

Dec. 26, 1939.

J. K. DUKAS

2,184,292

FURNACE GRATE

Filed Dec. 23, 1938

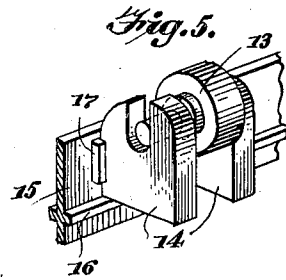
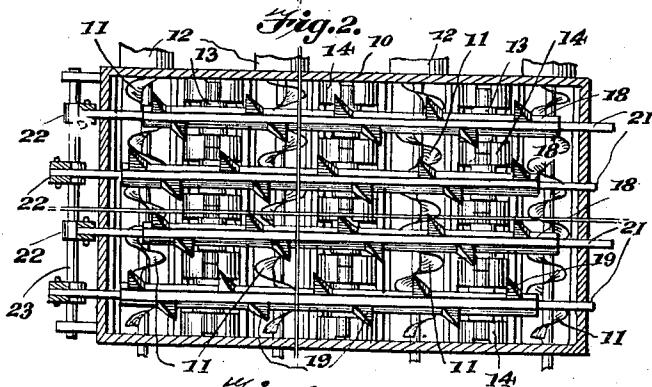
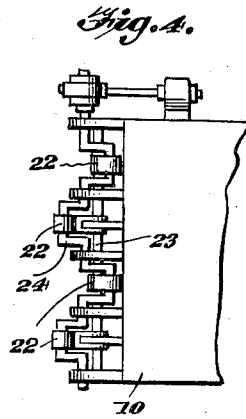
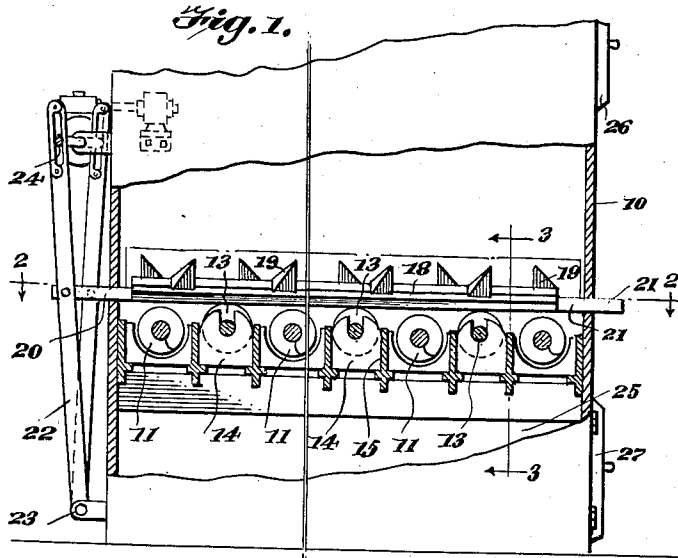
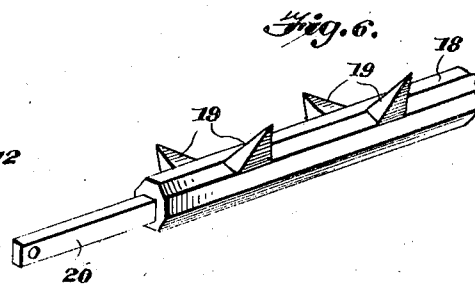
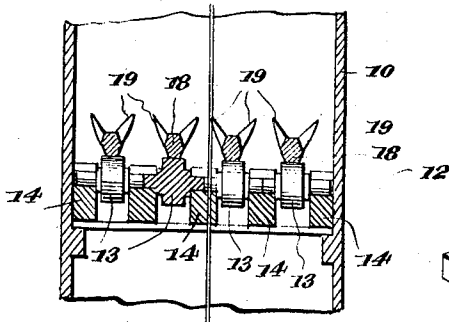


Fig. 3.



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2,184,292

FURNACE GRATE

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Application December 23, 1938, Serial No. 247,519

5 Claims. (Cl. 110—35)

This invention relates to furnace grates, and has for its object the production of a simple and efficient grate which is so constructed as to facilitate the breaking up of cinders or clinkers, whereby the broken particles may be conveyed out from the fire-box to a suitable point of disposal.

A further object of this invention is the production of a simple and efficient grate bar having a plurality of projecting prongs formed thereon, and which are arranged so as to dislodge the ashes which become caked or clinkered, and to facilitate the crushing thereof whereby the removal of the ashes may be facilitated.

Other objects and advantages of the present invention will appear throughout the following specification and claims.

In the drawing:

Figure 1 is a side elevational view of a furnace, certain parts being shown in section;

Figure 2 is a horizontal sectional view taken on line 2—2 of Figure 1;

Figure 3 is a vertical sectional view taken on line 3—3 of Figure 1;

Figure 4 is a fragmentary top plan view of the grate operating mechanism;

Figure 5 is a fragmentary sectional perspective view of a portion of the grate structure showing the manner in which the grate bar supporting rollers are mounted;

Figure 6 is a detail perspective view of one of the agitating grate bars.

By referring to the drawing, it will be seen that 10 designates the furnace which is provided with a plurality of transversely extending conveyors 11, of a type similar to that disclosed in my application Serial Number 242,095, filed November 23, 1938, relating to Furnace grates and operating means therefor, which conveyors are adapted to convey the ashes out through the tubes 12 also similar to the tubes 29 shown in my application above identified. Between the spiral conveyors 11 are mounted a plurality of rollers 13, which rollers are arranged in spaced relation and are supported upon the journal blocks 14, the journal blocks 14 being supported upon the division plates 15, which plates 15 are carried by the sides of the furnace 10 and are supported in any suitable or desired manner. These division plates 15 are provided with longitudinally extending supporting ribs 16 upon which the journal blocks 14 fit and vertically extending ribs 17 are formed upon the division plates 15 to hold the blocks 14 in properly spaced and upright positions.

Grate bars 18 extending longitudinally of the

furnace 10 are slidably mounted in any suitable or desired manner and rest upon the upper faces of the rollers 13, as shown in Figure 3. These grate bars are provided with alternately arranged oppositely extending raker teeth 19, the teeth of each grate bar 18 being spread alternately to the right and left and flaring laterally, as shown in Figures 2 and 3.

Each bar 18 is provided with extending shanks 20 and 21, the shanks 20 being connected to suitable operating levers 22 which are pivoted at their lower ends, as at 23. The bars 18 are connected to the levers 22 in a manner so as to cause the bars to alternately shift in opposite directions, one moving forwardly while the other moves rearwardly in a raking action, and this action is provided through the medium of the crank and link connection 24 similar to that shown in my previous application above identified.

As shown in Figure 1, the longitudinally extending grate bars 18 are located just above the spiral conveyors 11, the spiral conveyors extending transversely of the fire-box, and these grate bars 18 are mounted for forward and rearward sliding movement upon the supporting rollers 13. As the grate bars 18 are reciprocated forwardly and rearwardly, the alternate bars operating in opposite directions, a raking action will be produced through the mechanism of the teeth 19 which will tend to break the cakes or clinkers formed at the bottom of the fire-box, and efficiently crush the clinkers or cakes, whereby the smaller particles may drop down through the lower rollers and upon the conveyors 11, many of the particles being conveyed to the side of the furnace by the spiral conveyors 11 and certain other particles and fine ashes dropping down into the ash-pit 25.

In the form of my invention shown in this application, I prefer to mount the operating mechanism for the grate bars 18 at the rear of the furnace, that is to say so as to be out of the way of the front door 26 and the ash-pit door 27.

It should be understood that certain detail changes in the mechanical structure may be employed without departing from the spirit of the invention, so long as such changes fall within the scope of the appended claims.

Having described the invention, what I claim is:

1. A furnace grate of the class described comprising a plurality of aligned spiral conveyors, a plurality of grate bars extending transversely of the spiral conveyors and above the spiral con-

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veyors, and means for reciprocating the grate bars longitudinally.

2. A furnace grate of the class described comprising a plurality of aligned spiral conveyors, a plurality of grate bars extending transversely of the spiral conveyors and above the spiral conveyors, and means for alternately reciprocating the grate bars longitudinally.

3. A grate of the class described comprising a frame, a plurality of transversely extending spaced spiral conveyors, a plurality of grate bars extending longitudinally and in transverse relation with respect to the spiral conveyors, rollers supporting said grate bars, and means for alternately reciprocating the grate bars transversely of the spiral conveyors.

4. A grate of the class described comprising a frame, a plurality of transversely extending spaced spiral conveyors, a plurality of grate bars extending longitudinally and in transverse rela-

tion with respect to the spiral conveyors, rollers supporting said grate bars, means for alternately reciprocating the grate bars transversely of the spiral conveyors, each grate bar having a plurality of tapering spreading teeth projecting upwardly of the grate bars.

5. A grate of the class described comprising a frame, a plurality of transversely extending spaced spiral conveyors, a plurality of grate bars extending longitudinally and in transverse relation with respect to the spiral conveyors, rollers supporting said grate bars, means for alternately reciprocating the grate bars transversely of the spiral conveyors, journal blocks supporting said rollers, division plates supporting said journal blocks, and ribs carried by the plates for supporting the journal blocks in vertical spaced relation.

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