

(No Model.)

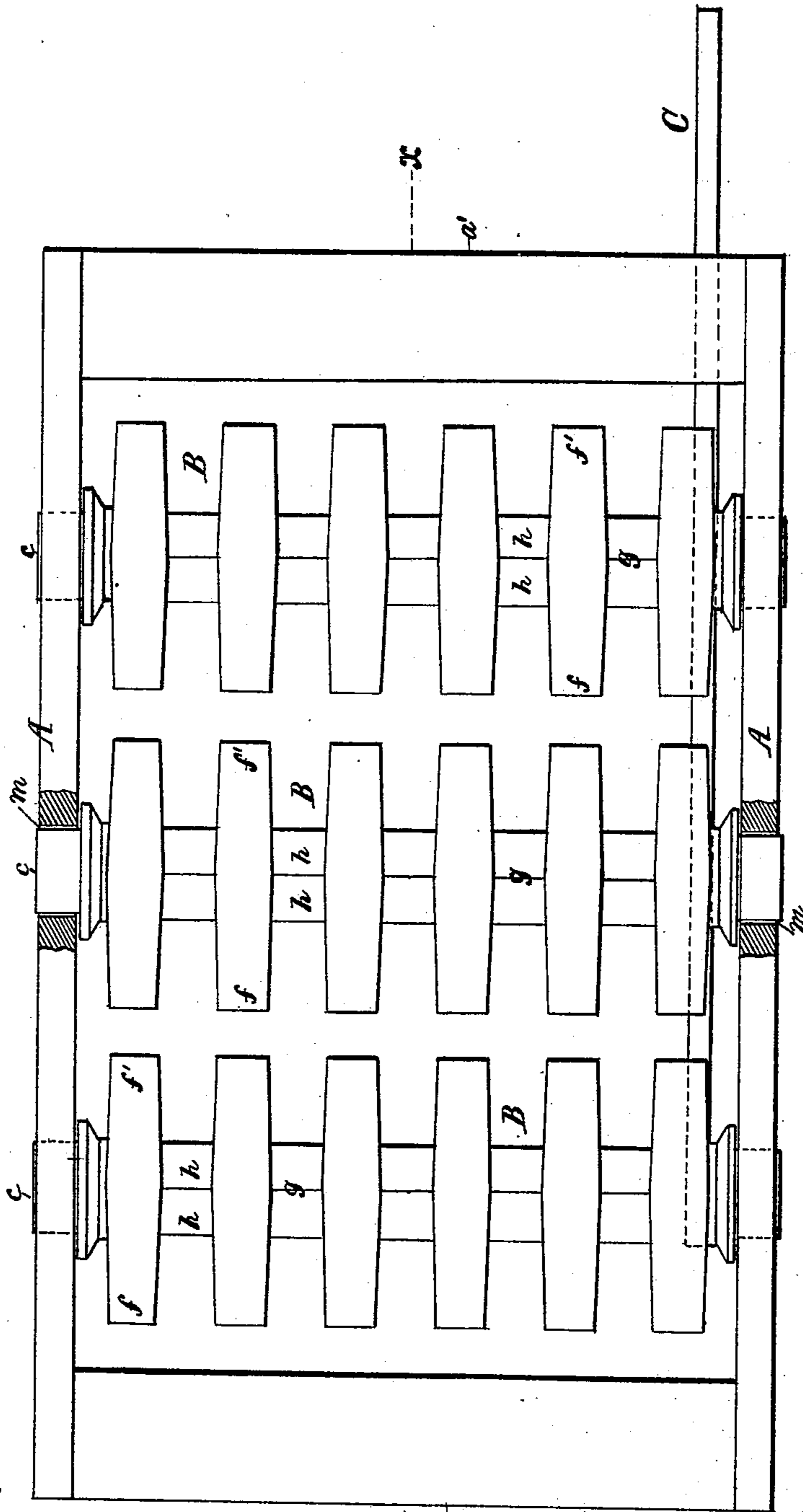
2 Sheets—Sheet 1.

W. McCLAVE.

GRATE FOR STOVES AND FURNACES.

No. 272,733.

Patented Feb. 20, 1883.



Witnesses:

B.C. Fenwick.
Robt. L. Fenwick

Inventor:

William McLane
by his attys
Jenwick Lawrence

(No Model.)

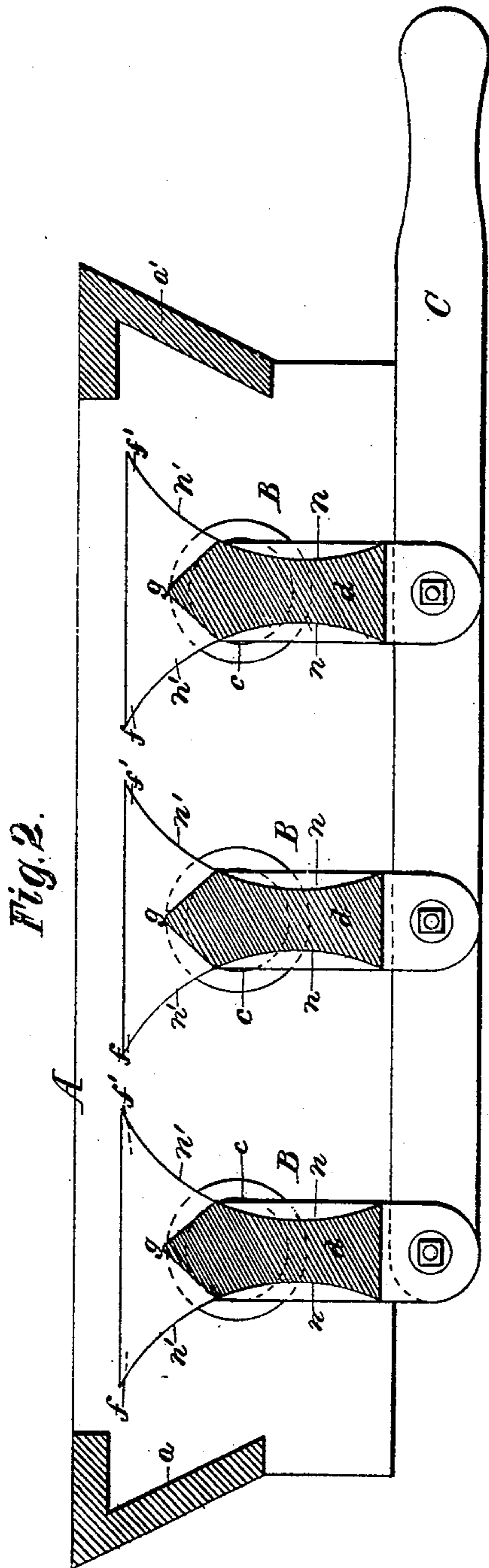
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W. McCLAVE.

GRATE FOR STOVES AND FURNACES.

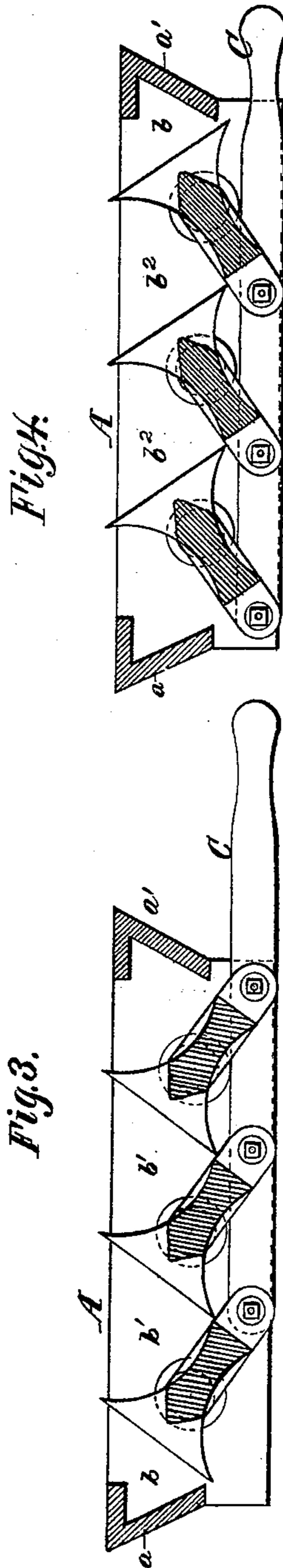
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UNITED STATES PATENT OFFICE.

WILLIAM MCCLAVE, OF SCRANTON, PENNSYLVANIA.

GRATE FOR STOVES AND FURNACES.

SPECIFICATION forming part of Letters Patent No. 272,733, dated February 20, 1883.

Application filed January 10, 1883. (No model.)

To all whom it may concern :

Be it known that I, WILLIAM MCCLAVE, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented a new and useful Improvement in Grates for Stoves, Furnaces, and other Heating Apparatus, of which the following is a specification.

My invention relates to a grate formed of vibrating sections, which form pockets for ashes, cinders, or clinkers on both sides of the vertical central axes of the sections, the pockets being formed on one side of said axes when the grate-sections are operated by a backward thrust, and on the opposite side of the same when they are operated by a forward pull.

My present grate differs from that shown in Letters Patent granted to me November 21, 1882, No. 267,910, in having its sections constructed in a form which in vertical cross-section resembles the letter T, (instead of an inverted L,) the body portion, answering to the leg of the T, being on each side preferably made with a concave depression of segmental form, while the portion forming a fire-bed, answering to the cap or top of the T, is, on its under side, preferably made with concave depressions, also of segmental form, which depressions are concentric continuations of the depressions in the body portion of the T-shaped sections.

In the accompanying drawings, Figure 1 is a plan view of a grate constructed in accordance with my invention, showing the grate-sections in their normal positions. Fig. 2 is a vertical section of the same in the line *xx* of Fig. 1, also showing the sections in their normal positions. Fig. 3 is a section similar to Fig. 1, but on a smaller scale, and showing the grate-sections in one of their abnormal positions; and Fig. 4 is a similar section to Fig. 3, but showing the grate-sections in a reversed abnormal position to that shown in Fig. 3.

A in the figures of the drawings may designate a portion of the ash-pit section of a stove, furnace, heater, or other fuel-burning structure; but the illustration given is best adapted for larger constructions, such as boiler-furnaces. The end pieces, *a a'*, of the portion A are made angular, as shown, in order to aid in forming a fire-bed by their horizontal parts, as shown

in Fig. 2, and also assist the grate-sections in forming end pockets, *b*, for ashes, cinders, or clinkers, as shown in Figs. 3 and 4.

B B are grate-sections, any suitable number of which may be employed. Each section, as in my aforesaid patent, is formed with trunnions or short journals *c c*, a continuous body portion, *d*, and separated fire-bed portions *ff'*, which are united with the body portion and extended up above the beveled or rounded portion *g* of the body portion a proper distance, so as to form passages *h* for air and ashes to pass through, as shown. The journals *c* of the grate-sections are placed about central of the vertical depth of the sections, and the sections are hung upon their journals in suitable bearings *m* of the section A, and are all vibrated in the same direction by means of a connecting-bar, C, attached to extensions of the body portions of the sections, as shown, or by any other suitable mechanical appliances, which, while serving for operating the sections, may be provided with any suitable means for holding the grate-sections in any desired fixed position. Each grate-section B is formed with its body portion *d* about equal to or only a little less in depth than the length of the space between a pair of journals, *c c*; and this body portion is extended from side to side the full or nearly the full length of the grate-sections B, as shown in Figs. 1 and 2. The respective side extensions of the fire-bed portions *ff'* of the sections are of a length equal, or nearly so, to one-half the space between a pair of journals, as shown, and by this construction the sections when in vertical positions, as in Figs. 1 and 2, form a proper fire-bed for the grate, and when in inclined positions, as shown in Fig. 3, form ash-pockets *b'* on one side of the journals of the sections, and when inclined, as in Fig. 4, form ash-pockets *b''* on the opposite sides of the journals. The side surfaces of the body portions *d* of the sections B and the under surfaces of the cap or top portions *ff'* thereof are preferably made of a segmental concave form, as indicated at *n n'*; and by this construction the ash-pockets *b' b''* are made very effective for the purpose desired, while the discharge of the retained ashes, clinkers, cinders, or other debris which were cut out and retained during the back or forward move-

ment are freely discharged when the sections are brought from an inclined to an upright position or reversed in their inclined position. The grate-sections B are double-acting instead of single-acting, as in my aforesaid patent—that is, ash-pockets may be formed on both sides of the vertical axis of the body portion of the sections, as indicated in Figs. 3 and 4.

10 In operation the sections act thus: The lower edges of the body portions and the ends of the cap or top portions forming the fire-surface come almost together and form ash-pockets; and this is the case whether the sections are
15 moved by a backward or a forward motion of the bar C, as fully illustrated in the drawings. The pockets *b* at the two ends of the fire-bed are formed respectively by means of the end sections, B, and the angular end pieces, *a a'*,
20 at the same time that the intermediate pockets are formed.

The action of my present invention is the same as in my aforesaid patent, while its capabilities are doubled, and it is therefore unnecessary to describe herein very particularly the
25 way in which the ashes and clinkers are cut out from under the body of burning fuel above and retained and discharged; nor is it necessary to describe the means for keeping the
30 grate-sections level or in a fixed position, as these may be of any proper and suitable char-

acter, and they form no part of my claim. My double-acting sections will answer a better purpose for larger furnaces—such as boiler-furnaces—on account of their capability to
35 more speedily discharge ashes and clinkers than the single-acting sections, which form pockets on only one side of their pendent body portions, as in my aforesaid patent.

I will state that I do not confine my invention to the exact form given to the sides of the body portions and under surfaces of the cap or top portions of the sections; but I believe this to be the best form for carrying out
40 my invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The grate-sections of a fire-bed having the body portion *d* and the cap portion *f f'*, the said sections being operated all in the same
50 direction, and alternately forming pockets on each side of the sections when they are vibrated or moved back and forth, substantially as and for the purpose described.

2. The combination of the T-shaped section
55 at the end of the fire-bed with the angular end piece of the portion A of a furnace, substantially as and for the purpose described.

WILLIAM MCCLAVE.

Witnesses:

R. G. BROOKS,
B. S. REYNOLDS.