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(54) Device for packing a fowl in a bag.

(57) A device for packing a fowl into a bag, provided with a bottom plate (3) in which in order to have an escape for air from the forward part of the bag when the fowl is pushed into it the cross-section of the bottom plate is wave or zig-zag shaped so that between said plate and a bag stretched around it one or more channels (20) are left free.

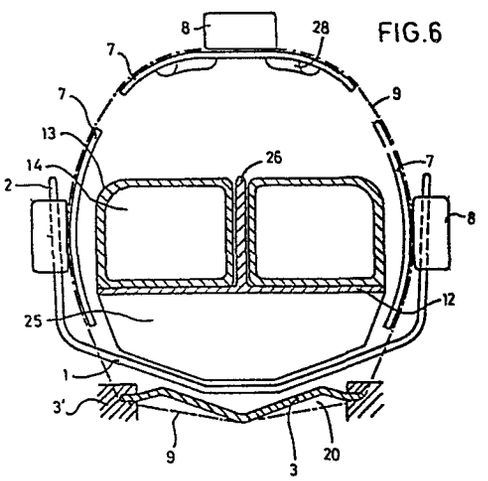

FIG.6

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Device for packing a fowl in a bag.

The invention relates to a device for packing a fowl in a bag, provided with an attachment means for holding up the bag in opened condition, a bottom plate to be inserted into said opened bag and one or more pushing members to push a fowl on said bottom plate into said bag. Such a device is known from the Dutch Patent Application 7508309 (Thurne).

The invention aims to eliminate difficulties that may be caused by air inclusion at the bottom side of the bag, when the fowl is pushed into the bag and may be active as a piston , which may lead to detaching or even tiring the bag or to a final product having a by times important air bubble in the bag.

Accordingly the invention provides that said bottom plate has at least one recess oriented lengthwise in said bottom plate.

The cross-sectional shape of the bottom plate provides an air escape passage between the underside of the plate and the bag stretched around it. Further this shape allows for a higher rigidity of the plate when using the same sheet thickness.

A further elaboration of the invention provides that said bottom plate has at its lower side a wave or zig-zag shaped cross-section with at least one upwardly directed wave crest.

In order to provide a reasonable match of the cross-sectional shape of the bottom plate to that of a fowl to be packed and to have only little free room left in the bag when the bottom plate is retracted, according to a further improvement of the invention it is provided that said cross-section has wave crests at each side, the side edge of the bottom plate being at a level between its adjacent crest and the level in the center of the cross-section.

In the following the invention is further elucidated on hand of the drawing, in which:

Figure 1 shows a plan view of the invention in the starting position;
Figure 2 is a side view of the invention in the starting position;
Figure 3 corresponds to fig. 2 but shows a further stage;
Figure 4 shows a still further stage in the same manner as fig. 2 and 3;
Figure 5 shows a still further stage;
Figure 6 schematically shows a cross-section over the line VI-VI of fig. 4;
Figure 7 serves to elucidate a control cam; and
Figure 8 shows a number of graphs in which the workings of several parts of the invention are shown in mutual correlation.

In the drawing reference 1 indicates a deposit gutter having slightly converging vertical walls 2 and centrally below its bottom a bottom plate 3 movable in its longitudinal direction. As more specifically and schematically has been shown in fig. 2-5 inclusive the bottom plate 3 can be moved by a driving member 4, which is for instance a pneumatical cylinder and has not further been detailed in the drawing.

In fig. 6 the cross-sectional shape of the deposit gutter 1 and the bottom plate 3 as well as a guide 3' in which the bottom plate 3 is guided, are shown.

A driving member 5 that is executed in triple serves to actuate stretch members 7. Each stretch member 7 is formed by a pivotable sheet having a pivot shaft 6 and is pivotable from the position shown in fig. 1 and 2 into the position shown in fig. 3, in which each of them clamps a bag 9 between itself and a fixedly mounted counter member 8.

The bag 9 is the uppermost of a stack 10 of bags which by means of pressurized air from a nozzle 11 is brought in the shown position and therein fixed by the stretching

members 7.

Synchronous with the actuation of the driving members 5 for the stretching members 7 also the driving member 4 for the bottom plate 3 has executed its activity, so that the bottom plate 3 has taken the position shown in fig. 3.

Following to this the pushing members 12 and 13 which are movable in the longitudinal direction of the bag become active which can be carried out pneumatically, wherewith the member 12 presses against the body of the fowl. The pushing member 12 consists of a horizontal plate with at its lower side somewhat retracted a transverse sheet 25 and at its upper side in the middle a vertical baffle 26 extending in the longitudinal direction. The member 13 has at its front side two recesses 14, by reason of which this member 13 is adapted to push the legs of the fowl and to lay them against the body of the fowl. A slit 27 in the member 13 enables to accomodate the baffle 26.

As more specifically appears from fig. 4 the members 12 and 13 are completely shifted into the bag, when the latter at its outer side is supported by an abutment member 15. Therewith the bottom plate 3 is following to this retracted, so that the position of fig. 5 comes to existence. In this position a retaining member 16 is pressed on the fowl, as has been shown in interrupted lines in fig. 5, the fowl being supported by a turntable 17. After this the turntable 17 is rotated until the bag with the fowl is in the position indicated with reference 18 in which position the bag is closed with a closing device 19 that has not further been detailed.

An important advantage of this construction is, that the time necessary for stretching and filling of a bag forms a first cycle and the time necessary for closing the bag a second one, which increases the working speed of the complete device in a considerable extend.

A further advantage of the shown construction is, that the wind blowing from the nozzle 11 can bring a bag of the stack of bags in the position desired for stretching , wherewith this happens at the moment that the turntable 17 is in the position shown in fig. 1 with interrupted lines, so that the advantage is obtained that the bag is not hampered by the turntable when bringing the bag in the desired position, after which, when the turntable is in the position shown in solid lines in fig. 1, it can serve the purpose of supporting the bag and the fowl, when the bottom plate has been retracted therefrom.

In fig. 6 a cross-section through the bottom plate 3 has been shown, wherewith it is visible that between this plate and the bag 9 two passage gutters 20 for air are present at the lower side. This means that when the fowl is shifted over the bottom plate into the bag the air from the front side of the bag can always easily be vented through the gutters 20, whereas nevertheless, after the plate 3 has been retracted, a good tight enclosure of the bag around the fowl can be realized. The stretching members 7 are also schematically shown in fig. 6 as well as the counter members 8 and the pushing members 12,25,26 and 13,14. Further is visible that the uppermost stretch member 7 at its inner side has guiding ribs 28.

By rotating a control cam 24 the brackets 16 and 16' are actuated because they are via rotating shafts 21 connected to actuating arms 22 with at their ends follow rollers 23' and 23 cooperating with said cam 24. Tension springs 29 keep the follow rollers 23 and 23' in engagement with the cam 24.

The follow rollers 23 and 23' and the cam 24 have been shown again in fig. 7. Therewith the cam has been shown in the position of fig. 3 of the drawing. This cam has a non shown control member which can cause it to rotate. With a first rotational movement the cam moves 30° counter clockwise by reason of which follow roller 23 sways inwardly over the cam part a1, so that bracket 16' (see fig. 2) moves from the position of fig. 3 into that of fig. 4.

Therewith follow roller 23' runs over cam part b1 of cam 24 and consequently the related bracket 16 is not swayed. The mutual position of the cam and follow rollers is maintained until the position of fig. 5 is reached, thus the fowl being completely shifted forward and the bottom plate 3 retracted, wherewith the stretching members 7 are still kept in their opened position by the pushing member 13. Now the cam 24 is rotated 60° further counter clockwise. Then the follow roller 23 cooperates with the part a2 of the cam 24, wherewith no variation in radius occurs and consequently no swaying movement of the related bracket. The follow roller 23' runs over cam part b2 which means an increase of radius, so that the corresponding bracket 16 is swayed downward. Now the turntable 17 is rotated over 90°, wherewith the follow roller 23' runs over cam part b3 and follow roller 23 over cam part a3. None of these cam parts show a variation of radius, so that no swaying movement occurs. After this the cam is rotated 90° clockwise, by reason of which follow roller 23 runs over cam part a3 but now in opposite direction, and follow roller 23' over cam part b3, also in opposite direction. Following to this the table rotates still 90° further, so that the starting position is taken again, but with exchange of the brackets and follow rollers 16, 16' and 23' and 23 respectively.

The working of the device in the following is further elucidated on hand of the time graphs of fig. 8. In this figure the vertical axis is the time axis, wherewith as reference the positions of the several figures are indicated and the graphs are indicated with the references of the parts to which these graphs relate. These are the nozzle 11; actuating members 5 and 4 which are always actuated together; the cam 24; the turntable 17 and the pushing members 12 and 13.

In fig. 8 is started from the position of fig. 3, because in that position deposing of a fowl in the deposit gutter 1 occurs. After this an actuating mechanism is activated by reason of which a complete cycle is carried out until the position of fig. 3 is reached again.

Deposing a fowl needs not to happen with special care, provided the ends of the legs are located at both sides of the baffle 26 on the horizontal plate of the pushing member 12 and the fowl further is located such, that its brest-bone comes between the guide ribs 28.

After starting the device the pushing members 12 and 13 are shifted toward the left, wherewith initially they move equally but the pushing member 13 receives at the end of its stroke a higher velocity and overtakes the pushing member 12 until the position of fig. 4 is attained, in which the front edges of the pushing members 12 and 13 almost coincide.

Because the front edge of 12 is located on a certain height, in practice some cm above the deposit gutter, this edge engages the back side of the upper parts of the legs and the body of the fowl. This causes in combination with the baffle 26 the fowl to be pushed straight forward, which cause is also enhanced by the vertical sheet 25.

The final position of the pushing members 12 and 13 has to be such, that a good dressing of the bird is obtained, wherewith for chickens it generally is preferred that the ends of the legs are located near the front edge of the pushing member 12. This may, however, be different for other types of fowl.

When starting the device the cam 24 is rotated 30^{o} counter clockwise, by reason of which the retaining member 16' sways upwardly into the position of fig. 4. After attaining the position of fig. 4 the actuating members 5 are retracted and the stretching members 7 can sway back, wherewith, however, the pushing members 12 and 13 prevent that they sway already completely back into the position of fig. 1 and 2.

In the same time the driving member 4 and consequently the bottom plate 3 are retracted, by reason of which some room in the bag is created and the pushing members 12 and 13 can

move a little further on. The graph for these members will in that instance lay anywhere between the solid and the interrupted lines 12 and 13 in fig. 8.

Starting from the position of fig. 5 the cam 24 is rotated 60° counter clockwise, so that the retaining member 16 takes the position indicated with interrupted lines. The end of this movement is in fig. 8 indicated with fig. 5'. Now the retracting of the pushing members 12 and 13 begins. When they are sufficiently retracted to enable rotation of table 17 without a too strong hindrance caused by the pushing members 12 or 13 and /or the stretching members kept open by them, the table 17 is rotated a quarter of a revolution as follows from line 17 in fig. 8. Therewith the preceding bag 18, which has been closed by a not further detailed closing device 19, engages an abutment and wipe off member 30 and falls from the table 17. With this rotational movement of the table 17 the bag 9 is retained by bracket 16. After this rotational movement over 90°, wherewith the bag is tired away from the bag stack 10, as is known per se, the nozzle 11 becomes active. After this the next bag of the stack 10, is brought in the position of the bag 9 in fig. 1 and 2, wherewith the table 17 rotated over a quarter of a revolution does not hinder the bag.

After the first movement of the turntable 17 the cam 24 rotates 90° clockwise, vide graph 24. This does not cause any positional change of the retaining members 16 and 16'.

Following to this the turntable 17 rotates again 90°, wherewith as has been elucidated earlier on hand of fig. 7 again no positional change of the retaining members 16 and 16' occurs. In the mean time the pushing members 12 and 13 have arrived in their retracted positions, wherewith it will be clear that the accellerated movement of 13 indicated in fig. 8 in the final part of its back stroke is not necessary: each movement with which 12 and 13 are in time in their starting positions is allowable.

Now the device is in the position of fig. 1 and 2, but with a rotation of the turntable over 180°. Now the next fowl can be deposed into the deposit gutter and after activation of the actuating mechanism the whole cycle will be repeated.

Claims:

1. Device for packing a fowl in a bag, provided with an attachment means (7) for holding up the bag (9) in opened condition, a bottom plate (3) to be inserted into said opened bag and one or more pushing members (12,13) to push a fowl on said bottom plate into said bag, characterized in that said bottom plate has at least one recess (20) oriented lengthwise in said bottom plate.

2. Device according to claim 1, characterized in that said bottom plate has at its lower side a wave or zig-zag shaped cross-section with at least one upwardly directed wave crest (20).

3. Device according to claim 2, characterized in that said cross-section has wave crests (20) at each side, the side edge of the bottom plate being at a level between its adjacent crest and the level in the center of the cross-section.

FIG. 1

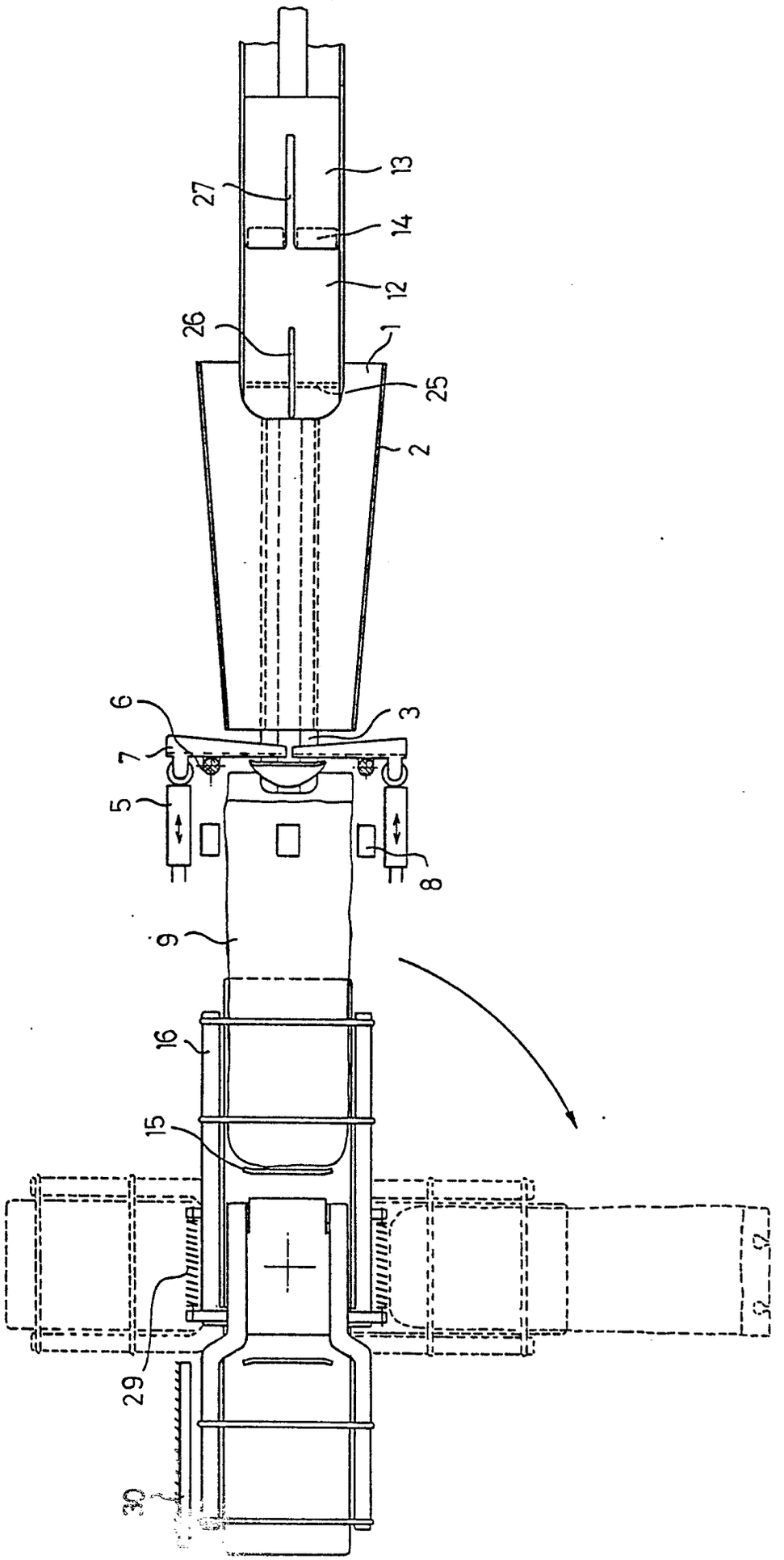
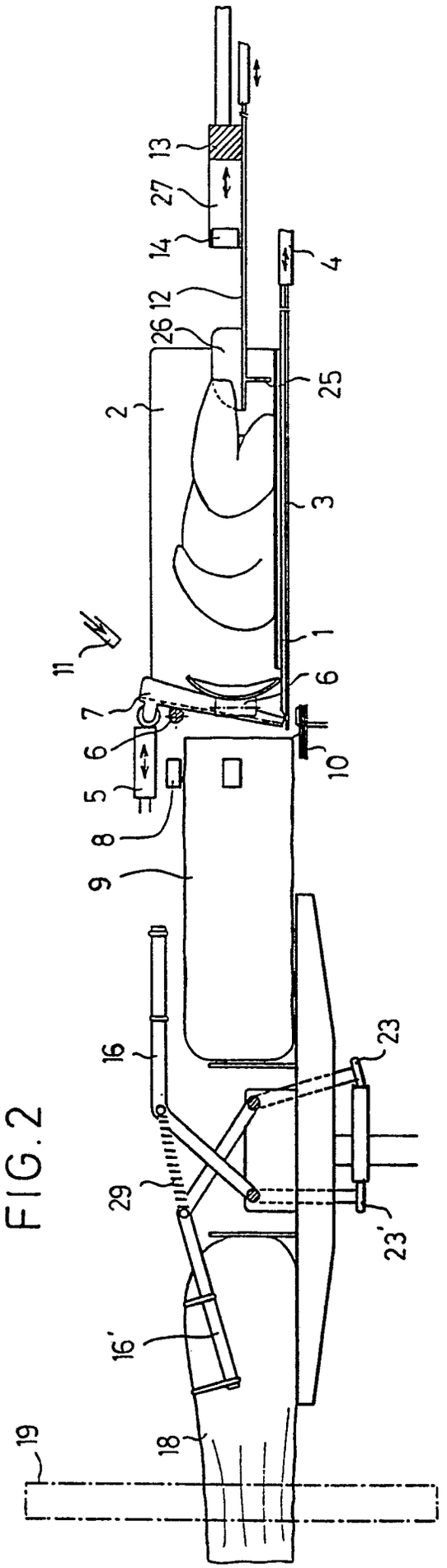


FIG. 2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5
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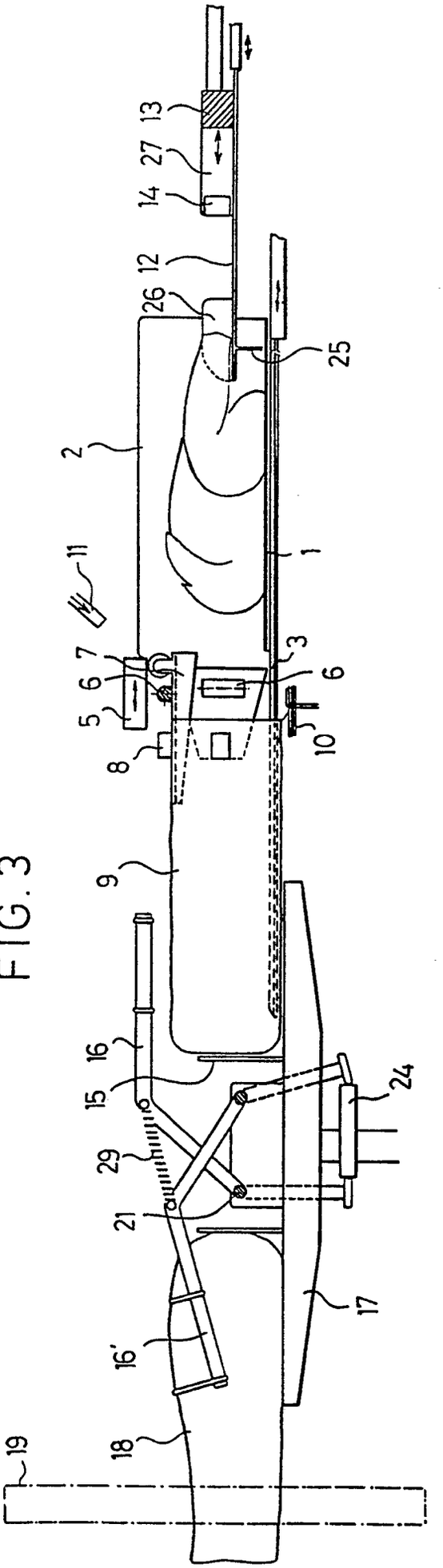
19

FIG. 3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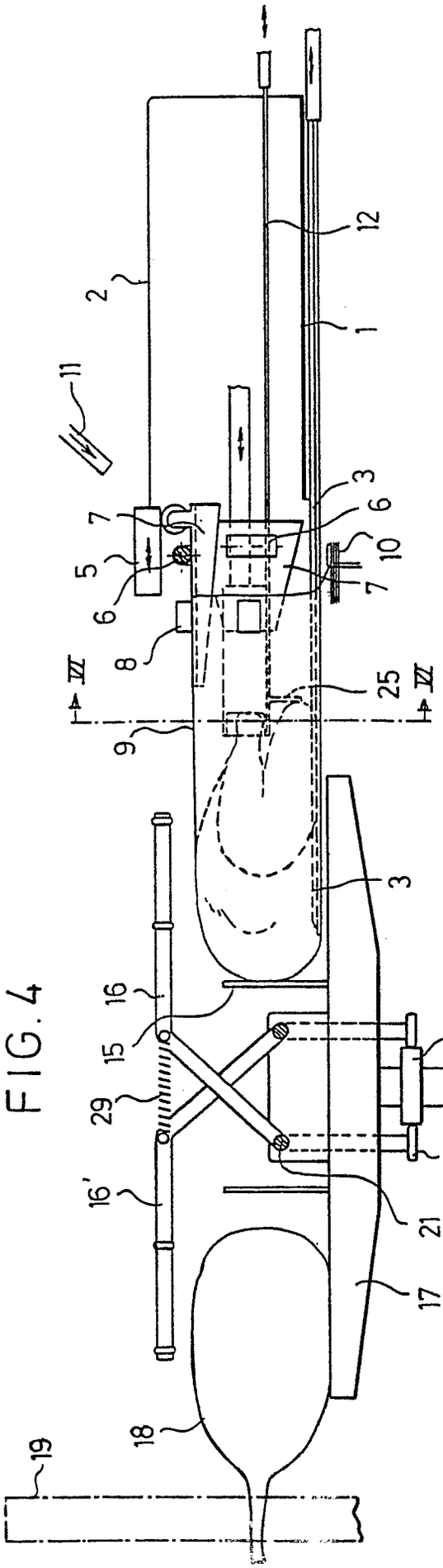
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FIG. 4

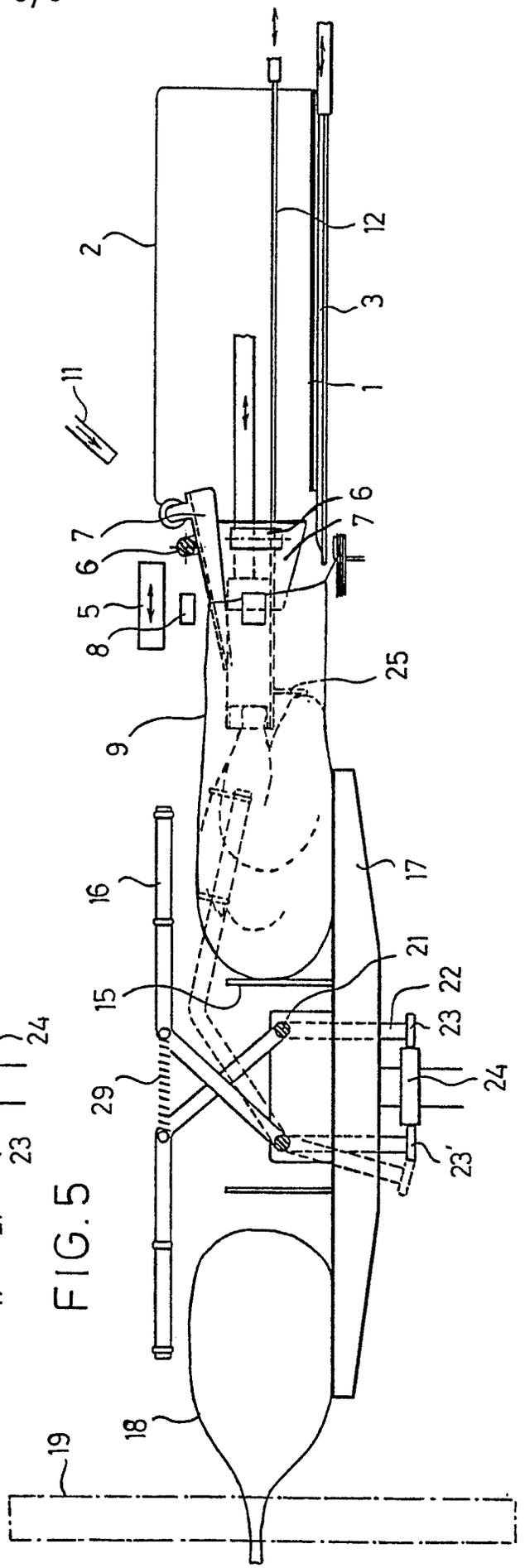
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FIG. 5

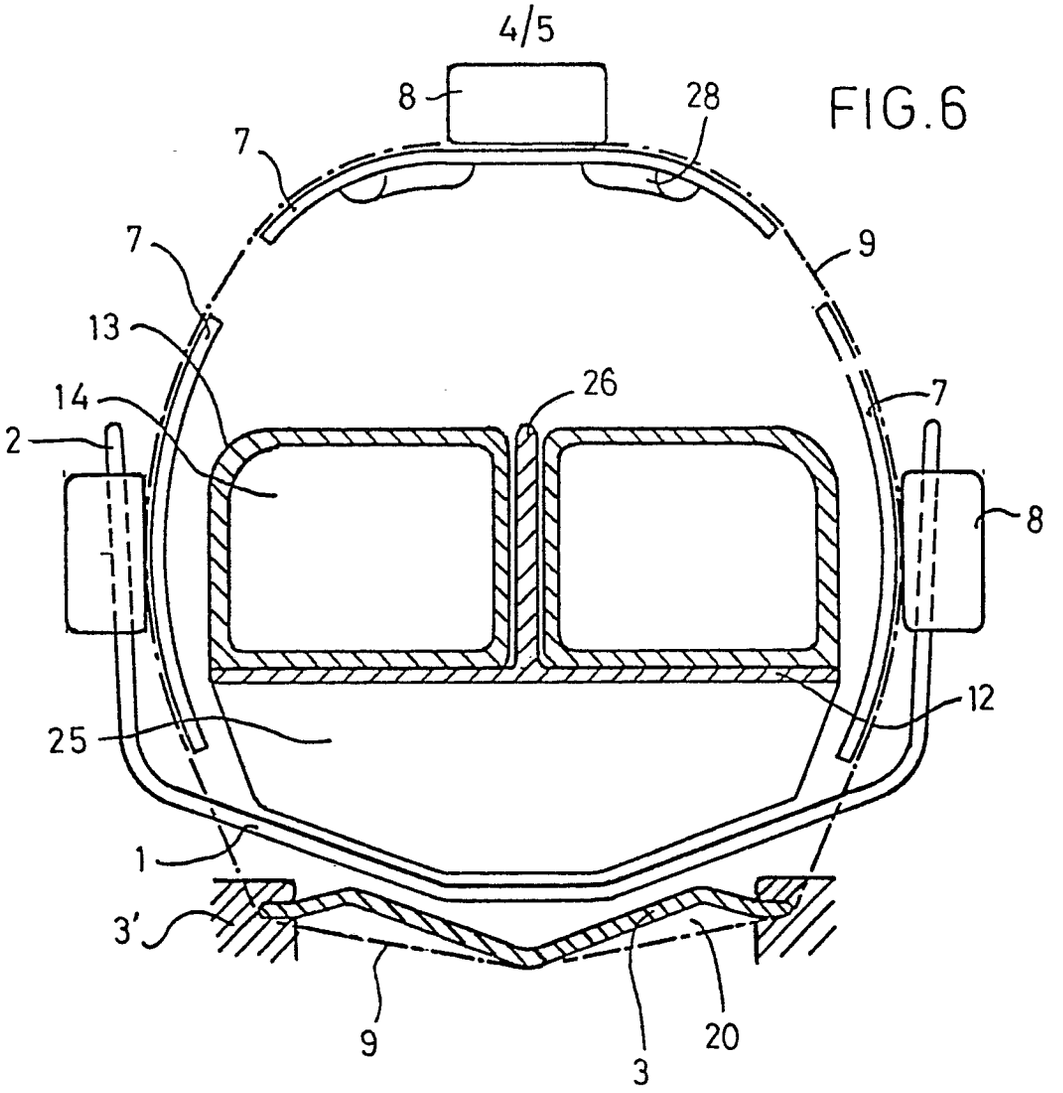


FIG.6

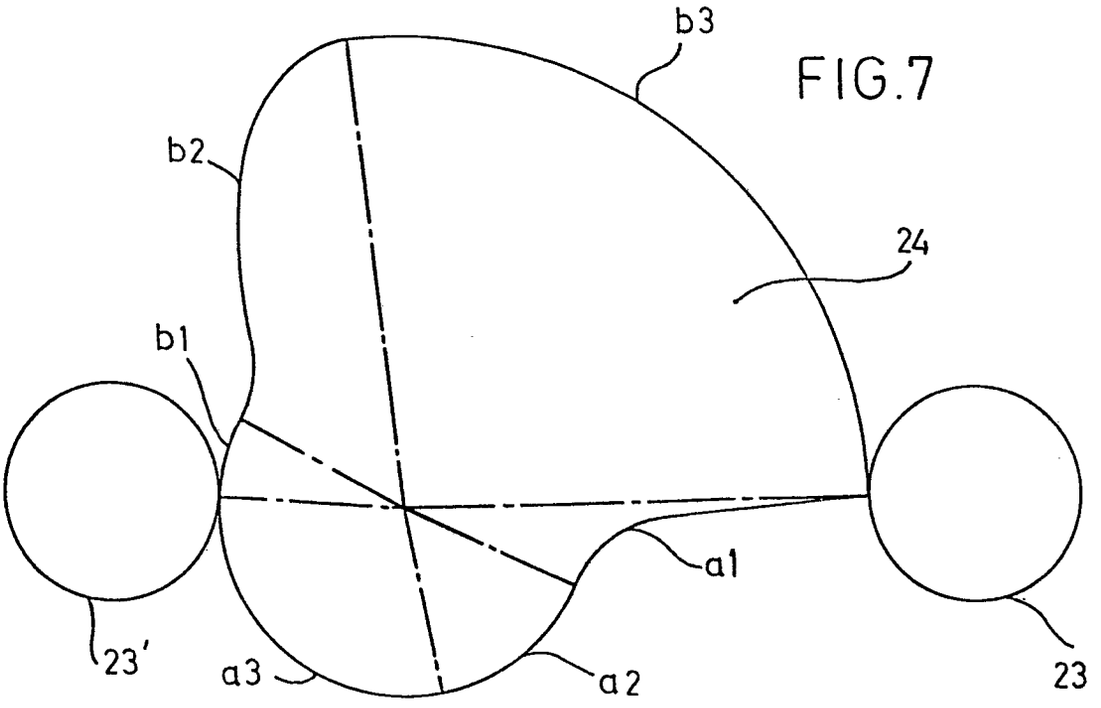
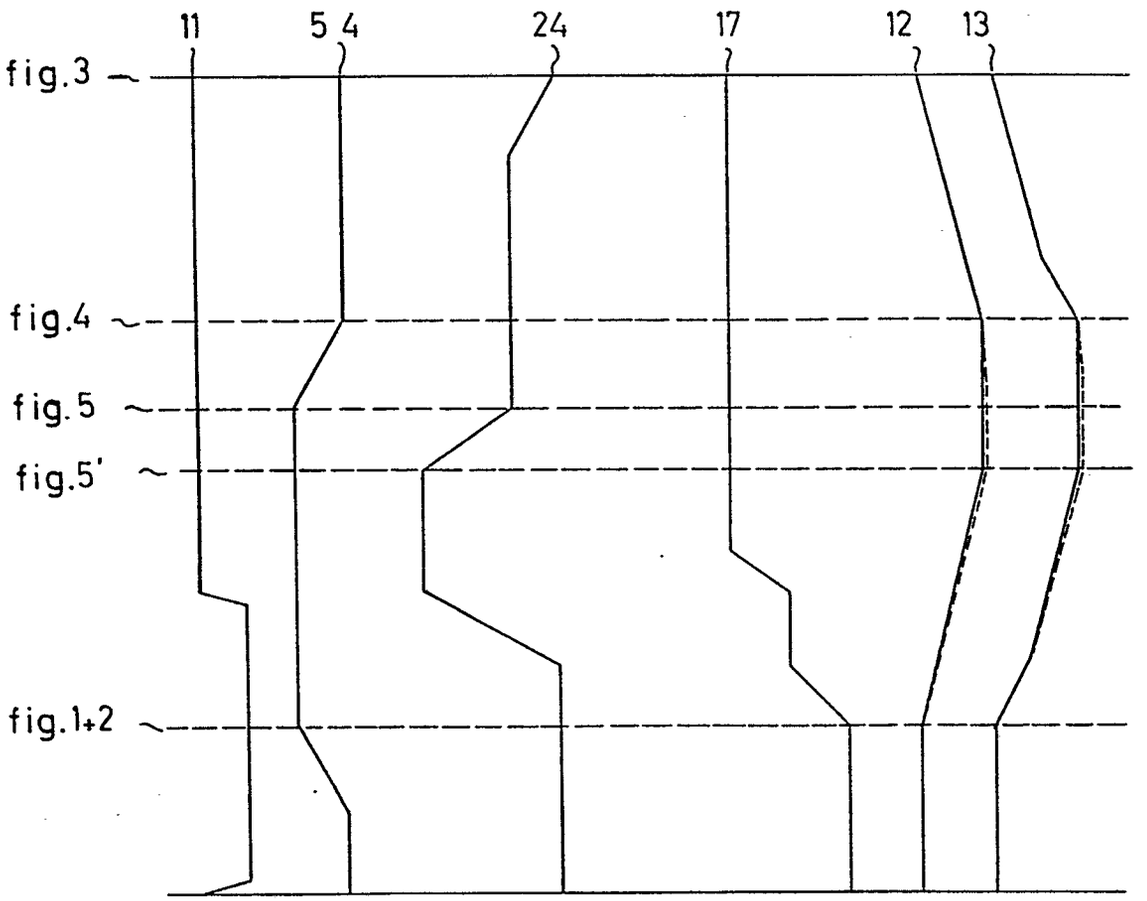


FIG.7

FIG.8



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EUROPEAN SEARCH REPORT

Application number

EP 82 20 0581

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
A,D	GB-A-1 516 498 (THURNE) *Page 2, line 12 - line 96; figures 1-4* & NL - A - 75 08309	1	B 65 B 25/06
A	GB-A-1 581 040 (W.GRACE) *Page 3, lines 11-65; figures*	1	

TECHNICAL FIELDS SEARCHED (Int. Cl. ³)

B 65 B
A 22 C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	04-08-1982	JAGUSIAK A.H.G.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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