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**Datasheet for the decision  
of 21 April 2023**

**Case Number:** T 0970/21 - 3.2.04

**Application Number:** 03761866.7

**Publication Number:** 1528858

**IPC:** A22C7/00, A23P1/10

**Language of the proceedings:** EN

**Title of invention:**

METHOD AND MOULDING DEVICES FOR MOULDING THREE-DIMENSIONAL  
PRODUCTS

**Patent Proprietor:**

Marel Townsend Further Processing B.V.

**Opponent:**

GEA Food Solutions Bakel B.V.

**Headword:**

**Relevant legal provisions:**

EPC Art. 56

**Keyword:**

Inventive step - (no)

**Decisions cited:**

**Catchword:**



**Beschwerdekammern**

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**Case Number: T 0970/21 - 3.2.04**

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.04**  
**of 21 April 2023**

**Appellant:** Marel Townsend Further Processing B.V.  
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**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 21 May 2021  
revoking European patent No. 1528858 pursuant to  
Article 101(3) (b) EPC.**

**Composition of the Board:**

**Chairman** A. de Vries  
**Members:** S. Oechsner de Coninck  
T. Bokor

## **Summary of Facts and Submissions**

- I. The appellant (proprietor) lodged an appeal against the decision of the opposition division revoking European patent No. 1528858 pursuant to Article 101(3) (b) EPC.
- II. The patent was the subject of a previous appeal T 1608/14 against a decision to revoke the patent for lack of novelty and added subject-matter. In that appeal the Board (in the same composition) held that amendments to claim 1 of the main request did not add subject-matter and that the claimed invention was novel, but remitted the case for further prosecution.
- III. In its decision following remittal, the opposition division decided that the subject-matter of claim 1 according to the unchanged main request lacked an inventive step having regard to the following documents:  
  
D11: US 4,684,040  
E2: US 4,212,609
- IV. The Board issued a communication in preparation for oral proceedings and setting out its provisional view on the relevant issues. Oral proceedings were held in person on 21 April 2023.
- V. The appellant patent proprietor requests that the decision under appeal be set aside and the patent be maintained in an amended form on the basis of the main request, claims 1-11, filed with letter dated 23 July 2013 (then as auxiliary request) and also underlying the appealed decision.

VI. The respondent opponent requests that the appeal be dismissed.

VII. The wording of the independent claim 1 of the main request reads as follows (feature references in **bold** added by the Board):

"Device for moulding three-dimensional products from a meat mass comprising

**a)** a moulding surface, wherein the moulding surface is the wall (252) of a drum (16) which can be rotated in a direction of rotation by associated drive means and is provided with at least one mould cavity (60) which is open on the outer circumference of the drum and has an associated boundary comprising walls (66) and base (68),

**b)** a mass feed member which is arranged at a mass feed position for feeding the said mass to the mould cavities (60),

**c)** the mass feed member (18) comprises a housing (140) in which there is a through-passage (142) for mass to pass from an inlet (144) to an outlet (146) located on the drum side,

**d)** the drum side of the mass feed member (18) comprises means for closing the mould cavity and maintaining the mould cavity in a closed condition, which means comprise a flexible plate (158)

**e)** the plate bears in a sealing manner against the outer circumference of the drum (16) under pressure as a result of pressure means,

**f)** the flexible plate is being designed to adapt to irregularities in the outer circumference of the drum (16),

**g)** the drum side of the mass feed member (18) as seen in the circumferential direction of the drum extends on

either side of the outlet (146) over a distance which covers at least one mould cavity (60),

**h)** the device comprises means for applying a medium for eliminating adhesion forces between the boundary (66, 68) of a mould cavity (60) and a moulded product (78),

**i)** the boundary comprises a porous structure of intercommunicating pores,

**j)** said means for applying a medium for eliminating adhesion forces comprises excess-pressure means for supplying a pressurized fluid which are in fluid communication with the boundary of a mould cavity."

VIII. The appellant argued as follows:

- D11 should not be admitted. D11 lacks further features of the preamble of claim 1. E2 also lacks cleaning all the boundaries of the wall. Neither are suitable starting points. Even if combined the combination would lack the feature of applying medium to the boundary walls.

IX. The respondent argued as follows:

- The skilled person would use the teaching of E2 to modify the device of D11 thereby arriving at the subject-matter of claim 1. The differences argued by the appellant are not reflected in the claim wording.

## Reasons for the Decision

1. The appeal is admissible.

2. Admissibility of D11

2.1 In its communication in preparation for the oral proceedings, section 4., the Board gave the following provisional opinion regarding the admission of D11 by the opposition division:

*"The appellant contests admission of the documents D11, D6 and D7 filed before the Opposition Division. D6 and D7 had been filed on 11 April 2014 after the opposition period, and were held prima facie relevant (item 1.2.3 of the decision). D11 has been filed on 22.06.2018 by a third party submission pursuant Article 115 EPC and was also held as prima facie relevant and also admitted into the proceedings (item 1.2.3 of the decision, last paragraph).*

*In deciding on the admission the opposition division considered prima facie relevance of the documents and heard the parties. It would thus appear that the division exercised its power under the correct principles and thus in a correct manner. Nor is the Board indeed aware of any legal basis for retroactively un-admitting documents on which the impugned decision is based (item 2.3 of the decision). "*

2.2 The appellant argued at the oral proceedings that because D11 lacked so many of the claim features the decision to admit was erroneous. However, this argument does not address the substance of the Board's provisional opinion, that there would be no legal basis for retroactively unadmitting a document, and that the division appeared to have exercised its discretion properly, and according to due process. Absent any

further argumentation in this respect from the appellant, the Board sees no reason to change its provisional view not to retroactively unadmit (i.e. effectively to remove) D11 from the proceedings.

3. Main request - Inventive step

3.1 D11 as starting point discloses an apparatus for depositing controlled volumes of flowable, particulate and/or chunk material in order to deposit portioned or discrete volumes of the material in a predetermined pattern, col. 1, lines 12-16 and thus also suitable to process a meat mass. The apparatus comprises a cam controlled piston 31 mounted within cylinders 32 forming moulding surfaces of a mould cavity located in the wall of a drum (rotary assembly 23), **feature a)**, paragraph bridging columns 4 to 5; figure 4. A mass feed member including a manifold assembly 22 is provided having a housing - hopper cavity 52 - with a through passage - mouth 51 -, **features b) and c)**. The drum side of the mass feed member 22 also comprises a means for closing the mould cavity 31, 32 in the form of a strap member 47, **feature d)**. The drum side of the mass feed member 22 as seen in the circumferential direction of the drum extends on either side of the outlet 51 over a distance which covers at least one mould cavity, as visible in figure 4. Furthermore, the curved surface of the hopper have solid portions that bear on the strap and drum on either side of the mouth over a length greater than the diameter of the mould cavity, **feature g)**.

3.2 The appellant considers that D11 does not disclose the following four features of claim 1:

- The moulding surface according to **feature a)** are formed in the wall of the drum: instead, D11 has



plungers as the main surface of the moulds. On proper interpretation, the claim requires that the whole mould cavity is constituted by the drum wall.

- the drum side of the mass feed member comprises means for closing, **feature d)**: instead, D11 has a strap and tensioning spring, which are not parts of the mass feed member.

- the flexible plate which forms the closure member for adapting to irregularities, **feature f)**: D11 only shows a tensioning of the plate, its flexible properties are ineffective between rigid members.

- excess injection pressure for eliminating adhesion forces and pressurized fluid in fluid communication with the boundary, which comprises walls and base of the mould cavity, **feature j)**: this is not shown in either of D11 or E2.

3.3 Turning first to **feature a)**, the wording of this feature does not exclude that the wall of the drum may be composite, formed of different components. This interpretation is also in conformity with the patent itself, that describes several types of inserts located within the thickness of the drum wall thus forming a drum made of several parts (see figures 4,14,15). Thus, the Board disagrees with the limited interpretation made by the appellant whereby the surface of the mould should be understood to be formed by a cylindrical recess in the drum surface within the thickness of the wall to form a sealed volume. In the Board's view, just as the separate inserts form part of the drum wall that forms the moulding surface in the patent, so also in D11 the piston or plunger 31 movable within cylinders 32 can be seen to form part of the wall of a drum in the form of rotary assembly 23 that forms the moulding surface, visible in figure 1. Thus, the Board finds **feature a)** to be disclosed in D11.

- 3.4 D11 is also seen to disclose the cooperation between the mass feed member and the flexible plate defined in **features d), e) and f)** of claim 1.
- 3.4.1 D11 explains in the sentence bridging column 4 to 5, that the "strap member 47 is closely wrapped around a portion of the outer circumference of the rotary assembly 23 ... in order to ... complete the formation of a volumetric compartment 48". Figure 4 shows the strap bolted at one end (see the right hand side of the figure close to the protruding piston 31) and tensioned at the other (bottom left of the figure) by a spring to conform to the cylindrical surface of the drum. This clearly indicates that the strap member is flexible enough to be bent and closely adapts to the outer cylindrical surface of the drum. The strap is shown to be thin and smooth, and from the way it is bolted it can be taken to have a certain rigidity. The strap member can thus be identified as a flexible plate in line with its understanding in the context of claim 1 as set out in point 3.2 of the first appeal T 1608/14.

The Board is unconvinced by the argument that the mass feed member of D11 would not "comprise" the strap, as it would not form part of the manifold 22. The Board rather sees the "mass feed member", which is not common terminology, to be realized in D11 by the configuration of components that carry out the claimed functions. Thus it "comprises", (interpreted as meaning "include" or "comprehend": CLBA, 10th edition 2022, II.A.6.2), not only the manifold assembly 22 in which is formed the hopper 52 and mouth 51, from which material is dispensed through a slot of the strap 47, but also the strap passing between manifold and drum and forming the slot. It is thus immaterial whether the strap is

directly attached to the mass feed member itself or indirectly, such as by bolts connected to the tube arrangement visible in figure 4 and itself bolted to the manifold assembly. The **feature d)** is also fully disclosed in D11.

3.4.2 Because the strap is closely wrapped about the rotary assembly it bears against its outer circumference and seals or closes the cavities formed by cylinder 32 to form the volumetric compartment 48, paragraph bridging columns 4 and 5. It does so in part under the action of the spring arrangement visible bottom left in figure 4, but also, as is evident from that figure, because the manifold assembly 22 bears against it, so that it is sandwiched between manifold and rotary assemblies either side of the hopper mouth 51 and slot 49. Pivoting arms 54 and 58 hold the manifold assembly firmly against the strap member and drum, col.5, ln. 44 - 55. Those parts of the manifold assembly either side of the mouth 51 that bear against the strap can be seen to be pressure means in the sense of **feature e)**. That feature is thus also disclosed in D11.

3.4.3 Because of its flexibility the strap must necessarily adapt to irregularities in the outer surface of the rotary assembly/drum 23 against which it bears, whether these are due to the cavities formed in the drum surface or because the drum is not perfectly cylindrical. It has not been argued nor otherwise demonstrated that the adaptations of the plate referred to in **feature f)** are the result of anything other than the flexibility of the plate, see pars. 0050 and 0051 of the patent. The Board thus also sees this feature - interpreted in its broadest sense - disclosed in D11.

Summing up, contrary to the appellant's opinion, the strap member of D11 fulfils all the requirements of **features d), e) and f)** in respect of its cooperation with the mass feed member to maintain tightness of the mould cavities.

3.5 It is otherwise undisputed that the subject-matter of claim 1 differs from D11 by means for applying a medium for eliminating adhesion forces between the boundary of the mould cavity and a moulded product, wherein the boundary comprises a porous structure of intercommunicating pores and that said means for applying a medium for eliminating adhesion forces comprises excess-pressure means for supplying a pressurized fluid which are in fluid communication with the boundary of a mould cavity, **features h), i), j)**.

3.6 As already expressed in feature h) the excess-pressure means applying pressurized fluid through a porous boundary eliminates adhesion forces between the boundary of the moulded cavity and product. This assists in the release and expulsion of product from the mould cavities, as explained in paragraphs 0012 to 0014 of the patent. Indeed, there the force generated is meant to act together with gravity to expel product without the need for mechanical means such as a plunger. However, the claim as worded does not exclude mechanical expulsion means such as a plunger.

Therefore, vis-a-vis D11, which features a plunger-type removal means (cam controlled pistons 31 within cylindrical cavities 32, figure 4 and bridging paragraph of col. 3 and 4, and col. 5, ln. 13 to 22), the effect of this differing feature can lie only in the elimination of adhesion forces as stated in the

claim. This is regardless of the wire 59 close to the ejection position at the underside of the drum, which just like the release device 24 in the patent (figures 8-10) further facilitates separation of product.

Starting from D11 the associated objective technical problem can thus be formulated as how to improve release of the product.

3.7 The idea of providing medium under pressure through pores of a cavity boundary to eject a product is already known from document E2. E2 is also concerned with producing shaped and sized food articles, such as meat products, see title, abstract and opening paragraphs, using a similar device in which a "mass feed member" in the form of hopper 6 and feed rollers 63, 64 feeds mass into cavities on the outer surface of a roll 11. The ejection mechanism comprises cam controlled die pins 15 mounted within mould cavities 12, which as in D11, are set within the wall of a roll 11 (col 2, last paragraph, col 3; figures 3-6).

In column 4, lines 42-61, an air passage 55 is disclosed that supplies air under pressure to a porous sintered die 16. Depending on the food product, either a heating unit 57 or a refrigeration unit 58 is used to feed pressurized air at a suitable temperature. As is apparent from the abstract, temperature and pressure are such as to force product off of the wall (of the drum) onto the conveyor. This is described in greater detail in col.6, ln. 62, to col.7, ln. 27, according to which the product is blown free to deposit it onto the conveyor. Col.4, ln. 42-66, further describe how vegetable oil mist may be added into airline 55 "to lessen the tendency of food product to stick to the die and to the food cavity 15 in the die roll". Over and

above the outward movement of the die 16, the air - possibly supplemented by oil mist - acts to further assist or improve release. This can only be because the pressurized air (with oil mist) acts to overcome adhesion forces between product and cavity 15 to release the product from the cavity. E2 thus teaches the solution defined by **features h), i) and j)** for the same problem.

- 3.8 Tasked to improve release of product from the cavities when producing shaped products as in D11 the skilled person would look to E2 which offers the claimed solution and apply it in straightforward manner to the device and method of D11.

It may be that applying the teaching of E2 to inject pressurized air to improve release to the method and device of D11 will involve some adaptation. However, the Board considers the degree and level of adaptation to be straightforward and well within routine design skills of the skilled person, an engineer developing machines and methods for producing food products. For example, it will be clear to them that they need not adopt the system of cam activated pistons of E2 as it is already present in D11. In E2, the pressurised air longitudinal passages 50 are located within the drum wall, column 4, lines 26-31, figure 3. The drum of D11 has a commensurate thickness to allow similar passages to be machined within the thickness of the drum between the volumetric compartments 48 in D11. The same applies to the air external feeding passages, including air line 55 and arcuate recess 54 described in column 4, lines 37-41 of E2 which can easily be accommodated within the wall of the rotary assembly 23 adjacent the cavities 32 in D11. Hence the Board considers that the same arrangement of air passages 55 can be provided

within the thickness of the wall in D11 as in E2 without any major changes. Nor would it represent any great difficulty to provide an outer circuit for heating or cooling air which would not require any significant modification of the drum, plungers and cam arrangement themselves.

- 3.8.1 Contrary to the appellant's view, the Board also considers that adopting the teaching of E2 to be compatible with the wire 59, which further assists release in D11. As noted, the patent itself teaches the use of such an additional releasing device 24 in paragraph 056. The Board is certainly unable to see how the presence of the wire at the outer circumference of the drum might interfere with the application of pressurized air to the die.
- 3.8.2 The Board is also not convinced that adoption of E2's teaching would compromise the cleaning function in D11. Firstly, the Board is unconvinced that the skilled person would not attempt to adopt the cam-controlled, pressurised porous plunger of E2 as that would interfere with the cleaning in D11 as described in col. 4, ln. 39 to 53, and which involves flowing heated water through the cylindrical cavity 32 with the piston made to extend out of it. E2 also includes a cleaning function which is integral to the pressurized porous plunger system and which involves injecting a high pressure source of water 61 into lines and flow passages 50, 51, 55 of the pressurized air system into sintered die (or plunger) 16. In adopting the pressurized porous plunger of E2 the skilled person would rather as a matter of course also adopt its cleaning mechanism to replace or supplement that of D11. And even if they were to then retain the cleaning mechanism of D11 - to complement that of E2 - it is not

apparent to the Board how or why that mechanism might interfere with the use of pressurized porous plungers.

Moreover, because the die is sintered, i.e. is porous throughout, not just towards its front surface but also towards its sides, cleaning liquid will result in cleaning of the entire cavity, walls and bottom. Therefore, contrary to what is argued by the appellant, cleaning would not suffer.

Finally, because E2 and D11 both relate to the production of meat products, hygiene will be a major concern in both. This is why E2 details cleaning using heated, pressurized water. Here the Board is unable to see any conflict between the levels of hygiene required by either document that might deter the skilled person from combining their teachings.

- 3.9 For these reasons the Board confirms the opposition division's finding that the subject-matter of claim 1 of the main request lacks an inventive step. The appellant's appeal therefore fails. As the main request is the sole request, the Board can but confirm the impugned decision to revoke the patent pursuant to Article 101(3) (b) EPC.



**Order**

**For these reasons it is decided that:**

**The appeal is dismissed.**

The Registrar:

The Chairman:



G. Magouliotis

A. de Vries

Decision electronically authenticated