J. WALP.

GRATE.

APPLICATION FILED NOV. 11, 1909.

980,370. Patented Jan. 3, 1911.

Fig. 1.

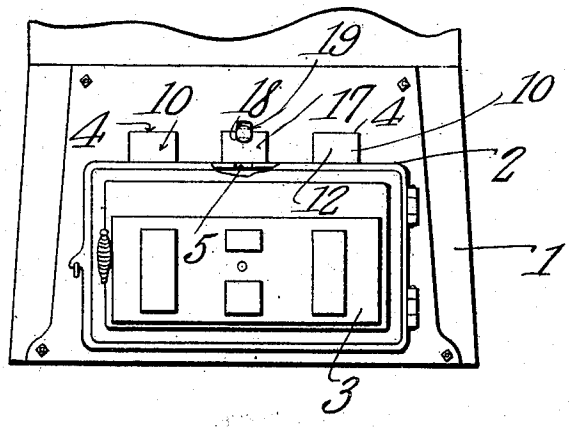


Fig. 2.

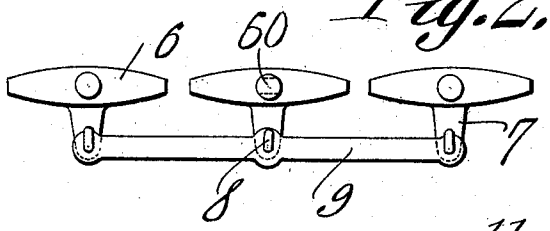
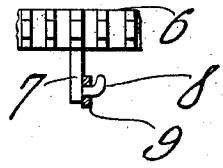


Fig. 3.



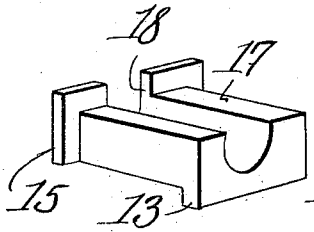


Fig. 4.

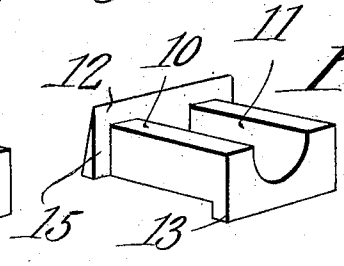


Fig. 5.

Fig. 6.

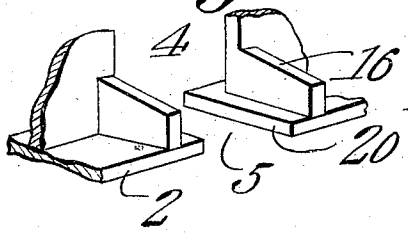
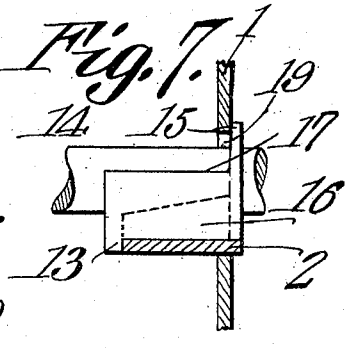


Fig. 7.



Inventor

James Walp.

By C. A. Snow & Co.

Attorneys

Witnesses

E. J. Clement

R. K. Bishop

UNITED STATES PATENT OFFICE.

JAMES WALP, OF ALLENTOWN, PENNSYLVANIA, ASSIGNOR TO CLARA C. WALP, OF ALLENTOWN, PENNSYLVANIA.

GRATE.

980,370. Specification of Letters Patent. **Patented Jan. 3, 1911.**

Application filed November 11, 1909. Serial No. 527,478.

To all whom it may concern:

Be it known that I, JAMES WALP, a citizen of the United States, residing at Allentown, in the county of Lehigh and State of Pennsylvania, have invented a new and useful Grate, of which the following is a specification.

This invention relates to improvements in grates and relates particularly to grates for heating furnaces, ranges and similar heating apparatus.

The object of the invention is to provide means whereby the grate bars may be readily disconnected and removed from the base of the furnace when repairs are necessary. This object and such other incidental objects as will hereinafter appear are attained by the use of the device illustrated in the accompanying drawings, and the invention consists in certain novel features of the same which will be hereinafter first fully described and then particularly pointed out in the appended claims.

In the drawings, Figure 1 is a front elevation of the base of a furnace equipped with my invention. Fig. 2 is an end view of the grate removed from the furnace. Fig. 3 is a detailed side elevation of one of the grate bars. Figs. 4 and 5 are detail perspective views of the front bearings for the grate bars. Fig. 6 is a detail perspective of a portion of the furnace front looking at the same from the inner side. Fig. 7 is a detail side elevation of one of the bearings in position.

The base 1 of the furnace may be of any desired size or construction and is provided with the usual door frame 2, upon which is mounted the door 3 closing the ash pit in the usual manner. In the front of the furnace, just above the door frame, are three openings 4 in which are removably fitted bearings for the front ends of the grate bars. The door frame 2 extends across the bottoms of these openings and furnishes a support for the bearing blocks fitted therein and at its center the said door frame is provided with a slot 5 which will permit the shank of the central grate bar to drop when the bearing block has been removed so that the grate bar may be removed from the ash pit, it being understood that the central grate bar has a long shank 60 which projects through the front of the furnace in order to be engaged by any suitable implement for shaking or rocking the grate. In the form of the invention illustrated, the grate is composed of three grate bars 6, (the exact number of the bars, however, being immaterial) each of the grate bars being provided with a depending arm 7 on the front side of which, at the lower end thereof, is an upturned hook 8 adapted to be engaged by a link 9 so that the said grate bars will be connected in such a manner as to rock simultaneously. This construction provides a positive connection between the several grate bars so that the motion of the central grate bar will be transmitted directly to the side bars and at the same time facilitates the making of repairs inasmuch as it is necessary merely to lift the connecting link 9 from its engagement with the hooks 8 in order to disconnect the grate bars. Ordinarily the link will remain in engagement with the hooks inasmuch as the upturned ends of the hooks prevent the link sliding therefrom but will not prevent the ready detachment of the link when the same is manipulated by the workman.

The rear ends of the shanks of the grate bars are supported in suitable bearings formed in the wall of the ash pit and as these bearings are the ordinary sockets and form no part of my invention I have deemed it unnecessary to illustrate the same. The front end of the shank of each of the side grate bars is supported by a bearing block 10 which is fitted in the side opening 4 in the furnace front and consists of a semi-cylindrical bearing portion or body 11 and a closed front plate or hood 12 which is adapted to fit against the furnace front and entirely close the opening 4, as will be readily understood. The semi-cylindrical body 11 passes inward through the opening 4 to receive the front end of the shank and the underside of the said body is in the same plane with the lower edge of the hood 12 so that the bearing block will rest upon the upper side of the door frame and be thereby supported within the opening 4 in position to receive the end of the shank. In order to prevent the accidental withdrawal of the bearing block, a lip 13 is formed on the under side of the body at the inner end of the

same and is adapted to engage the inner edge of the door frame, as will be readily understood, while in order to permit the block to be removed when necessary, the sides of the block do not extend to the top of the opening in which it is placed but sufficient play between the several parts is provided to permit the block to be rocked on its lower front edge or corner so that the lip or flange 13 may clear the inner edge of the door frame 2 after which the block may be drawn forward through the opening. The hood 12 projects slightly beyond the edges of the body portion so as to present flanges 15 which will engage against the furnace front and thereby prevent the block being pushed too far into the furnace. The furnace front is provided on its inner side at the edges of the openings 4 with brackets or lugs 16 which form guides or side supports for the bearing blocks to prevent lateral movement of the same while they are being inserted into or withdrawn from the openings 4 and also to prevent vibration of the same when the grate is being manipulated to shake down the ashes from the fire. The central bearing block 17 shown in Fig. 4 is provided with an open front instead of the closed hood 12 shown in the bearing blocks for the side grate bars and in order that the long shank of the central grate bar may project through the said block and in order that the said block may be removed from its engagement with the shank to permit the removal of the said grate bar the opening in the front of the said bearing extends through the top of the same, as shown at 18. In order to permit the central block 17 to be rocked and removed as above described, the shank 60 of the long grate bar must first be raised, and to permit this the furnace front has a notch 19 above the slot 5. The latter is just wide enough to permit the shank of the grate bar 60 to pass therethrough, but is narrower than the base of the bearing block 17 so as to provide ledges or ribs 20 upon which the said bearing block will be supported when in position.

It is thought the advantages of my invention will be readily appreciated from the foregoing description, taken in connection with the accompanying drawings. When repairs are necessary and the grate bars, or any one of the same, must be removed it is only necessary to withdraw the bearing blocks and disengage the connecting link from the hooks on the under sides of the grate bars after which the central grate bar may be swung downward so as to carry its long shank through the opening in the door frame. Then the said grate bar may be drawn forward and downward so as to be brought out through the door opening to the ash pit. The side grate bars can also be readily removed in the same manner and any bar can be removed without disturbing any other bar.

The device is extremely simple in its construction and will add nothing to the cost of furnaces as now constructed.

Having thus described my invention, what I claim is:

1. The combination of a furnace front having a plurality of openings therein, brackets within the furnace front at the sides of said openings, bearing blocks inserted in said openings between the brackets and provided at their inner ends with depending lips adapted to engage over the rear edges of the brackets, and grate bars having their front ends journaled in said blocks.

2. The combination of a furnace front having a plurality of openings therein, interior brackets at the sides of each opening, a door frame secured in the furnace front and extending across said openings and beneath said brackets, bearing blocks inserted in said openings between the brackets and resting on the door frame, one of said blocks having an opening through its front side and the remaining blocks having closed front sides, grate bars having their front ends fitted in said blocks, one of said bars extending through the opening in the front side of one of the blocks, and a detachable connection between the grate bars.

3. The combination with a furnace front, and a door frame therein, the furnace front being provided with openings immediately over the door frame and the latter with a central slot narrower than the central opening and registering with it so as to produce side ledges; of bearing blocks resting upon the door frame within the side openings and one of them upon said ledges in the central opening and all provided with flanges at their front ends engaging the front side of the furnace front.

4. The combination of a furnace front having openings therein and a notch above the central opening, a door frame extending across the lower sides of the said openings and having a central slot, brackets on the inner side of the furnace front at the side edges of the said openings, and bearing blocks fitting between the said brackets and supported by the door frame.

5. The combination of a furnace front having openings therein and a notch above the central opening, a door frame extending across the lower sides of sai dopenings and having a central slot, brackets on the inner side of the furnace front at the side edges of the said openings, and bearing blocks inserted through said openings and resting

on the door frame, the sides of the blocks bearing against said brackets and the blocks being provided at their inner ends with depending flanges engaging the inner edge of the door frame and at their front ends with lateral flanges bearing against the front face of the furnace front.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JAMES WALP.

Witnesses:
C. W. NAGLE,
FRANK E. WETZEL.