

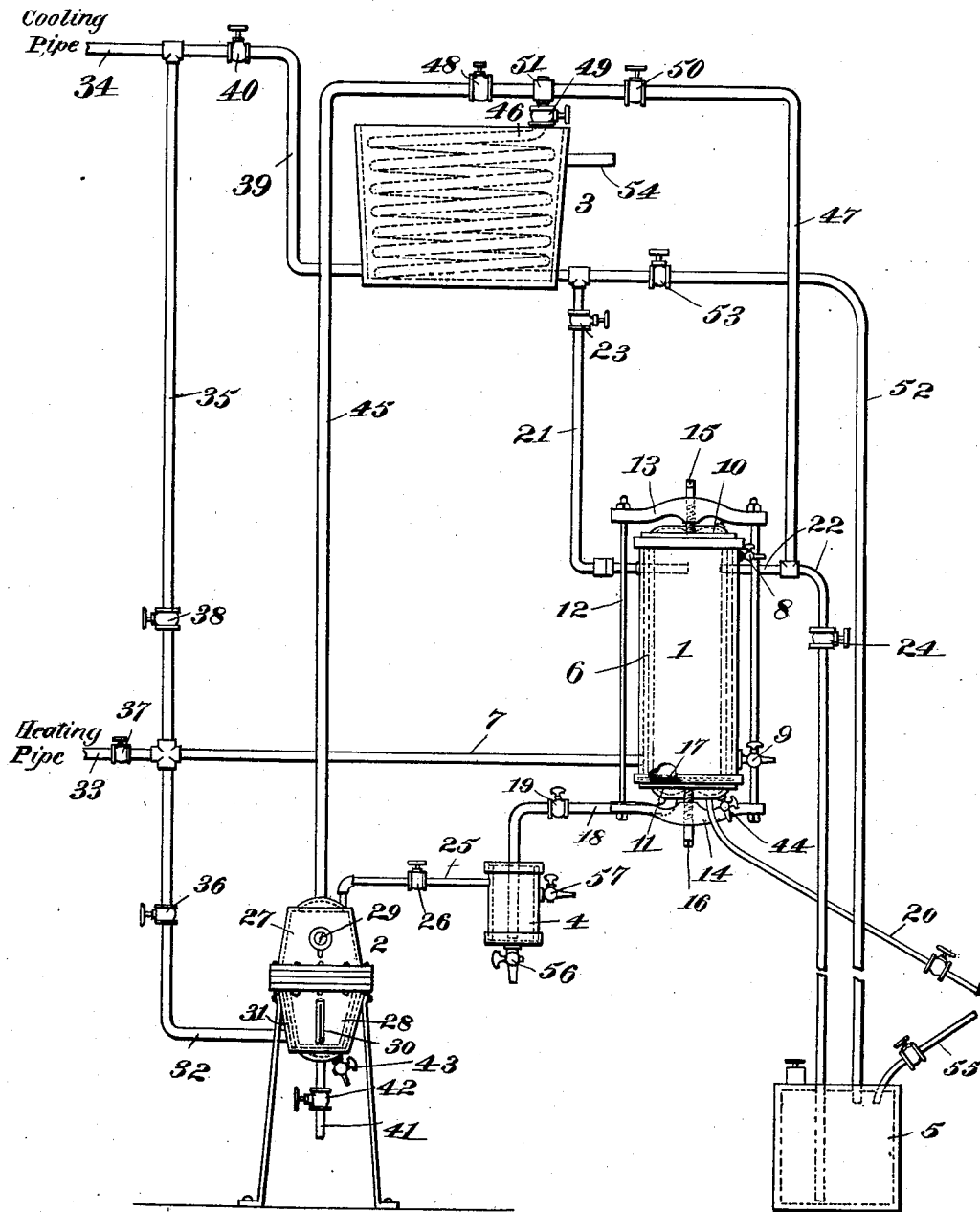
No. 678,362.

H. FROEHLING.
PROCESS OF EXTRACTING NICOTIN.

Patented July 16, 1901.

(Application filed Oct. 2, 1900.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

HENRY FROEHLING, OF RICHMOND, VIRGINIA, ASSIGNOR TO PASCAL DAVIE,
OF SAME PLACE.

PROCESS OF EXTRACTING NICOTIN.

SPECIFICATION forming part of Letters Patent No. 678,362, dated July 16, 1901.

Application filed October 2, 1900. Serial No. 31,796. (No specimens.)

To all whom it may concern:

Be it known that I, HENRY FROEHLING, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Processes of Extracting Nicotin from Tobacco, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a process for extracting nicotin from tobacco, which consists, first, in subjecting the tobacco while in a closed receiver or cylinder to the action of continuously-circulating liquid hydrocarbon, and then separating the hydrocarbon from the nicotin by vaporization, and consists, secondly, in first drying and then comminuting the tobacco (generally stems) in any suitable manner, and then placing the thus-dried tobacco in a suitable receiver, which is tightly closed while the process is being carried on, and subjecting the tobacco to the action of continuously-circulating liquid hydrocarbon, and then separating the hydrocarbon from the nicotin by vaporization.

The process also consists in subjecting tobacco contained in a closed receiver to the action of vaporized hydrocarbon and then subjecting the hydrocarbon while in contact with the tobacco to the action of a cooling agent, thereby liquefying the hydrocarbon, the liquid hydrocarbon and nicotin passing off, the nicotin being separated from the hydrocarbon by vaporization.

For carrying out my invention I employ an apparatus such as illustrated in the accompanying drawing, in which 1 is a cylinder or receiver; 2, a still; 3, a condenser; 4, a water-trap, and 5 a supply-tank.

After the tobacco (generally stems) has been dried and comminuted, preferably by grinding, it is then placed in the receiver or cylinder, as 1, and liquid or vaporized hydrocarbon brought into contact with the tobacco, according to the way in which the valves or cocks in the different parts of the apparatus are operated. For instance, for bringing vaporized hydrocarbon in contact with the tobacco in the cylinder the liquid hydrocarbon

in the still 2 is vaporized and carried through pipe 45, thence through pipe 47, into the cylinder or receiver 1. For bringing liquid hydrocarbon into contact with the tobacco the hydrocarbon in the still 2 can be passed through the condenser 3, from whence it may be conducted through pipe 23 in a liquid state into the cylinder 1. While the vaporized hydrocarbon is in the cylinder in contact with the tobacco, it is liquefied by coming under the influence of a cooling agent contained in the jacket 6, surrounding the cylinder 1. The nicotin extracted from the tobacco passes off with the liquefied hydrocarbon through pipe 18 to the lower end of the cylinder into the water-trap 4, and from the water-trap 4 the liquefied hydrocarbon containing the nicotin flows over through the pipe 25 and the nicotin caught in the lower section of the still and drawn off.

In starting the process, liquid hydrocarbon is contained in the supply-tank 5, and by letting in air under pressure through pipe 55 the hydrocarbon is forced into the cylinder 1 through pipe 22. When the thorough treatment of the tobacco is completed and all the nicotin is extracted, which is determined by testing the hydrocarbon through cocks in water-trap 4 or through cock 44 in cylinder 1, the process is discontinued and the extracting agent removed from the cylinder, after which the tobacco may be taken out from the same. Although hydrocarbon in a liquid state might always be brought into contact with the tobacco for extracting the nicotin, I prefer to subject the tobacco to vaporized hydrocarbon, as it acts more quickly, thoroughly, and satisfactorily.

The important feature of my process is the separation of the nicotin from the liquid hydrocarbon by volatilizing the hydrocarbon in the still and bringing vaporized hydrocarbon into contact with the tobacco and while in contact therewith liquefying the same and passing the nicotin off with the liquid hydrocarbon and continuing the process until the tobacco has been thoroughly treated, the process being a continuous one.

A pipe 33, which is connected with a source of heat-supply, is connected by means of a pipe 32 with the still 2 and by means of the pipe 7

with the cylinder 1. A pipe 34 is connected with a cooling agent, which is connected by pipe 35 with either pipe 7 or pipe 32 or with the condenser 3 by means of pipe 39. The
5 condenser is also connected with the heat-supply through pipe 35 and pipe 39, suitable cocks 37, 38, and 40 being provided for regulating the flow. A cock 36 is also provided in pipe 32 for controlling the heat-supply to
10 the still. Suitable other cocks are provided in the other parts of the apparatus for controlling and regulating the flow of the liquid or vaporized hydrocarbon and for conducting the same in a proper course throughout the
15 apparatus for carrying out the necessary features of my process.

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

The herein-described process for extracting 20
nicotin from tobacco, which consists in subjecting dried comminuted tobacco contained in a closed receiver to the action of a vaporized hydrocarbon, and then subjecting the vaporized hydrocarbon while in contact with 25
the tobacco to the action of a cooling agent and thereby liquefying the hydrocarbon, the liquefied hydrocarbon and the nicotin passing off together, and then separating the nicotin from the hydrocarbon by vaporization, 30
substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

HENRY FROEHLING.

Witnesses:

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