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D E C I S I O N
of 15 October 1996

Case Number: T 0108/94 - 3.2.4

Application Number: 88301595.0

Publication Number: 0280537

IPC: B65B 3/32

Language of the proceedings: EN

Title of invention:
A dosing system

Patentee:
ODIN DEVELOPMENTS LIMITED

Opponent:
AB Tetra Pak

Headword:
-

Relevant legal provisions:
EPC Art. 52, 54, 56, 104

Keyword:
"Novelty - yes"
"Inventive step - yes"
"Apportionment of costs - no"

Decisions cited:
T 0461/88

Catchword:
-

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Case Number: T 0108/94 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 15 October 1996

Appellant: (Opponent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 6 December 1993 rejecting the opposition filed against European patent No. 0 280 537 pursuant to Article 102(2) EPC.**

Composition of the Board:

Chairman: C. A. J. Andries
Members: M. G. Hatherly
J. P. B. Seitz

Summary of Facts and Submissions

I. The decision of the opposition division to reject the opposition against European patent No. 0 280 537 was dispatched on 6 December 1993. Although the decision stated that the claims were appended, Appendix II in fact consisted not of the claims as granted but of another set of claims. The decision made it clear however that the claims as granted were intended.

On 8 February 1994 the appellants (opponents) both filed an appeal against this decision and paid the appeal fee. The Statement of Grounds of Appeal was received on 7 April 1994.

II. Claim 1 as granted reads as follows:

"Dosing apparatus comprising a piston-and-cylinder device (2), a peripheral port (3) of the cylinder (11) and swept by the piston (12) as the piston (12) moves between an open position in which an axial end of said piston (12) faces towards said port (3), and a closed position, drive means (15) for reciprocating the piston in the cylinder, and means (5) for supplying a predetermined amount of a flowable material to said port (3), characterized in that said apparatus further comprises a conduit (20) extending in said piston (12) and debouching longitudinally of said cylinder (11) at said axial end in the form of a mouth of a width almost equal to the internal width of said cylinder (11), and means (4, 22) for supplying a predetermined amount of a liquid to said mouth by way of said conduit (20), said cylinder (11) having an outlet for said flowable material and said liquid."

III. The following documents were referred to during the appeal proceedings:

D1: GB-A-2 089 440
D2: FR-A-2 392 252
D3: EP-A-232 943
D4: DE-A-2 539 656
D5: DE-C-1 786 591
D6: DE-A-3 303 127
D6a: US-A-4 460 025 (equivalent to D6)
D7: US-A-4 398 577
D8: Webster's Third New International Dictionary, G. Bell & Sons, Ltd, London, 1961, definition of the word "piston"
D9: The Oxford English Dictionary, University Press, Oxford, 1961, definition of the word "piston"
D10: Brockhaus der Naturwissenschaften und der Technik, F. A. Brockhaus, Wiesbaden, 1958, page 297, definition of the word "Kolben"
D11: Webster's Third New International Dictionary, Encyclopaedia Britannica, Inc., Chicago, definition of the word "sweep"

Moreover the respondents referred to affidavits.

IV. Oral proceedings took place on 15 October 1996 in the presence of the parties.

In the appeal proceedings the appellants argued that the subject-matter of claim 1 as granted lacked novelty over the document D3 and inventive step over the documents D1, D2 and D4 to D7.

The respondents essentially countered the appellants' arguments.

V. The appellants request that the decision under appeal be set aside and the patent revoked.

The respondents' main requests are for dismissal of the appeal (which would mean maintaining the patent as granted) and for apportionment of costs.

Auxiliarily the respondents request that the decision be set aside and the patent be maintained in amended form on the basis of five auxiliary requests, each based on a respective independent claim 1 consisting of the granted claim 1 as granted and essentially one or more of the granted dependent claims.

Reasons for the Decision

1. The appeal is admissible.

2. *Interpretation of claim 1 as granted (the main request)*

2.1 Even without referring to the definitions of the word "piston" in the documents D8 to D10, it can be seen that this term is used inappropriately in claim 1 as granted. In accordance with Article 69 EPC the word "piston" needs to be interpreted by referring to the description and drawings. From these it can be seen that the piston 12, while scraping the surrounding cylinder wall, opens and closes the flowable material inlet port 3 of the cylinder 11 and carries the liquid to the mouth which (as explained in the claim at column 6, lines 8 and 9) is almost as wide as the internal width of the cylinder. Thus the so-called piston is more like the spool of a valve.

2.2 The description explains in column 4, lines 15 to 17 that the piston scavenges the internal peripheral surface of the cylinder 11 and this is expressed in claim 1 in column 5, lines 56 and 57 by the wording "a peripheral port (3) of the cylinder (11) and swept by

the piston (12)", the word "swept" signifying a contact of piston and cylinder wall and the resultant removal of whatever is on the cylinder wall around the port ie above and below it.

2.3 It is clear from the wording "means (5) for supplying a predetermined amount of a flowable material to said port (3)" (column 6, lines 3 to 5) that a specific, additional device (such as the piston and cylinder device 6 shown in Figure 1) is provided for supplying the predetermined amount. While the word "means" is accompanied by the single reference numeral "5" which can be seen from Figure 1 to denote a conduit, the "means" is more than just the conduit 5 since this on its own could not supply a predetermined amount of material to the port 3. Although, as agreed by the respondents, the word "means" should have been accompanied also by the reference numeral 6, the claim need not be amended in these appeal proceedings since the reference numerals do not limit the claim (Rule 29(7) EPC).

2.4 Similarly, the wording "means (4, 22) for supplying a predetermined amount of a liquid to said mouth" in lines 10 and 11 of column 6 is to be understood as a specific, additional device (eg the piston and cylinder device 10 in Figure 1) and not simply a liquid inlet port 4 and diametral intersecting bore 22 implied by the use solely of these reference numerals.

3. *Novelty - claim 1 as granted (the main request)*

3.1 Citation D3 falls under Article 54(3) EPC and designates all the contracting states designated by the present patent except Greece (Article 54(4) EPC). This citation and claim 1 as granted must therefore be compared for novelty.

3.2 The board considers that the tubular valve body 18 shown in Figure 2 satisfies the interpretation of the word "piston" made in section 2.1 above. The annular opening constitutes a peripheral port as required by claim 1 as granted and this peripheral port is opened and closed by the valve body 18.

3.3 Lines 14 to 32 of column 6 of the document D3 state that "Via the outer feed duct 11 thicker contents ... are supplied ... delivered in portions in that the valve body 18 is moved upwards and downwards in rhythm with the advance of the packing material tube 8 and the transverse sealing off of the packing containers 15. In the upper position of the valve body 18 the contents can flow out freely via the feed duct 11 through the lower end of the filling pipe 10 during a limited time of the package formation ... the flow of contents via the feed duct 11 is interrupted, however, in good time before such a seal is to take place in that the valve body is displaced into a lower position ... where its front end shuts off the outlet of the feed duct 11 and prevents further outflow of contents via the feed duct 11."

From this it is clear to the board that the thicker contents are continuously supplied to the feed duct 11 ie they are always present at the lower end of the duct 11. The portioning of the thicker contents is achieved solely by the valve body 18 moving downwards to close the outlet of the feed duct 11.

Thus, following section 2.3 above, in the machine according to document D3, while there is a valve, there is no additional means for supplying a predetermined amount of the thicker material to the peripheral port (cf column 6, lines 3 to 5 of claim 1 as granted).

3.4 Lines 9 to 14 of column 6 of document D3 states that "Through the inner duct 12 a more or less continuous flow of liquid contents is supplied which pass through the valve body 18 and discharge into the lower end of the packing material tube 8 irrespectively of the position of the valve body 18." Lines 32 to 34 of column 6 continue that, even when the outlet of the feed duct 11 is shut off, the "liquid contents ... can flow unhindered down into the packing material tube."

The words "more or less" mean "in greater or less degree" or "thereabouts" so the wording "a more or less continuous flow" might describe a fluctuating flow but does not signify a flow divided into predetermined amounts. While it would be advantageous, if the machine were filling separate containers (as numbered 1 in the line of containers 1A on Figure 7 of the present patent), to stop the flow of liquid when one container is full and is to be moved away from the outlet and the next moved into place, this is unnecessary in the machine according to document D3 since, as shown in Figure 1 thereof, the containers are formed from a packing material tube 8 so that the next container is already in place when the container below it is completed.

From this the board concludes that, following section 2.4 above, in the machine according to document D3, while there is a valve, there is no additional means for supplying a predetermined amount of a liquid to the outlet (cf column 6, lines 10 and 11 of claim 1 as granted).

3.5 Thus (at least) two features of claim 1 as granted are not disclosed, explicitly or implicitly, by the citation D3. Accordingly the subject-matter of the claim is novel thereover.

3.6 No other document on file discloses all the features of claim 1 as granted. This is not disputed by the appellants. Accordingly the subject-matter of claim 1 as granted is considered as novel within the meaning of Article 54 EPC.

4. *The prior art falling under Article 54(2) EPC*

4.1 In the metering pump disclosed by document D1 a predetermined amount of primary fluid (corresponding to the flowable material of claim 1 as granted) is first supplied to a port 3 by a shuttle valve 33 and later on to the discharge nozzle 21, whereas a predetermined amount of secondary fluid (corresponding to the liquid of claim 1 as granted) is directly discharged to the discharge nozzle 21 from a bypass conduit 22 through a nozzle almost as large as the cylinder at the inward end of the discharge nozzle 21 (see Figure 6). The pump thus has a common outlet (the discharge nozzle 21) for the primary and secondary fluids. The secondary fluid (which may be sterile water, see page 2, lines 27 and 28) "washes away ... primary fluid from the end of the shuttle valve ... and ... discharge nozzle and then mixes with the primary fluid" (see page 3, lines 87 to 91).

4.2 The appellants have given no reasons for citing document D2 in the appeal proceedings and the board considers the document to be irrelevant.

4.3 Document D4 discloses a dosing apparatus which in its preferred embodiment supplies ketchup under pressure (see page 3, lines 25 to 27) to a peripheral port 14. Ketchup flow is cut off when the container 18 is full (weight or time dependent - see page 6, lines 13 to 16) by the piston 24 plugging the lower end of the cylinder 10. In order to prevent a cone of ketchup extending up out of the neck of the container, a pulse (ie a

predetermined amount) of "sanitär isolierendes Fluidum, Luft, steriles bzw. sterilisierendes oder inertes Gas od. dgl." (see page 5, lines 29 and 30) is sent through conduit 52 in the piston 24 which debouches longitudinally of the cylinder at the axial end in the form of a mouth 54 of width almost equal to the internal width of said cylinder.

4.4 In the preferred embodiment of document D5, see Figure 2, ice cream from inlet pipe 95 and syrup from inlet 96 (via tubes 91) enter chamber 90 and exit past valve body 93'. The curved conduit ends 118 in Figure 4 direct the syrup to the container wall (see column 6, lines 41 to 43).

4.5 Document D6a deals with filling containers 23 with liquid or viscous materials via an outlet nozzle 41. Fibres or lumps 27 (see Figure 3) are blasted into the container 23 by a fluid such as an inert gas such as nitrogen (see column 2, lines 36 to 39).

4.6 In the apparatus of document D7 (see column 7, lines 39 to 60 and Figures 6 and 7) a flowable product is supplied to dispensing port 258 from hose 230 via port 257 which is opened or shut by piston 244. When shut, a pulse of air from line 256 via air passages 246 cleans the bottom of the piston. There is no disclosure of replacing the cleaning air by a liquid.

5. *Closest prior art, problem and solution - claim 1 as granted (the main request)*

5.1 The invention is concerned with a dosing apparatus for two materials, it delivers predetermined amounts of both a flowable material and a liquid to an outlet. The

liquid serves additionally to clean away the flowable material from the axial end of the piston and the internal wall of the cylinder, see column 2, lines 2 to 4.

5.2 Apparatuses for filling containers with a product consisting of a single flowable material are well known. The apparatus of document D7 (see section 4.6 above) clearly falls into this category.

The appellants argue that the disclosure in document D4 of "Fluidum oder Gas" (see page 3, line 3 and page 5, lines 29 and 30) implies a disclosure of a liquid. The board does not agree, seeing the words as the result of imprecise drafting and needing to be read in context. The ketchup container is virtually full when the pulse occurs, liquid would overfill it and if it remained on top would be unsightly when the consumer opened the container.

Similarly the board does not see the statement in column 2, lines 36 to 39 of document D6a of a fluid such as an inert gas such as nitrogen as being a disclosure of a liquid.

Thus the apparatuses of documents D4 and D6a also fall into the category of providing a product of a single flowable material.

5.3 In the apparatuses of documents D4, D6a and D7 the gas is used to clean the piston and/or to discharge material remaining at the outlet of the apparatus but the gas does not subsequently form part of the product in the container. In the type of apparatus with which the invention is concerned both mediums remain in the container after delivery and apparently form an essential part of the final product. Thus while liquids and gases are both fluids, there are differences

between using a liquid and using a gas in dosing apparatuses, firstly in their cleaning effect on the apparatus and secondly in their effect on the final dispensed product.

5.4 Accordingly dosing apparatuses using a gas, and thus delivering only a single medium which is the resultant product, are further away from the invention than apparatuses delivering a two part end product.

5.5 The apparatus of document D5 delivers a flowable material (eg ice cream) and a liquid (eg syrup) to a container. The syrup might remove some of the ice cream from part of the outlet section of the apparatus but cannot really be said to be a cleaning agent because it is coloured, because it does not mix with the ice cream (see column 1, lines 11 and 12) but is there to decorate the finished product (see column 4, lines 3 to 6) and because its flow is stopped suddenly at the same time as that of the ice cream (see column 4, lines 12 to 15 and column 6, lines 28 to 32).

5.6 On the other hand, it is stated on page 3, lines 87 to 93 of document D1 that the secondary fluid (eg water) washes away the primary fluid (eg soup or stew) from the end of the shuttle valve and discharge nozzle and then mixes with the primary fluid.

5.7 Accordingly, while the apparatus of document D1 has basic constructional differences to that of the invention and indeed is structurally further away from the invention than eg the apparatus of document D7, the board must conclude, in agreement with the parties, that the closest prior art (or starting point for the invention) is the pump for metering two fluids disclosed by document D1.

5.8 The disadvantage of the metering pump disclosed by document D1 is its complicated structure and so the problem is to simplify its design. The features of the present claim 1 and in particular those of its characterising portion make possible a simplified structure.

6. *Inventive step - claim 1 as granted (the main request)*

6.1 Starting from document D1

6.1.1 Unlike the dosing apparatus defined in claim 1 as granted, the shuttle valve 33 (ie piston) of document D1 has no end mouth of a width almost equal to the internal width of said cylinder. The liquid conduit 22 is not in the piston 33 and the liquid discharge from the nozzle is not longitudinal of the cylinder. Furthermore, due to its specific construction, it cannot be stated that the valve 33 moves between an open and a closed position in the meaning of the claim as granted. Indeed the valve 33 when moving from its lowest position (shown in Figures 1 and 2), where the cylinder 2 is open to be filled, to its highest position, first closes the cylinder 2 (during movement) to arrive at a position where the cylinder 2 is again open to permit delivery of the dosed material (see Figures 3 and 4).

6.1.2 The appellants argue that it would be an obvious, merely constructional change to locate the liquid conduit in the piston 33 of document D1 since gas or liquid carrying conduits in pistons for cleaning purposes are known from the other cited documents.

6.1.3 The board considers that the skilled person would not be led to the subject-matter of the granted claim 1 by apparatuses whose pistons have **gas** carrying conduits

(ie those of documents D4, D6a and D7) because, as explained in sections 5.3 and 5.4 above, such apparatuses deliver only a single medium (the resultant product) and so are in a different field. Accordingly only document D5 would remain for consideration.

6.1.4 However the board must conclude that this document D5 could not lead the skilled person in the direction of the claimed invention for the following reasons:

- While Figure 3 shows a valve body 93" with a conduit 113, this valve body 93" is not a piston moving in a cylinder and it neither sweeps nor closes the inlet port 95.

- The materials (ice cream and syrup) are continuously supplied to the inlet ports 95 and 96 instead of as predetermined quantities.

- The liquid (syrup) is not a cleaning agent, see section 5.5 above. This is true even of the configuration shown in Figure 4 since the internal surface of the discharging tube is not completely covered by the liquid streams leaving the tubes 117.

- In the embodiment shown in Figure 3, the syrup exits the end of the valve body 93" axially and it does not seem that it would remove ice cream either from the remainder of the end of the valve body or from the inner wall of the exit opening.

- Taking the embodiment shown in Figure 4, even though the lower ends of the syrup conduits 117 are outwardly bent at 118, this is to direct the syrup to the sidewall of the container rather than to clean the exit opening. The lower ends 118 of the conduits (from where the syrup emerges) are

located well downstream of where the valve body contacts the cylinder to close the exit opening, thus the end of the valve body and the upper part of the exit opening are not even contacted, let alone cleaned, by the syrup.

Thus the combination of documents D1 and D5 would not yield the subject-matter of claim 1. To argue that the skilled person would then draw on other documents to fill the missing gaps (eg draw on document D4 or D6a to provide the wide mouth of the end of the valve body) is to stretch the skilled person's capabilities to breaking point and can only be the impermissible result of an ex post facto analysis.

6.1.5 In any case the modification of the shuttle valve 33 of document D1, not only to locate the liquid carrying conduit therein but also to arrange for it to solely open and close a peripheral port, would necessitate so many changes to the remainder of the apparatus that the skilled person, having chosen that prior art pump concept as a starting point for further development of that concept, would be deterred from making these changes which would completely modify that prior art pump concept. Such an approach therefore cannot be considered as an obvious modification but rather as the result of an ex post facto analysis. Furthermore even if, as suggested by the appellants, the port 35 were still to be provided in the shuttle valve 33, this would mean that very little space would be available for the conduit. Such a conduit could not simply terminate in the secondary liquid space directly above the shuttle valve 33 adjacent the valve rod 34 since the secondary liquid is not pressurised there. To pressurise the secondary liquid above the shuttle valve 33 by reversing the direction of the piston 27 would

affect the operation of the piston 9 which forces the primary fluid from port 3. The modifications necessary to replace the simple tubular bypass 22 by a conduit through the shuttle valve 33 would deter the skilled person from attempting them.

6.2 Other starting points

6.2.1 As expressed in section 5.7 above, the board does not consider that the skilled person would start from document D7. It does not seem to be obvious when wishing to dispense a product comprising two mediums to start from a device which dispenses a one medium product. Nevertheless, assuming that the skilled person did start from document D7 then merely modifying the source for the pressurised air that enters the dispenser through air line 256 (on Figures 6 and 7) to a source providing a predetermined amount of a liquid would not be enough. When the plug valve 244 closes the dispensing port 258 (see column 7, lines 39 to 60) a pulse of air via air passages 246 cleans the bottom of the plug valve. While the air passages 246 are shown as diverging downwardly there is no open mouth at the end of the plug valve as required by claim 1 as granted. The appellants argue that the array of air passages is similar to the cover gauze disc 21 shown in Figure 5 of the present patent and claimed as a cover formed with through holes distributed over its area in claim 2 as granted. It must be said that, firstly, this cover is plainly in addition to the mouth of the granted claim 1 and, secondly, that it is speculative to derive from the depiction of four air passages 246 in the cross sectional view of Figure 6 that there are passages distributed over the end of the plug valve in the manner of the gauze shown in the present Figure 5.

Independently of the above reasons, it does not seem that the skilled person, having once chosen a one medium product dispenser, would then decide to modify it to get to a two medium product dispenser. Moreover it is unlikely that, having rejected a two medium product dispenser as his starting point, that he would then use its teachings in his modification.

6.2.2 Similar considerations to those given in section 6.2.1 apply when considering whether documents D4 and D6a would be appropriate starting points and whether the necessary modifications thereto would be obvious to the skilled person.

6.3 Thus the board cannot see that the prior art documents on file, on their own or in combination, could lead the skilled person in an obvious manner to arrive at the dosing apparatus specified in claim 1 as granted.

7. The subject-matter of claim 1 as granted (forming the basis of the respondents' main request) is thus patentable as required by Article 52 EPC. The patent may therefore be maintained with this independent claim and claims 2 to 10 which are dependent on claim 1.

8. Accordingly the respondents' auxiliary requests need not be considered.

9. *Apportionment of costs*

In the fourth paragraph of page 2 of their letter of 12 January 1995 the respondents request that costs should be awarded to them on the basis that the appellants' inventive step arguments include combining citation D1 as a primary citation with any one of citations D4 to D7 whereas such combinations were not argued at the opposition stage.

While some of the appellants' arguments in the appeal proceedings rely on specific citation combinations which had not been made during the opposition proceedings, all the citations had been considered during the opposition proceedings and various combinations of these citations had been discussed. Moreover the board notes that in fact the combination of citation D1 as a primary citation with document D7 had been considered during the opposition proceedings (see section 3.4 of the opposition division's decision). The respondents had already studied all the citations and various combinations thereof during the opposition proceedings so that the extra effort needed to consider the newly argued combinations was small.

Article 104(1) EPC means that each party bears his own costs but that in exceptional circumstances the EPO has the power to apportion costs in such a manner as it considers to be equitable. The circumstances in this appeal proceedings are not exceptional. The appellants' conduct is in keeping with the care required in the exercise of their legal rights and they have committed no culpable action of an irresponsible or malicious nature (see decision T 461/88, OJ EPO 1993, 295).

Thus the board finds that there shall be no deviation from the normal practice of each party bearing their own costs.

Order

for these reasons it is decided that:

1. The appeal is dismissed.

2. The respondents' request for apportionment of costs is refused.

The Registrar:

N. Maslin

The Chairman:

C. Andries