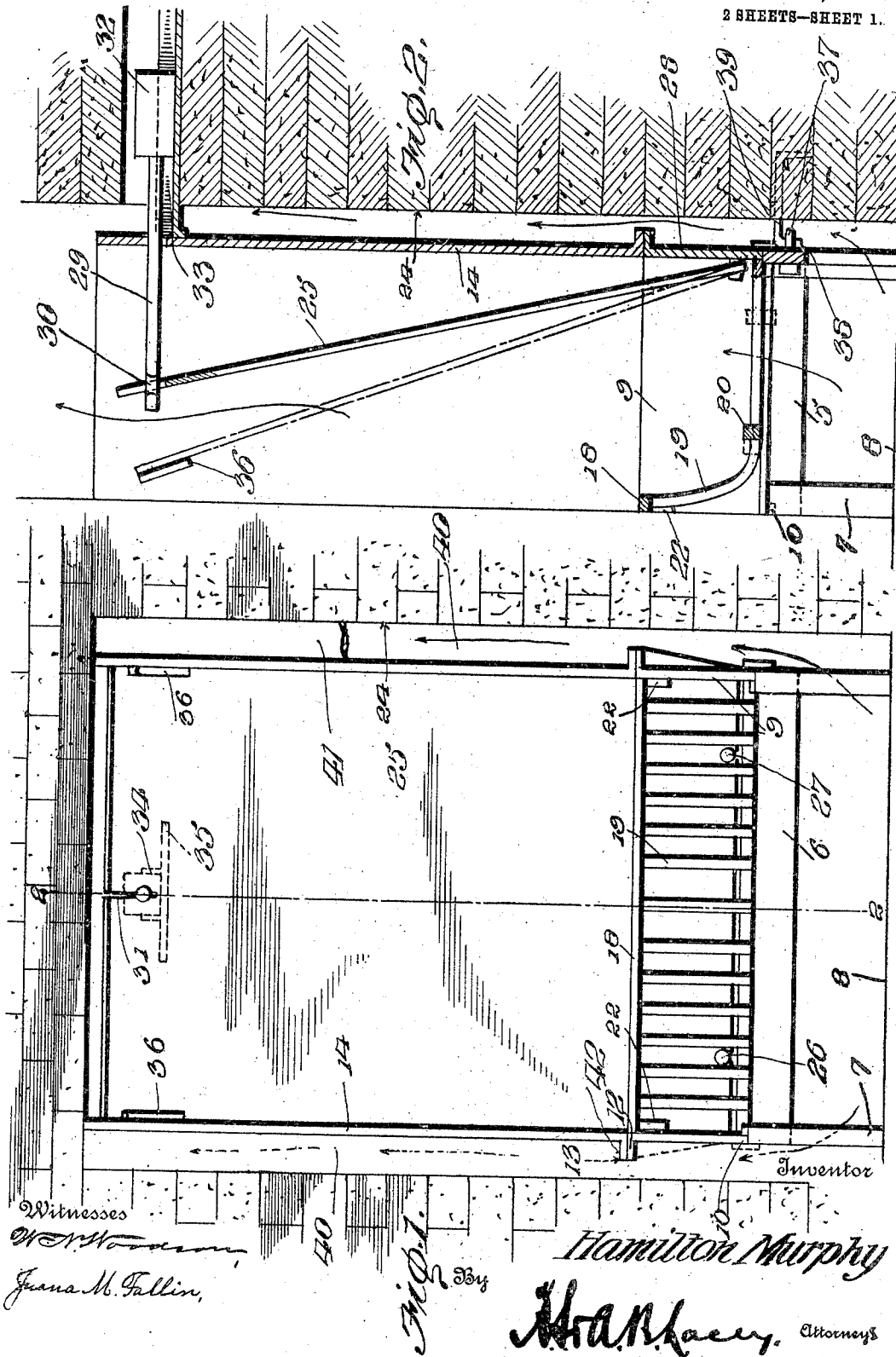


APPLICATION FILED AUG. 4, 1909.

Patented Mar. 1, 1910.

2 SHEETS--SHEET 1.



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GRATE FURNACE.
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951,020.

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2 SHEETS—SHEET 2.

Fig. 4.

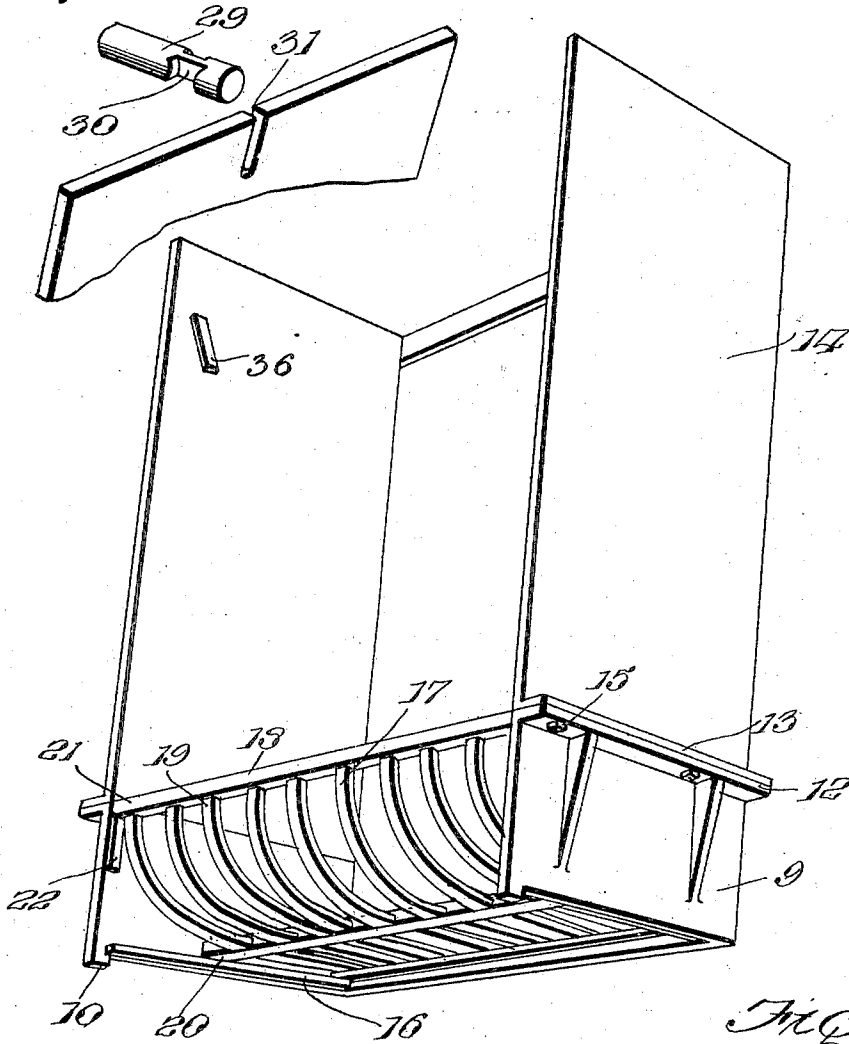
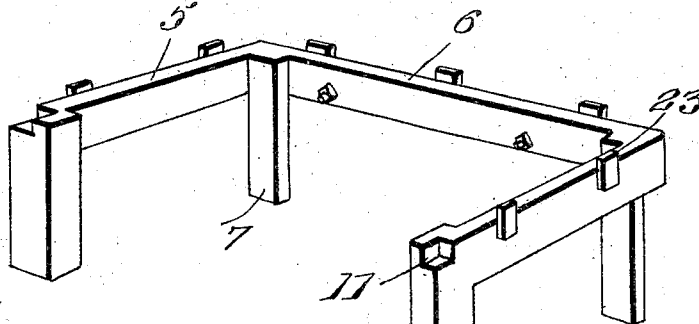


Fig. 3.



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UNITED STATES PATENT OFFICE.

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GRATE-FURNACE.

951,020.

Specification of Letters Patent.

Patented Mar. 1, 1910.

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To all whom it may concern:

Be it known that I, HAMILTON MURPHY, a citizen of the United States, residing at Jerusalem, in the county of Monroe and State of Ohio, have invented certain new and useful Improvements in Grate-Furnaces, of which the following is a specification.

This invention relates to open heaters or grates for fire places and has for its object to provide a strong, durable and thoroughly efficient device of this character, the construction of which is such that a maximum amount of heat is obtained with a minimum consumption of fuel.

A further object is to provide a grate, in which the usual fire brick or lining is dispensed with, provision being made for the passage of air between the fire box and the adjacent walls of the chimney flue, thus to assist in preventing the metal constituting the fire box from burning out when subjected to the intense heat of the incandescent bed of fuel.

A further object is to provide means for deflecting the heat laterally into a room or other inclosure, and means for adjusting the deflecting means so as to control the passage of the products of combustion through the chimney.

A further object is to provide an open heater including a supporting stand having a fire box detachably secured thereto and provided with a removable grate, suitable attaching members or hooks being carried by the supporting stand for detachably securing the heater within the fire place.

A still further object of the invention is generally to improve this class of devices so as to increase their utility, durability and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a front elevation of an open heater constructed in accordance with my invention; Fig. 2 is a vertical sectional view taken on the line 2—2 of Fig. 1, the deflector

plate being shown in dotted lines in a position to direct the heat laterally into a room; Fig. 3 is a perspective view of the supporting stand and fire box, the fire box, grate and tubular extension being shown detached from the stand in order to more clearly illustrate the construction of the parts; Fig. 4 is a detail perspective view of the upper portion of the deflector plate showing the manner of attaching the drag bar thereto.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The open heater forming the subject matter of the present invention comprises a supporting stand or base including spaced transverse bars 5 connected at their rear ends by a longitudinal bar 6 and provided with depending legs 7 adapted to rest on the base of the fire place, indicated at 8.

Mounted on the supporting stand or base is a fire box 9, the latter being preferably formed of metal and having its side walls provided with depending lugs 10 adapted to enter correspondingly shaped recesses 11 formed in the side bars 5 of the supporting stand or base, as shown.

The upper portion of the fire box 9 is provided with a laterally extending flange 12 which engages a corresponding flange 13 formed on a casing member or extension 14, there being registering perforations formed in the flanges 12 and 13 for the reception of bolts or similar fastening devices 15 by means of which the casing or extension 14 may be detachably secured to the fire box.

Surrounding the interior walls of the fire box 9 at the lower portion thereof, and preferably formed integral with the fire box, is a marginal rib or flange 16 which forms a support for the detachable grate, indicated at 17. The grate 17 comprises a front bar 18 having a plurality of spaced grate bars 19 secured to or formed integral therewith, with their rear ends resting on the adjacent supporting rib or flange 16, the curved grate bars 19 being reinforced and strengthened by the provision of an intermediate connecting bar 20 resting on the flange 16 at the side walls of the fire box 9.

The forward ends of the grate bars 19 are curved upwardly, while the terminal grate bars are spaced from the opposite ends of the connecting bar 18 to form terminal portions 21 adapted to rest on suitable sup-

porting lugs 22 secured to or formed integral with the interior faces of the side walls 9.

Thus it will be seen that the grate 17 may be readily placed in position within the fire box 9 or removed therefrom when it is desired to effect any necessary repairs to the grate.

As a means for preventing accidental displacement of the fire box 9 with respect to the supporting stand, the transverse and longitudinal bars 5 and 6 of the latter are formed with a plurality of spaced vertically disposed lugs 23 adapted to bear against the exterior walls of the fire box, as shown, the front of the supporting stand, fire box and extension being open so as to permit ready access to the incandescent bed of fuel on the grate.

Attention is here called to the fact that the side walls of the fire box 9 and extension 14 are spaced from the interior walls of the chimney flue 24 so as to permit the free circulation of air between the fire box and chimney flue, thus to prevent the intense heat of the incandescent bed of fuel on the grate from burning out the metal constituting the fire box, such a construction rendering the employment of the usual fire brick or lining for the grate unnecessary.

Pivotaly mounted for tilting movement in the casing or extension 14 of the fire box, is a plate or deflector 25 having its lower transverse edge provided with spaced slots 26 which receive laterally extending pins 27 carried by the rear wall 28 of the fire box and which form the pivotal axis of the deflector plate 25, as shown, said pins being provided with enlarged heads so as to prevent accidental displacement of the plate 25 when the latter is moved to different positions of adjustment.

As a means for securing the plate 25 in different positions of adjustment, there is provided a friction drag comprising a rod 29 having one end thereof provided with oppositely disposed recesses defining a reduced neck 30 adapted to enter a correspondingly shaped slot 31 formed in the upper transverse edge of the plate 25.

The rear end of the rod 29 is provided with a terminal weight 32, which latter is slidably mounted in a trough 33, embedded in or otherwise secured to the adjacent wall of the chimney.

The trough 33 is formed by spaced guide flanges 34 extending vertically from a plate 35, the latter being fastened in any suitable manner to the walls of the chimney, as before stated.

Thus it will be seen that when the plate 25 is in the dotted line position shown in Fig. 2 of the drawings, a large portion of the heat from the bed of fuel in the grate will be deflected laterally into the room or other

inclosure, and when the plate is in the full line position shown in Fig. 2 the products of combustion may pass up the chimney in order to create a draft through the bed of fuel when necessary, the frictional engagement of the weight 32 on the trough 33 serving to hold the plate 25 in adjusted position.

An inclined lug 36 is preferably secured to the interior walls of the extension 14 on each side thereof for the purpose of limiting the forward tilting movement of the deflector 25.

In order to detachably secure the heater within the fire place, the supporting stand thereof is preferably provided with spaced eyes 37 adapted to receive the angular terminals 38 of suitable anchoring members or hooks 39, the opposite ends of the hooks being embedded in or otherwise secured to the adjacent wall of the chimney, as best shown in Fig. 2 of the drawings.

The fire place is preferably surrounded by a metallic face-plate or frame 41, which latter forms a closure for the air passages 40, there being transverse recesses 42 formed in the casing 40 and adapted to receive the flanges 12 and 13 of the fire box and extension 14 respectively. Thus it will be seen that by releasing the anchoring members or hooks 39 and imparting a slight forward movement to the fire box, the latter together with the supporting stand and extension 14, may be readily removed from the fire place and positioned in another fire place when desired, while by disengaging the grate 17 from the supporting lugs 22 and flange 16, the latter may be removed from the fire box in order to effect any necessary repairs thereto.

Having thus described the invention, what is claimed as new is:

1. A device of the class described including a supporting stand, a fire box mounted on the stand, a casing resting on the fire box, a removable grate disposed within said fire box, a horizontally disposed trough, a deflector plate pivotaly mounted for tilting movement within the casing, and a rod having one end thereof operatively connected with the upper end of the deflector plate and its other end extended through the adjacent wall of the casing and provided with a weight slidably mounted in said trough.

2. A device of the class described including a supporting stand, having a plurality of spaced lugs extending vertically therefrom, a fire box resting on the supporting stand and bearing against said lugs, a casing detachably secured to the fire box, a grate disposed within the fire box, pins extending laterally from one wall of the fire box, a deflector plate pivotaly mounted for lateral movement within the casing and having its lower edge provided with spaced recesses to accommodate the pins, a horizontally dis-

posed trough, and a rod having one end thereof operatively connected with the upper end of the deflector plate and its other end provided with a weight slidably mounted in said trough.

3. A device of the class described comprising a supporting stand having spaced lugs extending vertically therefrom and provided with oppositely disposed sockets, a fire box resting on the stand and provided with depending lugs adapted to enter the sockets in the stand, a casing carried by the fire box, a grate disposed within the fire box, a deflector plate pivotally mounted for tilting movement within the casing, a friction drag operatively connected with the upper end of the plate for supporting the plate in different positions of adjustment, and means for limiting the forward tilting movement of said deflector plate.

4. A device of the class described including a supporting stand having oppositely disposed sockets formed therein, a fire box resting on the supporting stand and having its lower edge provided with depending lugs entering said sockets and its upper edge provided with a laterally extending flange, a casing having a corresponding flange adapted to engage the flange on the fire box, lugs secured to the end walls of the fire box, a grate disposed within the fire box and resting on said lugs, pins extending laterally from the fire box at the rear of the grate, a deflector plate pivotally mounted for lateral movement on said pins, and a friction drag operatively connected with the upper end of the deflector plate for securing the latter in different positions of adjustment.

5. The combination with a fire place, of a supporting stand disposed within the fire place, a fire box resting on the stand and spaced from the interior walls of the fire place to produce an air passage, a casing detachably secured to the fire box and also spaced from the interior walls of the fire place, a grate seated within the fire box, a deflector plate having its lower end pivotally mounted in the fire box, a trough, and a rod having one end thereof operatively connected

with the upper end of the deflector plate and its other end provided with a weight adapted to frictionally engage the walls of the trough.

6. The combination with a fire place, of a supporting stand disposed within the fire place and provided with spaced eyes, a fire box resting on the stand and spaced from the interior walls of the fire place to form an intermediate air passage, a casing detachably secured to the fire box, a grate disposed within the fire box, a deflector plate pivotally mounted for lateral movement in the casing above said grate, a horizontally disposed trough, a rod operatively connected with the deflector plate and provided with a weight slidably mounted in the trough and constituting a friction drag, and anchoring devices engaging the eyes on the supporting stand and having portions thereof embedded in the walls of the fire place.

7. The combination with a fire place having a face plate provided with transversely alined recesses, of a supporting stand disposed within and resting on the base of the fire place, a fire box supported by the stand, a casing resting on the fire-box, a removable grate disposed within the fire box, spaced pins extending inwardly from the rear wall of the fire box, a deflector plate having its lower edge provided with spaced openings adapted to receive the pins and its upper end provided with an opening, a trough, and a rod having one end thereof provided with oppositely disposed recesses defining a reduced neck adapted to enter the opening in the upper end of the deflector plate, and its other end provided with a weight slidably mounted in the trough, said fire box and casing being provided with laterally extending flanges adapted to enter the recesses in the face plate of the fire place.

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

HAMILTON MURPHY. [L. s.]

Witnesses:

MINERVA MURPHY,
L. W. JONES.