(No Model.) 2 Sheets—Sheet 1.

G. F. GALLAGHER & T. B. MOORE.

FURNACE.

No. 414,037. Patented Oct. 29, 1889.

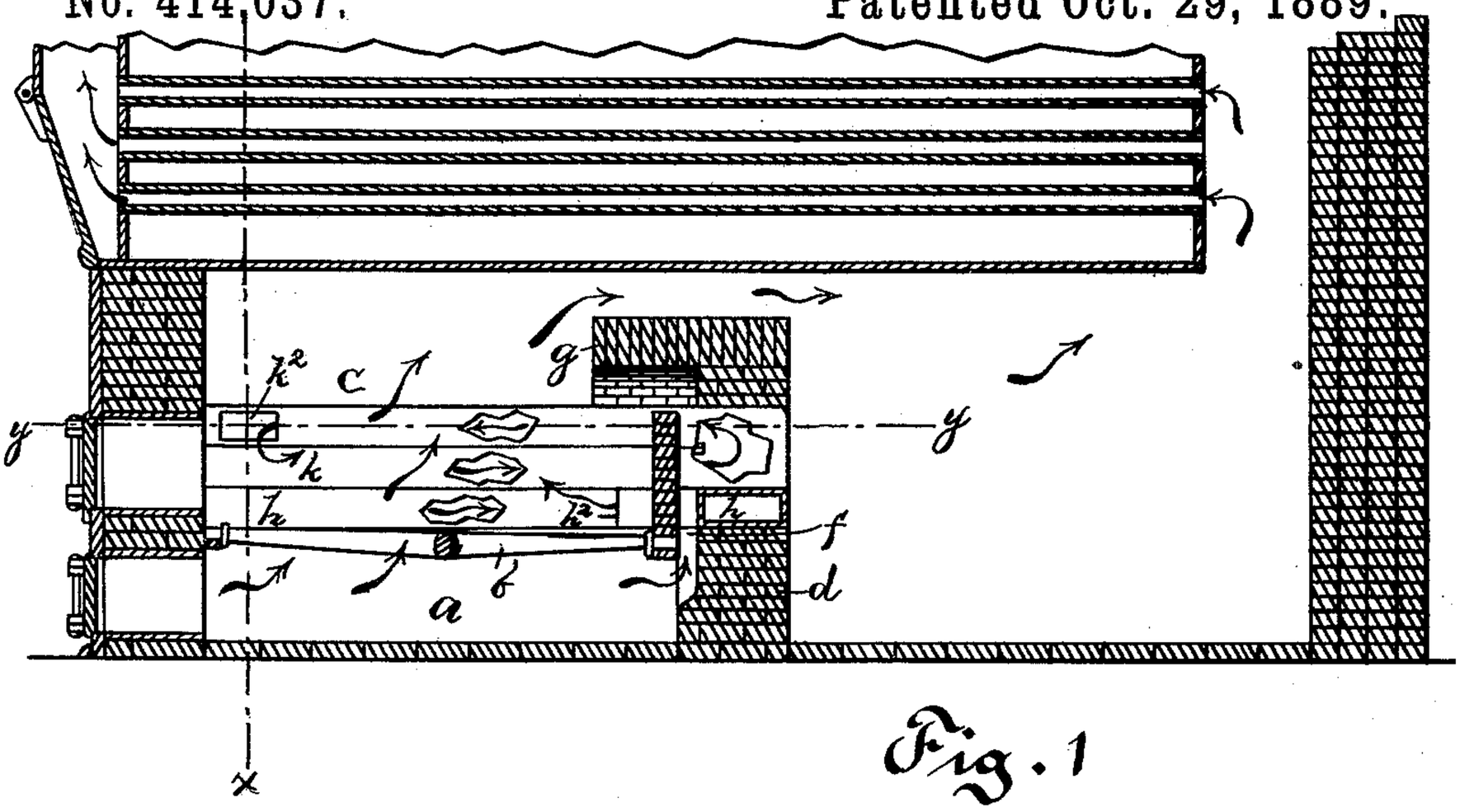

Fig. 1

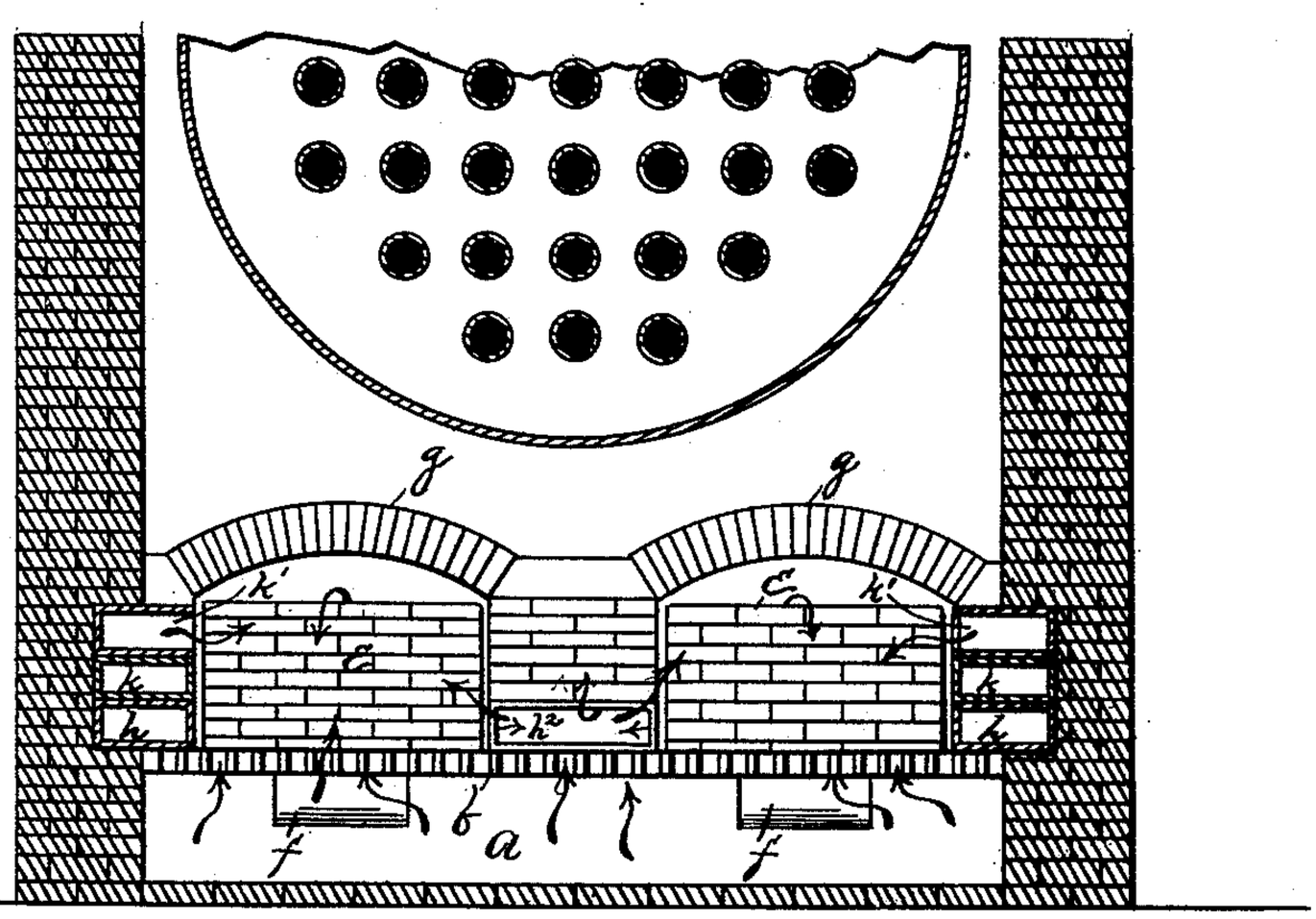

Fig. 2.

Witnesses

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James. A. Jarrett

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(No Model.) 2 Sheets—Sheet 2.

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FURNACE.

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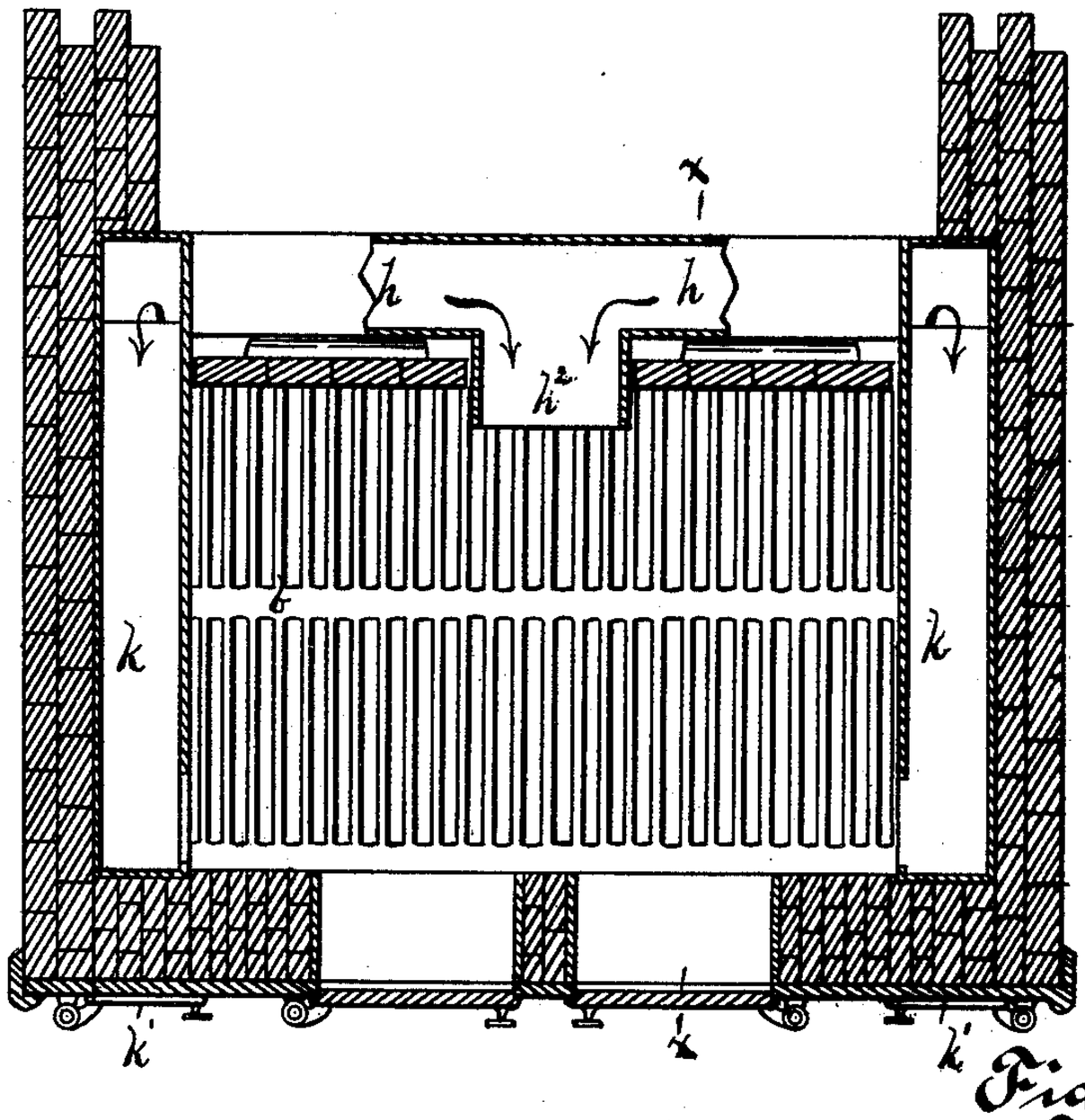

Fig. 3

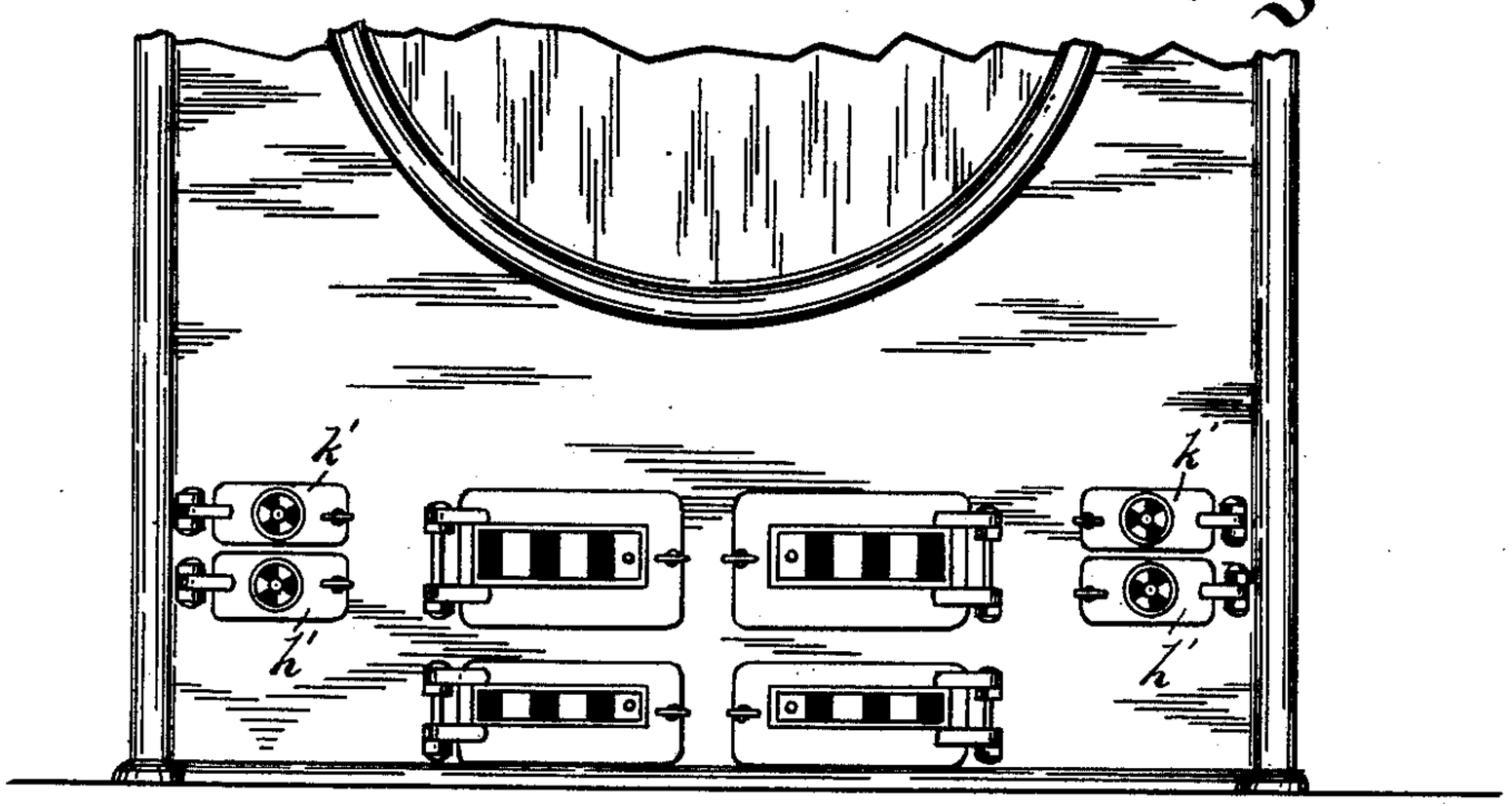

Fig. 4.

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UNITED STATES PATENT OFFICE.

GEORGE F. GALLAGHER AND THOMAS B. MOORE, OF ROCHESTER, NEW YORK, ASSIGNORS OF ONE-SIXTH TO HENRY GALLAGHER, OF SAME PLACE.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 414,037, dated October 29, 1889.

Application filed April 12, 1889. Serial No. 306,937. (No model.)

To all whom it may concern:

Be it known that we, GEORGE F. GALLAGHER and THOMAS B. MOORE, citizens of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Furnaces; and we do hereby 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

In our application filed January 16, 1889, Serial No. 296,474, the passages for furnishing heated air to the fire-box passed across the center of the grate-bars in both directions, thus virtually making two fire-boxes, and the fire-box was arched over to a point near the front thereof. These features, together with the passage connecting the ash-pit with the rear of the fire-box, constitute a furnace giving satisfactory results; but we have discovered in constructing and operating this furnace in an experimental way that better results are unquestionably obtained by first having the grate-bars' surface entirely free of the hot-air passages, one set of the passages starting at the sides and meeting at the center of the rear of the fire-box, and the other set starting also at the sides of the fire-box, extending along such sides, and then returning directly back to the front of the fire-box, and there discharging the heated air. The arch over the fire-box in our present improvement is almost entirely dispensed with, only a short projection from the bridge-wall being left to serve as a deflector for the air coming up from the ash-pit.

We will now proceed to describe and claim the manner in which we have carried out these important improvements.

In the drawings, Figure 1 is a vertical longitudinal section of our improved furnace, taken on line $x\ x$ of Fig. 3. Fig. 2 is a transverse vertical section through line $x\ x$, Fig. 1. Fig. 3 is a horizontal section through line $y\ y$, Fig. 1, with portions broken away; and Fig. 4 is an outside front elevation.

Referring to the drawings, a is the ash-pit, b the grate-bars, c the fire-box, and d the bridge-wall, all of usual construction. In front of the bridge-wall is the auxiliary wall e, having the passages $f\ f$, leading from the ash-pit to the fire-box between it and the bridge-wall, as in the application hereinbefore referred to.

g is a horizontal extension of the bridge-wall, which acts as a deflector for the air coming up from the ash-pit. The air-passages are divided into two sets, the first $h\ h$ starting from the doors or dampers $h'\ h'$ at the sides of the fire-box and passing along the sides to the rear and across to the center, where they merge into a common discharge-opening h^2 at the center of the rear of the fire-box. The difference between these and the passages in the application referred to is that the heated air is discharged in the rear of the fire-box instead of the front. The other set of passages k start just above the passages $h\ h$ at their doors or dampers $k'\ k'$, pass back to the rear, and return along the same side to the front of the fire-box, where they discharge their heated air at the openings $k^2\ k^2$. This improved arrangement discharging, as it does, the highly-heated air at the center of the rear of the fire-box and also at the sides of the front of the same, together with an unobstructed grate-surface and the addition of the supply of air from the ash-pit at the rear of the fire-box, produces an intense heat, which entirely consumes all the products of combustion (which go to make smoke) in a manner not heretofore effected by any of our varied constructions. It also effects a larger saving of fuel, which fact has been clearly demonstrated by actual and careful experiment.

We claim—

A furnace having the ash-pit and bridge-wall, as shown, a passage or passages between the bridge-wall and an auxiliary wall, such passage or passages leading from the ash-pit to the fire-box, for the purpose stated, and two sets of air-passages, one set starting from the outer sides of the fire-box, extending along the sides to the rear, and joining at the center in one common passage, which discharges

the heated air in the rear of the fire-box, the other set of passages starting from the outer sides of the fire-box, extending along the sides to the rear, and returning along the same sides and discharging their heated air in the front of the fire-box, substantially as and for the purpose stated.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEORGE F. GALLAGHER.
THOMAS B. MOORE.

Witnesses:
JOHN C. HEISLER,
F. J. O'BRIEN.