

H. S. BLACKMORE.
COMPOSITION FOR ANTISEPTIC AND OTHER PURPOSES.
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Fig. 1.

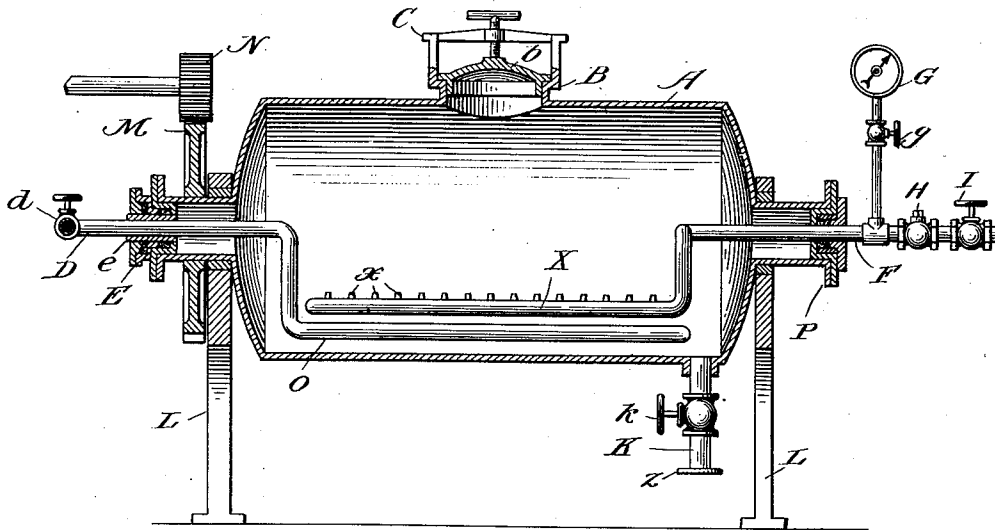


Fig. 2.

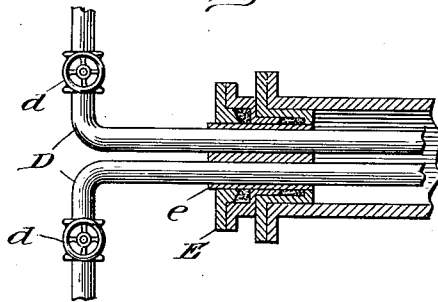
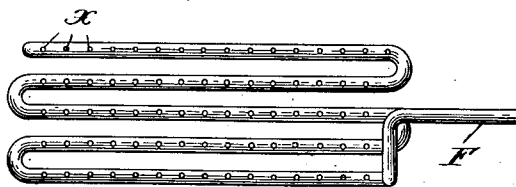


Fig. 3.



Inventor

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COMPOSITION FOR ANTISEPTIC AND OTHER PURPOSES.

No. 909,527.

Specification of Letters Patent.

Patented Jan. 12, 1909.

Application filed August 7, 1903. Serial No. 168,673.

To all whom it may concern:

Be it known that I, HENRY SPENCER BLACKMORE, a citizen of the United States, residing at Mount Vernon, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Compositions for Antiseptic and other Purposes; 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.

This invention relates to a new article of manufacture for disinfecting, germicide, antiseptic and medicinal purposes and process of making the same, and it consists of a mixture, compound, or solution of formic aldehyde or its polymerids in a fixed water-repellent, such as fixed oils or fatty vehicles, which compounds or compositions may or may not be associated with other medicating agents, the object being to produce a fixed, fatty composition of water-repellent nature containing formic aldehyde which may be employed *per se* or as a vehicle for other medicating or medicinal agents.

As a specific illustration of my new composition and the manner in which the same is produced I will take, for example, the production of a solution of formic aldehyde in maize oil (corn oil) which oil consists largely of glycerol-oleic ester. The manner in which I prefer to produce this fixed water-repellent or oily formic aldehyde solution or compound is to place the desired fixed oil, such as maize oil, in a proper container and expose it to the presence of formic aldehyde under increased pressure at the same time agitating it, whereby the formic aldehyde becomes absorbed, occluded, or retained therein. When the fixed oil has become saturated with formic aldehyde it is removed, the formic aldehyde content ascertained by test, and the composition diluted with more oil to obtain the percentage content of formic aldehyde desired.

The polymerids of formic aldehyde, such as paraformaldehyde or trioxymethylene may be dissolved in the oil, preferably by the action of heat, producing compounds not departing from the spirit of my invention, as, upon heating in the formation of the composition, formic aldehyde is generated and the composition is found to have a like dis-

infectant, germicide, antiseptic, and medicinal property, and to all intents and purposes may be considered, and is herein included, as an equivalent composition in accordance with my invention.

The apparatus, in which the solution of formic aldehyde in inert and fixed water-repellent vehicles in accordance with my process is made, is illustrated in the accompanying drawing, in which,

Figure 1 is a longitudinal vertical section; Fig. 2 is a sectional view of an axial stuffing-box through which pass the inlet and outlet pipes for the purpose of heating the contents of the apparatus by means of steam; Fig. 3 is a view of a perforated pipe through which the formic aldehyde is introduced into the apparatus.

In carrying out my invention for making a solution of formic aldehyde in maize oil, I introduce into the revoluble drum A, maize or corn oil which consists largely of glycerol-oleic ester, through the opening B by removing the cover *b*, sufficient to fill the drum about two-thirds full. I then place the cover *b* over the opening B and maintain the same in a tight or closed position by means of the screw-clamp C. I then open the valves *d* in the pipes D and pass there-through and through the coil O a current of steam, whereby the maize or corn oil in the drum A becomes heated. As soon as the oil has become heated to about 100° C., I introduce into the oil through the perforated pipe X formic aldehyde gas under a pressure of about 20 pounds by opening the valve I. This formic aldehyde gas passes first through the check-valve H which prevents the oil or other substances in the receptacle A from being forced back into the formic aldehyde reservoir or generating apparatus. Connected with the pipe F, through which the formic aldehyde gas under pressure passes to the coil X from which the formic aldehyde gas is discharged through the perforations *x*, is a pressure gage G which becomes operative on opening the valve *g*. As soon as the formic aldehyde begins to pass into the oil in receptacle A through the small perforations *a*, the drum A is revolved by means of the cog-wheel M actuated by the movement of the revolving wheel N. In the axial ends of the drum A are the stuffing-boxes E and P, the

steam pipes D passing through the fixed section *e* of the stuffing-box E, while the pipe F through which the formic aldehyde is introduced into the apparatus passes through the stuffing-box P. As the apparatus revolves, the contents are simultaneously heated by the steam passing through the pipes D and the formic aldehyde is introduced through the pipe F, the pressure being maintained preferably at about 20 pounds. After a sufficient amount of formic aldehyde has been introduced into the oil in the apparatus to produce the desired percentage content, the apparatus is maintained in a rotary condition for about two hours whereby the formic aldehyde becomes thoroughly dissolved in or assimilated with the oil by the agitative action of the revolving drum and the fixed steam-heating coil *o* and perforated coil *x* through which the formic aldehyde is introduced. The revolution of the apparatus is then stopped and the oil, charged with formic aldehyde, is withdrawn through the pipe K by opening the valve *k*. The pipe K is provided at its outer end with a flange *z* for the purpose of coupling up or clamping to conduits leading to a reservoir for the fixed oil charged with formic aldehyde. The whole apparatus is axially supported by the stands L through which the ends or hollow trunnions of the receptacle A are supported. It can be seen that the oil and formic aldehyde are thus thoroughly mixed and assimilated by the action of heat and pressure together with the agitation caused by the revolution of the drum, thus continually flowing the oil against the fixed coils X and O.

I have found it of advantage to employ this anhydrous fixed water-repellent composition containing formic aldehyde or its described equivalent as a vehicle for other medicinal agents, such, for instance, as eucalyptol, in which case it is found to act with satisfaction as an antiseptic and healing agent for application to suppurating surfaces bringing about the destruction and removal of the inflammatory or suppurating causes and at the same time apparently acting as a local anesthetic and thereby relieving the pain with which such inflammations are usually accompanied. It is preferable that the formic aldehyde content of the fixed oily vehicle, in cases of this kind, should not exceed one tenth of one per cent., but it can be varied at the option of the prescriber to meet the exigencies and idiosyncrasies of the case.

Instead of eucalyptol I can employ any other medicinal agent as desired, such as menthol, cocaine, morphine, etc., with the fixed oily formic aldehyde vehicle, or I can employ other fats, oils or aliphatic esters as the base for the formic aldehyde vehicle without departing from the spirit of my invention, and I intend to include the dense

fatty oils or fats, such as stearin, palmatin, olein, or other aliphatic or similar oxy-acid ester which may be of solid or semi-solid or fluid consistency at ordinary atmospheric pressure and temperature, the said anhydrous fatty water-repellent formic aldehyde compositions of which may be employed as a vehicle for other medicating or medicinal agents.

It is found that, aside from the advantages derived from the employment of the fixed oily formic aldehyde compositions as a vehicle for other medicating or medicinal agents, that the formic aldehyde content prevents the oily base from becoming oxidized or rancid and the composition is found to be of itself of great advantage as a hemostatic and when applied to cuts or wounds is a rapid healing agent by reason of its antiseptic and coagulating action upon the albuminous content of the blood or exposed raw surfaces.

I am aware that formic aldehyde has been mixed in its aqueous solution emulsified with lard and with emulsions, such as milk, for the purpose of preserving the same, and I am also aware that formic aldehyde has been combined with hydrated collogen, such as is contained in gelatin, glues, skins and hides, to render the said substances insoluble or transform them into leather, but it is seen that in these cases the substances produced are not of water-repellent nature inasmuch as water may be mixed with and absorbed by the said compositions with perfect freedom, which is not the case with the fixed oily or fatty formic aldehyde composition as produced by my process, which water-repellent vehicle consists largely of anhydrous fixed aliphatic esters *en masse* and not associated with water in suspension in contradistinction from the aforesaid references.

It may be noted that dry formic aldehyde, which is a gas, unites or combines more readily with the fixed oils or aliphatic esters and becomes more readily assimilated with or retained or occluded therein in a more permanent manner and to a larger percentage without danger of polymerization than is the case with aqueous solutions.

The term "inert" employed throughout this specification and claims has particular reference to the character of the solvent for the formic aldehyde and its character in relation to the formic aldehyde content; and the term "fixed oil" to the crude or commercial anhydrous, inert fixed, water-repellent, mineral, vegetable or animal fat or oil, as well as purified products or esters and is intended to include anhydrous, inert, fixed water-repellent compositions of fixed oily nature which might be derived from mineral substances or artificially or synthetically prepared, it being understood that the term "fixed" implies that the substance is of

non-volatile and permanent character under ordinary atmospheric pressure and temperature; and the term "water-repellent" designates a composition ordinarily insoluble in or incompatible with water.

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

1. A new anhydrous composition of matter consisting of an inert, unctuous, fixed water-repellent vehicle, and formic aldehyde.

2. A new anhydrous composition of matter consisting of an inert, unctuous, fixed water-repellent vehicle containing formic aldehyde.

3. A new anhydrous composition of matter composed of formic aldehyde and an inert fixed ester.

4. A new anhydrous composition of matter composed of formic aldehyde and an inert fixed oxy-acid ester.

5. A new anhydrous composition of matter composed of formic aldehyde and an inert fixed aliphatic ester.

6. A new anhydrous composition of matter substantially consisting of an inert fixed aliphatic ester and formic aldehyde.

7. A new anhydrous composition of matter composed of an inert oleic ester and formic aldehyde.

8. A new composition of matter substantially composed of an inert fixed aliphatic ester, formic aldehyde and a medicating agent.

9. A new anhydrous composition of mat-

ter consisting of formic aldehyde and an inert fixed oil.

10. A new anhydrous composition of matter consisting of inert fixed oil and formic aldehyde.

11. As a vehicle for medicinal agents, an anhydrous composition comprising an inert fixed oily ester containing formic aldehyde.

12. The process of making the new composition of matter herein set forth, which consists in mixing a fixed water-repellent ester with anhydrous formic aldehyde and exposing the same to intimate association until the formic aldehyde has become associated therewith or occluded therein.

13. The process of making the new composition of matter herein set forth which consists in mixing a fixed water-repellent ester with gaseous formic aldehyde and exposing the same to intimate association until the formic aldehyde has become associated therewith or occluded therein.

14. The process of making the new composition of matter herein set forth which consists in mixing a fixed water-repellent ester with formic aldehyde under super-atmospheric pressure and exposing the same to intimate association until the formic aldehyde has become associated therewith or occluded therein.

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

HENRY SPENCER BLACKMORE.

Witnesses:

O. G. VICTOR,

WALTER F. NURZEY.