C. E. MURRAY.

GRATE-CLEANER.

No. 193,022. Patented July 10, 1877.

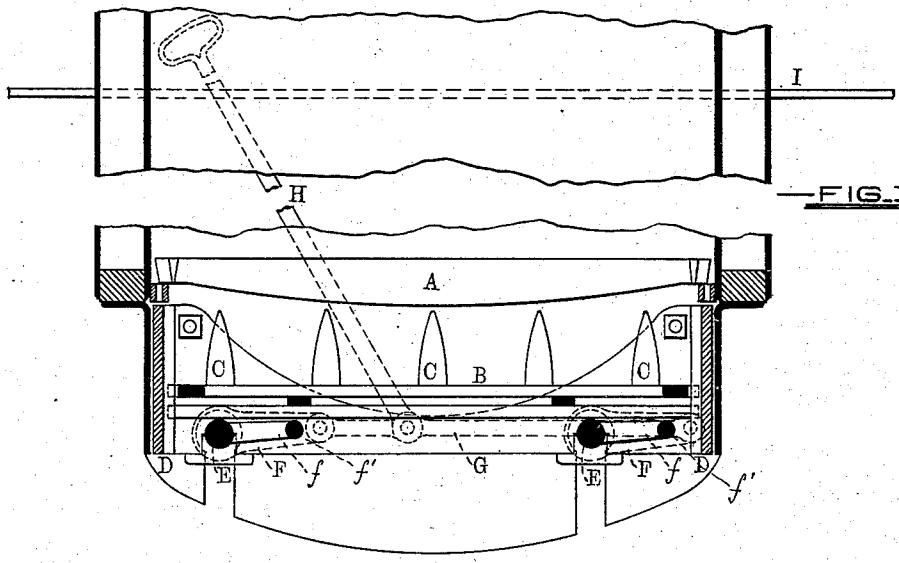


FIG. I

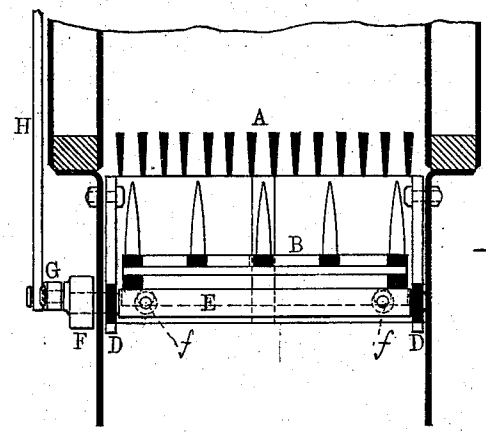


FIG. II

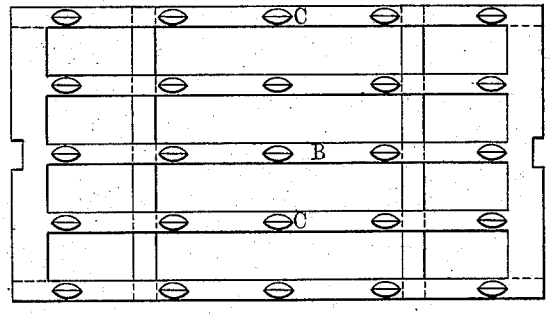


FIG III

WITNESSES.

Wm W. Tourson

W. W. Thurston

INVENTOR.

Charles E. Murray,

by Geo. W. Howard

Attys.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES E. MURRAY, OF WARREN, ASSIGNOR OF ONE-HALF HIS RIGHT TO WILLIAM E. CHILDS, OF ELLENGOWAN, MARYLAND.

IMPROVEMENT IN GRATE-CLEANERS.

Specification forming part of Letters Patent No. **193,022**, dated July 10, 1877; application filed January 25, 1877.

To all whom it may concern:

Be it known that I, CHARLES E. MURRAY, of Warren, in the county of Baltimore and State of Maryland, have invented certain Improvements in Grate-Cleaners for Boilers, Stoves, and the like, of which the following is a specification; and I do hereby declare that in the same is contained a full, clear, and exact description of my said invention, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

This invention relates to a grate-cleaner for boilers, stoves, and the like, of the construction and adapted to be operated in the manner hereinafter described, and is designed to effect its work by the alternate insertion and withdrawal of certain projecting spines to and from the air-passages between the bars of the grate.

The invention consists in certain details of construction in the devices employed, as hereinafter more fully designated.

In the description of the invention and its operation which follows, reference is made to the accompanying drawing, forming a part hereof, and in which—

Figure 1 is a longitudinal section of a grate to which my improved grate-cleaner is applied. Fig. 2 is a transverse section of the same. Fig. 3 is a plan of the cleaner, the grate being removed.

Similar letters of reference indicate similar parts in all the figures.

A represents the grate, and B the frame of the cleaner, to which are attached the spines or blades C.

In the drawing the invention is shown as applied to a locomotive-boiler grate, and for this purpose the frame is constructed to move within a casing, D, secured rigidly to the fire-box below the furnace-grate A. The vertically-reciprocating motion of the frame and spines is obtained by the partial revolution of the shafts E, fitted to turn in bearings in the casing D.

In order to produce a joint action of the shaft, E, and preserve the frame in a horizontal position during its movement, the said shafts are furnished with cranks F, connected by the rod G, and also with lifters *f*, connected by rods *f'*, extending across the frame B, which lifters and rods are detached from the said frame, and raise each end thereof a common distance.

In applying the invention to a locomotive, the movement of the shafts E and connections is communicated thereto through the medium of a handle, H, which passes through the foot-board I.

In adapting the grate-cleaner to the various descriptions of stoves and furnaces, the mechanism for imparting movement to the cranks and lifters must, however, necessarily undergo certain modifications.

When the air-passages between the bars of the grate become clogged with ashes to such an extent as to impair their efficiency, the frame is forced upward until the spines penetrate the ashes and enter the unconsumed fuel. The spines are then withdrawn, leaving openings, through which air enters to the furnace. In case where the ashes are accumulated in large quantities, the spines are inserted several times in quick succession, when the ashes are thoroughly removed and the grates cleaned.

Having thus described my invention, what I claim as new, and wish to secure by Letters Patent of the United States, is—

1. The frame B, having the spines C, combined with the shafts E, cranks F, rod G, and lifters *f* and lifter-rods *f'*, detached from the said frame, substantially as specified.

2. The handle H, rod G, cranks F, and shafts E, provided with lifters, combined with the grate-cleaner B C and casing D, substantially as and for the purposes specified.

In testimony whereof I have hereunto subscribed my name this 21st day of December, in the year of our Lord 1876.

CHARLES E. MURRAY.

Witnesses:
WM. T. HOWARD,
THOS. MURDOCK.