

UNITED STATES PATENT OFFICE.

EDGAR WEDEKIND, OF TÜBINGEN, GERMANY.

CHLORINATED METHYL-ETHER OF MENTHOL.

SPECIFICATION forming part of Letters Patent No. 703,104, dated June 24, 1902.

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To all whom it may concern:

Be it known that I, EDGAR WEDEKIND, a subject of the King of Prussia, Emperor of Germany, and a resident of Tübingen, Kingdom of Würtemberg, German Empire, have
5 invented a new Chlorinated Methyl-Ether of Menthol, of which the following is a specification.

This invention consists in a chlorinated
10 methyl ether of menthol which corresponds to the formula $C_{10}H_{19}OCH_2Cl$, and which is consequently a chloromethyl-menthyl-ether. This compound is particularly suitable for treating catarrhal affections of the respiratory
15 passages, since it can be readily split up by simple means, so as to liberate or evolve therapeutically-active constituents—namely, formic aldehyde and menthol—which can be inhaled or introduced into the respiratory
20 passages by the nose or mouth of the patient.

The new product chloromethyl-menthyl-ether is a yellow oily liquid of peculiar and somewhat pungent odor. The liquid is insoluble in water and alcohol, but dissolves
25 readily in ether and chloroform. It possesses a specific gravity of about 0.9821 and a boiling-point of about 160° to 163° centigrade under thirteen to sixteen millimeters pressure and rotates the plane of polarization to the
30 left.

In the manufacture of this new product I may proceed in accordance with the following example; but it will be understood that I do not limit myself to the exact proportions,
35 temperatures, and other details specified, which may be varied without departing from the spirit of the invention.

Example: One hundred and sixty grams of menthol are mixed with ninety grams of a
40 thirty-five-per-cent. formalin solution, and the mixture is brought into solution by carefully heating on the water-bath. Into the well-stirred mixture is introduced during two to three hours an excess of dry hydrochloric-
45 acid gas. Two layers will form, the upper of which is decanted off and dried for twenty-four hours over a bed of calcined sulfate of soda. After filtration and pressing of the desiccated material the limpid oil is freed
50 from the greater part of the dissolved hydrochloric acid by injecting into it *in vacuo* a

current of dry air. By repeating this operation at a temperature of 50° to 60° centigrade the remainder of the hydrochloric-acid gas is caused to escape. The average yield of the
55 ether thus obtained amounts to a little more than the quantity of menthol employed.

The therapeutic effect of the chloromethyl-menthyl-ether is based upon the great facility with which it can be decomposed, so as to
60 liberate or evolve the substances before described. This decomposition is, for instance, effected if the substance be exposed to the action of moist air and still more rapidly if it be introduced into hot water or alkalies.
65 Upon being thus decomposed it splits up into formic aldehyde, menthol, and hydrochloric acid. In this way the therapeutically-active bodies are obtained in a nascent state.

In employing the improved compound for
70 inhalations—for example, in the treatment of catarrhal affections of the respiratory passages—I may, according to my invention, introduce the said compound into hot water or into a hot alkaline solution contained in a
75 suitable vessel provided with leading or delivery tubes adapted to be inserted into the mouth or nostrils of the patient.

The rapidity of the decomposition depends upon the temperature of the decomposing
80 agent. The higher this is the more rapidly does the decomposition take place. The hydrochloric acid liberated remains dissolved in the water, while formic aldehyde and menthol escape with the aqueous vapors. By in-
85 haling these aqueous vapors saturated with formic aldehyde and menthol into the air-passages catarrhal affections of the latter can be quickly relieved or cured.

It will be understood that instead of em-
90 ploying hot water or an alkaline solution, as above described, to cause the decomposition of the compound I may effect this by any other suitable means—for example, by exposing the compound in a suitable vessel to
95 the action of moist air, means being provided to absorb the hydrochloric acid as same is evolved.

I claim—

As a new article of manufacture the im-
100 proved product hereinbefore described being a chlorinated methyl-ether of menthol corre-

sponding to the formula $C_{10}H_{19}OCH_2Cl$ and
being a yellow oily liquid of peculiar pungent
odor, of specific gravity about 0.9821, insolu-
ble in water and alcohol and readily soluble
5 in ether and chloroform.

In testimony that I claim the foregoing as
my invention I have signed my name, in pres-

ence of two witnesses, this 8th day of Febru-
ary, 1902.

EDGAR WEDEKIND.

Witnesses:

WM. HAHN,
ERNST ENTENMAS.