

No. 675,512.

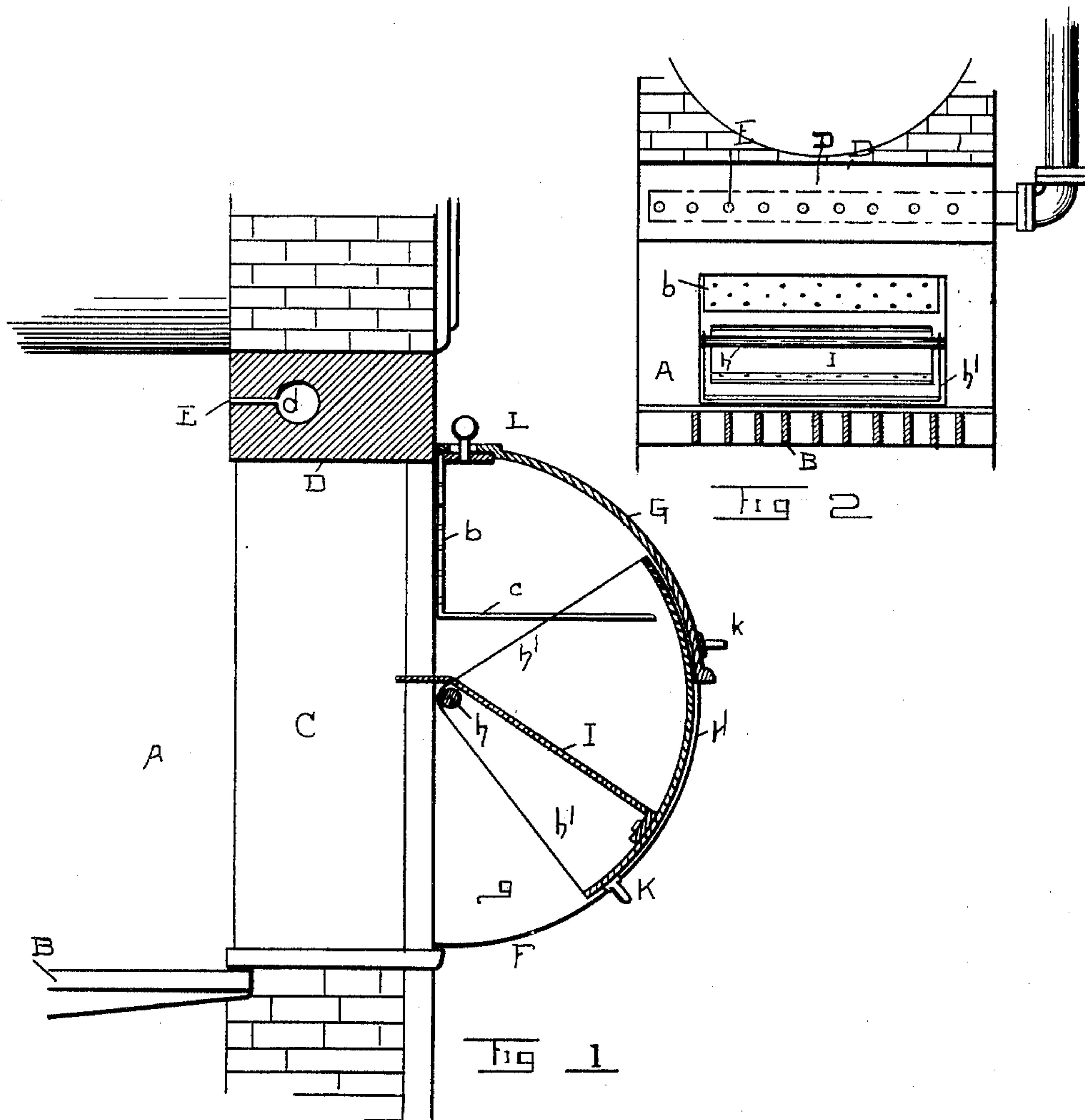
Patented June 4, 1901.

E. H. HOVEY.
FUEL ECONOMIZER.

(Application filed Apr. 25, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES.

Jamies E. Stoddard
Samuel Stringer

INVENTOR.

Eddy H. Hovey
by E. E. Stoddard
Attorney.

No. 675,512.

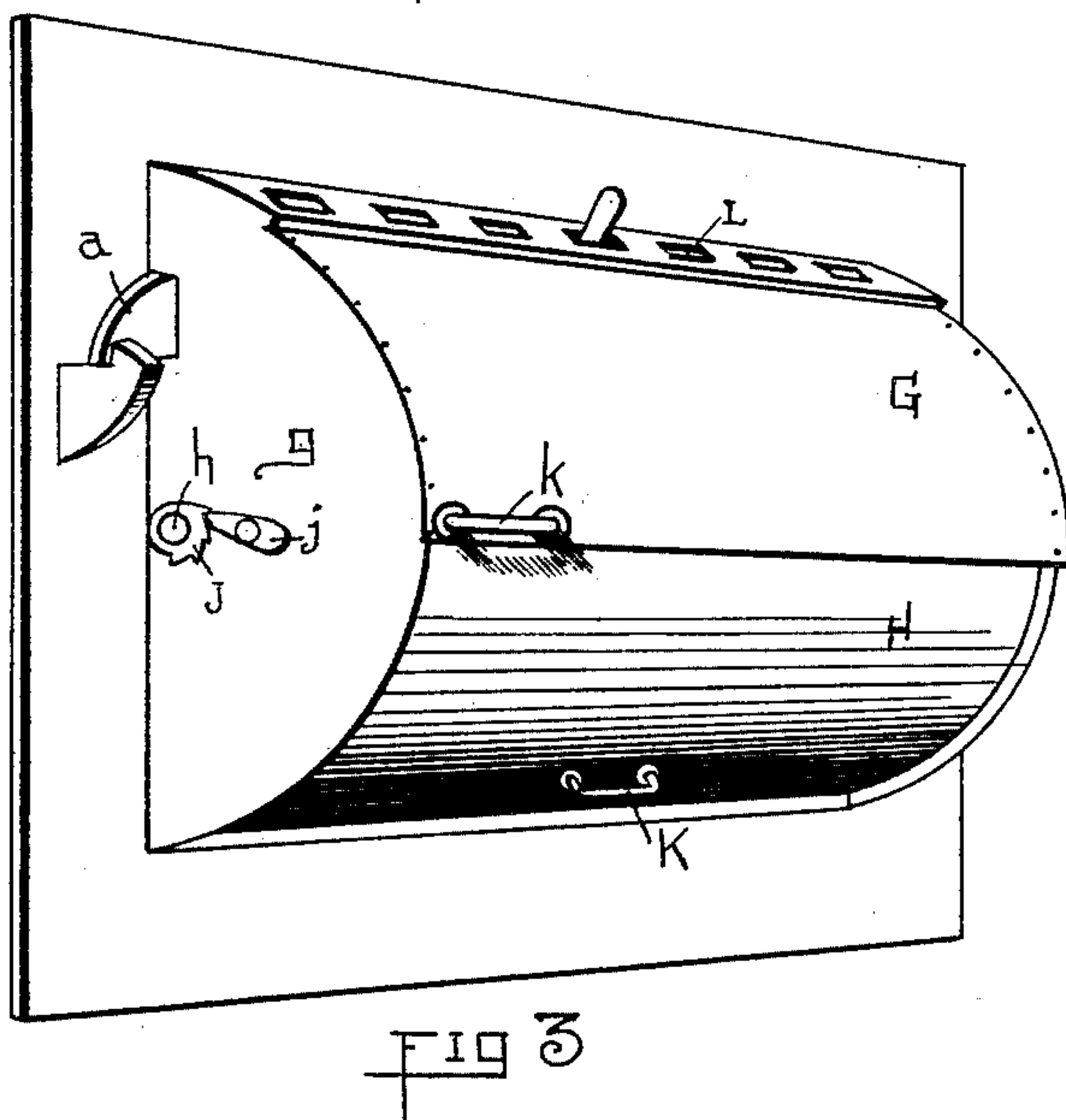
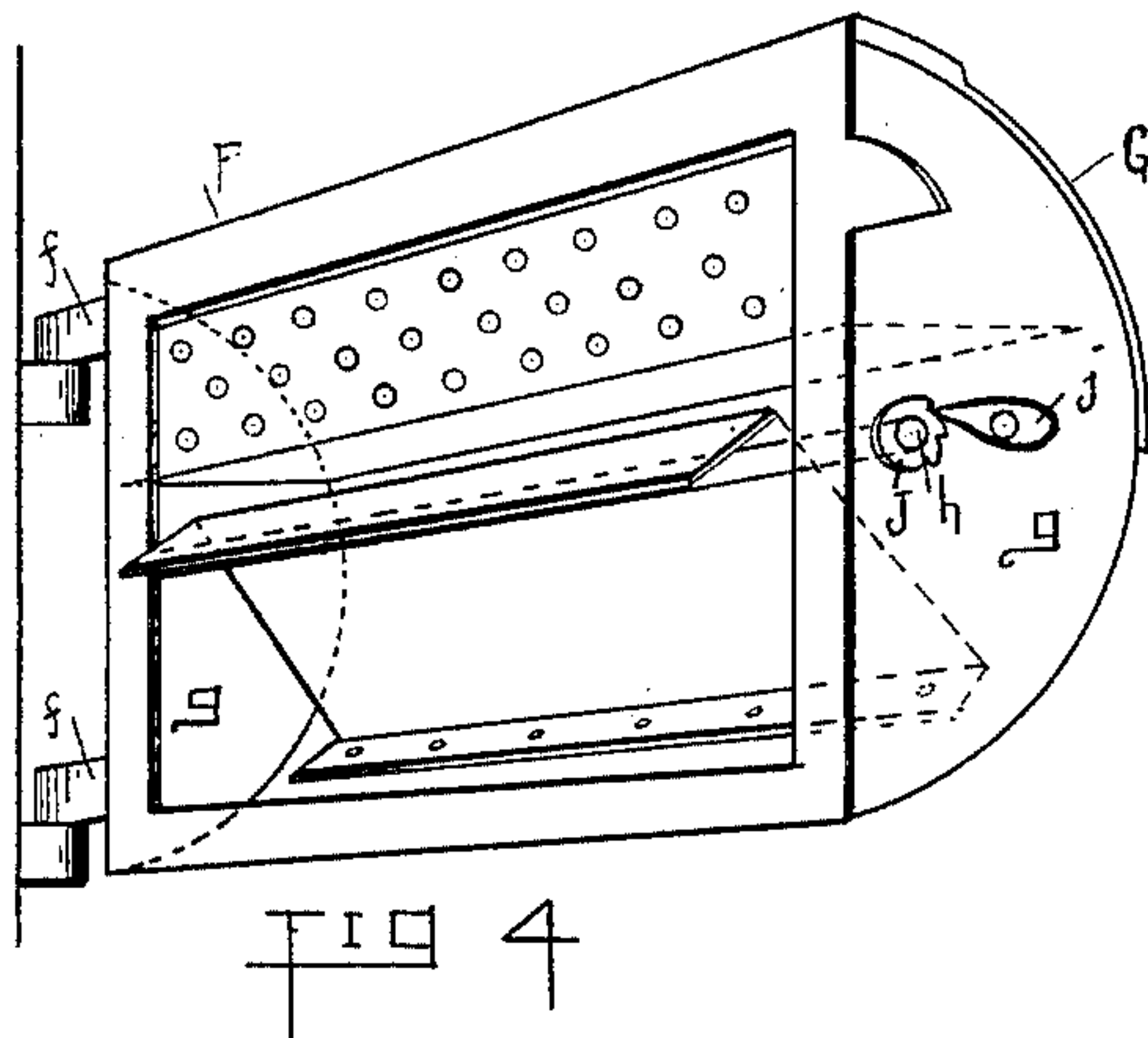
Patented June 4, 1901.

E. H. HOVEY.
FUEL ECONOMIZER.

(Application filed Apr. 25, 1900.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES
Jamie E. Stoddard
Samuel Stricker

INVENTOR
Eddy H. Hovey
By E. E. Stoddard
Attorney

UNITED STATES PATENT OFFICE.

EDDY H. HOVEY, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE STEAM
BOILER EQUIPMENT COMPANY, OF NEW YORK, N. Y.

FUEL-ECONOMIZER.

SPECIFICATION forming part of Letters Patent No. 675,512, dated June 4, 1901.

Application filed April 25, 1900. Serial No. 14,235. (No model.)

To all whom it may concern:

Be it known that I, EDDY H. HOVEY, a citizen of the United States, residing at Brooklyn, county of Kings, State of New York, have invented a certain new and useful Improvement in Fuel-Economizers; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to apparatus for promoting the combustion of fuel in furnaces; and the object of my improvements is to provide an improved apparatus for supplying air and mixing the same with combustible gases.

Referring to the accompanying drawings, Figure 1 is a sectional elevation of the front portion of a furnace with the apparatus embodying my invention attached. Fig. 2 is an elevation of the same looking from the interior. Fig. 3 is a perspective of the door looking from in front of the furnace; and Fig. 4 is a perspective of the door, showing the interior of the same.

The same letter indicates the same part in all the views.

A is the interior of the furnace.

B represents the grates.

C is the opening through which the coal is passed.

D is a heavy iron casting provided with a passage *d*, extending longitudinally thereof. Said casting extends transversely across the furnace above the opening C.

E E are a series of small holes extending from the passage *d* toward the rear of the furnace.

e is a pipe adapted to lead steam from the boiler to the passage *d*. The pipe *e* closes one end of the passage *d*, and the other end is closed by a plug.

F is a door adapted to close the opening C. *f f* are hinges by which said door is secured to the furnace-front, and *a* is a latch by which the door is held closed.

b is a foraminous plate extending across the door and at its inner surface and about one-quarter of the distance from its upper toward its lower edge. The outer portion of the door F is a semicylindrical casing G H, having its

ends closed by semicircular plates *g*. The part G of the casing G H is stationary, and the part H turns about a line at the center of the cylinder.

h is a rod pivoted in the plates *g* at the center of the cylinder, of which G H form a part. The part H of the outer casing of the door F is secured to the rod *h* by end pieces *h'*.

c is a horizontal plate extending across the door F and from the lower edge of the plate *b* nearly to the outer casing of said door. The part H of the outer casing turns up inside of the part G and between G and the inner edge of the plate *c*, as shown in Fig. 1.

I is a plate secured at the inner surface of the part H of the door-casing, extending upward and inward to the rod *h*, to which it is secured, then bending slightly downward and extending a short distance inward from said rod.

J is a ratchet-wheel on the rod *h* just outside of one of the plates *g*.

j is a pawl pivoted upon a plate *g* and adapted to engage with the teeth of the wheel J.

K is a handle upon the part H of the outer casing of the door, and *k* is a similar handle upon the part G, by which the door F may be opened and closed.

L is a gridiron-damper, by which a regulated quantity of air may be admitted to the interior of the door-casing above the plate *c* and in front of the plate *b*.

The operation of the above-described device is as follows: The part H of the outer casing being closed or at its lowest position, the opening *c* is completely closed. The damper L is now opened to admit air, which flows down into the door-casing back of the plate *b* and above the plate *c*, between said plate and the outer casing, and against the plate I, keeping said parts from becoming excessively hot. If it is desired to admit more air, the part H of the outer casing is raised and held in place by the ratchet-wheel J. Steam is admitted to the interior of the casting D, in which it is considerably superheated. From the casting D the steam flows rapidly in small jets toward the rear of the furnace, stirring and thoroughly mixing the gases in the furnace and creating a slight vacuum just inside of the opening C, which induces an increased draft through the openings in the door. The

air coming in under the part H of the outer casing of the door is directed by the plate I and deflected downward by the bend at the forward edge of said plate. The part H is raised to pass coal into the furnace.

It will be noticed that the above-described apparatus may be placed upon any furnace without making any material alteration in the brickwork or furnace-front, and experience has shown that it will prevent the formation of smoke and greatly increase the efficiency of the fuel.

What I claim is—

1. A furnace-door having a semicylindrical casing consisting of two parts, G, H, and end pieces, *g*, and a plate I, the part, H, of the semicylindrical casing being adapted to turn with its surface parallel and adjacent to the surface of the part, G to admit air to the furnace, and to permit the passage of fuel, substantially as described.

2. A furnace-door having a semicylindrical casing consisting of two parts, G, H, and end pieces, *g*, the part, H, of the semicylindrical casing being adapted to turn with its surface parallel and adjacent to the surface of the part, G, to admit air to the furnace, and a plate, I, extending from the inner surface of the part, H, and bending downward toward its inner edge, substantially as described.

3. A furnace-door having a semicylindrical casing consisting of two parts, G, H, and end pieces, *g*, the part, H, of the semicylindrical casing being adapted to turn with its surface parallel and adjacent to the surface of the part, G, to admit air to the furnace a plate, I, extending from the inner surface of the part, H, upward and inward, a plate, *b*, extending from the upper edge of the door down-

ward and means for admitting air near the upper edge of the plate, *b*, and between said plate and the semicylindrical casing, G, H, substantially as described.

4. A furnace-door having a semicylindrical casing consisting of two parts, G, H, and end pieces, *g*, the part, H, of the semicylindrical casing being adapted to turn with its surface parallel and adjacent to the surface of the part, G, to admit air to the furnace, a plate, I, extending from the inner surface of the plate, H, upward and inward, a foraminous plate, *b*, extending from the upper edge of the door downward, a plate, *c*, extending from the lower edge of the plate, *b*, nearly to the semicylindrical casing, and means for admitting air near the upper edge of the plate, *b*, and between said plate and the semicylindrical casing, G, H, substantially as described.

5. A furnace-door, having a semicylindrical casing consisting of two parts, G, H, and end pieces, *g*, a rod, *h*, bearing in said end pieces, a plate, I, extending from the inner surface of the part, H, and uniting said part, H, to said rod, substantially as described.

6. A furnace-door, having a semicylindrical casing consisting of two parts, G, H, and end pieces, *g*, a rod, *h*, bearing in said end pieces, means for uniting the part, H, with said rod, a ratchet-wheel on the end of said rod and a pawl on a plate, *g*, adapted to engage with said ratchet-wheel, substantially as and for the purpose described.

In testimony whereof I sign this specification in the presence of two witnesses.

EDDY H. HOVEY.

Witnesses:

F. G. ANDERSON,
H. L. VAN SYCKEL.