Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2138373 C 2006/01/31

(11)(21) 2 138 373

(12) BREVET CANADIEN
CANADIAN PATENT

(13) C

(86) Date de dépôt PCT/PCT Filing Date: 1993/07/20
(87) Date publication PCT/PCT Publication Date: 1994/02/03
(45) Date de délivrance/Issue Date: 2006/01/31
(85) Entrée phase nationale/National Entry: 1994/12/16
(86) N° demande PCT/PCT Application No.: AU 1993/000365
(87) N° publication PCT/PCT Publication No.: 1994/002358
(30) Priorité/Priority: 1992/07/21 (PL 3714) AU

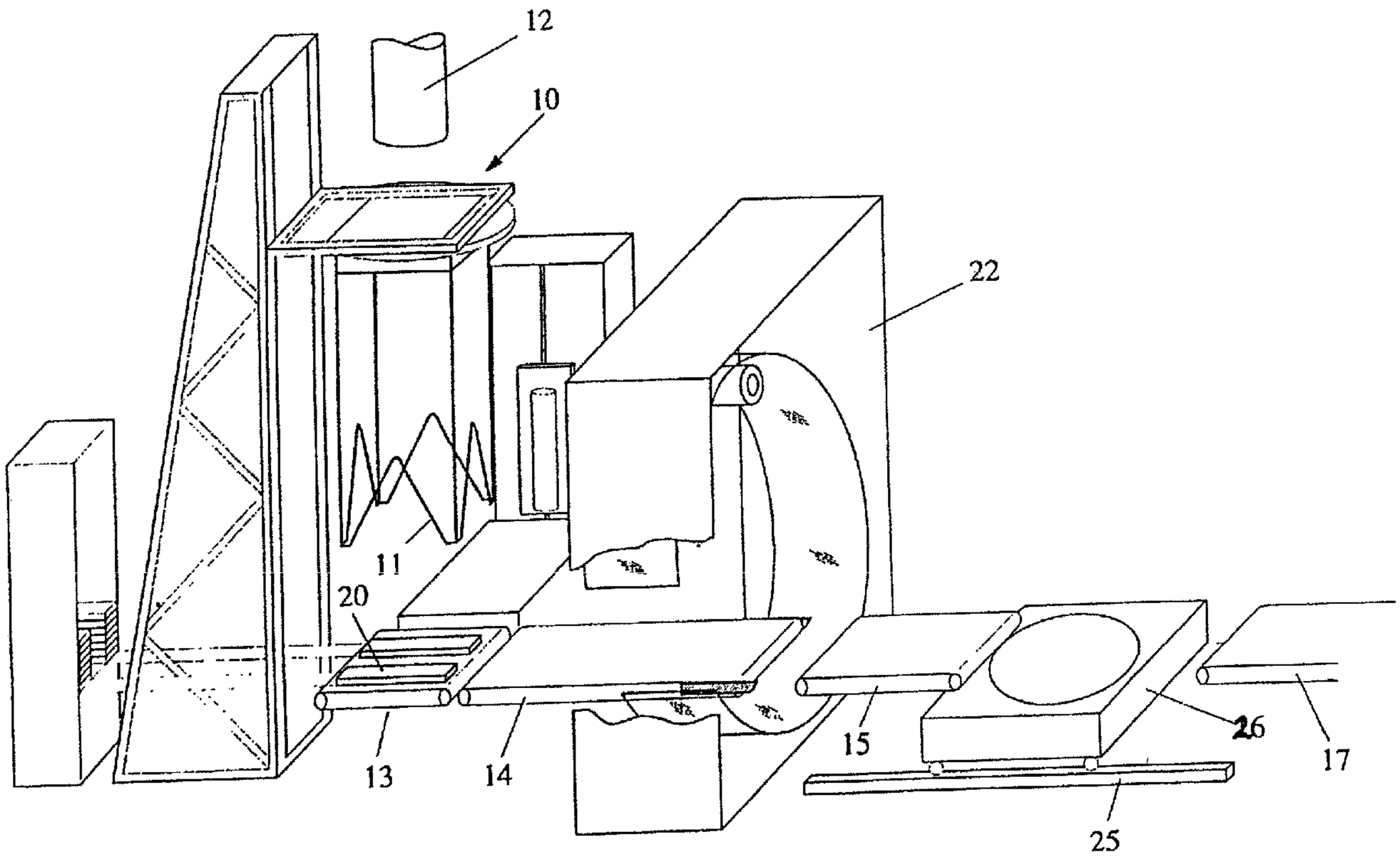
(51) Cl.Int.^{7}/Int.Cl.^{7} B65B 1/02, B65B 43/34

(72) Inventeur/Inventor:
JOHNSTONE, PETER, AU

(73) Propriétaire/Owner:
FIRST GREEN PARK PTY. LTD., AU

(74) Agent: DENNISON ASSOCIATES

(54) Titre : SYSTEME D'EMBALLAGE EN VRAC
(54) Title: BULK PACKAGING SYSTEM



(57) Abrégé/Abstract:
A system for forming a container (21) suitable for storage of flowable or non-flowable material, comprising the steps of forming an open container of flexible material having walls and a closed bottom with a retractable or removable, framework (11) therein; at least partially filling the container (21) with material; removing or retracting said framework (11) from said container (21); closing the container (21); and subsequently over-wrapping the closed container (21) with stretch plastic film (16) to form reinforcing strips to reinforce the container (21), and to allow engagement with handling apparatus such as the forks of a lift truck.

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 5 :
B65B 1/04, 7/02, 43/54
B65B 51/08

A1

(11) International Publication Number: WO 94/02358

(43) International Publication Date: 3 February 1994 (03.02.94)

(21) International Application Number: PCT/AU93/00365

(22) International Filing Date: 20 July 1993 (20.07.93)

(30) Priority data:
PL 3714 21 July 1992 (21.07.92) AU

(71) Applicant *(for all designated States except US)*: FIRST GREEN PARK PTY. LTD. [AU/AU]; 34-36 Lakeside Avenue, Reservoir, VIC 3073 (AU).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)* : JOHNSTONE, Peter [AU/AU]; Integrated Packaging, 34-36 Lakeside Avenue, Reservoir, NSW 3073 (AU).

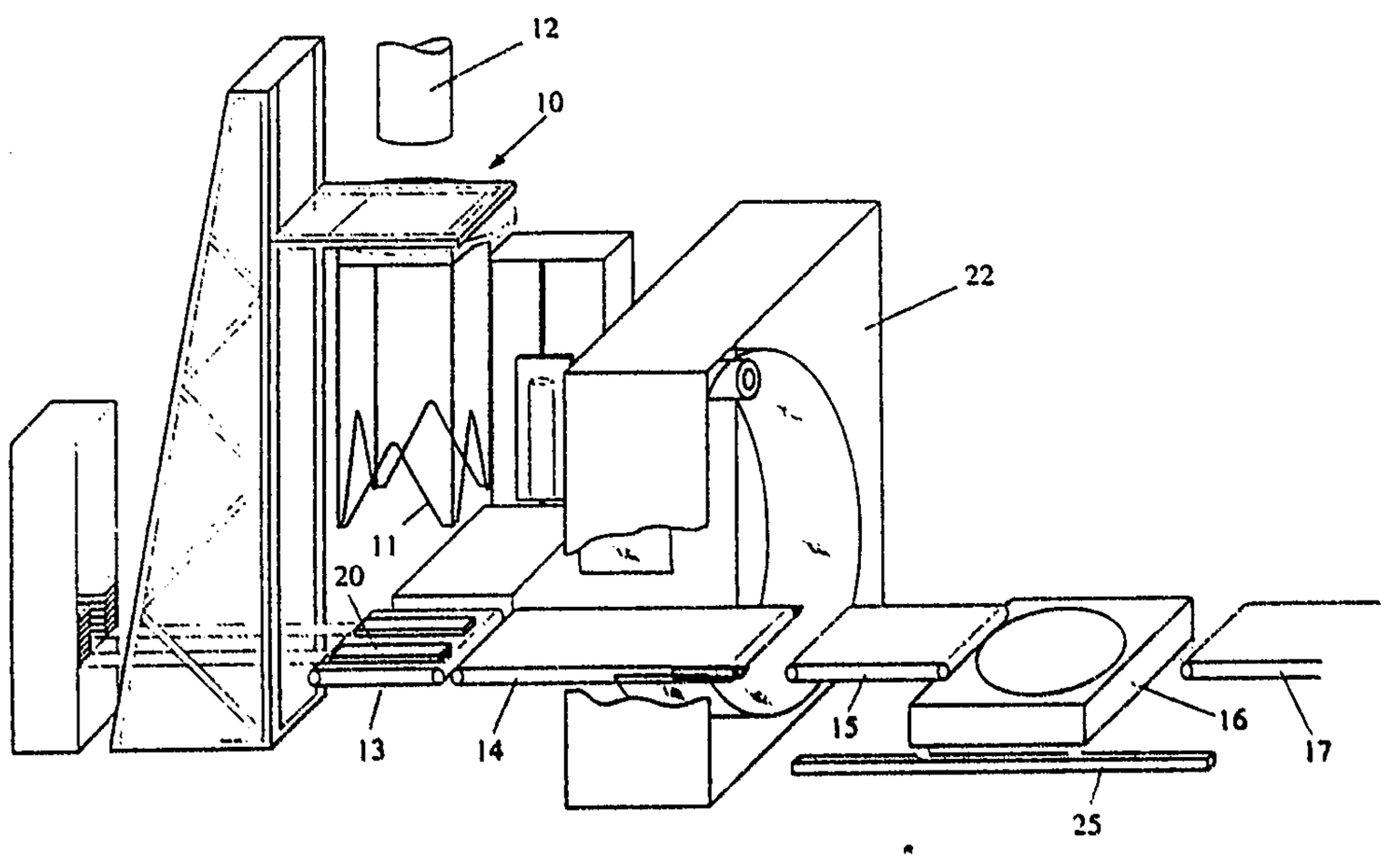
(74) Agent: WATERMARK; 2nd Floor, The Atrium, 290 Burwood Road, Hawthorn, VIC 3122 (AU).

(81) Designated States: AU, CA, JP, NZ, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

2138373

Published
With international search report.

(54) Title: BULK PACKAGING SYSTEM



(57) Abstract

A system for forming a container (21) suitable for storage of flowable or non-flowable material, comprising the steps of forming an open container of flexible material having walls and a closed bottom with a retractable or removable framework (11) therein; at least partially filling the container (21) with material; removing or retracting said framework (11) from said container (21); closing the container (21); and subsequently over-wrapping the closed container (21) with stretch plastic film (16) to form reinforcing strips to reinforce the container (21), and to allow engagement with handling apparatus such as the forks of a lift truck.

BULK PACKAGING SYSTEM

The present invention relates to the packaging of articles of any kind particularly flowable granules, powders or liquids.

The method or methods of the invention may be incorporated into fully automated packaging lines.

The invention is useful in the packaging of flowable granules such as plastic granules, cereals, powders such as fertilisers or liquids as well as for baling of waste materials with only minor modification being required. Materials of all kinds including industrial, commercial and domestic waste materials are currently handled in a variety of ways including use of plastic bags which are difficult to handle if they are to be subject to exposure to liquids and/or compacting of contents and includes intermediate bulk containers which are usually filled with material such as fertilisers, cereal or plastic granules. Furthermore such bags tend to be expensive and do not lend themselves to recycling procedures.

A packaging system of the present type has already been disclosed in our co-pending International Patent Application No. PCT/AU92/00142.

The present invention has as its objective to provide a bulk package and packaging system in which the need for a solid base member or conventional pallet base is dispensed with and the package can be handled by normal handling machinery and methods.

There is provided according to the present invention a method of forming a bulk container comprising the steps of forming an open container of flexible material having walls and a closed bottom with a retractable or removable framework therein, at least partially filling the container with material, removing or retracting said framework from said container, closing the container, and subsequently over wrapping the closed container with stretch plastic film to form reinforcing strips to reinforce the container and allow engagement with handling apparatus such as the fork of a lift truck.

In a further aspect of the present invention there is provided a method of forming a container comprising the steps of forming an open chamber

of flexible material having walls and a closed bottom with a retractable or removable framework therein acting to maintain the container volume open, at least partially filling the container with material, removing or retracting said framework from said container, wrapping said container and a spacer means with flexible material to reinforce said container and secure said spacer means, said spacer means being arranged and adapted to allow engagement with a load handling apparatus.

A reinforcing stretch film is preferably wrapped circumferentially around the container end to end to form a right angular cross pattern. To assist engagement with the fork or forks of a lift truck a rigid spacer member(s) is (are) provided at either end of the container between the end of the container and the reinforcing wrap. Thus with the spacer at the top of the container, the container can be transported by a lift truck suspended from the tine of the lift truck or resting on the tine with the spacers at the bottom of the container.

It has been found that the container formed in accordance with the invention will assume a substantially rectangular cubic configuration which is conveniently stackable in the manner of a conventional rectangular cubic bag container without danger of the contents of the container slipping or moving.

The invention is conveniently used in association with a packaging system disclosed in our above-referred to patent application, however, it can be utilised with conventional pre-formed plastic bag systems and overcomes the problem inherent in such systems in retaining a substantially rectangular cubic configuration. Furthermore in conventional bag systems flowable contents such as liquids or granules do tend to shift and the present invention is adapted to overcome this difficulty.

The invention may be used with or without a support base. A support base is not essential if a rigid spacer is provided at the top or the bottom of the bag to accept the fork of lift truck equipment.

The invention will be described in greater detail with reference to the accompanying drawings in which:

Figures 1 and 1A are perspective views of a container formed according to the invention;

Figure 2 shows schematically a system of formation of a container and conveyance according to the invention;

Figure 2A is a partial perspective view of the reinforcing wrapping step according to the present invention.

With reference to Figures 2 and 2A the container is formed at the station 10 and filled with material and the frame removed in accordance with procedures as disclosed in our earlier patent application No. PCT/AU92/00142 referred to above wherein stretch plastic film is wrapped around a removable or retractable frame 11 to form a walled container. The container is preferably solely constructed of the plastic film with the retractable/removable frame 11 and conveyor 13 being its sole means of support during a filling operation.

The container is formed by wrapping the frame with several layers of stretch plastic film including over wrapping at the base of the frame 11. The film is applied at up to 300% elongation of the film so that the film contracts inwardly to form a base that can be easily closed as by tying or welding. In one embodiment of the invention the frame with its wrapping is then rested on a conveyor 13 upon which is placed a pair of spacer members 20. At this time the formed container may be filled with any suitable material but including any flowable material such as granules, powder or liquid. The size of the container is preferably of a standard size of approximately 1000 kilograms. This weight may be varied according to individual requirements.

After filling the container from filler nozzle 12 the container is self supporting and the frame is adapted to be removed/retracted from the top of the container and the container closed off at the top. The weight of the container and contents is sufficient to remain in its rest position on the conveyor 13 whilst the frame 11 is removed or retracted from the container.

The container may be constituted by a strong plastic bag rather than formed by stretch plastic film and the bag is supported or held open in its empty condition by a removable frame structure which may be in the same form as is used in the container formed by wrapped film material.

After closing the top of the container 21 the container mounted on spacer elements 20 is moved on to a conveyor 14 operating in conjunction with a

tubular film wrapping station 22 which may be of the same general type as disclosed in US Patent No. 4079565 in which plastic stretch film is dispensed from an orbiting stretch film dispenser apparatus.

The stretch film is wrapped first around the container to form a single band 16 extending end to end around the container over the spacer members 20. The container is then moved on to a turntable 26 and turn through 90° and returned to the wrapping station 22 wherein the second band 17 is applied to the container to form the cross-wrapping as best shown in Figure 1 with the spacer members 20 securely fixed to the bottom of the container.

With specific reference to Figure 2A the conveyor 14 is provided with fixed slide members 24 at each side, preferably coated with anti-friction material such as a non-stick coating or suitable lubricant to facilitate sliding of the reinforcing plastic layer 23 therefrom after a wrapping step forming a reinforcing layers 16 and 17 on the container. The space between the conveyors 14,15 is set at approximately one half of the width of the plastic film 23 so that approximately one half of the film width is actually contacting the slide members 24 and the other half is directly contacting the container wall. After tightly wrapping the film 23 to the filled container 21 the process is repeated after rotation of the container 21 through 90°.

The film slides off into the gap between the conveyors 14 and 15 due to its inherent tightness under tension to closely envelop the container as shown in Figures 1 and 1A. A container can then be moved to the conveyor 17 for handling by conventional handling equipment such as a fork lift truck either by lifting by insertion of the fork lift tines into the spacer member 20 shown at Figure 1 or the insertion of the tine into the spacer member 20a as shown in Figure 1A.

To achieve movement of the container from the turntable the turntable is mounted on a hoist (not shown) and is movable on a track 25 relative to conveyors 15 and 17 to enable transfer of the loaded container from and to the conveyors 15 and 17 and the turntable.

With specific reference to Figure 1A a rigid spacer member 20a is positioned on top of the filled container and is secured in position shown by

over wrapping of the container by the reinforcing strips 16,17 in similar fashion to that described previously.

It has been surprisingly found that the wrapping of the container as shown ensures that the overall configuration of the container substantially conforms to that of a rectangular cubic construction as shown in Figures 1 and 1A and can be easily stacked in container transport or for any long distance transport.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A method of forming a bulk container comprising the steps of forming an open container of flexible material having walls and a closed bottom with a retractable or removable framework therein, at least partially filling the container with material, removing or retracting said framework from said container, closing the container to fully enclose said material, and subsequently over wrapping the closed container with stretch plastic film to form at least one reinforcing strip to reinforce the container and allow engagement with handling apparatus such as a fork of lift truck.

2. A method as claimed in claim 1 wherein the stretch plastic film forming the or each said reinforcing strip is wrapped circumferentially around the container end to end to form a right angular cross pattern.

3. A method as claimed in claim 1 or claim 2 wherein at least one spacer member adapted to cooperate with said handling apparatus is located between said at least one reinforcing strip and a surface of said container.

4. A method of forming a container comprising the steps of forming an open chamber of flexible material having circumferentially continuous side walls and a closed bottom with a retractable or removable framework therein to maintain the container volume open, at least partially filling the container with material, removing or retracting said framework from said container, wrapping said container and a spacer means with flexible material to reinforce said container and secure said spacer means, said spacer means being arranged and adapted to allow engagement with a load handling apparatus.

5. A method as claimed in claim 4 wherein the flexible material to reinforce said container and secure said spacer means is wrapped circumferentially around the container to form a right angled cross pattern on two opposed faces of said container.

6. A method as claimed in claim 5 wherein the spacer means is provided by a first member diagonally disposed relative to one said right angled cross pattern between said flexible material and a surface of said container.

7. A method as claimed in claim 5 wherein the spacer means is provided by a first and a second member disposed parallel to one another on one face of said container with at least one band of said flexible material overlying said first and second members.

8. A container made by the method as claimed in claim 4, 5, 6 or 7.

9. A container formed from flexible material having circumferentially continuous side walls and a closed bottom with an open top for introducing filling material into said container, the open top being closed after the container has been at least partially filled with said filling material, and at lest one reinforcing strip being formed by over wrapping the container with flexible material, said at least one reinforcing strip being configured for operational engagement with container handling apparatus.

10. A container as claimed in claim 9 wherein the flexible material to reinforce said container and allow engagement with handling apparatus is wrapped circumferentially around the container to form a right angled cross pattern on two opposed faces of the container.

11. A container as claimed in claim 10 wherein a spacer member is disposed diagonally relative to one of said right angled cross pattern between said flexible material and a surface of said container.

12. A container as claimed in claim 10 wherein first and second spacer members are provided disposed parallel to one another on one face of said container with at least one band of said flexible material overlying said first and second spacer members.

Fig 1 .

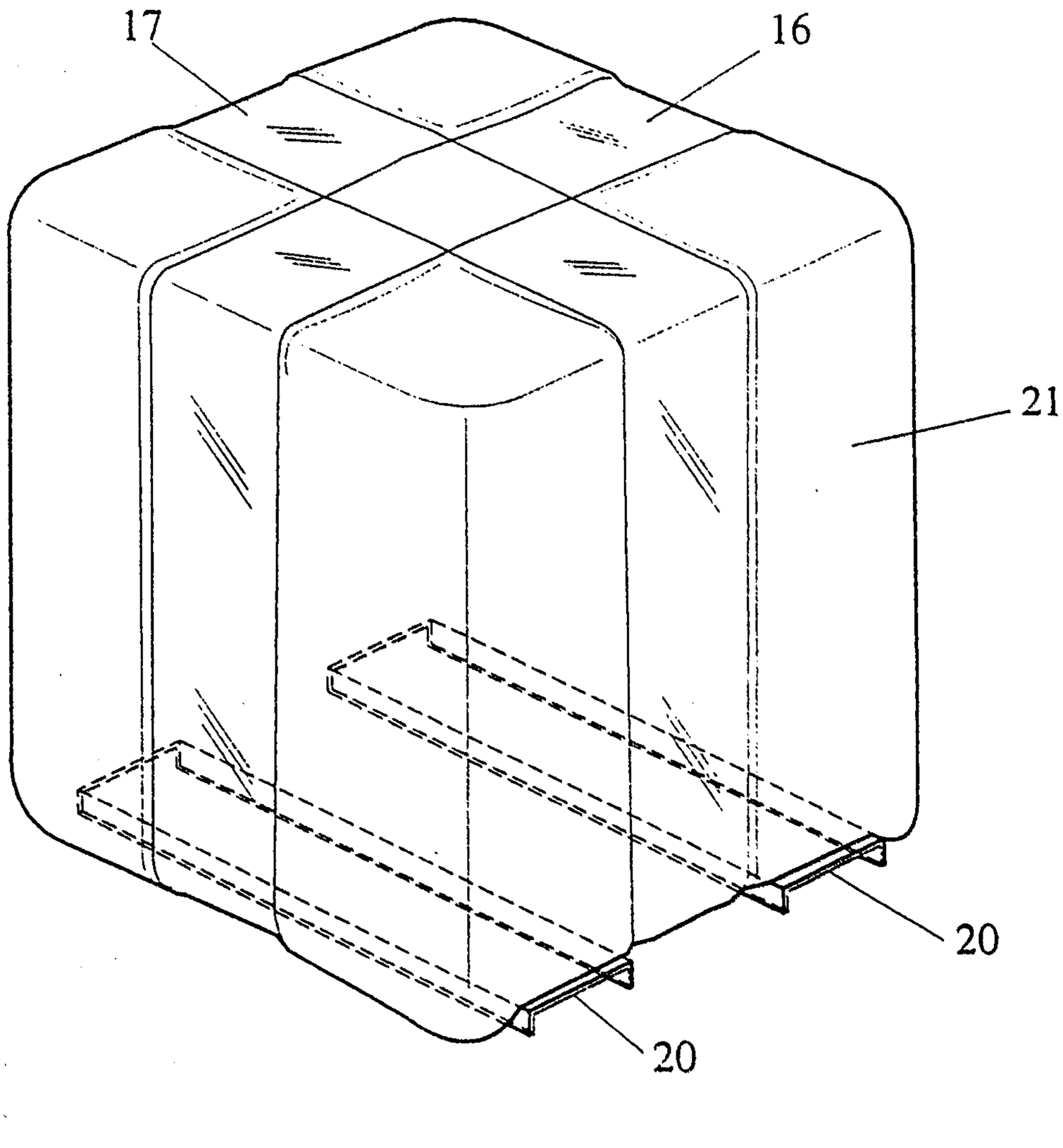
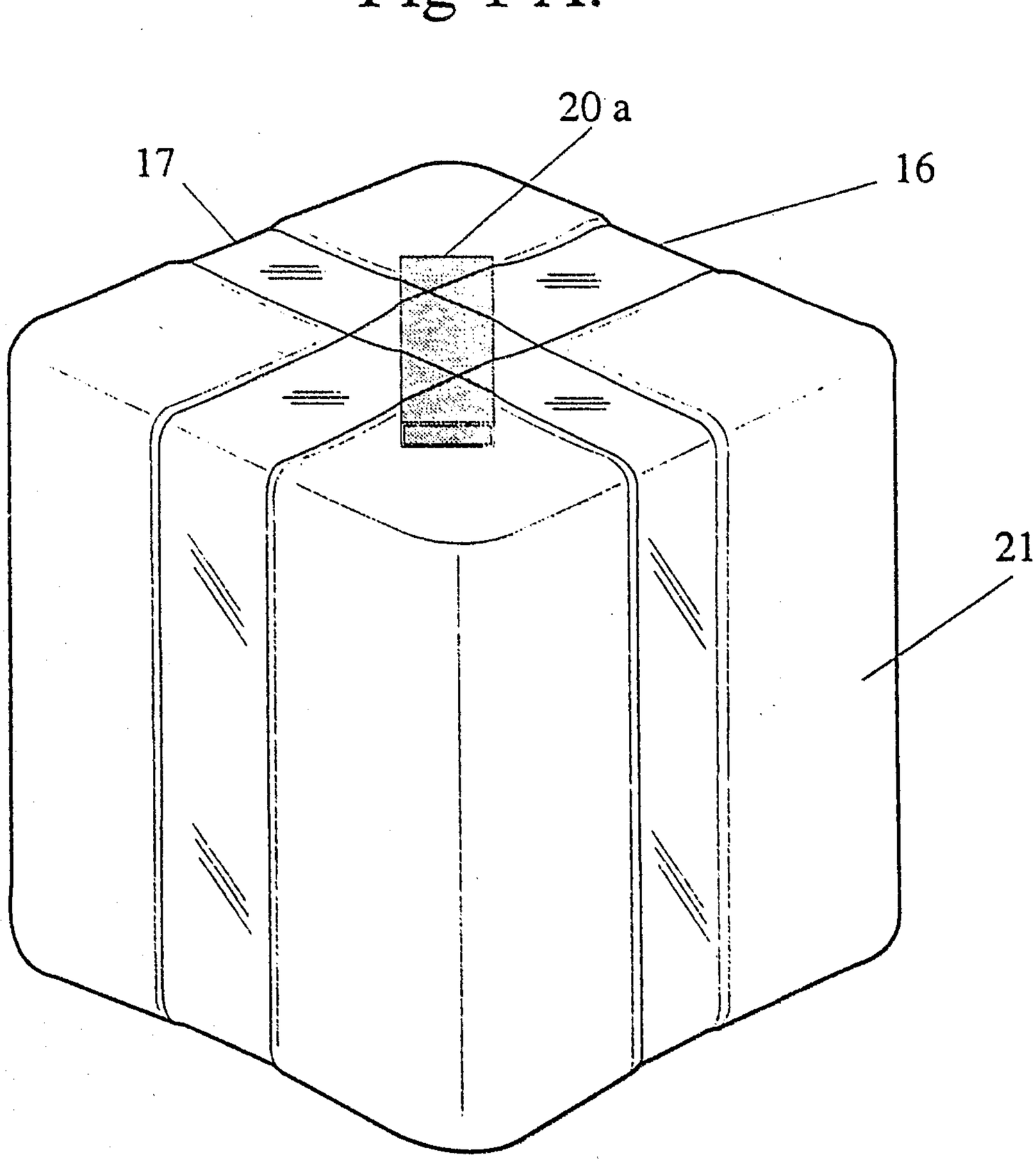


Fig 1 A.



WO 94/02358

2138373

PCT/AU93/00365

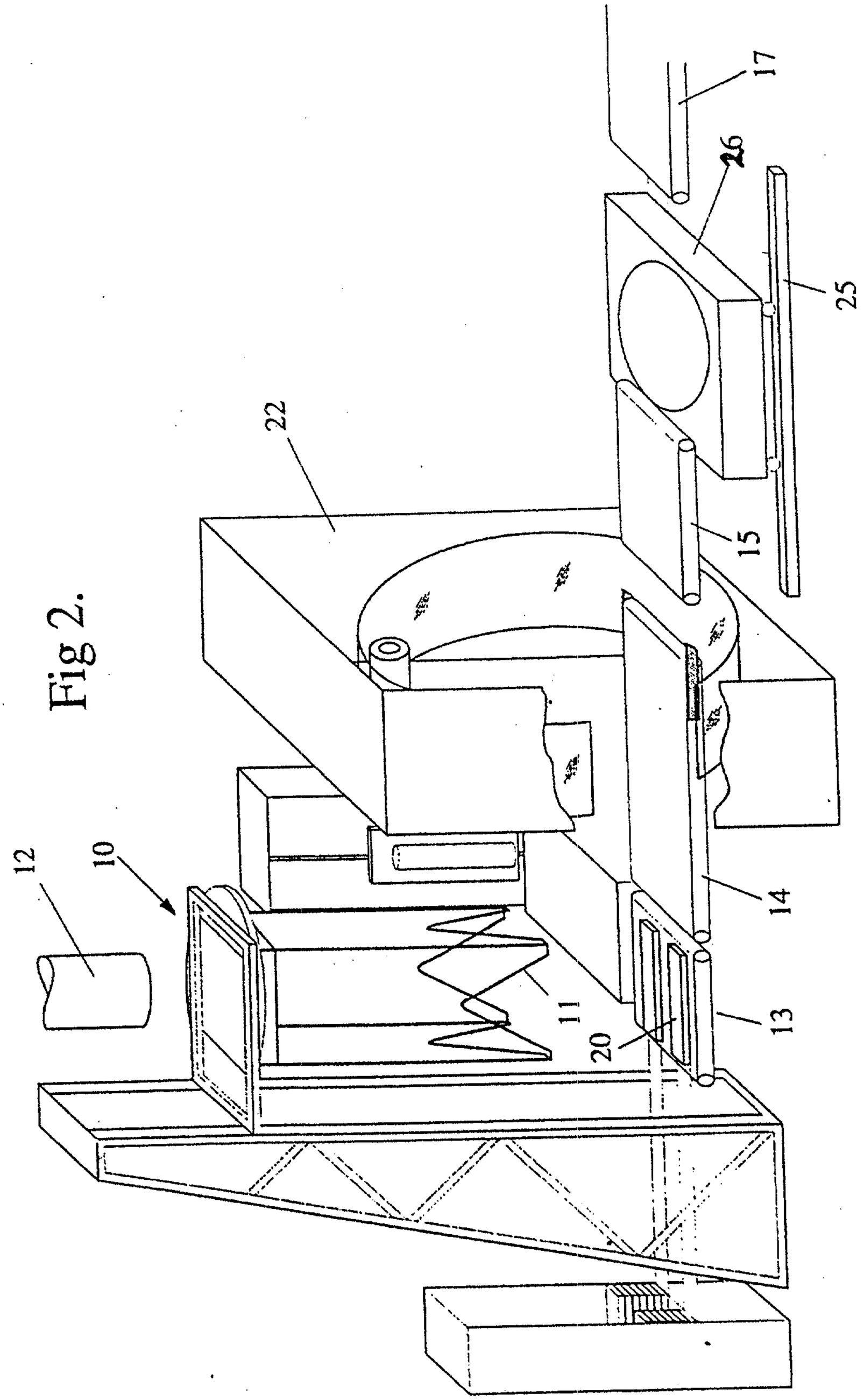


Fig 2.

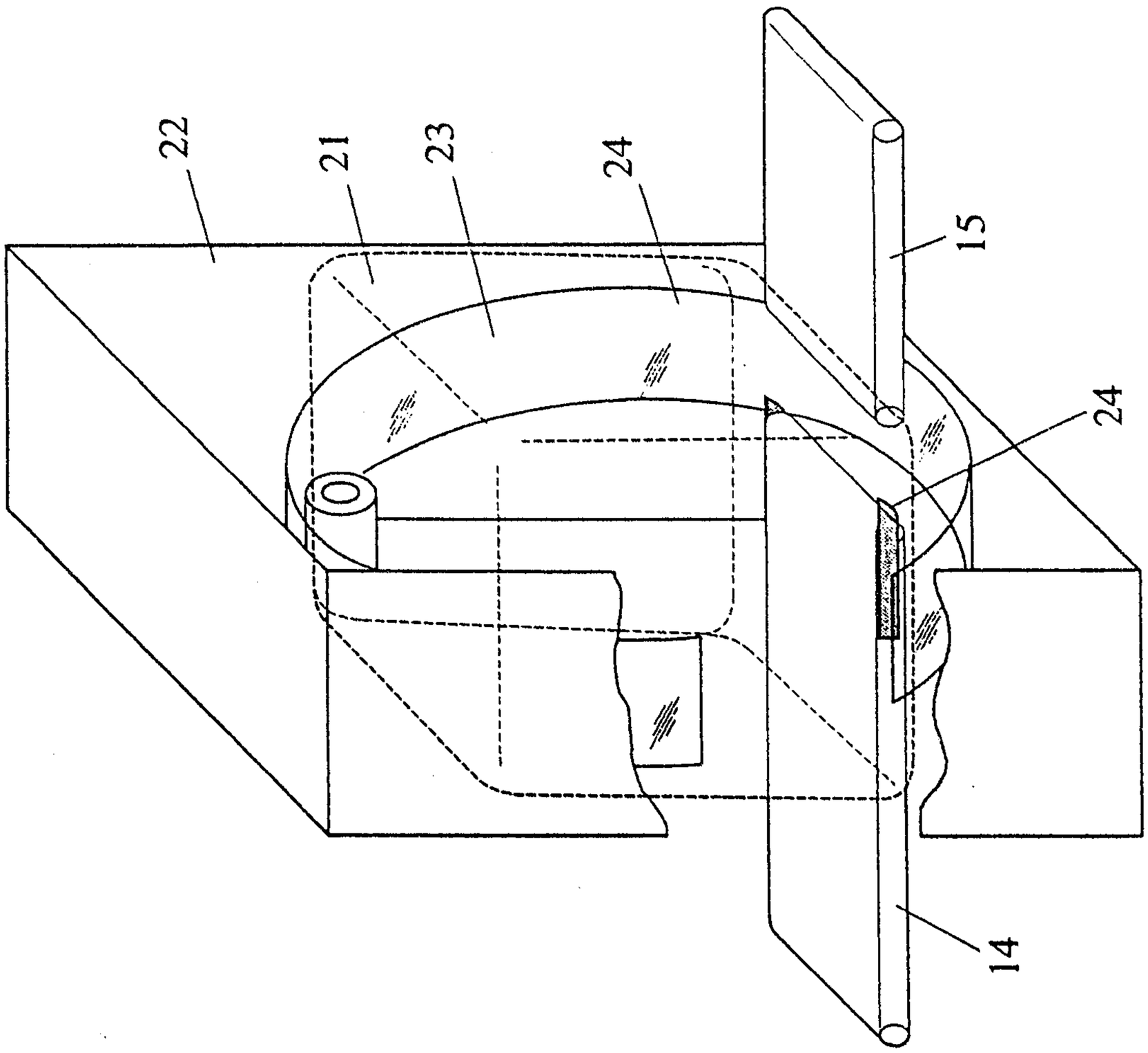
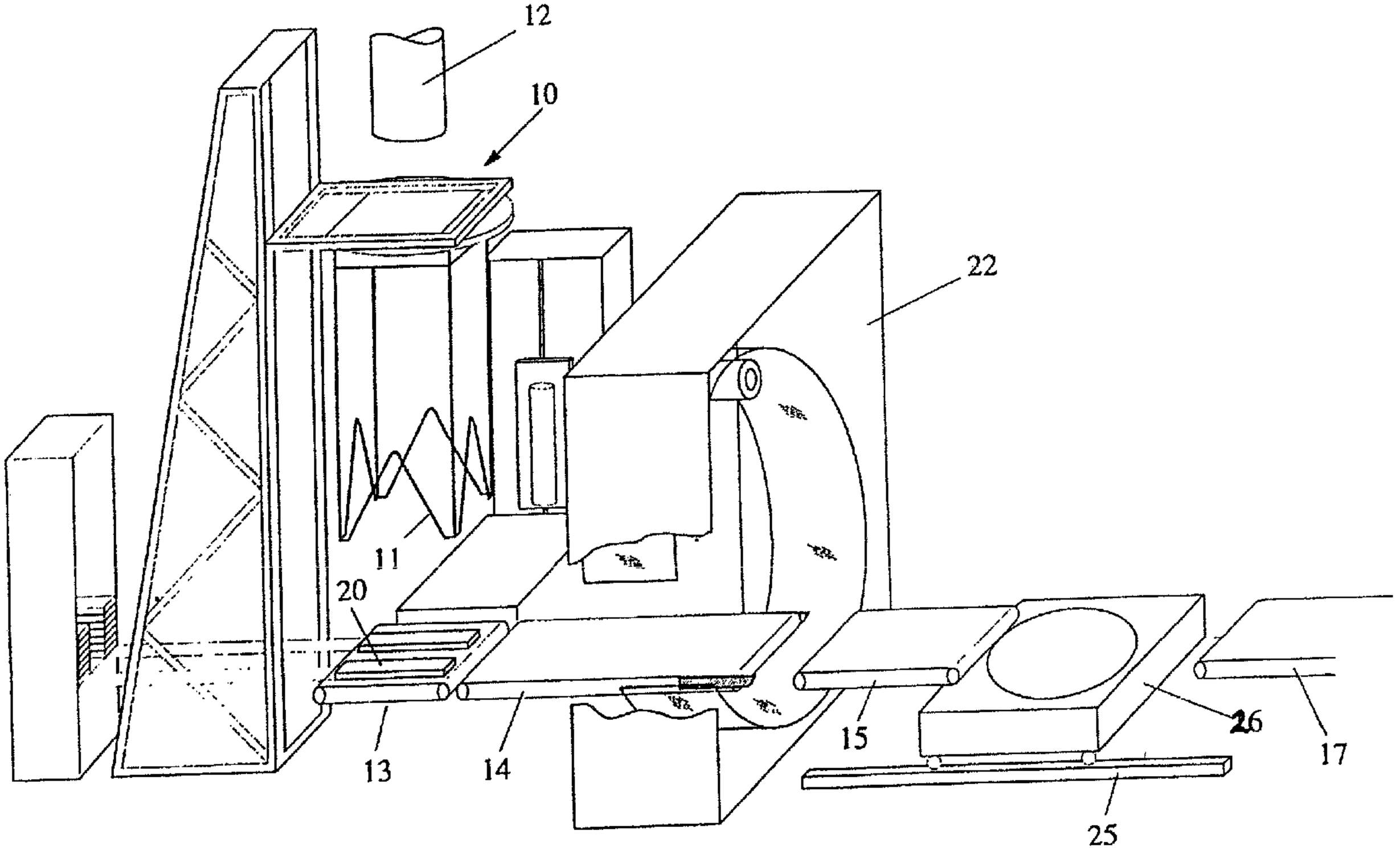


Fig 2 A.


12
10
22
11
20
13
14
15
26
17
25