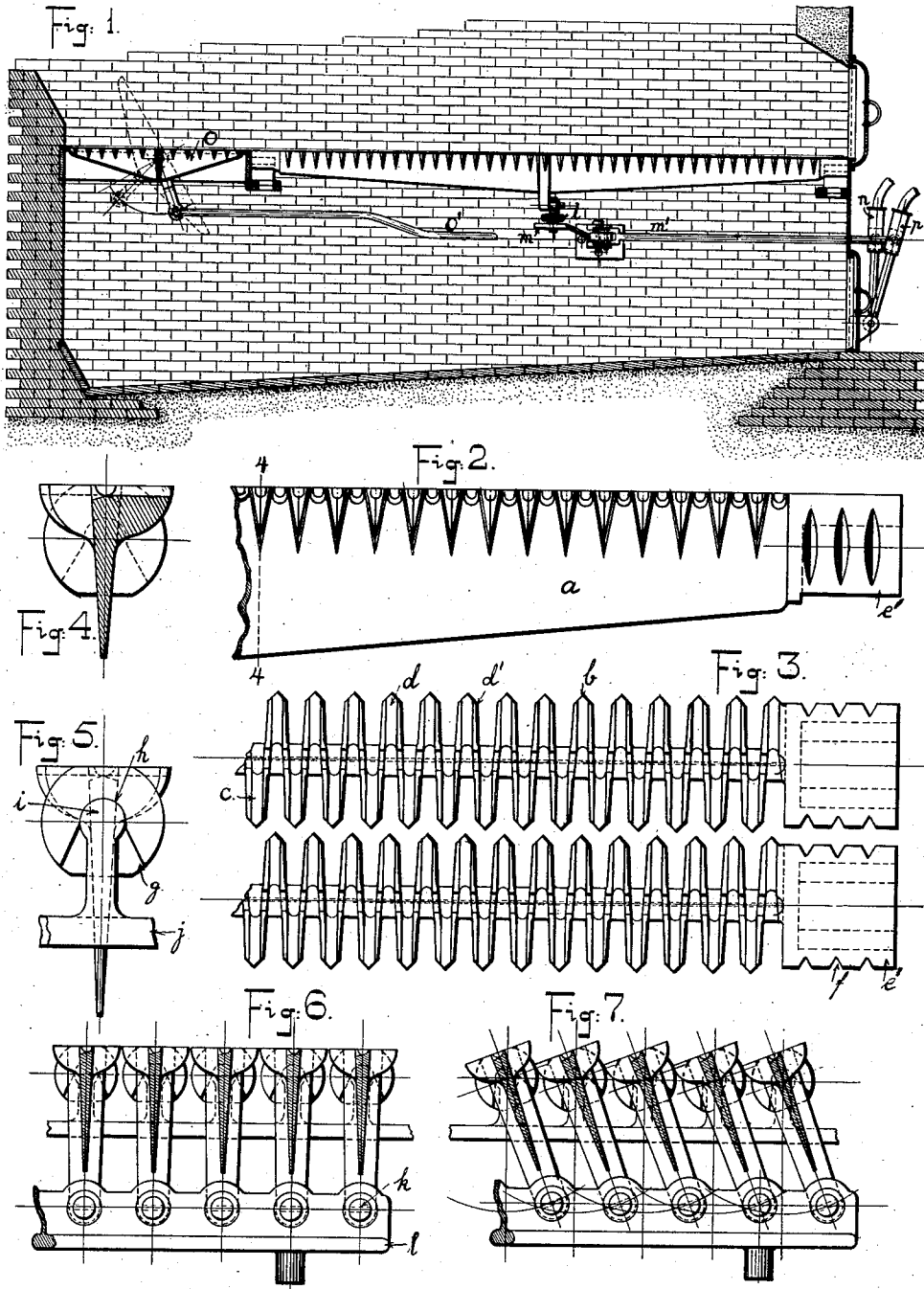


J. C. QUINN.
GRATE.

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1,021,556.

Patented Mar. 26, 1912.



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GRATE.

1,021,556.

Specification of Letters Patent.

Patented Mar. 26, 1912.

Application filed December 28, 1905. Serial No. 293,584.

To all whom it may concern:

Be it known that I, JOHN C. QUINN, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Grates, of which the following is a full, clear, and exact description.

My invention relates to grates and it consists of certain novel parts and novel combinations of parts particularly pointed out in the claims concluding this specification.

In the accompanying drawings I have shown my invention applied in forms at present preferred by me, but it will be understood that various modifications and changes may be made without departing from the principle of my invention and without exceeding the scope of my claims.

In the accompanying drawings: Figure 1 is a longitudinal sectional view of a furnace equipped with my improved grate bars; Fig. 2 is a side elevation of a portion of a grate involving my invention; Fig. 3 is a plan view of portions of two grate bars as they would be relatively arranged in a furnace; Fig. 4 is a vertical section of a grate bar taken on the line 4, 4 Fig. 2; Fig. 5 is an end view of a grate bar and its end rocking support; Fig. 6 is a transverse section of a gang of bars illustrating the means by which they may be simultaneously rocked showing the bars in normal position; and Fig. 7 is a view similar to Fig. 6 showing the bars in one of their rocked positions.

The following is a description of that embodiment of my invention shown in the drawing in such full, clear and exact terms as will enable others skilled in the art to practice the same.

The grate bars each comprise a central main web or girder *a* extending lengthwise of the bar, a series of horns *b* projecting laterally from the upper part of the web at one side thereof and series of horns *c* similarly projecting from the other side of the web, but alternately arranged relatively to the horns *b*. In the upper or fuel supporting faces of these horns *b* and *c* are formed channels or grooves *d*, bounded by ledges *d'* sufficiently wide for proper support of the fuel. The inner or central ends of the channels *d* extend transversely through the upper face of the rib *a* and open into the air passages between the adjacent horns on the

other side of the bar. The remaining portions of the supporting face of the web *a* may be partly cut away as at *e*, to afford a complete circulation of air to all parts of the under side of the fuel supported by the grate. The effect of this construction is to provide grate bars with an increased amount of air-supplying spaces for passage of air to practically all parts of the base of the supporting fuel and, at the same time, afford full and adequate support for the latter.

As shown at Fig. 3, the horns of adjacent bars are staggered when the bars are assembled; that is, the horns *b* of one bar are opposite the spaces between the horns *c* of the adjoining bar, and the horns *c* of the first named bar are opposite the spaces between the horns *b* of another bar. To insure as nearly as possible uniformity of width, at the top of the bars, of all the air spaces or passages between the various parts of the bars, the ends of the horns *b*, *c*, are formed with angular faces beveled or tapered as shown, so that spaces between adjoining horns of the same bar and between the beveled faces of their ends and the corresponding beveled faces of the horns of adjoining bars are, or may be equal.

Each bar has at each end a bearing piece, shown as a block *e'*, with cylindrical sides, so that the spaces between blocks of adjacent bars will be maintained when the bars are rocked, and the cylindrical sides are formed with grooves *f* for free passage of air.

The block bearings *e'* have, formed in their under sides, deep longitudinal grooves *g* the upper parts *h* of which are cylindrically formed and constitute the bearings of the bars by resting on the cylindrical heads *i* of the grate end supporting bars *j*. This affords a freely acting rocking support for the bars and one that is fully protected from dirt and ashes falling from the fuel. In this instance the bars are shown mounted longitudinally of the furnace, and to rock them lugs *k* at the central parts of the bottom of the webs *a* are pinned to a rocker bar *l*, connected at its end to one arm of a bell-crank *m*, the other arm of which is connected by rod *m'* with the shaker lever *n*.

o is a dumping grate at the rear of the main grate and connected by rod *o'* with a lever *p*.

What I claim and desire to secure by Letters Patent is:—

1. A grate consisting of a series of grate bars arranged longitudinally side by side and each provided with a channel extending longitudinally of the top face thereof and side horns at the upper part of and extending laterally from the opposite sides thereof, the horns on one side being in staggered relation to the corresponding horns on the opposite side, and the upper face of each of such horns having a groove or channel formed therein and open to the air space between the two adjacent horns on the opposite side of the bar, such grooves or channels of the individual horns communicating with the channel of the top face of the bar, the bars in said series of bars being so arranged that each horn of a bar is positioned opposite the air space between two horns of an adjacent bar.

2. A grate consisting of a series of grate bars arranged longitudinally side by side and each having a groove extending longitudinally of the top face thereof and side horns at the upper part thereof and extending laterally from the sides of the bar, the upper faces of such horns having grooves or channels formed therein open to air spaces between the horns on the opposite side of the bar and communicating with said longitudinal groove in the top face of the

bar, the bars being so arranged and located that the extremities of the horns on opposite sides of each of two adjacent bars extend toward the spaces between the horns of the other bars.

3. A grate consisting of a series of grate bars arranged longitudinally side by side and each provided with a channel extending longitudinally of the top face thereof and side horns at the upper part of and extending laterally from the sides thereof, the horns on one side being in staggered relation to the corresponding horns on the opposite side, the extremities of the horns being pointed or formed with angular faces, and the upper face of each of such horns having a groove or channel formed therein and open to the air space between the two adjacent horns on the opposite side of the bar, such grooves or channels of the individual horns communicating with the channel of the top face of the bar, the bars being so arranged that each horn of a bar is positioned opposite the air space between two horns of an adjacent bar.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN C. QUINN.

Witnesses:

RICHARD B. CAVANAGH,
HENRY B. HAIGH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."