May 29, 1923. 1,456,707

O. P. NYSTROM

FURNACE GRATE SHAKER

Filed Feb. 10, 1921

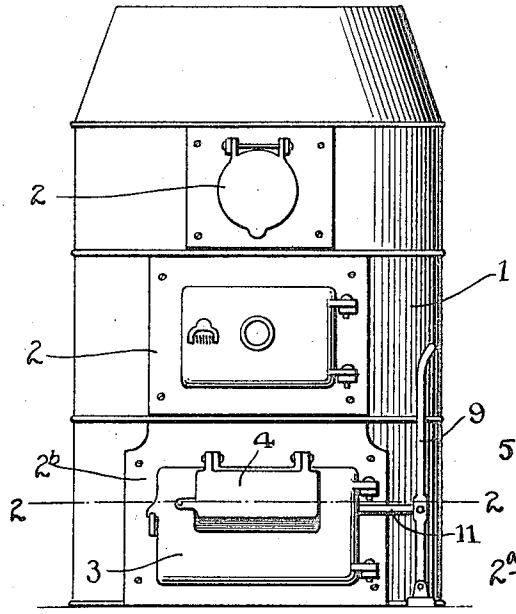


FIG. 1.

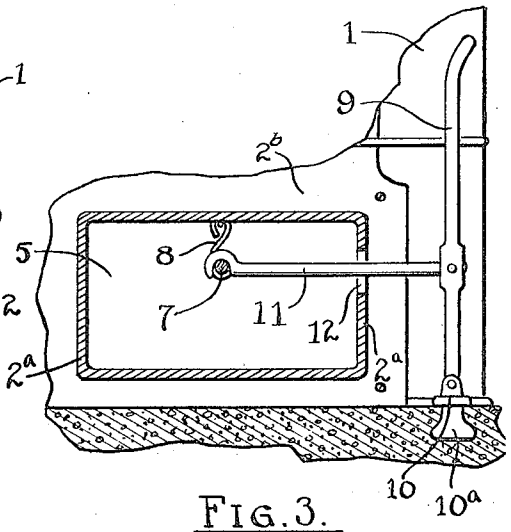


FIG. 3.

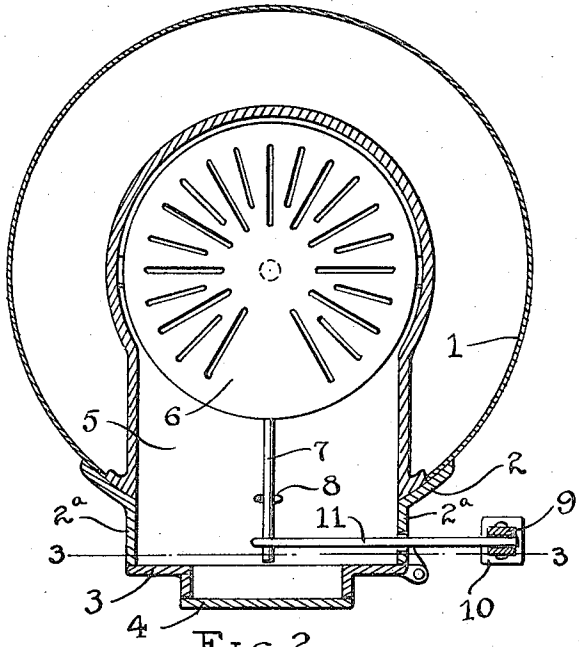


FIG. 2.

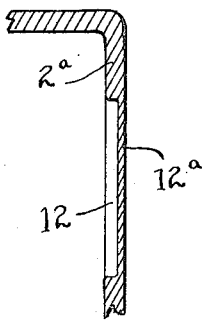


FIG. 4.

INVENTOR

Oscar P. Nystrom.

By Frank E. Liverance, Jr.

ATTORNEY.

Patented May 29, 1923. 1,456,707

UNITED STATES PATENT OFFICE.

OSCAR P. NYSTROM, OF HOLLAND, MICHIGAN, ASSIGNOR TO HOLLAND FURNACE COMPANY, OF HOLLAND, MICHIGAN, A CORPORATION OF MICHIGAN.

FURNACE-GRATE SHAKER.

Application filed February 10, 1921. Serial No. 443,770.

To all whom it may concern:

Be it known that I, OSCAR P. NYSTROM, a citizen of the United States of America, residing at Holland, in the county of Ottawa and State of Michigan, have invented certain new and useful Improvements in Furnace-Grate Shakers; 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.

This invention relates to improvements in furnace grate shakers and more particularly to means for shaking such grates as have an oscillatory or a reciprocatory movement and its object is to provide a shaking lever adapted to be located outside the furnace and easily accessible for manual operation, which may be easily attached to the furnace grate or detached therefrom and which has its fulcrum firmly attached to a base independent of any part of the furnace proper. The device is also provided with various other new and useful features as will more fully appear as a clear understanding of the invention is had from the following description taken in connection with the accompanying drawings in which:

Figure 1 is a front elevation of a furnace with a grate shaker embodying this invention applied thereto,

Fig. 2 is an enlarged sectional plan of the same on the line 2—2 of Fig. 1,

Fig. 3 is a sectional elevation on the line 3—3 of Fig. 2 and

Fig. 4 is an enlarged section of a portion of the furnace casting showing a detail of construction.

Like reference characters refer to like parts in all of the figures.

1 represents the furnace casing, usually made of sheet metal and attached by bolts or like means to the front castings 2—2^b. Hinged to the lower one of said front castings 2^b is the ash-pit door 3, said casting having an outwardly extending rim 2^a surrounding the door opening and the door 3 closes against said rim. The ash-pit 5 is directly behind the ash-pit door and is surmounted by the fire-pot (not shown) and a grate 6 is mounted beneath the fire-pot in the usual way. In the construction shown the grate is pivotally supported at its center and has a lever 7 extending within the ash-pit 5 toward the ash-pit door 3 and terminating back of the draft door 4 in the said ash-pit door. The lever 7 is supported near its outer end by a hook 8 pivotally suspended from the top of the ash-pit casting. The grate being supported in this way is permitted a limited oscillatory movement by means of the lever 7 which may be actuated through the draft opening by raising the draft door 4 or by means of the shaking lever as hereafter described.

A shaking lever 9 is located outside the furnace adjacent to and at one side of the ash-pit door, its lower end acting as the fulcrum and being pivotally attached to a pivot block 10 which is firmly fixed to the floor or foundation upon which the furnace is mounted. The pivot block shown in the drawing is formed with a downwardly extending lug 10^a which is imbedded in the cement or other material of which the furnace foundation is made but other forms of pivot blocks may be used which may be attached to the foundation in other ways such as being provided with a base adapted to be screwed to a floor or other means of attaching. A connecting rod 11 has one of its ends pivotally attached to the shaking lever 9 between the ends of said lever and this rod extends through an aperture 12 in the rim 2^a of the front casting 2^b and its inner end is formed into a hook which embraces the grate lever 7. The upper end of the shaking lever 9 acts as a handle and is preferably curved and rounded as shown to afford a more convenient grip and by manually oscillating this lever the furnace grate will likewise be oscillated. Although an oscillating grate having a peculiar mode of suspension has been shown and described it is obvious that any grate having either an oscillatory or reciprocatory motion may be manipulated by this form of shaking lever and connecting rod.

A great advantage is had by attaching the pivot block directly to the furnace foundation instead of to the furnace itself. If the lever were attached to the furnace by extending a bracket from the front casting 2^b thereof or by bolting a bracket to the casing 1, to either of which the lever would be connected, the vibration and strain would soon break the casting or tear the bracket loose from the casing which is invariably made of sheet metal and not sufficiently strong to withstand such strain. By fixing the pivot

block directly to the foundation it may be fastened as securely as necessary to withstand any strain that may be put upon it.

The hooked end of the connecting rod 11 provides a convenient means of attaching the rod to the grate lever and also enables it to be readily disconnected if it is desired to shake the grate without using the shaking lever.

As all furnace users do not desire the shaking lever applied to the furnace the front casting 2^b may be made with the aperture 12 closed by a thin wall of metal 12^a which may be knocked out to form the aperture if it is desired or left intact if the shaking lever is not to be used.

I claim:

1. The combination with a furnace having a movable grate, an extended front casting with a door opening therein, and an arm on the grate extending into said extended front casting, of a grate shaker comprising a lever pivotally anchored at its lower end to the furnace foundation at one side of said extended front casting and reciprocable in a plane parallel with said door opening, and means for connecting the lever between its ends to said arm.

2. The combination with a furnace having a movable grate, a front casting having an extended portion with a door opening therein, and an arm on the grate extending into said extended portion of the front casting, of a grate shaker comprising a pivot block fastened to the furnace foundation separate from the furnace and at one side of said front casting extension, a lever pivoted at its lower end to said pivot block and adapted to oscillate in a plane parallel with said door opening, and a rod pivotally attached at one end to said lever intermediate its ends and extending through an opening in said front casting extension and provided at its other end with a hook to embrace the arm on the grate.

In testimony whereof I affix my signature.

OSCAR P. NYSTROM.