

PATENT SPECIFICATION



Application Date: Aug. 27, 1927. No. 22,586 / 27.

294,008

Complete Accepted: July 19, 1928.

COMPLETE SPECIFICATION.

Improvements in and relating to the Production of Cellulose Ester and Cellulose Ether Compositions.

We, HENRY JAMES HANDS, of 100, Duke's Avenue, Chiswick, London, W. 4, a British subject, and SPICERS, LIMITED, of 19, New Bridge Street, London, E.C. 4, a company registered under the laws of Great Britain, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

thin foil, cinema film, artificial fibres and for other purposes to which plasticised cellulose ester compositions may be applied.

The following particulars are given by way of example to illustrate suitable methods of carrying the invention into effect:—

THIN FOIL.

Cellulose acetate - - - - 100

ERRATUM.

SPECIFICATION No. 294,008. (2nd Edition).

Page 1, lines 44/5, for "pro-tion" read "proportion"

THE PATENT OFFICE,
10th October, 1928.

phosphate and mono-phenyl di-cresyl phosphate in proportions such as would be represented by a mixture of 55 parts of phenyl phosphate and 45 parts of cresyl phosphate is conveniently employed.

In producing cellulose ester compositions in accordance with the invention mixtures of the bodies in the proportions above indicated may be used in a proportion by weight of 25 to 40 per cent. of the cellulose acetate.

Conveniently in accordance with the invention the materials specified may be used in association with the higher chlorine derivatives of ethane and other hydrocarbons of the paraffin series.

Compositions in accordance with the invention may be used in the production of

[Price

The advantages arising from the present invention may be briefly indicated.

By the use of the mixed phosphates a similar result is secured insofar as reduction in inflammability of the product is concerned as when tri-phenyl phosphate is used but the compositions in accordance with the invention do not exhibit the drawback of crystallising out as does the tri-phenyl ester of phosphoric acid. At the same time the pliability imparted to the products corresponds with that which may be secured by the use of tri-cresyl phosphate but without exhibiting the disadvantage which is presented by the tri-cresyl ester owing to the greasiness of the film.

Further, mixed esters in accordance

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This invention relates to the production of cellulose ester and cellulose ether compositions and particularly to compositions containing cellulose acetates.

As plasticisers in such compositions the employment of mixed aryl esters of phosphoric acid, that is to say esters of the kind in which a plurality of different aryl groups, for instance both the phenyl and cresyl groups, are linked to a single phosphoric acid radical, have been proposed.

According to the invention di-phenyl mono-cresyl phosphate and mono-phenyl di-cresyl phosphate are used together or in association one with the other in the compositions in such relative proportions as would yield a mixture corresponding in respect of its content of phenyl and cresyl groups and the phosphoric anhydride group with mixtures of phenyl phosphate and cresyl phosphate containing from 45 to 65 per cent. of the former to 55 to 35 per cent. of the latter.

In practice it will be found that a mixture containing di-phenyl mono-cresyl phosphate and mono-phenyl di-cresyl phosphate in proportions such as would be represented by a mixture of 55 parts of phenyl phosphate and 45 parts of cresyl phosphate is conveniently employed.

In producing cellulose ester compositions in accordance with the invention mixtures of the bodies in the proportions above indicated may be used in a proportion by weight of 25 to 40 per cent. of the cellulose acetate.

Conveniently in accordance with the invention the materials specified may be used in association with the higher chlorine derivatives of ethane and other hydrocarbons of the paraffin series.

Compositions in accordance with the invention may be used in the production of

thin foil, cinema film, artificial fibres and for other purposes to which plasticised cellulose ester compositions may be applied.

The following particulars are given by way of example to illustrate suitable methods of carrying the invention into effect:—

THIN FOIL.

Cellulose acetate	-	-	-	100
Di-phenyl mono-cresyl phosphate	-	-	-	22
Mono-phenyl di-cresyl phosphate	-	-	-	14
Chlorine derivatives of paraffin hydrocarbons	-	-	-	1 to 3
Usual solvents	-	A suitable proportion.		

CINEMA FILM.

Cellulose acetate	-	-	-	100
Di-phenyl mono-cresyl phosphate	-	-	-	20
Mono-phenyl di-cresyl phosphate	-	-	-	12
Chlorine derivatives of paraffin hydrocarbons	-	-	-	3 to 10
Suitable solvents	-	A suitable proportion.		

SILK.

Cellulose acetate	-	-	-	100
Di-phenyl mono-cresyl phosphate	-	-	-	23
Mono-phenyl di-cresyl phosphate	-	-	-	14
Chlorine derivatives of paraffin hydrocarbons	-	-	-	5 to 12
Suitable solvents	-	A suitable proportion.		

The mechanical operations involved in the production of foil, films or fibres in accordance with the invention corresponds with the methods ordinarily employed in the production of similar articles from known cellulose ester compositions.

The advantages arising from the present invention may be briefly indicated.

By the use of the mixed phosphates a similar result is secured insofar as reduction in inflammability of the product is concerned as when tri-phenyl phosphate is used but the compositions in accordance with the invention do not exhibit the drawback of crystallising out as does the tri-phenyl ester of phosphoric acid. At the same time the pliability imparted to the products corresponds with that which may be secured by the use of tri-cresyl phosphate but without exhibiting the disadvantage which is presented by the tri-cresyl ester owing to the greasiness of the film.

Further, mixed esters in accordance

- with the invention yield products possessing a greater prominence of character than similar products produced with the aid of tri-phenyl or tri-cresyl phosphate, as the
- 5 mixed phosphates employed have exceptionally high boiling points and low vapour pressures and do not tend to sublime out of the film as does tri-phenyl phosphate.
- 10 When the mixed esters are used in association with hepta-chlor propane the firmness of the skin of the products produced in accordance with the invention is enhanced.
- 15 Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—
1. Cellulose ester and cellulose ether compositions containing a mixture of di-phenyl-mono-cresyl phosphate and mono-phenyl-di-cresyl phosphate in such relative proportions as would yield a mixture corresponding in respect of its content of phenyl and cresyl groups and the phosphoric anhydride group with a mixture of phenyl and cresyl phosphate containing from 45 to 65 per cent. of the former to 55 to 35 per cent. of the latter.
2. Cellulose ester and cellulose ether compositions and particularly compositions containing cellulose acetates, substantially as hereinbefore described.
- Dated this 25th day of August, 1927.
- MARKS & CLERK.