(No Model.)

J. N. B. BOND.

APPARATUS FOR TREATING OFFAL, &c.

No. 261,298. Patented July 18, 1882.

Fig. 1.

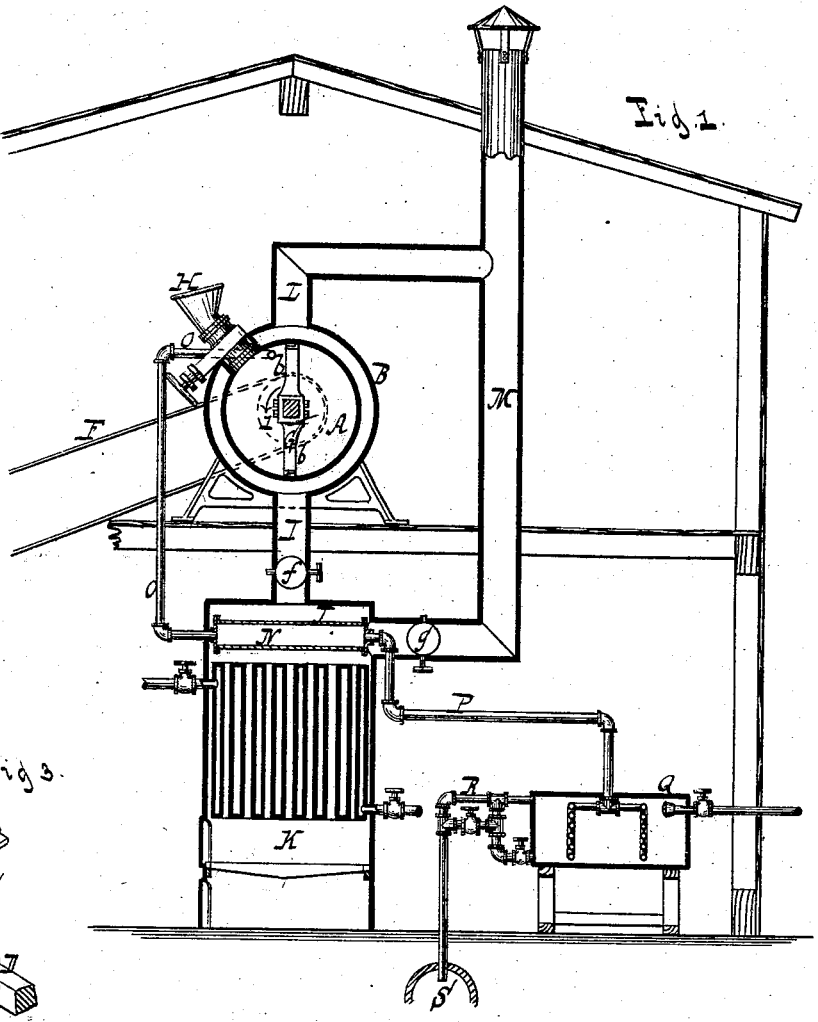


Fig. 3.

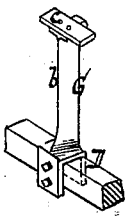
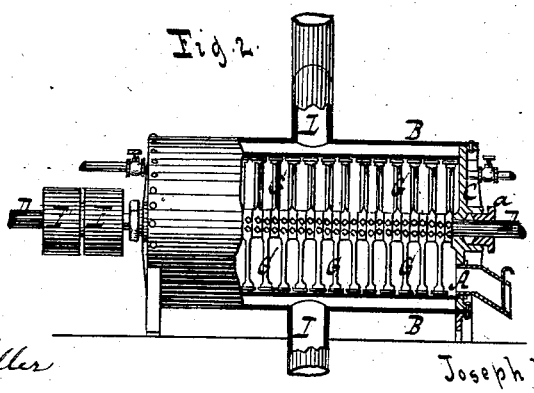


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR TREATING OFFAL, &c.

SPECIFICATION forming part of Letters Patent No. 261,298, dated July 18, 1882.

Application filed May 8, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH N. B. BOND, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Apparatus for Treating Offal, Oils, Fats, and other Similar Substances, of which the following is a specification.

This invention consists in the combination of a drying chamber or drum, a shaft extending through the drum and carrying a series of blades, a heating-jacket surrounding the said drum, a condenser communicating with the interior of the drum, a flue connecting the heating-jacket with the smoke-chamber of a suitable furnace, and a second flue leading from the jacket-chamber to the smoke-stack of the furnace; further, in the combination, with the parts above named, of a decomposing-chamber and of a condenser.

This invention is illustrated in the accompanying drawings, in which Figure 1 represents a vertical section of the apparatus which may be used in carrying out my invention. Fig. 2 is a sectional side view of the drying-cylinder. Fig. 3 is a perspective view of one of the cutting and agitating blades on a larger scale than the previous figures.

Similar letters indicate corresponding parts.

In these drawings, the letter A designates the drying chamber or drum, which is by preference made in the form of a cylinder closed on all sides and provided with a jacket, B, which is fastened to the heads C of the cylinder in the manner shown in Fig. 2, or which may be secured by any other suitable means. Said heads form the bearings for a shaft, D, and they are provided with stuffing-boxes *a* to prevent the escape of gases from the interior of the cylinder at the journals of the shaft. On one end of this shaft are mounted two pulleys, E E′, one being fast and the other loose, so that a revolving motion can be imparted to said shaft by means of a belt, F. Other means—such as cog-wheels—may, however, be employed for this purpose.

On that portion of the shaft D which is situated in the interior of the cylinder are secured a series of blades, G, which have cutting-edges, *b*, Fig. 3, and are provided at their outer ends with scrapers *c*, said blades being arranged, as shown in Figs. 1 and 2, so that when the shaft D is revolved in the direction of arrow 1, Fig. 1, the cutting-edges *b* of all the blades act upon the material contained in the drum A so as to comminute the same, while the scrapers *c* prevent said material from adhering to the inner surface of the drum. At the same time the material contained in the drum is constantly agitated and turned over by the action of the blades G and the scrapers *c*, so that in a short time all parts thereof become exposed to the action of the cutting-edges of the blades, and the entire mass is reduced to small particles.

The material to be treated is introduced into the drum A through a hopper, H, which is provided with an air-tight gate, so that when the apparatus is in action the escape of gases through the hopper is prevented.

The jacket B connects at its bottom by a flue, I, with the smoke-chamber J of a furnace, K, and from the upper portion of said jacket extends a flue, L, which communicates with the smoke-stack M of the furnace.

In the flue I is a damper, *f*, and the smoke-stack is provided with a damper, *g*. If the damper *g* is closed and the damper *f* is open, the heated products of combustion rising from the furnace pass through the jacket B to the smoke-stack, and the contents of drum A are heated to a high temperature.

In the example represented by the drawings I have shown a steam-boiler furnace so constructed that the heated gases which rise from said furnace are employed for the double purpose of producing steam and of heating the contents of the drum A, the steam being required to produce the required power for driving the shaft D.

In the smoke-chamber J of the furnace is situated a decomposing-chamber, N, which communicates at one end by means of a pipe, O, with the interior of the cylinder A, and at its opposite end by a pipe, P, with the condenser Q. Said decomposing-chamber is filled with small pieces of copper, iron, coke, or any other suitable material, according to the materials treated in the cylinder A, and as the vapors

and gases which rise from the heated mass in said cylinder pass through the decomposing-chamber N they become highly heated, and by contact with the materials contained in said chamber they become decomposed into ammoniacal and hydrocarbon gases, which, on passing through the condenser, are rapidly cooled and mixed with water, in which state they pass off through the pipe R into the sewer S. As the air in the condenser becomes rarefied the gases and vapors from the drum A are drawn through the decomposing-chamber with great rapidity and no offensive gases are permitted to remain in said drum.

By these means I am enabled to treat offal of every kind, oils, fats, horse-manure, excrements, and other substances of a similar nature, and to convert such substances into fertilizers without allowing any of the deleterious gases to escape or produce an offensive odor, and the entire operation can be conducted very economically and with comparatively little hand-labor.

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

1. The combination of the closed drying-chamber, the rotary shaft arranged therein and provided with cutting and agitating blades, the closed heating-jacket constructed as a part of and surrounding the exterior of the drying-chamber, but having no communication therewith, the flue connected with one side of the jacket and with the smoke-chamber of a furnace, and the flue connected with the other side of the jacket and with the smoke-stack of the furnace, substantially as described.

2. The combination of the closed drying-chamber, the rotary shaft arranged therein and provided with cutting and agitating blades, the closed heating-jacket surrounding the exterior of the drying-chamber and connected therewith, the flues connecting the jacket with the smoke-chamber and the smoke-stack of a furnace, the decomposing-chamber arranged in the smoke-chamber of the furnace and connected with the drying-chamber, and the closed condenser connected with the decomposing-chamber, substantially as described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

JOSEPH N. B. BOND. [L. S.]

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.