

No. 717,503.

Patented Dec. 30, 1902.

F. I. JONES.

SECTIONAL GRATE FOR FURNACES.

(Application filed July 31, 1902.)

(No Model.)

Fig. 1.

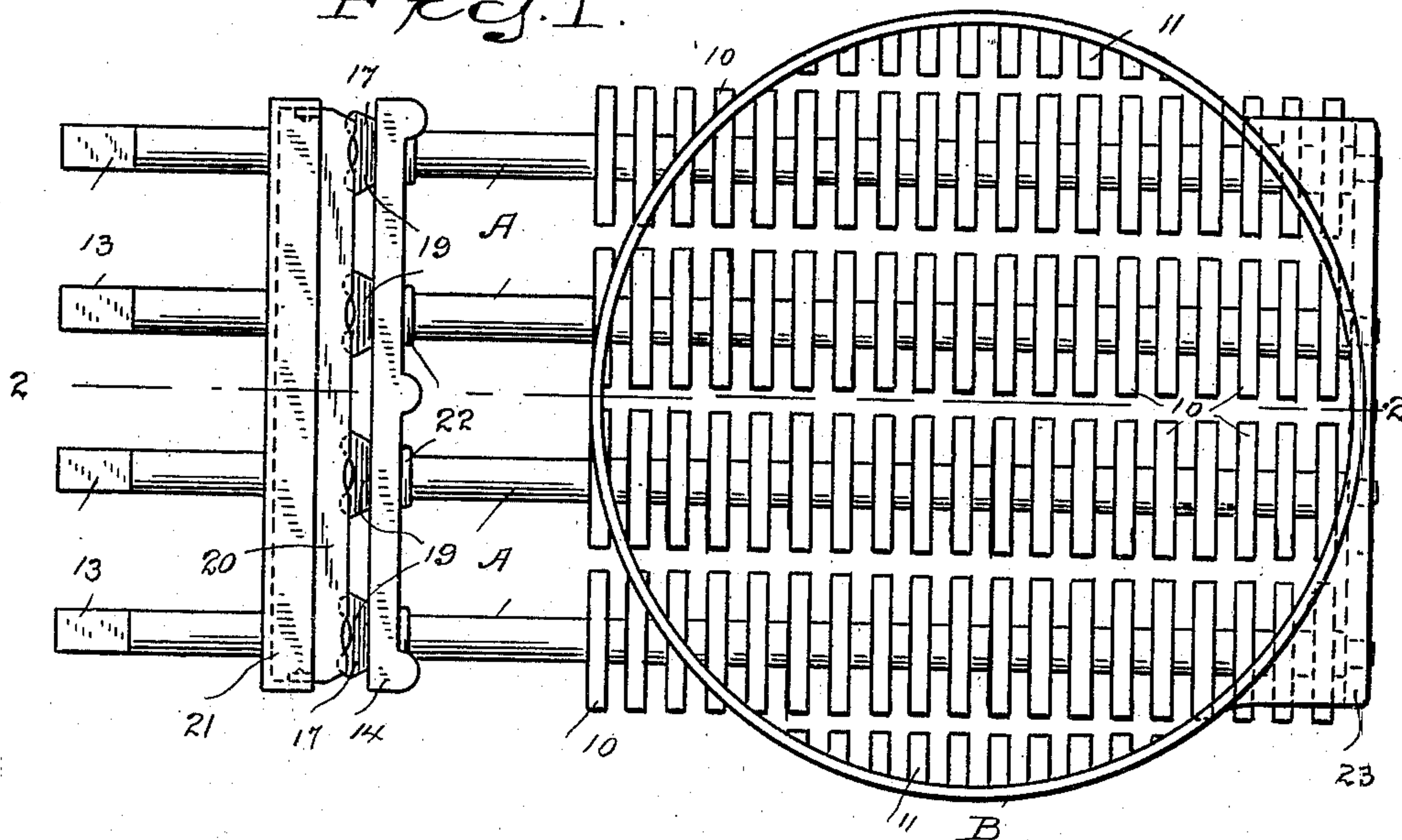


Fig. 2.

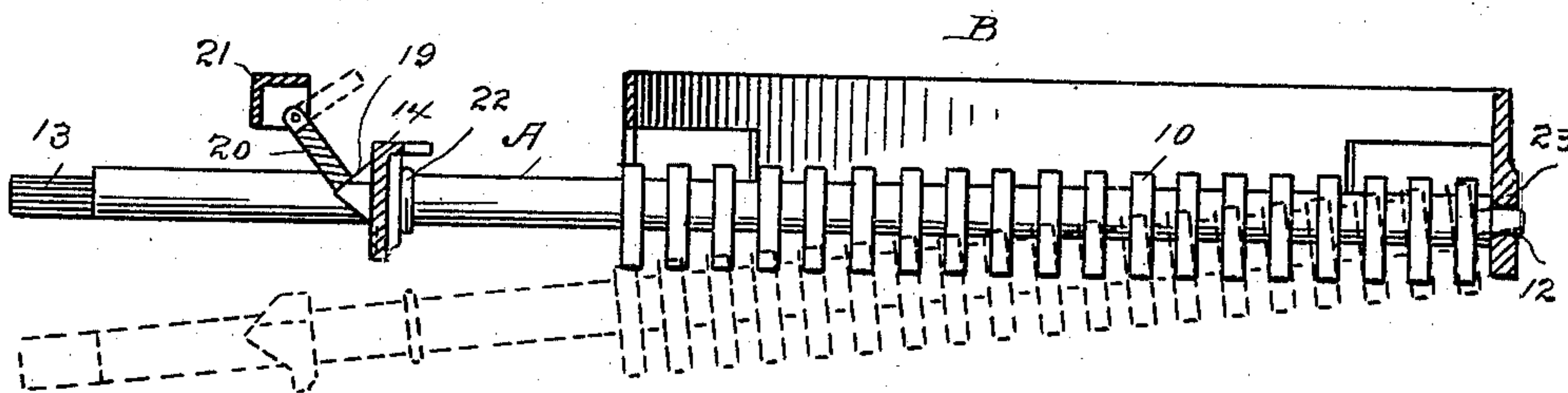


Fig. 3.

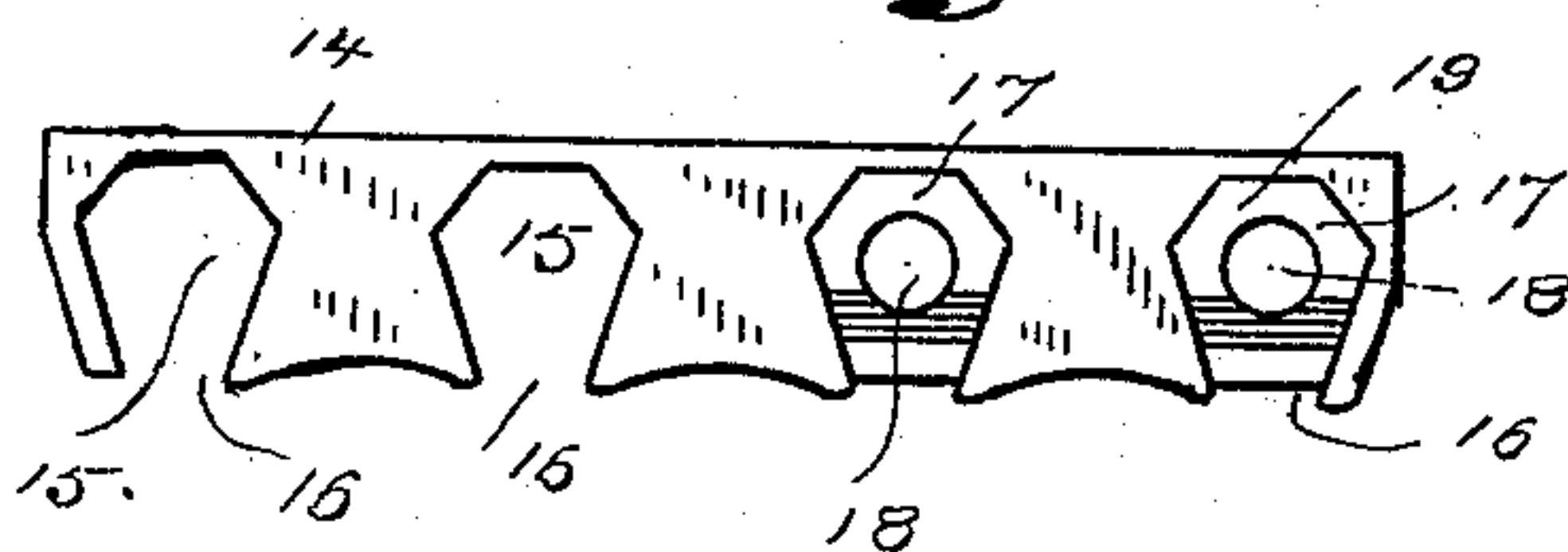
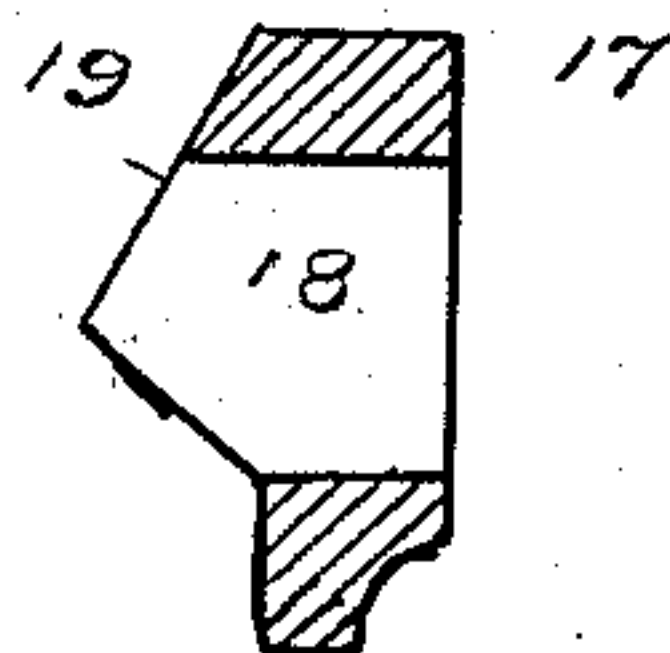


Fig. 4.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

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## SECTIONAL GRATE FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 717,503, dated December 30, 1902.

Application filed July 31, 1902. Serial No. 117,786. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK I. JONES, a citizen of the United States, residing at Norwalk, county of Fairfield, State of Connecticut, have  
5 invented a new and useful Sectional Grate for Furnaces, &c., of which the following is a specification.

This invention relates to furnaces generally without regard to the general structure  
10 of the furnace or the arrangement of hot and cold air reservoirs, air-pipes, smoke-flues, &c.

In furnaces as ordinarily constructed clogging of the gates is a source of serious inconvenience and annoyance. If any portion of a  
15 grate becomes clogged, shaking of the entire grate is prevented, and should repairs to the grate be necessary or even serious clogging occur it is necessary to let the fire go out, remove the contents of the fire-pot, and cool  
20 it off before repairs can be made by even a skilled workman.

In order to provide a grate adapted for use in various styles of furnaces, part of which may be shaken when other parts are broken  
25 or clogged, thus rendering serious clogging practically impossible and enabling an operator to shake some portions of the grate under all conditions, and a part of which may be removed from the furnace and another part  
30 substituted in its place very quickly without the requirement for a specially-skilled workman and without the necessity for removing all the contents of the fire-pot or of cooling the furnace, I have devised the novel sectional grate, of which the following description, in connection with the accompanying  
35 drawings, is a specification, reference characters being used to designate the several parts.

40 Figure 1 is a plan view of my novel grate and the parts of a furnace from which it is suspended detached; Fig. 2, a section on the line 2 2 in Fig. 1, illustrating the mode of suspension and removal of a grate-rod; Fig.  
45 3, an elevation of the locking-plate detached, two locking-blocks being shown in position therein; and Fig. 4 is a detail sectional view, on an enlarged scale, of one of the locking-blocks detached.

50 My novel grate consists, essentially, of independent grate rods or bars A, each of which

is provided with projections 10, which together comprise the supporting-surface of the grate. These projections are preferably  
55 angular plates lying in the vertical plane and having a straight edge normally lying in the horizontal plane, as shown in the drawings, the number and size of the projections depending, of course, upon the judgment of the  
60 manufacturer in view of special kinds of fuel and various other conditions of use. In the present instance I have illustrated a grate consisting of four rods provided with projections 10. These angular projections upon  
65 the rods act when the rods are oscillated in shaking to effectually break up clinker. Corresponding projections 11 may be formed, as may be required, upon the inner face of the  
70 lower ring B of the furnace, which lies directly over the ash-pit and corresponds in diameter with the fire-pot of a furnace. (Not shown.) The rear ends of rods A are adapted  
75 to engage holes 12 in a bracket or lug 23 at the rear of ring B, which may or may not be cast integral with said ring, as preferred. The front ends of the grate-rods are provided  
with angular portions 13 to receive a shaker, each rod being oscillated to shake down the  
fire independently of the others.

The front support of rods A and the means  
80 for effecting the convenient removal of either of the grate-rods independently of the others and without the necessity for emptying the fire-pot is an important feature of my invention.  
85

14 denotes a transverse locking-plate, which may be bolted or otherwise rigidly secured in place in the furnace. This locking-plate is provided with angular recesses 15, having  
90 contracted necks 16 below them, the necks extending to the lower edge of the plate and being of just sufficient size to permit the grate-rods to pass through them.

17 denotes locking-blocks provided with central openings 18, through which the grate-  
95 rods slide freely, said blocks being of suitable shape to pass into the angular recesses and having inclined rear walls 19, which are adapted to be engaged by a swinging bar or  
100 plate 20 to lock the blocks in the recesses, it being, of course, immaterial whether all of the blocks are locked by a single swinging



plate or a separate swinging plate or bar is provided for each block. The swinging plate is shown as pivoted to an angle-piece 21, which is itself bolted or otherwise rigidly secured in the furnace.

22 denotes a rib or collar on each of the grate-rods, which is adapted to rest against the corresponding locking-block in the assembled position, so as to hold the rod from sliding backward.

The mode of putting in a grate-rod is as follows: A locking-block is passed onto the rod from the front end. Then the rod is passed into the furnace and the rear end lifted up and passed into the hole 12 to receive it in bracket 23. The front end of the rod is then raised and passed through the neck 16, leading into one of the angular recesses. The locking-block is then moved forward into the angular recess, as in Figs. 1 and 2, and is locked there by the swinging plate or bar 20, which is allowed to drop down against it. When inserting a grate-rod, the swinging bar or plate may be locked upward out of the way in any suitable manner or may simply rest on the top of the locking-block before it is moved forward. To remove a grate-rod, the operator simply raises the locking plate or bar, moves the locking-block backward on the rod, and then allows the forward end to drop through the neck 16, when it may be drawn outward freely.

Having thus described my invention, I claim—

1. The combination with a grate-rod and means for supporting the rear end thereof, of a locking-plate having an angular opening and a reduced neck through which the rod may pass, a locking-block adapted to slide on the rod and engage the recess and means for retaining the block in the locking position.

2. The combination with a grate-rod having a rib and a bracket adapted to receive the rear end of the rod, of a locking-plate having an angular opening and a reduced neck through which the rod may pass, a locking-block adapted to engage the recess and by which the rib is engaged and means for retaining the block in the locking position.

3. The combination with a grate-rod having a rib, of a bracket adapted to receive the rear end of the rod, a locking-plate having an angular opening and a reduced neck through which the rod may pass, a locking-block adapted to engage the recess and a swinging bar for retaining the block in the locking position, the rib upon the rod engaging the block to hold the rod from sliding backward.

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

FRANK I. JONES.

Witnesses:

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NEIL PIERCE.