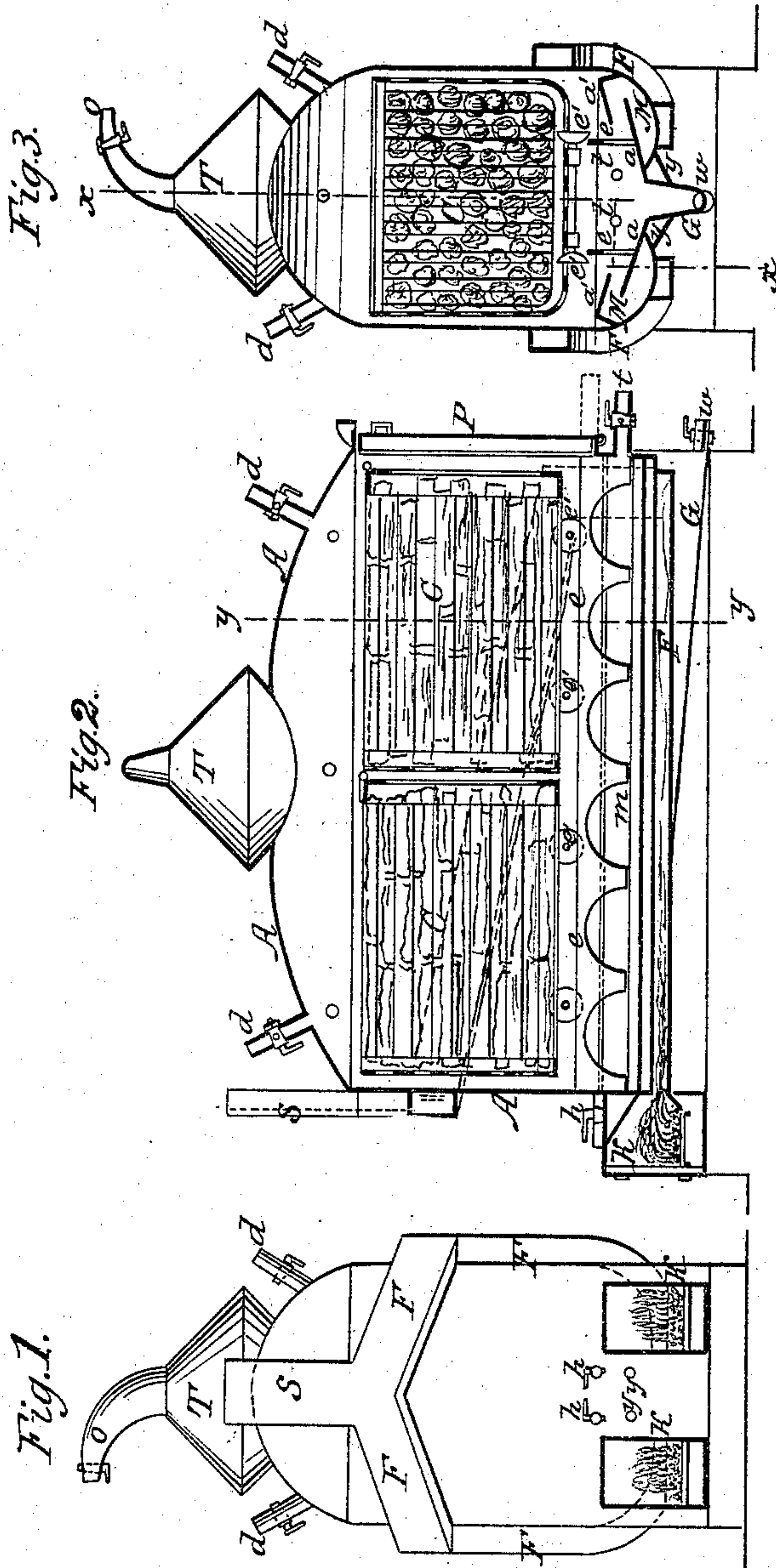


G. HUNZIKER.
Distilling Wood.

No. 78,743.

Patented June 9, 1868.



Witnesses.
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GASPAR HUNZIKER, OF SUMMIT, MISSISSIPPI.

Letters Patent No. 78,743, dated June 9, 1868.

IMPROVED APPARATUS FOR DISTILLING WOOD.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, GASPAR HUNZIKER, of Summit, in the county of Pike, and State of Mississippi, have invented a new and improved Apparatus for Distilling Wood, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a new and improved method of constructing apparatus for distilling wood and stone-coal, whereby the resin and tar contained in the same are more effectually separated from the charcoal or carbon, and whereby the same is more economically done.

It consists of an oven made of boiler-iron or other suitable material, provided at one end with suitable furnaces, and provided also with suitable steam and air-pipes; provided also on the inside with a railway-track and carriages, by means of which the wood or other substance to be distilled is conveniently conveyed into the oven. Said oven is provided also, in the bottom of the same, with a gutter or trough by means of which the tar and rosin are carried from the oven into some suitable receptacle for the same. In the accompanying plate of drawings—

Figure 1 represents an end view of my invention.

Figure 2 is a central vertical section of the same, taken in the line *x x*, fig. 3.

Figure 3 is a vertical section of the same, taken in the line *y y*, fig. 2.

Similar letters of reference indicate corresponding parts.

A is the oven; K are the furnaces; F are the flues; S is the chimney; T is a dome opening into the oven A; *o* is a pipe connected with said dome T, opening into the air; *d* are pipes in the oven A, opening into the air; C are the carriages, shown as loaded with wood; *e* are the rails on bottom of oven A, on which carriages C run; *e'* are carriage-wheels of carriages C; *m* are the hot-air chambers; G is a gutter or trough in the oven A; W is the outlet of gutter G; *t* are steam-pipes for admitting steam to oven A; *h* are air-pipes for admitting air to oven A; *y* are cold-air pipes; P is the door; Y an air-tube through the oven A. The oven A is made of boiler-iron, or other suitable material, rectangular in form, covered with a metallic roof, highest in the middle. The bottom of said oven A is raised or rounded at the lower corners, and has in the middle of the same a gutter or trough, G, running the whole length, so constructed as to be lowest at the opening W of the same, as shown in the drawing. Into the lower end of said gutter G, as shown, is a pipe or opening, W, provided with a suitable stop-cock, by means of which the tar distilled from the wood is carried off. Upon each side of the gutter G are the hot-air chambers M, formed by the rounded corners of the oven, and covered by the plates *a*, as shown in the drawing, fig. 3. Above the plates, and attached to the inside of the oven A, as shown, are the plates *a'*, inclined in like manner with the plates *a*, as shown in the drawing, the object being to retain the heat from the furnaces K, and give direction to the same under the middle of the wood contained in the carriages C. Upon the plates *a* are the vertical strips *e* extending from one end of the oven A to the other, and parallel to each other, so as to form a support for the carriages C, and at the same time form rails upon which the wheels *e'* of the carriages C run. Upon one end of the oven A, and near the bottom of the same, as shown in the drawings, figs. 1 and 2, are the furnaces K. Said furnaces K are made in the ordinary way, each said furnace K having flues F, which said flues F, commencing at the furnaces K, run under the chambers M the whole length of the oven A; then turning upwards, they continue along the whole length of the oven to the furnace-end of the oven A again, inclining from the bottom to the top of the oven, when they unite in a chimney, S.

In the end of the furnace A, opposite to the furnaces K, and beneath the door P, are two or more steam-pipes, *t*, for the admission of steam to the oven. In the same end of the oven A with the furnaces K, and directly over the same, are the air-pipes *h*, opening into the oven A, so as to supply air to the chambers M, said pipes *t* and *h* being provided with suitable stop-cock, to shut off the communication through the same to the oven A.

In the same end of the oven A as the furnaces K, and over and between said furnaces, are suitable air-pipes,

y, running entirely through said oven A from end to end, and along the outside of the gutter G, by means of which said gutter G is kept cool. Upon the oven A, and opening into the same, is a dome or condenser, T, by means of which the vapors arising from the distilling wood are condensed.

Through the top of the oven A is any convenient number of pipes, *d*, provided with suitable stop-cocks, as shown in the drawing, for the escape of smoke and gas. Upon the top of the oven A, and opening into the same, is the dome T, provided with the pipe O, as shown.

The carriages C, which may be of any convenient number, are rectangular-shaped boxes, formed of strips or slats of wire, of sufficient size nearly to fill the oven A. Said carriages C are provided with wheels, upon which said carriages run upon the rails on the strips *e*, in such a way that they may easily at any time run in or out of the oven A. The oven A is provided at the end opposite to the furnaces K with a door, P, of nearly the size of the end of the oven A, so that the opening of said end may be tightly closed when the oven is in use. The carriages C are provided at one end with a door, by means of which the charcoal may be easily removed. Said door P is attached to the bottom of the oven A, by suitable hinges, so that the said door P may swing outwards and downwards. Said door P is provided upon the upper or inner side with rails so constructed as to be a continuation of the rails *e*, so as to form skids upon which the carriages may be run into and out of the oven. The operation is such that the carriages C, being filled with wood or stone-coal, are run into the oven, when the door P is closed, and made tight with lute or clay. The fires are then started in the furnaces K. As soon as the vapors produced begin to be condensed, a small jet of steam is admitted at the steam-pipes *t*, to regulate and keep up an equal and uniform heat, a thermometer being placed in any convenient place, so that the amount of heat may be easily ascertained.

This may be continued as long as necessary, when the steam is shut off at the steam-pipes *t*, and a small quantity of air may then be admitted at the pipe *h*, to supply air to the heated wood, to produce a slight flame, at the same time opening the stop-cocks in the pipes *d*. The tar and rosin distilled from the wood are collected in the gutter G, from which they may be withdrawn into any convenient receptacle at the orifice *w*, the charcoal remaining in the carriages C, which may then be rolled out and their contents discharged. The operation may be repeated as often as required.

Constructed as above described, it constitutes a cheap and durable apparatus, by means of which the tar or rosin contained in wood and stone-coal may be easily distilled from the same, and collected in any convenient receptacle for the same, leaving the charcoal in the carriages, from which it may easily be taken, the advantages being that the rosin or tar may be more effectually separated from the wood, leaving the charcoal behind without loss or waste.

I claim as new, and desire to secure by Letters Patent—

1. The oven A, constructed as described, having the rounded lower edges, and the central longitudinal inclined trough G, whose inclined wings, *a*, support the vertical strips and rails *e* for the carriages C, the inclined plates *a'*, above the wings *a*, the cold-air pipes *y*, beneath said inclined wings, and between the flues F, the top of said oven provided with the condensing-dome T, all arranged as described, for the purpose specified.
2. The arrangement of the furnaces K, inclined flues F, trough G, cold-air pipes *y*, draught-pipes *h*, steam-pipes *t*, hot-air chambers M, and carriage-supporting rails *e*, as herein described, for the purpose specified.
3. The door P, provided with a track upon its inner side, whereby, when it is swung down in a horizontal position, it receives the carriages C, which are rolled out upon it to discharge their loads, as herein shown and described.
4. The furnace-flues F, when arranged to pass beneath the curved bottom of the oven A, upon each side of the projecting trough G, and, curving outward, extend in an inclined direction upon each side of said oven to the front thereof over the furnaces, to unite in the chimney S, as herein described, for the purpose specified.

Witnesses:

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