

Title (en)  
BOTTLE STOPPER FOR FREEZE-DRYING

Publication  
**EP 0322548 B1 19930714 (DE)**

Application  
**EP 88118843 A 19881111**

Priority  
DE 3744174 A 19871224

Abstract (en)  
[origin: US4872572A] A lyophilization stopper made of a rubber elastic material is composed of a shank (1) and a circular disc shaped flange (2) made in one piece with the shank. The shank includes a cavity (4) which surrounds the longitudinal axis (A) of the shank and is open toward the free end face (3) of the shank, while extending toward a central closed wall portion (2b) of the flange. A first section (Z1) of the shank disposed between a first transverse plane (Q1) and a second transverse plane (Q2) has a closed outer circumferential face which has a maximum diameter (D). A subsequent second section (Z2) includes a passage which communicates with the cavity as well as a plurality of projecting blocking elements (14a-14c). The inner wall surface (19) which laterally delimits the cavity (4) and has an increasing diameter with increasing approach to the free shank end face lies completely outside a cone (K) whose axis is the longitudinal axis (A) of the shank, whose tip (K1) lies in the transverse plane (Q1) and whose tip angle (  $\beta$  ), in degrees, is larger than a value calculated according to the formula  $-39+75 \times \lg(D)$ , where "D" is the maximum diameter (D) of the first section (Z1) measured in millimeters. In this way, a particularly utilitarian stopper is obtained which does not interfere with the insertion of the hollow extraction needle.

IPC 1-7  
**B01L 3/14**; **B65D 39/00**; **B65D 51/24**

IPC 8 full level  
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CPC (source: EP US)  
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