

(No Model.)

W. J. WARD.

GRATE BAR.

No. 246,577.

Patented Aug. 30, 1881.

Fig 1.

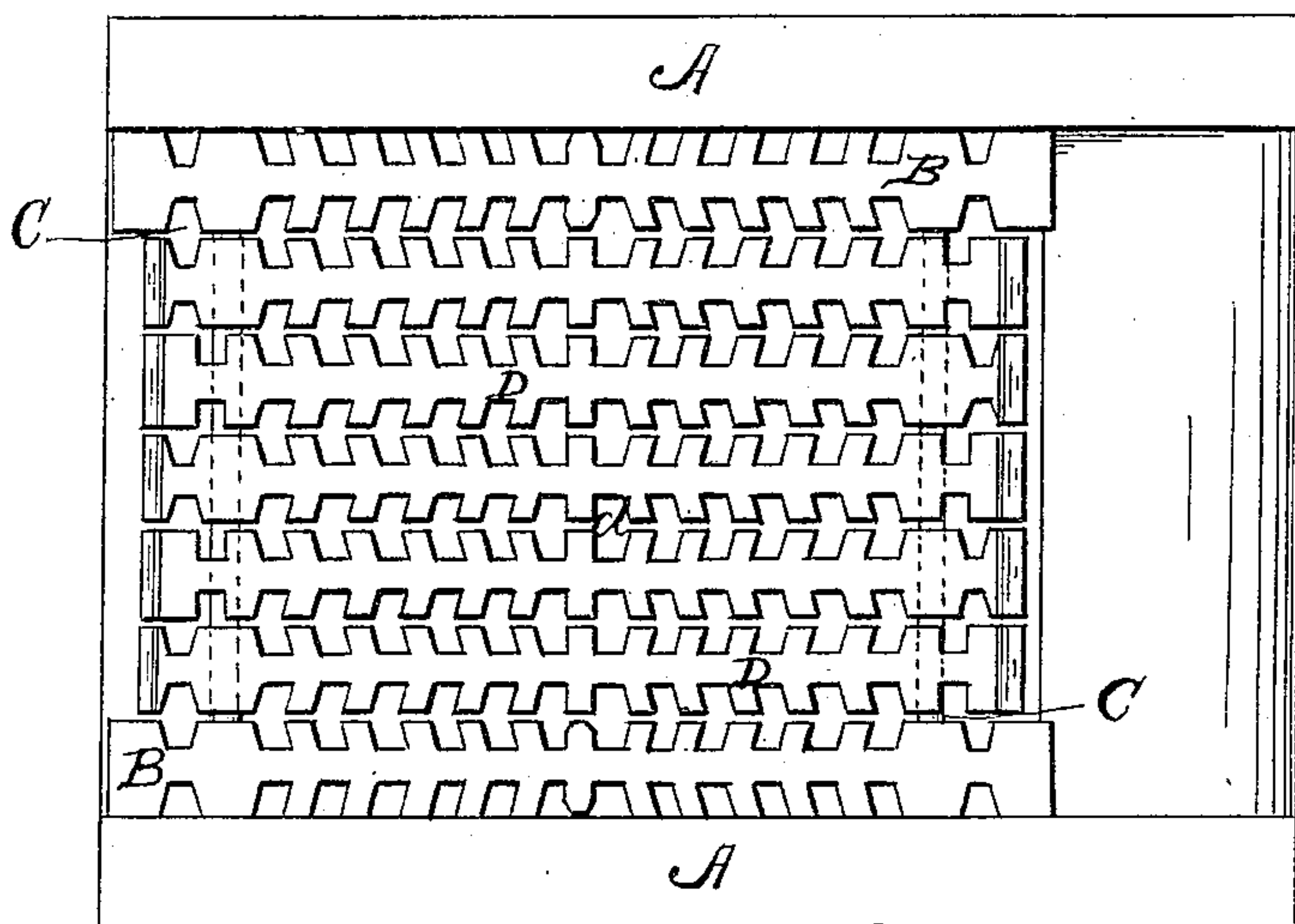


Fig 2.

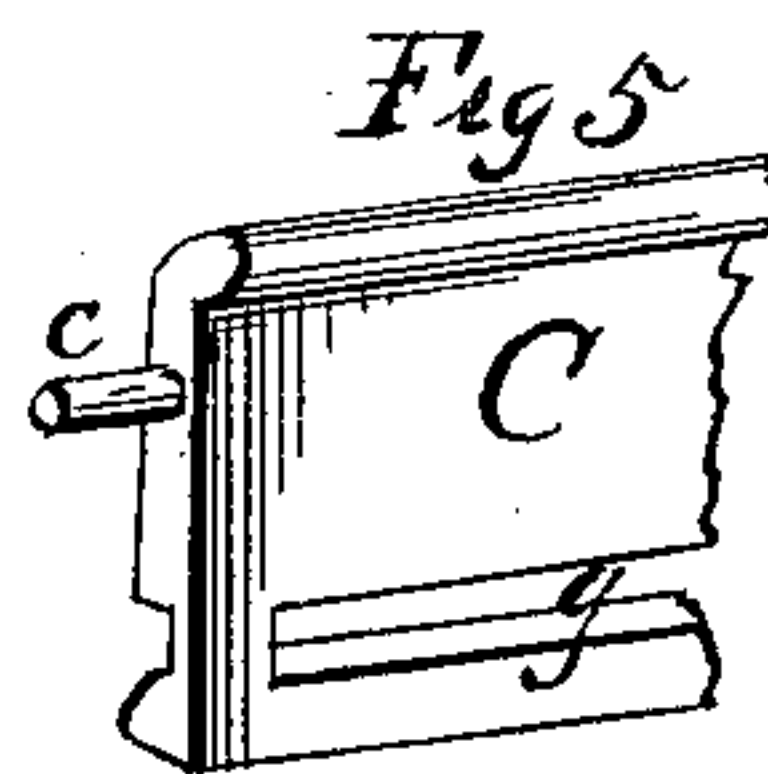
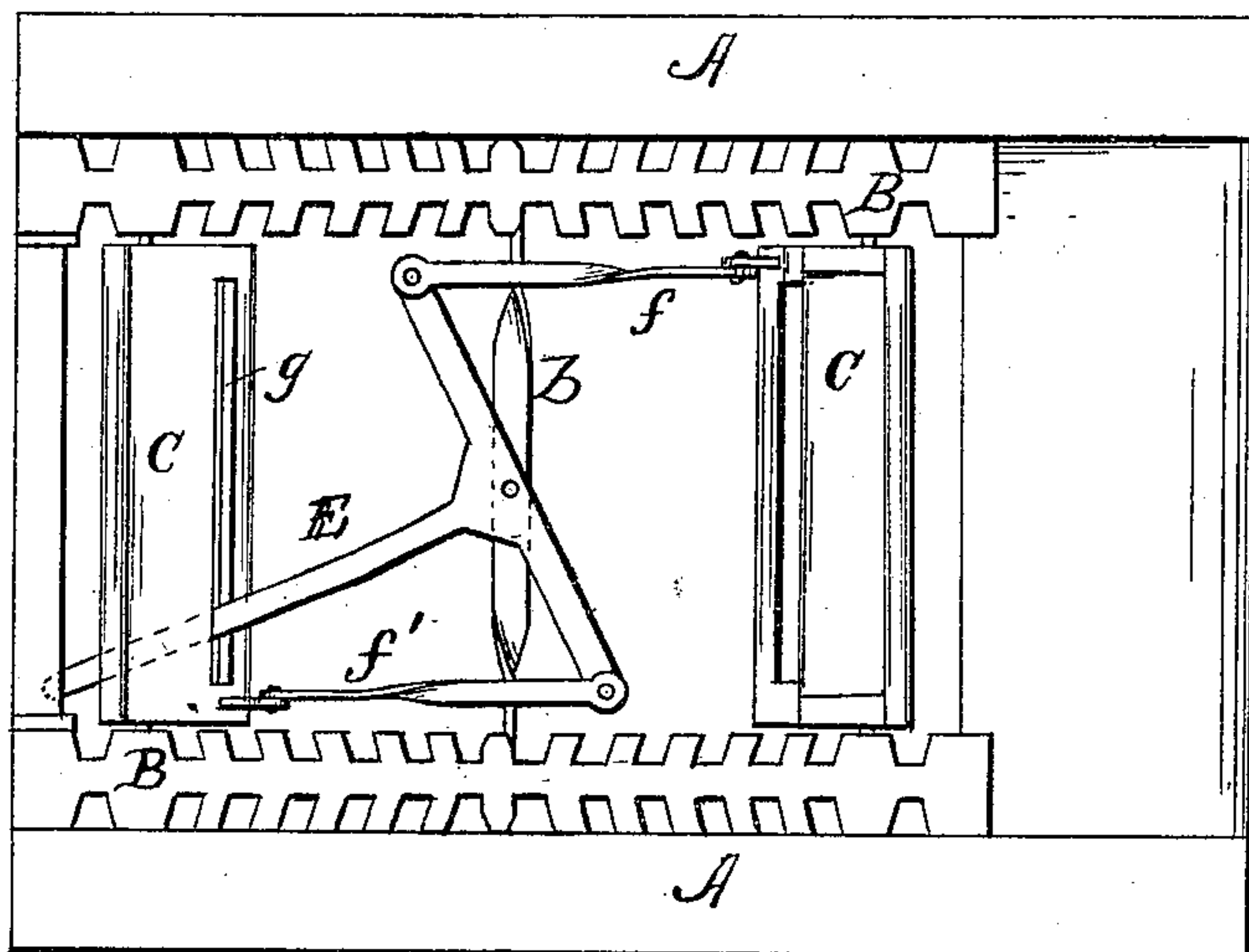


Fig 3.

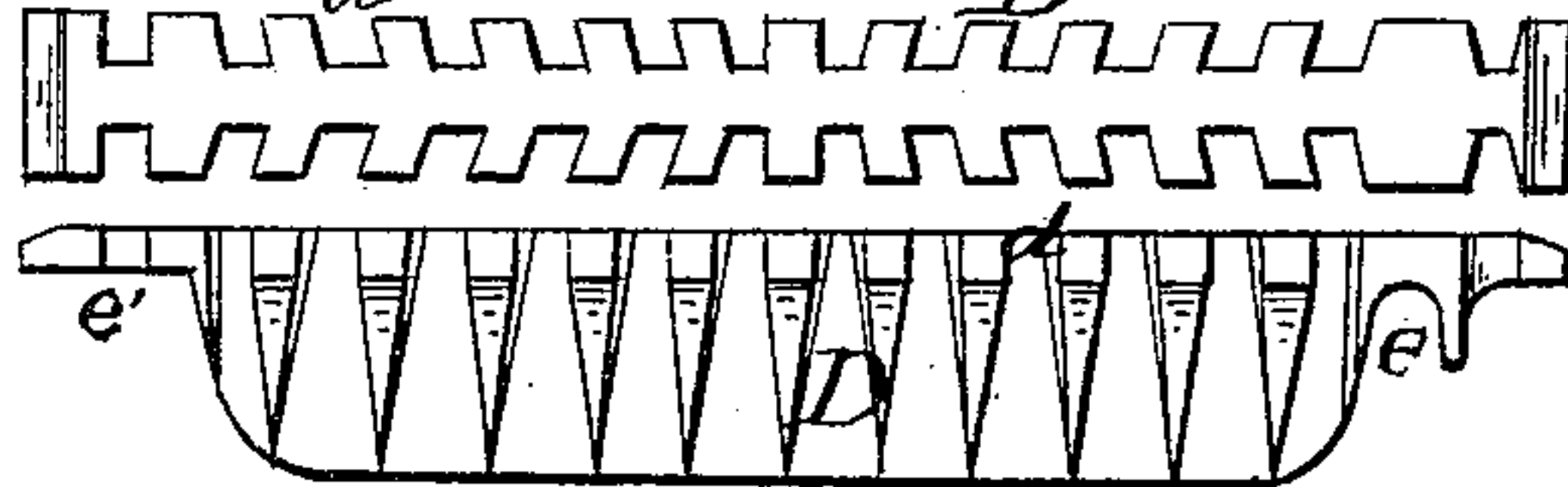
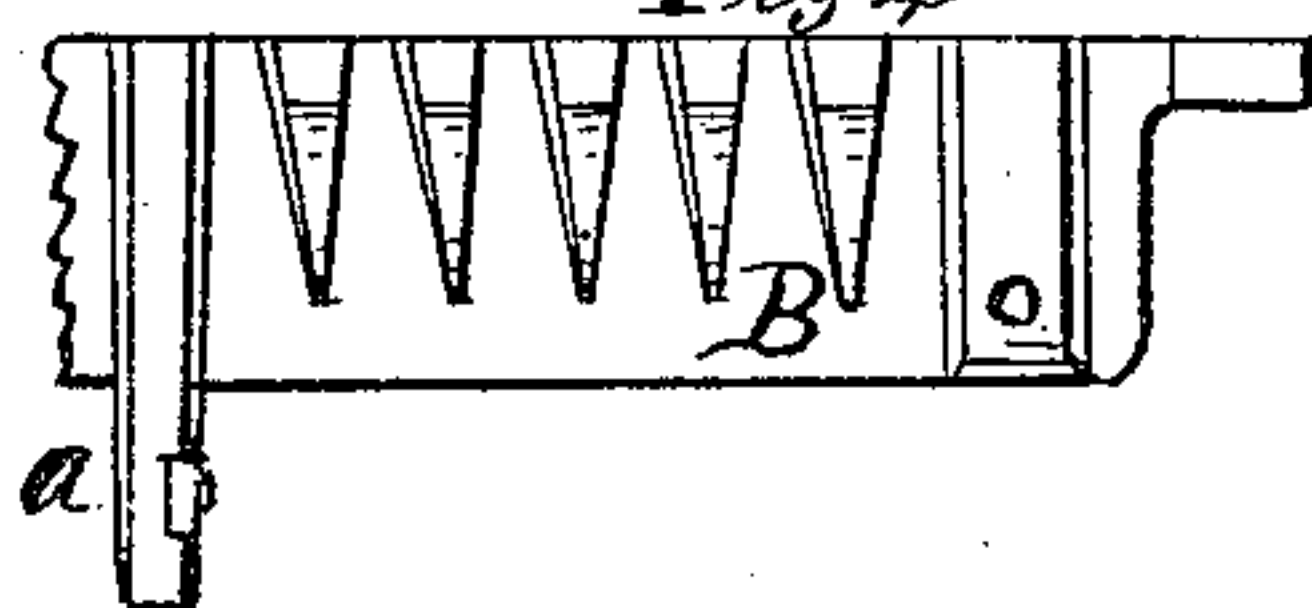


Fig 4.



Witnesses.

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WILLIAM J. WARD, OF PITTSBURG, PENNSYLVANIA.

GRATE-BAR.

SPECIFICATION forming part of Letters Patent No. 246,577, dated August 30, 1881.

Application filed March 10, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. WARD, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Grate-Bars; and I do hereby 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification, and in which—

Figure 1 is a plan view of my improved grate. Fig. 2 is a similar view with a number of the grate-bars removed, exposing to view the operating-lever. Fig. 3 is a plan and a side view of one of the grate-bars. Figs. 4 and 5 are detail views.

This invention relates to improvements in grates, especially for stoves and furnaces, by which each consecutive bar has an alternate vibrating motion, and any one or more is capable of renewal; and it consists of the combination and arrangement of parts, substantially as hereinafter more fully set forth.

Referring to the accompanying drawings, A may represent the fire-brick or masonry of the fire-place, stove, or furnace.

B B refer to two side bars fixed at the sides of the fire place or chamber, with depending arms *a a* at, or about at, their centers to support a cross-bar, *b*.

C C mark two cross rocking bars, plates, or frames, having end studs, *c*, and one hung at the front and the other hung at the rear of the fire-chamber in the stationary side bars, B, by means of the said studs.

D D are the alternately-vibrating grate-bars, with their adjoining sides deeply notched or recessed, as at *d*, to provide suitable interstices or openings for the ashes and burnt pieces or particles of fuel to fall through as the grate is operated. These bars are adapted, by each having at one end or alternately opposite ends a slot or recess, *e*, which permits them to be adjusted removably upon the upper edges of the rocking bars C, and by the action of the said

bars, to have an alternately-vibrating motion to agitate and shake the ashes, &c., down through them into the ash pit or pan below. These bars being readily removable, as above described, they can be renewed when required.

E is a lever, preferably of a T shape, it being pivoted at the center of its cross-piece to the bar *b*, with one arm connected by a link, *f*, to one of the rocking bars C, and the other arm connected by a link, *f'*, to the other rocking bar C, while its handle passes through an elongated horizontal slot, *g*, in the front rocking bar.

It will be observed that by vibrating the handle of the lever E the rocking bars will be operated, which, in turn, will impart an alternately vibrating motion to the grate-bars, which effects the shaking of the fuel to eliminate the ashes, &c.

Each grate-bar D has a straight bearing surface or extension, *e'*, on one of its ends, and a recessed bearing, *e*, on its other end. The bearing *e* holds the bar to one of the rockers C, and the bearing *e'* slides freely to and fro on the top edge of the other rocker. The grate-bars are arranged so as to bring a bearing *e* and a bearing *e'* in alternate positions on the same rocker. By this arrangement one bar will be held and moved by the rocker, while the next bar will slide in an opposite direction on the same rocker. The rockers are swung in opposite directions by the arrangement of the T-lever and the connecting-rods *f f'*, as hereinbefore described.

Having thus fully described my invention, I claim and desire to secure by Letters Patent—

1. The combination of the grate-bars D, constructed with recessed bearings *e* in one end and straight bearings or extensions *e'* on their opposite ends, and having the recessed bearings and straight bearings placed in alternate positions on the same rocking plate, and the rocking plates C C, pivoted to the side bars, B, and swinging in opposite directions, and operated substantially as set forth.

2. The combination, with the bars B, cross-bar *b*, having its ends fixed to and at or near the middle of the side bars, and the bars D, constructed with recessed bearings *e* and straight

bearings e' on opposite ends and placed in alternate positions on the rockers, of the rockers C C, pivoted to the side bars, the T-lever pivoted to the cross-bar b , and connecting-rods f
5 f' , connected to the opposite ends of the arms of the T-lever and to the rockers C C, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses on this 19th day of February, 1881.

WILLIAM J. WARD.

Witnesses:

MARK BURKE,
ARTHUR D. ROSSELL.