No. 885,898. PATENTED APR. 28, 1908.

H. W. WHELAN.

GRATE.

APPLICATION FILED JULY 10, 1907.

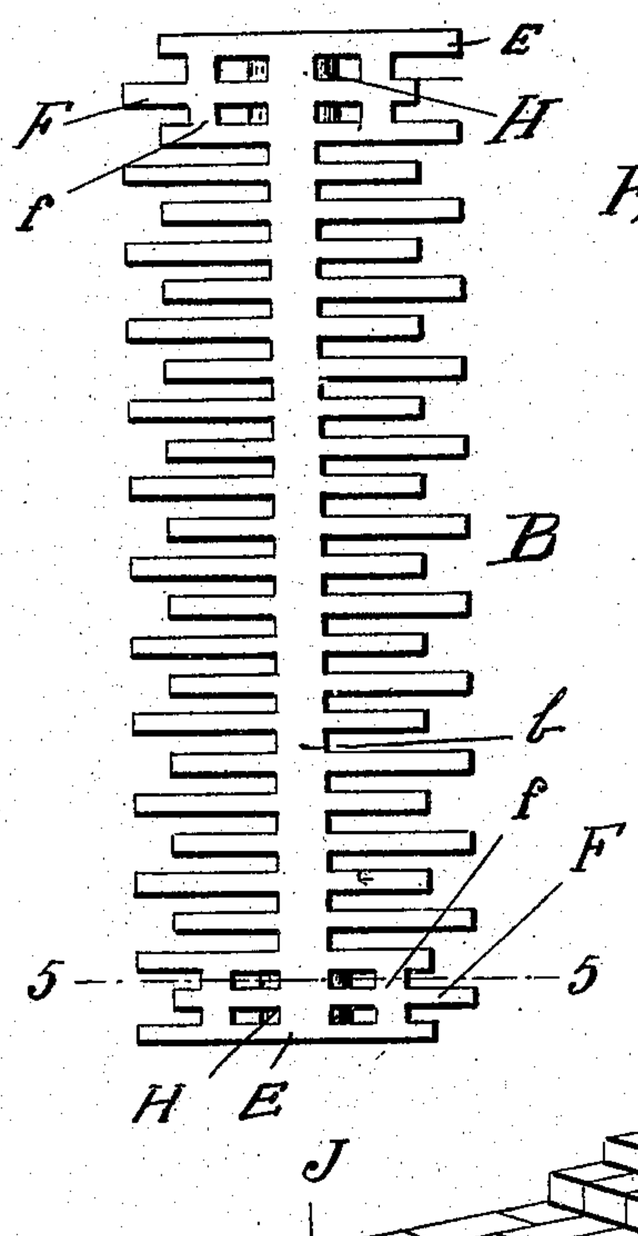

Fig. 4.

Fig. 2.

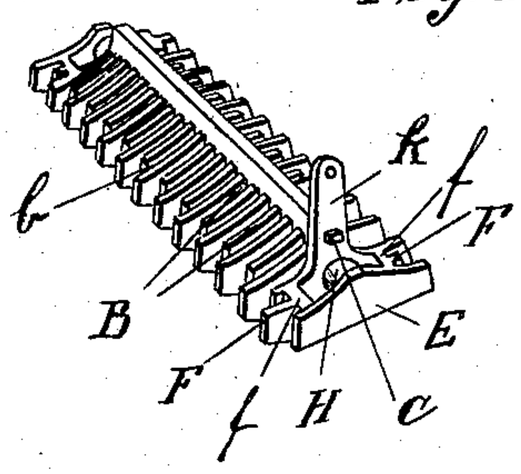

Fig. 1.

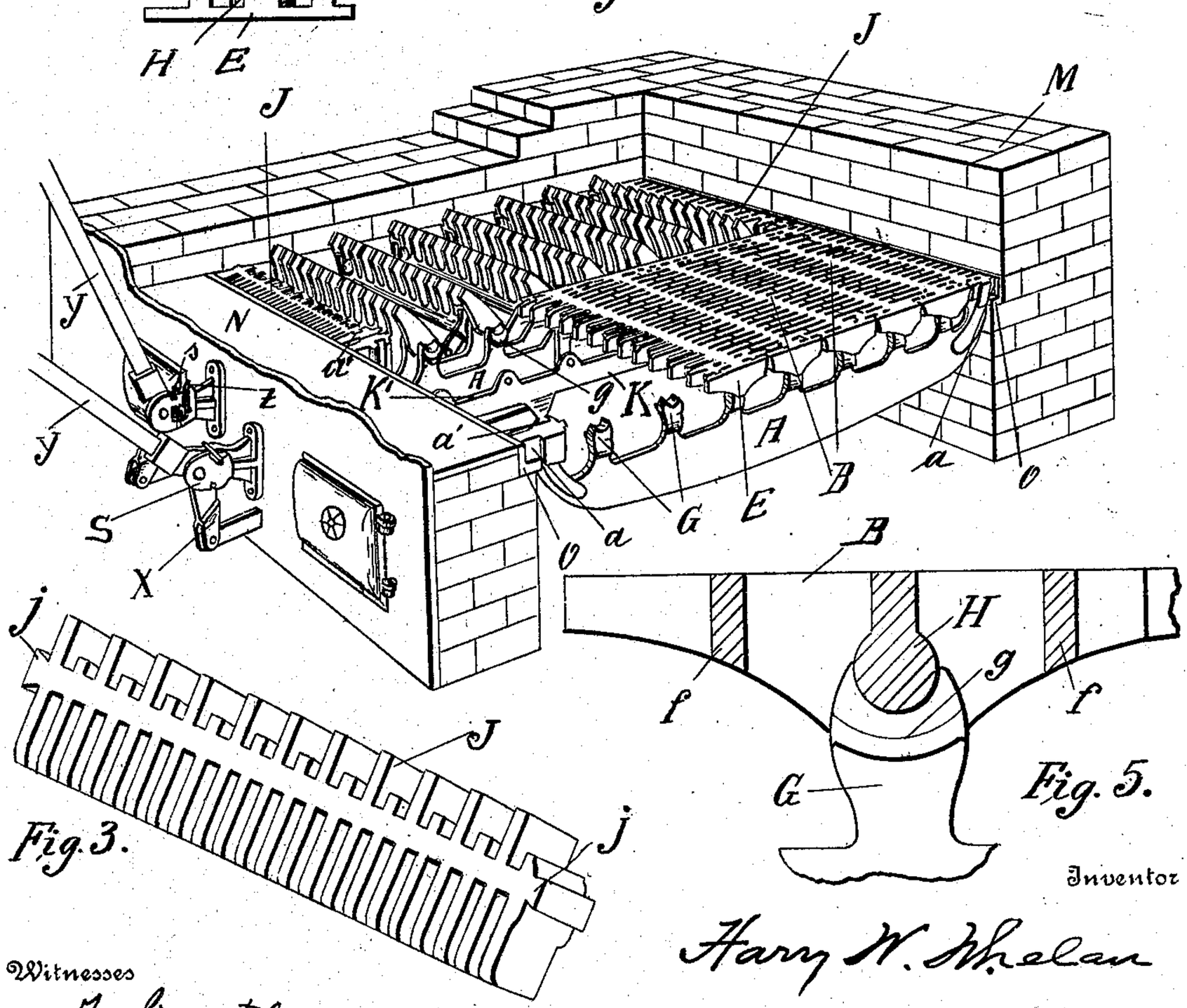

Fig. 3.

Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

HARRY W. WHELAN, OF CHICAGO, ILLINOIS.

GRATE.

No. 885,898. Specification of Letters Patent. Patented April 28, 1908.

Application filed July 10, 1907. Serial No. 383,037.

To all whom it may concern:

Be it known that I, HARRY W. WHELAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Grates, of which the following is a specification.

This invention relates to grates particularly suitable for boiler furnaces, of that class known as rocking grates wherein the grate bars or sections are connected together and operated by means of a lever to shake or dump the same.

The object of the invention is to provide an improved grate bar; also to provide improved means for supporting the grate bar in a strong and satisfactory manner so that the bars will not bind or stick in their bearings, and can be readily removed or replaced, without removing any bolts or screws. The construction is such that the supporting bars are not exposed to the fire and not apt to become burned or warped.

A further object of the invention is to provide an improved latch for holding the grate bars in level position.

The invention is illustrated in the accompanying drawings, in which

Figure 1 is a perspective view of a grate constructed according to the invention. Fig. 2 is a perspective view of one of the bars removed, showing the under side thereof. Fig. 3 is a perspective view of one of the stationary end bars. Fig. 4 is a top plan view of one of the bars. Fig. 5 is a detail in section.

The furnace setting is indicated at M, and may be built of brick in the ordinary manner. It has angle irons O set on ledges at the front and back, to support the grate. The grate may comprise one or more main sections. Each section has longitudinal supporting bars A at opposite sides. The body of each of these bars is bent down or dropped, and has at the ends lugs *a* which rest upon the angle irons referred to. Each supporting bar also has a series of up-standing arms or bearing supports G having a semi-circular recess in the top to receive the trunnions of the grate bars, and also having segmental ribs *g* cast on the inner side below said bearing recesses. The supporting bars also have dove-tailed sockets *a'* at the ends, on the inner sides or faces, for the purpose of supporting the stationary end bars J.

The main or rocking grate bars are indicated at B. Each of these bars is formed in one piece, or solid, which makes a strong grate and one not apt to warp. The bars have spaced fingers which are alternately long and short so that they work between each other on the adjacent bars, as usual, and these fingers spring or project from a main vertical web *b* extending the full length of the bar. This web is presented edgewise to the weight of the fuel, and is of considerable depth, so that there is little possibility of its bending or buckling under weight. An arm *k* projects downwardly from the bar, for connection to the operating bar K. This operating bar is recessed on the upper side as indicated at K', so that the fingers will not strike the same when the grate is dumped.

The grate bar sections B are provided with trunnions H which are located within the end fingers or cross piece E of the bar, and by placing said fingers on the outside of the bearing they may be located and worked close to the side wall of the furnace setting, so that fuel will not drop down at the sides between the grate and said walls. This construction also strengthens the trunnion. The finger or tooth F, next to the end, is cut out on the under side to afford room for the trunnion, a cross piece *f* being cast in to strengthen the fingers. The bearing is thus located under the bar, or under the surface of the bar, and said bearing parts are not exposed to the fire. A lug C projects from the arm *k* and extends under the segmental rib *g* when the grate bar is put in place, and acts to prevent the grate bar from jumping out of its bearings when rocked.

The fixed end sections J have dove-tailed tongues *j* at the ends which fit in the slots *a'* in the supporting bars, and inasmuch as this stationary bar is fixed over the ash pit, behind the bearing plate N instead of above said plate as is usual, there is a free circulation of air through said stationary bar which prevents warping and assists the fire.

The operating bar K extends through the front of the furnace and is connected to the lower end of the rocking lever X which has a socket to receive a handle Y and is pivoted to a bracket S fixed to the furnace front. Said bracket is notched as indicated at *s*, and the lever X is also notched on its upper edge, and the notches register when the grate bars are level. A latch Z is pivoted to the side of the bracket S and is arranged to swing down in

the notches and lock the grate in normal position. When it is desired to shake the grate the latch may be swung up and disengaged by the foot, thereby saving the trouble of stooping down in front of the furnace door to pull out a pin or the like, as heretofore.

The various novel features above described produce an efficient and convenient grate free from many of the objections incident to grates of known construction. To remove a grate bar it is simply necessary to rock it over and disconnect it from the connecting bar K and then lift it from its bearings.

I claim:

1. In a grate, the combination of supporting bars having bearings and curved ribs projecting under said bearings, and grate bars having trunnions mounted in the bearings and lugs projecting under said ribs.

2. In a rocking grate, the combination with a bracket having a notch in the top, a shaking lever pivoted on the bracket and connected to the grate bars and having a notch adapted to register with said notch when the grate bars are level, and a latch pivoted to the bracket and arranged to fall in said notches.

In testimony whereof I affix my signature, in presence of two witnesses.

HARRY W. WHELAN.

Witnesses:
H. G. BATCHELOR,
FLORENCE HENDERSON.