

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
6 August 2009 (06.08.2009)

PCT

(10) International Publication Number  
**WO 2009/095784 A1**

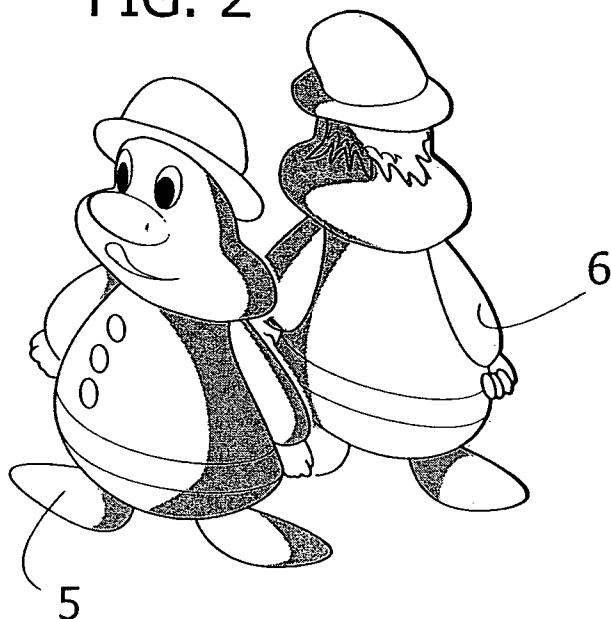
- (51) International Patent Classification:  
A63H 9/00 (2006.01) B29C 51/00 (2006.01)
- (21) International Application Number:  
PCT/IB2009/000191
- (22) International Filing Date: 29 January 2009 (29.01.2009)
- (25) Filing Language: Italian
- (26) Publication Language: English
- (30) Priority Data:  
TO2008A000064 30 January 2008 (30.01.2008) IT
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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

- Published:**
- with international search report
  - before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(54) Title: PROCESS FOR MANUFACTURING A DOLL OR THE LIKE MADE OF PLASTIC MATERIAL

FIG. 2



(57) Abstract: A process for manufacturing a doll (P) or the like consisting in thermof orming a pair of transparent or translucent plates (1, 2), on a face of which respective images (3, 4) are printed corresponding to the features of the doll so as to obtain two shaped half-shells (5, 6), which are then coupled and joined together so as to obtain a hollow body (P) contained inside which are the printed images (3, 4), visible from outside.

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"Process for manufacturing a doll or the like made of plastic material"

\* \* \*

TEXT OF THE DESCRIPTION

5 Field of the invention

The present invention relates to articles such as dolls or the like made of plastic material, particularly designed for being associated to and/or incorporated in confectionery products, typically  
10 chocolate eggs.

State of the prior art

Traditionally, dolls of the above sort are constituted by a single full, i.e., massif, solid body or else by a number of parts that can be put together  
15 and assembled with one another and also in this case full, formed by means of injection moulding of plastic material. In both cases, the outer surface of the doll is decorated with images that represent the features of the personage, directly during the injection process,  
20 by adding appropriate colouring agents to the injected plastic material.

These conventional embodiments present two problems.

In the first place, the amount of plastic material  
25 used for constituting the mass of the doll, even though this is of small dimensions, is relatively considerable, which entails production costs that are far from compatible with the nature of the article. In the case where it is designed to be associated to a  
30 confectionery product, such as, for example, in the form of a surprise gift inside a chocolate egg, the cost of production of the doll fatally affects the price of sale of the confectionery product.

The second problem regards the safety in regard to  
35 the end users for whom the article is designed,

typically small children: the colouring substances added to the injected plastic material and present on the surface of the doll may prove to a certain extent toxic, and hence their possible contact with the mouth  
5 of the child can hence involve even serious risks for his health.

Summary of the invention

The object of the present invention is to solve both of the aforesaid problems and to provide a process  
10 for manufacturing a doll or the like that, on the one hand, will require the use of a sensibly smaller amount of plastic material, and on the other will eliminate any risk of contamination for the user.

With a view to achieving the above object, the  
15 process according to the invention is basically characterized in that it comprises the following steps:

- providing a pair of transparent or translucent plates of thermoformable plastic material;
- printing on one face of each plate an image  
20 corresponding to a respective half of the doll or the like;
- thermoforming said plates so as to obtain two shaped half-shells, the faces of which bearing the respective printed images being set inside the half-  
25 shells; and
- coupling and joining the two half-shells forming the corresponding images so as to obtain a hollow body in which the image thus composed is contained inside it and is visible from the outside.

30 The two half-shells are preferably permanently joined together, for example, by heat-sealing or equivalent systems.

The doll or the like provided in conformance with the process according to the invention can be  
35 manufactured in a particularly inexpensive way and is

also appreciably lighter than those obtained with current injection-moulding technologies, and is much safer as regards the risks of toxicity for the end users in so far as the colouring substances or inks used for printing the image representing the features are inaccessible from outside.

#### Brief description of the drawings

The invention will now be described in detail with reference to the annexed drawings, which are provided purely by way of non-limiting example, and in which:

- Figure 1 is a schematic illustration of a first step of the manufacturing process according to the invention;

- Figure 2 is a schematic illustration of a second step of the process; and

- Figure 3 shows the final article obtained at the end of the process.

#### Detailed description of the invention

The example of embodiment that will now be described with reference to the drawings regards manufacture of a doll designed to be associated to a confectionery product, which may typically be introduced inside a chocolate egg in the form of a surprise.

The first step of the process, represented in Figure 1, consists in providing a pair of thin plates of heat-sealable plastic material 1, 2, necessarily transparent or translucent and preferably of the type designed for foodstuff usage.

The plates 1, 2 normally have overall dimensions only slightly greater than those of the article produced, in the case in point the doll designated by P in Figure 3.

Alternatively, the plates 1, 2 may present larger dimensions, for example, such as to enable production

of a plurality of dolls P at the same time.

To return to the case of the example illustrated, the second step of the process, which is also represented in Figure 1, consists in reproducing on one  
5 face of each of the two plates 1, 2, by means of conventional printing processes, a respective image or decoration 3, 4 corresponding to the features of a respective half of the final doll P. In the case of the example illustrated the image 3 printed on one face of  
10 the plate 1 represents the front side of the doll P, whilst the image 4 printed on the face of the other plate 2 represents the dorsal side thereof.

The next step, represented in Figure 2, consists in thermoforming the two plates 1, 2 via respective  
15 moulds, with modalities generally known to the person skilled in the branch, in such a way as to obtain two shaped half-shells 5, 6 having a boundary corresponding to that of the images 3 and 4, respectively. The printed images 3, 4 are set on the internal surfaces,  
20 i.e., the concave ones, of the two half-shells 5 and 6.

Following upon separation of the shells 5, 6 from the corresponding plates 1, 2 (typically by means of shearing along the boundaries of the images 3, 4 following upon thermoforming, also in this case  
25 according to modalities within the reach of a person skilled in the branch), the two half-shells 5, 6 are finally coupled together along the corresponding edges, by setting the corresponding cavities against one another, and are then joined so as to obtain a hollow  
30 body the final configuration of which is that of the doll P represented in Figure 3. Following upon coupling of the two half-shells 5, 6 the three-dimensional image of the doll P is obtained, formed, in the example illustrated, by the complex of the front image 3 and of  
35 the dorsal image 4.

The union between the two half-shells 5, 6 is normally permanent, and in this case it can be provided by heat-sealing or similar processes, or else may possibly be separable. Alternatively, it is also possible to envisage a connection thereof that can be dismantled.

Heat-sealing for permanent joining of the two half-shells 5, 6 may be performed, for example, with electrode devices via automated systems. Thus, the sealing electrode will be set along the line of joining between the two half-shells, the pattern of which will have been detected mathematically or else using a "master" example of the doll, and a feeler and corresponding transducer.

In its final form represented in Figure 3, the three-dimensional doll P thus obtained will hence present the printed images 3, 4 located inside the hollow body, and hence inaccessible from outside but visible in transparency through the material of the half-shells 5 and 6 obtained from the transparent or translucent plates 1 and 2.

Of course, the conformation of the doll P obtained via the process according to the invention may vary widely with respect to what has been described and illustrated and may present the an extremely wide range of shapes, in compliance with the characteristics of the thermoforming methodology.

CLAIMS

1. A process for manufacturing a doll (P) or the like, characterized in that it comprises the following  
5 steps:

- providing a pair of transparent or translucent plates (1, 2) made of thermoformable plastic material;

- printing on a face of each plate an image (3, 4) corresponding to a respective half of the doll or the  
10 like (P);

- thermoforming said plates (1, 2) so as to obtain two shaped half-shells (5, 6), the faces of which bearing the respective printed images (3, 4) being set inside said half-shells (5, 6); and

15 - coupling and joining together the two half-shells (5, 6) making up the corresponding images (3, 4) so as to obtain a hollow body (P) in which the image thus obtained is contained inside it and is visible from outside.

20 2. The process according to Claim 1, characterized in that said two half-shells (5, 6) are permanently joined to one another by means of heat-sealing.

25 3. A doll or the like comprising a hollow body (P) defined by two half-shells (5, 6) made of transparent or translucent thermoformed plastic material, which are coupled to one another and the internal surfaces of which bear printed images (3, 4) representing the features of the doll and being visible from outside.

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FIG. 1

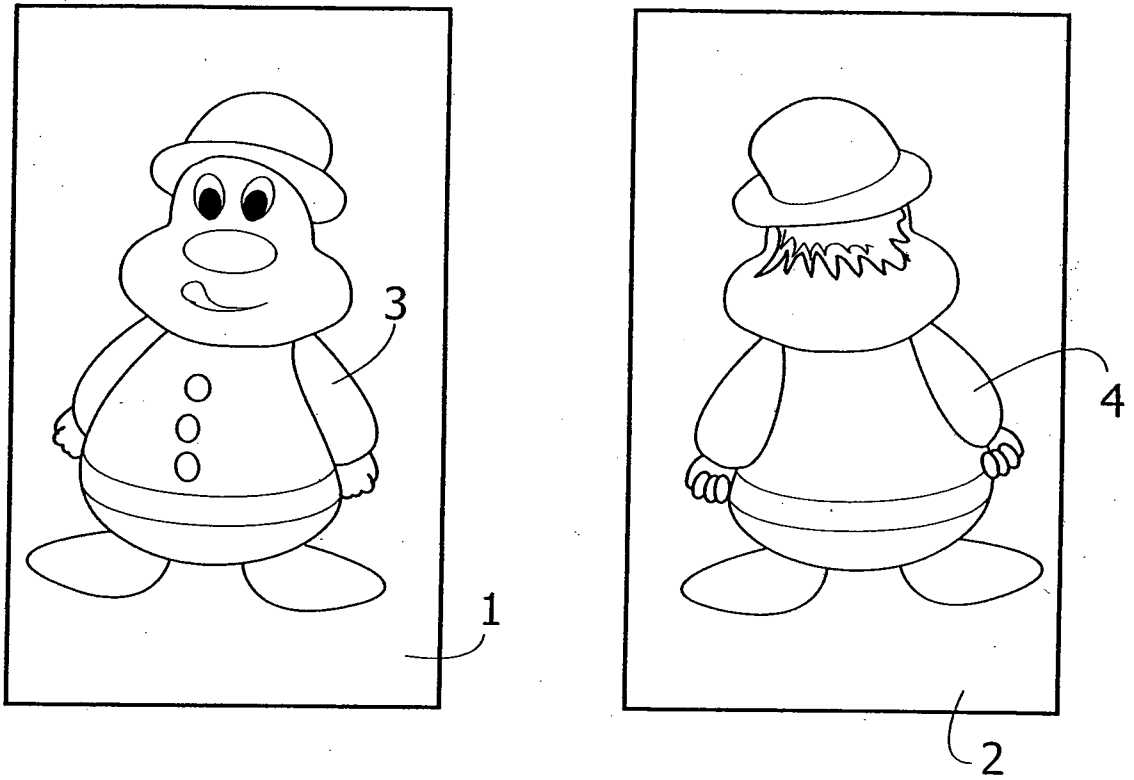


FIG. 2

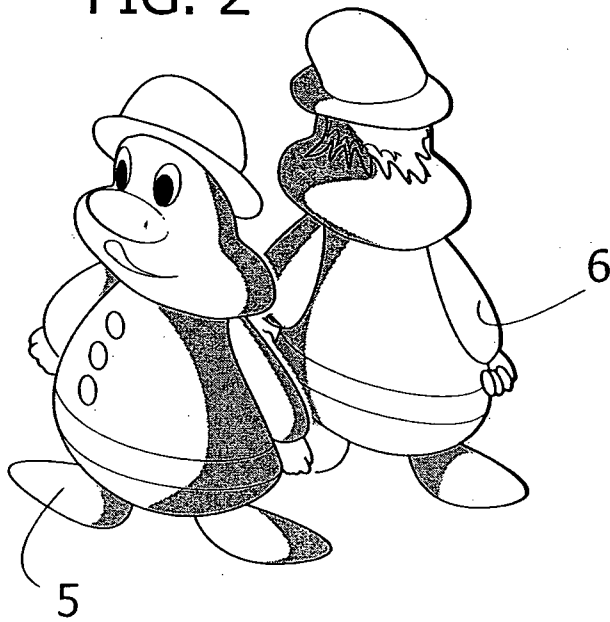
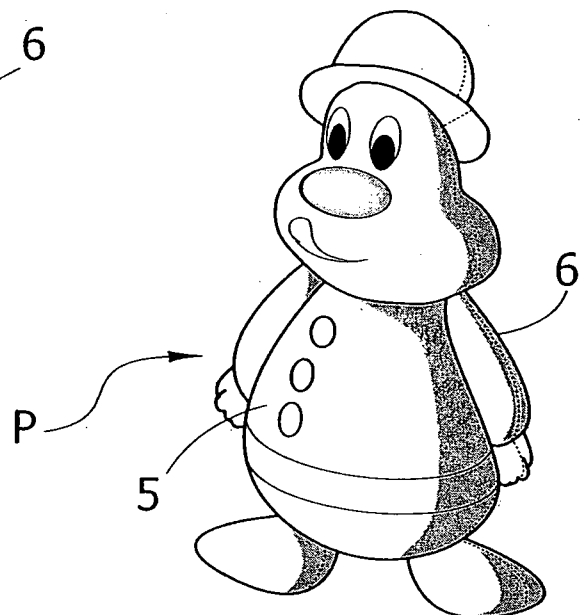


FIG. 3



**INTERNATIONAL SEARCH REPORT**

International application No  
PCT/IB2009/000191

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> INV. A63H9/00 ADD. B29C51/00		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) A63H B29C		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 98/58791 A (VAVOURAS IOANNIS [GR]) 30 December 1998 (1998-12-30) the whole document	1-3
Y	FR 2 726 499 A (COMPTEC SA SOC [FR]) 10 May 1996 (1996-05-10) page 1 - page 7; figures	1-3
A	US 2 877 570 A (STARWORTH IRVING J) 17 March 1959 (1959-03-17) column 1, line 69 - column 3, line 35; figures	1-3
A	FR 2 336 955 A (NISHIZAWA SHINHACHIRO [JP] NISHIZAWA SHINHACHIRO) 29 July 1977 (1977-07-29) page 3, line 2 - page 4, line 15; claim 1; figures	1-3
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.		
<input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents :		
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*E* earlier document but published on or after the international filing date	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	
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*O* document referring to an oral disclosure, use, exhibition or other means	*&* document member of the same patent family	
*P* document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search  <p align="center">3 June 2009</p>	Date of mailing of the international search report  <p align="center">15/06/2009</p>	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  <p align="center">Bagarry, Damien</p>	

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**INTERNATIONAL SEARCH REPORT**

International application No  
PCT/IB2009/000191

**C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT**

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A	WO 02/30248 A (GARY PRODUCTS GROUP INC [US]) 18 April 2002 (2002-04-18) page 9, line 26 - page 10, line 4; figures 1-6 -----	1,3

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Information on patent family members

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