

DRAWINGS ATTACHED.

Date of Application and filing Complete Specification:  
June 22, 1962. No. 24203/62.

Application made in Italy (No. 11735) on June 23, 1961.

Complete Specification Published: Jan. 19, 1966.

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1,017,342



Index at Acceptance :—B6 P11D4; B8 CA; B8 D44.

Int. Cl.:—B 43 c //A 61 j, B 67 b.

COMPLETE SPECIFICATION.

Improvements in or relating to Synthetic-Material Cartridges for Liquids.

We, AURORA SOCIETA PER AZIONI, an Italian Body Corporate, of 1 Via Arcivescivado, Turin, Italy, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to cartridges of synthetic material for liquids, for example polyethylene cartridges for ink, used in fountain pens and the like.

In cartridges of this kind, the end portion towards the perforation area, is usually of reduced diameter in order to facilitate its introduction into the feeder assembly of the fountain pen. In a cartridge of this shape, and also for any other shape of the cartridge with variable inner section, it may happen that a part of the ink (or other liquid) will tend to be trapped in the portions of lesser diameter, where it is held due to a phenomenon of capillary tension.

Also in cartridges with constant inner section, in the case of very small diameters, the flow of ink within the cartridge may become particularly difficult, if not impossible.

Thus, various difficulties arise, such as an interruption of ink feeding to the feeder assembly when the ink tends to collect in the rear of the cartridge, or losses or an excessive outflow of ink when the latter tends to collect in the front of said cartridge.

According to the present invention the disadvantages enumerated above are eliminated by forming one or more longitudinal capillary channels in the inner surface of the cartridge, extending substantially the length of the cartridge. These channels can be obtained in any convenient manner for instance, by forming them directly by moulding, with the cartridge itself.

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These channels will determine, by capillary action, a movement of the ink at the inside of said cartridge. Accordingly, even with cartridges of particularly reduced diameter it is possible to obtain a normal flow of ink and therefore a regular feeding of the pen nib.

Specific embodiments of the invention will now be described by way of example with reference to the accompanying drawing, in which:—

Figure 1 shows a longitudinal section through a cartridge embodying the invention,

Figure 2 shows a cross section of the cartridge shown in Figure 1,

Figure 3 shows a longitudinal section through a cartridge in a modification of the invention, and

Figure 4 shows a cross section of the cartridge shown in Figure 3.

As shown in Figures 1 and 2, the cartridge comprises a cylindrical casing 1 of thermoplastic material having an end portion 1<sup>1</sup> of reduced diameter, which is closed by a membrane 2. The membrane 2 is perforated at the moment of use of the cartridge.

Along the cylindrical wall of the cartridge there is provided a longitudinal capillary channel 3 starting from the bottom of the cartridge and terminating at the membrane 2. This channel is formed between two small longitudinal inner ribs or ridges 4, 5.

The capillary channel 3 will ensure regular flow of the ink or other liquid from the cartridge at the same time preventing local blockages within the cartridge.

In a modification of the invention, two or more longitudinal capillary channels may be provided in the inner surface of the cartridge. For example, as shown in Figures 3 and 4, the cartridge is provided with longitudinal channels 6 over the whole inner sur-

face thereof, the channels 6 being separated by longitudinal ridges or ribs 7.

5 The size of the longitudinal channel or channels is such as normally to permit flow of ink when the cartridge is in a substantially vertical position and to immobilize part of the ink when the cartridge is in a substantially horizontal position. In practice, when a cartridge having a narrow end portion is 10 in a substantially horizontal position the ink will tend to collect in said narrow end portion thus leaving a space filled with air which, if warmed, would cause an outflow of ink. The capillary channels provided 15 in the inner surface of the cartridge, therefore, also perform the function of removing the ink from the narrow end portion and immobilizing the ink in said channels thus leaving a free passage for air.

20 Specification No. 33532/65 (Serial No. 1,017,343) divided from this application claims a cartridge of synthetic material having a perforable membrane.

WHAT WE CLAIM IS:—

25 1. A cartridge of synthetic material for

liquids, wherein one or more longitudinal capillary channels are formed in the inner surface of said cartridge and extend substantially the length of the cartridge.

2. A cartridge as claimed in claim 1, 30 wherein the or each channel extends from the bottom of the cartridge up to a membrane which closes said cartridge or container.

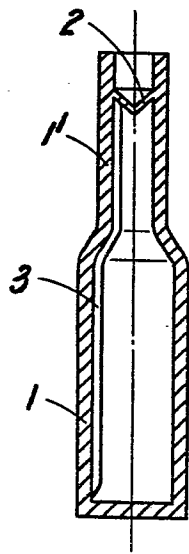
3. A cartridge as claimed in claim 1 or claim 2, wherein the or each capillary channel is directly moulded in the cartridge. 35

4. A cartridge of synthetic material for liquids, in particular for ink, substantially as hereinbefore described with reference to 40 and as illustrated in Figures 1 and 2, or Figures 3 and 4 of the accompanying drawing.

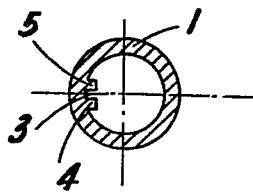
AURORA SOCIETA PER AZIONI.

Per: BOULT, WADE & TENNANT,  
111/112 Hatton Garden,  
London, E.C.1,  
Chartered Patent Agents.

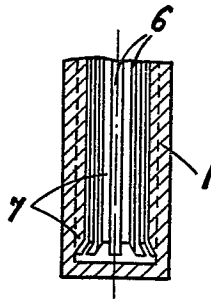
**Fig.1.**



**Fig.2.**



**Fig.3.**



**Fig.4.**

