UNITED STATES PATENT OFFICE.

FREDERICK D. BANNING, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE SKABCURA DIP COMPANY, OF SAME PLACE.

PROCESS OF EXTRACTING NICOTINE.

SPECIFICATION forming part of Letters Patent No. 620,406, dated February 28, 1899.

Application filed January 13, 1898. Serial No. 666,491. (No specimens.)

To all whom it may concern:

Be it known that I, FREDERICK D. BANNING, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a Method of Extracting Nicotine from Tobacco, of which the following is a specification.

This invention has for its object the removal of nicotine salts from tobacco leaf or fiber. The extraction of nicotine from tobacco is in itself a useful and valuable treatment of the leaf and the nicotine itself may be reclaimed in suitable apparatus. Solutions of nicotine are useful for many purposes, such as destroying parasites on animals and plants.

The manner in which this invention may be practised is as follows: Place a quantity of tobacco leaf or fiber (if only nicotine is desired for recovery in solution tobacco stems and refuse may be used) in a chamber and then fill the space in the chamber not occupied by tobacco with ammonia-gas. The ammonia breaks up the nicotine salts, replacing the nicotine in the combination in which it exists with vegetable acids. The liberated nicotine, being volatile, may be removed or allowed to escape unless it is desired as a product.

The approved method of extracting nicotine, especially from tobacco waste, is as follows: Fill a closed chamber with comminuted and bruised tobacco scraps. This chamber may be of any convenient size and shape and should be provided with inlet and outlet pipes. Raise the temperature of the tobacco by injecting steam through the inlet. This moistens the tobacco thoroughly, while heating it. Then admit ammonia-gas at the inlet along with the steam and open the outlet. Nicotine will be given off from the tobacco and pass out through the outlet with vapor of water and surplus ammonia. The outlet should lead to a condenser or scrubber or to a series of collecting-tanks filled with any nicotine-recovering liquid, such as dilute sulfuric acid, diluted oxalic acid, or some of the heavy petroleum distillates. Dilute sulfuric acid is regarded as the best reclaimant of nicotine. The ammonia can be recovered and saved in like manner.

Other alkaline reagents, if stronger bases than nicotine, will serve to break up the nicotine salts; but most, if not all, such alkalies must be used in liquid solution. The nicotine released would be dissolved in this solution and be so weak as hardly to be recovered profitably. The gaseous alkali ammonia is by far superior as an agent for this process. If any other gaseous alkali exists or is discovered which is a stronger base than nicotine, then it may be expected to act as an equivalent for ammonia.

The presence of moisture and heat in the tobacco-chamber facilitates the liberation of nicotine. The process goes on remarkably well in a closed chamber filled with steam at a temperature as high as 225° centigrade. The chemical change takes place with increasing facility as the temperature rises and is slower with dry tobacco than in the presence of steam.

What I claim, and desire to secure by Letters Patent, is as follows:

The method of extracting nicotine from tobacco-fiber which consists in passing a current of steam and ammonia through and over the tobacco-fiber, thus liberating the nicotine, then passing the liberated nicotine into reclaiming-acid, substantially as described.

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

FREDERICK D. BANNING.

Witnesses:
WM. O'NEIL,
JOSEPH KENDRICK.