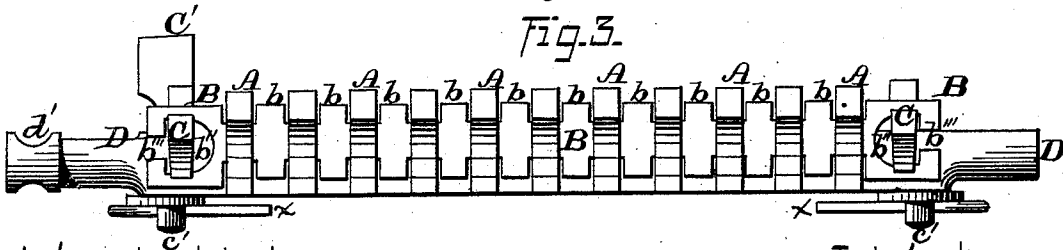
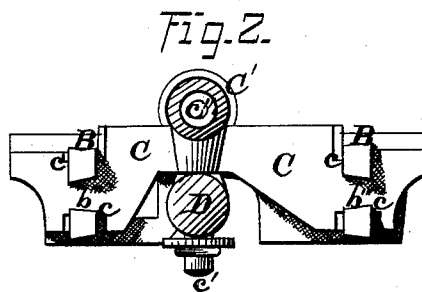
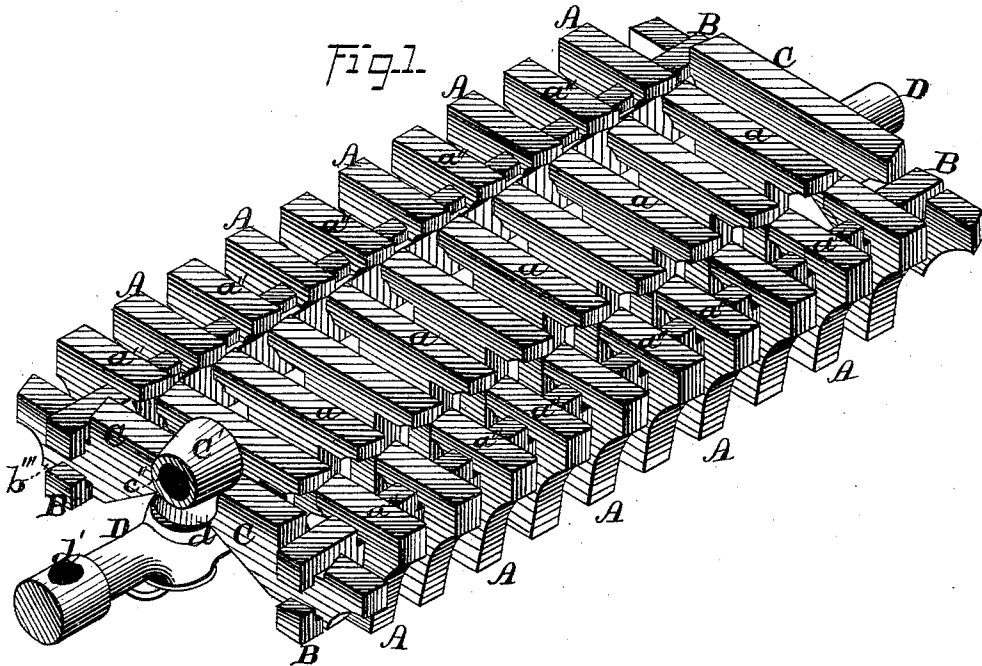


M. G. FAGAN.
GRATE.

No. 170,835.

Patented Dec. 7, 1875.



WITNESSES=

Jas. Hutchinson
John R. Young

INVENTOR

Michael S. Fagan, by
Prindle & Co. his Attys

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Fig. 4.

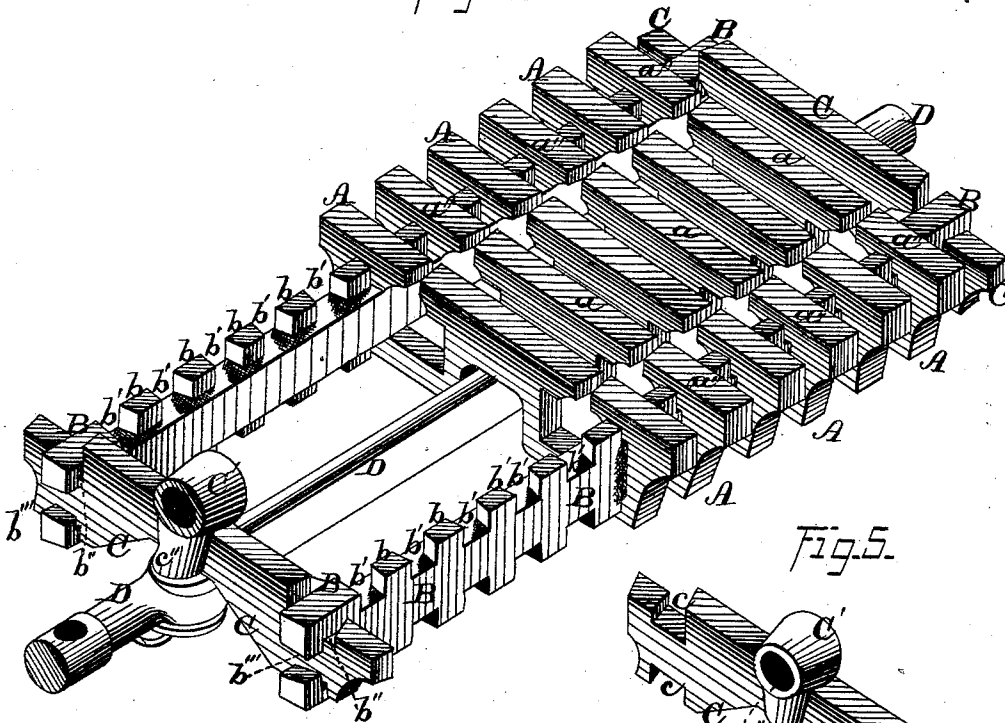


Fig. 5.

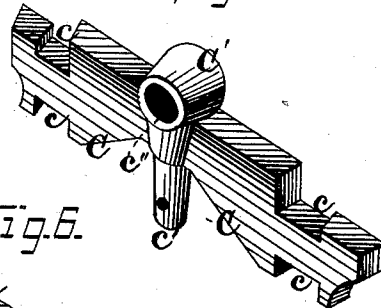
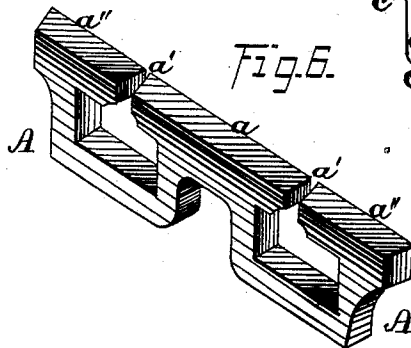


Fig. 6.



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UNITED STATES PATENT OFFICE.

MICHEL G. FAGAN, OF TROY, NEW YORK, ASSIGNOR TO HIMSELF AND
ALBERT C. CORSE, OF SAME PLACE.

IMPROVEMENT IN GRATES.

Specification forming part of Letters Patent No. **170,835**, dated December 7, 1875; application filed
September 6, 1875.

To all whom it may concern:

Be it known that I, MICHEL G. FAGAN, of Troy, in the county of Rensselaer and in the State of New York, have invented certain new and useful Improvements in Grates for Stoves; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1 is a perspective view of my grate separated from a stove. Fig. 2 is an elevation of the shaker end of the same. Fig. 3 is a side elevation of said grate. Fig. 4 is a perspective view of the same, a portion of the cross-bars being removed, so as to show the construction of the longitudinal bars; and Figs. 5 and 6 are, respectively, like views of one of the end cross-bars and one of the central cross-bars separated from said grate.

Letters of like name and kind refer to like parts in each of the figures.

The design of my invention is to increase the efficiency and durability of a stove-grate; and to this end it consists, principally, in the peculiar construction of the cross-bars, by means of which the usual injurious effects which result from the expansion and contraction of similar bars are avoided, substantially as hereinafter specified.

It consists, further, in the means employed for combining the cross-bars so as to form a grated surface, substantially as is hereinafter shown.

It consists, further, in a cross-bar pivoted to or upon a central longitudinal bar by means of a vertical pintle, substantially as and for the purpose hereinafter set forth.

It consists, finally, in the grate as a whole, its several parts being constructed and combined to operate in the manner and for the purpose substantially as is hereinafter shown and described.

In the annexed drawings, A represents a cross-bar, having, in side elevation, substantially the form of two letters U joined together, its upper surface being composed of a plane central bar, *a*, which at each end is separated by a transverse opening, *a'*, from an end bar, *a''*, that has preferably somewhat less length

than said central portion. Below the upper portion of the bar A the openings *a'* and *a* have a general rectangular shape, vertically, and through each passes a bar which has, in cross-section, a square form, and loosely fills said opening vertically. Upon the upper and lower edges of the bar B are provided a number of lugs, *b* and *b'*, between each pair of which is sufficient space, *b''*, to admit a cross-bar, A, which latter is thus kept in position with relation to the other cross-bars, while at the same time permitted considerable freedom of motion within its notches.

As seen in Fig. 5, the end cross-bar C has a different shape from those described, said bar being plane upon its upper edge, arched at its lower side, and at each end provided with a notched tenon, *c*, which receives and contains the mortised end *b''* of the side bar B, said mortise being open at the end of said bar, and at such point *b'''* considerably less in vertical dimensions than the portion of said tenon that is contained within said mortise. The rear portion of the mortise *b''* is formed upon a circular line, and has such dimensions as to permit the tenon *c*, when passed edgewise through the opening *b'''*, to be turned to its proper vertical position. From the lower side, at a point near the longitudinal center of each end cross-bar C, a pintle, *c'*, extends vertically downward, and is contained within a corresponding opening, *d*, that is provided within a central longitudinal bar, D. A pin, *e*, passing horizontally through the end of said pintle below said central bar, prevents said parts from becoming disconnected.

As thus constructed and combined, it will be seen that the cross-bars A and A are held in position and supported by the side bars B and B. The latter, with their load, are supported by the end rails C and C, while the whole rests upon and is sustained by the center bar D at or near its ends, the central portion of said bar D having no contact with any portion of said grate. If, now, one of the end bars is oscillated upon its pivotal bearing, its motion will be communicated, through the side bars, to the remaining cross-bars, each of which latter will oscillate in a horizontal plane around an axis that corresponds in lateral po-

sition to the transverse center of the center bar.

In order that the horizontally-vibratory motion described may be easily communicated to the grate, a lug, *C'*, provided with a central opening, *c''*, for the reception of the end of a round shaker-bar, is formed upon the upper side, at the axial center of one of the end bars *C*.

The ends of the center rail *D* form journals or bearings for and upon which the grate may be partially or entirely rotated in a vertical plane, and by providing within one of said journals a vertical opening, *d'*, the same rod or bar used for shaking said grate may be employed for dumping the same.

It will be seen that in consequence of the peculiar form, longitudinally, of the cross-bars, the expansion or contraction of the same can have but little effect upon their shape or length, while in consequence of the means employed for connecting them together, and for suspending the whole from the center rail, great ease and freedom of motion are secured.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. The cross-bar *A*, constructed as shown, and provided with the transverse openings *a'* and *a'*, substantially as and for the purpose specified.

2. In combination with the cross-bars *A* and *A*, provided with the transverse openings *a'* and *a'*, the side bars *B* and *B*, having the lugs *b b* separated by spaces or notches *b'* and *b'*, substantially as and for the purpose shown.

3. In combination with the side bar *B*, provided with mortise *b'' b'''*, the end bar *C*, having the tenon *c*, which fits into and is contained within said mortise, substantially as and for the purpose set forth.

4. In a stove-grate having separate bars, a cross-bar pivoted transversely to or upon a central supporting-bar by means of a vertical pintle, which is secured to and projects downward from the lower side, near the longitudinal center of said cross-bar, substantially as and for the purpose shown and described.

5. The hereinbefore-described grate, consisting of the cross-bars *A* and *A*, side bars *B* and *B*, end bars *C* and *C*, and center bar *D*, all constructed and combined in the manner and for the purpose substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand this 3d day of September, 1875.

MICHEL G. FAGAN.

Witnesses:

AUG. P. CORSE,
G. C. BALDWIN, Jr.