

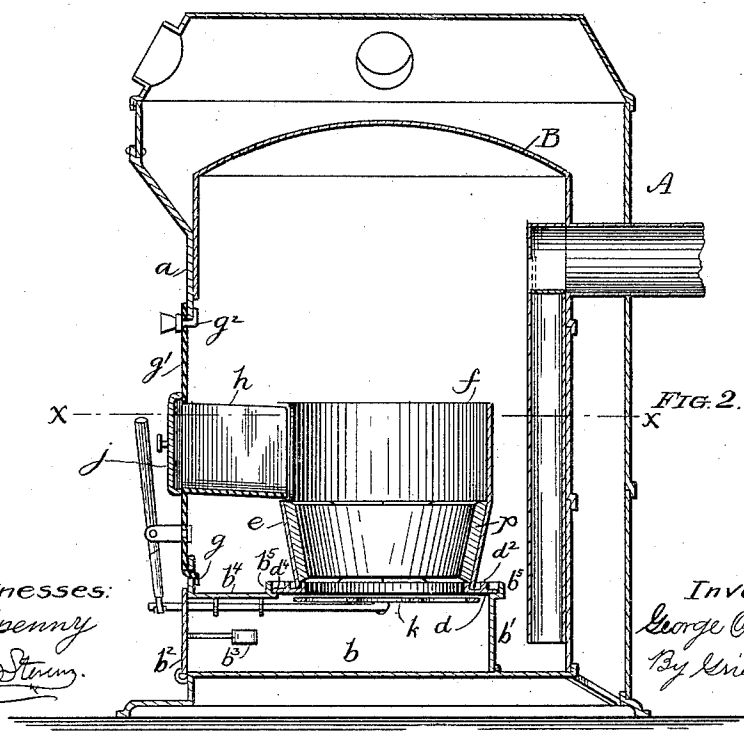
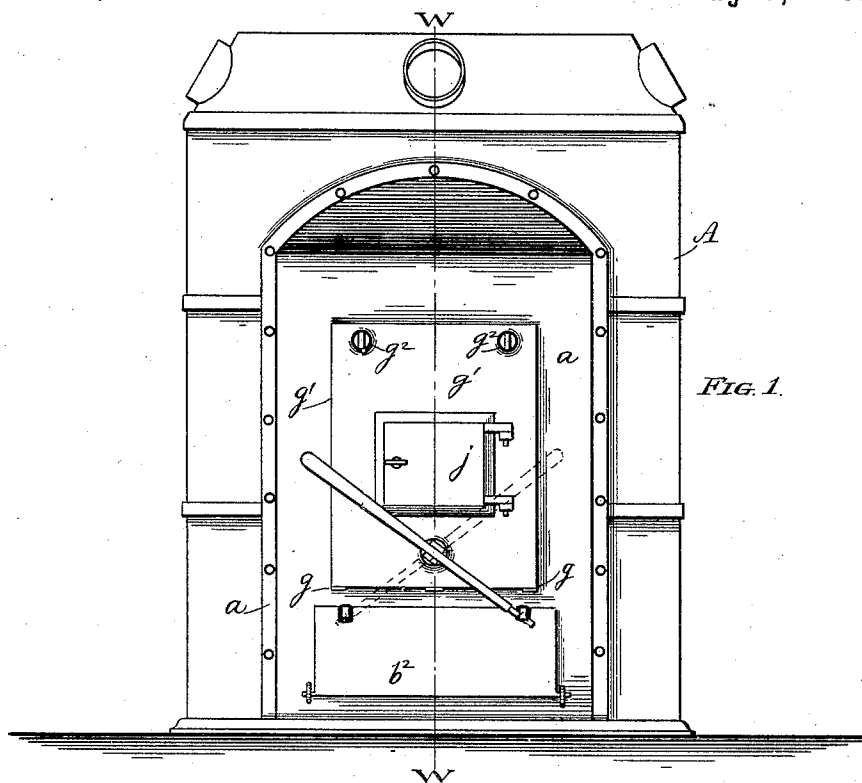
(No Model.)

2 Sheets—Sheet 1.

G. F. FRENCH.
HEATING FURNACE.

No. 474,316.

Patented May 3, 1892.



Witnesses:
J. Halpenny
Daniel Stearns

Inventor:
George F. French
By *Ernest A. Welch*
his Att'y.

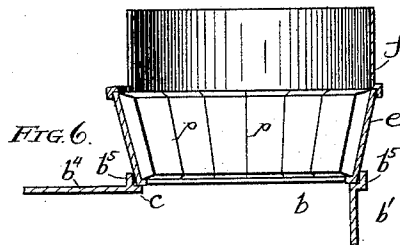
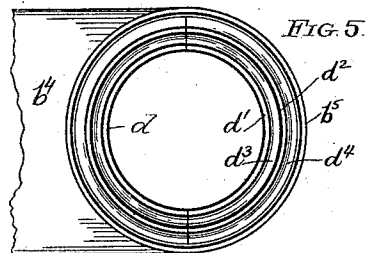
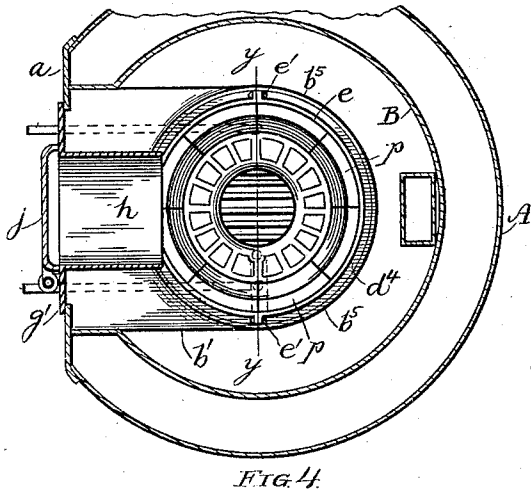
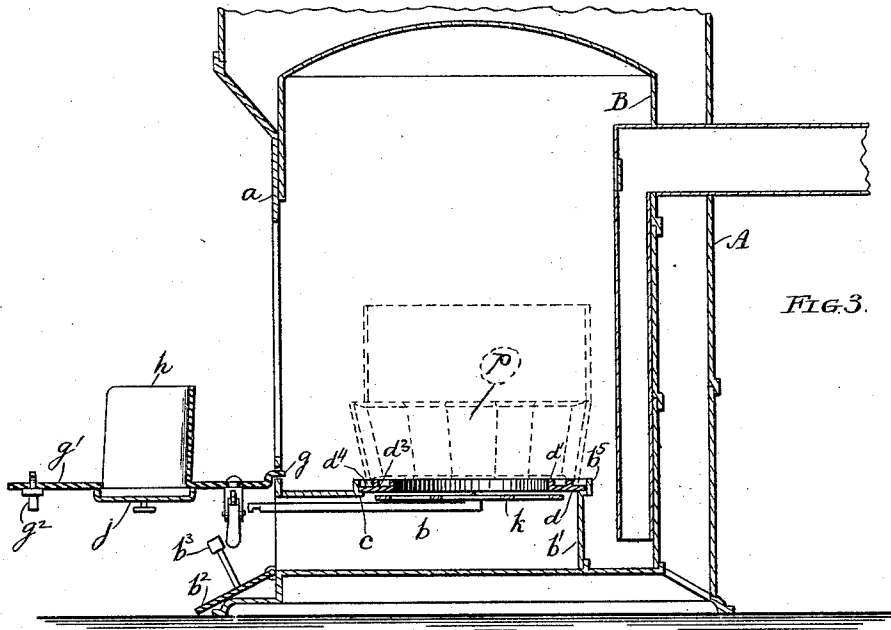
(No Model.)

2 Sheets—Sheet 2.

G. F. FRENCH.
HEATING FURNACE.

No. 474,316.

Patented May 3, 1892.



Witnesses:
J. Halpenny
David W. Allen.

Inventor:
George F. French,
By Lindley M. McKim,
His Atty.

UNITED STATES PATENT OFFICE.

GEORGE F. FRENCH, OF EVANSTON, ILLINOIS, ASSIGNOR TO LULU E. FRENCH,
OF SAME PLACE.

HEATING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 474,316, dated May 3, 1892.

Application filed October 26, 1889. Serial No. 328,270. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. FRENCH, of Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Heating-Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a front elevation of a furnace embodying the features of my improvement. Fig. 2 is a vertical sectional view thereof, taken upon the line *w w*, Fig. 1. Fig. 3 is a like view showing the removable front and ash-pit door in abnormal positions. Fig. 4 is a sectional view in plan taken upon the line *x x*, Fig. 2. Fig. 5 is a plan view in detail of the annular ring for holding the fire-pot as it appears when in position above the case which forms the ash-pit; and Fig. 6 is a sectional view in detail of a portion of the ash-pit case, showing an enlarged fire-pot in position, the annular ring being removed.

Like letters of reference in the different figures indicate like parts.

My invention relates to heating-furnaces; and my object, primarily, is to so construct a furnace that fire-pots of varying sizes may be employed therewith, so as to enable the heating capacity of said furnace to be increased or diminished without varying the size of the general structure. A further object is to render the front and coal-chute removable, so that workmen may have ready access to the interior of the furnace for changing or cleaning the parts, all of which is hereinafter more particularly described and claimed.

Referring to the drawings, A represents the body or outer case of the furnace, which is constructed of sheet metal in the usual cylindrical form, with the exception that the main portion of the front, extending nearly to the top, is flat, as shown at *a*, Figs. 1, 2, and 4, said flat front consisting, preferably, of a cast metal plate bolted to the casing. Within the case is placed the body B of the furnace, having an ash-pit *b*, surrounded upon three sides by the casing *b'* and closed in front by means of the door *b²*, which is hinged at the bottom, as shown, and provided with a counterpoise-weight *b³*, which serves to retain the same nor-

mally closed. A circular opening is formed in the plate *b⁴*, which covers the ash-pit, said opening being surrounded by a vertical flange *b⁵*, within which is a narrow ledge *c*, which may serve either as a direct support for a fire-pot of the largest size, as indicated in Fig. 6, or for an annular ring *d*, which is provided with vertical annular flanges *d'* *d²*, so that when said ring is in position there are formed annular grooves *d³* *d⁴* of different diameters.

The fire-pot is constructed of a number of separate and removable sections *p*, preferably of fire-brick, which rest upon the ledge *c* or upon the ring *d*, as the case may be, and are bound together by an encircling band *e*, also formed in sections and detachably secured together, as by bolts at *e'*. With these parts fire-pots of widely-different sizes may be constructed, it being simply necessary to select so many of the sections *p* as will form a pot of the desired diameter and then adjust or construct the encircling band accordingly. For example, Fig. 4 shows a pot of the smallest size that it is possible to construct of the parts shown in the drawings. It is made up of eight of the sections *p*, resting upon the inner margin of the ring *d*, the encircling band being made up of but two sections having their ends attached directly to each other. The pot thus constructed is held in its central position by the annular flange *d'*, which engages the band *e*. The pot shown in Fig. 3 is somewhat larger and is made up of ten of the sections *p*, while the pot shown in Fig. 6 is still larger, being made up of twelve of said sections. In order to enable the band *e* to encircle these larger pots, it may be made up of more than two sections, or else its ends may be connected by long bolts or tie-rods. The pot shown in Fig. 3 is centered by the flange *d²*, and the pot shown in Fig. 6 is centered by the vertical flange *b⁵* of the casing *b'*, the ring *d* being in this latter case omitted.

The removability of the rest for the fire-pot of smaller diameter is a desirable feature, because if it were not removable it would form a ledge or shoulder that would support a quantity of ashes when the fire-pot of larger size is used. Such a bed of ashes resting against the inner face of the fire-pot would materially prevent the radiation of heat, and thereby lessen

the effectiveness of the furnace. Above the fire-pot and resting loosely thereon is placed a circular metal guard *f*, which is intended to prevent the fuel from falling over the edge of the fire-pot. Loosely attached to the front *a* by means of bent pintles *g g*, extending through perforations in said front, is a supplemental removable front *g'*, which is secured to the top by means of turn-buttons *g²*, opening in the usual way. The coal-chute *h* is rigidly attached to said movable front and is arranged to normally connect with the top of the fire-pot, as shown in Figs. 2 and 4. A door *j*, hinged in the usual way, is arranged opposite to said coal-chute. The one grate *k* is used for the fire-pots of all the different sizes. Upon turning the buttons *g²* the front *g'* may be lowered, as shown in Fig. 3, when access is given to the interior of the furnace. A large or small fire-pot may then be placed in the outer or inner groove, as may be found desirable. Should the larger size be desired, the ring *d* may be removed and the pot adjusted, as indicated in Fig. 6; but this is not necessary.

I claim—

1. A furnace having a grate, a rest for a fire-pot of one size situated in proximity thereto, and a removable rest for a fire-pot of a smaller size, substantially as set forth.

2. A furnace having a grate, a rest for a fire-pot of one size situated in proximity thereto, and a removable rest for a fire-pot of a smaller size projecting inward over the grate, substantially as set forth.

3. A furnace having the grate *k*, the rest *c* for a fire-pot of one size situated in proximity thereto, and the removable rest *d*, adapted to rest upon the rest *c* and project over the edge of the grate for supporting a fire-pot of smaller size, substantially as set forth.

4. A furnace having a grate, a rest for a fire-pot of one size situated in proximity thereto, and a removable rest for a fire-pot of a smaller size situated within the first-named rest, in combination with a knockdown fire-pot con-

sisting of a number of separate narrow sections or staves and an adjustable encircling band, substantially as set forth.

5. In a furnace, a grate, a rest for a fire-pot of one size situated in proximity thereto, and a removable rest for a fire-pot of smaller size projecting inward over the grate, in combination with a knockdown fire-pot consisting of a number of separate narrow sections or staves and an adjustable encircling band, substantially as set forth.

6. In a furnace, a grate *k*, a rest *c* for a fire-pot of one size situated in proximity thereto, and the removable ring *d*, adapted to rest upon the rest *c* and project over the edge of the grate, said ring having a rest for a fire-pot of smaller size, in combination with a knockdown fire-pot consisting of a number of narrow sections or staves and an adjustable encircling band, substantially as set forth.

7. The combination, with the grate *k* and the casing *b'*, having flange *c*, of the removable ring *d*, adapted to rest upon the flange *c* and having the concentric annular flanges *d'* and *d²*, forming, with the upper margin of the casing *b'*, two concentric grooves *d³* and *d⁴*, the band *e*, having means for adjusting it so that it may rest in either of said grooves, and the removable fire-pot sections or staves encircled by said band and resting on one or the other of said flanges, substantially as set forth.

8. In a furnace, the combination, with the grate and fire-pot, of a casing having a removable side section, a feed-door formed there-through, and a chute secured to and carried by said section and projecting over the fire-pot, substantially as set forth.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 18th day of October, 1889.

GEORGE F. FRENCH.

Witnesses:

D. HORACE FLETCHER,
J. HALPENNY.