G. B. MERSHON.

GRATE.

No. 193,018. Patented July 10, 1877.

Fig. 1.

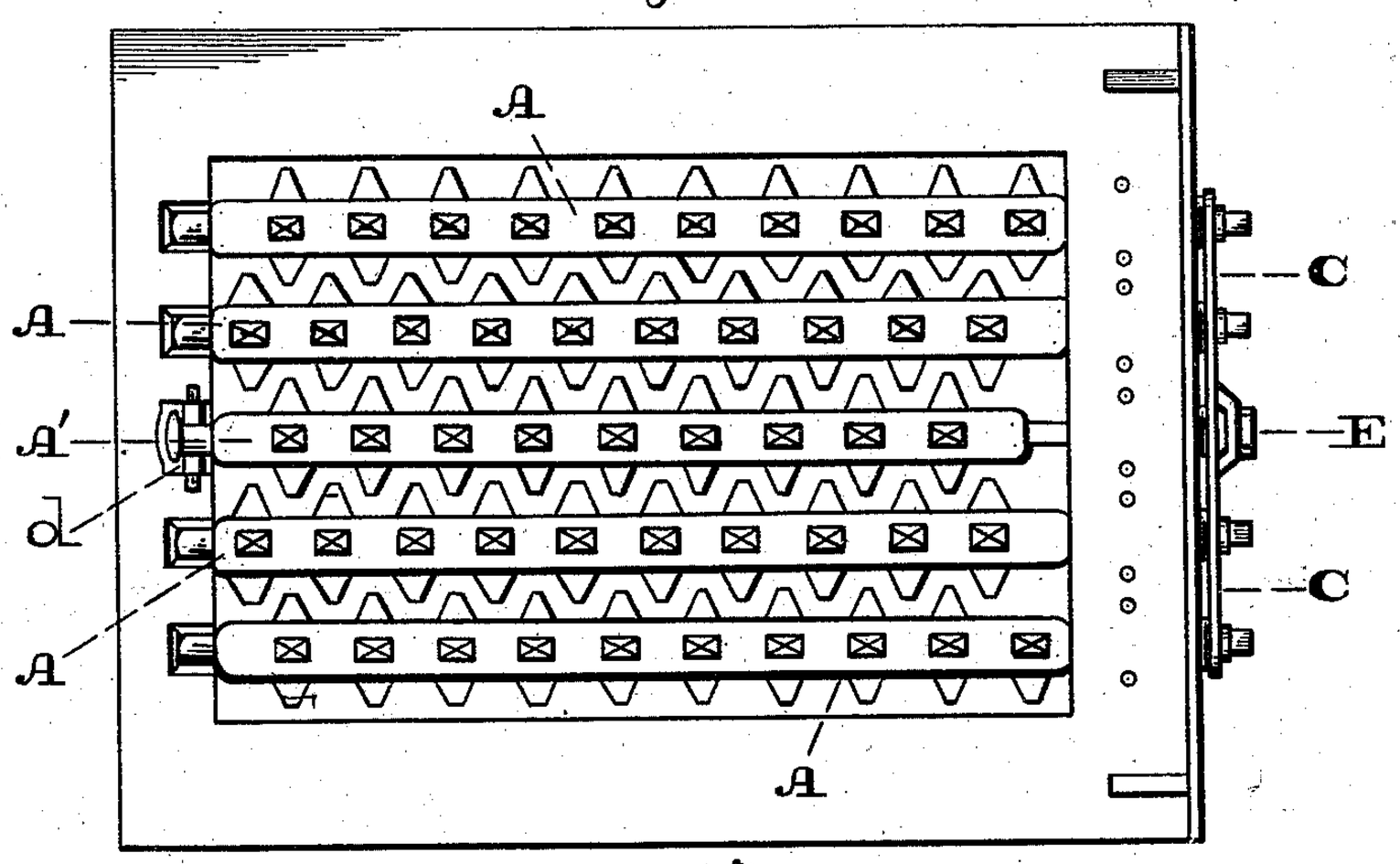


Fig. 2.

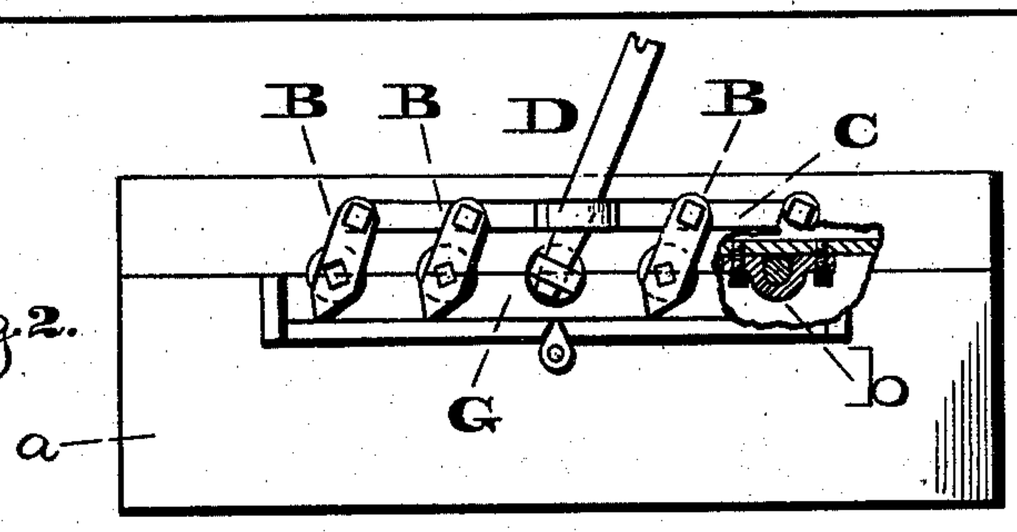


Fig. 3.

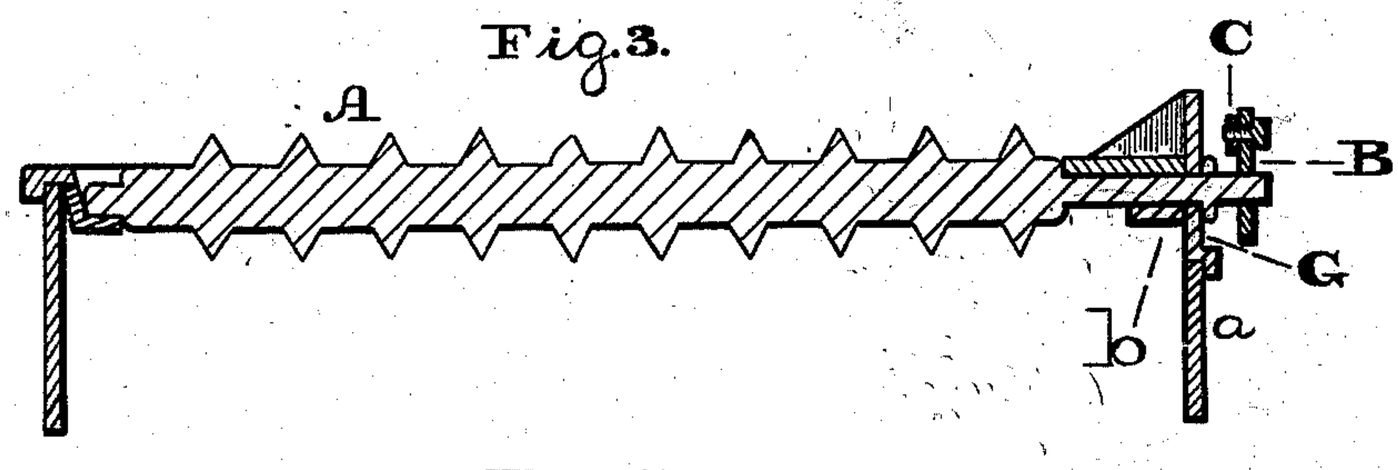
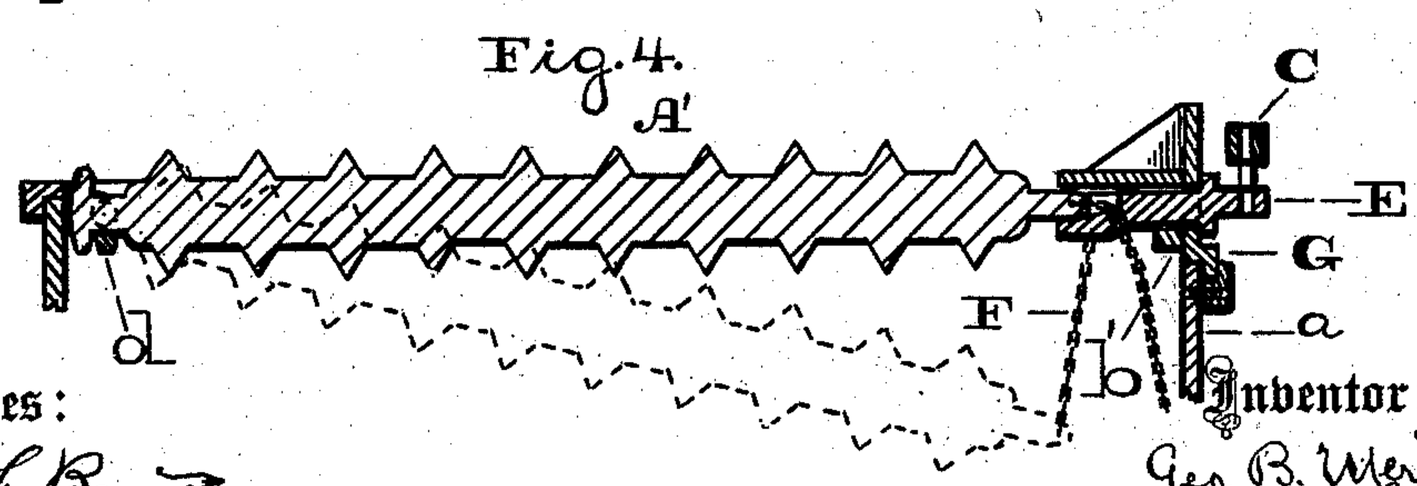


Fig. 4.



Witnesses:

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Fig. 5.

E

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UNITED STATES PATENT OFFICE.

GEORGE B. MERSHON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO ALBERT H. MERSHON, OF SAME PLACE.

IMPROVEMENT IN GRATES.

Specification forming part of Letters Patent No. 193,018, dated July 10, 1877; application filed March 23, 1877.

To all whom it may concern:

Be it known that I, GEORGE B. MERSHON, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Grates, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a top or plan view of the grate embodying my invention. Fig. 2 is a front view thereof. Fig. 3 is a longitudinal section in line *x x*, Fig. 1. Fig. 4 is a similar section in line *y y*, Fig. 1; and Fig. 5 is a view of the inner end of a sliding bearing for one of the dropping grate-bars.

Similar letters of reference indicate corresponding parts in the several figures.

My invention relates to improvements in rotary grate-bars, whereby the grate may be conveniently and properly raked from the front.

My invention consists of rotary grate-bars, which are coupled in such manner that the grate may be conveniently and properly raked from the front thereof, and provision is made for raking the bars separately or together.

It also consists of a sliding bearing for a dropping-bar, whereby the latter may be dropped for letting down the fire or ashes.

It also consists of a connection between the dropping-bar and the sliding bearing, whereby said bar may be readily replaced.

It also consists of a removable plate for access to the hangers of the bars, whereby said bars may be conveniently removed for repairs or replacement of new bars.

It also consists of an operating-lever applicable to the coupling-bar of the grate-bars, and to the sliding bearing of the central grate-bar.

Referring to the drawings, A represents a series of rotary grate-bars, which are supported loosely on the rear of the bed-plate, and in front on hangers *b b′*, secured to the under side of said plate. The bars, excepting the central bar A′, are extended in front of the rest-plate *a*, and formed with squared or angular ends, on which are fitted arms B, to whose upper ends are pivoted a horizontal bar, C, occupying a position in front of the plate, and in said bar, at the center thereof, is an opening for the insertion of a lever, D, whose lower end is adapted to enter an opening in the bearing E for the central grate-bar.

The bearing E has a sliding motion on the respective hanger *b′* and rest-plate *a*, and the central bar A′ is detachable from said bearing. For this purpose the inner end of the bearing is formed with an angular opening, into which will be received the angular front end of the central bar A′, whose rear end is preferably supported on a swinging hanger, *d*, connected to the rear of the bed-plate.

To the front end of the bar A′ is connected a chain, F, which is passed freely through an opening in the bearing E, and of sufficient length to be reached in front or at the side of the grate.

The sliding bearing E is so constructed that when it is drawn out it cannot rotate, but when forced in it may freely rotate. For this purpose the hangers *b′*, or the under face of the bed-plate, may be inclined, wedged, or notched, so as to cause the bearing, when drawn out, to engage with the plate or hanger, without, however, causing an engagement when said bearing is forced in.

In the rest-plate *a*, beneath the front of the bars, there is a transverse opening, which is occupied by a plate, G, or a plate for each side, held in position by suitable fastenings, and removable, so as to permit access to the hangers of the bars.

The grate-bars may be formed on the surfaces with spurs or projections, and made solid or hollow, as desired or necessary.

The operation is as follows: The lever D will be inserted into the bar C and bearing E, and reciprocated, whereby, by means of the bar C and the arms B, rocking motion will be imparted to the grate-bars, and the fire will be properly raked.

When it is desired to rotate one of the grate-bars without disturbing the others, the connecting-pin of the respective arm B and coupling-bar C will be withdrawn, thus permitting the said grate-bar to be rotated without operating the bar C and the other grate-bars.

When the fire or ashes are to be let down, the bearing E will be withdrawn, and the

central grate-bar, loosing support at its front end, falls and forms a space through which the fire or ashes will descend, the operation thereof being assisted by rotating the other grate-bars.

In order to restore the central grate-bar, draw the chain F, thus elevating the bar to a line with its bearing E, and force in the latter, so that the front end of the bar enters the squared opening of the bearing, whereby the bar will be again properly supported.

It is evident that one or all of the side bars may have sliding or shifting bearings in order to allow said bar or bars to be lowered; but under ordinary circumstances the central bar is sufficient to be lowered.

In order to remove the grate bars for repairs or new bars, withdraw the plate or plates G, whereby the hangers, nuts or bolts, and grate-bars are readily accessible, and subsequent action thereon conveniently performed through the opening of the rest-plate.

I am aware that it is not new to couple the grate-bars by means of geared wheels, and, therefore, disclaim the same.

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

1. The grate-bars A, in combination with the front coupling-bar C and with the arms B, fitted on the front extensions of the bars A, and detachably connected to said bar C, substantially as and for the purpose set forth.

2. The sliding bearing E and lowering grate-bar A′, combined and operating substantially as and for the purpose set forth.

3. The grate-bars, in combination with the front coupling-bar C, arms B, and movable bearing E, substantially as and for the purpose set forth.

4. The connection F, in combination with the sliding bearing E and lowering-bar A′, substantially as and for the purpose set forth.

5. The removable front plate or plates G of the rest-plate *a*, in combination with the grate-bars and the front hangers *b b′*, substantially as and for the purpose set forth.

6. The combination, with the grate-bars, of the front coupling-bar C, sliding bearing E, and lever D, substantially as and for the purpose set forth.

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