

R. W. & D. DAVIS.

Grate.

No. 54,064.

Patented April 17, 1866.

Fig. 1

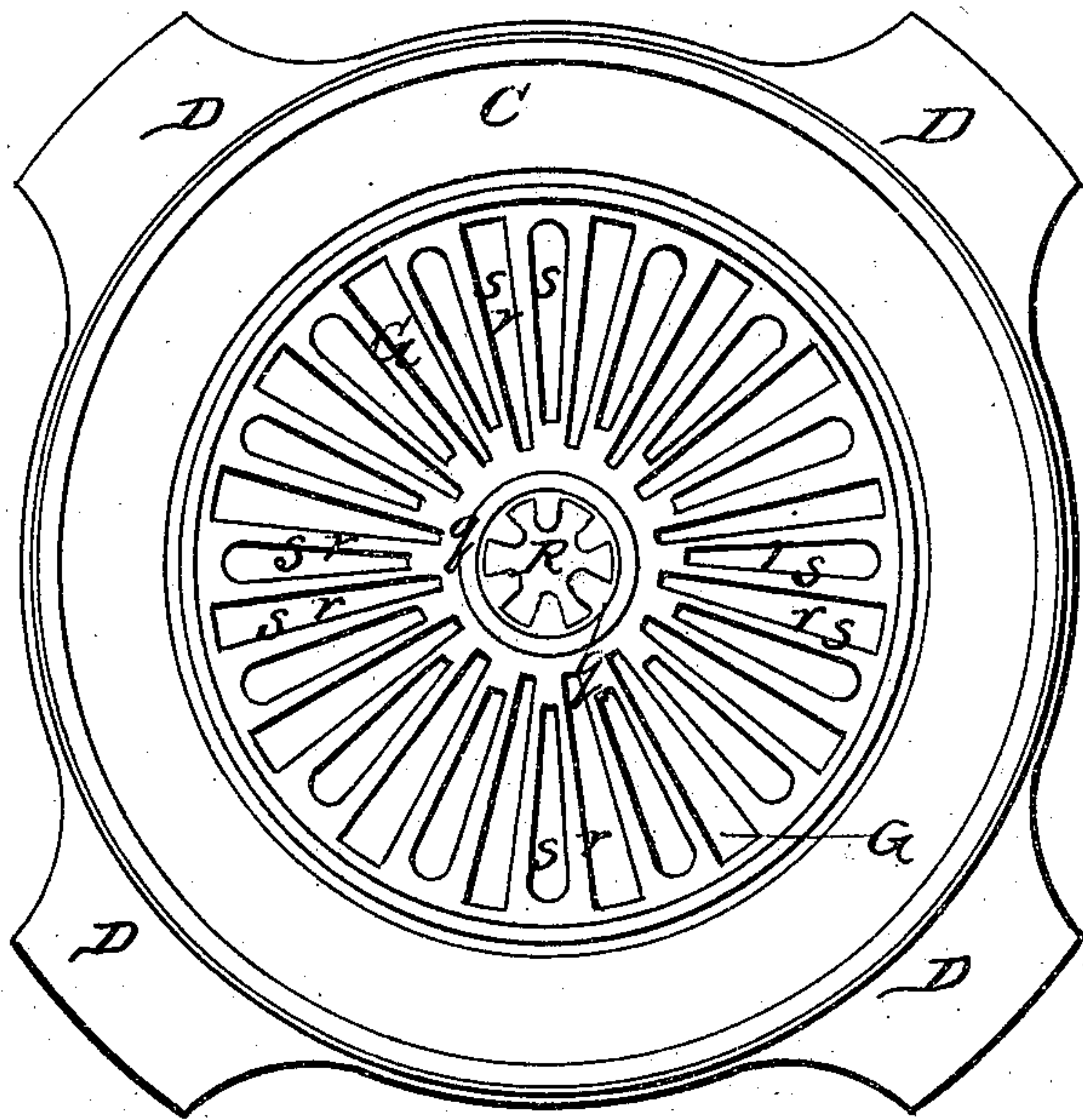


Fig. 2

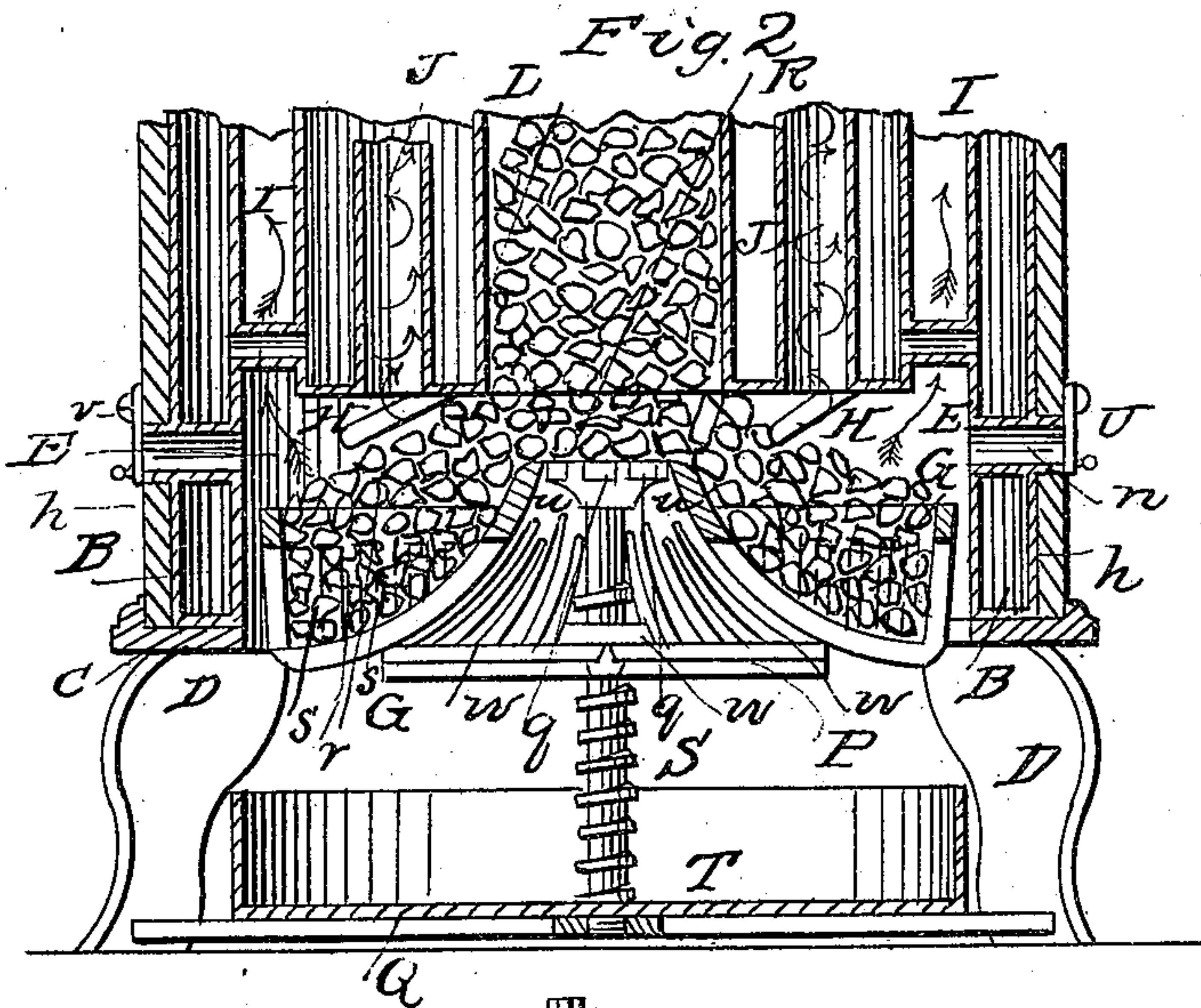
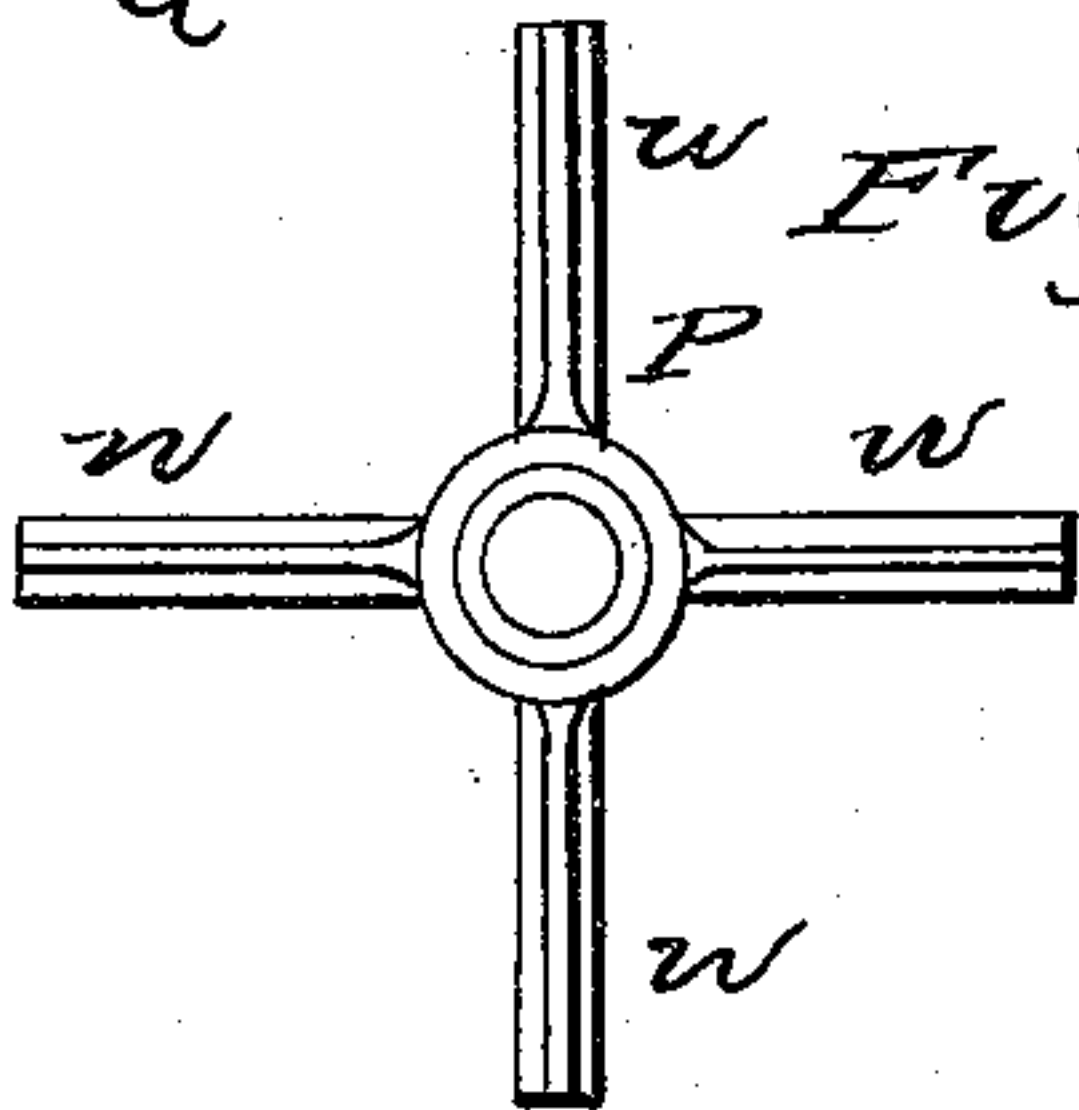


Fig. 3



Witnesses

L. H. Ohuse Jr  
A. Lellere

Inventors

Robert W. Davis  
Daniel Davis



# UNITED STATES PATENT OFFICE.

ROBERT W. DAVIS, OF FLUSHING, AND DANIEL DAVIS, OF LONG ISLAND CITY, ASSIGNORS TO THEMSELVES AND JOHN H. LIVINGSTON, OF LONG ISLAND CITY, NEW YORK.

## GRATE FOR FURNACES, &c.

Specification forming part of Letters Patent No. 54,064, dated April 17, 1866.

*To all whom it may concern:*

Be it known that we, ROBERT WINSLOW DAVIS, of Flushing, in the county of Queens and State of New York, and DANIEL DAVIS, of Long Island city, in the same county and State, have invented certain new and useful Improvements in Grates for Furnaces and Stoves; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a plan view of the grate alone. Fig. 2 is a central vertical section, showing the invention as applied to a vertical steam-boiler. Fig. 3 is a detached sectional view of a portion of the apparatus.

Similar letters of reference indicate corresponding parts in the several figures.

Although represented in the drawings as applied to the furnace of a steam-boiler, my invention is equally applicable to base-burning stoves.

It consists in a novel construction of a fire-grate with bars radiating from a common center, and having such a curvature in vertical planes as to give the grate the form of a basket, and give the intervening spaces between the said bars a greatly-increased length as compared with the length of the bars measured directly in a horizontal plane, and thereby to give a very large area of air-passage between the said bars as compared with the horizontal area of the grate.

It also consists in supporting the grate of a furnace or stove upon a central screw, upon which only it can be lowered out of the furnace or fire-box for the purpose of removing clinkers or other refuse of combustion.

To enable those skilled in the art to understand the construction and operation of my invention, I will proceed to describe it with reference to the drawings.

G is the grate, circular in form, and situated below the vertical boiler or beneath the body of the base-burning stove, as the case may be.

Z represents the position with regard to the grate of the fuel-reservoir, formed within the said boiler, or within the body of the stove, and through which the fuel passes to the grate. I shows the annular flue that car-

ries off the products of combustion. The furnace E is circular in shape, so as to conform to the periphery of the grate G, which is placed therein when in use. This grate is composed of bars *s*, which radiate from a central ring, *u*, and between which are formed radial spaces *r*. These bars are curved downward as they approach the sides of the furnace and then turn upward at their outer ends, which are united by an annular rim situated at the same height as the ring *u*. This peculiar concave shape of the bars gives them and the spaces *r* between them a length very much greater than the width of the grate measured in a horizontal direction, and in this way provision is afforded for a greater supply of air through the grate than if the bars were straight.

The grate thus constructed has the character of a basket, which may be lowered vertically out of the furnace E for the removal of the clinkers or such refuse from the fuel as cannot be raked between the bars by the insertion of prickers or other stoking-irons under the bed-plate C. Before thus lowering the grate the fuel should all, as near as possible, be consumed.

This grate is supported by a yoke, P, which has in its central hub or boss a screw-thread which fits to a vertical fixed screw, *s*, the lower end of which is screwed into the horizontal brace Q, which is attached to the standards D D, or any other fixed support. The said yoke, of which Fig. 3 is a plan view, has three or more radial arms, *w*, on which there are vertical ribs which enter the spaces *r r* between the grate-bars, so as to compel the grate to turn with it upon the screw *s*, for the purpose of being raised and lowered into and from the furnace.

On the top of the screw there is firmly secured a small stationary grate, R, of a form resembling a cog-wheel, and of an external circumference, to fit to the inside of the ring *u*, which forms the middle portion of the grate G. The upper part of this central grate, R, is level with the surrounding portion of the grate G when the latter is up to its proper operating level, above which it is prevented from rising either by the yoke P coming in contact with a stop upon the screw S or by the thread of

the screw being cut away to a proper height. Under the grate there is an ash-pan, T.

When it is desired to take out clinkers or other refuse the grate G is revolved around the screw S until it is brought sufficiently low down to admit of their removal by any suitable means.

What we claim as new, and desire to secure by Letters Patent, is—

1. The grate G, constructed and applied to a

boiler or other furnace, or to a stove, substantially as and for the purpose herein set forth.

2. Supporting the grate of a boiler, or other furnace, or of a stove upon a vertical screw, substantially as and for the purpose specified.

ROBERT W. DAVIS.

DANIEL DAVIS.

Witnesses:

HENRY T. BROWN,

J. W. COOMBS.