

# SPECIFICATION

## PATENT APPLICATION

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COUNTRY AUSTRALIA

TYPE PROVISIONAL

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TITLE "TOBACCO SMOKE FILTERS"

*Recovery of Patent*

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Limited

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*Robert J. Halatsky*

FORM 9

REGULATION 13 (1)

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952-1969

PROVISIONAL SPECIFICATION FOR THE INVENTION ENTITLED:

"TOBACCO SMOKE FILTERS"

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This invention is described in the following  
statement:

- 1 -



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In the manufacture of cigarette filters from a tow of synthetic fibres it is customary to wet the tow with a plasticiser so as to soften the fibre surfaces, compress the tow into a cylindrical filter rod wherein the softened fibres merge at their points of mutual contact and subsequently allow the plasticiser to migrate into the bulk of the fibres to allow the fibre surfaces to harden and become permanently bonded at those points of contact.

- 10           The present invention is based upon the discovery that small amounts of plasticiser are carried over into the smoke when the cigarette is used and that this carry over has a noticeable effect on the quality of the smoke as judged by the smoker.

- Thus, the present invention consists in a method of making a cigarette filter of the kind comprising forming a tow of synthetic fibres, treating the fibres with a plasticiser, and compressing the treated fibres into a cylindrical filter rod characterised by the further  
20 step of extracting and preferably recovering at least some of the plasticiser from the finished rod.

The characteristic step of the method may be effected in a number of ways. For example, the rod may be heated in an oven in still or slowly moving air so as to volatilise the plasticiser, it may be subjected to a stream of swiftly flowing air or other gas to evaporate the plasticiser, it may be exposed to a reduction in

pressure which again causes volatilisation or evaporation of the plasticiser, it may be treated with an appropriate organic or inorganic solvent for the plasticiser, which solvent may then be extracted by evaporation or otherwise, or, if desired, various combinations of the above-mentioned techniques may be used.

Surprisingly, it has been found that the finished rod when treated by any of the method steps enumerated above, is not materially altered in appearance or physical properties except, of course, for the substantial elimination of the plasticiser.

By way of example, several methods of removing Glycerol Tricetate, referred to hereinafter by its commonly used name "triacetin", from Cellulose Acetate fibre filter rods is described.

In one instance, a rod was exposed to atmospheric pressure to a temperature of  $100^{\circ}\text{C}$ . The rod initially contained approximately 5% of triacetin (by weight) and it evaporated from the rod at a rate of approximately 0.25% (basis dry tow) per hour. The rod may be heated in an oven and a slow air stream may be maintained through the oven from which a mixture of water and triacetin can be recovered in a conventional cooled trap.

If the temperature is increased to  $125^{\circ}\text{C}$  the abovementioned evaporation rate is doubled. Furthermore, during the early stages practically all the moisture is driven off and, thus, the trap is preferably rendered

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operative only after most of the water has evaporated (approximately 10 minutes) so that, thereafter, reasonably pure triacetin is recovered.

In one particular experiment it was found that when 200 filter rods each 120 mm long and 26.5 mm in circumference were heated at 125°C in an oven with a capacity of 0.3 cubic feet it took 14 hours to reduce the triacetin content of the rods from 5.3% to 0.9%. On the other hand, with an air temperature of 100°C and an air velocity of 100 feet per minute the triacetin content of a similar batch of rods was reduced from 5.3% to 0.5% in four hours. In another instance, filter rods were kept at 100°C under an ambient pressure of 10 mm of mercury. In that case the triacetin content was reduced from 5.3% to 0.7% in four hours.

In still another instance, using the Soxhlet principle with ethanol as a solvent substantially all of the plasticiser is extracted within one hour. The extract may be distilled and both the triacetin and the ethanol recovered.

DATED this 10th day of November 1971.

W.D. & H.O. WILLS (AUSTRALIA) LIMITED

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