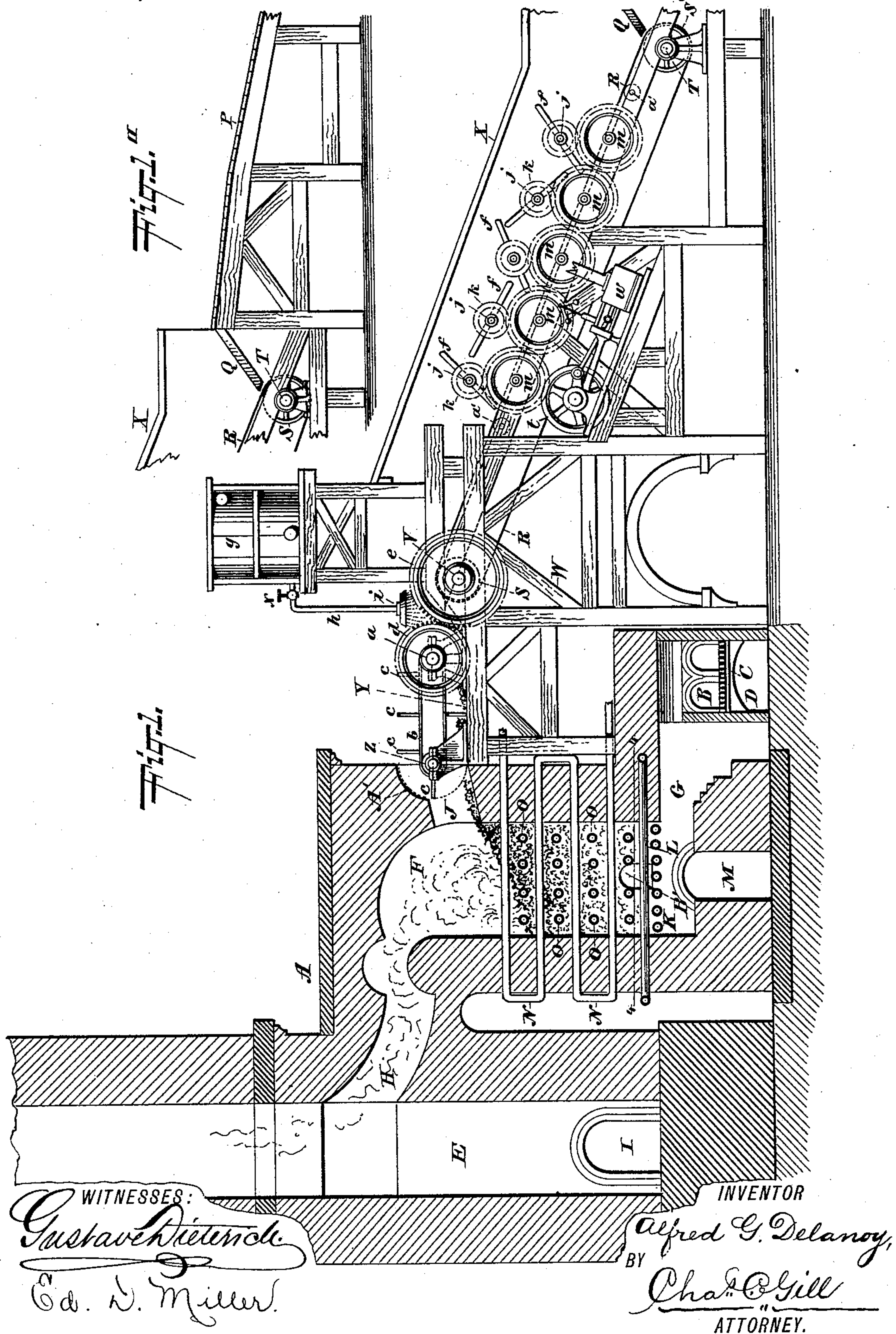


3 Sheets—Sheet 1.

No. 479,405.

Patented July 26, 1892.



(No Model.)

3 Sheets—Sheet 2.

A. G. DELANOY.
GARBAGE OR REFUSE CREMATORY.

No. 479,405.

Patented July 26, 1892.

Fig. 2.

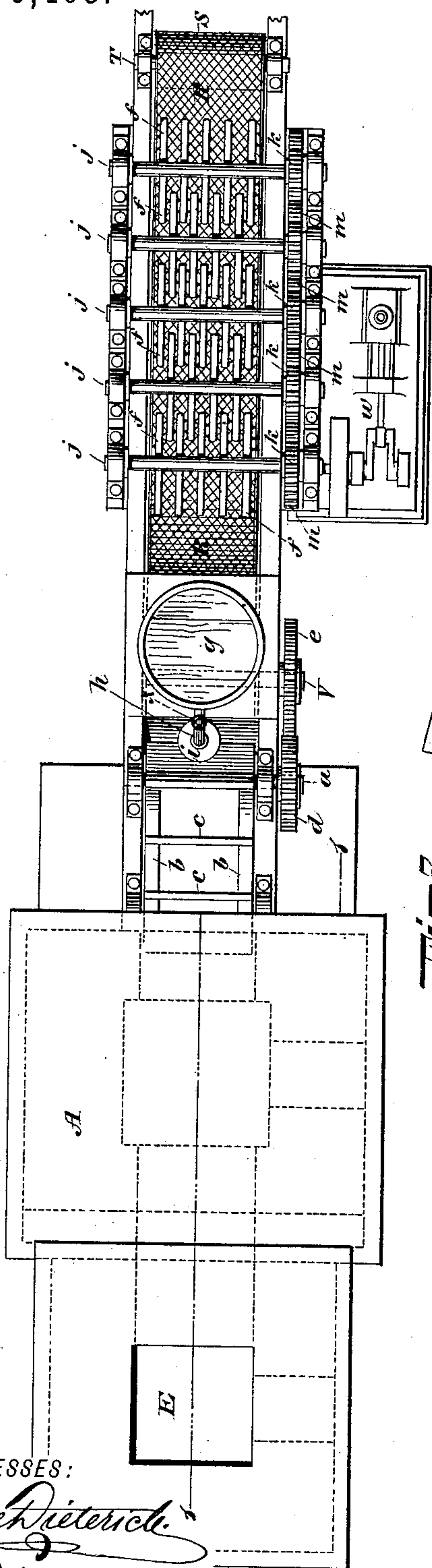
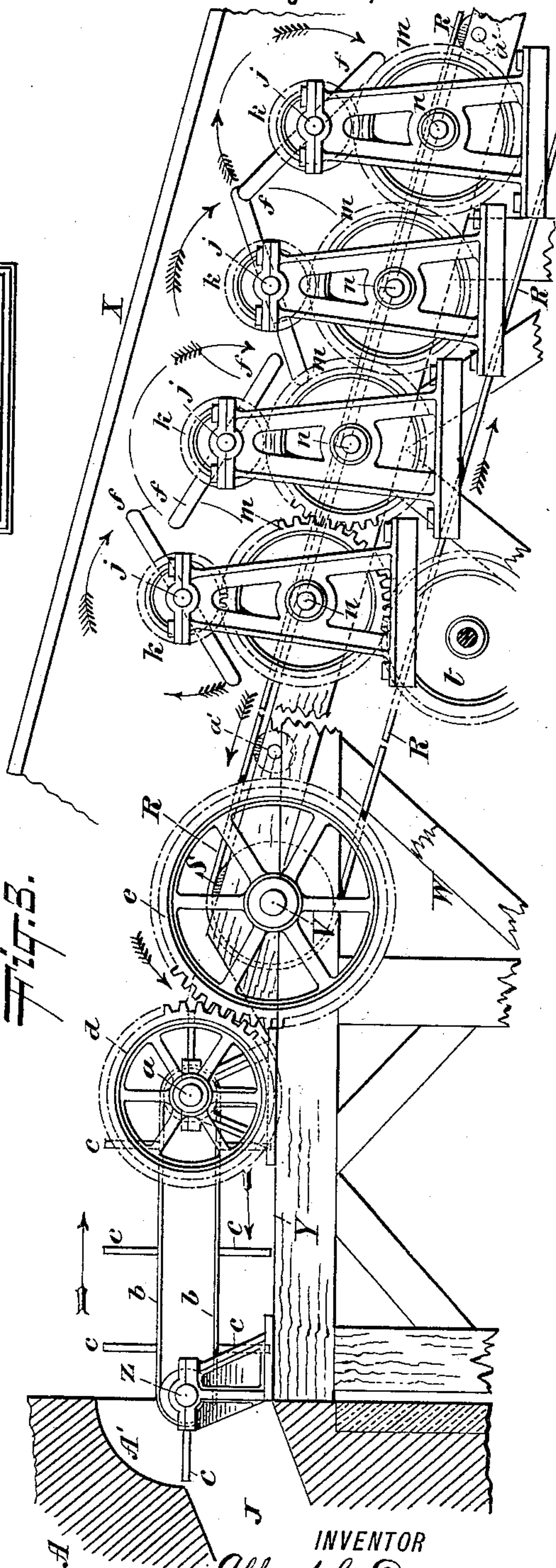


Fig. 3.



WITNESSES:
Gustave Dieterich
Ed. D. Miller

INVENTOR
Alfred G. Delanoy
BY
Chas. O. Gill
ATTORNEY.

(No Model.)

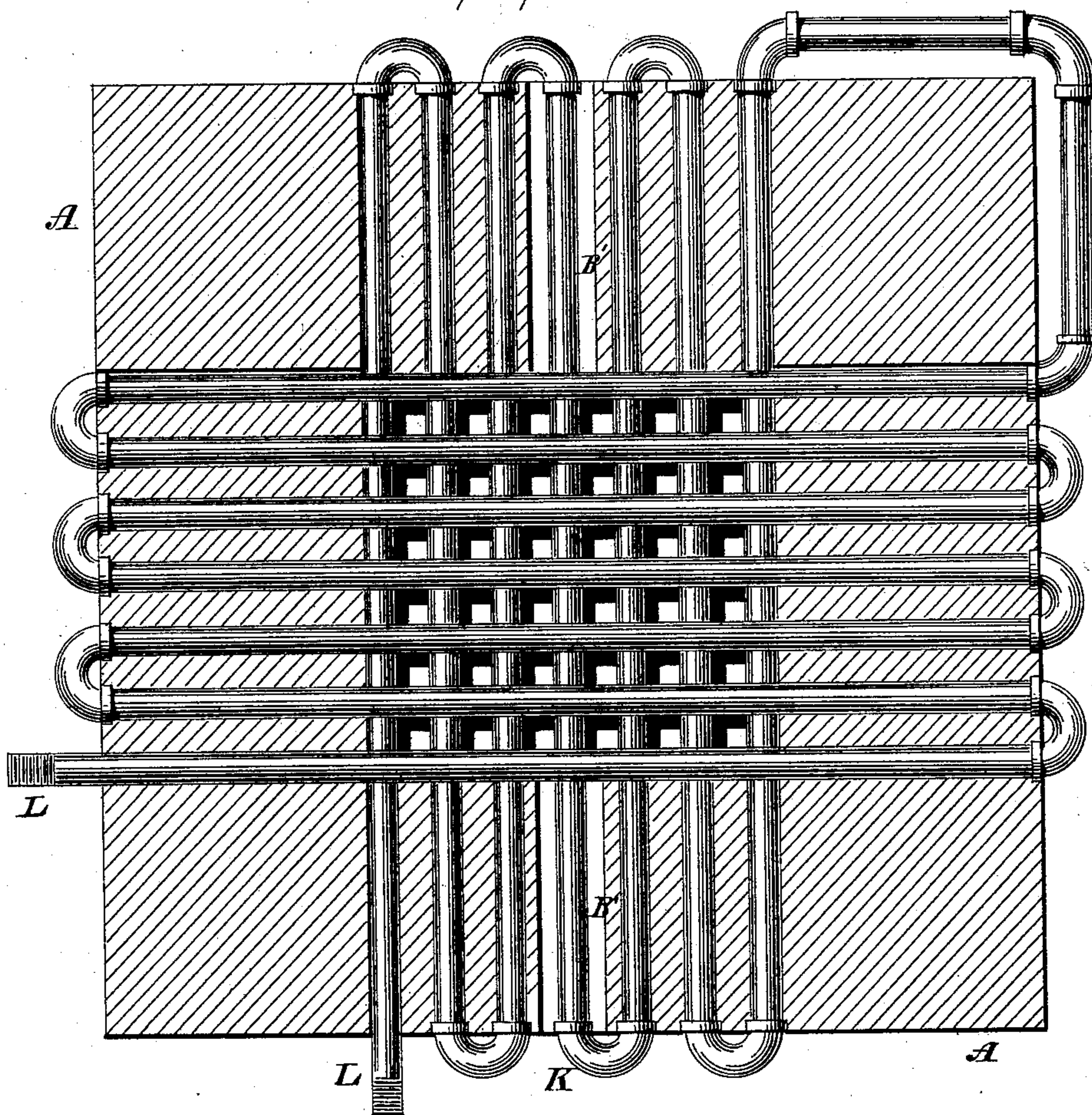
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Fig. 4.



WITNESSES:
Gustave Dietrich
Ed. D. Miller

INVENTOR
Alfred G. Delanoy
BY
Chas. O. Gill
ATTORNEY.

UNITED STATES PATENT OFFICE.

ALFRED G. DELANOY, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO
JOHN E. MCKAY, OF SAME PLACE.

GARBAGE OR REFUSE CREMATORY.

SPECIFICATION forming part of Letters Patent No. 479,405, dated July 26, 1892.

Application filed October 13, 1891. Serial No. 408,552. (No model.)

To all whom it may concern:

Be it known that I, ALFRED G. DELANOY, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Garbage or Refuse Crematories, of which the following is a specification.

The invention relates to improvements in garbage-crematories for the use of cities and towns; and it consists in novel means, hereinafter described, for conveying the garbage from the point where it is dumped from the carts to the combustion-chamber of a specially-designed furnace, where it is rapidly consumed. On the passage of the garbage from the dumping-point to the furnace it is first moved upon an endless traveling sieve and kept in agitation thereby to evenly distribute the mass and permit the sand and similar particles to escape, and then the garbage on its passage to the furnace is sprayed with petroleum or other highly-inflammable substance, which prepares it for rapid and complete consumption as soon as it enters the combustion-chamber.

One of the main objects of the invention is to effect the thorough and rapid consumption of the garbage; and this object I attain by means of the apparatus hereinafter particularly described and claimed, and illustrated in the accompanying drawings, forming a part of this specification.

Referring to the accompanying drawings, Figure 1 is a side elevation, partly in section, of a crematory constructed in accordance with the invention, the right-hand end of which is broken away, owing to lack of space on the sheet of drawings. Fig. 1' is a side elevation of the right-hand end of the crematory, being the part omitted from Fig. 1. Fig. 2 is a top plan view of same and indicating by the dotted line 1 1 the section on which a part of Fig. 1 is taken. Fig. 3 is an enlarged side elevation, partly in section, of the conveying portion of the crematory; and Fig. 4 is a detached horizontal section on the line 4 4 of Fig. 1, looking downward and illustrating on an enlarged scale the grate.

In the drawings, A indicates a furnace having the fire-box B, grate C, and ash-pit D at

the right-hand end thereof and having, also, the flue E and garbage-combustion chamber F. The fire-box B, with its grate C and ash-pit D, is of the usual construction and need not be specially described. The fire-box B, however, connects through the passage G with the combustion-chamber F. This latter chamber through the passage H connects with the escape-flue, which is provided at its lower end with the opening I.

The combustion-chamber F is provided adjacent to its upper portion with the inlet J, the outer portion of which at its upper surface is in the outline of an arc of a circle, as illustrated in Fig. 1, and said combustion-chamber is provided at its lower end with the grate K, composed of the series of tubing L, (shown enlarged in Fig. 4,) in which it will be observed that the parts of the tubing cross each other and form a substantial grate. One end of the tubing L will be connected with a pump (not shown) and the other end of said tubing will be connected with a suitable escape, (not shown,) and when in use water will be circulated through said tubing for the purpose of preventing its destruction by the fire. The tubing L is in the form of two serpentine coils connected together and crossing each other, as shown. Below the grate K the furnace is provided with a door M, and above said grate K the combustion-chamber F is traversed by serpentine coils of tubing N O, which cross each other, as illustrated in Fig. 1, and constitute supports for the material passed into the chamber F through the inlet J. It will be observed upon reference to Fig. 1 that the tubing N O is not arranged very closely together, but considerable space is left between the lines of tubing, and the purpose of this tubing is not to prevent the material from falling downward toward the grate K, but to sufficiently obstruct the downward movement of said material for the purpose of preventing it from becoming compact within the chamber F. The lines of tubing N O keep the garbage distributed through the combustion-chamber F and render the mass thereof sufficiently porous for the accomplishment of the rapid destruction of same. The tubing N O will also be connected with a suitable pump (not shown) for the purpose of cir-

culating water through the same. The door M at the base of the combustion-chamber F is provided for the purpose of enabling the removal of such unconsumed elements as may pass through the grate K.

At the end of the apparatus opposite to the furnace A is provided the inclined platform P, having at its inner end the incline Q, extending downward to the inclined perforated continuous traveling belt R, which is mounted upon the rollers S S, secured upon shafts T V, the latter being suitably mounted in bearings upon the frame W. The belt R will be covered by an elevated hood X and extends upward to the platform Y, leading directly into the inlet J of the combustion-chamber F.

Over the platform Y are mounted the shafts Z a, which carry the endless belt b, to which the series of arms c are secured. The belt b has a continuous traveling movement, and the arms c, carried thereby, operate as scrapers to move the material from the platform Y into the inlet J of the furnace. Upon the ends of the shafts a V are provided the intermeshing gear-wheels d e, by which a simultaneous movement in the belts b R is insured.

In the operation of the apparatus the garbage by means of carts is carried upon the platform P and dumped down the incline Q upon the belt R, which conveys it upward to the platform Y, whence it is scraped by means of the belt b and arms c into the inlet J of the combustion-chamber F, and during the passage of the garbage from the platform P to the furnace it is kept in proper condition for its movement by means of the agitator-arms f, hereinafter referred to, and is impregnated with petroleum or other highly-inflammable material contained in the tank g, from which it escapes and is discharged upon the material by means of the pipe h and sprayer i. The agitator-arms f are more clearly illustrated in Figs. 2 and 3, in which it will be observed that they are secured upon shafts j, extending across the frame of the apparatus above the belt R, said shafts carrying upon their ends the pinion-wheels k, which engage the gear-wheels m, mounted upon shafts n, located below the upper surface of the belt R. The gear-wheels m are in series, engaging each other, and receive their movement from the wheel t, operated by the engine w. Upon the engine w being set in motion the wheel t will be rotated and, being in engagement with one of the gear-wheels m, will rotate the latter, and said wheel m being in series the entire line thereof will have a simultaneous movement and impart the same to the pinion-wheels k and shafts j, thereby causing the rotation of the agitator-arms f. The arms f will during their rotation agitate and distribute the material being carried upward on the belt R and prevent any clogging of the material on said belt and insure the uniform conveying of the same to the platform Y. It is desirable that the volume of material being carried upward on the belt R will be uniform and

equally distributed, since the proper spraying of the same with petroleum or other inflammable material will thereby be facilitated. The hood X prevents the arms f from throwing the material from off the apparatus and retains said material within a confined space during its upward movement to the platform Y. As soon as the material has reached the upper end of the belt R it will pass directly below the sprayer i and fall upon the platform Y, whence it will be immediately moved forward into the inlet J by the continuous movement of the belt b and scraper-arms c. The pipe h, connected with the sprayer i, is provided with a valve x, by which the escape of petroleum or other inflammable material may be regulated at will. The lower surface of the inlet J is inclined, so as to facilitate the passage of the garbage into the combustion-chamber F, and, as will be observed in Fig. 1, the arms c, connected with the belt b, pass into said inlet J during the traveling movement of the belt b, and it is for this reason that the upper outer portion of said inlet J describes the arc of a circle. The length of the arms c is such as to bring their outer ends close to the walls A' of said inlet J, and the distance between the arms c is such that upon one arm c leaving the outer end of the inlet J the preceding arm will enter the same and close the space between the walls A' and shaft Z. The continuous passage of the arms c into the inlet J is illustrated in Fig. 1, and their movement along the curved walls A' of said inlet operates to preserve that portion of the inlet above the shaft Z closed, while at the same time said arms c are constantly scraping the impregnated garbage along the platform Y and into the combustion-chamber F.

While I have described above the series of gear-wheels m, pinions k, and engine w as means for actuating the agitator-arms f, it is to be understood that I do not confine the invention to the use of these gear-wheels, since other mechanical means may be adopted for imparting the proper rotary movement to the shafts j. The arrangement of gearing m k and engine w will be found effectual, however, in the proper operation of the arms f and shafts j. The gear-wheels d e may depend for their movement upon the tension of the belt R upon the shaft V, or additional means—such as a separate engine w—may be employed for rotating said wheels d e.

In the operation of the apparatus the fire will be started upon the grate C, and the flames and products of combustion will thence pass through the space G to the combustion-chamber F, whence they will escape upward through the passage H into the flue E. In the meantime the garbage will be carried upward upon the belt R to the platform Y, where it will be sprayed with petroleum or other inflammable material from the tank g, and thence be moved by means of the belt b and arms c into the inlet J, whereupon it will fall upon and partly pass through the lines of tubing N O to the

grate K, being thus brought into direct contact with the flames and consumed. During the upward movement of the garbage on the belt R fine sand and similar particles will escape through the belt, since the latter is in the nature of a sieve, being made from thin perforated sheet-steel or from wire-cloth or analogous material. The garbage falling upon and between the lines of tubing N O will be rapidly consumed, the greater portion of the same never reaching the grate K except in the form of ashes. There is intended to be a constant and intense combustion in the chamber F, so as to reduce the garbage to ashes in the most rapid manner. The ashes falling through the grate K may be removed through the door M, and any foreign element which may remain upon the grate K may be withdrawn through the small door B', provided for that purpose. The door I is provided for the purpose of permitting the removal of any matter settling in the base of the flue E.

In the practical construction of the apparatus it may be necessary to support the middle portions of the belt R in order to prevent the same from sagging under the weight of the garbage, and, if so, transverse rollers *a'* may be distributed below the upper portion of the belt and receive the weight of the material. In Fig. 3 I illustrate two of the rollers *a'* as examples; but as many of them may be used as desired, or other well-known means may be employed to support the belt.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a garbage-crematory, the endless conveying-belt extending from the dumping-point to a receiving-platform and a spray for treating the garbage with an inflammable material after reaching the upper end of said belt, combined with the endless scraper-belt to move the garbage along said platform, and the furnace having the garbage-combustion chamber intermediate the fire-box and flue and its inlet in line with said platform, the whole being arranged and operating substantially as and for the purposes set forth.

2. In a garbage-crematory, the endless conveying sieve-belt and the series of agitator-arms over said belt, combined with the spray for treating the garbage with an inflammable material prior to its entering the combustion-chamber and the furnace to receive the garbage, said furnace having a combustion-chamber for garbage, means therein for lightening the mass, the fire-box, and flue, with independent grates for the said chamber and box, the whole being arranged and operating substantially as and for the purposes set forth.

3. In a garbage-crematory, the endless conveying-belt and the spray at the upper end of said belt and leading from a tank of inflammable material, combined with the furnace having the flue, garbage-combustion chamber, and fire-box, the whole being arranged and operating substantially as and for the purposes set forth.

4. In a garbage-crematory, the endless conveying-belt and the spray leading from a tank of inflammable material, combined with the furnace, the flue, garbage-combustion chamber and fire-box therein, the series of tubes for lightening the mass in the combustion-chamber, and the tubular grate-bars in said chamber, the whole being arranged and operating substantially as and for the purposes set forth.

5. In a garbage-crematory, the endless conveying-belt extending upward from the dumping-point, the platform receiving the material from said belt, and the endless belt having scraper-arms on said platform, combined with the furnace having the inlet to its garbage-combustion chamber in line with said platform, said inlet at its upper part being of a form adapted to be closed by said arms and having its lower surface inclined, the whole being arranged and operating substantially as and for the purposes set forth.

6. In a garbage-crematory, the furnace having the fire-box and grate, the combustion-chamber with grate and door for same, the flue with door at base of same, the passages between the fire-box and combustion-chamber and between the combustion-chamber and flue, and the inlet for garbage to said combustion-chamber, and means for lightening the mass in said combustion-chamber, the whole being arranged and operating substantially as and for the purposes set forth.

7. In a garbage-crematory, the furnace, combined with the endless conveying sieve-belt extending from the dumping-point to a receiving-platform, the endless scraper-belt on said platform leading to the inlet of the garbage-combustion chamber of said furnace, the transverse shafts carrying agitator-arms over said sieve-belt, and means, substantially as described, for actuating said shafts and arms, substantially as and for the purposes set forth.

Signed at New York, in the county of New York and State of New York, this 7th day of October, A. D. 1891.

ALFRED G. DELANOY.

Witnesses:

CHARLES C. GILL,
ED. D. MILLER.