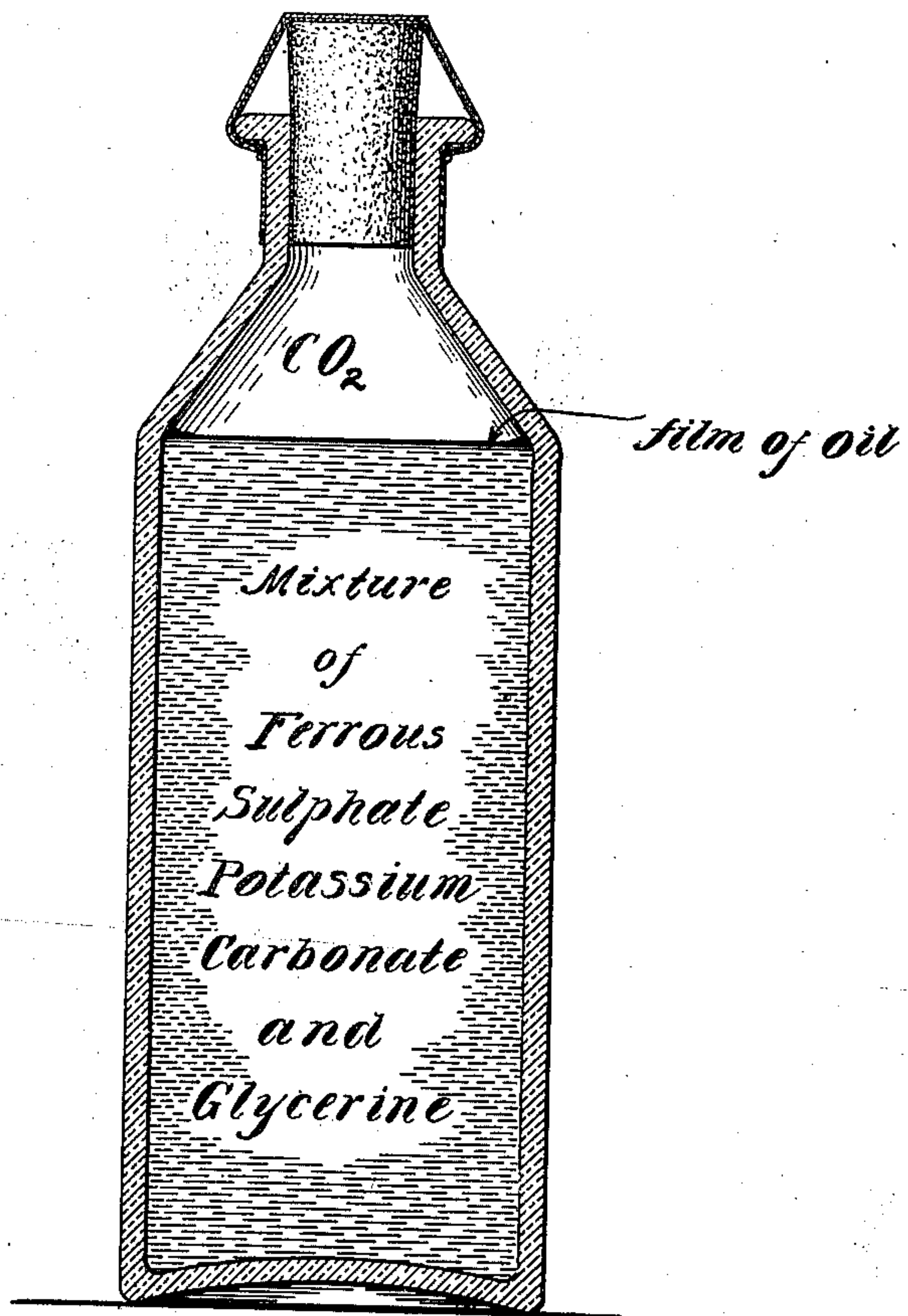


J. K. LILLY.  
COMMERCIAL PACKAGE OF MEDICINE.  
APPLICATION FILED OCT. 30, 1907.

929,610.

Patented July 27, 1909.



Witnesses  
Frank A. Fahl  
Thomas W. McMeans

Inventor  
Josiah K. Lilly  
B. Bradford Hood  
Attorneys



# UNITED STATES PATENT OFFICE.

JOSIAH K. LILLY, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO ELI LILLY & COMPANY, OF INDIANAPOLIS, INDIANA, A CORPORATION OF INDIANA.

## COMMERCIAL PACKAGE OF MEDICINE.

No. 929,610.

Specification of Letters Patent.

Patented July 27, 1909.

Original application filed September 1, 1906, Serial No. 333,026. Divided and this application filed October 30, 1907. Serial No. 399,890.

*To all whom it may concern:*

Be it known that I, JOSIAH K. LILLY, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Commercial Packages of a Pharmaceutical Preparation, of which the following is a specification.

In the manufacture and marketing of a liquid pharmaceutical preparation consisting broadly of a ferrous salt, a carbonate, or its equivalent, and a liquid carrier for these two substances of such character as to prevent their combination into ferrous carbonate, and prevent their oxidation, and consisting specifically of a solution of ferrous sulfate and sodium carbonate in glycerin, it has been found that, in order that the preparation may retain its medicinal value for a long period, it is desirable to so package the preparation as to protect it while sealed and automatically protect it after it has been once unsealed. My present application, therefore, which is a division of my application Serial No. 333,026, filed September 1, 1906, relates to the improved package for this pharmaceutical preparation.

The accompanying drawing is a vertical section of a package embodying my invention.

As disclosed in the application before mentioned, my improved pharmaceutical preparation comprises specifically a mixture of ferrous sulfate, potassium carbonate and glycerin, although of course it will be understood that any satisfactory ferrous salt may be substituted for the sulfate, any satisfactory alkaline carbonate, or other substance capable of furnishing the necessary  $\text{CO}_3$  group for the subsequent production of ferrous carbonate, may be substituted for the potassium carbonate, and any liquid carrier capable of holding the other ingredients in suspension so as to prevent the normal production of ferrous carbonate may be substituted for the glycerin.

In practice I have found that, for producing the medicine in commercial quantities, the following formula has been satisfactory.

(a) In eleven (11) gallons of pure glycerin dissolve, by aid of gentle heat, three (3) pounds, four (4) ounces, two hundred and ninety-two (292) grains of pure ferrous sulfate. (b) In four (4) gallons of pure glycerin dissolve, by aid of gentle heat, one (1) pound,

ten (10) ounces, ninety (90) grains of pure potassium carbonate. (c) When cool, place solution (a) in an earthenware vessel of sufficient capacity and add slowly, with stirring, solution (b). When thoroughly mixed, pour on sufficient pure mineral oil to cover the surface in order to protect from oxygen and moisture in the air, whereupon it is ready to be drawn off from below into bottles or other suitable packages.

Any desirable form of package may be used but the ordinary bottle, such as is illustrated in the drawings, is probably the most satisfactory. The mixture hereinbefore described is delivered into the bottle so as to nearly fill the same and I add to this mixture a small quantity of a neutral non-volatile oil, conveniently a tasteless and colorless petroleum oil, in sufficient quantity to form a light film entirely over the top of the liquid. Then, in order to further prevent any slight reaction which might result from air in the upper end of the bottle during a long period of storage, either in the factory or on a druggist's shelves, I fill the space in the bottle, above the oil film, with carbon dioxide gas and then seal tightly by a cork or otherwise, as clearly indicated in the drawing. The oil which is used as a film should preferably be tasteless and colorless, and the quantity relative to the medicine is quite small.

The carbon dioxide gas remains in the bottle so long as the package is continued in its original condition, but of course disappears as soon as the bottle is uncorked and the first dose of medicine is taken. A dose of the medicine is only a small portion of the contents of the bottle and instructions are therefore given to "shake well before taking" so that the film of protecting oil will be broken up and distributed in the body of the medicine. When a dose is poured off under these conditions only a very small part of the oil passes out and as soon as the bottle is allowed to remain standing for a short time the oil gathers at the top of the medicine and again forms a protecting film which is substantially air and moisture tight, and therefore prevents the access of air and moisture to the medicine.

In the presence of water the ferrous sulfate and the potassium carbonate readily unite to form the medicinal ferrous-carbonate and as glycerin is hygroscopic the film of oil is desirable to serve as a protection against



the absorption of water by the glycerin. This protection will continue so long as there is any medicine left in the package, the oil being sufficient in quantity to continue to form a thin film even for the last dose.

I claim as my invention:

1. A package of medicine comprising a vessel containing a liquid medicine, a thin film of oil upon such medicine, a stopper, and a volume of carbon dioxid gas filling the space between the stopper and oil film.
2. A package of medicine comprising a vessel containing a liquid medicine, a thin

film of non-volatile petroleum oil upon such medicine, a stopper, and a volume of carbon dioxid gas filling the space between the stopper and oil film.

In witness whereof, I have hereunto set my hand and seal at Indianapolis, Indiana, this twenty-sixth day of October, A. D. one thousand nine hundred and seven.

JOSIAH K. LILLY. [L. s.]

Witnesses:

ARTHUR M. HOOD,  
THOMAS W. McMEANS.