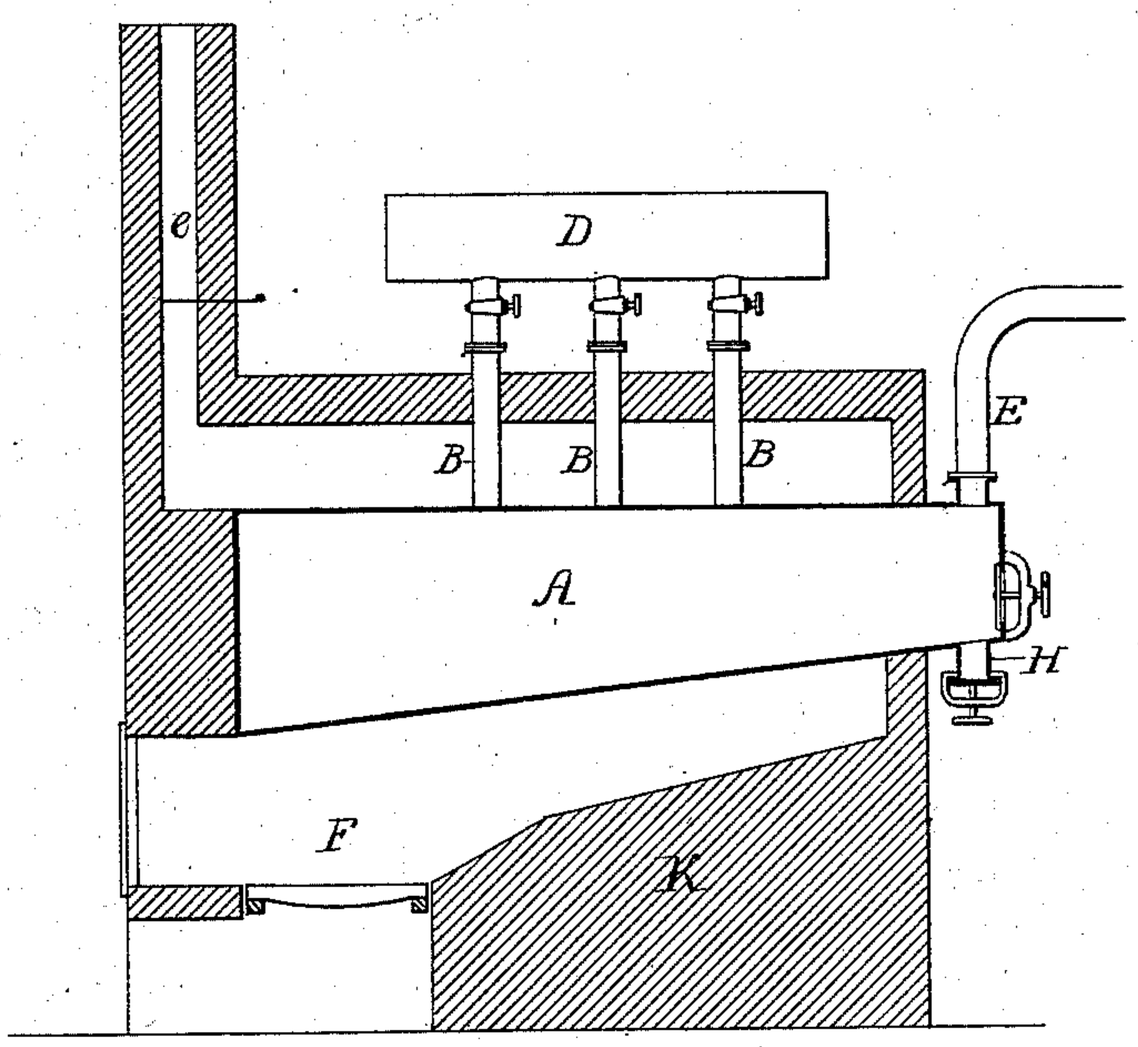
(No Model.)

B. TERNE.

PROCESS OF TREATING TANK WATERS OF SLAUGHTER HOUSES.

No. 282,411. Patented July 31, 1883.



WITNESSES:

Alexander Barkoff

James F Tobin

INVENTOR:

Bruno Terne

by his Attorneys

Howson and Sons

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

BRUNO TERNE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF THREE-FOURTHS TO DANIEL BAUGH AND EDWIN P. BAUGH, OF SAME PLACE.

PROCESS OF TREATING TANK-WATERS OF SLAUGHTER-HOUSES.

SPECIFICATION forming part of Letters Patent No. 282,411, dated July 31, 1883.

Application filed December 11, 1882. (No model.)

To all whom it may concern:

Be it known that I, BRUNO TERNE, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Treating Tank-Waters of Slaughter-Houses, &c., of which the following is a specification.

My invention relates to a process of utilizing the tank-waters of slaughter-houses, packing-houses, bone-boiling and other analogous establishments.

The first step consists in applying a gentle heat to such waters, so that they may not be too rapidly decomposed while they are being dried down to the condition of solid matter in the way hereinafter described. In this first step it is desired to push the concentration of these waste animal-liquids down to such a point that the density of the fluid may be from 15° to 25° Baumé. As these waste tank-waters contain much animal matter, either in solution or suspension, and as the nitrogenous element contained in such animal matter is in different chemical conditions from the state of undecomposed albumen to the more fully oxidized matters in advancing decomposition, in which they are in part or in whole converted into ammonia, it is obvious in this first step of drying much of the decomposing matter will pass into the condition of gaseous ammonia in the process of evaporating and distilling the liquid matters to dryness, which ammonia is to be collected in apparatus, substantially as herein described for this purpose, for the utilization and application to all the purposes for which ammoniacal gas or solution is required.

In carrying out the second branch of the process I prefer to use the apparatus a vertical section of which is shown in the accompanying drawing.

A retort, A, which may be of cast-iron, is mounted in brick-work K, containing a fire-place, F, and flues communicating with a chimney, *e*, the front end of the retort being larger than the rear. Hence the bottom of the retort is inclined downward to the front.

An elevated reservoir, D, communicates with the retort through pipes B—three in the present instance—the said pipes being furnished with suitable stop-cocks or valves.

At the rear of the retort is an outlet-pipe, E, which communicates with a hydraulic main, with which may also communicate the outlet-pipes of other retorts similar to that shown in the drawing.

In the rear end of the retort is a man-hole, the cover of which may be confined to its place by the usual screw-fastening. There is also at the bottom of the retort, at or near the rear end of the same, an outlet branch, H, which may be either closed by an air-tight cover or may be in direct communication with an air-tight receiving-chamber.

The concentrated tank-water above referred to is introduced into the elevated reservoir while warm, and in a sufficiently fluid state to flow freely, and is permitted to pass into the retort through one or more of the pipes B, as circumstances may suggest. In coming in contact with the heated surface of the retort the residual water of the concentrated tank-liquor will be rapidly dissipated by the heat and removed from the retort, along with the free ammoniacal gas already existing in the fluid, a further portion being readily produced by the heat of the chamber.

The ammoniacal gas generated in the retort is condensed in the manner and by the appliances usually adopted in charring bones, horns, and other similar substances.

The concentrated tank-waters contain from twelve to fourteen per cent. of ammonia in the form of organic nitrogen, and of this the greater portion will be converted by the above-described process into ammonia, while the residuum in the retort, containing more or less nitrogen, will be available as a manure or manure ingredient.

From the foregoing it will be perceived that my invention does not consist in pushing the application of heat in the retort so far as to convert the whole of the nitrogen of the animal matter into ammonia or its salts at this stage of the manufacture, but to leave a basis of potential ammonia behind in the partially-decomposed dry matter at the bottom of the retort. I thus economize in the cheapest and readiest way all the nitrogen of the waste tank-waters, either as actual or potential ammonia, and this constitutes the peculiarity of my process which distinguishes it from other known methods of accomplishing the same result.

When the liquid matter in the retort has been fully dried off, and before the residual dry matter becomes charred, it should be removed, cooled off, and sent into market, either as a manure or for addition to manure.

Although I have illustrated and described apparatus for carrying into effect one branch of the process, I wish it to be understood that I do not desire to restrict myself to this apparatus; but

I claim as my invention—

The process of treating the tank-waters of slaughter-houses containing offal and similar matters, as herein described, the same consisting in first concentrating said liquids to a semi-solid condition and then passing the same into and upon the floor of a heated retort, whereby they are rapidly reduced or distilled to dryness, the free ammonia being collected and economized, and the residual partly-nitrogenized animal matter being finally collected from the floor of the retort to be utilized as a fertilizing compound.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BRUNO TERNE.

Witnesses:

HARRY DRURY,

HARRY SMITH.