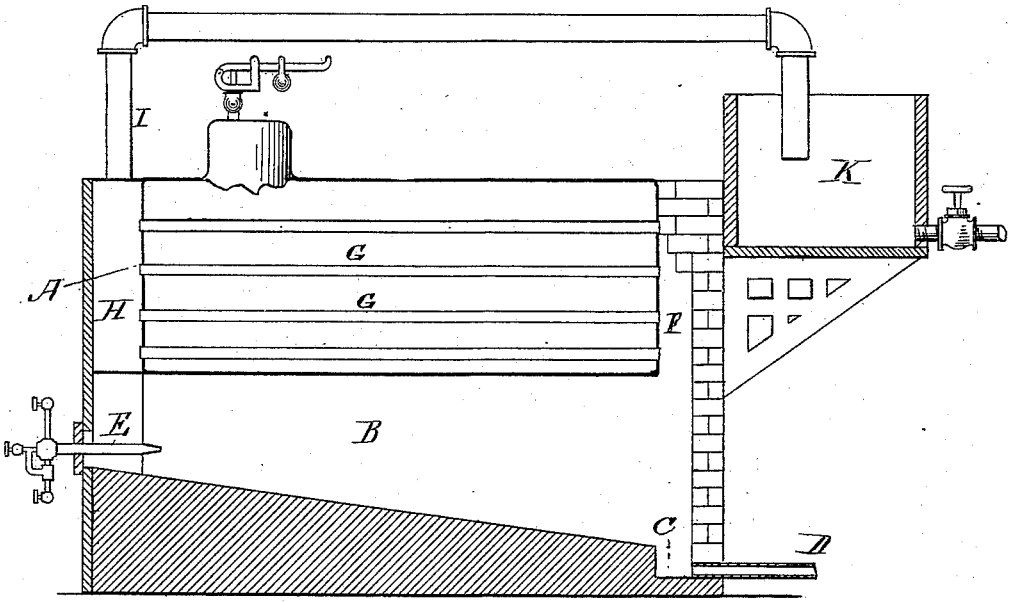
(No Model.)

E. N. ATWOOD.

PROCESS OF RECOVERING SODA.

No. 418,265. Patented Dec. 31, 1889.



WITNESSES.
Frank H. Parker
Arthur S. Davis.

INVENTOR.
Edmund N. Atwood
by his attorney
Alex. L. Hayes.

UNITED STATES PATENT OFFICE.

EDWARD N. ATWOOD, OF PORTLAND, MAINE, ASSIGNOR, BY MESNE ASSIGNMENTS, TO S. D. WARREN & CO., OF BOSTON, MASSACHUSETTS.

PROCESS OF RECOVERING SODA.

SPECIFICATION forming part of Letters Patent No. 418,265, dated December 31, 1889.

Application filed December 3, 1887. Serial No. 256,853. (No model.)

To all whom it may concern:

Be it known that I, EDWARD NORTON ATWOOD, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, have invented a new and useful improvement in processes for recovering chemicals from solutions or when mixed with other substances which are volatilizable or destructible by heat, it being especially adapted for recovering soda from the spent soda-liquor of paper-pulp mills, of which the following is a specification.

The solution of soda which is used in the treatment of wood pulp for the manufacture of paper contains, after having been used, such a quantity of resinous substances derived from the wood that it is capable of burning of itself when supplied with sufficient air, thus permitting the recovery of the soda contained therein, and various methods have been devised for this purpose.

The accompanying drawing is a vertical section of a form of furnace which I may use for carrying my invention into effect.

A is a horizontal boiler suitably mounted over a fire-box or combustion-chamber B, which is preferably tightly closed both at the front and rear ends, and which may have a sloping floor, having a basin C at its end provided with a discharge-pipe D.

E is a burner or atomizer of any usual or desired construction, whereby the soda-liquor constituting the liquid fuel is blown into a fine spray by the atomizing action of a jet of air or steam. This is inserted, preferably, into the front of the combustion-chamber.

In the rear of the combustion-chamber is a passage F, which extends up in the rear of the boiler, and H is a passage or flue in front of the boiler, but separated from the combustion-chamber.

G G are tubular flues, which extend through the boiler and connect the passages F and H. From the passage H a pipe I is carried to a tank of water K, and the end of this pipe extends into the water, so that the products of combustion pass into the water and escape into the air through the same. This tank acts as a means for causing a back-pressure in the furnace, and also to separate the floating particles of alkali from the gaseous products of combustion.

When the liquor is burned in the combustion-chamber, the soda falls upon the inclined floor of the same and can be collected in the basin C, from which it can be drawn off by the discharge-pipe.

I have shown the spent soda-liquor as burned under a boiler for the purpose of making steam; but it may be otherwise burned, and the heat can be utilized for other purposes

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

1. The method of recovering spent soda-liquor of wood-pulp mills, which consists in atomizing said liquor and then burning said atomized liquor as fuel under pressure, substantially as set forth.

2. The method of recovering spent soda-liquor of wood-pulp mills, which consists in atomizing said liquor, then burning said atomized liquor as fuel under pressure, and then separating the floating particles of alkali from the gaseous products of combustion, substantially as set forth.

3. The method of recovering chemicals, which consists in injecting the chemical into a combustion-chamber and then burning the said chemical as a fuel under pressure, substantially as described.

4. The method of recovering chemicals, which consists in injecting the chemical into a combustion-chamber and then burning the said chemical as a fuel under pressure, and then separating the floating particles of alkali from the gaseous products of combustion, substantially as described.

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

E. N. ATWOOD.

Witnesses:
GEO. E. BIRD,
HERBERT H. D. PEIRCE.