

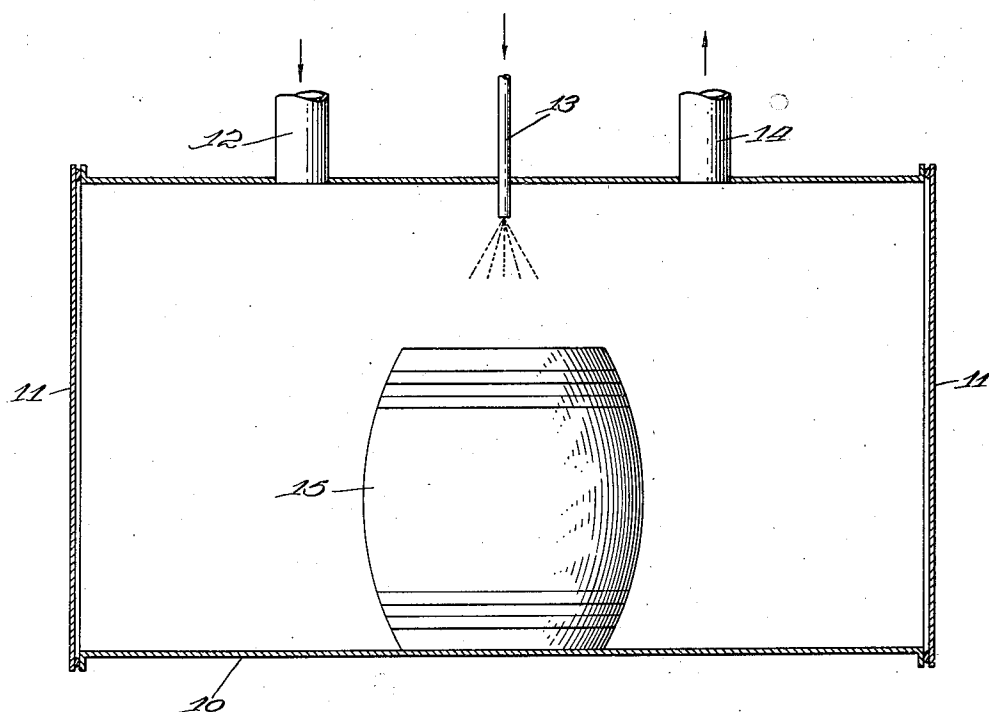
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J. M. BAER

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MOISTENING TOBACCO FOR STEMMING

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Inventor:
John M. Baer.
By Chittton, Wills, Davis, Hirschler, Dawson.
Attys.

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MOISTENING TOBACCO FOR STEMMING

John M. Baer, Chicago, Ill., assignor to The
Guardite Corporation, a corporation of Illi-
nois

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This invention relates to a method of stem-
ming tobacco and more particularly to a method
of treating dry brittle tobacco to render it soft
and pliable and then stemming the material
while still in a soft pliable condition.

In the present tobacco treating methods, to-
bacco is stored in large hogsheads in which
from 1,000 to 1,600 lbs. or so of tobacco are held
under very considerable pressure. When the
storage period is over, this tobacco is in an ex-
tremely dry and brittle condition and can not
be handled without considerable breakage. As
a result, it has been uniformly customary to
moisten this tobacco in a steam or ordering
room, in which the moisture content of the
tobacco is increased from 2 to 3%, and its tem-
perature slightly raised. A dry tobacco nor-
mally has a moisture content of from 7 to 9%,
which is therefore raised to around 10 to 12%
in the ordering treatment.

The so-treated tobacco is then satisfactory for
grading, but the moisture content is not suffi-
cient so that the material can be immediately put
through stemming machines. Instead, the hogs-
heads are broken down and the material placed
on conveyers, which carry it through a steam
tunnel or ordering chamber, wherein the mois-
ture content is further increased, and from which
the tobacco is immediately passed to stemming
machines, wherein it is stemmed.

It has now been discovered that if the mois-
ture content of tobacco is increased initially to
approximately 15 to 17%, it may be then di-
rectly stemmed without the use of the steam
tunnel. Such a process has enormous advan-
tages in the saving of expense and also in avoid-
ing the losses of aromatic materials by distilla-
tion in the steam tunnel.

The invention is illustrated diagrammatically
in the drawing in which: 10 represents a vacuum
chamber provided with doors 11, a steam line
12, a water line 13, and an evacuating line 14.
A hogshead of tobacco 15 may be placed inside
the vacuum chamber and treated as hereinafter
described.

In accordance with this invention, dry to-
bacco, having say a moisture content of 9%, is
treated in the hogsheads with steam and liquid
water sufficient to raise its moisture content to
15 to 17%.

In carrying out the process, the bulk tobacco
is placed in a gas-tight chamber and subjected
to a high vacuum, sufficient to reduce the tem-
perature of the tobacco considerably. Normally,
a vacuum of below 29½" is necessary for this

purpose. After the tobacco has been substan-
tially freed in this manner from non-condensable
gas, steam and liquid water are admitted to
the vacuum chamber, the liquid water being
preferably introduced in spray form at the high
vacuum. In this way the water has been found
to penetrate to the center of the tobacco with-
out raising its temperature as much as the steam
does. During the first portion of the steaming
period, it is preferred to continue evacuation,
this having a flushing effect upon any remnants
of non-condensable gas in the tank or any that
may be introduced with the steam or water.

The admission of the steam will, of course,
raise the temperature and pressure in the cham-
ber, and it is preferred to stop the steaming
operation before the temperature has reached a
deleterious point. This will, of course, vary for
different tobaccos, but it is preferred not to ex-
ceed about 175° F. for Burley tobacco and 160° F.
for Virginia tobacco.

The amount of moisture added is controlled
by the amount of water admitted, and also by
the increase in temperature. The amount which
may be added in any one operation, however, is
limited to about 10 to 12%. If more is desired,
a further watering cycle may be employed.

Liquid water is preferably only admitted dur-
ing a portion of the steaming operation, the
steaming being continued and the temperature
raised for a substantial period after the admis-
sion of liquid water has ceased. This additional
steaming operation is preferred, because it tends
to remove any wet spots which may have been
produced by unequal spraying of the water. Pref-
erably steam used in this portion of the proce-
dure is slightly superheated.

With some tobaccos it is desirable, following
the operation heretofore described, again to lower
the pressure in the chamber to produce boiling of
water. This second evacuation apparently re-
moves traces of non-condensable gas, which may
have been held in very tightly compressed por-
tions of the hogshead, or in portions where the
vapor pressure was extremely low, or it may re-
move non-condensable gas which has been
brought in by the incoming steam or water that
has collected in the center of the hogshead. This
second evacuation preferably reduces the tem-
perature at least 10 to 15° and is preferably fol-
lowed by a steaming operation to bring the tem-
perature up materially, preferably to approxi-
mately the temperature existing before the sec-
ond evacuation treatment.

The hot tobacco, which preferably has from 2

to 3% more moisture in it than is necessary in the stemming operation, is then removed from the vacuum chamber and promptly passed to the stemming machine, which may be of any conventional type, such as the Pasley stemmer.

In the transfer from the vacuum chamber to the stemmer, the tobacco passes through the open air and is materially cooled by contact therewith and by evaporation of the excess moisture.

It is preferred that the tobacco be hot when it is freed from the vacuum chamber, because, for a given moisture content, tobacco is more pliable when warm than when cold. Moreover, since some of the cooling in the air is done by contact with the air and by radiation, there is not as much loss of moisture as there would be in the chamber where practically the entire temperature drop must be due to evaporation of moisture.

As an example of the process, a hogshead of Kentucky Burley tobacco weighing 1,213 lbs. and having an initial temperature varying from 81° at the center to 83° F. near the outside, was placed in a vacuum chamber and evacuated until the temperature of the tobacco had fallen to 68° F. throughout. This took a period of about 20 minutes and the absolute pressure reached about 0.3". Steam was then admitted for 14 minutes to raise the temperature in the tobacco to approximately 164° F., and then a vacuum was again drawn to reduce the temperature to approximately 134° F. at the center of hogshead. This took about 10 minutes and the mercury indicated a pressure of approximately 3.9" at the end of the evacuation cycle. Steam was then again admitted to bring the temperature up to 164° F.

In the first steaming period of this operation, 20 gallons of water were sprayed into the tank with the steam during the first 2 minutes of the steaming period. The last 12 minutes of the steaming period were with steam only.

The last steaming period required only about 7 minutes, or a total of 51 minutes for the entire operation. Evacuation was continued for the first 3 minutes of the first steaming cycle.

During this operation, 91 lbs. of water, or approximately 7.5% by weight, was added to the hogshead. The hogshead was free from cold or dry spots and was in satisfactory condition.

In another example of the process, Virginia tobacco in a hogshead weighing 1,178 lbs. and having a temperature of 81° F. at the center was subjected to a vacuum sufficient to produce a temperature of 68° F. in the center. This required about 20 minutes and the barometer at the end of the period was approximately 0.38" absolute. Steam was then introduced with 20 gallons of water for 2 minutes, and the steaming operation continued for 3 minutes further. The chamber was then evacuated for 10 minutes and then steam was admitted for 13 minutes, to produce a temperature of approximately 150° F. in the center of the hogshead. Tobacco was then evacuated again until its temperature had dropped to 125° F. after 10 minutes, and was then steamed for 9 minutes to produce a temperature of 157° F.

At the end of this time the tobacco had gained 89 lbs. in weight, or somewhat more than 7%. The tobacco was in excellent condition for handling and was free from dry spots.

Tobacco treated by this process not only completely passes directly to the stemming machines, but when stemmed produces pliable stems as distinguished from the frequently brittle stems resulting from sweat room plus ordering chamber operations.

The foregoing detailed description is given for clearness of understanding only, and no unnecessary limitations should be understood therefrom.

I claim:

1. In a tobacco treatment process, the successive steps of subjecting the tobacco to a high vacuum, supplying a mixture of steam and water in mist form to the tobacco whereby the absolute pressure thereon is increased from the initial vacuum value to a higher but sub-atmospheric pressure, and then subjecting the tobacco to an increased vacuum sufficient to cause evaporation of moisture therefrom whereby the tobacco is cooled.

2. In a tobacco treatment process, the successive steps of subjecting the tobacco to a high vacuum, supplying to the evacuated tobacco steam and finely divided water vapor entrained therewith, the amount of water so supplied being in excess of an amount sufficient to saturate the steam supplied at the subatmospheric pressures prevailing and then subjecting the tobacco to an increased vacuum sufficient to cause evaporation of moisture therefrom, whereby the tobacco is cooled.

3. A process for treating tobacco comprising subjecting the tobacco to a high vacuum, supplying to the tobacco a mixture of steam and water whereby the absolute pressure on the tobacco is increased and moisture is added thereto, and re-evacuating the tobacco sufficiently to cause evaporation of some of the moisture therefrom.

4. A process for treating tobacco comprising subjecting the tobacco to a high vacuum, supplying to the evacuated tobacco steam and finely divided water entrained therewith, the amount of water so supplied being in excess of an amount sufficient to saturate the steam supplied at the sub-atmospheric pressures prevailing, increasing the vacuum on the tobacco sufficiently to cause evaporation of moisture from the tobacco whereby the tobacco is cooled.

5. In the bulk treatment of organic products, the successive steps of removing from the product substantially all non-condensable gas, supplying thereto a mixture of steam and water, the water being in micromist form, and being supplied to the product in a carrier of steam, whereby the steam carries the particles of water substantially uniformly throughout the bulk of the product and condenses therein, leaving the water distributed therethrough, and then subjecting the product to an increased vacuum sufficient to cause evaporation of moisture therefrom, whereby the product is cooled.

JOHN M. BAER.