

No. 718,603.

PATENTED JAN. 20, 1903.

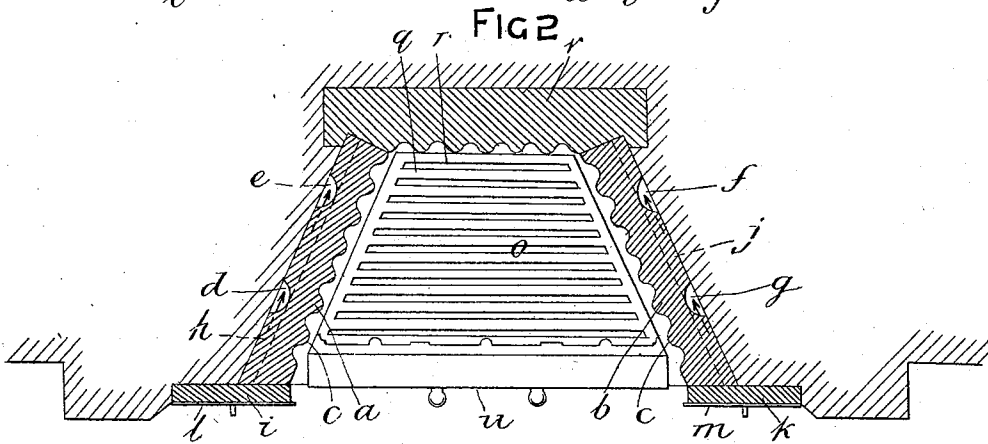
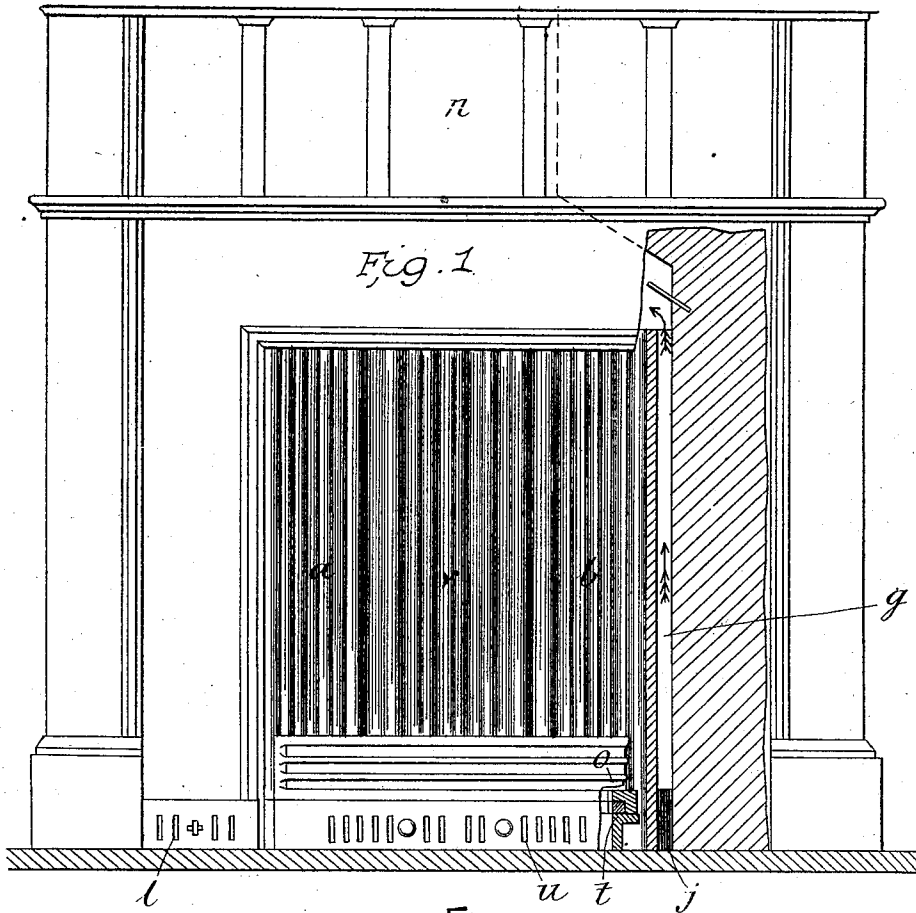
J. J. CHAVASSE.

DOMESTIC FIRE GRATE.

APPLICATION FILED APR. 9, 1901.

NO MODEL.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

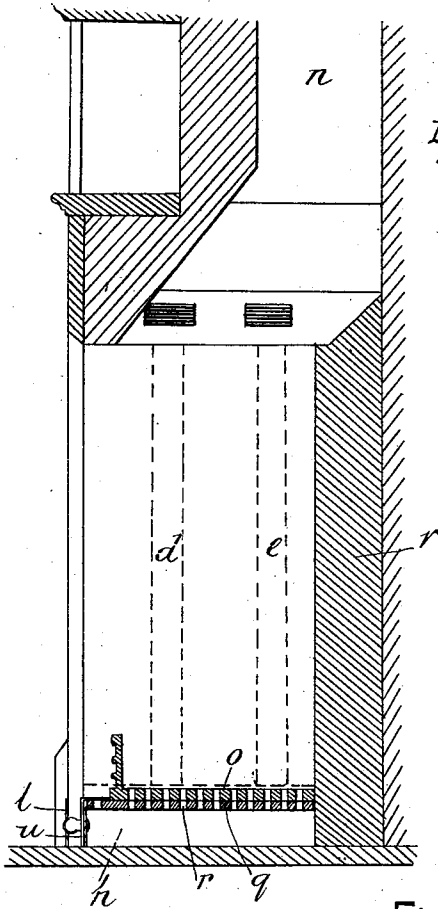


Fig. 3.

FIG 5

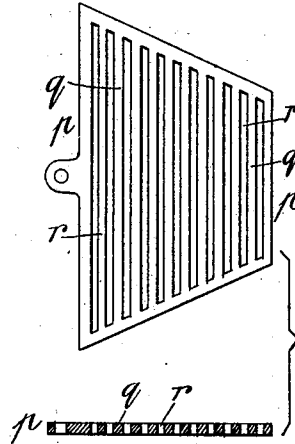
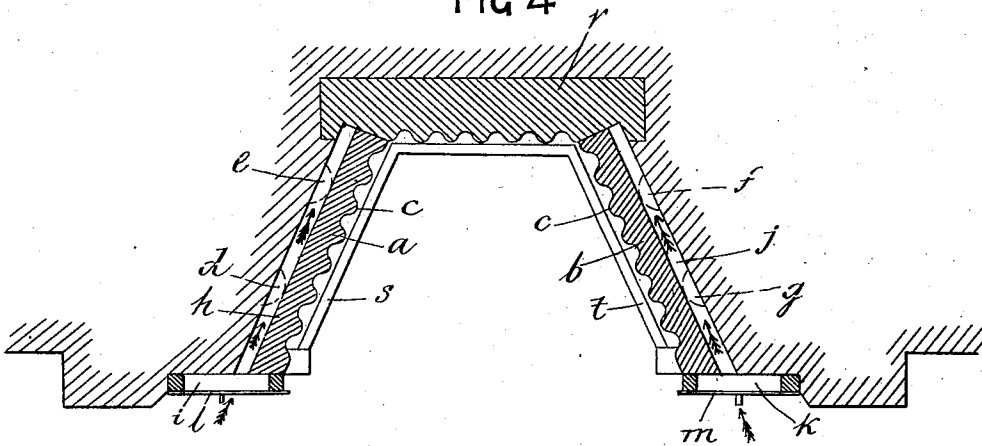


FIG 4



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3 SHEETS—SHEET 3.

FIG 6

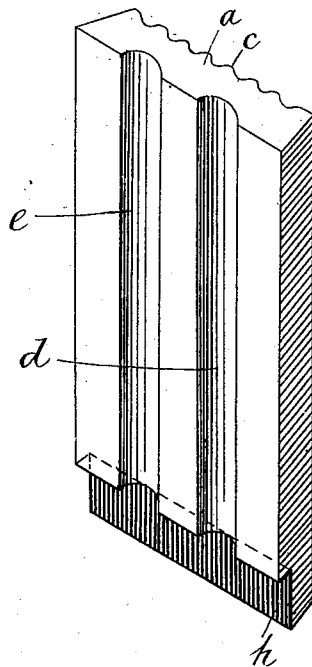
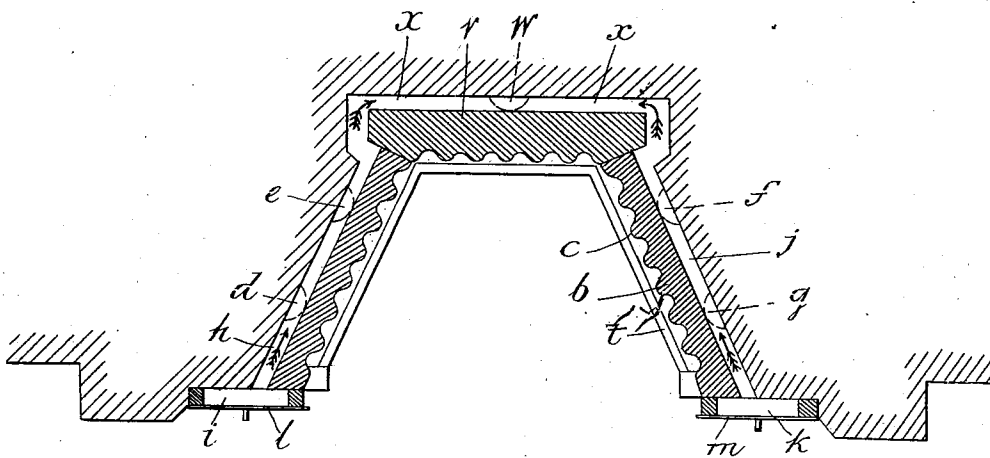


FIG 7



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# UNITED STATES PATENT OFFICE.

JAMES JOHNSON CHAVASSE, OF NAUNTON, ENGLAND.

## DOMESTIC FIRE-GRATE.

SPECIFICATION forming part of Letters Patent No. 718,603, dated January 20, 1903.

Application filed April 9, 1901. Serial No. 55,039. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES JOHNSON CHAVASSE, mineral-water-works manager, a subject of His Majesty the King of Great Britain and Ireland, residing at Naunton, Holt, near Worcester, in the county of Worcester, England, have invented certain new and useful Improvements in Domestic Fire-Grates, of which the following is a specification.

10 This invention consists of the herein-described improvements in domestic fire-grates, so as to economize the fuel and increase the percentage of effective heat that is derived therefrom. A room provided with a fire-  
15 grate constructed according to my invention can be more effectually heated by burning a small quantity of slack on the grate than is possible with burning a much larger quantity of coal in an ordinary fire-grate.

20 The invention is illustrated in the accompanying drawings, on which—

Figure 1 is a front view, partly in section, of a domestic fire-grate constructed according to this invention. Fig. 2 is a sectional  
25 plan of the same above the grate-bottom. Fig. 3 is a sectional side elevation of the same. Fig. 4 is a sectional plan of the same below the grate-bottom. Fig. 5 is a separate  
30 view of part of the air-regulator. Fig. 6 shows one of the fire-brick slabs of the grate, and Fig. 7 is a sectional plan of the grate below the grate-bottom to illustrate a modification of my invention.

The same letters of reference indicate the  
35 same parts in all the figures.

In carrying out my invention the two sides of the fire-grate which incline toward the back are formed of fire-brick slabs *a b*, which readily absorb the heat of the fire, and they  
40 are by preference made corrugated on their front surfaces *c*, so as to increase the area of the surface from which the heat is thrown off. Each of these fire-brick slabs *a b* has two  
45 small vertical air-passages, marked, respectively, *d*, *e*, *f*, and *g*, extending right up the back of the slabs from bottom to top and arranged side by side at a short distance apart, as shown in Figs. 2, 4, and 7. The air-passages *d* and *e* communicate by a horizontal  
50 passage *h* (formed as a rabbet in the slabs *a b*) with an air-inlet *i* at the lower part of the front of the grate, and the air-passages *f* and

*g* on the other side communicate by a similar horizontal passage *j* with another air-inlet *k* at the lower part of the grate. The  
55 opening of the air-inlets *i* and *k* is regulated by the slides *l m*. In the top of the fire-grate there is an outlet *n* to the chimney, with which these air-passages *d e f g* communicate. The grate-bottom is made with bars *o* across  
60 from side to side at short intervals apart and provided with an air-regulating slide *p*, which have alternate cross-bars *q* and openings *r*, corresponding with the grate-bars *o* and the openings between them. This regulating-slide *p*  
65 is carried and can slide to and fro on side bearers *s t*, which are made to fit against the corrugated fire-brick side slabs *a b*. By pulling the air-regulating slide *p* forward the openings between the grate-bars *o* for air to  
70 pass through the fire are regulated or entirely closed, as may be required.

At the front of the grate, below the level of the bars *o*, there is an air-regulator *u* for the purpose of regulating or shutting off the  
75 supply of air to the space under the grate-bars.

The back of the fire-grate is by preference formed of a fire-brick slab *v*, made corrugated on the front face like the side slabs *a* and *b*.  
80

When the fire is burning in the grate, the fire-brick sides *a b* become heated and cause constant drafts of cool air up the side passages *d e f g* and up the chimney, thereby furnishing a constantly-operating check-  
85 draft. The quantity of heat thus thrown out from the sides can be regulated by the damper-slides *l m*, which, as aforesaid, regulate the quantity of air entering the passages *h* and passing up the side passages *d e f g*. The  
90 fire can also be regulated by means of the air-regulating slide *p*, which regulates the amount of air passing up through the grate-bars and the fire.

When the fire-grate is constructed as above  
95 described, I find that the combustion is very slow and that a very large percentage of heat is given off into the room instead of passing up the chimney, and I get more heat from burning slack in the grate than can be ob-  
100 tained from burning the same weight of coal in an ordinary fire-grate.

If desired, the slab *v* may, as shown in Fig. 7, be formed with a vertical air-passage *w*, up

which a current of cool air passes to the chimney from the bottom horizontal passage *x*, communicating with the two horizontal cool-air passages *h* and *j*.

5 For bed-room fire-grates and other small fire-grates, in which the fire-brick slabs *a b* are made considerably smaller than in the grate above described with reference to Figs. 1 to 6, the said slabs *a b* are each made with only  
10 one of the vertical passages *d e f g*.

The front surfaces of the side slabs *a b* may, if desired, be made plain instead of corrugated; but I find that the corrugated surface gives the best results, owing to its larger surface area.  
15

What I claim as my invention, and desire to secure by Letters Patent, is—

A domestic fireplace having a grate, a slide

beneath the same arranged to open and close the openings between the bars thereof, a slide 20 arranged to open and close the space beneath said grate, fire-brick sides having their rear lower edges rabbeted to form channels extending to the front of the fireplace, means 25 for regulating the flow of air through said channels, and vertical channels in said sides extending upward from said first-named channels and communicating with the chimney, substantially as described.

In witness whereof I have hereunto set my 30 hand in presence of two witnesses.

JAMES JOHNSON CHAVASSE.

Witnesses:

CHARLES BOSWORTH KELLEY,

THOMAS JOHN ROWE.