J. MAHONY.

Shaking Grates.

No. 160,272. Patented March 2, 1875.

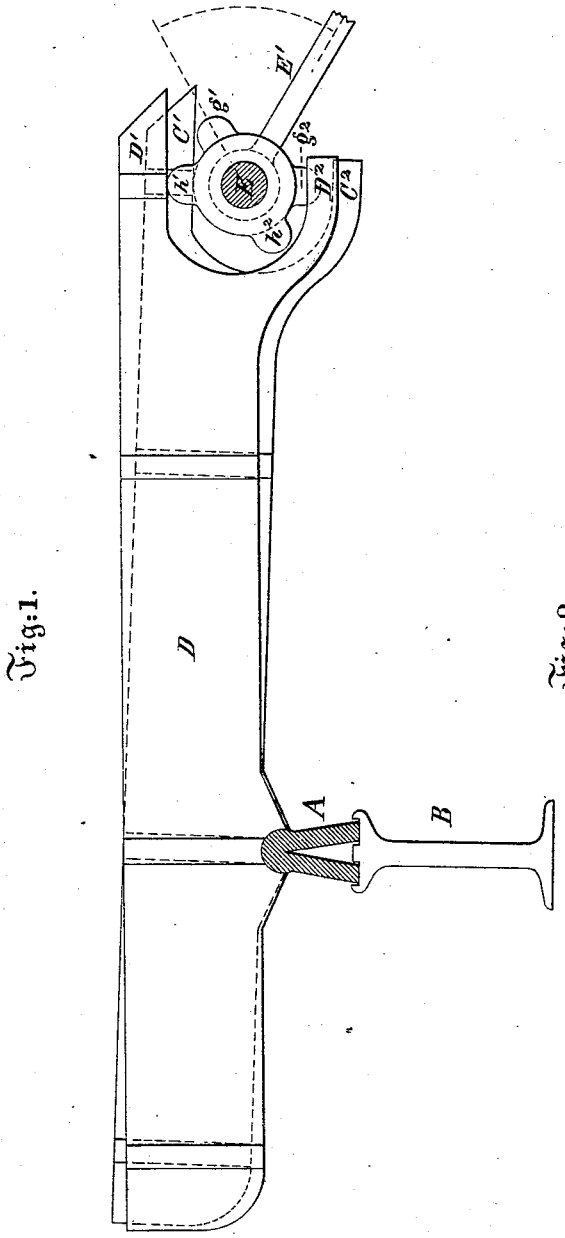

Fig:1.

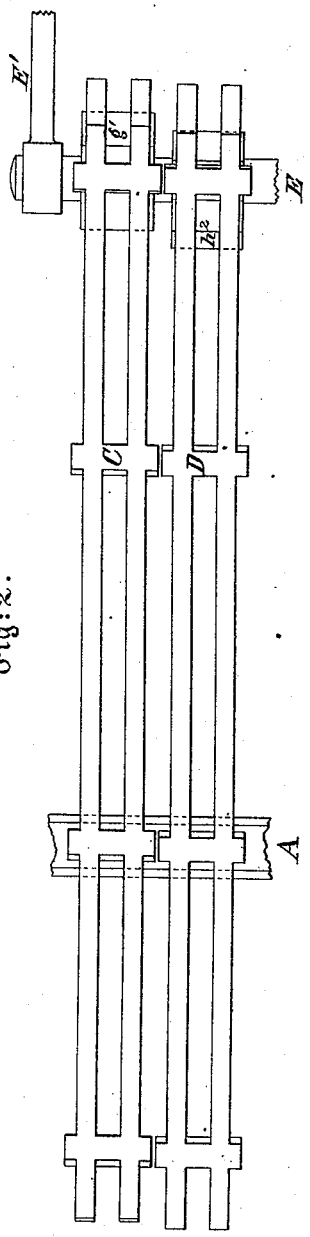

Fig:2.

Witnesses:

M. A. Van Namee

Wm. C. Dey.

Inventor:

James Mahony

by his Attorney Thomas D. Stetson

UNITED STATES PATENT OFFICE.

JAMES MAHONY, OF NEWPORT, RHODE ISLAND.

IMPROVEMENT IN SHAKING-GRATES.

Specification forming part of Letters Patent No. **160,272**, dated March 2, 1875; application filed January 27, 1875.

To all whom it may concern:

Be it known that I, JAMES MAHONY, of Newport, in the county of Newport and State of Rhode Island, have invented certain Improvements relating to Shaking Grates for Steam-Boiler Furnaces and analogous situations, of which the following is a specification:

I construct the grate in sections, mounted to oscillate on a horizontal axis near the center of the length of each. The longest end, which preponderates in weight, is supported on a rocking shaft formed with toes, which, as the shaft is rocked, raise and lower the corresponding ends of the grate-sections, raising alternate sections, and lowering the sections between them.

The grate is forked at that end, so that the properly-arranged toes on the rocking grate, acting on the arms of each section, depress as well as elevate by a positive motion.

The accompanying drawings form a portion of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a side elevation, with a vertical section of the cross piece or bearer. Fig. 2 is a plan view.

Similar letters of reference indicate like parts in both the figures.

A is a cross-bearer, of wrought-iron or other suitable material, supported on a bridge-piece, B, and serving as the turning-center for a series of sections of grate, only two of which are represented, but which, it will be understood, may be prolonged horizontally at will, according to the width of the furnace.

C D are the sections of the grate, formed of hard cast-iron or other suitable material, with openings of proper capacity and form to make the grate serve efficiently, and allow it to be raked and otherwise cleaned by ordinary means in addition to the shaking down of the ashes and clinkers, which is effected or promoted by my invention.

One end, preferably the front, of each section of grate is forked, as indicated by C^1 C^2 D^1 D^2. E is a rocking shaft, supported in suitable fixed bearings, (not represented,) and provided with toes g^1 g^2 h^1 h^2, arranged as shown. E′ is a lever, connected either permanently or temporarily to the shaft E, and by means of which it is rocked.

By vibrating it, as indicated by the dotted lines, the toe g^1 acts at one extreme of the motion to lift the section C^1 at the same time that the toe h^2 acts to depress the section D^2. At the other extreme of its motion the opposite condition is induced—that is to say, the toe g^2 depresses the section C^2 of the grate, and the toe h^1 elevates the section D^1.

The center of the rocking motion on the rounded top of the cross-bearer A is so far below the level of the top of the grate-sections C D that the rocking induces a considerable horizontal motion even of those portions of the sections C D which are immediately over the bearer.

All the parts in rear or in front of the bearer have not only a horizontal motion, but also a vertical motion, the alternate sections of the grate rising and sinking relatively to the sections between them. The result is a peculiarly effective shaking and cleansing of the fire, sifting down the ashes and fine cinders, and leaving the fire clear, without any considerable waste of fuel.

It is not necessary to describe that there are inclosing-walls to the furnace, either formed by the boiler itself, in the case of a steam-boiler furnace, or of fire-brick or other suitable material.

I believe that my grate may be used with some success for furnace fires for use in iron-manufacture and other branches of the arts, but intend it more particularly for steam-boiler furnaces.

There may be two or more lengths of my grate, with the sections placed end to end, and each having a suitable rocking shaft. The rocking shafts may be connected, so as to be rocked simultaneously, or disconnected, and provided with means for rocking each separately.

I claim as my invention—

1. The alternately-rocking grate-sections C D, in combination with a rocking shaft, E, with toes thereon, adapted to raise the one section

while the adjacent sections are depressed, substantially as herein specified.

2. The nearly central cross bearer or axis A, in combination with the rocking sections C D and operating means E, as hereinafter specified.

3. The forked ends C^1 C^2 D^1 D^2 of the grate-sections C D, and rocking shaft E, having toes $g^1 g^2 h^1 h^2$, combined and arranged for joint operation, as and for the purposes herein specified.

In testimony whereof I have hereunto set my hand this 25th day of January, 1875, in the presence of two subscribing witnesses.

JAMES MAHONY.

Witnesses:

BENJAMIN MARSH, 2d,

CHARLES B. MARSH.