No. 719,545. PATENTED FEB. 3, 1903.

C. A. WILLIAMS.

GARBAGE CREMATORY.

APPLICATION FILED SEPT. 28, 1901.

NO MODEL. 3 SHEETS—SHEET 1.

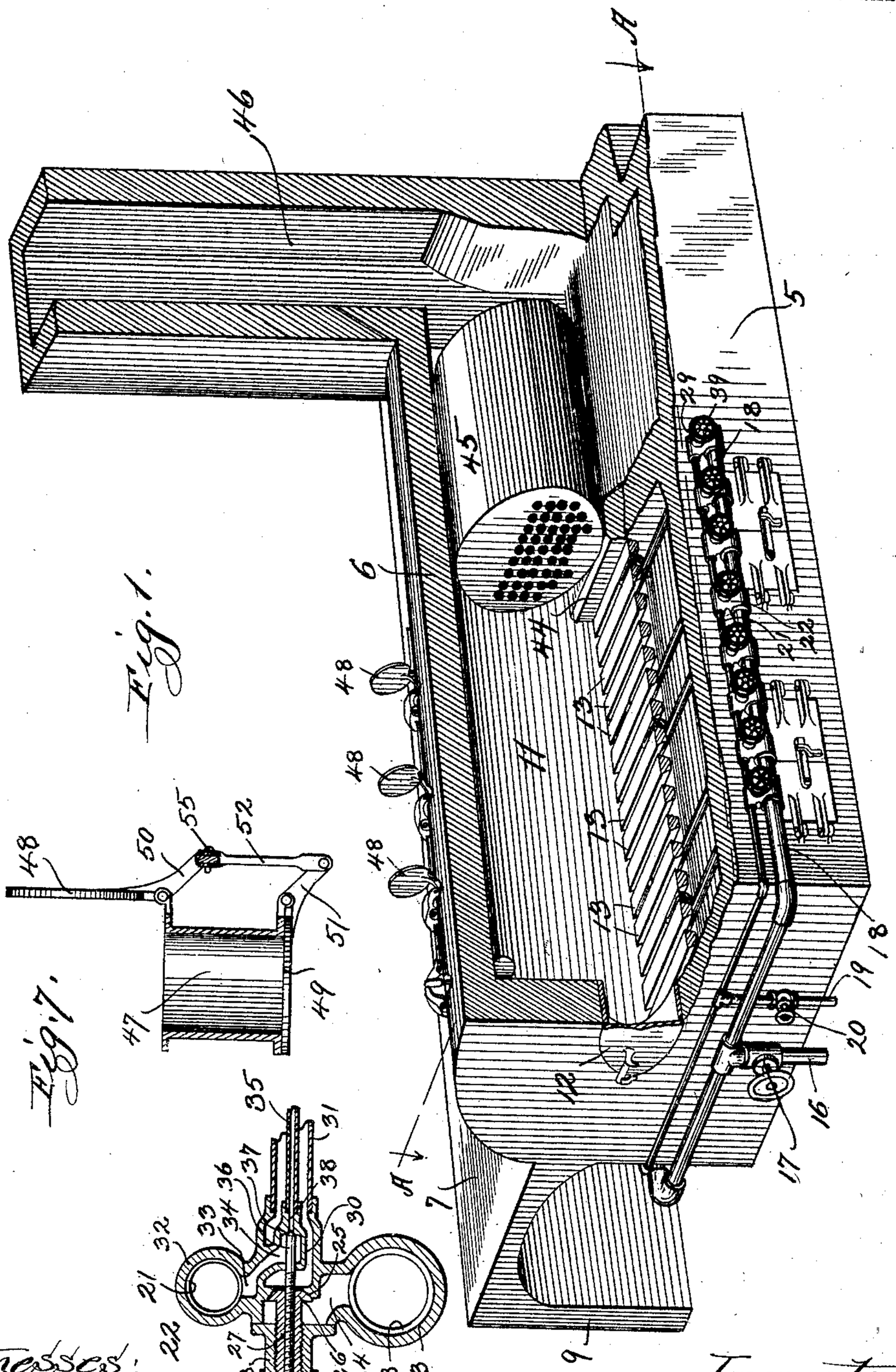


Fig. 1.

Fig. 7.

Fig. 6.

Witnesses:
W. J. Jacker
Chas. R. Harbaugh

Inventor:
Charles A. Williams,
By Coburn, McRoberts & McElroy.
Attys

No. 719,545. PATENTED FEB. 3, 1903.

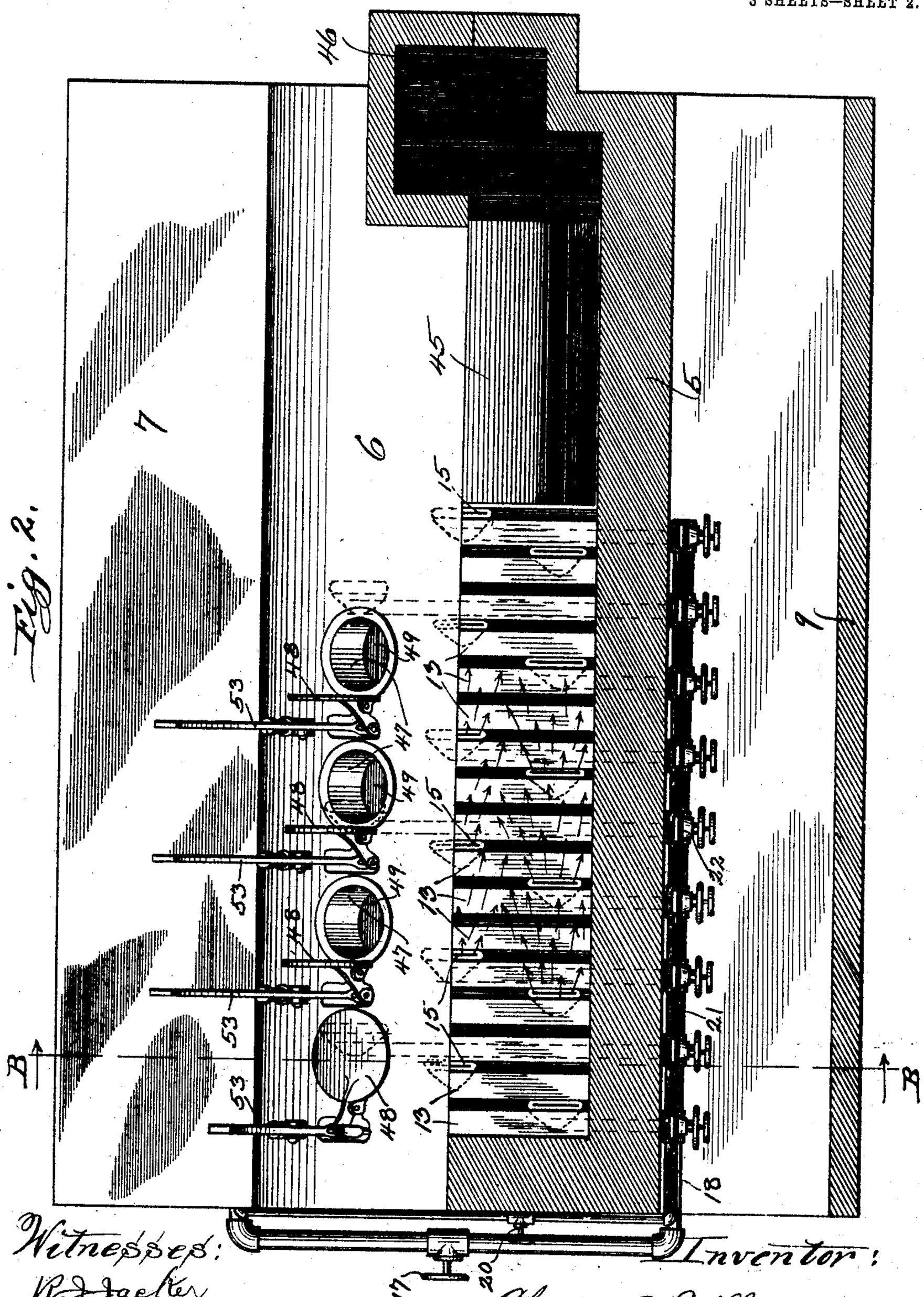
C. A. WILLIAMS.

GARBAGE CREMATORY.

APPLICATION FILED SEPT. 28, 1901.

NO MODEL. 3 SHEETS—SHEET 2.

Fig. 2.



Witnesses:
R. J. Jaeker
George A. Hardaugh

Inventor:
Charles A. Williams,
By Coburn, McRoberts & McElroy,
Attys.

No. 719,545. PATENTED FEB. 3, 1903.

C. A. WILLIAMS.

GARBAGE CREMATORY.

APPLICATION FILED SEPT. 28, 1901.

NO MODEL. 3 SHEETS—SHEET 3.

Fig. 5.

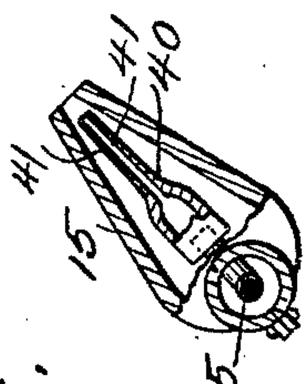


Fig. 4.

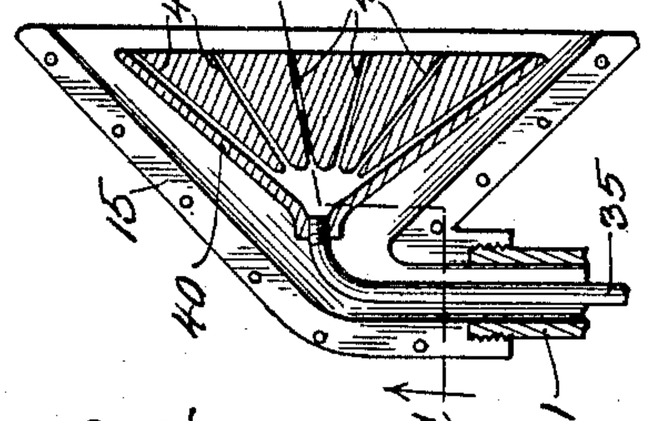


Fig. 3.

Witnesses:
R. J. Jaeker
George A. Harbaugh

Inventor:
Charles A. Williams
By Coburn, McRoberts & McElroy.
Atty's.

UNITED STATES PATENT OFFICE.

CHARLES A. WILLIAMS, OF CHICAGO, ILLINOIS.

GARBAGE-CREMATORY.

SPECIFICATION forming part of Letters Patent No. 719,545, dated February 3, 1903.

Application filed September 28, 1901. Serial No. 76,945. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. WILLIAMS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Garbage-Crematories, of which the following is a specification.

My invention is designed to produce a furnace adapted to thoroughly cremate garbage and similar matters and one that is adapted to be used in connection with a system in which the garbage-cans as they are filled are transported to the crematory and their contents dumped into the crematory directly without the necessity of previously emptying their contents.

Referring to the accompanying sheets of drawings, in which the same reference characters are used to designate identical parts in all the figures, Figure 1 is a perspective view of the crematory with portions of it broken away and in cross-section to show the interior construction thereof. Fig. 2 is a plan view of the same in section on the line A A of Fig. 1. Fig. 3 is a vertical section on the line B B of Fig. 2. Fig. 4 is a detail of one of the burner-nozzles in central longitudinal section. Fig. 5 is a section of the same on the line C C of Fig. 4. Fig. 6 is a sectional view through the valve controlling the oil and air supply for each burner, and Fig. 7 is a central sectional view through one of the garbage-receiving traps.

In carrying out my invention I preferably make a furnace of an elongated rectangular shape, having the thick vertical walls 5 surmounted by the arch-crown 6. At a suitable height with relation to the crown 6 I provide the platforms 7, upon which the attendant stands when he is emptying the cans into the garbage-receiving traps. These platforms 7 are conveniently formed by the flattened top of the supplementary arches 8, which are supported by the outside walls 9, thus making a covered passage-way 10 on either side of the furnace. The walls 5 and 9 and the arches 6 and 8 are preferably formed of the customary stone and fire-brick construction that is used in devices of this kind.

The fire-box 11 is of the same general shape as that of the furnace proper and may have the door 12 at one end thereof, giving access to the grate-bars 13, which, as seen in Fig. 3, extend from side to side and are supported upon and secured to flanges formed by the preferably metallic strips 14, set into the inner side of the walls 5 and projecting a short distance therefrom. To secure the necessary heat for the combustion, I provide a plurality of oil-burners 15, which, as seen in Figs. 2 and 5, are directed rearwardly and upwardly between the grate-bars and staggered so that the entire grate-surface is covered by a practical sheet of flame when the burners are in operation.

While I might employ almost any form of an oil-burner, I preferably employ the one illustrated in detail in Figs. 4 to 6. A pipe 16, connected with a suitable supply of compressed air, has a valve 17 therein, by which the air-supply for the entire furnace can be increased or diminished. The branches 18 of this pipe extend along the sides of this furnace. A similar supply-pipe 19 for fuel-oil, preferably controlled by the valve 20, has its branches 21 parallel to and adjacent the branches 18, and these branch oil and air supply pipes are connected on each side opposite the alternate burners by the valve connections 22. (Best shown in section in Fig. 6.) The lower channel 23, into which the branch pipe 18 enters, has the passage 24, leading to the valve-seat 25, which is closed by the valve 26, having its stem 27 threaded through the cap 28 and terminating in the hand-wheel 29. The valve 26 connects the passage 24 with a chamber 30, into which opens the end of the pipe 31, leading directly to the burner 15. The upper channel 32, into which the branch oil-pipe 21 enters, is connected by the passage 33 with the chamber 34, with which the oil-supply pipe 35, which passes directly into the burner 15, is connected. The supply of oil to the individual burners is regulated by the valve-stem 36, screwed through the stem 27, the pointed end of which coöperates with a seat 37, formed by the inner end of the passage 38, into which the pipe 35 passes. A hand-wheel 39 on the end of the stem 36 permits the proper manipulation of the valve.

As seen in Figs. 4 and 5, the burner 15 consists of the fan-shaped hollow outer casing into which the compressed air passes from

the pipe 31. This is flattened toward its outer end, as seen in Fig. 5, to leave a narrow slit through which the air and atomized oil passes to make the fan-shaped flame (indicated by the arrows in Fig. 2) when the burners are lighted. The upwardly-turned end of the pipe 35 has secured upon it the fan-shaped spray-nozzle 40, preferably made of two symmetrical halves secured together, the inner surface of each half being provided with the oppositely-disposed diverging channels 41, which insure the oil being delivered in several fine sprays, which are atomized by the action of the compressed air passing over them in escaping from the nozzle, so that a sheet of oil, forming a fan-shaped flame, as above described, emerges from the burner.

At suitable intervals along the sides and beneath the pipes 18 I provide the doors 42, by which the ashes may be cleaned from the ash-box 43 beneath the grate-bars 13. At the rear end of the furnace, upon a raised seat 44, I place a steam or water boiler 45, of any desired construction, so that the smoke and heated air from the combustion of the garbage must pass through and around said boiler before they can escape from the chimney 46, located at the end of the furnace. Of course the boiler 45 will be provided with suitable connections by which the steam or heated water generated therein can be utilized.

The garbage-receiving traps, as best seen in Figs. 2, 3, and 4, consist of the preferably metallic cylinders 47, set into the crown 6 at a suitable angle, so that their contents will be discharged centrally upon the grate-bars 13. These cylinders 47 have the covers 48 and the swinging bottoms 49 hinged to one side thereof, as clearly seen in Fig. 3, and provided with the stems 50 and 51, respectively, which are connected by the link 52, so that as the cover 48 is open the bottom 49 will be closed, and vice versa. A foot-lever 53 is pivoted to a suitable bearing 54, secured upon the side of the crown, and has its upper end pivoted, as at 55, between ears formed on the upper end of the link 52. An expanding helically-coiled spring 56 is interposed between a suitable recessed cap 57 on the under side of the foot-lever 53 and the bearing 54, so that the tension of the spring holds the lever 53 in position, so that the cover is opened and the bottom is closed. The projection 58 is formed on the bottom of the lever 53, so that when the attendant desires to discharge the contents of the garbage-receiving trap into the furnace all he has to do is to step on the projection 58, when the parts will be shifted from the position shown on the right hand of Fig. 2 to that shown on the left hand, thereby discharging the contents of the trap into the furnace.

The operation of the device will be readily apparent. The burners having been properly adjusted and lighted and the garbage-wagon placed alongside of the platform 7, the attendant takes the cans from the wagon and dumps their contents into the garbage-receiving traps, after which he steps on the lever 53, discharging the garbage into the furnace, by which it is consumed. After the garbage has become thoroughly ignited some of it of course becomes fuel for the flames and the amount of oil can be diminished as may be found desirable, either uniform by the valve 20 or differently in different parts of the furnace, as by the valve-wheels 39. Likewise the supply of compressed air may be diminished uniformly or differently in different portions, as may be necessary to secure the perfect combustion of the garbage under the varying conditions of the kind, quantity, and location thereof in the furnace.

By the construction herein shown and described it will be apparent that I have produced a simple and efficient furnace for the consumption of garbage and similar materials and one in which the heat therefrom can be utilized in generating steam, &c.

While I have shown my invention as embodied in the form which I at present consider best adapted to carry out its purposes, it will be understood that it is capable of modifications and that I do not desire to be limited in the interpretation of the following claims by the language thereof, but only as may be necessitated by the state of the prior art.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a garbage-crematory, the combination with the fire-box, of the grate-bars extending across the lower portion thereof, the burners extending beneath and projecting up through said grate-bars, and the traps arranged in the top of the fire-box and adapted to discharge their contents upon said grate-bars; substantially as described.

2. In a garbage-crematory, the combination with the fire-box, of the grate-bars across the lower forward portion thereof, the raised seat at the chimney end of said fire-box, the burners extending beneath and projecting up through said grate-bars, a boiler on said seat in position to be heated by the fire, and the traps arranged in the top of the fire-box and adapted to discharge their contents upon said grate-bars; substantially as described.

3. In a garbage-crematory, the combination with the elongated rectangular fire-box, of the traps arranged along the sides in the top thereof, the transverse grate-bars, the fuel-supply pipes arranged on the outside of the fire-box adjacent the grate-bars, and the platform along the sides above and protecting the fuel-supply pipes and giving access to the traps; substantially as described.

4. In a garbage-crematory, the combination with the fire-box, of the grate-bars extending across the lower portion thereof, the burners extending beneath said grate-bars and projecting upwardly and rearwardly between said grate-bars, and the traps arranged

on the top of the fire-box and adapted to discharge their contents upon said grate-bars; substantially as described.

5. In a garbage-crematory, the combination with the fire-box of the grate-bars extending across the lower portion thereof, the staggered burners extending beneath said grate-bars and projecting upwardly and rearwardly between said grate-bars, the oil and air supply pipes extending along the sides of the fire-box and having the burners alternately connected thereto on either side, and the traps arranged in the top of the fire-box and adapted to discharge their contents upon said grate-bars; substantially as described.

6. In a garbage-crematory, the combination with the fire-box of the grate-bars extending across the lower portion thereof, the traps arranged in the top of the fire-box and adapted to discharge their contents upon said grate-bars, the burners extending beneath and projecting upwardly through said grate-bars, and valves for said burners by which the fuel-supply can be increased or diminished at any part of the furnace; substantially as described.

7. In a garbage-crematory, the combination with the fire-box, of the grate-bars extending across the lower portion thereof, the traps arranged in the top of the fire-box and adapted to discharge their contents upon said grate-bars, the oil-burners extending beneath and projecting upwardly through said grate-bars, means for supplying said burners with oil and compressed air, and valves for regulating the supply of oil and air in any part of the furnace; substantially as described.

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

CHARLES A. WILLIAMS.

Witnesses:
JOHN H. MCELROY,
R. K. GUSTAFSON.