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A. FALK.

PROCESS OF REMOVING NICOTIN FROM ARTICLES MADE OF TOBACCO.

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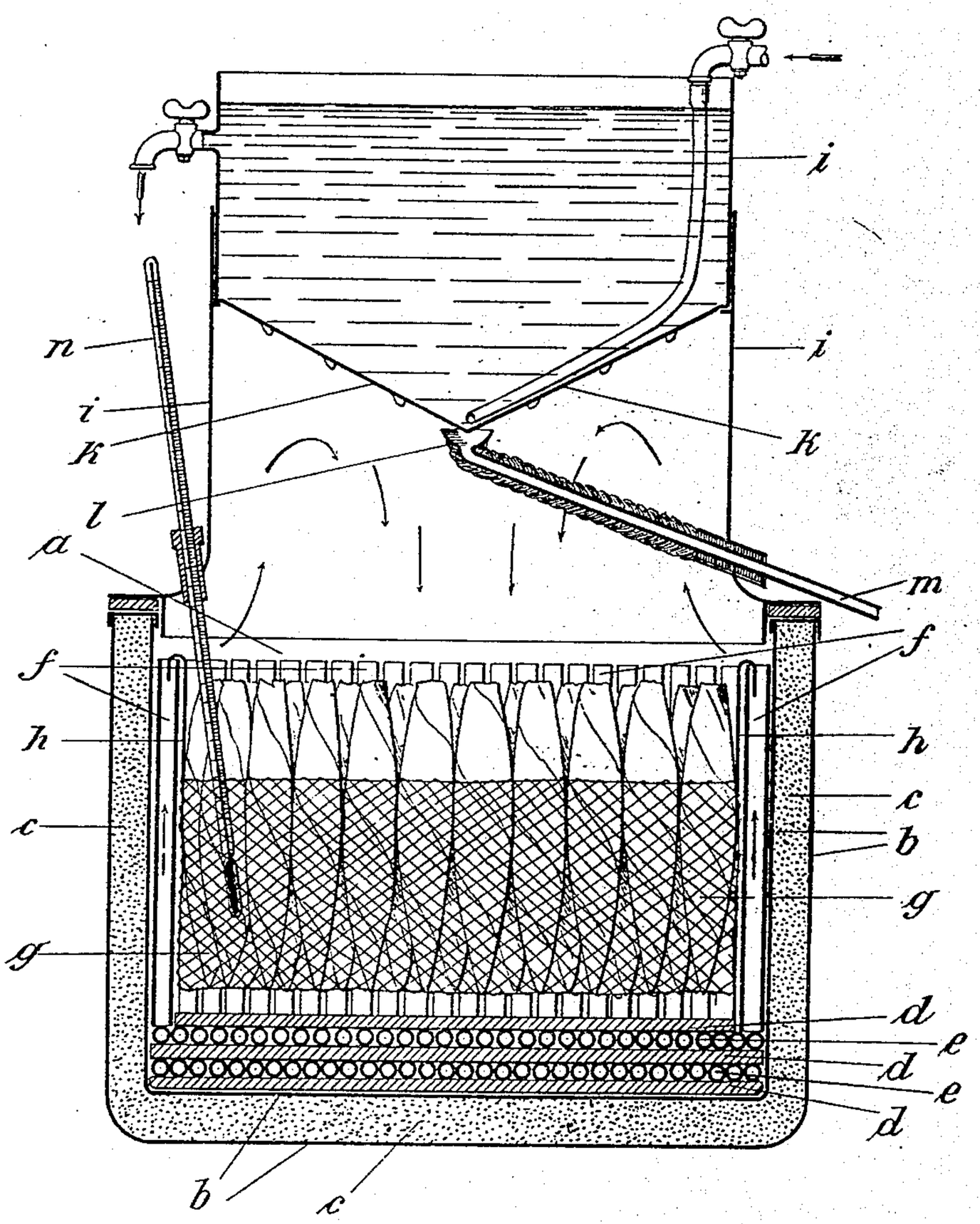

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UNITED STATES PATENT OFFICE.

AUGUST FALK, OF VIENNA, AUSTRIA-HUNGARY.

PROCESS OF REMOVING NICOTIN FROM ARTICLES MADE OF TOBACCO.

No. 803,887. Specification of Letters Patent. Patented Nov. 7, 1905.

Application filed February 2, 1903. Serial No. 141,461.

To all whom it may concern:

Be it known that I, AUGUST FALK, manufacturer, of IV Margaretenstrasse 22, Vienna, Austria-Hungary, have invented certain new and useful Improvements in Processes of Removing Nicotin from Finished Articles Made of Tobacco—Cigars, Cigarettes, and the Like—of which the following is a specification.

This invention relates to a process of treating tobacco and finished articles made of tobacco—such as cigars, cigarettes, &c.,—for the purpose of removing the greater part of the nicotin contained therein.

The improved process is carried on as follows: The finished articles of tobacco just as they are to be had in commerce, (cigarettes remaining in their wrappers, if desired)—that is to say, without any special preparation—are submitted for a certain time to a gradually-increasing heating in a closed vessel, excluding the further admission of atmospheric air and protected against the direct action of radiating heat. The developed vapors are condensed by means of a cooling device projecting into the heating-space and located at the top of the heating vessel. The condensed vapors are led away from the vessel by means of another device, as hereinafter described. By this means I am able not only to obtain, if desired, the nicotin contained in the liquid of condensation, but by suitably carrying on the process a gradually-increasing and then constant temperature in the heating-space. Furthermore, a quick and continuous circulation of the developed vapors is produced by cooling and reheating them. By thus gradually heating to a predetermined temperature, as described, the escape of the flavoring substances is prevented, while, on the other hand, the circulating vapors of nicotin and ammonia of the tobacco are condensed and removed.

The advantages of my improved process are as follows: First, the amount of nicotin of the treated articles is very largely reduced; second, the fine flavor of the tobacco is neither reduced nor lost, as all the ingredients necessary for the aroma remain in the tobacco; third, the tobacco treated according to this process burns better and with white ashes, having a better draft; fourth, the process may be executed quickly in an easy manner and at small expense by means of an apparatus as hereinafter described or by means of any other apparatus of similar construction and on a large or small scale even by a smoker for his own needs.

The accompanying drawing shows in vertical section an apparatus for carrying out the improved process of removing nicotin, as heretofore described.

This apparatus consists of a vessel *a*, having double walls and a sand packing *c* between these walls. This vessel *a* is covered on the inside of its bottom with alternating layers of asbestos *d* and of glass tubes *e*, and the whole inner wall is fitted with a lining of vertical glass tubes *f*, connected together by means of wires. This lining has for its purpose to protect the articles under treatment from the direct radiating heat of the bottom and walls and to maintain a constant and speedy circulation of the heated air, whereby an equal and gradual heating of the tobacco or articles to be treated is secured. In the space between these linings the tobacco or articles to be treated are placed, preferably, in a vertical position in one or more baskets of wire *g*, which in turn are freely suspended, by means of hooks *h*, distant from the lining.

At the top of the vessel *a* there is arranged a receptacle *i*, the upper portion of which is filled with constantly-circulating cooling-water. This receptacle *i* forms the lid of the vessel *a* and a portion of the heating-space. A bottom *k*, fixed in about half the height of the receptacle *i*, is conically shaped, the apex of the cone being directed downward in such a manner that this bottom projects into the heating-space like a funnel. This device has for its purpose to condense the rising vapors on the cooling-surface increased by its conical form and to cool the heated air. The liquid of condensation is led toward the apex of the cone, where it is allowed to drop into a vessel *l*, from which it is conducted away by means of a pipe *m*, surrounded by a mantle of asbestos. In consequence of the conical shape of the cooling-surface the cooled air, deprived by condensation of all the vapors, is compelled to continuously pass through the tobacco or articles, whereby it is again saturated with vapors and to rise reheated along the wall of vessel *a*, and thus to continue circulation.

At a suitable place a thermometer *n* extends across the receptacle *i* into the interior of the heating vessel *a* for the purpose of controlling the temperature in the latter, which temperature may be produced by heating the vessel by means of any suitable source of heat.

The process of removing nicotin is carried through as follows: The articles to be treated

are introduced into and fixed in the heating vessel *a* by means of baskets of wire *g*, whereupon the vessel *a* is closed by putting on the receptacle *i*. Heat is then produced by a gas-jet or other means. When the thermometer shows a temperature of 50° to 70° Celsius in the interior of the vessel, cooling-water is introduced into the upper portion of the receptacle *i*. As the temperature rises in the heating vessel, vapor arises from the articles undergoing treatment, which vapor is condensed on the bottom *k* and conducted away by the pipe *m*, a circulation of the inclosed air and vapor being maintained by the alternate heating and cooling. Heating of the air in the vessel *a* is continued until the temperature in the interior of the vessel has attained the necessary degree. The temperature, however, should be different for various articles of tobacco; but in no case should it exceed 200° Celsius. For instance, with tobacco for smoking, especially when finely cut, the surface of contact with the heated air is relatively very great, and the temperature may be brought to a maximum of 150° to 160° Celsius, while with cigarettes in paper envelops or with small thin cigars the temperature may be 160° to 175° Celsius, and large thick cigars must be exposed to a temperature of at least 185° to 195° Celsius. The time for carrying through the process will of course depend from the temperature to be attained. As soon as the desired temperature is attained the source of heat is cut off, the cooling apparatus, however, being left at work. A moderate rising of about 5° to 10° Celsius of the temperature in the vessel will then be observed, owing to the fact that the vessel *a* and its packing accumulate heat to a considerable extent, which stored heat is given out even after the external source of heat is cut off; but afterward a gradual cooling takes place. During the whole process the products of condensation flow off through the pipe *m*. When the thermometer shows a temperature of about 60° Celsius in the vessel, the cooling apparatus is evacuated and removed. The baskets of wire are taken out of the vessel with the treated articles therein and the latter placed upon dishes and allowed to slowly cool. At this stage the rest of the vapors escape, and the process thus being finished the treated tobacco articles may at once be commercially used. It is advisable, however, to store the same for a longer or shorter time.

By means of this process about fifty per cent. of the nicotin may be removed at one treatment, and if a greater percentage of nicotin is desired to be extracted the tobacco or articles after having been stored for some time are treated once more or repeatedly in the same manner as described.

I am aware that methods of and means for removing nicotin from raw tobacco or from cigars have been proposed and even used, and of course I do not claim such a process broadly. The present invention, however, makes it possible for the nicotin to be removed from finished articles of tobacco in a very simple, cheap, and effective manner and by means of an apparatus which can be made for either a small number of cigars or for hundreds or thousands.

A great advantage of this process is that the ingredients (citric acid and malic acid) giving the tobacco the peculiar and agreeable flavor and taste are not removed nor is the structure of the articles destroyed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A process for reducing the amount of nicotin contained in tobacco by means of a slow dry distillation, consisting in suspending the articles to be treated in a substantially closed vessel, protecting them from the heat radiating from the interior walls of the vessel, gradually heating the lower part of the vessel and its contents to a maximum of 150° to 193° Celsius according to the kind and dimensions of the articles to be treated and for the purpose of freeing the tobacco from its moisture and nicotin, cooling the upper side of the vessel so that the rising vapor will be condensed thereon, draining the condensed liquid from the upper side of the vessel to the exterior and continuing the operation until the nicotin has been removed to the desired extent.

In witness whereof I have hereunto signed my name, this 16th day of January, 1903, in the presence of two subscribing witnesses.

AUGUST FALK.

Witnesses:
OTTO ENGLISCH,
ALVESTO S. HOGUE.