

UNITED STATES PATENT OFFICE.

GEORG CASP. SEEGER, OF MÜNCHBERG, GERMANY.

PROCESS OF IMPREGNATING LEATHER.

SPECIFICATION forming part of Letters Patent No. 458,132, dated August 18, 1891.

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To all whom it may concern:

Be it known that I, GEORG CASPAR SEE-
BERGER, chemist, a subject of the King of Ba-
varia, residing at Münchberg, in the King-
5 dom of Bavaria and German Empire, have in-
vented certain new and useful Improvements
in a Process for the Impregnation of Leather;
and I do hereby declare the following to be a
full, clear, and exact description of the in-
10 vention, such as will enable others skilled in
the art to which it appertains to make and use
the same.

This invention has for its object a process
for the impregnation of leather of any kind,
15 and especially for rendering soles of boots or
shoes not only water-proof, but also more dura-
ble. The durability becomes at once evi-
dent by the fact that boots or shoes made
from leather impregnated by the process de-
20 scribed hereinafter do not shrink, nor do the
seams rip when the goods stand in dry air.
The process is based on the principle that the
small holes which are formed in the leather
by the tacks or the pitched thread are filled
25 up with a resinous mass which is insoluble in
water and proof against the weather, so that
no moisture can enter the interior of the
leather. This filling up of the holes prevents
the leather of the soles from drying up, and
30 in this way and also by making the leather
very pliable the durability of the leather is
indirectly increased. Besides, another and
very essential advantage is attained. In con-
sequence of the uniform saturation both of
35 the leather and the wooden tacks and the
pitched thread with the resinous mass an in-
timate cementing of the tacks and thread with
the leather is brought about which allows of
a long-continued keeping of the ready-made
40 goods in dry air.

In carrying out the process in practice the
following method is pursued, whereby more
especially the impregnation of soles of shoes
or boots is kept in view. One hundred parts
45 of linseed-oil are intimately mixed with about
one and one-half parts of manganese borate
and one-half part of burnt alum and the
mixture is gently boiled for several hours.
The soles are then coated several times with
50 the mass thus obtained and afterward ex-
posed to the action of atmospheric air, where-
by linseed-oil is subjected to the well-known

chemical change. The liquid substance which
permeates the leather of the soles in all its
pores is gradually changed by the oxygen of 55
the air into a solid resinous mass, which is
elastic still and possesses the properties de-
scribed. A continued boiling of the linseed-
oil is of a special importance, inasmuch as by
such a proceeding noxious organic matter is de- 60
stroyed and all the moisture driven off, where-
by a purer and more suitable product is ob-
tained. The addition of manganese borate
and burnt alum causes a rapid drying of the
linseed-oil, whereby the mass becomes harder 65
and more able to resist the influence of the
weather. By the addition of the said chemi-
cals and a long-continued boiling the mass ac-
quires the further property of not solidifying
even at low temperatures, so that the impreg- 70
nation of leather can take place at common
temperatures. After the soles have been pre-
pared in the manner described above they are
treated once more in a manner to be described
directly. Whereas the resin in the first stage 75
of the impregnation is, as it were, formed in the
material to be treated by exposure to the air,
the resin, which is also employed in this sec-
ond stage, need not be formed by the chemi-
cal action of the air; but resinous substances 80
are directly employed for the purpose. I
have found that this is best done by using so-
lutions of resin dissolved in suitable agents.
The soles are saturated with this solution and
then exposed to the air, whereby the dissolv- 85
ing agent is evaporated, while the resinous
mass is deposited in the interior of the leather.

The resins to be used can be chosen at pleas-
ure, as also the liquid for dissolving; but it
has proved best to employ the following sub- 90
stances in quantities, as stated: One kilo of
shellac, one-fourth kilo of sandarac, sixty
grams of mastic, fifteen grams of camphor,
and two hundred grams of Venetian turpen-
tine are digested with four liters of methy- 95
lated spirit and heated to the boiling-point
in a water bath. After the substances have
been dissolved the mass is allowed to cool
and the soles are then coated with it several
times. After the perfect drying they are 100
ready to be used.

There is an important object in the consecu-
tive treatment of the soles with an oil which
turns resinous on exposure to the air and with

a solution of resin ready formed, as will be shown at once. In order to give the leather a permanent elasticity it is very essential that only a certain portion of the linseed-oil turns
5 into resin, while the rest is not changed by the oxygen of the air, but keeps its thick "half-liquid" state. Now the complete conversion of the linseed-oil can only be arrested by covering the first layer of linseed-oil after
10 the partial change has taken place by a second layer of resin, so that no oxygen can get admission to the first layer. This is most aptly effected by the application of alcoholic solutions. The alcohol quickly evaporates
15 and leaves behind a coating of resin which perfectly protects the linseed-oil from oxidation. The leather is therefore saturated with a semi-fluid liquid mass, which, on the other hand, is, as it were, incased in a hard and elastic material, whereby the leather offers the
20 double advantage of possessing both great elasticity and hardness and a powerful resistance against moisture.

The treatment of leather goods with an oil
25 which is transformed into resin by air or the treatment with a solution of resin—that is to

say, neither treatment by itself—is not sufficient to produce a lasting effect; but both treatments must be combined in the manner as above described. 30

Having thus fully described this invention, I claim—

1. The method of treating leather, which consists in first impregnating the leather with an oil—such as boiled linseed-oil—then partially oxidizing the oil, and finally coating the
35 leather with a resinous varnish, substantially as set forth.

2. The method of treating leather, which consists in first impregnating the leather with a mixture of boiled linseed-oil, manganese borate, and alum, then exposing the leather to the air to partially oxidize the oil, and finally coating the leather with a resinous
40 varnish, substantially as set forth. 45

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

GEORG CASP. SEEBERGER.

Witnesses:

ADOLF KUMECK,
CARL LINHARDT.