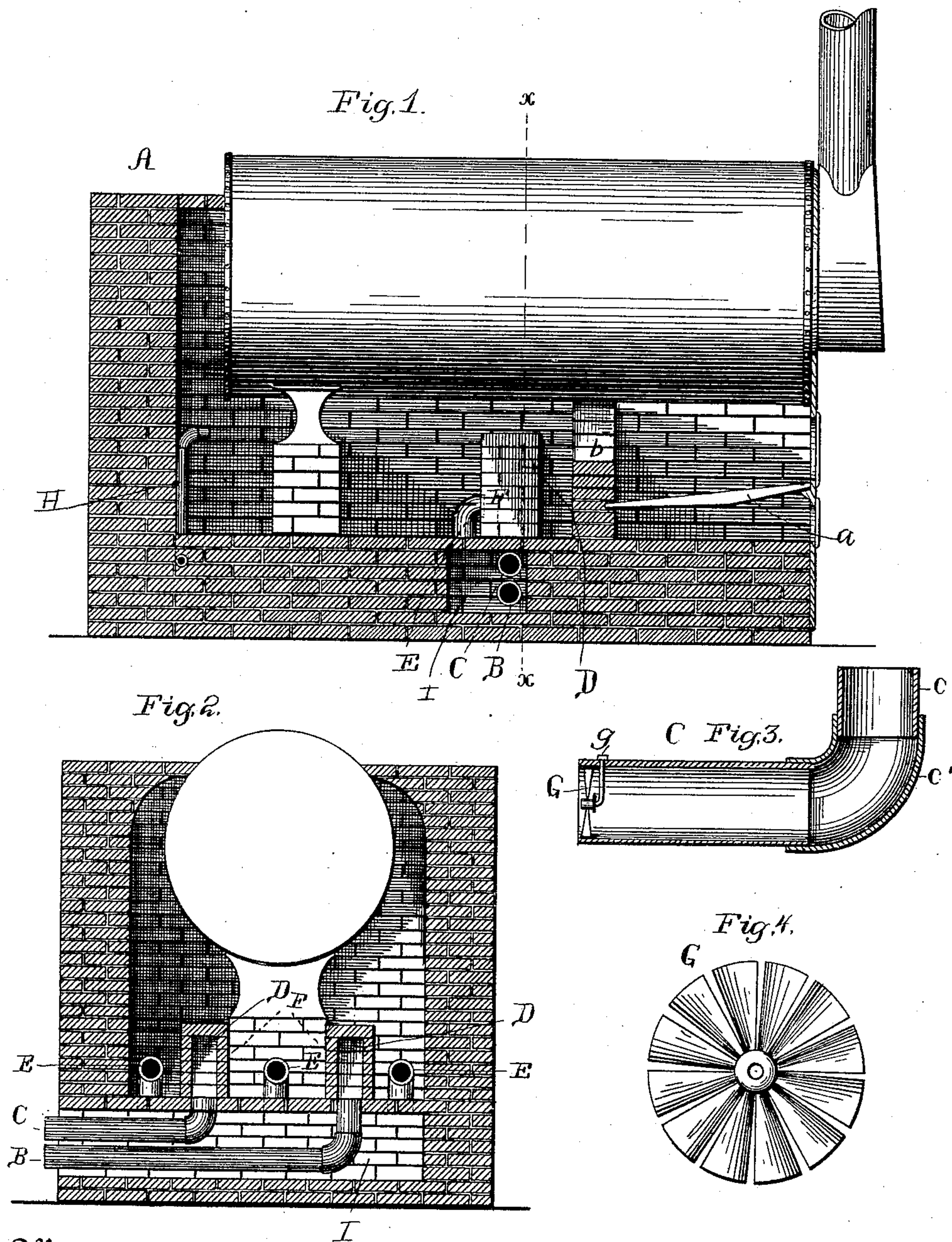


(No Model.)

R. KNOBELSPIES.
SMOKE CONSUMER.

No. 429,765.

Patented June 10, 1890.



Witnesses

R.A. Balderson.

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Inventor

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By His Attorneys,

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UNITED STATES PATENT OFFICE.

RUDOLPH KNOBELSPIES, OF KANSAS CITY, MISSOURI, ASSIGNOR OF ONE-HALF TO THOMAS M. DICKEN, GEORGE C. MILLER, AND CHARLES A. HUNT, ALL OF SAME PLACE.

SMOKE-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 429,765, dated June 10, 1890.

Application filed January 25, 1890. Serial No. 338,054. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH KNOBELSPIES, of Kansas City, Jackson county, Missouri, have invented certain new and useful
5 Improvements in Smoke-Consumers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in
10 smoke-consumers; and it consists in the novel construction and arrangements hereinafter fully set forth and described.

In the drawings, which illustrate the manner of carrying out my invention, Figure 1 is
15 a longitudinal section through a furnace, showing the position of the pipes which constitute my smoke-consumer. Fig. 2 is a cross-sectional view through the same, taken on line *xx* of Fig. 1. Fig. 3 is a sectional detail view of the pipes, showing the manner in
20 which the fan is secured in position. Fig. 4 is a detail view of said fan.

Referring to the drawings by letter, A represents a furnace constructed in the ordinary
25 manner, having the steam-boiler secured therein on suitable supports and provided with a grate *a*, which rests on the bridge-wall *b*.

B C are pipes, made of any suitable material, secured in the opening or chamber I
30 in the lower part of the furnace, as illustrated in Figs. 1 and 2. Said pipes convey the cold air from the outside of the furnace to the flues D, which are formed in the projections
35 F, said flues and projections being more clearly illustrated in Figs. 1 and 2.

E are pipes extending from the opening I into the fire-box of the furnace, having their
40 exits turned toward the front of the furnace, so that the air drawn therein meets the flames, and thereby causes the smoke to be consumed.

G is a fan secured in the outer ends of pipes B and C, said fan being pivoted on the
45 support *g* in any suitable method, preferably as shown in Fig. 3. This fan is operated by the air passing through said pipes, and serves

to keep the air from passing back again after it has once entered them. Said fan G may, however, be dispensed with. 50

The pipes B and C are preferably situated near the center of the furnace, and as they extend upward into the fire-boxes their ends are turned toward the flames, and as the air is discharged from them it meets the smoke
55 and flames, thereby driving the smoke back toward the front of the furnace.

H is a small pipe which extends from the side of the furnace through to the center and thence upward, as illustrated in Fig. 60
1, having its outlet turned toward the front of the furnace. This pipe H is placed at the rear of the furnace, and the cold air which passes through it meets the flames and smoke as they pass around the rear of the
65 boiler.

Having a smoke-consumer constructed in this manner it will be found very effective and durable. The pipes B C extend only a short distance into the flues D, the purpose
70 being to protect them from the heat, the projections F, which form the flues D, being composed of suitable fire-brick. The air from pipes E and flues D being directed against the flames and smoke they are driven
75 backward toward the front of the furnace, and the oxygen of the cold air coming in contact with the carbon of the smoke causes said carbon to burn, thereby leaving what
80 smoke there is free from soot and other carbonic matter.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A smoke-consumer consisting of pipes 85 B, C, and H, secured in the fire-box of the furnace from the side, having their outlets or exits directed against the flames of chambers I, from which extend the pipes E, which direct a current of cold air against the
90 flames, thus causing the smoke to be consumed in the manner substantially as herein described.

2. A smoke-consumer having the pipes B,

C, and E extending from chamber I, together with a small pipe H, located at the rear of the furnace, all of which direct a current of air against the flames and smoke in the
5 manner described, the said pipes B and C being provided with a fan G, mounted on bearing g, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

RUDOLPH KNOBELSPIES.

Witnesses:

R. A. BALDERSON,
A. A. HIGDON.