No. 630,703. Patented Aug. 8, 1899.

G. S. HUFF.

SMOKE CONSUMER.

(Application filed Feb. 25, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

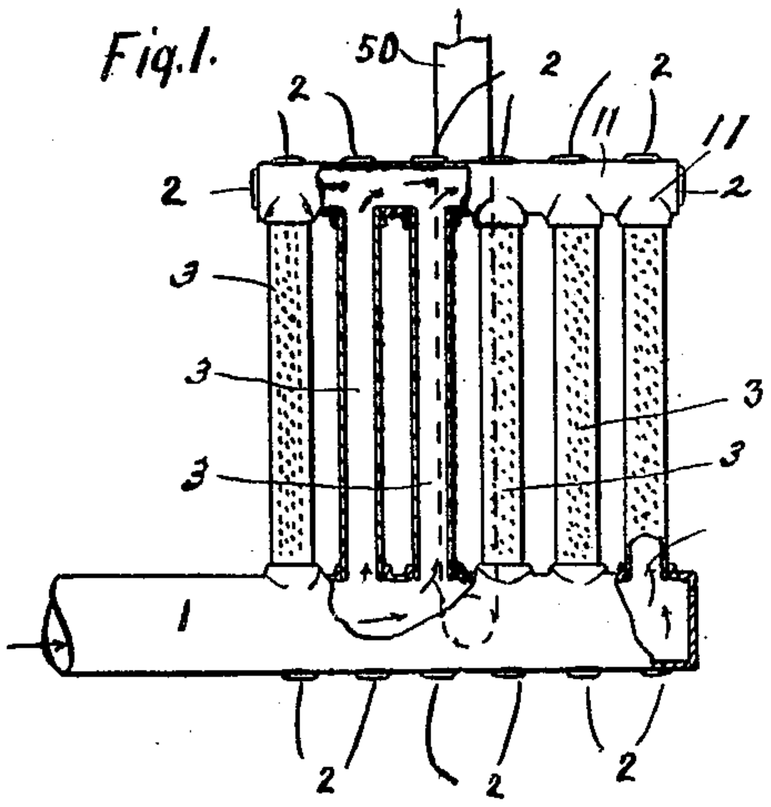


Fig. 1a.

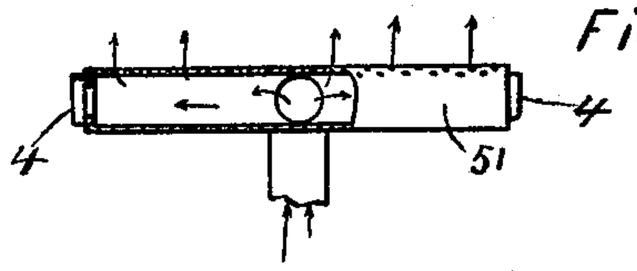
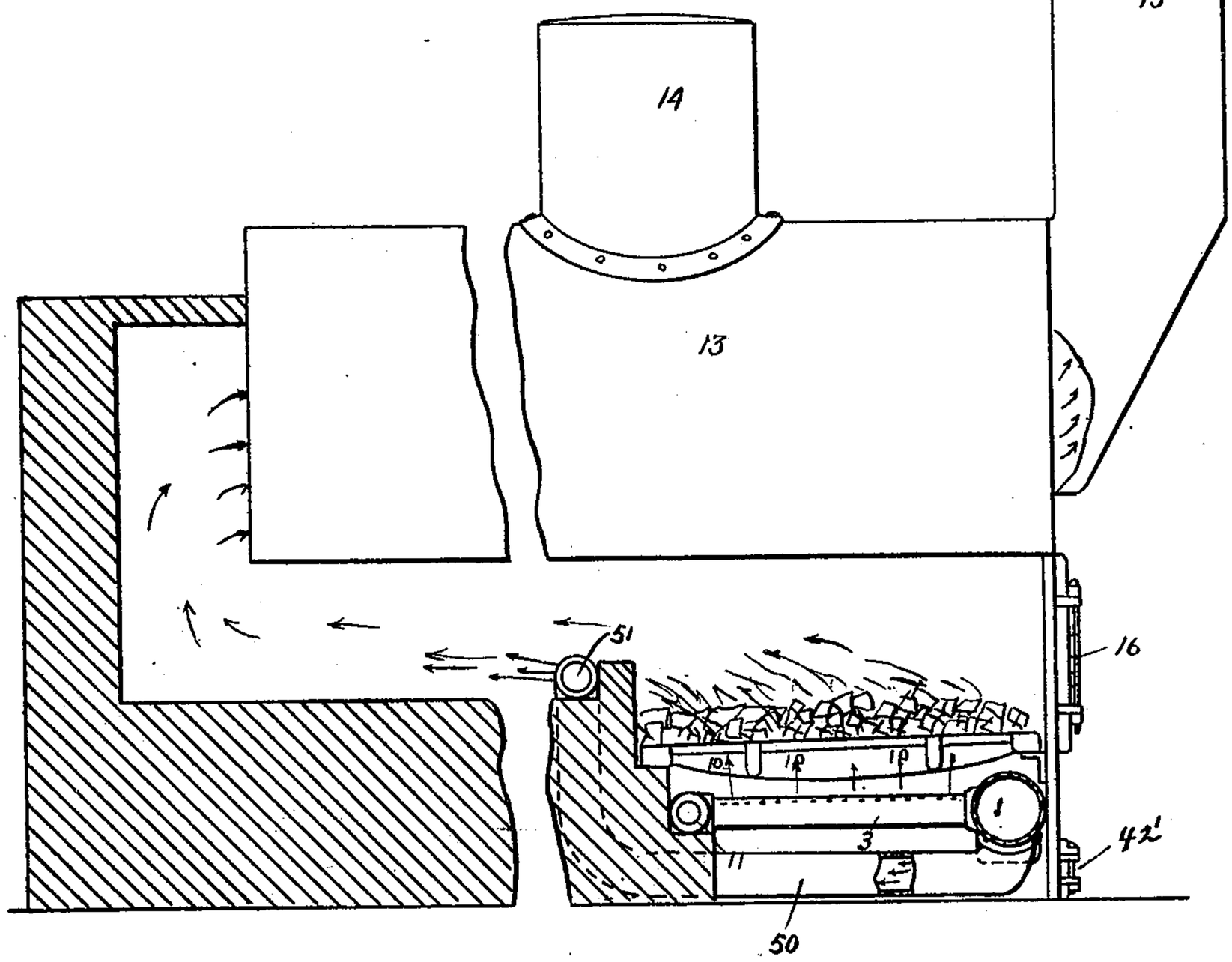


Fig. 2.



Witnesses
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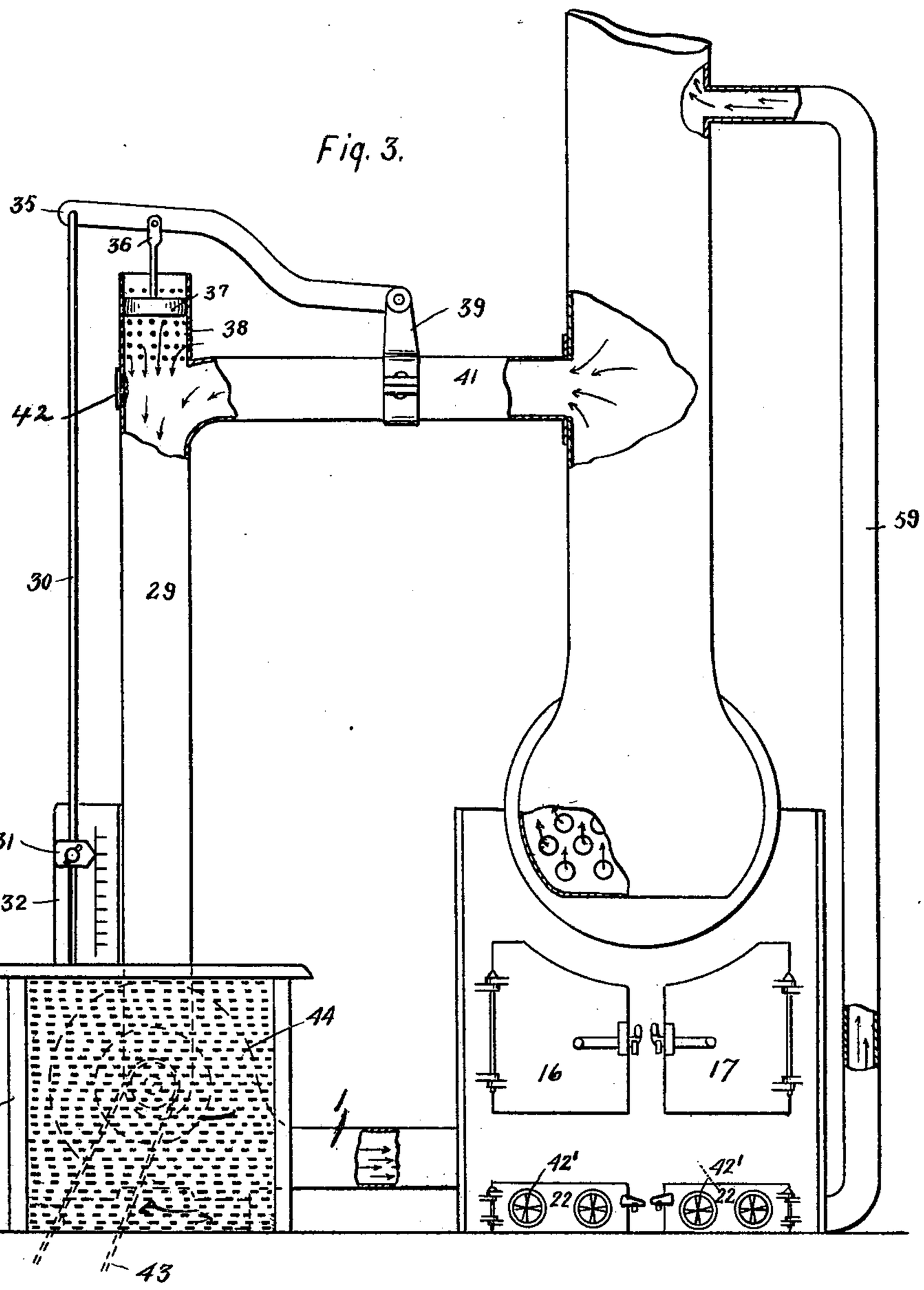
Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE S. HUFF, OF PORTLAND, INDIANA.

SMOKE-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 630,703, dated August 8, 1899.

Application filed February 25, 1899. Serial No. 706,783. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. HUFF, a citizen of the United States, residing at Portland, in the county of Jay and State of Indiana, have invented certain new and useful Improvements in Smoke-Consumers; and I 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.

My invention relates to smoke-consumers, and has for its object to so construct the same that not only will it be cheap, durable, and efficient, but a more perfect combustion and economy of fuel will result.

In the drawings forming a part of this specification, and in which like symbols of reference represent corresponding parts in the several views, Figure 1 is a plan view, partly in section, of the perforated pipes located beneath the grate-bars of the furnace. Fig. 1ª is a section of perforated T-pipe connecting the series of perforated pipes with the rear of the furnace. Fig. 2 is a sectional side view of the furnace; and Fig. 3 is a front elevation of the apparatus applied to a furnace, showing certain parts broken away.

1 represents the large tube that is used to supply smoke and air to the smoke-tubes, 3 a series of perforated tubes connected with the same, and 11 a tube connected with the ends of tubes 3, so that air or other fluids may pass through the same.

2 represents caps upon tubes 1 and 11 for the purpose of cleaning the same.

13 represents the boiler of furnace; 14, a dome on same; 15, smoke-stack, and 16 and 17 fire-doors to the furnace.

50 shows a pipe connecting large pipe 1 with a cross-T 51, protected by section of fire-wall, and 4 caps or plugs for the cross-T. This cross-T has perforations leading from the rear of the same, so that any fluid passing from it will be directed to the rear of the furnace. This pipe 50 extends from the under side of the pipe 1 to the rear wall of the furnace and, passing up through the same, connects with the cross-T 51 and is for the purpose of discharging through its perforations a portion of the smoke and gases into the part of the furnace known as the "combustion-chamber."

10 represents the fire-grates, located above the perforated tubes 3.

Referring now to Fig. 3, 30 shows a connecting-rod; 31, an indicator; 32, graduated plate; 33, top of blower-cabinet; 34, side of same; 35, a lever; 36, piston-rod; 37, a piston-head, and 38 a section through vertical pipe 29, disclosing the perforations in the top of the same. 39 shows a band connected to pipe 41 for the purpose of supporting lever 35; 42, a cap for cleaning pipe 29; 43, belt for communicating power to the blower, and 44 blower or fan. 42′ are ventilators, 22 draft-doors, and 59 a tube connecting the ash-bed of the furnace with the smoke-stack for the purpose of carrying off the foul or burned gases. Between said tube 59 and the exhaust-pipe is a damper (not shown) for the purpose of forming a division and permitting the non-combustible gases to pass through pipe 59 above pipe 41, or, if desired, the pipe 59 may be projected through the side wall of the building or structure.

The arrows throughout the drawings indicate the course of the air-currents, &c.

The operation of the apparatus will be apparent from the foregoing. The products of combustion passing from the furnace into the smoke-stack and thence into the exhaust-pipe are directed through said pipe into the base of the ash-bed by the action of the blower and mingle with the fire in the furnace. The non-combustible gases are at the same time directed through the escape-pipe above the exhaust-pipe and pass out through the chimney or other exit.

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

1. In a device of the character described, the combination with a furnace, of an exhaust-pipe leading from the smoke-stack of the same to the ash-pit, a perforated arm projecting from said exhaust-pipe, a valve controlling admission of air to the perforated arm, an indicator to regulate said valve, a blower, and an escape-pipe leading from the ash-pit of the furnace to carry off the non-combustible gases.

2. In a device of the character described, the combination with the smoke-stack of a furnace, of an exhaust-pipe leading from the

same and connecting with the base of the furnace beneath the fire-grates, perforations in said exhaust-pipe for the admission of air, a valve to control the admission of air, a lever carrying the valve, an indicator to regulate said valve, a blower, a series of perforated pipes located beneath the grate-bars and connected with the exhaust-pipe, a supplemental pipe connected with the exhaust-pipe and resting on the ash-bed of the furnace, said supplemental pipe connected with a perforated T in the fire-wall of the furnace, and an escape-pipe leading from the ash-bed to the smoke-stack, all substantially as described.

3. In a device of the character described, the combination with a furnace or the like, of a blower located near the same, an exhaust-pipe leading to said blower, a bracket supported upon the exhaust-pipe, a lever supported by said bracket, a valve carried by said lever, openings in the pipe controlled by said valve, a rod connecting the free end of the lever with an indicator on the top of the blower-casing, a supplemental pipe connected with the exhaust-pipe and resting on the ash-bed of the furnace, said supplemental pipe connected with a perforated T in the fire-wall of the furnace, and an escape-pipe leading from the ash-bed to the smoke-stack, all substantially as described.

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

GEORGE S. HUFF.

Witnesses:
L. G. HOLMES,
J. W. SMITH.