

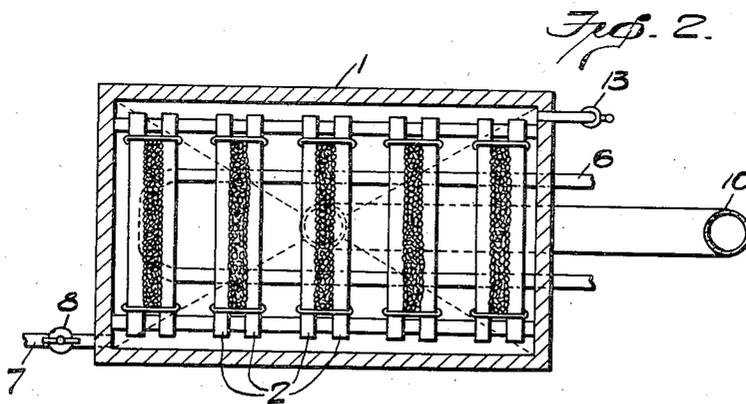
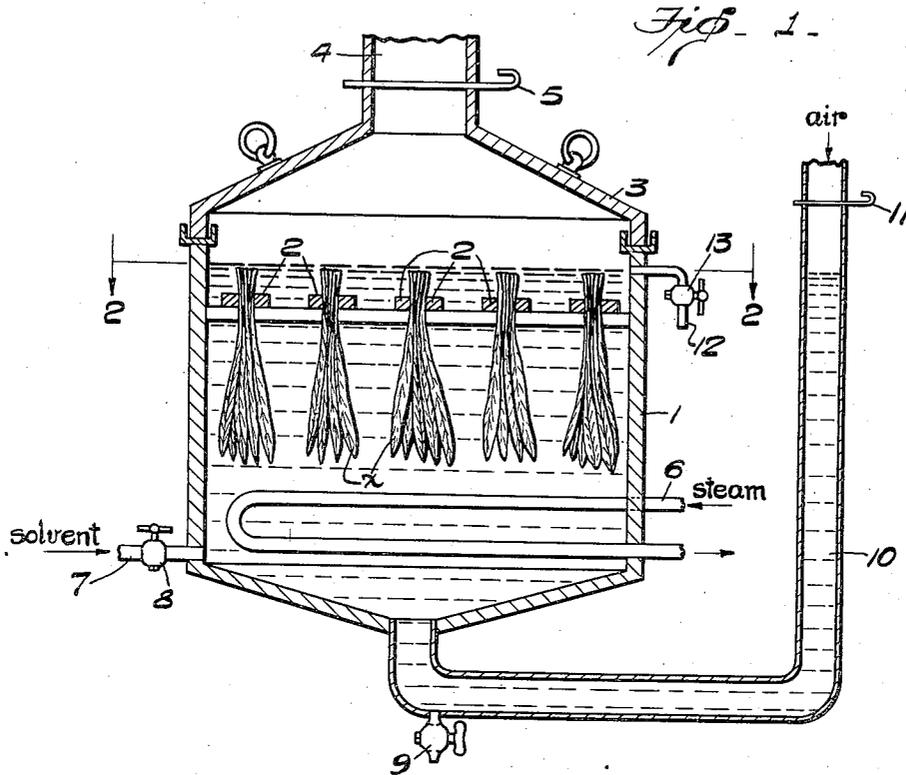
July 21, 1936.

W. H. ROSELIUS

2,048,624

MANUFACTURE OF DENICOTINIZED TOBACCO PRODUCTS

Filed Nov. 28, 1933



Inventor

Wilhelm H. Roselius

By

Norris + Pateman.

Attorneys

UNITED STATES PATENT OFFICE

2,048,624

MANUFACTURE OF DENICOTINIZED TOBACCO PRODUCTS

Wilhelm Heinrich Roselius, Bremen, Germany

Application November 28, 1933, Serial No. 700,150
In Germany December 3, 1932

9 Claims. (Cl. 131-6)

My invention relates to a process for manufacturing denicotinized tobacco by extracting the nicotine from the tobacco leaves when moistened with water or steam, through the medium of organic solvents at a temperature under 60° C. and by eliminating the solvents from the tobacco by alternate subjection to steam and warm air.

Previous attempts have been made to remove the nicotine from tobacco leaves or from tobacco products by subjecting the tobacco to high temperatures and by treating it with ammonia. The high temperatures and in particular the treatment with ammonia results in a destruction of the aromatic components contained in the tobacco leaves, whereby the quality of the tobacco is destroyed, or at least reduced to such an extent, that the products manufactured from tobacco prepared in this way have a strawlike taste. In addition, the removal of the nicotine according to this process is very difficult and cannot be performed to a satisfactory extent. In spite of a continued treatment, a substantial part of the nicotine remains in the leaves.

Attempts have also been made to remove the nicotine from the tobacco at high temperatures with organic solvents after a preliminary treatment with alkalis. Moreover, by this process the aromatic constituents, which also determine the quality of the tobacco, are so correlated, that the production of nicotine-free tobacco is quite impossible, especially since not only the aromatic constituents are lost, but also the appearance suffers considerably.

I have found that it is possible to manufacture tobacco of perfect smoking quality, free from all nicotine contents, by sprinkling and moistening the tobacco leaves with water at a temperature not higher than 50° C., whereupon without difficulty and by relatively short treatment of the tobacco with organic solvents, in particular with chloro-hydrocarbons, the nicotine can be removed from the leaves. It has also been found of advantage, to perform the moistening of the tobacco leaves in such a manner, that the leaves show a rather high moisture content, ranging from 30% of the weight of tobacco to the maximum quantity of moisture which tobacco leaves are able to absorb by a treatment with water. The nicotine is soluble in water whilst the aromatic components, producing the smoking qualities of the tobacco, are fatty substances and not soluble in water. For this reason an abundant moistening of the tobacco leaves with water leads to a solution of the nicotine in the water, from which solution it can easily be removed by the subsequent treatment

with organic solvents, whilst the aromatic fatty substances are practically enclosed by the water as in capsules and accordingly protected from the action of the solvents. This is of great importance, as the solvents which can be used for the extraction of the nicotine dissolve fatty substances, and therefore without the special treatment, the aromatic substances would be extracted by the solvents in the same proportion as the nicotine and only a quite worthless leaf skeleton would result.

Further, it has been ascertained that it is of advantage to keep the temperature, during the extraction of the nicotine with the solvents, as low as possible, in no case higher than 50° C., as there- by not only the aromatic ingredients of the tobacco leaves are preserved, but also a normal appearance of the tobacco leaves, which have been freed from the nicotine, is achieved. Consequently solvents of a particularly low boiling point, such as acetylenedichloride, chloroform, carbon tetrachloride, methyldichloride are suitable for the manufacture of denicotinized tobacco. The application of low boiling solvents is also preferred inasmuch as their removal from the tobacco leaves is possible after the extraction of the nicotine has been carried through. The removal of the remainder of the solvents is accomplished by subjecting the tobacco leaves for a short time to warm air current, then moistening them with steam and then exposing them once more to the treatment with warm air or to a heating in vacuo.

The tobacco leaves, which have been thus completely freed from the nicotine, have unimpaired appearance and smoking quality and can be used without further treatment for the manufacture of cigars, cigarettes, pipe tobacco or other tobacco products, as usual.

Example

100 cwt. of tobacco leaves are uniformly moistened on racks by sprinkling with water or by a watery mist or steam to a moisture content of 50% and at a temperature of 35° C. The tobacco leaves, after having been subjected to this preliminary treatment, are then treated from 5 to 10 hours at room temperature with acetylenedichloride. After the extraction of the nicotine has been carried through, the remainder of the solvent is allowed to drip off and for about 15 minutes a warm current of air is sent into the apparatus, whereupon the denicotinized tobacco leaves are again moistened with steam by subjecting to mist or by sprinkling and again heated

in vacuo at a temperature not higher than 60° C.

An example of a conventional form of apparatus which forms no part of the present invention but may be used in carrying out the process according to the present invention, is shown in the accompanying drawing, wherein:

Fig. 1 is a vertical section of a treating chamber; and

Fig. 2 is a horizontal section through such chamber on the line 2—2 in Fig. 1.

The apparatus shown comprises a treating chamber 1 having racks 2 supported therein for suspending the tobacco leaves *x*, the chamber having a tightly fitting hood or cover 3 which is removable to permit the racks carrying the tobacco leaves to be placed in and removed from the chamber, the hood having a vent passage 4 adapted to be closed by a slide valve 5. The treating chamber is adapted to contain a body of water and has a heating coil 6 therein for vaporizing the water, and the chamber is also adapted to receive the solvent through a pipe 7 controlled by a valve 8, the treating chamber being nearly filled with the solvent during the extraction of nicotine. A drain cock 9 in the bottom of the chamber enables the water and the solvent to be drained therefrom, and a pipe 10 connected to the bottom of the chamber enables air to be introduced into the chamber, this pipe having a slide valve 11 for closing it. An overflow pipe 12 leads from the chamber above the level of the tobacco leaves therein, this pipe being provided with a valve 13 for closing it.

In carrying out the process with the aid of an apparatus such as that shown and described, the tobacco leaves, after being placed in the chamber, are moistened by admitting water to the chamber through valve 9 up to a level below the tobacco leaves and heated by admitting steam to the heating coil 6, the valve 5 in the vent passage 4 being then open so that the arising steam or vapor moistens the leaves and then escapes from the treating chamber. The water is drawn off from the treating chamber, after the leaves have been sufficiently moistened, by opening valve 9, and the solvent is admitted through the pipe 7 by opening the valve 8, it overflowing through the pipe 12, the valve 13 in which is open. The solvent is drawn off, after extraction of the nicotine has been completed, by opening the valve 9, and warm air is admitted into the chamber through pipe 10 for removing the remainder of the solvent. The subsequent moistening of the tobacco leaves is accomplished with steam or vapor as described above, and thereafter, the water is drawn off from the treating chamber by opening the valve 9, and warm air is again admitted into the chamber through the pipe 10, or steam is admitted to the heating coil 6, and the tobacco leaves heated in vacuo by closing the valves 5 and 11 as well as valves 8 and 9 and exhausting the vapors from the chamber through the pipe 12.

I claim:

1. The process of producing denicotinized tobacco, consisting in moistening the tobacco, then subjecting the moistened tobacco to the action of an organic nicotine solvent, then treating the tobacco with warm air for the purpose of remov-

ing the said solvent, again moistening the tobacco, again subjecting the tobacco to treatment with warm air, and finally heating the tobacco to remove the remaining moisture.

2. The process of producing denicotinized tobacco, consisting in moistening the tobacco, then subjecting the moistened tobacco to the action of an organic nicotine solvent, then treating the tobacco with warm air for the purpose of removing the solvent, again moistening the tobacco, again treating the tobacco with warm air, and then heating the tobacco in vacuo to remove the remaining moisture.

3. The process of producing denicotinized tobacco, consisting in moistening the tobacco, at a temperature not above 60° C., then subjecting the moistened tobacco to the action of an organic nicotine solvent, then treating the tobacco with warm air not above 60° C. for the purpose of removing the said solvent, again moistening the tobacco, again treating the tobacco with warm air not above the aforesaid temperature, and then heating the tobacco to a temperature not above 60° C. to remove the remaining moisture.

4. The process of producing denicotinized tobacco consisting in moistening the tobacco to an extent not above 30% of the capacity of the tobacco, then subjecting the tobacco to the action of an organic nicotine solvent, then treating the tobacco with warm air to remove the said solvent, again moistening the tobacco, again treating the tobacco with warm air, and finally heating the tobacco to remove the remaining moisture from the tobacco.

5. The process according to claim 1, wherein the solvent is from the group solvents consisting of acetylene dichloride, chloroform, carbon tetrachloride, and methyl dichloride.

6. The process of producing denicotinized tobacco, consisting in causing the tobacco to swell by moistening the tobacco at a temperature not above 60° C., then subjecting the moistened tobacco to the action of an organic nicotine solvent, and then treating the tobacco with warm air for the purpose of removing the said solvent.

7. The process of producing denicotinized tobacco, consisting in causing the tobacco to swell by moistening the tobacco at a temperature below the boiling point of the moistening agent, then subjecting the moistened tobacco to the action of an organic nicotine solvent, and then treating the tobacco with warm air for the purpose of removing the said solvent.

8. The process of producing denicotinized tobacco, consisting in causing the tobacco to swell by moistening the tobacco at a temperature not above 60° C., then subjecting the moistened tobacco to the action of an organic nicotine solvent, and then treating the tobacco to remove the said solvent.

9. The process of producing denicotinized tobacco, consisting in causing the tobacco to swell by moistening the tobacco at a temperature below the boiling point of the moistening agent, then subjecting the moistened tobacco to the action of an organic nicotine solvent, and then treating the tobacco to remove the said solvent.

WILHELM HEINRICH ROSELIUS.