May 22, 1923. 1,456,138

V. MacKAY

AUXILIARY FEED BLOCK FOR FURNACES

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Fig. 1.

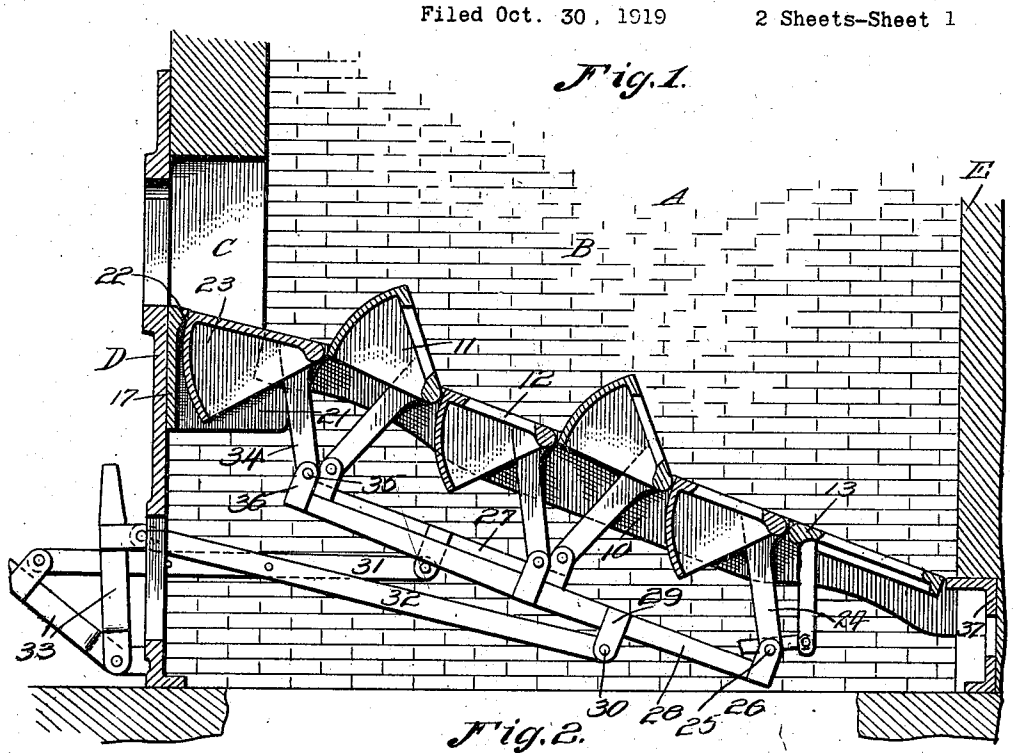


Fig. 2.

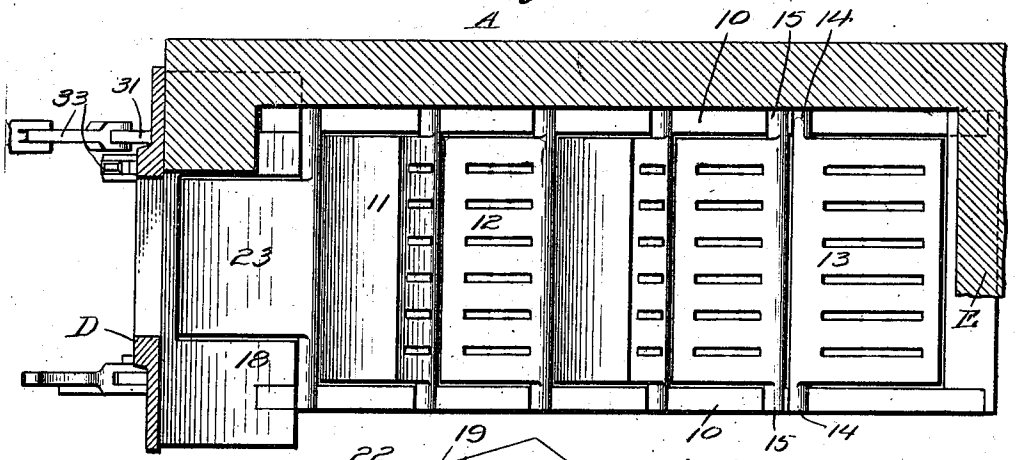
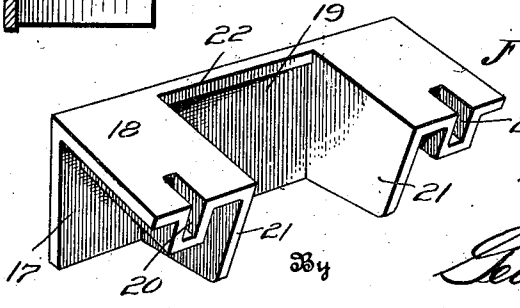


Fig. 3.



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Fig. 4.

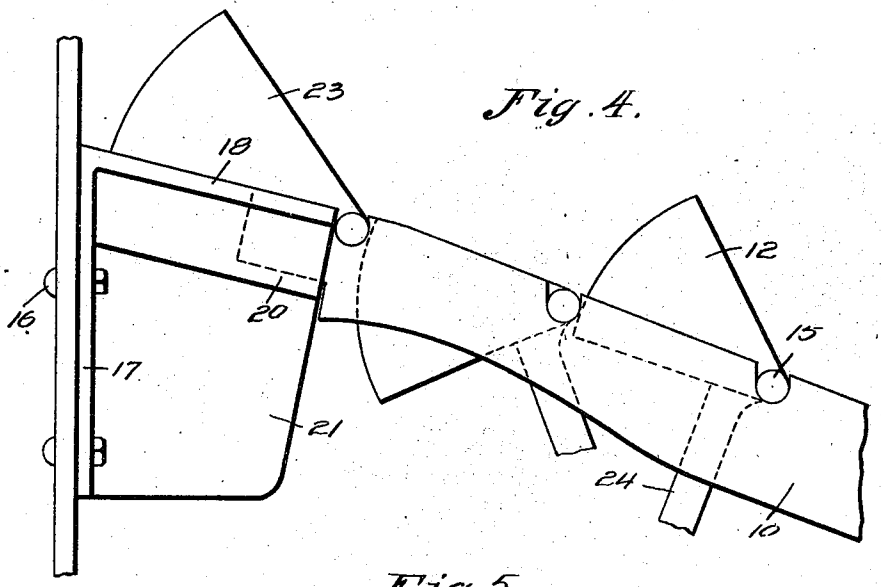


Fig. 5.

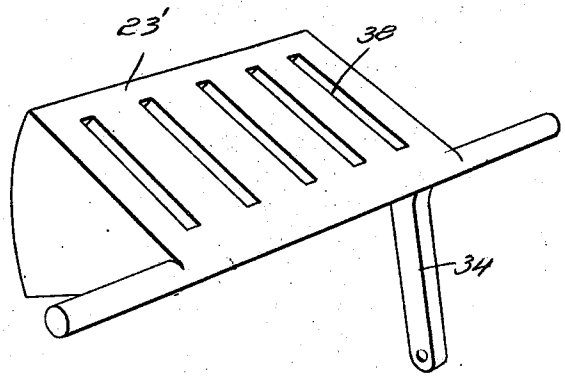
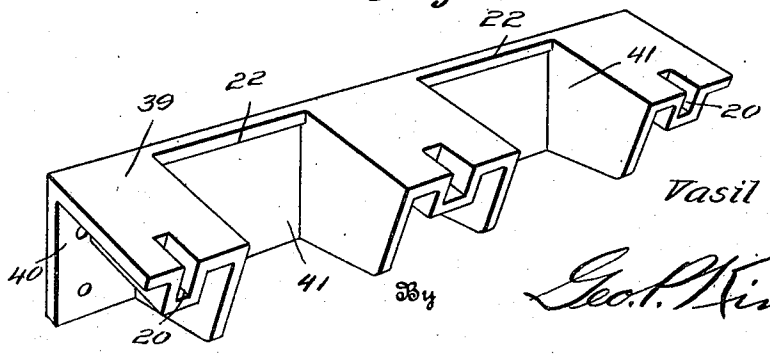


Fig. 6.



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Patented May 22, 1923. 1,456,138

UNITED STATES PATENT OFFICE.

VASIL MacKAY, OF WASHINGTON, DISTRICT OF COLUMBIA.

AUXILIARY FEED BLOCK FOR FURNACES.

Application filed October 30, 1919. Serial No. 334,589.

To all whom it may concern:

Be it known that I, VASIL MacKAY, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new useful Improvements in an Auxiliary Feed Block for Furnaces of which the following is a specification.

The invention relates to a furnace grate supporting structure, and more particularly to the class of dead plates and fuel supporting or feeding members for fuel feeding grates.

The primary object of the invention is the provision of a dead plate of this character, wherein the construction thereof enables the securing of the same in place at the front of a furnace to support the side beams or bars of the fuel feeding grate and to accommodate the fuel supporting or feeding member of novel construction to assure the distribution of the fuel when introduced into a furnace onto the fuel feeding grate therein, thereby eliminating the hand stoking of the fuel supported upon by the feeding grate.

Another object of the invention is the provision of a dead plate and a fuel supporting or feeding member, the same being operated simultaneously with the fuel feeding grate in a furnace to assure the positive and successful handling of the fuel without hand stoking by an operator and a uniform distribution of the fuel upon the grate for perfect combustion and consumption in the operation of the furnace, the dead plate being of novel construction to enable the setting and positioning of the same in the fire chamber of a furnace.

A further object of the invention is the provision of an improvement of the designated character, which is simple in construction, thoroughly reliable and efficient in operation and inexpensive to manufacture and install.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts, as will be hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereunto appended.

In the accompanying drawings:

Figure 1 is a fragmentary vertical sectional elevation through a furnace showing the dead plate and the fuel supporting or feeding member constructed in accordance with the invention associated with a fuel feeding grate.

Figure 2 is a horizontal sectional view showing the grate with the dead plate and the fuel supporting or feeding member in position, the grate and dead plate being in plan.

Figure 3 is a perspective view of the dead plate removed from the furnace.

Figure 4 is an enlarged fragmentary side elevation of the plate fastened to the front wall, the fuel supporting or feeding member and also a portion of the grate.

Figure 5 is a perspective view of a slightly modified form of the fuel supporting or feeding member.

Figure 6 is a perspective view of a slight modification of the dead plate, the same being constructed for use with two fuel supporting or feeding members.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings in detail, particularly Figures 1 and 2 thereof A designates generally a portion of the body of a furnace which as usual is constructed from brick masonary having formed therein a fire chamber B, the front walls being formed with a doorway C and this front wall at its outer side has fitted thereover the usual front plate D, while at the rear fire chamber B is the bridge E of the ordinary well known construction. Arranged interiorly of the fire chamber B within the body A of the furnace is a fuel feeding grate, which includes spaced parallel rearwardly inclined side beams or bars 10 supporting two sets of grate bars 11 and 12, of the character shown, arranged transversely of the furnace, the bars of one set alternating with those of the other, and the bars of each set being connected so that they may be simultaneously rocked independently of the bars of the other set. Arranged at the rear end of the grate is a dumping section 13, the same being adapted to swing downwardly. Each of the grate bars, as well as the dumping section, is provided on its ends with trunnions 14 which are adapted to be received in sockets 15 formed in the top edge of the side beams or bars 10.

Arranged immediately beneath the door way C and constituting the sill thereof is a dead plate which is placed within the brick

masonry at the front of the furnace body A and is preferably bolted as at 16 to the metal front plate, the dead plate being formed with a straight vertical flange 17 and a rearwardly inclined angular portion 18 relative to said flange 17, the portion 18 being cut away to a recess 19 for accommodating a fuel supporting or feeding member hereinafter fully described.

The portion 18 of the dead plate on opposite sides of the recess 19 has formed therein notches 20 constituting seats for the forward ends of the side beams 10 which are removably received therein as is clearly shown in Figures 1 and 2 of the drawing. The recess 19 is formed with side walls 21, while the flange 17 constitutes the front wall of said recess, the flange 17 throughout the extent of the width of the recess 19 being formed at its upper edge with a lip 22 to coact with the prime fuel feeding bar in a manner presently described.

The fuel supporting or feeding member comprises a segmental shaped block or section 23 of substantially the width of the recess 19 so as to protrude within the latter in relatively close relation to the lip 22 on the flange 17 of the dead plate so that when the member is in normal lowered position there is no possibility of the fuel received through the door way C into the fire chamber B sifting through or falling between the lip 22 and the edge of the member.

The grate bars 11 and 12 have formed thereon depending arms 24, which are pivoted at 25 in brackets 26 on links 27 and 28 respectively, which through the medium of brackets 29 connected at 30 with operating rods 31 and 32 respectively, the latter being extended through the front plate D and are pivotally connected to operating levers 33 swingingly supported exteriorly of the body A of the furnace, so that on manual manipulation of the levers 33 the series of grate bars 11 and 12 will be alternately actuated for the feeding of the fuel within the fire chamber B in the body A of the furnace, when the said fuel is fed onto the gate therein.

The fuel supporting or feeding member 23 has formed thereon an arm 34 which is pivoted at 35 in a bracket carried on the forward end of the link 28 so that when the said link is actuated the member 23 will be simultanenously operated with the series of grate bars 12, enabling the fuel initially introduced through the doorway into the fire chamber B to be delivered onto the grate bar of its series adjacent to the fuel supporting or feeding member 23, thus eliminating the necessity of hand stoking the fuel onto the grate, when the said fuel is introduced through the doorway C to the furnace.

The bridge E at the rear fire chamber B in the body A of the furnace has supported therein below the plane of the dead plate a horizontal beam or bearing 37 in which are removably fitted the rear ends of the side beams or bars 10 supporting the grate bars of the grate.

The fuel supporting or feeding member 23 as shown in Figures 1 and 2 of the drawing has its upper supporting surface flat and solid.

In Figure 5 of the drawing there is shown a slight modification of the fuel supporting or feeding member shown at 23′, wherein the upper supporting surface thereof is formed with spaced parallel slots 38, which serve as draft spaces, said member having the slots 38 therein being otherwise identical with the member 23 hereinbefore described.

In Figure 6 of the drawing there is shown a slight modification of a dead plate, wherein the rearwardly inclined angular portion 39 relative to the spaced vertical flange 40 has formed therein spaced recesses 41 for accommodating two fuel supporting or feeding members 23, otherwise the same is identical to the formation of the dead plate shown in detail in Figure 3 of the drawings.

In the operation of the device the fuel will be introduced through the fuel opening, in the front plate, and will be supported upon the supporting or feeding member 23. The two sets of grate bars will be operated, as previously described, so as to feed the fuel towards the rear end of the grate and the fuel supporting or feeding member 23 will be operated simultaneously with the set of grate bars 12 so as to feed the fuel upon the foremost grate bar 11. By the construction disclosed the fuel may be supported and fed on to the grate bars without the necessity of hand stoking.

It is of course to be understood that changes, variations and modifications may be made in the improvement hereinbefore described and illustrated in the accompanying drawings, without departing from the spirit and scope of the invention or sacrificing any of its advantages.

From the foregoing it is thought that the construction and manner of operation of the invention will be clearly understood and therefore a more extended explanation has been omitted.

What is claimed is:

1. In combination with a furnace having a fuel opening therein, a dead plate secured in the furnace adjacent the fuel opening and having a recess therein and a socket on each side of the recess, side beams having their forward ends received in the sockets, a fuel supporting and feeding member pivotally carried by the side beams and received in the recess of the dead plate, grate bars pivotally carried by the side beams, and means for operating the grate bars and fuel supporting and feeding member.

2. In combination with a furnace having a fuel opening therein, a dead plate secured in the furnace adjacent the fuel opening and having a recess therein and a socket on each side of the recess, said recess being of a width equal to the width of the fuel opening, side beams having their forward ends received in the sockets, a fuel supporting and feeding member pivotally carried by the side beams and received in the recess of the dead plate, two sets of grate bars pivotally carried by the side beams, the forward most grate bar being adjacent the fuel supporting and feeding member, means for operating the grate bars of one set in alternation with those of the other set, and means for operating the fuel supporting and feeding member simultaneously with one set of grate bars.

3. A grate structure for furnaces comprising a dead plate secured to the front wall of the furnace, said dead plate having a recess therein and sockets on each side of the recess, a beam secured to the rear wall of the furnace on a level below that of the dead plate, side bars supported at an inclination by the dead plate and beam, said side bars having their upper ends received in the sockets in the dead plate and their lower ends supported by the beam, a fuel supporting and feeding member pivotally carried by the side bars and received in the recess of the dead plate, grate bars pivotally supported by the side bars, and means for operating the fuel supporting and feeding member and grate bars.

In testimony whereof, I affix my signature hereto.

VASIL MacKAY.