

UNITED STATES PATENT OFFICE

1,990,320

GAS METER AND DIAPHRAGM THEREFOR

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No Drawing. Application April 3, 1930
Serial No. 441,423

2 Claims. (Cl. 73—1)

The present invention relates to treated or stuffed leather.

In certain uses of leather, for example, in diaphragms for gas meters, it is necessary to treat the leather with a stuffing agent which will render the leather flexible and gas tight. The satisfactory operation of the meter depends upon the maintenance of these characteristics in the leather diaphragm.

It has been past practice to stuff the leather with oil or fats which give the leather the required flexibility and gas tightness.

The use of the stuffing agents hitherto employed is open to serious objections. These agents are soluble in benzol, which is present in most metered gas, as, for instance, in manufactured gas for domestic and industrial consumption.

If the dew point of the gas is lowered sufficiently, benzol condenses out of the gas containing it, and in actual gas distribution practice, such condensation of benzol does occur within the meters. As a result, benzol is condensed out on the leather diaphragm and dissolves and washes out the stuffing agent.

Such action renders the leather stiff and hard and no longer gas tight, impairing the satisfactory operation of the meter and necessitating frequent and costly repairs and replacements.

We have discovered that if the leather is stuffed with a metallic soap insoluble in benzol and in other hydrocarbons occurring in gas drip oil and in water (which also may condense from the gas) and neutral to the leather, the leather is rendered flexible and gas tight, and that these characteristics are maintained under the above described conditions under which leather stuffed as hitherto loses its flexibility and gas tightness.

As examples of such a soap may be mentioned an aluminum soap or a barium soap, composed

substantially of an aluminum or barium compound of palm oil, cocoanut oil, olive oil or castor oil. The leather may be stuffed with the soap as such, or the soap may be formed in the leather by treating it with the proper reagents.

Instead of using an insoluble metallic soap made from the above oils we may prefer to use insoluble metallic soaps made from pure fatty acids, such as lauric acid, myristic acid, palmitic acid, capric acid, oleic acid, stearic acid, etc.

Metallic soap may be used alone to stuff the leather. The metallic soap is put in the leather by rubbing or is applied to the leather in a solution in a solvent which will dissolve the soap. Examples of such solvents are ether or chloroform.

When the leather of a meter diaphragm is stuffed with such a soap, it is flexible and gas tight and remains so over a longer period of time, in spite of condensation of benzol or other hydrocarbon or water in the meter, thereby maintaining the satisfactory operation of the meter and obviating the frequent repairs and replacements hitherto necessary, due to loss of flexibility and gas tightness in the diaphragm.

We claim:

1. For gas meter diaphragms, leather stuffed with soap composed of aluminum and saponified cocoanut oil which is insoluble in benzol and other hydrocarbons commonly occurring in gas drip and also in water.

2. The combination of a gas meter and a diaphragm of leather stuffed with metallic soap which is insoluble in water and in the constituents of gas drip oil, whereby the accuracy of the meter is maintained constant.

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