

(No Model.)

J. P. THOMAS.  
GRATE.

No. 424,234.

Patented Mar. 25, 1890.

Fig. 1

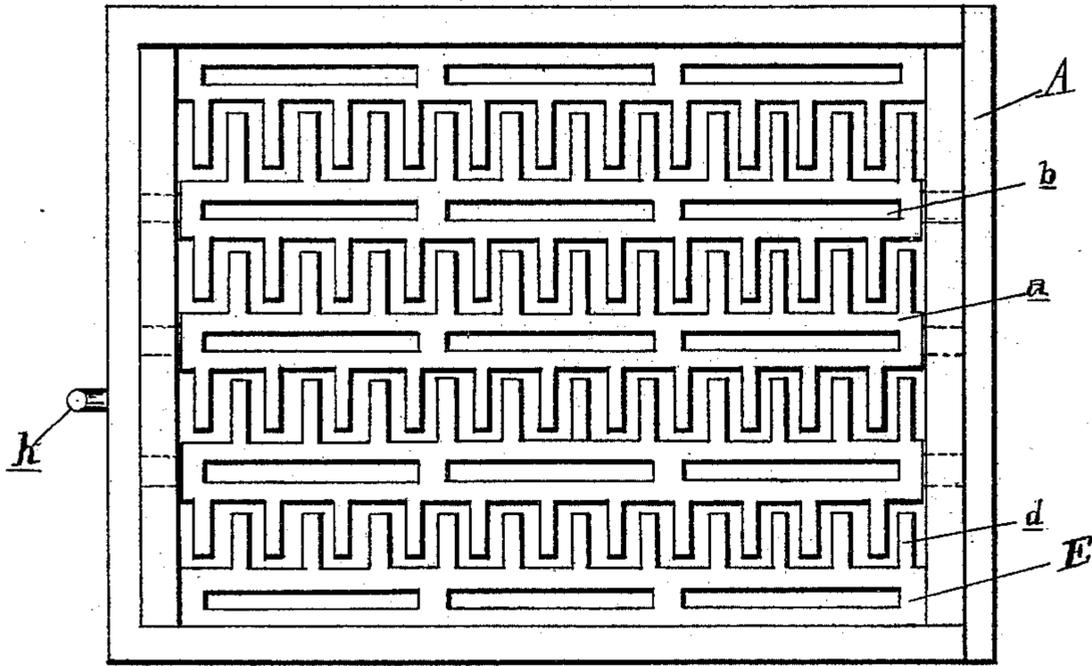


Fig. 2

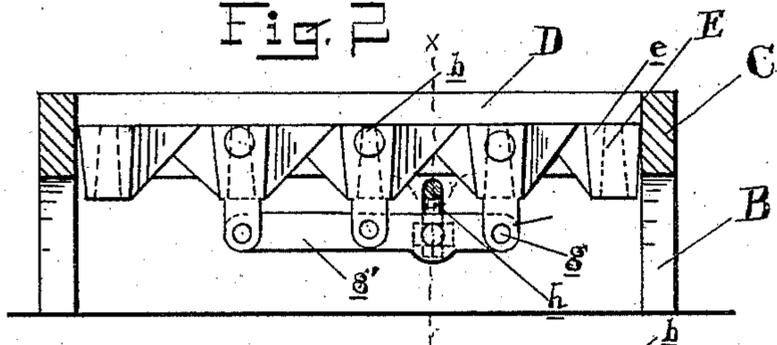


Fig. 3

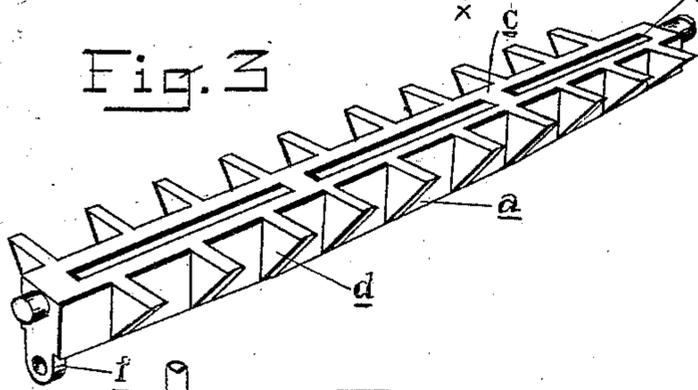
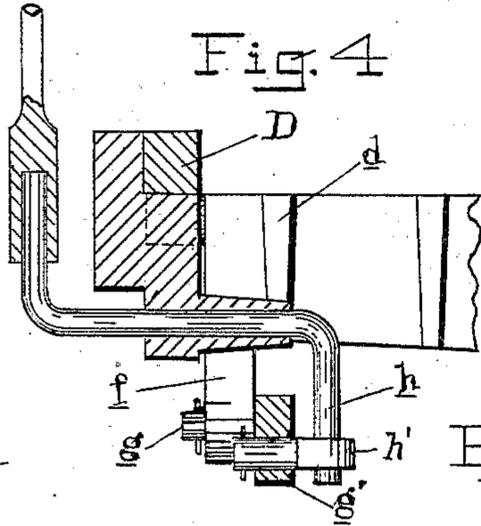


Fig. 4



Witnesses  
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# UNITED STATES PATENT OFFICE.

JOHN P. THOMAS, OF DETROIT, MICHIGAN.

## GRATE.

SPECIFICATION forming part of Letters Patent No. 424,234, dated March 25, 1890.

Application filed September 23, 1889. Serial No. 324,767. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN PETER THOMAS, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Grates, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in grates; and the invention consists in the peculiar construction and arrangement of parts hereinafter described, and definitely pointed out in the claim.

The object of my invention is to provide an easily-operated and strong and durable grate.

In the drawings which accompany this specification, Figure 1 is a plan view of my improved grate. Fig. 2 is an end elevation thereof, with the end of the frame removed. Fig. 3 is a perspective view of one of the grate-bars detached. Fig. 4 is an enlarged section through the line  $xx$  of Fig. 2.

A is the frame, having suitable supports or legs B, which may be secured in the masonry setting of the boiler. This frame is provided at its end with the bearing-pieces C, in which are suitable bearings to receive the ends of the grate-bars, which are held in place by means of the cap D.

In the drawings the three central grate-bars are shown as rocking bars, and consist of the body portion  $a$ , having a central aperture  $b$ , stayed at intervals by the lugs  $c$  and the grate-teeth  $d$ . These grate-teeth are triangular in shape, tapering gradually down to the bottom of the grate-bar, and alternating with each other when placed in position, as shown in Fig. 1.

On the sides of the frame are secured the stationary bars E. These stationary bars consist of the body portion  $e$ , having a longitudinal aperture and teeth the same as the

rocking bars, except that the teeth are applied upon but one side. Each of the rocking bars is provided with a downwardly-projecting lug  $f$ , in which is secured the pivot-pin  $g$ , passing through the link  $g'$ , connecting the three rocking bars together.

$h$  is a double-crank shaking-lever journaled in the frame, and having suitable pivotal connection through the pin  $h'$  with the link  $g'$ .

The body portion of each of the grate-bars is thicker in the middle than at the ends, thereby forming a truss for each bar.

The parts being thus constructed and arranged, they are intended to operate as follows: A fire being built upon the grate in the usual manner, the operator, when he desires to shake the grate, moves the lever  $h$  backward and forward, which rocks the grates and thoroughly breaks up the under part of the fire, thereby shaking the loose parts through and breaking up all cinders which may be formed, it being evident that the spaces between the teeth and through the hollow bar give ample room for the passage of the ashes and cinders through the grate and into the ash-pit beneath.

What I claim as my invention is—

In a grate, the combination, with the rocking bars provided with downwardly-extending arms, of a connecting-rod for said arms, a pin provided with an opening in one end passing through the connecting-rod and adapted to turn freely therein, and a double-crank lever passing through the grate-frame and having its inner end extended into the opening in the pin, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 20th day of August, 1889.

JOHN P. THOMAS.

Witnesses:

P. M. HULBERT,  
ED MCBREARTY.