

W. RISLEY.

APPARATUS FOR BURNING GARBAGE.

No. 517,301.

Patented Mar. 27, 1894.

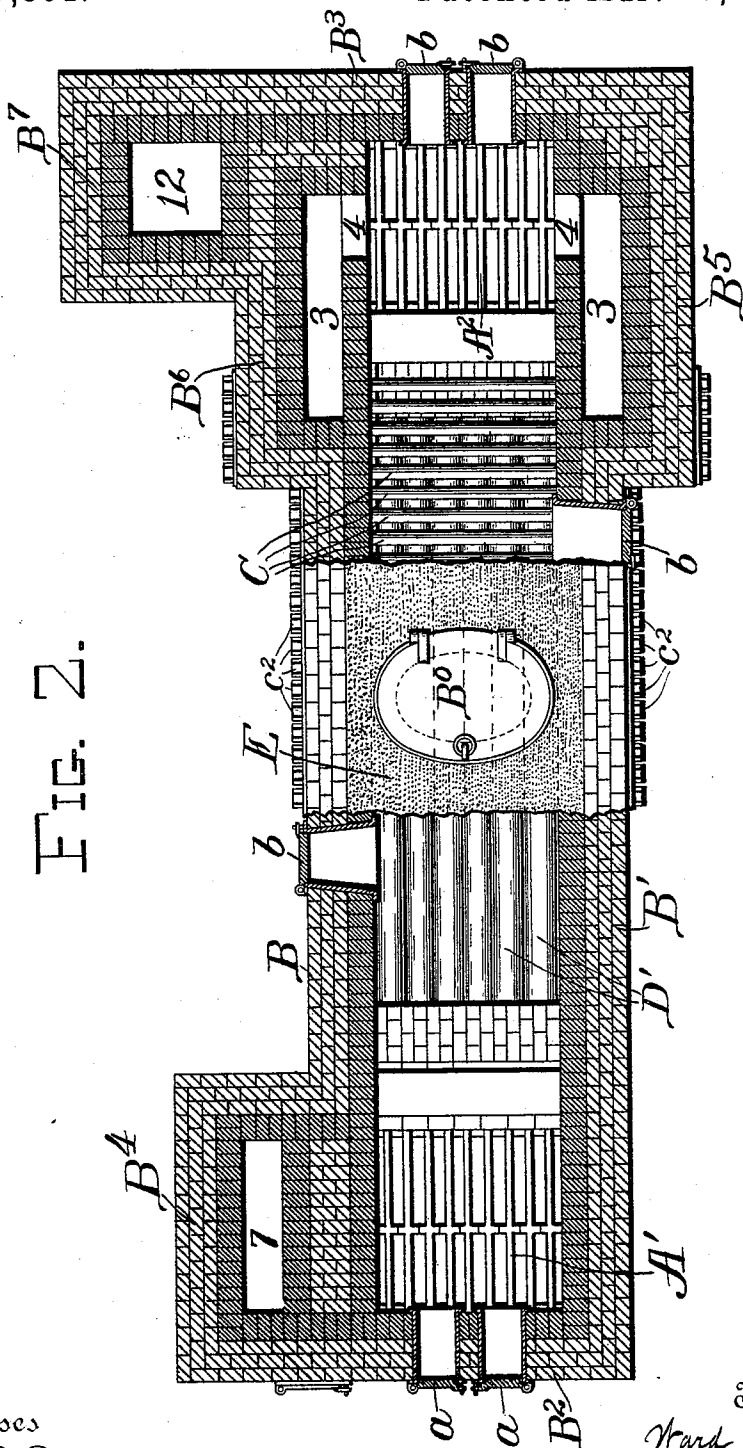


FIG. 2.

Witnesses

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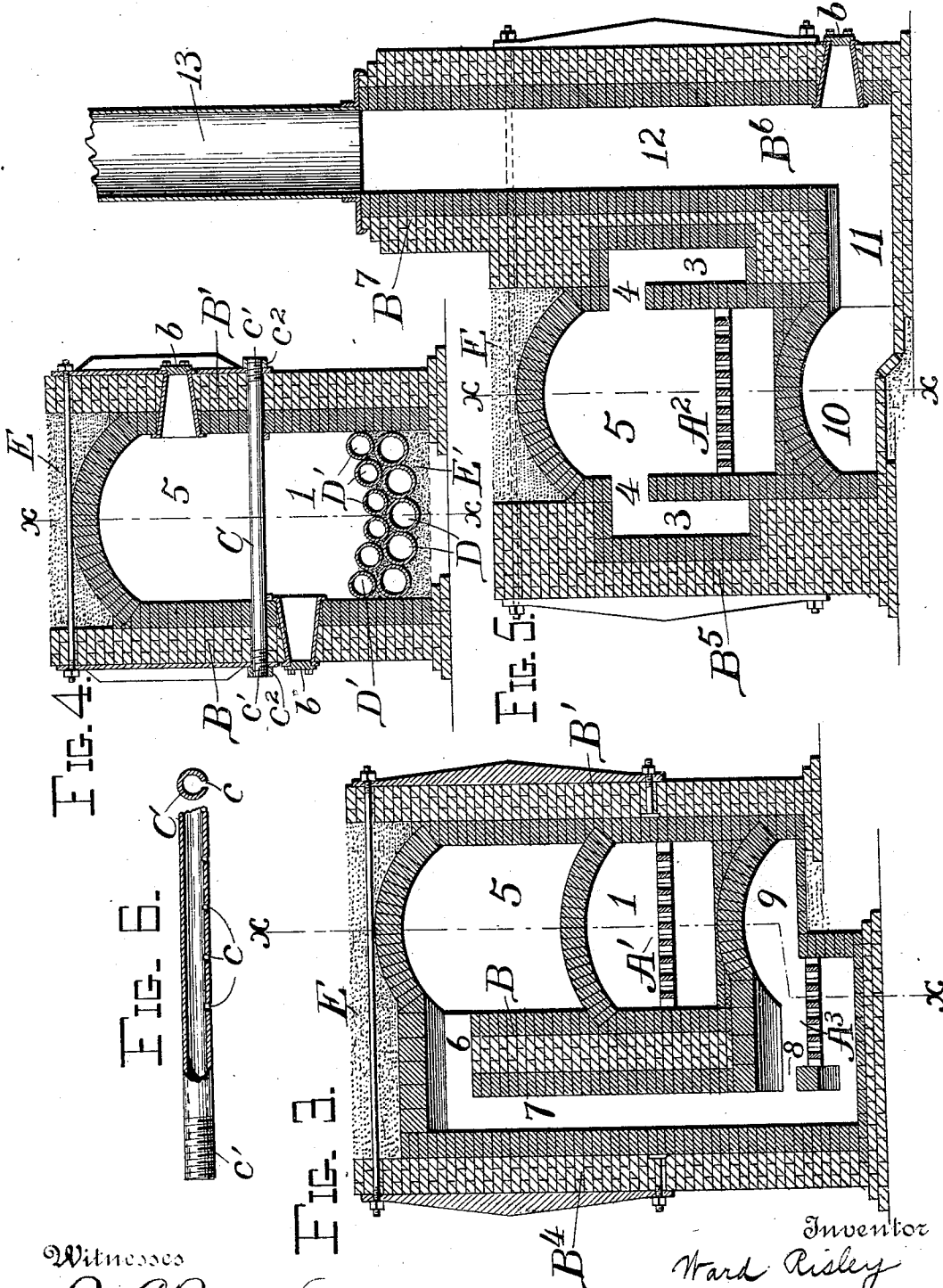
(No Model.)

3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

WARD RISLEY, OF HENRIETTA, TEXAS.

APPARATUS FOR BURNING GARBAGE.

SPECIFICATION forming part of Letters Patent No. 517,301, dated March 27, 1894.

Application filed December 26, 1893. Serial No. 494,748. (No model.)

To all whom it may concern:

Be it known that I, WARD RISLEY, a citizen of the United States, residing at Henrietta, in the county of Clay and State of Texas, have
5 invented certain new and useful Improvements in Apparatus for Burning Garbage; 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
10 art to which it appertains to make and use the same.

My invention relates to improvements in apparatus for burning garbage, and it consists of certain novel features hereinafter described and claimed.

Reference is had to the accompanying drawings, in which the same parts are indicated by the same letters and numerals throughout the several views.

20 Figure 1 represents a section of the apparatus along the lines xx of Figs. 3, 4, and 5. Fig. 2 represents a section of the device shown in Fig. 1, along the broken line yy of the said figure, and looking down. Fig. 3 represents a section along the line zz of Fig. 1, and
25 looking to the right. Fig. 4 represents a section along the line $z'z'$ of Fig. 1. Fig. 5 represents a section along the line $z''z''$ of Fig. 1, and looking to the left, and Fig. 6 represents
30 one of the tubular grate bars detached, both longitudinally and in section.

A^1 , A^2 , and A^3 represent fires placed in furnaces of the usual pattern, and provided with fire doors a and ash doors a' .

35 B and B' represent the side walls of the furnace, B^2 and B^3 the end walls, B^4 , B^5 and B^6 outer flue walls, and B^7 the walls of the smokestack or chimney, all of which are preferably built of masonry and strengthened in
40 the usual way, and B^8 and B^9 represent bridge walls, on which the inner ends of the several grates, and also the ends of the flues D and D' are supported.

The side walls B and B' , and the end walls
45 B^2 and B^3 are perforated as at b for the purpose of cleaning or trimming the fire, or for man-holes for repairing the various parts of the apparatus.

The crown of the roasting chamber is provided with a plurality of elliptical doors B^0 ,
50 hinged at one side for dumping in the garbage or other matter to be burned. These

doors are made elliptical, with their major axes at right angles to the major axis of the roasting chamber as shown so that a large
55 area for dumping in the garbage may be obtained, and at the same time the crown of the arch may be cut away as little as practicable in a longitudinal direction. It has been
60 found that the use of round holes of the same area weakens the crown of the chamber to a material degree.

The grate C for the garbage is made of a plurality of hollow tubes perforated downward as shown at c in Fig. 6, and opening into
65 the outer air. These tubes are screwthreaded on their outer ends as shown at c' , and the nuts c^2 (see Fig. 4), not only hold the tubes in place, but also strengthen the side walls against bulging outward. It will be seen that
70 these tubes act as tie-bolts for the said walls of the furnace, and greatly strengthen the same.

D and D' are flues which are supported in the bridge walls B^8 and B^9 and slope upward
75 so as to assist the passage of the products of combustion from the fire A^3 . These flues may be of any preferred size or shape, their size varying with the size of the burner.

The top of the burner is covered with sand
80 or other insulating material E , and the flues D and D' are wholly or partly immersed in a bed of sand or other suitable non-combustible absorbent E' .

The operation of the device is as follows:—
85 The garbage being on the grate C , and the fires A^1 , A^2 and A^3 being kindled, the products of combustion from the fire A^1 pass into the space 1 beneath the grate C , where they receive fresh air sucked in through the hollow
90 grate bars, and through the openings c in the bottom of the same. If an insufficient supply of air be admitted to the fire A^1 , this fire will give off large quantities of carbon monoxide (CO), which uniting with the warmed air
95 coming in through the grate bars C , will continue the flame throughout the space 1 beneath the grate C , and as far as the bridge wall B^9 . If there are any interstices in the garbage, part of the products of combustion
100 will pass up through the grate bars into the space 5, but the bulk of the products of combustion will pass through the openings 2 beneath the grate, then up through the side

passages 3, shown in Fig. 5, and through the openings 4 into the space 5 above the garbage. Here they will mingle with the products of combustion from the fire A^2 and the mixed gases will move above the entire length of the garbage to the opposite end of the furnace, where they will descend through the opening 6 and vertical passage 7, shown in Fig. 3, to the passage 8 above the fire A^3 . The gases from the fires A' and A^2 will then mingle with the products of combustion from the fire A^3 , and the whole passing through the passage 9, will enter the flues D and D', where they will evaporate and destroy any drippings from the grate C. After passing through these upwardly-inclined flues D and D' the products of combustion of the three fires, mixing with the gases resultant from the burning of the garbage, will pass through the passages 10, 11, and 12, up the smoke stack 13. It will be seen that the products of combustion from the fire A' , will break up the noxious gases arising from the absorbent mass E' , and that these burned gases will mix with the hot products of combustion from the fire A^2 and will assist in destroying the foul gases arising from the garbage on the grate C. Again, should the combined result of the products of combustion from the fires A' and A^2 , which pass first under and then over the grate, be insufficient to complete the destruction of the noxious gases, they are subjected to the heat of a third fire A^3 before being ready to be delivered to the open air. These gases, after leaving the fire A^3 , might be conducted directly to the smokestack without deleterious effects, but it is preferred to carry them through the inclined flues D and D', so that the heat stored up in the said gases may be partly utilized in evaporating the drippings from the grate C. It will be obvious that artificial means, such as a blower, may be used to increase the draft through the apparatus, if desired.

45 Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. An apparatus for burning garbage and other refuse products, comprising a roasting chamber, a grate supporting the garbage and extending nearly the whole length of the said roasting chamber, a furnace adapted to pass its products of combustion beneath and then above the said grate, a second furnace adapted to pass its products of combustion along the whole length of the top of the garbage grate, a passage for the combined products of combustion from the two furnaces and gases derived from the garbage, a third furnace situated beneath the first furnace and connected with said passage, flues receiving the gases from the three furnaces and the garbage, and leading to the smokestack, and a mass of non-combustible absorbent material surrounding said flues and situated beneath said garbage grate, substantially as and for the purposes described.

2. An apparatus for burning garbage and other refuse products, comprising a roasting chamber, a grate supporting the garbage and extending nearly the whole length of the said roasting chamber, the said grate having hollow grate bars extending across the said chamber with air passages through the bottom of said hollow grate bars, a furnace adapted to pass its products of combustion beneath and then above the said grate, a second furnace adapted to pass its products of combustion along the whole length of the top of the garbage grate, a passage for the combined products of combustion from the two furnaces and gases derived from the garbage, a third furnace situated beneath the first furnace and connected with said passage, flues receiving the gases from the three furnaces the said flues being arranged horizontally beneath said grate, substantially as and for the purposes described.

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

WARD RISLEY.

Witnesses:

J. C. CHESNUTT,
PORTER B. HARTON.