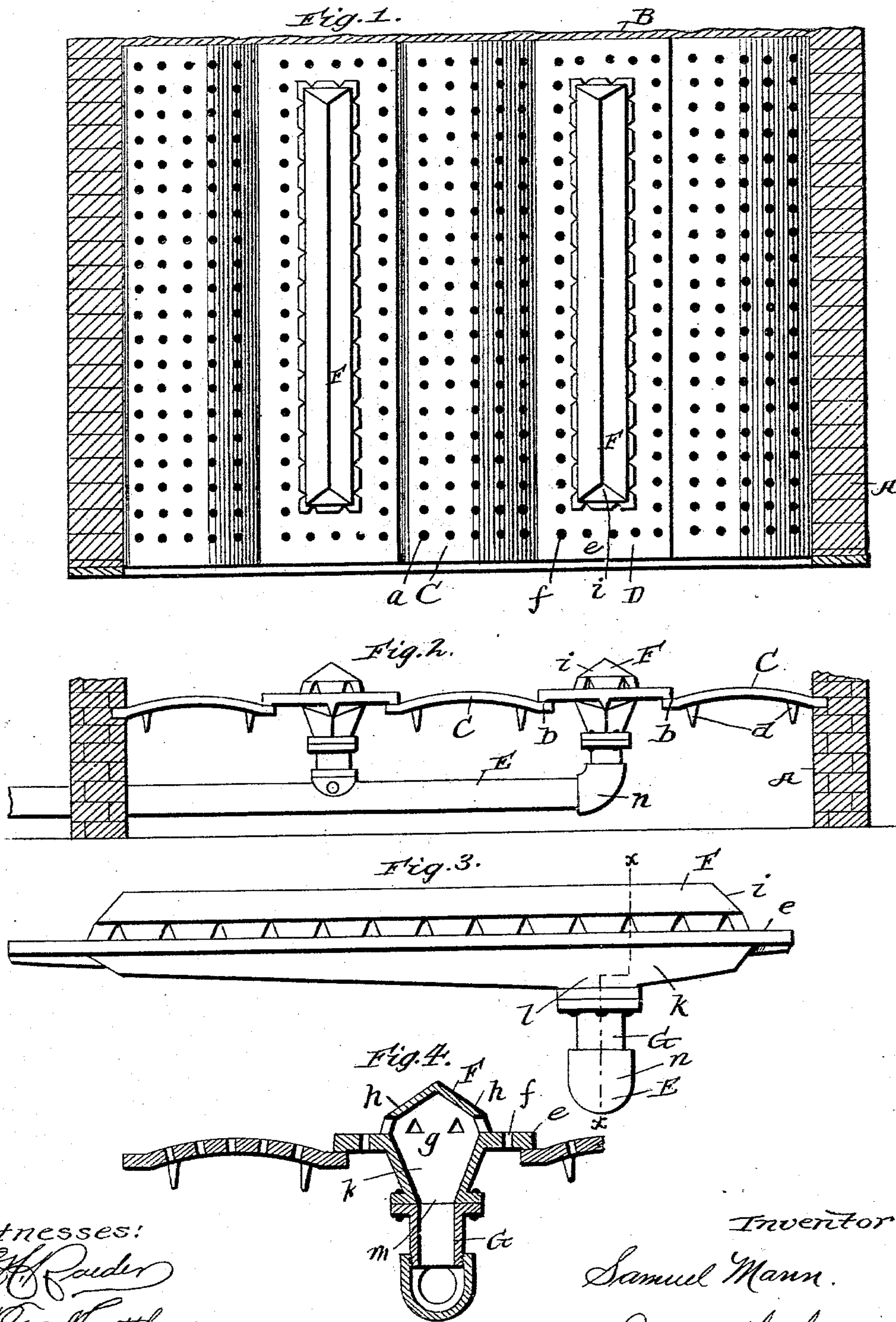


(No Model.)

S. MANN.
FURNACE GRATE.

No. 551,505.

Patented Dec. 17, 1895.



Witnesses:

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SAMUEL MANN, OF MILFORD, INDIANA.

FURNACE-GRATE.

SPECIFICATION forming part of Letters Patent No. 551,505, dated December 17, 1895.

Application filed September 18, 1895. Serial No. 562,866. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL MANN, a citizen of the United States, residing at Milford, in the county of Kosciusko and State of Indiana, have invented certain new and useful Improvements in Furnace-Grates; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in furnace-grates, and it is designed more particularly for use in such furnaces as use sawdust, tanbark, bagasse, and the like for fuel, and the novelty and many advantages of such construction will appear from the following description and claims, when taken in connection with the annexed drawings, in which—

Figure 1 is a transverse horizontal sectional view of a furnace, illustrating my improved grate therein. Fig. 2 is a vertical cross-sectional view of the same, showing the grate and the blast apparatus in elevation. Fig. 3 is a side elevation of one of the grate-bars with the blast-pipe attached, and Fig. 4 is an enlarged sectional view taken in the plane indicated by the dotted line *xx* on Fig. 3.

Referring by letter to said drawings, A indicates the side walls and B the bridge-wall of a furnace, which may be of any ordinary or approved construction.

C indicates grate-bars which are of a concavo-convex form in cross-section. These bars are perforated, as shown at *a*, and are arranged in the furnace with their convex side up. These bars C are of approximately flat contour and have their longitudinal edges straight, or approximately so, as shown at *b*, for a purpose which will presently appear, and are also preferably provided on their under sides with longitudinally-disposed ribs or strengthening-flanges *d*.

Alternating with each grate-bar C is a grate-bar D, which is hollow and designed to receive an air-blast from a pipe or conduit E. These hollow bars are of a form substantially as shown, having vertical holes or apertures *f* in the flat portion or plate *e* and having a central longitudinal slot or opening *g*, which is closed by a cap F. This cap F, which closes the slot *g*, slopes or pitches laterally, as shown by the walls *h*, and the ends of said capslope,

as shown at *i*. At the base of these sloping walls and in the sides and ends of the cap are laterally-disposed holes or apertures *j*, which are designed to direct blasts over the perforated grate-bars C and into the fuel thereon. The caps F, by reason of their being sloped or pitched laterally, as shown, tend to deflect the sawdust or other fuel placed on the grate onto the bars C, and the lateral disposition of the apertures *j* in said cap prevents said apertures from being filled up by sawdust and similar fuel and also enables them to discharge the blast of air laterally into and on the fuel on the bars C, so as to materially promote the combustion of said fuel.

Depending from the slot *g* of the bars D is a blast-trough *k*. This blast-trough, as better shown in Fig. 3 of the drawings, slopes from opposite ends to the point *l*, where the blast-pipe E connects therewith. This blast-trough is provided with a suitable aperture *m*, and a coupling G is employed for connecting the blast-pipe E therewith. It will be observed that in coupling the end of the blast-pipe with the hollow bar an elbow *n* is employed in addition to the coupling *b* employed at the other points of connection. By reason of the sloping formation of the blast-trough I am enabled to more effectively distribute and force the blast through the hollow bars and into the fuel. By alternating these blast-bars or hollow bars with the perforated flat bars I get a very thorough combustion of the fuel, as the forced draft aided by the natural draft through the perforated bars serves very effectively in the consumption.

It will be seen that should any one of the bars become impaired or injured it can be readily removed and replaced by another without removing the entire grate, as the bars simply bear upon each other, the hollow or blast bars, which are the heavier, resting upon the longitudinal edges of the concavo-convex bars.

Having described my invention, what I claim is—

1. A grate bar comprising a body having vertical holes or apertures, a central, longitudinal slot a cap covering said slot and sloping outwardly in opposite directions and

provided with laterally-disposed perforations at its base, and also having a central, depending blast-trough with an aperture for connection with a blast pipe, and its walls sloping toward said connection, substantially as specified.

2. The furnace grate described comprising the concavo-convex bars having vertical apertures, and alternating bars having vertical apertures, a central slot and a cap covering said slot and sloping outwardly in opposite

directions and provided with lateral apertures at its base and also having a central, depending blast trough provided with an aperture for connection with a blast pipe, substantially as specified. 15

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL MANN.

Witnesses:

LLOYD L. BURRIS,

C. D. FOSTER.