No. 695,757. Patented Mar. 18, 1902.

J. C. McDONALD & M. BRENNAN.

RAKING DEVICE FOR FURNACE GRATES.

(Application filed Oct. 27, 1900.)

(No Model.)

Fig. 1.

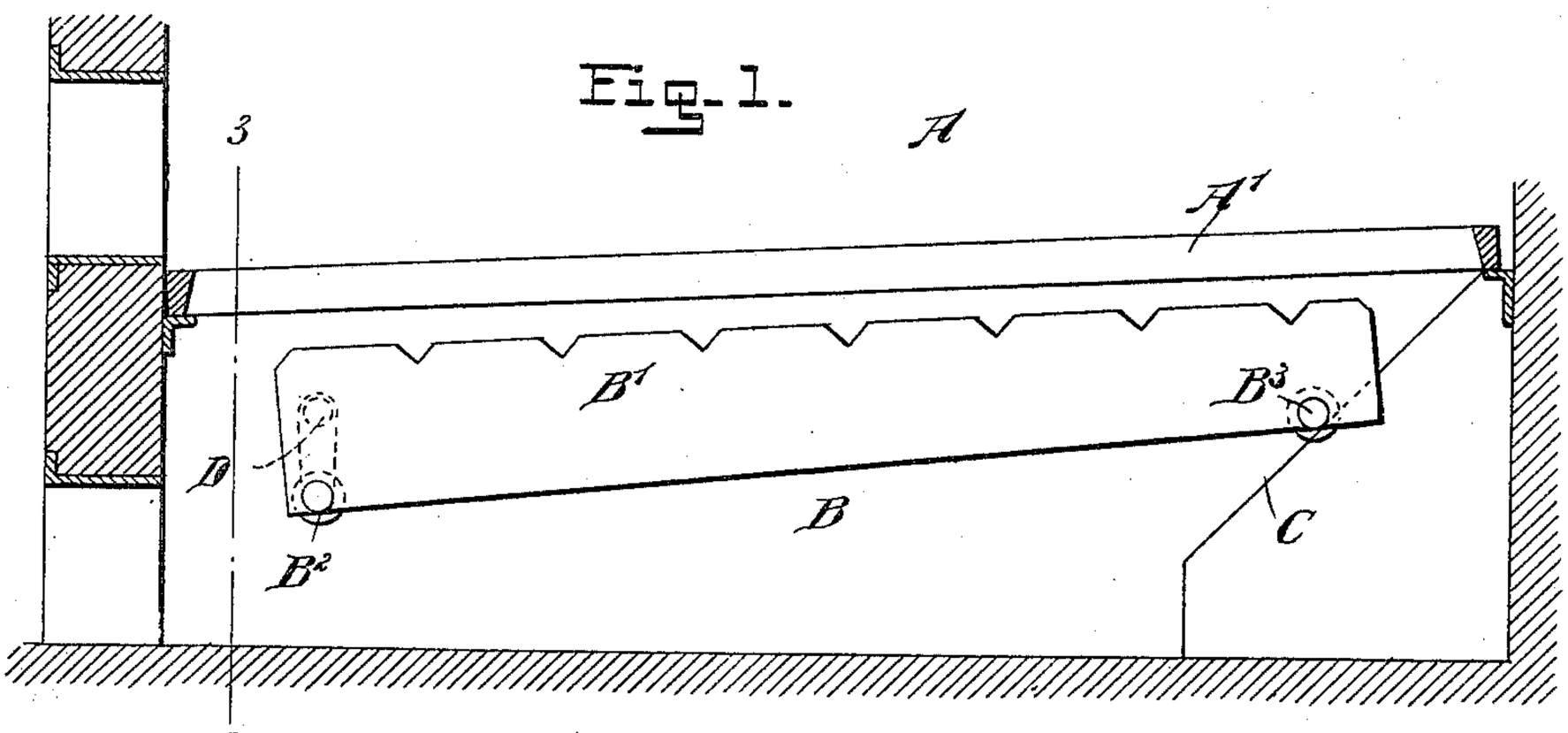


Fig. 2.

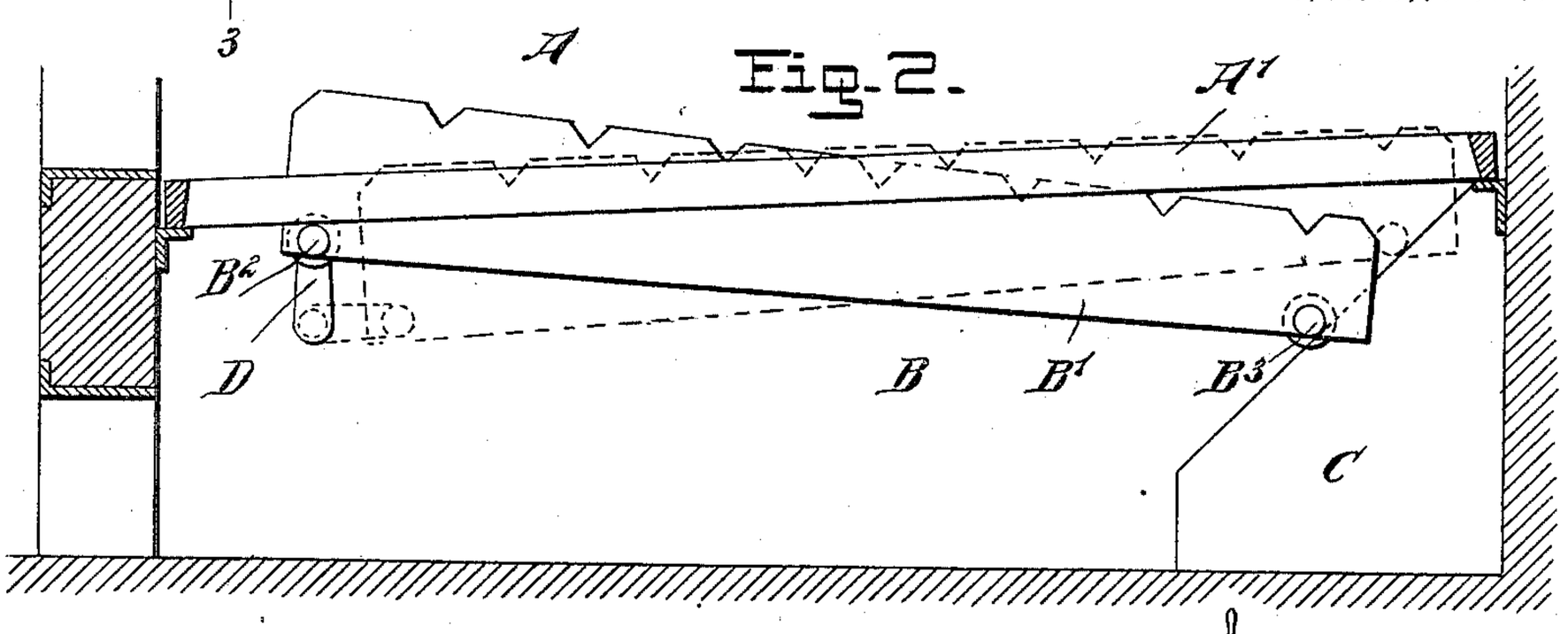


Fig. 4.

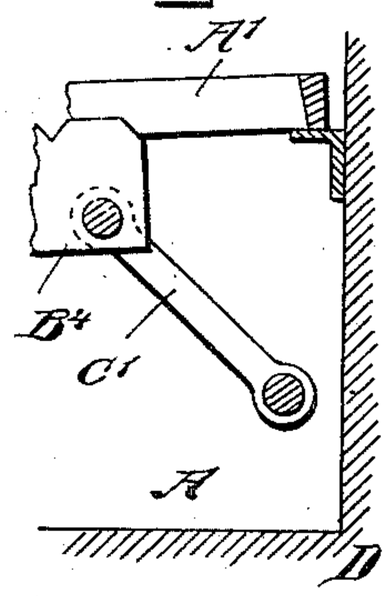
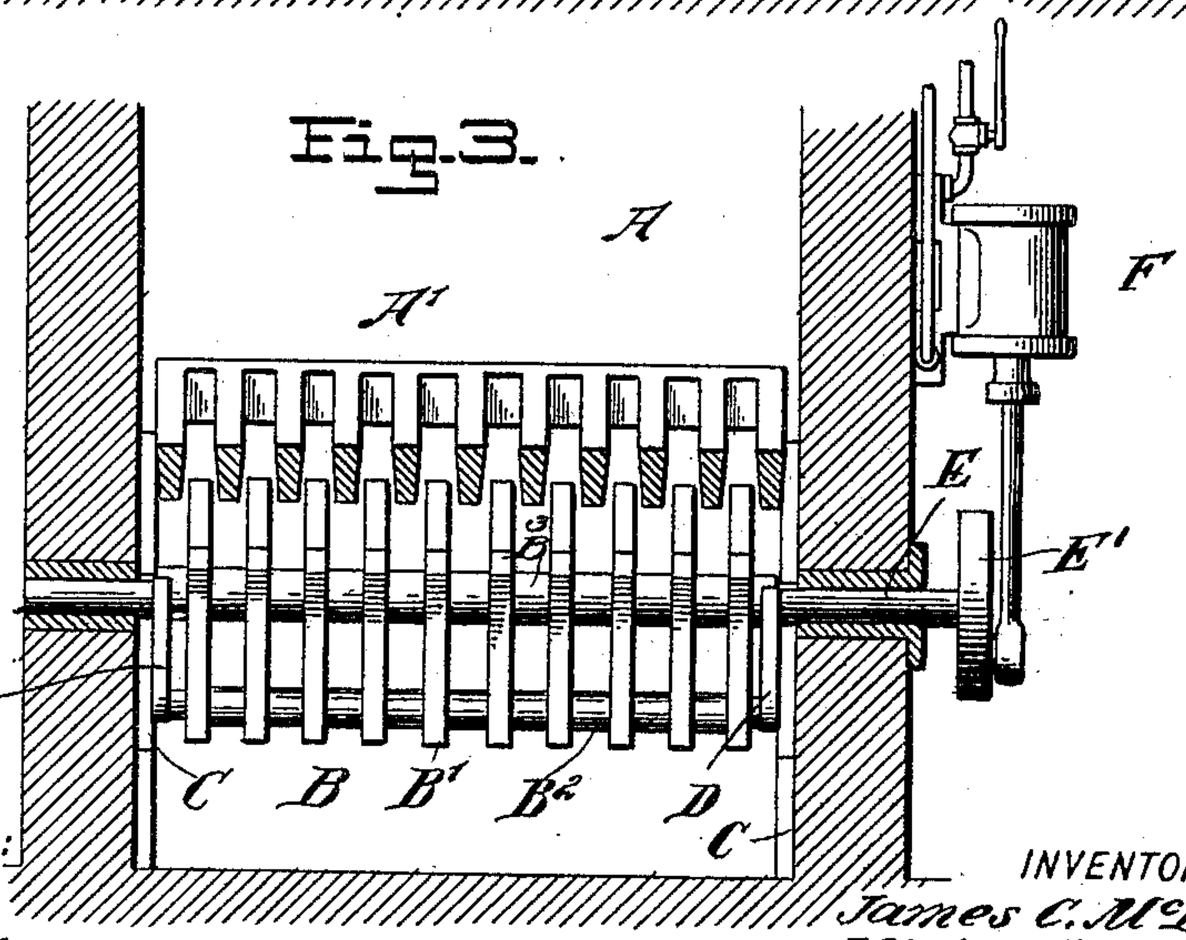


Fig. 3.



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JAMES C. McDONALD AND MICHAEL BRENNAN, OF SIDNEY, NEW YORK.

RAKING DEVICE FOR FURNACE-GRATES.

SPECIFICATION forming part of Letters Patent No. 695,757, dated March 18, 1902.

Application filed October 27, 1900. Serial No. 34,637. (No model.)

To all whom it may concern:

Be it known that we, JAMES COCHRANE MCDONALD and MICHAEL BRENNAN, citizens of the United States, and residents of Sidney, in the county of Delaware and State of New York, have invented a new and Improved Raking Device for Furnace-Grates, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved raking device for furnace-grates which is simple and durable in construction and easily manipulated to insure proper raking of the fuel for producing complete combustion without loss of fuel.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of the fire-box of a furnace with the improvement applied. Fig. 2 is a similar view of the same with the raking device in a different position. Fig. 3 is a transverse section of the same on the line 3 3 in Fig. 1, and Fig. 4 is a sectional side elevation of a modified form of the improvement.

The fire-box A of the furnace is of the usual construction and is provided with a grate A′, below which is normally held a raking-frame B, consisting of a plurality of spaced longitudinally-extending raking-bars B′, connected with each other at their front and rear ends by cross-bars B^2 B^3, of which the cross-bar B^3 has its reduced ends mounted to travel on inclines C, arranged on the sides of the ash-pit at the rear end of the fire-box, as is plainly indicated in the drawings. The forward cross-bar B^2 is pivotally connected at its ends with cranks D of a crank-shaft E, journaled in suitable bearings in the sides of the furnace, as is plainly indicated in Fig. 3, and on one outer end of the crank-shaft is secured a crank-disk E′, forming part of an engine F for rotating the shaft E, so as to cause the crank-arm D to impart a swinging motion to the raking-frame B. The bars B′ of this raking-frame normally stand below the grate A, as is plainly shown in Fig. 1, said raking-bars being arranged to pass between the grate-bars when an upward-swinging movement is given to the raking-frame B by the crank-arms D. The top edges of the raking-bars B′ are preferably notched, so as to readily engage and agitate the fuel on the top of the grate A′ and to readily cut any clinkers that may pass or lodge between the bars of the grate, so that the fuel is perfectly raked and complete combustion insured.

It is understood that when the frame B is actuated by the crank-arms D the rear end of the frame travels up and down on the inclines C, which also form a fulcrum for the frame to swing on, so that an up-and-down reciprocating sliding motion is given to the said raking-frame. It is further understood that the relation between the frame B and the fixed grate A′ is such that when movement is given to said frame then the notched edges of the bars B′ pass over the top surface of the grate A′ to insure a thorough raking of the fuel.

In the modified form shown in Fig. 4 the inner ends of the rocking bars B of the raking-frame are pivotally connected with links C′, fulcrumed in the fire-box, so that when the raking-frame is actuated, as above described in reference to Figs. 1, 2, and 3, then an up-and-down swinging and lengthwise-sliding motion is given to the said rocking frame by the links C′, which now take the place of the inclines C.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. A raking device for furnace-grates, comprising a raking-frame normally located under the grate and provided with spaced bars adapted to pass between the grate-bars, a revoluble crank-shaft with which one end of the raking-frame is connected, and means for supporting the other end of the said frame to permit it to have an up-and-down movement, whereby when the crank-shaft is operated the raking-frame will have an up-and-down swinging and lengthwise-traveling motion imparted to it, as set forth.

2. A raking device for furnace-grates, comprising a raking-frame normally below the

grate, an incline below the grate and on which one end of the frame is mounted to travel, and a revoluble crank-shaft connected with the other end of said frame, to impart motion to the latter, as set forth.

3. A raking device for furnace-grates, comprising a raking-frame normally located under the grate, and provided with longitudinally-extending and spaced bars adapted to pass up between the bars of the grate, an incline below the grate and on which one end of said frame is mounted to travel, and a crank-shaft revolubly mounted and connected with the other end of the frame, to impart a reciprocating motion thereto, as set forth.

4. A raking device for furnace-grates, comprising a raking-frame normally below the grate, consisting of a plurality of spaced longitudinally-extending bars having notches at the top edges, and cross-rods for connecting the said longitudinal bars with each other at the front and rear ends, inclines below the grate and on which the rear cross-bar is mounted to travel, and a revoluble crank-shaft mounted to rotate and journaled in the sides of the furnace, said crank-shaft being pivotally connected at its cranks with the cross-rod at the front end of said raking-frame, as set forth.

5. A raking device for furnace-grates, comprising a raking-frame normally below the grate, an incline below the grate and on which one end of the frame is mounted to travel, a revoluble crank-shaft connected with the other end of said frame, to impart motion to the latter, and an engine connected with the crank-shaft for operating the same, as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JAMES C. McDONALD.
MICHAEL BRENNAN.

Witnesses:
BELLMONT E. GEORGIA,
ARTHUR BIRD.