

(No Model.)

H. GRAEF.
GRATE FOR STOVES, &c.

No. 503,699.

Patented Aug. 22, 1893.

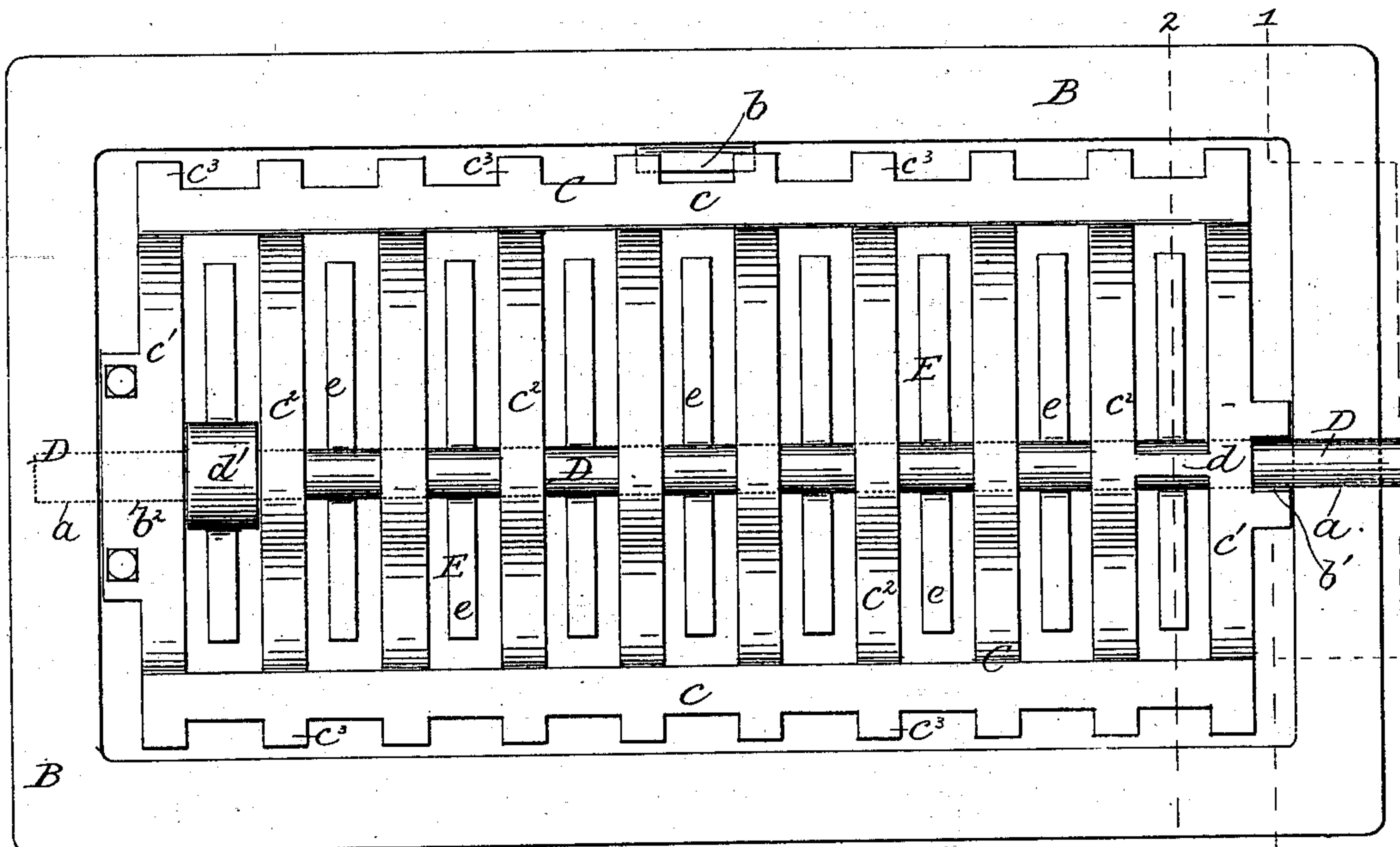


Fig. 1.

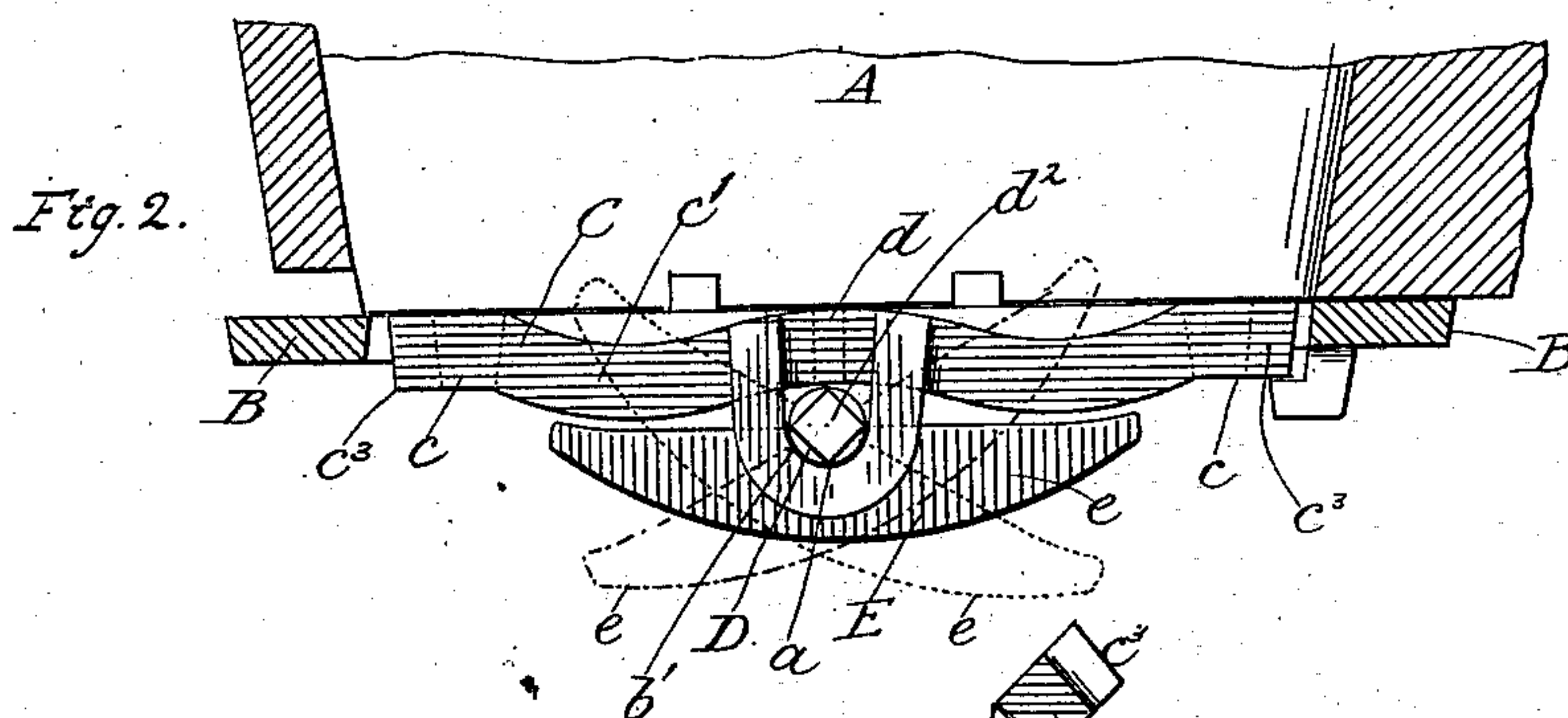


Fig. 2.

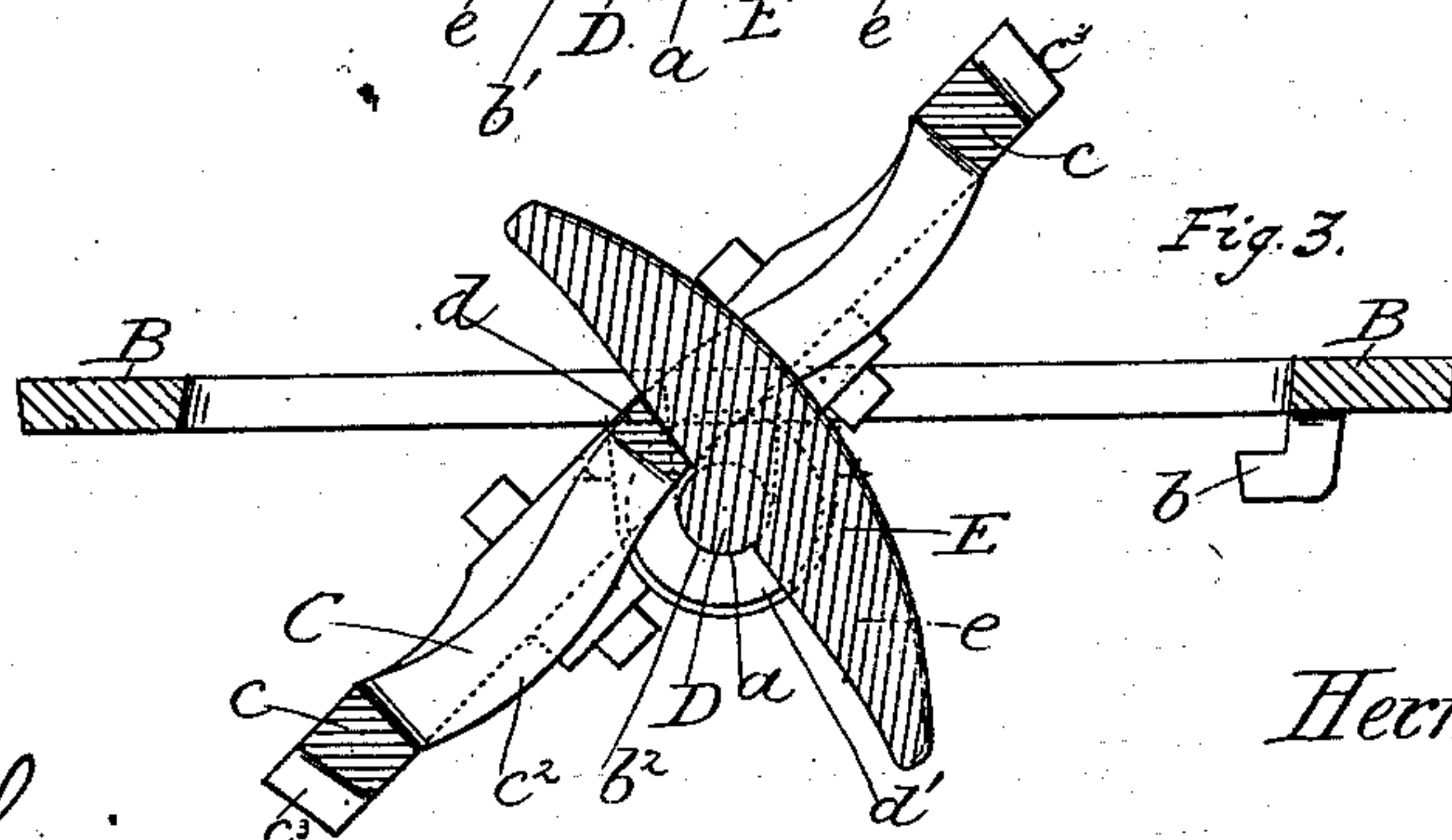


Fig. 3.

Witnesses.

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GRATE FOR STOVES, &c.

SPECIFICATION forming part of Letters Patent No. 503,699, dated August 22, 1893.

Application filed February 3, 1892. Serial No. 420,149. (No model.)

To all whom it may concern:

Be it known that I, HERMAN GRAEF, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Grates for Stoves, Ranges, and Furnaces; 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.

My invention relates to improvements in grates for stoves, ranges and furnaces; and it consists of the combinations of devices and elements hereinafter particularly described, and specifically set forth in the claim.

The objects of my invention are to provide for use in stoves, ranges, and furnaces, a grate formed by a main grate section, which is loosely mounted by its end portions on a shaft which is supported in suitable bearings provided in the grate frame, and a sub-grate section which is so connected with the said shaft, on which said main grate section is mounted, as to be oscillated, at will, without oscillating said main grate section, for loosening the ashes and clinkers supported by said main grate section, and be made, at will, to tilt the said main grate section for dumping the same; and also to provide specific means by which my invention may be embodied in grates. I attain these objects by the means illustrated in the accompanying drawings forming a part of this specification in which—

Figure 1 is a plan view of a grate embodying my improvements. Fig. 2 is a view of the same taken in the transverse at line 1—1 in Fig. 1; and Fig. 3 is a section taken at line 2—2 in Fig. 1.

The same letters of reference refer to similar parts throughout the several views.

In the drawings A is the fire box which may be made of metal or fire brick or both combined.

B is the grate frame which is preferably made to consist of a single piece, though it may be made in sections, and may be made with any form of construction as may be calculated to adapt it for use in the stove or furnace to which my invention is to be applied.

C is the main grate section composed of the side bars $c\ c$, end bars $c'\ c'$ and the series of

cross bars $c^2\ c^2$ all preferably integral, and composing a single piece. The cross bars $c^2\ c^2$ connecting by their ends with the side bars $c\ c$ are made preferably with the form shown in Figs. 2 and 3; that is to say, the middle portion of these cross bars $c^2\ c^2$ are made with a convex bent form, while their portions, between the said side bars and said convex portion are made with concave bent form.

E is the sub grate section which is composed of a series of fingers or bars, preferably slightly concave on their upper sides, and an oscillating shaft as shaft D, preferably integral with said radial bars or fingers $e\ e$ so as to constitute a single piece.

Provided with the end portions of the grate frame B are bearings $a\ a$, Figs. 1 and 3, which are sunken below the plane of the lower side of the main grate section and in which the ends of the shaft D, of the sub-grate section, is loosely mounted, so that said shaft and its connected radial bars or fingers $e\ e$ may be freely oscillated at will.

At near one end of the shaft D is provided an enlarged or annular projection d' intervening between an end portion c' of the main grate section, and a cross bar c^2 neighboring said end portion c' for preventing said sub-grate section E from shifting endwise in relation to the main grate section. A stop b , Fig. 3, connected with the lower side of the grate frame B, prevents the heavier half portion of the main grate section C from dropping down. A squared or catching end d^2 is provided on said shaft D, for receiving or holding with a suitable wrench or lever for oscillating the same, and the radial bars or fingers $e\ e$ of the grate section E connected with said shaft.

Projecting from the lower side of the end bars $c'\ c'$, of the main grate section C, are bearings $b'\ b^2$ preferably integral with said end bars c' . These bearings $b'\ b^2$ receive the shaft D of the sub-grate section E, as illustrated in Figs. 1 and 2, and retain the series of cross bars $c^2\ c^2$, at their middle portions, on a plane relatively above the said shaft, so that the latter will be substantially free from contact with the said cross bars of the main grate section, and thereby preserve the said shaft substantially out of contact with the fire above the grate.

Provided between two of the cross bars $c^2 c^2$,
 of the main grate section C, or between one
 of the end bars c' and its neighboring cross
 bar c^2 , is the catching piece d , shown in full
 lines in Figs. 1 and 3, and indicated by dotted
 lines in Fig. 2. This catching piece is pref-
 erably made integral with bars c' and c^2 , as
 shown in Fig. 1, and is out of contact with
 the radial bar or finger e when both the main
 grate section C and the sub-grate section E
 are in horizontal positions as shown in Fig. 2,
 and allows the said sub-grate section to be
 oscillated alternately, in opposite directions,
 as indicated by dotted lines in Fig. 2; for
 loosening the ashes and cinders on the grate
 bed, by their end portions being alternately
 projected above the upper side of the bars c^2
 of the main grate section, as illustrated in
 Fig. 2. When the sub-grate section E is
 turned so that its radial fingers or bars e are
 moved past a vertical line and against the
 catching piece d , and the movement of said
 sub-grate section is continued, the finger or
 bar e , beneath said piece d , will co-act with
 the latter to throw the front side portion of
 the main grate section downwardly, as illus-
 trated in Fig. 3, and thereby dump the same,
 when the materials on the grate bed will
 readily slide downwardly and off.
 If preferred, there may be provided at the
 outer edges of the bars $c c$, of the main grate
 section C, short projections $c^3 c^3$, integral with
 said bars and extending to within a short dis-
 tance from the grate frame B as shown.
 By my above described improvements, the
 main grate section may be allowed to remain
 in a horizontal position for any desired length

of time, while the bars of the sub-grate sec-
 tion may be oscillated, at will, for so loosen-
 ing the ashes and clinkers, as to cause them,
 in a large measure, to fall down between the
 bars $c^2 c^2$ of the main grate section. The
 shaft D is, at all times, preserved from con-
 tact with the fire, so that it will not become
 bent or warped; and, by a suitable length of
 movement of the sub-grate section past a ver-
 tical line, the main grate may be readily
 dumped.

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

In a grate for a stove, range or furnace, the
 combination with the grate frame B, provided
 with the stop b and the bearings $a a$, a main
 grate section C composed of bars $c c'$ and c^2 ,
 as described, and provided with catching
 piece d , and the downwardly projected bear-
 ings $b' b^2$, of the sub-section E, composed of
 shaft D, and radial bars e all below the said
 main grate section, the said shaft being sup-
 ported in the said bearings $a a$ of the grate
 frame, and rolling in bearings $b' b^2$ provided
 with the main grate section, and having an
 end thereof provided with means for engag-
 ing with an operating lever, all substantially
 as and for the purposes set forth.

In testimony that I claim the invention
 above set forth I affix my signature in pres-
 ence of two witnesses.

HERMAN GRAEF.

Witnesses:

CHARLES SELKIRK,
 A. SELKIRK, Jr.