No. 794,471. PATENTED JULY 11, 1905.

I. D. SMEAD.

PORTABLE GARBAGE CREMATORY.

APPLICATION FILED APR. 12, 1905.

3 SHEETS—SHEET 1.

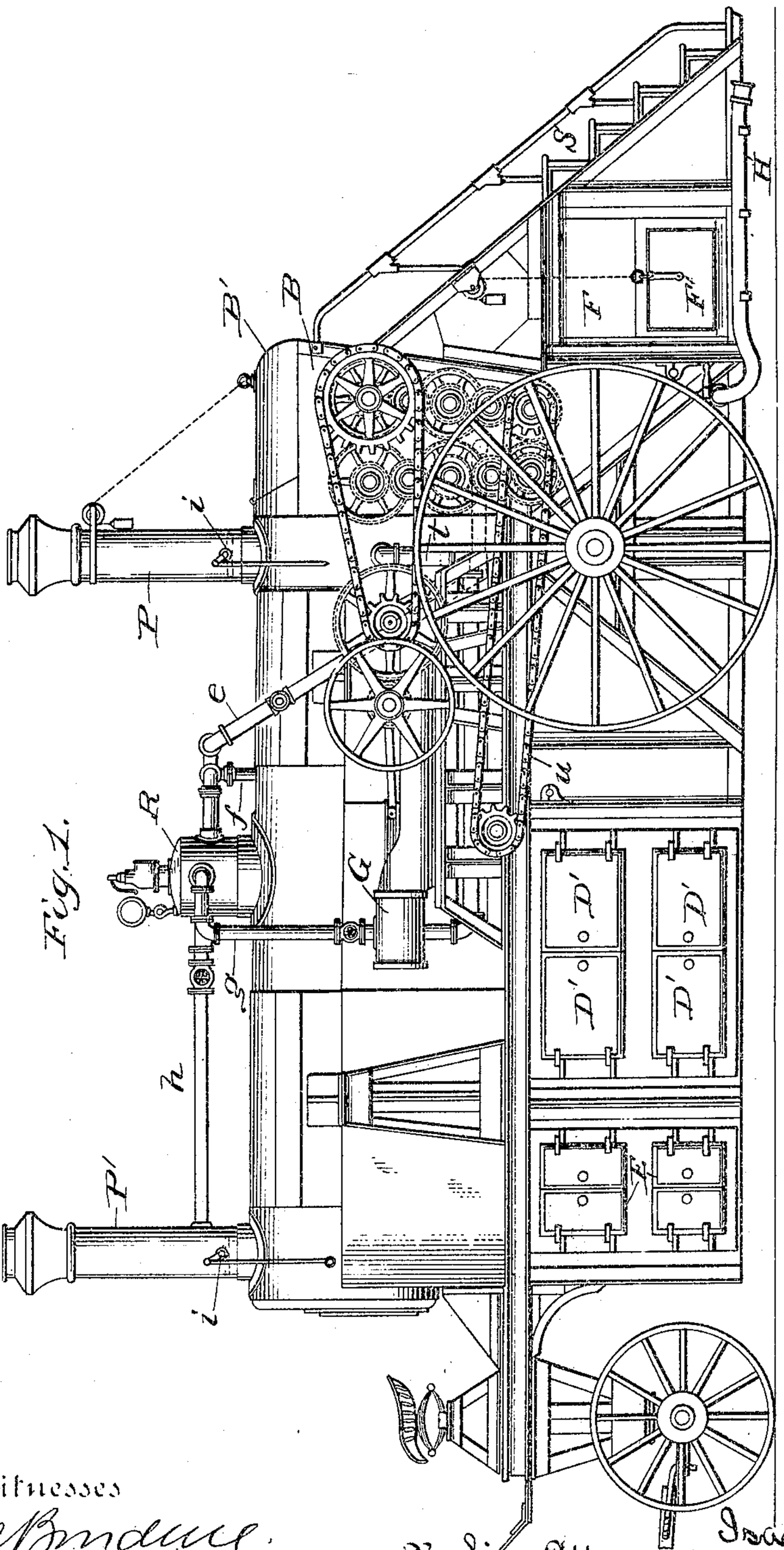

Fig. 1.

Witnesses
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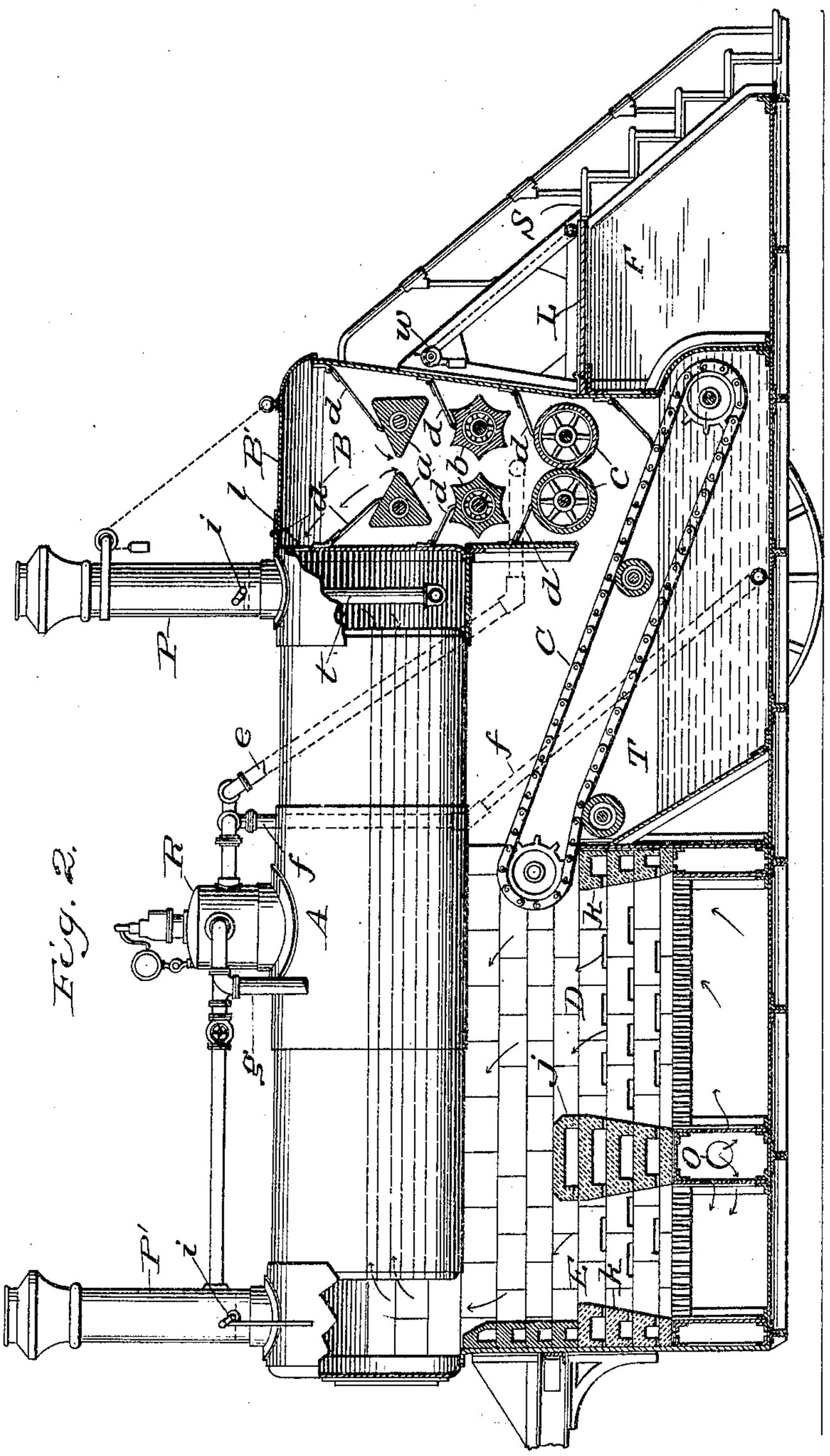

Fig. 2.

Witnesses

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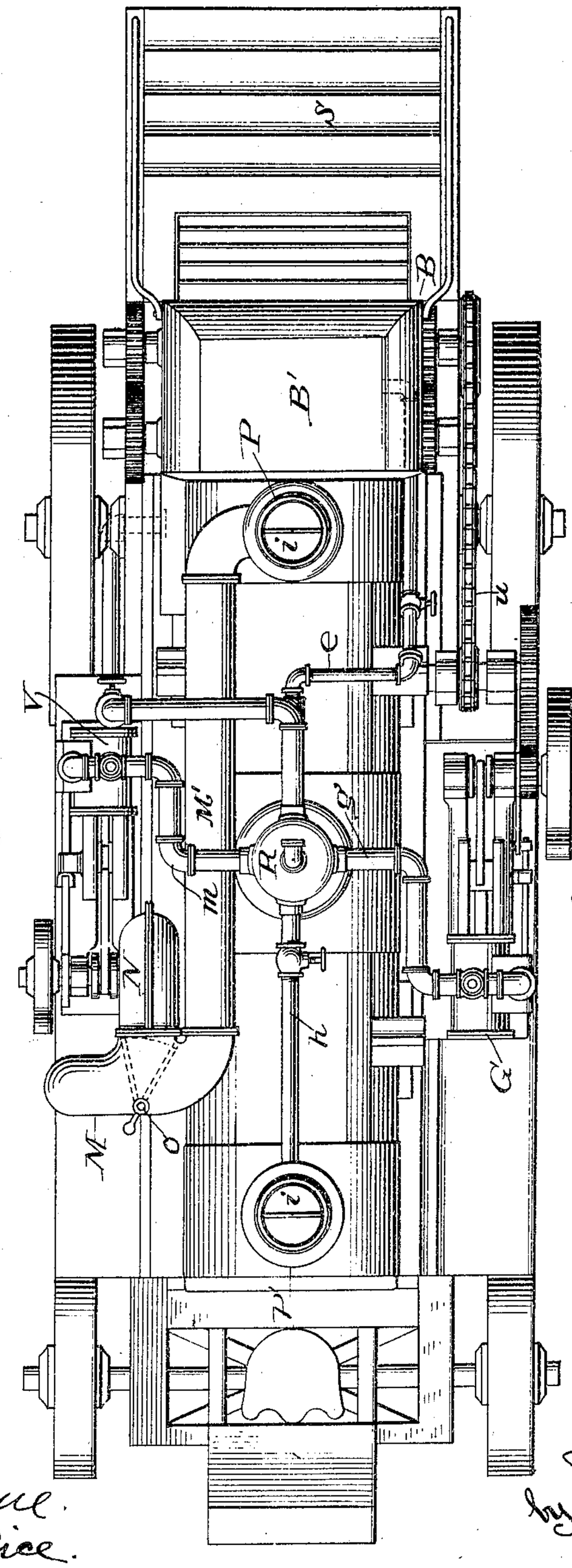

Fig. 3.

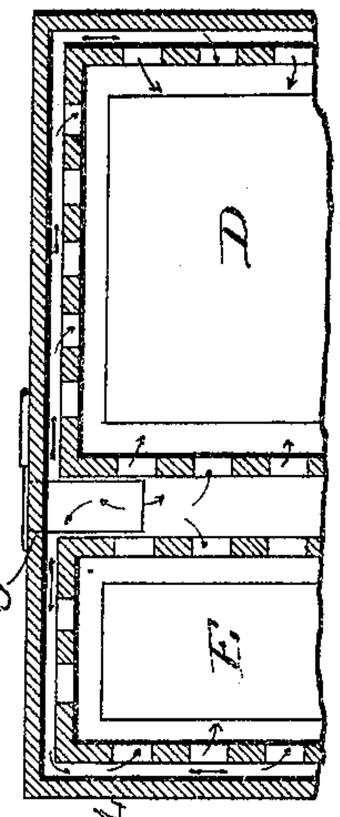

Fig. 4.

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No. 794,471. Patented July 11, 1905.

UNITED STATES PATENT OFFICE.

ISAAC D. SMEAD, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-FOURTH TO THEODORE M. WARNER, OF CLEVELAND, OHIO, AND THREE-EIGHTHS TO EDWARD L. SMEAD, BOTH OF CINCINNATI, OHIO.

PORTABLE GARBAGE-CREMATORY.

SPECIFICATION forming part of Letters Patent No. 794,471, dated July 11, 1905.

Application filed April 12, 1905. Serial No. 255,201.

To all whom it may concern:

Be it known that I, ISAAC D. SMEAD, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Portable Garbage-Crematories, of which the following is a specification.

My present invention relates to a portable crematory for gathering and burning garbage; and it consists in a novel construction and combination of mechanism for this purpose, as hereinafter more fully described.

In the accompanying drawings, Figure 1 is a side elevation of the apparatus. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a top plan view, and Fig. 4 is a horizontal section of the double furnace looking from above downward.

The object of this invention is to provide means for gathering and cremating garbage at or near the places where it is produced, thus avoiding the necessity of hauling it through the streets of cities, which, as usually conducted, is attended with many objections. To accomplish this result, I build a metallic frame adapted to carry a steam-boiler and furnace, with mechanism for crushing the garbage, expressing the fluid therefrom, and feeding the solid portions to the furnace, where it is consumed, the apparatus as a whole being mounted upon wheels, so that it may be hauled or propelled through the alleys or wherever desired, as shown in Fig. 2.

Referring to said figure, at the rear end of the boiler A is a hopper B (provided with a hinged lid B′) for the reception of the garbage, said hopper being reached by steps S at the rear. Within the hopper I arrange three pairs of rolls, the upper pair *a* being triangular in cross-section, their function being to crush any hard substance that may be contained in the garbage and feed it down to the second pair of rolls *b*, provided with a series of longitudinal ribs, which further crush and grind the garbage and in turn feed it to the third pair of rolls *c*, which express the liquid from the garbage, said liquid passing into a tank T beneath, as clearly shown in Fig. 2.

Above each pair of rolls I hinge a pair of plates *d*, with their free edges resting upon the rolls, as shown. These plates feed the material between the rolls and prevent it from passing to the outside of the same, the gearing connecting and operating the rolls being arranged in such manner as to cause the rolls of each pair to turn inward toward each other, as shown in Fig. 2. As will be seen in Fig. 1, the gearing is located upon the outside of the frame.

Underneath the rolls is arranged an endless belt or conveyer C, composed of a series of pivoted links, as shown in Fig. 2, and which extends forward to the furnace-chamber D to convey the garbage as it falls from the rolls to the furnace. Belt C is driven by sprocket-wheels, one of which is actuated by a chain *u*, passing about a sprocket-wheel on the end of the shaft of one of the rolls, as shown in Fig. 1, it being understood that the rolls and conveying-belt extend from side to side of the machine or frame, the walls of which are composed of metallic plates.

To operate the rolls and the conveyer C, I provide a steam-engine G, which, as shown in Figs. 1 and 3, is located at the side of the boiler on the frame.

The furnace is composed of two chambers, the rear larger chamber D being employed for cremating the garbage and the smaller front chamber E for burning coke or coal to more effectually heat the boiler. These chambers are both lined with fire-brick provided with openings for the admission of air, as shown in Figs. 2 and 4. The partition *j* between the two chambers is composed of hollow fire-bricks provided with openings at their sides for the escape of air to the chambers, as are also the end bricks *k*.

To supply air to the furnace, I provide a blower or fan N and a small steam-engine V for driving the same, this engine being located on the opposite side of the boiler from

engine G, as shown in Fig. 3. From the blower a pipe M extends downward and terminates in a chamber underneath the partition *j*, which separates the two fire-chambers, as shown at O, Fig. 2, the walls of this air-chamber being provided with openings through which the air can readily pass. As shown in Fig. 4, an open space is left on all sides between the fire-brick walls of the furnace and the metallic plates which surround the same, so that the air which is forced into and fills this entire space is also forced through the openings in the brick walls on all sides, as well as through the bottom grate, thereby creating an intense heat in the furnace. In addition to this forced draft I also provide for a suction-draft through the furnace by extending a pipe M′ from the fan or blower N to the rear smoke-stack, Fig. 3, there being a valve or gate *o* arranged at the junction of the two pipes, as shown in dotted lines, by the movement of which the air may be turned into either pipe whenever desired. The object of this suction-draft is to prevent the smoke and heat from being blown out of the furnace when the doors are opened for putting in fuel or trash, as would be the case if the forced draft were continued at such times. By turning the current from the fan into the smoke-stack P the air instead of being forced into the furnace will be drawn in, there being one or more openings (with slides to close them when desired) in the metal wall which surrounds the furnace-chambers, as shown in Fig. 4, through which the air may enter. By these means either a forced draft or a suction-draft may be produced at will, the furnace being supplied with a strong draft in either case.

The boiler is provided with two smoke-stacks P and P′, one at each end, as shown in Figs. 1, 2, and 3, each having a valve or damper *i*, by which either one may be opened or closed at will, the one at the rear being ordinarily used and that at the front when there is an excess of heat. Each stack is also provided with a steam-pipe, as shown at *t*, Fig. 2, to aid in creating a draft when desired.

In order to sterilize the fluid in the tank T, a steam-pipe *f* is extended from the steam-dome R and enters the tank near its bottom, as shown in Fig. 2, and to destroy any germs there may be in the garbage another steam-pipe *e* is extended to the hopper, as also shown in Fig. 2, by which steam is mingled with the garbage as it passes between the rolls, carrying upward with it the fumes absorbed therefrom and entering the smoke-stack through an opening *l*, as shown in Fig. 2. This, with the heat passing through the smoke-stack, will effectually destroy any offensive odors there may be.

Steam is conveyed to the engine G by a pipe *g* and to engine V by a pipe *m*, as shown in Fig. 2, all of the pipes being provided with valves, which may be located wherever most convenient.

At the rear end of the apparatus under the steps S is a chamber F for the coke or coal used in the front furnace-chamber E, it being provided at the top with a hinged lid L, (shown in Fig. 2,) to which a weight is attached by a cord or chain passing over a pulley *w* to hold said lid open while the fuel is being put into chamber F. This fuel-chamber, as shown in Fig. 1, is also provided at one side with a vertically-sliding door F′, which has a counterbalance or weight to hold it open when the fuel is being removed.

A hose H is attached to the tank T, as shown in Fig. 1, by which the contents of the tank may be emptied into the sewer-trap whenever necessary.

In order to keep the boiler supplied with water, a tank (not shown) may be located at the most convenient point—as, for instance, at one or both sides of the boiler in front of the engines—and which may be replenished from the street-hydrants at intervals, as may be necessary, a feed-pump being provided, as usual.

I have shown the apparatus as designed to be hauled by a team; but it is obvious that it may be arranged to be automatically propelled, if desired.

In using the apparatus it will be drawn or propelled through the alleys or where most convenient to receive the garbage, which will be dumped into the hopper B, the lid of which will then be closed and the engine started. The garbage having been crushed, ground, and freed of any liquid it may contain by the action of the rolls will be deposited in a comparatively dry state upon the traveling belt C, which will convey it to the furnace-chamber D, into which it will fall in an inclined heap at the rear end and there be consumed by the intense heat of the furnace. Whatever fumes may arise will be effectually destroyed by the heat and pass off with the smoke through the boiler and smoke-stack, the operation being repeated frequently as the crematory is moved from point to point. By these means the disagreeable and expensive practice of hauling the garbage through streets will be entirely avoided, and by burning it daily or at frequent intervals before it becomes decayed its offensive odors will be greatly lessened and the small amount there may be will be practically destroyed. All rubbish—such as paper, rags, and the like—will be put into the furnace direct through the doors D′ and burned.

Having thus fully described my invention, what I claim is—

1. The combination in a portable crematory, of a boiler; a furnace; a hopper; a pair of triangular crushing-rolls, a pair of ribbed grinding-rolls, and a pair of pressing-rolls located within the hopper; an endless-chain

conveyer arranged to convey the pressed material to the furnace; with an engine and intermediate mechanism for operating the rolls and conveyer, all constructed and arranged to operate substantially as shown and described.

2. The combination of a boiler having a smoke-stack; a hopper for receiving garbage, said hopper being provided with a lid and an opening direct to the smoke-stack; and a pipe arranged to convey steam from the boiler to the hopper, substantially as shown and described.

3. A portable crematory provided with a furnace; means for expressing the contained liquid from garbage; means for conveying the garbage thus treated to the furnace; and a steam-boiler having a smoke-stack at its opposite ends, said smoke-stacks being provided with dampers whereby the draft may be made to pass in whole or in part through either smoke-stack at will, substantially as hereinbefore set forth.

4. The combination in a portable crematory, of a furnace; a steam-boiler; a hopper provided with a pair of angular crushing-rolls, a pair of ribbed grinding-rolls, and a pair of smooth pressing-rolls; a conveyer arranged to carry the pressed material from the rolls to the furnace; and a tank located beneath said hopper and conveyer to receive the fluid expressed from the material, all constructed and arranged to operate substantially as hereinbefore set forth.

5. The combination in a portable crematory, of a boiler provided with two smoke-stacks; a furnace lined with hollow fire-brick having slits or openings for the passage of air; a fan connected to the furnace and to the rear smoke-stack, with a valve arranged to regulate the flow of the air in the pipes leading to the furnace and the stack; and an engine for operating the fan, all arranged to operate substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ISAAC D. SMEAD.

Witnesses:
ANTHONY KUEFER,
BURTON A. SMEAD.