No. 645,769. Patented Mar. 20, 1900.

# H. J. WARREN & C. NORDELL.

## FIRE BOX FOR STOVES, RANGES, &c.

(Application filed Mar. 10, 1899.)

(No Model.) 2 Sheets—Sheet 1.

*Fig. 1.*

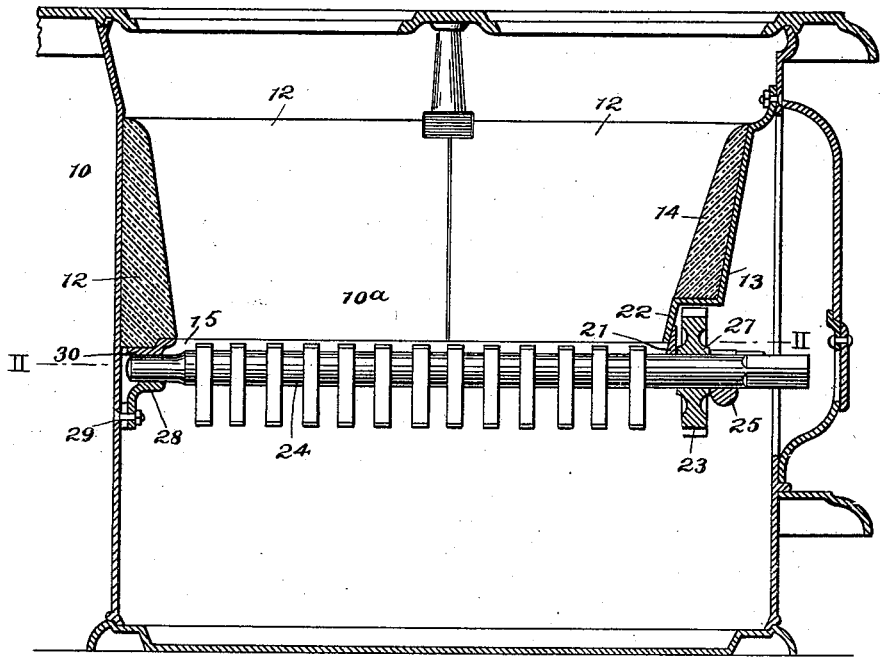


*Fig. 2.*

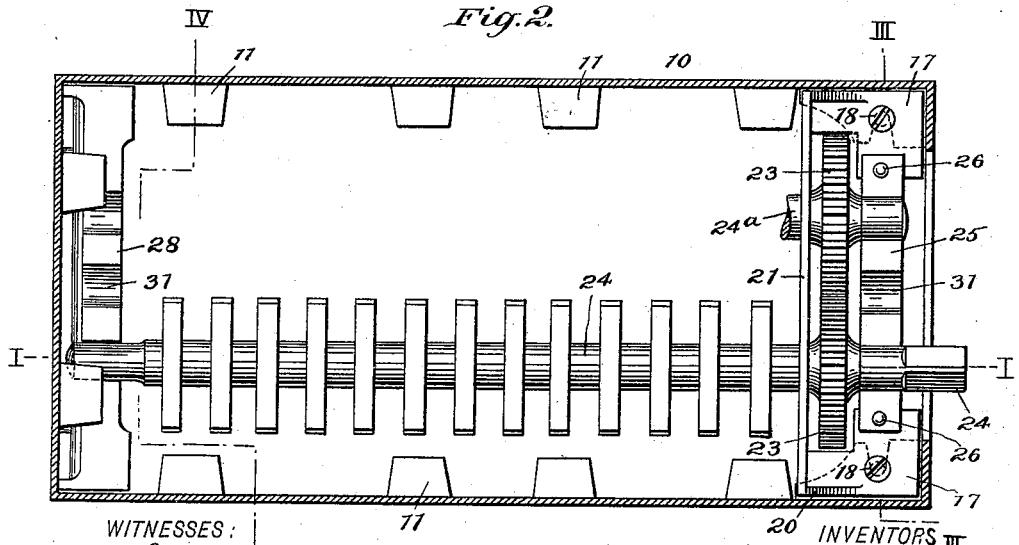


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*Fig. 3.*

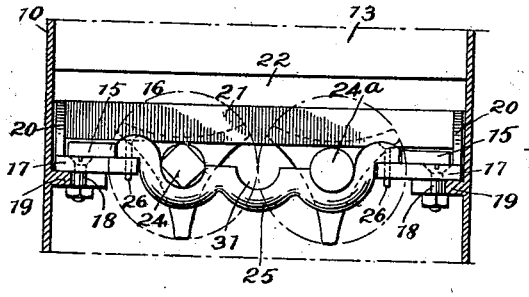



*Fig. 4.*

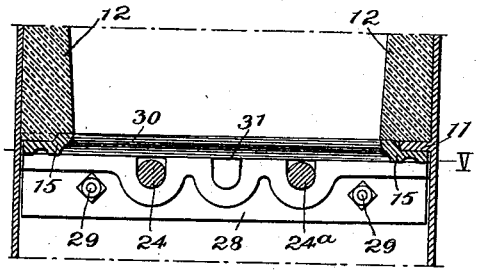



*Fig. 5.*

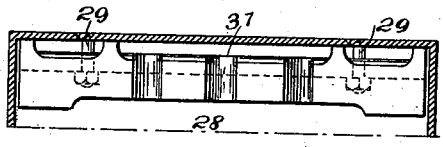
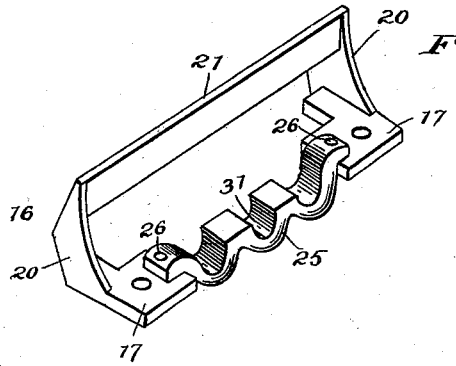



*Fig. 6.*

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# UNITED STATES PATENT OFFICE.

HENRY J. WARREN AND CARL NORDELL, OF STAMFORD, CONNECTICUT, ASSIGNORS TO THE STAMFORD FOUNDRY COMPANY, OF SAME PLACE.

## FIRE-BOX FOR STOVES, RANGES, &c.

SPECIFICATION forming part of Letters Patent No. 645,769, dated March 20, 1900.

Original application filed July 11, 1898, Serial No. 685,613. Divided and this application filed March 10, 1899. Serial No. 708,592. (No model.)

*To all whom it may concern:*

Be it known that we, HENRY J. WARREN and CARL NORDELL, of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Fire-Boxes for Stoves, Ranges, &c., of which the following is a full, clear, and exact description.

This invention relates to fire-boxes, but more particularly to fire-boxes for ranges and cooking-stoves, such as disclosed in our pending application, Serial No. 685,613, filed July 11, 1898, of which this application is a division.

The primary object of the invention is to provide simple and efficient means whereby the grates or grate-sections and the parts supporting the same may be readily removed for repairs or for the insertion of other parts in lieu thereof, which when in position will be easily accessible to permit the parts to be inspected and which will properly hold the fuel to prevent injury to the parts as far as possible.

Other objects are to provide simple means by which interchangeable grate bars or sections may be used and which will permit the parts to readily and properly expand.

The invention will be hereinafter more particularly described with reference to the accompanying drawings, which form a part of this specification, and then pointed out in the claims at the end of the description.

In the drawings, wherein similar figures of reference indicate similar parts, Figure 1 is a vertical sectional view, partly in elevation, of one form of range with the invention applied thereto, the section being taken on the line I I of Fig. 2. Fig. 2 is a sectional plan on a larger scale, partly broken away, taken on the line II II of Fig. 1. Fig. 3 is a fragmentary vertical section through the fire-box, taken on the line III III of Fig. 2, the pitch-line only of the gears connecting the shafts of the grate-sections being shown. Fig. 4 is a fragmentary vertical section taken on the line IV IV of Fig. 2. Fig. 5 is a fragmentary sectional plan taken on the line V V of Fig. 4, and Fig. 6 is a detailed perspective view of the bracket and one of the hangers.

The casing 10 may support the usual cover or top for cooking utensils and is provided with a suitable fire-box $10^a$. This fire-box has suitable lugs 11, adapted to support the bricks 12, which have their lower ends rabbeted so as to fit upon and between said lugs. A plate 13 may have its upper end secured to the casing 10 and its lower end made angular to support the end brick or bricks 14, and below the bricks may be arranged a frame 15 of any desired form, adapted to retain and hold the fire-bricks in their proper position and to prevent injury to the lower edges thereof by the coal. The frame 15, as well as the parts just described, either in part or as an entirety, may be of any preferred form or construction or may be substantially the same as that disclosed in our pending application hereinbefore referred to.

For the purpose of removably holding the grate-bar sections in position and to provide lengthwise movement of the grate-bar shafts at one end thereof a bracket 16 is located at the front end of the fire-box. The bracket 16, Figs. 2, 3, and 6, is provided with base-plates 17, in which are holes or apertures, and passing through the apertures are the screw-bolts 18, which serve to rigidly hold the bracket to slotted ears or lugs 19 on the fire-box casing. This bracket has the standards 20, which support the guard-bar 21. The guard-bar 21 abuts against a pendent flange 22 on the plate 13, which latter, together with the flange thereon, serves to protect the gears 23 from the heat as much as possible. The gears 23 are rigidly held to the shafts 24 and $24^a$, one of which, as 24, has a polygonal end to permit it to be turned to rotate the shafts in unison in the usual manner. The shafts of the grates have one of their ends supported in a hanger 25, so as to pass beneath the guard-bar 21 of the bracket 16, said hanger having apertured ends, through which pass pins or bolts 26, which engage apertures in the base-plates 17 of the bracket to removably hold the hanger in position and to permit the hanger to be readily removed when desired. By these means the hangers and grate-sections may be readily removed or held to the bracket; but instead of the bracket

being fastened to the casing, as shown, it may be arranged in any suitable manner.

The grate-bar sections, it has been found, do not contract as much as they expand by the heat. Consequently in time they grow or lengthen, and to compensate for this without interfering with the working of the gears 23, which operate the grate-bar sections in unison, one end of the shafts 24 and $24^a$ is prevented from lengthwise movement. As shown, the shafts are provided with collars 27, which form hubs for the gears 23, which latter are formed integral with the collars or are secured thereto, as desired. The collars or hubs 27 abut on one side against the guard-bar 21 and on the other side against the hanger 25, but in such a way as not to prevent rotation of the shafts. The other ends of the shafts may be reduced and are held to slide in the bearing or hanger 28, Figs. 1, 4, and 5, which hanger is stationary and is secured by the bolts 29 to the fire-box casing. This hanger has sockets which form a support or bearing for the shafts, above which is the end or section 30 of the frame 15, which rests upon the hanger 28 and holds the shafts in the sockets, yet permits them to readily expand. The hangers 25 and 28 may each have an intermediate socket or recess 31 for a single instead of a duplex grate—that is, one having two sections—in which case the gearing is dispensed with, and the collar to prevent lengthwise movement at one end of the shaft is arranged the same as the collars 27 without the gears, thus adapting various forms of grates to be employed, though instead of the collars other means may be employed to prevent the lengthwise movement of one end of the shaft or shafts.

The invention will be readily understood from the foregoing description when taken in connection with the accompanying drawings.

If the bolts or pins 26 are removed, the hanger 25 may be withdrawn through the opening in the casing 10, thus permitting the forward or front ends of the grate-sections to be lowered in order to permit the same to be removed or others inserted in the place thereof. The hanger 28 and the bracket 16 may likewise be removed by releasing the screw-bolts which hold the same to the casing, and both the hanger and bracket, as well as the grate-bar sections, may be placed in position by reversing the operation just described.

It will be seen that interchangeable grates or sections may be used, that the gears which connect the two shafts so as to operate in unison are, in a great measure, protected from the heat, and that the various parts described may be readily removed for repairs or otherwise or other parts substituted for those removed.

While we have described the stationary bearing or hanger as being independent of the frame, it will be understood that it might be made integral therewith and that instead of the pins 26 for fastening the ends of the hanger to a portion of the frame any suitable fastening means may be employed.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination with a sectional frame, of grate-bars suitably supported at the rear ends, and a removable hanger adapted to support the front end of the grate-bars and to space apart the side sections of the frame.

2. The combination with the frame having suitable side bars, a protective transverse bracket, and a removable hanger spacing apart the side bars of the frame, the protective bracket forming the front end of the frame, of the grate-bars suitably supported at their rear ends and with their front ends supported in the hanger, substantially as described.

3. The combination with the supporting-frame having suitable side bars, an upwardly-extending transverse bracket with inturned base-flanges to connect with and support the front ends of the side bars, a hanger connecting the base-flanges of the bracket and spacing apart the side bars of the frame, the said hanger and bracket forming the front end of the frame, and grate-bars suitably supported at one end and journaled in the hanger at the opposite end, substantially as described.

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