

APPLICATION ACCEPTED AND AMENDMENTS

ALLOWED 15-1-90

FORM 1

SPRUSON & FERGUSON

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

APPLICATION FOR A STANDARD PATENT

77301/87
LODGED AT SUB-OFFICE

21 AUG 1987

Sydney

Tetra Pak Finance & Trading S.A., of 70, Ave. C.-F. Ramuz, CH-1009 Pully, SWITZERLAND, hereby apply for the grant of a standard patent for an invention entitled:

Fluid Pack with Handle

which is described in the accompanying complete specification.

Details of basic application(s):-

Basic Applic. No: Country:

Application Date:

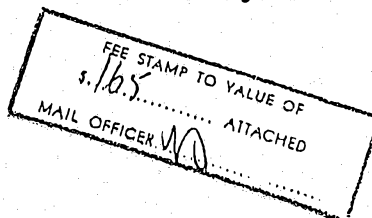
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FEDERAL REPUBLIC OF GERMANY

22 August 1986

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DATED this TWENTIETH day of AUGUST 1987

Tetra Pak Finance & Trading S.A.

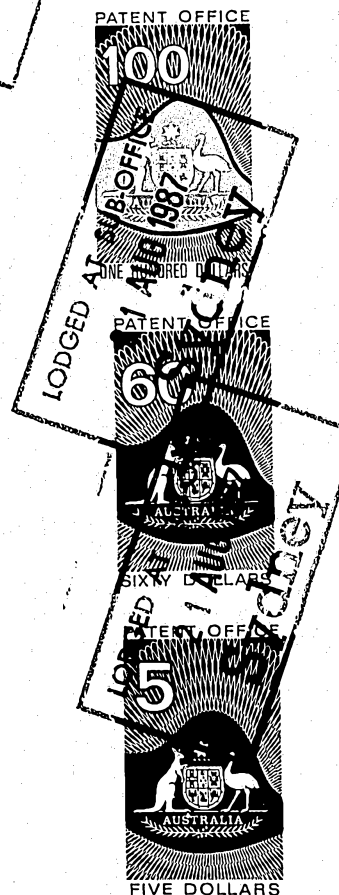
By:

H. J. Anderson

Registered Patent Attorney

TO: THE COMMISSIONER OF PATENTS
OUR REF: 33643
S&F CODE: 64070

5845/4



DECLARATION IN SUPPORT OF A
CONVENTION APPLICATION FOR A PATENT

In support of the Convention Application made for a
patent for an invention entitled: "Fluid Pack with Handle"

AUSTRALIA
CONVENTION
STANDARD
& PETTY PATENT
DECLARATION

Title of Invention

I/~~XX~~ Gösta Sevrell

Full name(s) and
address(es) of
Declarant(s)

of Plommonvägen 32, S-223 55 Lund, Sweden

do solemnly and sincerely declare as follows:-

Full name(s) of
Applicant(s)

1. ~~I am/We are the applicant(s) for the patent~~

(or, in the case of an application by a body corporate)

1. I am/~~XXXX~~ authorised by Tetra Pak Finance & Trading S.A.
(70, Ave. C.-F. Ramuz, CH-1009 Pully, Switzerland)

the applicant(s) for the patent to make this declaration on
its/~~their~~ behalf.

2. The basic application(s) as defined by Section 141 of the
Act was/~~were~~ made

in West Germany

Basic Country(ies)

on August 22, 1986

Priority Date(s)

by Altstädter Verpackungsvertriebs GmbH

Basic Applicant(s)

3. ~~I am/We are the actual inventor(s) of the invention referred
to in the basic application(s)~~

(or where a person other than the inventor is the applicant)

3. Wilhelm Reil

of Altengabweg 16

6142 Bensheim 1, Federal Republic of Germany

(respectively)

is/~~are~~ the actual inventor(s) of the invention and the facts upon
which the applicant(s) is/~~are~~ entitled to make the application are
as follows:

The said applicant is the assignee of Altstädter
Verpackungsvertriebs Gesellschaft mbH which is the
assignee of the actual inventor.

Set out how Applicant(s)
derive title from actual
inventor(s) e.g. The
Applicant(s) is/are the
assignee(s) of the
invention from the
inventor(s)

4. The basic application(s) referred to in paragraph 2 of this
Declaration was/~~were~~ the first application(s) made in a Convention
country in respect of the invention(s) the subject of the application.

Declared at Lund, Sweden this 6th

day of July 19 87

TETRA PAK FINANCE & TRADING S.A.

Gösta Sevrell
Signature of Declarant(s)

To: The Commissioner of Patents

11/81

(12) PATENT ABRIDGMENT **(11) Document No. AU-B-77301/87**
(19) AUSTRALIAN PATENT OFFICE **(10) Acceptance No. 595059**

(54) Title
FLUID PACK WITH HANDLE

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(56) Prior Art Documents
AU 537227 67289/81 B65D 5/46
AU 71001/87 B65D 5/46
US 4718598

(57) Claim

1. A pack for containing fluid materials and comprising:
a tube formed from a planar backing material coated with a thermoplastic material on at least one side thereof, the tube having at least one longitudinal sealing seam and being closed at each end by a top closure and a bottom closure respectively;

said top closure and bottom closure being generally parallel and extending transverse to the longitudinal axis of the tube;

wherein a side portion of the tube adjacent the top closure is folded onto itself so as to form an inclined side surface with respect to the top closure and a double-walled flange portion projecting transversely outwards from the inclined side surface, and wherein said side surface defines a tapering of the tube towards said top closure;

the top closure being an injection moulded thermoplastic material moulded onto the top end of the tube;

the bottom closure being formed by folding an end portion of the bottom end of said tube;

said pack further comprising a handle means provided adjacent said top closure which cooperates with and projects outwardly from said flange portion.

FORM 10

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

COMPLETE SPECIFICATION

(ORIGINAL)

FOR OFFICE USE:

Class Int Class

Complete Specification Lodged:

Accepted:

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This document contains the
amendments made under
Section 49 and is correct for
printing.

Priority:

Related Art:

Name and Address
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Complete Specification for the invention entitled:

Fluid Pack with Handle

The following statement is a full description of this invention, including the
best method of performing it known to me/us

Fluid pack with handle

The invention relates to a pack for filling materials which are capable of flow, comprising a tube which is formed by at least one longitudinal sealing seam and at the ends of which are disposed a bottom and a top, of which the top comprises thermoplastic material without a carrier material, is injected on the tube along the top edge thereof and has a pouring means, wherein the tube comprises carrier material, for example cardboard, which is coated with thermoplastic material at least on one side, the bottom is quadrangular and is formed from the folded-over tube of the pack, in the form of a folded closure, a portion of the tube wall, which adjoins the top edge of the tube, is folded on to itself and is joined to form a double-wall base strip which is triangular from the side, and wherein the top which is injected in position is extended above the top edge of the double-wall base strip by a web portion.

Various packs are known, for example fluid packs for milk, juices and the like, among which one design is for a pack volume of about two litres of fluid. That known pack has similar features to those set forth above. However the above-mentioned triangular double-wall base strip is itself provided with a gripping opening so that in other words the handle for that pack which is of heavy weight (containing two litres of fluid) is made from the material of the tube.

Besides various advantages in such a two-litre pack however it has been found that a not inconsiderable amount of distribution space in trucks, railway carriages or ships was uselessly wasted in transshipment and transportation operations. In the case of the first design of that two-litre pack, the aim, which was also achieved, was to provide an inexpensive option for manufacture thereof. However the tube used in that known pack was no longer of its cylindrical configuration in the handle area because material and space is required for the handle. As a result, as viewed from the side of the pack, a certain amount of volume

was thrown away, in the upper region on the handle and in the lower part, beside one side of the bottom of the pack; although that volume did not play any part in regard to the pack itself, it did however play a part in regard to distribution surface area. It has been found in practice that
5 the storage and stowage surface area on transshipment equipment, pallets, vehicles and the like is so expensive that the above-described space which is lost in regard to the filling material is not acceptable.

In the meantime consideration had also already been given to making the top of the pack quadrangular in plan view, or halving it, so that the
10 flat top surface is of a triangular configuration in plan view, with a handle being provided in the half of the top which has been cut away. However that gave rise to problems in regard to sealing the pack and manufacture thereof so that the optimum solution has not yet been found.

Therefore, the object of the present invention is so to improve the
pack of the kind set forth in greater detail in the opening part of this specification that, while simplifying the blank and the cutting operations on a web of material, it is possible to improve the sealed nature and the strength of the pack, while preferably also as much plastic material as possible is to be saved.

20 In one broad form the present invention provides a pack for containing fluid materials and comprising:

a tube formed from a planar backing material coated with a thermoplastic material on at least one side thereof, the tube having at least one longitudinal sealing seam and being closed at each end by a top
25 closure and a bottom closure respectively;

said top closure and bottom closure being generally parallel and extending transverse to the longitudinal axis of the tube;

wherein a side portion of the tube adjacent the top closure is folded onto itself so as to form an inclined side surface with respect to the top
30 closure and a double-walled flange portion projecting transversely outwards from the inclined side surface, and wherein said side surface defines a tapering of the tube towards said top closure;

the top closure being an injection moulded thermoplastic material moulded onto the top end of the tube;



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the bottom closure being formed by folding an end portion of the bottom end of said tube;

said pack further comprising a handle means provided adjacent said top closure which cooperates with and projects outwardly from said flange portion.

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(i.e. flange portion)

The idea of disposing a double-wall base strip on a second plane which is at an angle to the first plane was already the subject of design considerations. In that connection, the double-wall base strip was formed by cutting into a wall of the tube from the top edge in a V-shaped configuration, while, after the two wall portions of the base strip had been laid one upon the other, the base strip had an edge which was open rearwardly, towards the handle. Although tools had been developed to permit the two wall portions to be suitably aligned and secured together to form the base strip, that however involved a comparatively difficult folding operation, and the strength of the pack in the region of the handle was also not the best design.

preferred form of the

In contrast, the invention provides that the rearward edge of the double-wall base strip, which is towards the handle, is closed. That increases the strength of the walls of the pack in the region of the base strip and the two layers of the double-wall base strip can also be better held together so that they always lie one upon the other precisely and in exact alignment, even with less expensive production machinery. Surprisingly, that means that the blank can be of a simple configuration. In the developed condition, it is in the form of a rectangle, and the disadvantageous V-shaped cuts from the top edge of the tube no longer have to be formed therein. If the pack is formed from a continuous web of material, simple blades are all that is required to cut one blank from the web, after another. In addition, it is also possible to use simpler folding tools, by virtue of the arrangement according to the invention. On the one hand, the double-wall base strip should preferably be connected to itself by heat sealing, while on the other hand the aim is that, in that operation, the top and if possible also the handle should be injection-moulded in position. In accordance with the invention that can be done by a single operation for, when the tools for injection moulding the top in position are closed, the operation of folding the double-wall base strip is automatically carried out and is performed simultaneously with the other machine functions.



The formation of a tube for such a pack is known for example in relation to a liquid pack. A tube is formed from the rectangular cardboard blank, which is in a flat condition, by means of embossed lines and a folding operation, by virtue of a longitudinal sealing seam being produced at one edge of the tube. In accordance with the invention that longitudinal sealing seam is preferably disposed at an edge which goes to one of the four corners of the top. Although in that connection it may be that edge which is arranged beneath the pouring opening or the pouring edge of the pack, it is particularly preferred to use one of the two edges of the tube which are disposed therebeside and which are therefore arranged between the front and rear sides of the pack. In accordance with the description, the front side of the pack is in this case the side having the pouring opening while the rear side is the side which has the handle.

Apart from the one longitudinal sealing edge described, the tube initially has no welded joins. It will be apparent to the man skilled in the art that that considerably and advantageously reduces the problems involved in sealing the pack, when dealing with liquids as the filling material. When the bottom is produced in the form of a folded closure and also when the top is injection-moulded on the top of the tube, it will be appreciated that further welding operations are carried out and welded seams produced, but taken overall the pack according to the invention has a minimum number of welded seams with a corresponding guarantee that the pack is properly sealed.

By virtue of the angular or corner-forming configuration of the top (in plan view), especially as the bottom is in any case polygonal in plan view, it is possible for the overall pack to be of an outside contour which is substantially better from the point of view of distribution than the above-described 2-litre pack in which the handle is completely produced from the tube material. With the parallelepipedic outside contour of the pack according to the invention,

it is possible for one pack to be positioned very close to another, without any waste in respect of distribution volume. In that connection it is particularly advantageous for the handle to be disposed within the overall outside contour of the pack. Therefore
5 even larger packs which, because of their weight, should advantageously have the handle, can be transported and stored substantially less expensively than hitherto.

In accordance with the invention it is also particularly advantageous if the handle has an upper horizontal web portion
10 and a rearward vertical web portion which is in diametrically opposite relationship to the pouring edge, the web portions enclosing the gripping opening which is of a size for passing therethrough at least three fingers of the hand of an adult. Although attempts have already been made to inject handles of plastic material directly
15 on to the pack, integrally with the top or cover thereof, those handles however were of an externally rounded contour. By virtue of the present invention, the handle now has inter alia an upper horizontal web portion which is disposed in the plane of the cover and which extends in such a position as to prolong the diametral
20 line from the pouring means over the middle of the top of the pack to the oppositely disposed rearward edge. That provides a support line, thereby improving the stackability of a plurality of packs according to the invention one upon the other. The load-carrying capacity of the respective bottom pack is improved because the
25 vertically directed forces due to the weights of the upper packs can now be transmitted into the edges, which have a very high load-carrying capacity, of the respective subjacent pack. In addition, in accordance with the invention care has been directed to making the gripping opening of a practical configuration because adults
30 can easily handle a heavy pack, using three fingers of one hand. The

gripping opening should not be of a smaller size. On the other hand a substantially larger gripping opening in turn requires more production material and gives rise to a dead volume, in regard to transportation of the pack.

5 A further advantageous embodiment of the invention provides that the double-wall base strip which is triangular in side view has a right angle, beside the handle, in side view, and its hypotenuse includes, with the longitudinal centre line of the tube, an angle which is of a magnitude of between 20° and 40° , preferably 25 and
10 30° . While the blank is rectangular so that the outside edges of the blank each form a right angle with each other, the top edge of the tube to which the top or cover of the pack has to be injection-moulded follows a kinked line after the operation of folding the tube, due to the configuration of the triangular base strip. That occurs due
15 to the use of a portion of the wall material for the triangular base strip. If the latter is of such a configuration that the two triangular wall panel portions arranged to the right and to the left thereof are disposed in one plane, then that is the above-mentioned second plane which is at an angle to the first plane which is frequently
20 referred to in the description herein as the 'horizontal plane', that is to say the plane in which the top or cover lies. It will be appreciated that that angle is 90° larger than the above-mentioned angle which the second plane in which the hypotenuse of the base strip also lies includes with the longitudinal centre line of the tube.

25 Practical tests have shown that the last-mentioned angle between the longitudinal centre line of the tube and the hypotenuse or second plane is of a size of 29° or 30° . In that case it is then possible to provide a sufficiently large gripping opening for the three fingers of a hand. In actual fact the size of the gripping
30 opening is interrelated with that angle, while the cross-sectional dimension of the pack which is preferably a square also represents an

important factor in regard to determining the value of that angle. The thickness of the handle also governs to a certain degree the angle which the manufacturer generally tries to make as large as possible but which is subjected to clear limitations, due to the above-
5 mentioned factors.

It is also advantageous in accordance with the invention if at least the upper horizontal web portion of the handle is of a lateral width of 2 - 20 mm, preferably 6 - 12 mm, in the first plane of the top. As a result of that arrangement, the handle is strength-
10 ened against bending in a direction perpendicular to its main surface so that it projects out of the inclined so-called second plane substantially at an angle of 90° , and remains substantially rigidly in that position.

The strength aspect may be further enhanced in accordance with
15 the invention if strengthening ribs are injected on both sides on the double-wall base strip. In that way it is possible to avoid injecting material entirely around the base strip, while nonetheless achieving the same advantages, from a static point of view. That therefore saves on plastic material, while however the strength
20 aspect does not suffer.

In accordance with the invention it is also advantageous if both web portions of the handle are provided with strengthening ribs and that a free space without material is preferably disposed between the lower end of the vertical web portion and the point
25 of intersection of the second plane with the edge of the tube. Those features serve on the one hand to save material and on the other hand to maintain or enhance strength, particularly in the region of the handle and its connection to the tube. The above-mentioned space ensures that a free space is left at points which do not have
30 a support function or which could enhance the strength of the pack or

the handle, without the appearance of the pack suffering as a result.

A highly advantageous embodiment of the invention provides that the pouring opening is provided with a pouring opening cover of oval configuration in plan view, and the annular flange which is formed on the pouring opening cover is arranged in the region of its outside edge and follows said oval shape. The oval configuration of the pouring opening, and therewith the pouring opening cover and therewith its annular flange which is formed thereon at the edge thereof improves the sealed nature of the pack when it is re-closed for the oval shape provides higher lateral stresses in the material which result in an improvement in the clamping forces and thus the sealing effect.

Further advantages, features and possible uses of the present invention will be apparent from the following description in connection with the drawings in which:

Figure 1 shows a side view of the novel pack in which the bottom has not yet been finally folded,

Figure 2 shows a plan view of the pack shown in Figure 1, and

Figure 3 shows a view, which is broken off at the bottom, from the rear of the pack, viewing from right to left in Figures 1 and 2.

The tube 1 of the illustrated pack forms the four side walls thereof, of which only the front two walls of which one can be seen in Figure 1 and is identified by reference numeral 1a is rectangular. The other side walls which are denoted by 1b and 1c in Figure 3 are of a trapezoidal shape. They are connected by way of the rear edge 2 which represents a fold edge. At the top they terminate at point P which represents the intersection of the so-called second plane 3 with the rear edge 2. More precisely, the second plane 3 is formed by the two triangular panels 3a and 3b which are connected together by way of the double-wall triangular base strip 4.

The bottom of the pack, which is generally denoted by reference numeral 5, is formed by the fold lines and wall panels which are shown at the bottom of Figure 1. The top or cover of the pack is denoted by reference numeral 6.

5 The top 6 is of a triangular configuration, as can be clearly seen from Figure 2. It forms the so-called first plane which is identical to the plane of the top 6 and which is horizontal, that is to say parallel to the surface of the bottom 5 when in its finished folded form (not shown).

10 The top 6 has the pouring opening 7 with pouring opening cover 8 which is of oval configuration in plan view (see Figure 2), outside edge 9, opening strip 10, pouring edge 11 and annular flange 12. The partly sectional view in Figure 1 shows that the annular flange 12 extends in the region of the outside edge 9 of the pouring opening
15 cover 8 and thus follows the oval shape thereof.

The upper horizontal web portion 13 of the handle which is generally identified by reference numeral 14, for carrying the pack, extends in such a position as to prolong the first plane of the top 6.

20 The handle 14 is injected integrally on the top 6, comprises plastic material and is thus also directly joined to the two small triangular wall panels 3c and 3e which, together with the triangular wall panels 3a and 3b, form the so-called second plane which is generally identified by reference numeral 3. The view shown in Figure
25 2 illustrates the length of the horizontal web portion 13 which extends from the centre of the pack where the longitudinal centre line 15 intersects the top 6, to the rearward corner 16. It is adjoined beneath same by the vertical web portion 17 which is injection-moulded on the double-wall base strip 4, by way of a plastic shaped
30 portion 18.

The side view in Figure 1 also shows the reinforcing ribs 19 which are injected on the double-wall base strip 4, on both sides, together with the handle 14, while Figure 1 also indicates in broken-away form in the region of the vertical web portion 17 the strengthening ribs 20 which extend between the outside wall portions of the web portion. Figures 2 and 3 also show the width B of the web portions 13 and 17, which extends in the first plane of the top 6.

Figure 1 shows the free space 22 beneath the lower end 21 of the handle 14, so that material is saved as a result. The gripping opening 23 is of such a configuration that three fingers of the hand of an adult can pass readily therethrough so that even when the pack is in the filled condition, with a capacity of up to $2\frac{1}{2}$ litres, the pack can be properly handled.

Although the endeavour is for the point P (Figures 1 and 3) to be positioned as high as possible in order to increase the capacity of the pack, the size of the gripping opening 23, the lower thickness D of the opening 23 and even the height d of the vertical web portion (Figure 1) limit the position of the point P and therewith also the size of the angle α between the hypotenuse 24 of the double-wall base strip 4 which is in opposite relationship to the right angle 25 and the longitudinal centre line 15 of the tube 1.

The top edge of the tube 1, which is identified by reference numeral 26 in Figures 1 and 3, is straight and extends horizontally in the region of the front two side faces (one front side face 1a can be seen in Figure 1) while it extends over the two triangular wall panels 3a and 3b as a wide, upwardly open V-shape by way of which the two wall panels 3c and 3e which comprise plastic material are connected. That provides that the rear edge of the double-wall base strip 4, as identified by reference numeral 27, is closed. The top edge of the double-wall base strip 4 is denoted by reference numeral 28 (Figure 1).

The claims defining the invention are as follows:

1. A pack for containing fluid materials and comprising:
a tube formed from a planar backing material coated with a thermoplastic material on at least one side thereof, the tube having at least one longitudinal sealing seam and being closed at each end by a top closure and a bottom closure respectively;
said top closure and bottom closure being generally parallel and extending transverse to the longitudinal axis of the tube;
wherein a side portion of the tube adjacent the top closure is folded onto itself so as to form an inclined side surface with respect to the top closure and a double-walled flange portion projecting transversely outwards from the inclined side surface, and wherein said side surface defines a tapering of the tube towards said top closure;
the top closure being an injection moulded thermoplastic material moulded onto the top end of the tube;
the bottom closure being formed by folding an end portion of the bottom end of said tube;
said pack further comprising a handle means provided adjacent said top closure which cooperates with and projects outwardly from said flange portion.
2. A pack as set forth in claim 1 wherein said handle means extends generally parallel to the flange portion and has an upper horizontal web portion and a rearward vertical web portion, said web portions extending generally transverse to the plane of said handle means;
said handle means further comprising an opening between said flange portion of the tube and said rearward vertical web portion.
3. A pack as set forth in claim 1 or claim 2 wherein the inclined side surface of said tube defines an angle of between 20° and 40° with respect to the longitudinal axis of the tube.
4. A pack as set forth in claim 3 wherein said angle of inclination is between 25° and 35°.
5. A pack as set forth in claim 2 wherein said upper horizontal web portion of the handle is generally parallel to said top closure and has a lateral width of between 2 and 20 mm.
6. A pack as set forth in claim 5 wherein said lateral width is between 6 and 12 mm.



7. A pack as set forth in any one of claims 1 to 6 wherein strengthening ribs are injection moulded onto said flange portion of the tube and are integral with said handle means.

8. A pack as set forth in any one of claims 1 to 7 wherein the pouring opening is selectively closable by a closure means.

9. A pack for containing fluid materials as hereinbefore described with reference to, and as shown in the accompanying drawings.

DATED this SIXTH day of DECEMBER 1989

Tetra Pak Finance and Trading S.A.

Patent Attorneys for the Applicant

SPRUSON & FERGUSON



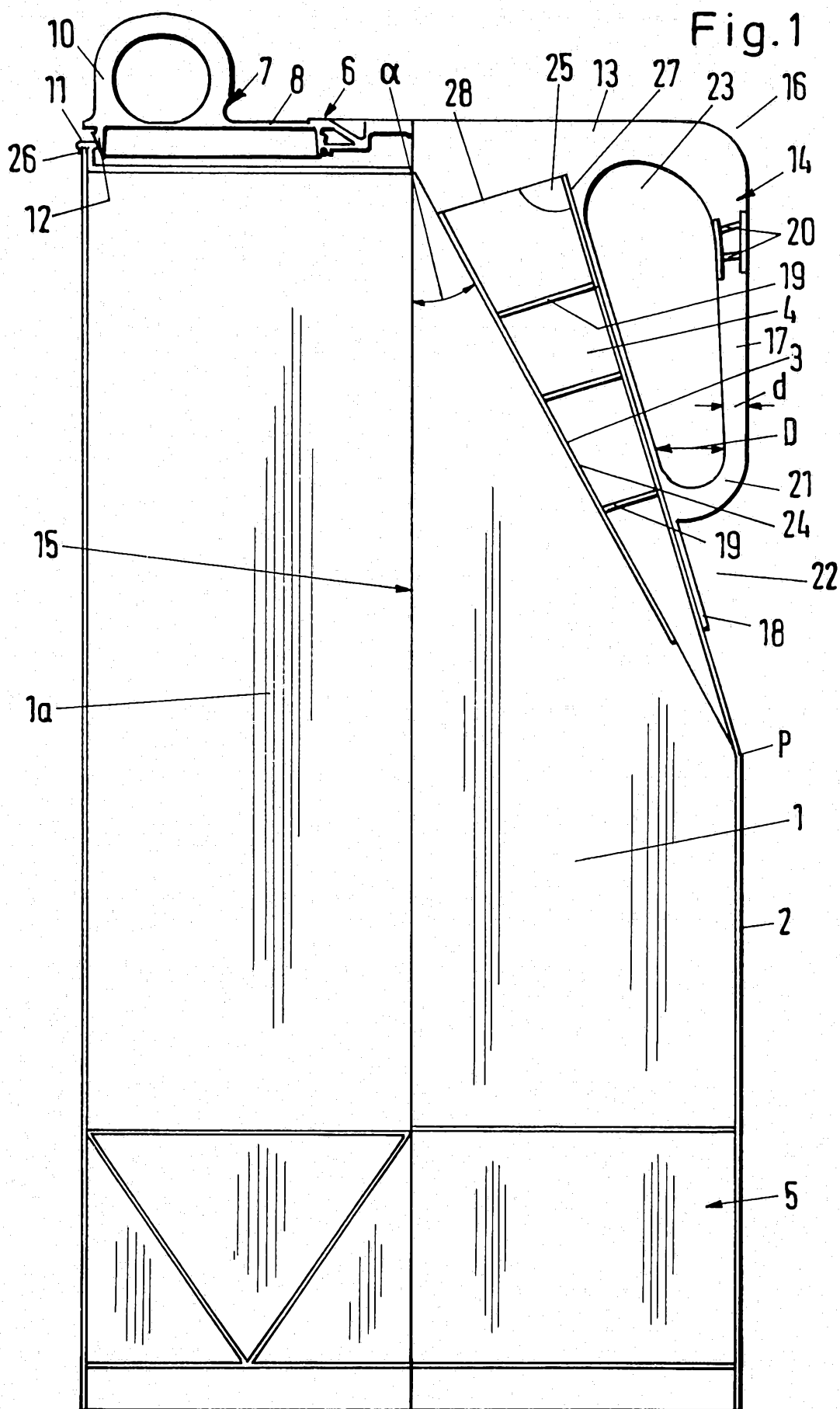


Fig. 2

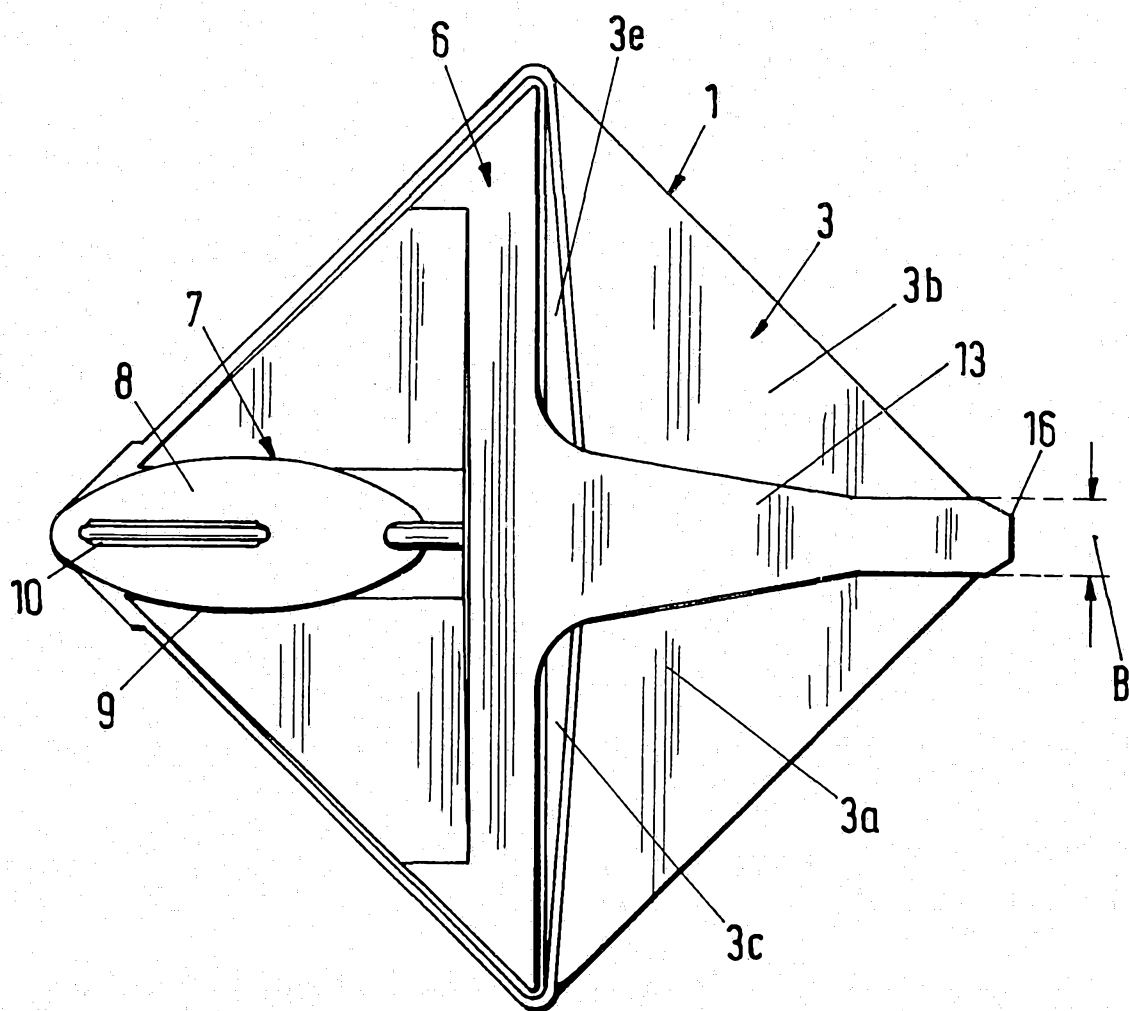


Fig. 3

