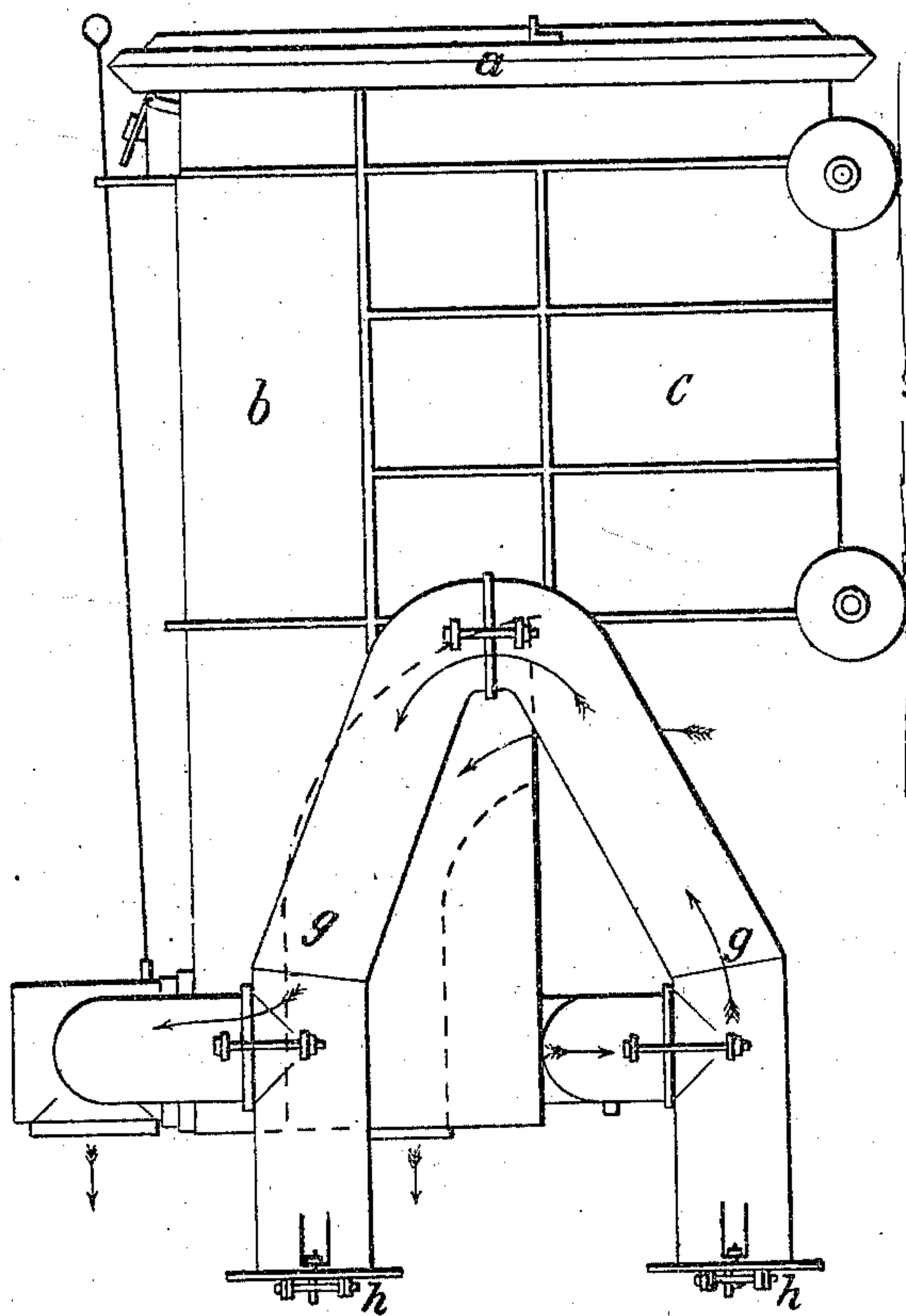


O. S. KELSEY.  
Hot-Air Furnaces.

No. 143,453.

Patented Oct. 7, 1873.

Fig. 1.



Witnesses

*Ezra Clark*

*Jeremy W Bliss*

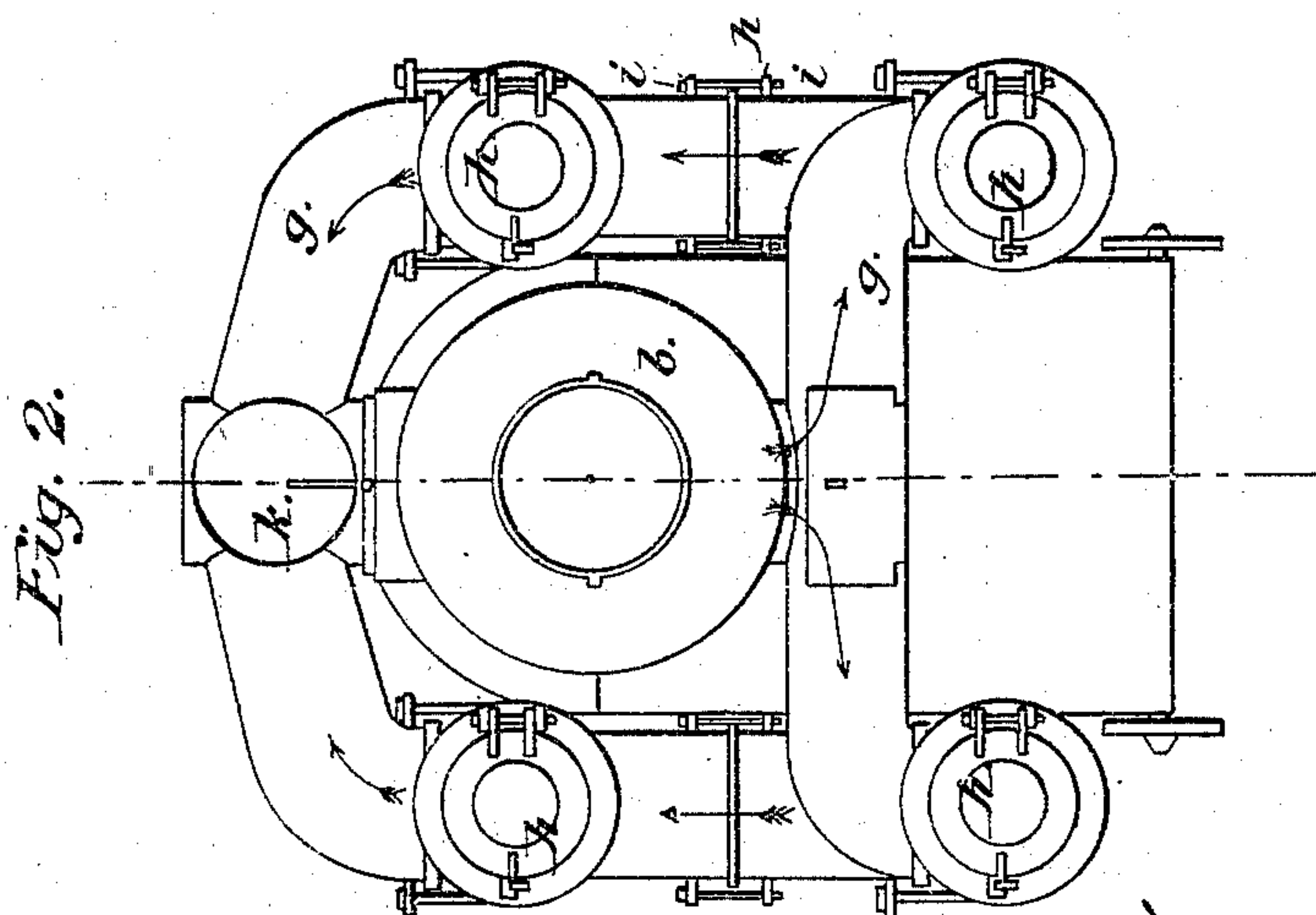
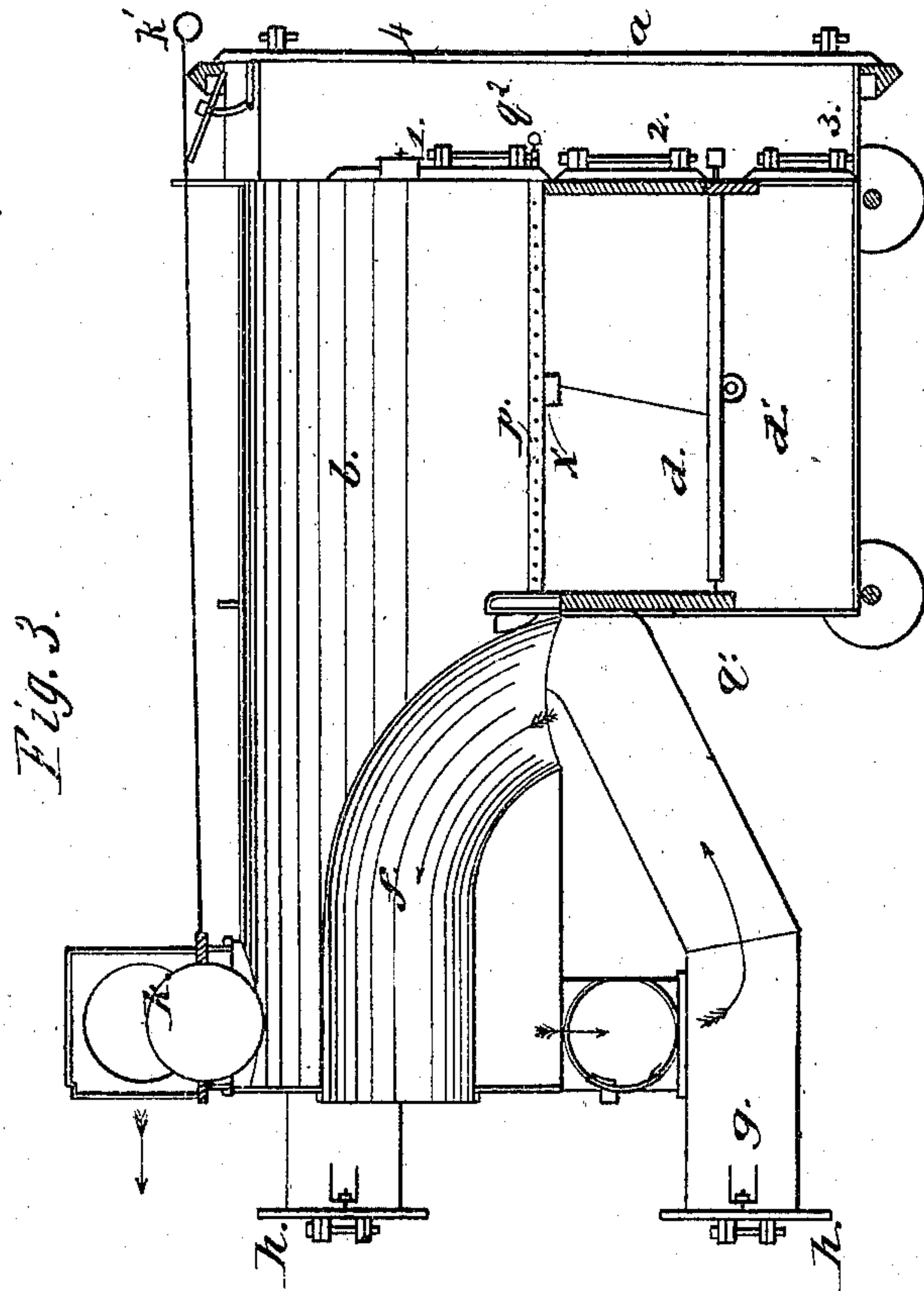
Inventor

*Otis S. Kelsey*

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Witnesses  
E. A. Kellogg

Jeremy W. Bliss

Inventor

O. S. Kelsey



# UNITED STATES PATENT OFFICE.

OTIS S. KELSEY, OF HARTFORD, CONNECTICUT.

## IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. 143,453, dated October 7, 1873; application filed June 19, 1873.

*To all whom it may concern:*

Be it known that I, OTIS S. KELSEY, of the city and county of Hartford and State of Connecticut, have invented a certain new and useful Improvement in Heating - Furnaces; and to enable others skilled in the art to make and use the same, I will proceed to describe, referring to the drawings, in which the same letters indicate like parts in each of the figures.

The nature of this improvement will be understood from the specification and drawings.

Figure 1 is a side elevation. Fig. 2 is a back-end elevation. Fig. 3 is a sectional elevation.

*a* is an edge view of the furnace front, in which are arranged doors 1 2 3 4. Door 1 opens into the combustion-chamber; door 2 opens into the fire-box; door 3 opens into the ash-box; door 4 closes the whole front. The back-side edge of the frame or plate *a* has a rabbet to receive the wall-casing or masonry, so as to exclude dirt and dust, and prevent leakage. *b* is a cylindrical chamber, which is formed in the square-box portion *c*, in which is formed the fire-box *d*, and directly under it the ash-box *d*<sup>1</sup>. The body of this furnace may be made whole, or in two or more parts, and is set in metal-work or masonry, inclosing the whole iron-work excepting the door-front, the door frames or flanges at the back end, and the smoke and gas exit, thus forming hot-air space between the casing or wall and the furnace. The air is first introduced through the wall into the air-pipe *f*, which passes through the cylinder *b* into and around the heating-pipes *g*. The hot air is conducted to the hot-air space into the several apartments by pipes in the common way. The side pipes are designed to be made whole, in one piece each; or in two parts. The end or cross connecting-pipes are also designed to be made whole, each in one piece, the ends or connections to have flanges or joints, and secured together firmly with bolts. *h* are doors and frames, four in number, secured to the back end of the conducting-pipes by means of bosses *i* formed on the body of said pipes, and bolts *i*<sup>1</sup>, which are for the purpose of clearing out the conductors, or making any necessary repairs. *k* is a damper, arranged in the neck of the pipe which joins the exit-opening.

When it is open a direct draft is produced. When it is closed the smoke, heat, &c., are turned, as indicated by darts, through the pipes *g*, over the closed damper, and off through the exit-pipe. This damper is operated from the front by means of connecting-rods *k*<sup>1</sup>. Thus the heat is expended and absorbed by continued fresh supply of air in the chamber within the casing and around the furnace-work. The smoke and gas pass off over the damper *k* into the chimney. The inside of the fire-box is lined with fire-brick, in the common way. *p* are air-conducting tubes, arranged upon or close to the upper edge of the fire-brick, and through the door-front, and extend back the whole length of the fire-box, and are turned up at right angle with their length at the back end to form a support for the water-back *q*, or the air-box *q*<sup>1</sup>, which are, one or the other, as desirable, arranged directly over the fire-brick, across the back end of the fire-box. These pipes are provided with bosses *x* for holding the upper edge of the fire-brick in their place against the wall of the fire-box. The pipes or tubes *p* are provided with air-regulating tubes *q*<sup>2</sup>. By drawing forward said tubes pure air will be introduced directly into the pipes *p* and to the fire-surface through the jet-orifices, to furnish the proper volume of oxygen. Said regulators may be opened and closed at will, without opening the door, directly to the fire-surface.

This furnace is cheap and simple of construction; can be easily kept cleared and in perfect order without detaching its parts; economizes in the use of fuel, and secures a steady healthy heat.

I believe I have thus shown the nature, construction, and advantage of this improvement so as to enable others skilled in the art to make and use the same.

I claim—

The combination of the fire-box *d*, cold-air pipes *p* having bosses or brick supports *x* and regulating-tubes *q*<sup>2</sup>, water or air back *q*<sup>1</sup>, cylindrical chamber *b*, heating-pipes *g*, rabbet-edge plate *a*, and doors and frames *h*, substantially as and for the purpose set forth.

OTIS S. KELSEY. [L. S.]

Witnesses:

EZRA CLARK,  
JEREMY W. BLISS.