

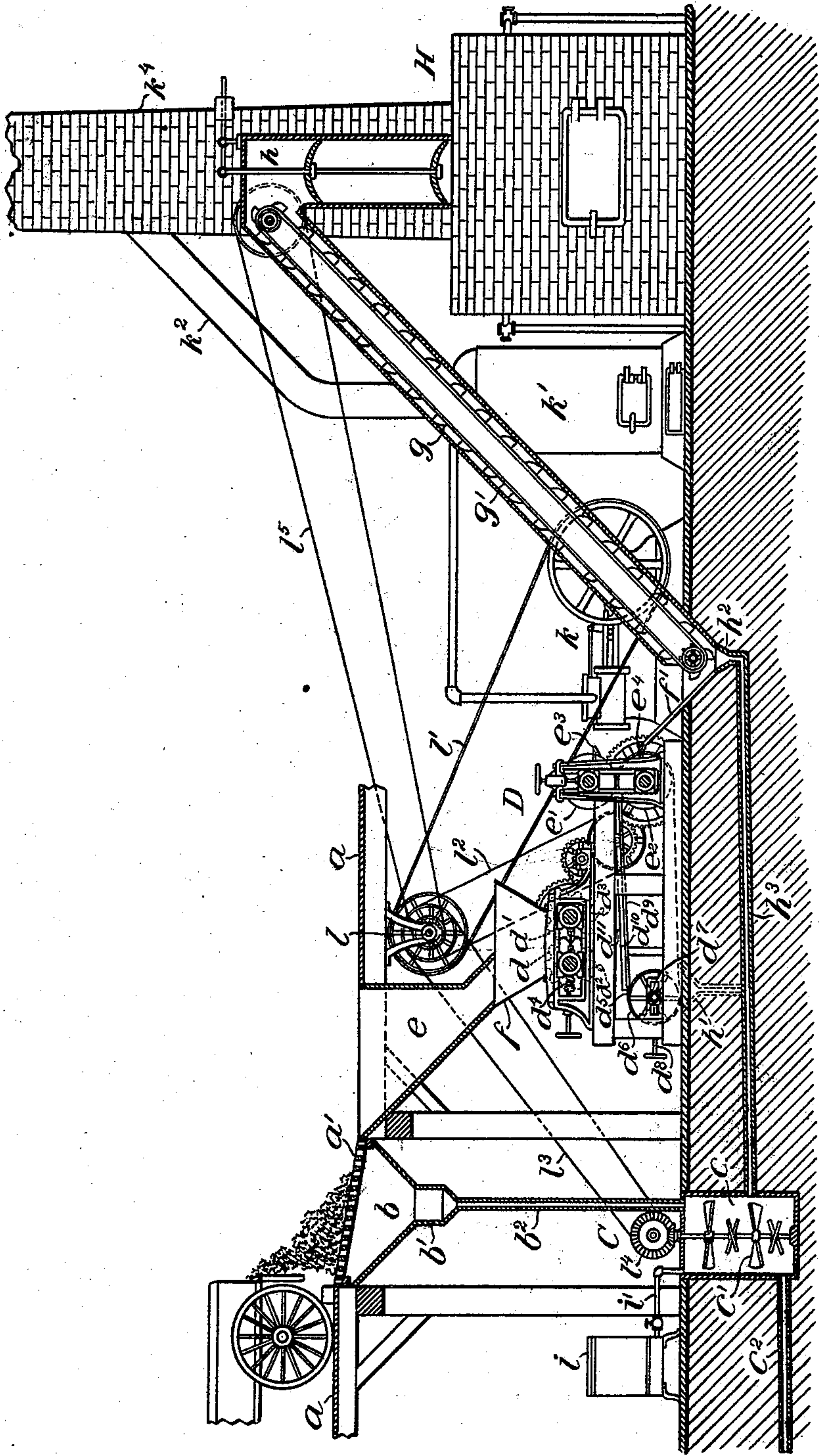
(No Model.)

N. DOWLING.

PROCESS OF AND APPARATUS FOR TREATING GARBAGE.

No. 506,363.

Patented Oct. 10, 1893.



WITNESSES:
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UNITED STATES PATENT OFFICE.

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PROCESS OF AND APPARATUS FOR TREATING GARBAGE.

SPECIFICATION forming part of Letters Patent No. 506,363, dated October 10, 1893.

Application filed March 7, 1893. Serial No. 464,937. (No model.)

To all whom it may concern:

Be it known that I, NORTH DOWLING, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in the Method of and Apparatus for Treating Garbage or Refuse Matter, of which the following is a specification.

My invention has relation to the treatment of garbage or refuse matter for separating and disinfecting the oily, fatty or liquid portion thereof and of the incineration of the solid portion for fertilizing and other purposes.

The principal objects of my invention are first to provide an economical and efficient method for converting garbage or refuse matter into an ash for fertilizing or analogous purposes; and second, to provide a plant for the conduct of said method of treating garbage or refuse matter.

My invention consists of the method of treating garbage or refuse matter by disinfecting the same, separating the solid matter thereof from the liquid matter, and pulping, compressing, drying and incinerating the solid matter and disinfecting the separated liquid matter; and my invention further consists of the improvements for the treatment of garbage or refuse matter hereinafter fully described and particularly pointed out in the claims.

The nature and general characteristic features of my invention will be more fully understood from the following description taken in connection with the accompanying drawings, showing partly in central section and partly in side elevation a plant or apparatus found practically efficient for the conduct of the method of treating garbage or refuse matter embodying the features of my present invention.

Referring to the drawings *a*, is a platform provided with a grating *a'*, onto which is dumped the garbage or refuse matter which in transit has been preliminarily disinfected and the liquid portion thereof draining through the grating into a receptacle *b*, provided with a trap *b'*, and with an exit pipe

b², leading into the well *c*, of a mixing device *C*, to be presently more fully described. The solid matter remaining on the grating *a'*, is conducted through an inclined chute or channel *e*, to the hopper *f*, of a pulping and compressing appliance *D*, provided with intermeshing fluted or corrugated adjustable pulping or squeezing rollers *d* and *d'*, having adjustable strippers *d²* and *d³*. These rollers *d* and *d'*, are held in their normal operative position by means of springs *d⁴*, and serve to pulp the mass and deliver the same onto an endless apron or conveyer *d⁵*, passing at one end over one or more rollers *d⁶*, journaled to movable blocks *d⁷*, which are provided with tightening screws *d⁸*. Beneath the endless apron or conveyer *d⁵*, is a stationary platform *d⁹*, adapted to form a support for the endless apron or conveyer *d⁵*, and provided with sidestrips *d¹⁰*, for preventing the squeezed and pulped mass from being precipitated over the sides thereof. Above the endless apron or conveyer *d⁵*, is an adjustable distributing device *d¹¹*, adapted to separate and even out the mass deposited from the hopper *f*, between the squeeze and pulping rollers *d* and *d'*, onto the endless apron *d⁵*, and to present the same uniformly distributed thereon to the positively driven adjustable compressing rollers *e'* and *e²*, it being understood that the endless apron or conveyer *d⁵* passes between the rollers *e'* and *e²*, and around the rollers *e²* and *d⁶*.

e³ and *e⁴*, are strippers for removing material adhering to the compressing rollers *e'* and *e²*. The pulped and compressed mass falls from the compressing rollers *e'* and *e²*, onto an inclined platform *f'*, from which it is taken automatically up in buckets *g*, connected with an endless chain *g'*, and delivered into the hopper *h*, of a hydrocarbon furnace *H*, wherein the mass is subjected to an incinerating action and reduced to an ash, which is withdrawn from the furnace for use as a fertilizer.

Any liquid matter that may be squeezed out of the garbage or other substance during its treatment by the pulping and compressing appliance *D*, collects in the receptacles *h'* and *h²*, and is conducted thence by means of

a conduit h^3 , and delivered into the well c , of the mixing device C. This mixing device C, is provided with a tank i , and pipe connections i' , for delivering a suitable supply of
5 disinfectant into the well c .

c' , are positively driven beaters or arms that serve to thoroughly mix the disinfected liquid extracted from the garbage. This disinfected liquid is then conducted from the
10 well c , by means of an off-take pipe c^2 , and may be discharged into the sewer or disposed of in any other suitable manner.

Power for operating the hereinbefore described appliances is supplied by means of
15 an engine k , and boiler k' , having its flue or off-take k^2 , in communication with the chimney k^4 , of the hydrocarbon furnace H. The engine k , drives a main-shaft l , through the instrumentality of a belt l' , and power for op-
20 erating the pulping and compressing apparatus D, is supplied from the main-shaft l , by means of a belt l^2 . The beaters or arms of the mixing device C, are attached to a revolu-
25 ble shaft that is driven by the main-shaft l , through the instrumentality of a belt l^3 , and bevel-gears l^4 .

l^5 , is a belt that serves to transmit power from the main-shaft l , to one of the drums around which the bucket endless chain g' ,
30 passes in order to operate the latter.

It will be manifestly obvious that as to details of the apparatus for the conduct of the method of treating garbage or refuse matter
35 modifications may be made, without departing from the spirit of my invention.

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

1. The herein described method of treating
40 garbage or refuse matter, which consists in disinfecting the same, separating the solid from the liquid matter, squeezing, pulping and compressing the solid matter and incin-
45 erating the same and disinfecting the separated liquid matter, substantially as and for the purposes set forth.

2. The herein described method of treating
50 garbage or refuse matter, which consists in disinfecting the solid and liquid matter in transit, separating the solid matter from the liquid matter, squeezing, pulping and com-
55 pressing and drying the solid matter, conveying the solid matter to a furnace to effect the incineration thereof and agitating and disin-
fecting continuously therewith the separated

liquid matter, substantially as and for the purposes set forth.

3. The herein described method of treating garbage or refuse matter, which consists in separating the solid from the liquid matter,
60 squeezing, pulping and compressing and incinerating the solid matter and continuously mixing or agitating and disinfecting the liquid matter in a separate appliance, substan-
65 tially as and for the purposes set forth.

4. The herein described method of treating garbage or refuse matter, which consists in separating the disinfected solid from the dis-
70 infected liquid matter, pulping and compressing and incinerating the compressed mass, substantially as and for the purposes set forth.

5. The herein described method of treating garbage or refuse matter, which consists in disinfecting the mass in transit and then separating and pulping and compressing and
75 incinerating the mass, substantially as and for the purposes set forth.

6. The herein described method of treating garbage or refuse matter, which consists in continuously separating the solid from the
80 liquid mass, pulping, compressing and squeezing and drying the solid matter and incinerating the same and disinfecting the separated liquid matter, substantially as and for the
85 purposes set forth.

7. The herein described method of treating garbage or refuse matter, which consists in separating the solid from the liquid matter,
90 pulping and compressing and drying the solid matter, agitating and disinfecting the separated liquid matter and incinerating the solid matter, substantially as and for the purposes set forth.

8. A plant or apparatus for treating garbage or refuse matter, comprising a perforated
95 platform having a chute leading therefrom and connected with a pulping and compressing appliance, substantially as described, an endless bucket conveyer, a furnace, an agi-
100 tator and disinfector, suitable connections, and means substantially as described for continuously actuating said appliances substan-
tially as and for the purposes set forth.

In testimony whereof I have hereunto set my signature in the presence of two subscrib-
105 ing witnesses.

NORTH DOWLING.

Witnesses:

THOMAS M. SMITH,
RICHARD C. MAXWELL.