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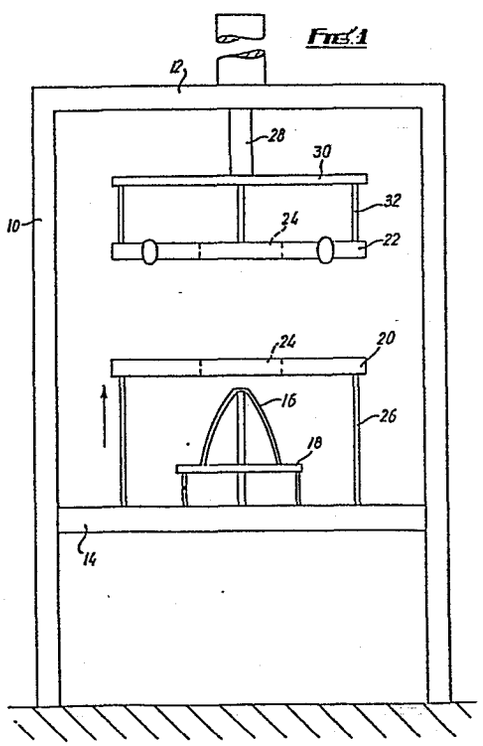
(54) An improved lampshade covering apparatus.

(57) A lampshade covering arrangement includes a frame support (16) for carrying a frame to be covered and a holder for covering material, said holder including two plates (20, 22) each having a central through passage (24) and being biassed together to sandwich the covering material therebetween and hold it under tension as the support penetrates the passage so that the frame it is carrying is covered by the covering material.

FIG.1



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An Improved Lampshade Covering Apparatus

The present invention concerns an improved apparatus for applying a covering to an item, especially but not exclusively a dome-shaped or frusto-conical item, for example a lampshade.

Traditionally lampshades comprise a wire frame over which is fitted a covering of, for example, a textile material, and in certain instances, edge decoration.

Lampshades have mainly been of a substantially dome-shaped or substantially frusto-conical configuration and the covering has been tailored such that it snugly fits over the frame. Originally and with certain more expensive present day frames, this has involved cutting a plurality of panels conforming to the panels defined by the ribs of the lamp frame, carefully sewing these panels together and then fixing the made up covering to the frame.

More recently, for reasons of cost, shades of this nature have not been popular and a covering in the form of a tube conforming approximately to the shape of the frame and having at its top and bottom elasticated edges has been provided. With certain shades the tube can be made from one piece of material with only one seam. Fitment of coverings of this nature to the frame invariably causes a gathering of material at least at the

regions of the frame of least diameter and this pleating of the material can be undesirable in certain circumstances.

It is an object of the present invention to obviate or mitigate the disadvantages inherent in prior lampshade coverings, methods of and arrangements for applying coverings.

According to the present invention there is provided an arrangement for covering a lampshade comprising a support for a lampshade frame, a covering material holder for holding a sheet of covering material in such a way that controlled movement of the material relative to the holder is permitted, passage means through said holder and means for causing relative movement between the holder and support such that when the support penetrates said holder a frame thereon is covered by tensioned covering material.

Preferably means are provided for fixing the material to at least certain portions of the frame while said support is penetrating said passage in the material holder. Said fixing means may be an adhesive applicator capable of applying an adhesive to selected areas of the frame or of applying an adhesive through the material. The fixing means may alternatively be heating means where thermoplastics materials are involved in the frame and covering or where the frame and/or covering has been pre-coated with a heat sensitive adhesive. Any suitable fixing means may be employed.

Cutting means may be provided for trimming excess material from the frame while the frame support still penetrates the material holder.

Preferably the material holder comprises a first plate having a passage therethrough and a second plate having a corresponding passage therethrough arranged on the first plate, means being provided to bias the plates together to clamp a sheet of covering material positioned therebetween the extending over said passage.

Preferably guide means is provided for said plates, Means may be provided for separating one plate from the other to facilitate the positioning of the sheet of covering material therebetween.

In one application of the invention the frame support is mounted on a framework and the material holder is mounted for movement towards and away from said support. The frame support may move relative to the framework. The means for moving the material holder towards and away from the support may comprise a pneumatic piston and cylinder device. The piston and cylinder device may act on the second of the plates of the holder, the first plate being resiliently mounted.

Further according to the present invention there is provided a method of applying a covering to the frame of the lampshade, comprising supporting said frame and holding a sheet of covering material in a material holder

which allows a controlled movement of the material relative thereto and causing said frame to penetrate through a passage in said material holder across which the covering material extends such that the material is stretched over the frame when it enters said passage.

Still further according to the present invention there is provided a lampshade when manufactured by an apparatus or method according to any one of the preceding seven paragraphs.

An embodiment of the present invention will now be described by way of example only with reference to the accompanying drawings in which Figs. 1 to 4 show diagrammatically, in partial cross-section, a lampshade covering apparatus at four stages during a shade covering cycle.

The lampshade covering apparatus comprises a framework including upright members 10 and top and intermediate cross members 12,14. The intermediate cross member 14 defines a platform for a mounting for a frame support 16 which is so shaped that a frame to be covered can be rigidly mounted thereon with the wire of the frame positively supported. In the drawing a support 16 for a dome-shaped frame is shown.

A pneumatic piston and cylinder device (not shown) is provided beneath the cross member 14 and on actuation raises the frame support 16 from the position shown in Fig. 1 to the position shown in Fig. 2 where it is held

spaced above an adhesive trough 18 which is rigidly fixed to the cross bar 14 and takes the form of an upwardly open annular channel into which the base of a frame supported on the frame support 16 extends when the support 16 is in its lower position as shown in Fig. 1. The adhesive trough 18 is intended to contain a cyno-acrylate adhesive. The frame support 16 is maintained in the raised position during the following steps (to be described below) to allow adhesive to drain off the frame.

The framework supports also a covering material holder comprising first and second plates 20, 22 each having a central circular passage 24 extending therethrough. The first plate 20 is connected by way of guide rods 26 to a pneumatic piston and cylinder arrangement (not shown) supported below the cross member 14, the interconnection between its piston and the rods 26 being resilient for a reason to be described later. The second plate 22 is also connected to a pneumatic piston and cylinder device 28 by means of an upper plate 30 and guide rods 32.

In operation, with the apparatus in the position shown in Fig. 1, a frame to be covered is placed on the frame support member 16 with its lower edge dipping into the adhesive contained in the adhesive trough 18. If desired, adhesive may be applied to the upper regions of the frame prior to placing it on the frame support and an

adhesive accelerator may be applied to the lower regions to be dipped into the trough. A sheet 34 of covering material which has been pre-cut to the appropriate size and shape and which may be protected by a polythene film lying on its upper surface is placed on the first plate 20 over the passage 24 and the piston and cylinder device 28 is actuated to bring the second plate 22 into contact with the first plate thereby sandwiching the covering material sheet 44 between the plates. The frame support 16 is moved upwardly by its piston and cylinder device so that the lower edge of the frame is raised out of the adhesive trough. The apparatus is now in the position shown in Fig. 2. As described above, the second plate 20 is resiliently connected to its actuating piston and cylinder arrangement and this connection controls the reactive force between the plates and thus the frictional forces exerted on the covering sheet 34.

As can be seen from Fig. 3, continued downward movement of the piston and cylinder device 28 coupled with retraction of the piston and cylinder device operating the first plate 20 causes the covering sheet 34 to be pulled down over the frame on the frame support 16, the covered frame being held above the plate 22 so that, if desired, clamping arrangements acting in a radial direction and fixed to the upper surface of the plate 22 can move inwardly to clamp the covering on the

frame as the adhesive sets. After a predetermined interval of time which is sufficient to allow the adhesive to set the clamps are retracted and the piston and cylinder device 28 actuated to raise the plate 22 and the associated clamping device away from the covered frame. This brings the apparatus to the position shown in Fig. 4 where the covered frame can be removed from the frame holder 16, the piston and cylinder devices attached to the cross member 14 then actuating to move the plate 20 upwardly and the frame support 16 downwardly both to the positions shown in Fig. 1. At this stage a repeat cycle can commence.

Conveniently, the movements of the various piston and cylinder arrangements are automatically controlled by a pneumatic logic system and the covering operation takes place in an enclosed space so that any fumes from the adhesive can be extracted by, for example, extractor fans.

Various modifications can be made without departing from the scope of the invention. For example, the first plate 20 may be resiliently mounted with no connection to a piston and cylinder device such that after a covering operation, as the upper plate 22 moves upwardly, the lower plate 20 moves with it due to the spring biassing until it meets the position shown in Fig. 1 where further upward movement is arrested by stop means on the guide rods 26. Other means may be applied for fixing the cover to the frame, for example if the cover and/or frame have a thermo-

plastic constituent heating means may be provided for attaching one to the other. Alternatively a thermo-setting adhesive may be utilised in which case heating elements may be incorporated in the frame support. It will be realised that the top and bottom of the covering sheet will require to be trimmed from the frame and automatic trimming means may be incorporated in the apparatus. It is desirable that the spring biassing means for the second plate 20 are adjustable so that fabrics having different coefficients of friction can be utilised on the apparatus.

Various other modifications can be made, for example the arrangement of the components of the apparatus can be varied in many different ways provided that the material holder is movable relative to the frame holder and while it is moving the movement of the material it supports is controlled; as a result the arrangement may operate horizontally rather than vertically or, in certain circumstances, the material holder can pivot relative to the frame holder. Numerous modified means could be employed for resiliently urging the two plates of the material holder together, for example hydraulic means could be employed and sensors could be incorporated in these means to ensure that the biassing force applied at any particular area has a pre-determined value. This may be important if non-uniform frames are being covered. If,

for example, it is desired that one area of material should be less tensioned than another then the spring force in the appropriate guide rod 26 may be reduced.

When the material employed to cover the frame does not have good stretch properties then it may be necessary to apply heat during the covering operation. This may be provided by the application of a steam blast or by any other heating means, for example hot air or infra-red radiation.

It will be realised that the apparatus described above is intended primarily to apply coverings to lamp-shades. It is suitable also for applying coverings to other items and is not limited in its size, for example it may be employed in certain areas of packaging or in applying skins to boat hull frames or in the manufacture of footwear.

CLAIMS:

1. An arrangement for covering a lampshade characterised in that it comprises a support (16) for a lampshade frame, a covering material holder (20,22) for holding a sheet (34) of covering material in such a way that controlled movement of the material relative to the holder is permitted, passage means (24) through said holder and means (26,28) for causing relative movement between the holder and support such that when the support penetrates said holder a frame thereon is covered by tensioned covering material.

2. An arrangement as claimed in claim 1, characterised in that it includes an adhesive applicator (18) capable of applying an adhesive to selected areas of the frame.

3. An arrangement as claimed in claim 1 or claim 2, characterised in that cutting means is provided for trimming excess material from the frame while the frame support still penetrates the material holder.

4. An arrangement as claimed in any one of the preceding claims, characterised in that the material holder comprises a first plate (20) having a passage (24) therethrough and a second plate (22) having a corresponding passage (24) therethrough arranged on the first plate, means being provided to bias the plates (22,24) together to clamp a

sheet (34) of covering material positioned therebetween and extending over said passage (24).

5. An arrangement as claimed in claim 4, characterised in that means is provided (28) for separating one plate (22) from the other (20) to facilitate the positioning of the sheet (34) of covering material therebetween.

6. An arrangement as claimed in any one of the preceding claims, characterised in that the frame support (16) is mounted on a framework (10) and the material holder (20,22) is mounted for movement towards and away from said support (16).

7. An arrangement as claimed in any one of the preceding claims, characterised in that the frame support (16) is movable relative to the framework (10).

8. An arrangement as claimed in claim 6 or claim 7, characterised in that the means for moving the material holder (20,22) towards and away from the support (16) comprises an hydraulic piston and cylinder device (28).

9. An arrangement as claimed in claim 8, characterised in that the piston and cylinder device (28) acts on the second (22) of the plates of the holder, the first plate (20) being resiliently mounted.

10. A method of applying a covering to the frame of the lampshade, characterised in that it comprises supporting

said frame and holding a sheet of covering material in a material holder which allows a controlled movement of the material relative thereto and causing said frame to penetrate through a passage in said material holder across which the covering material extends such that the material is stretched over the frame when it enters said passage.

FIG.1

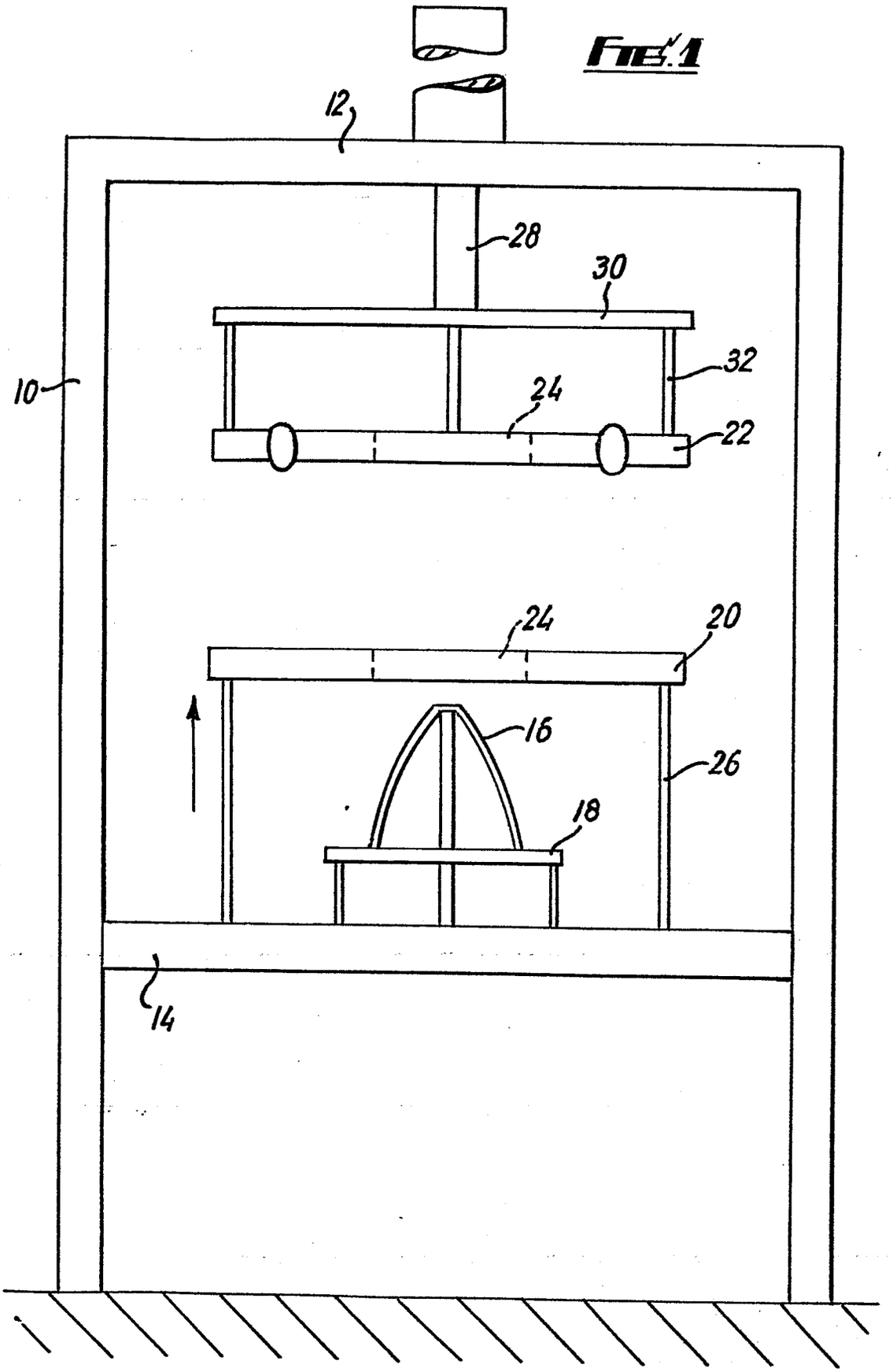


FIG. 2

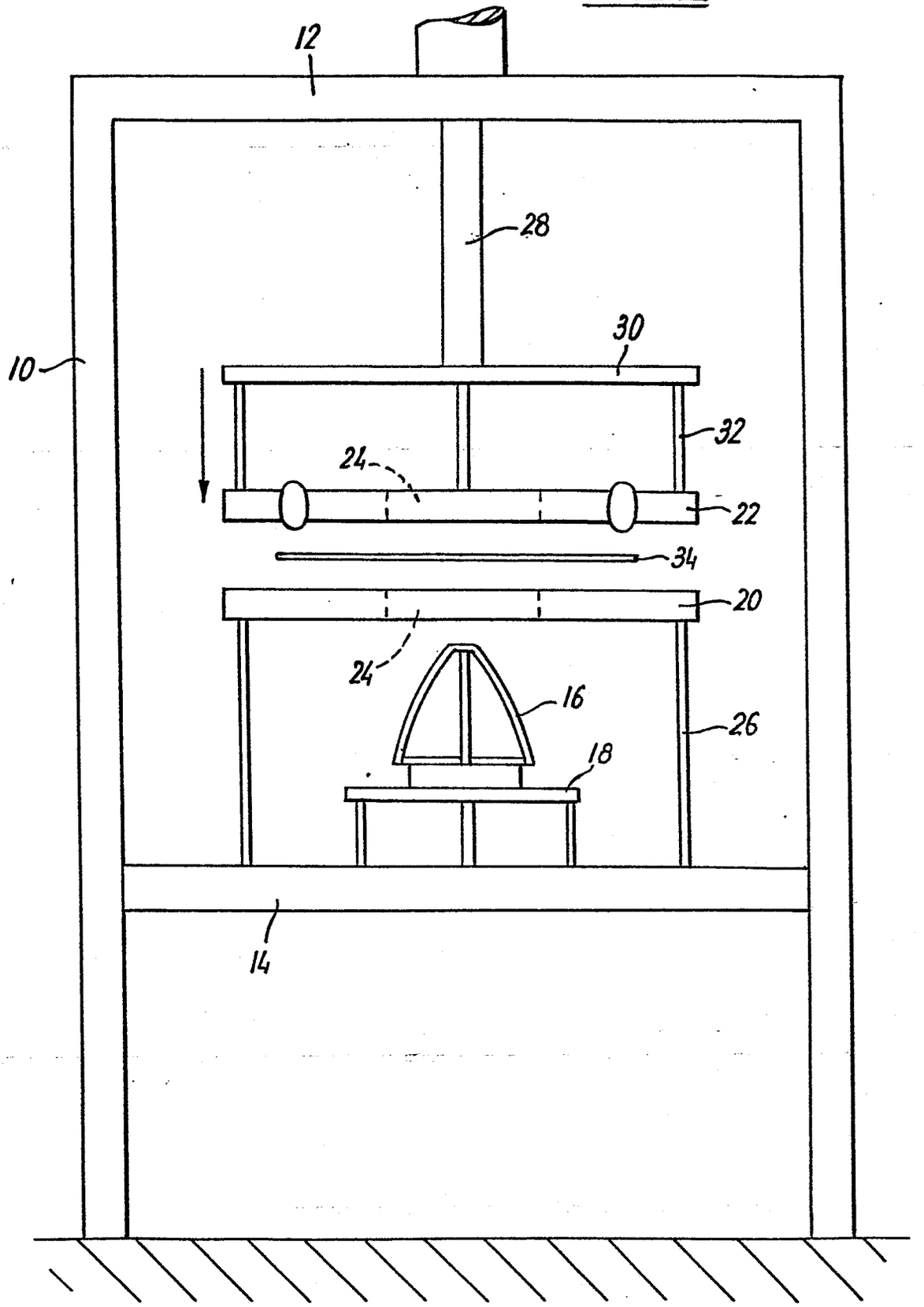


FIG.3

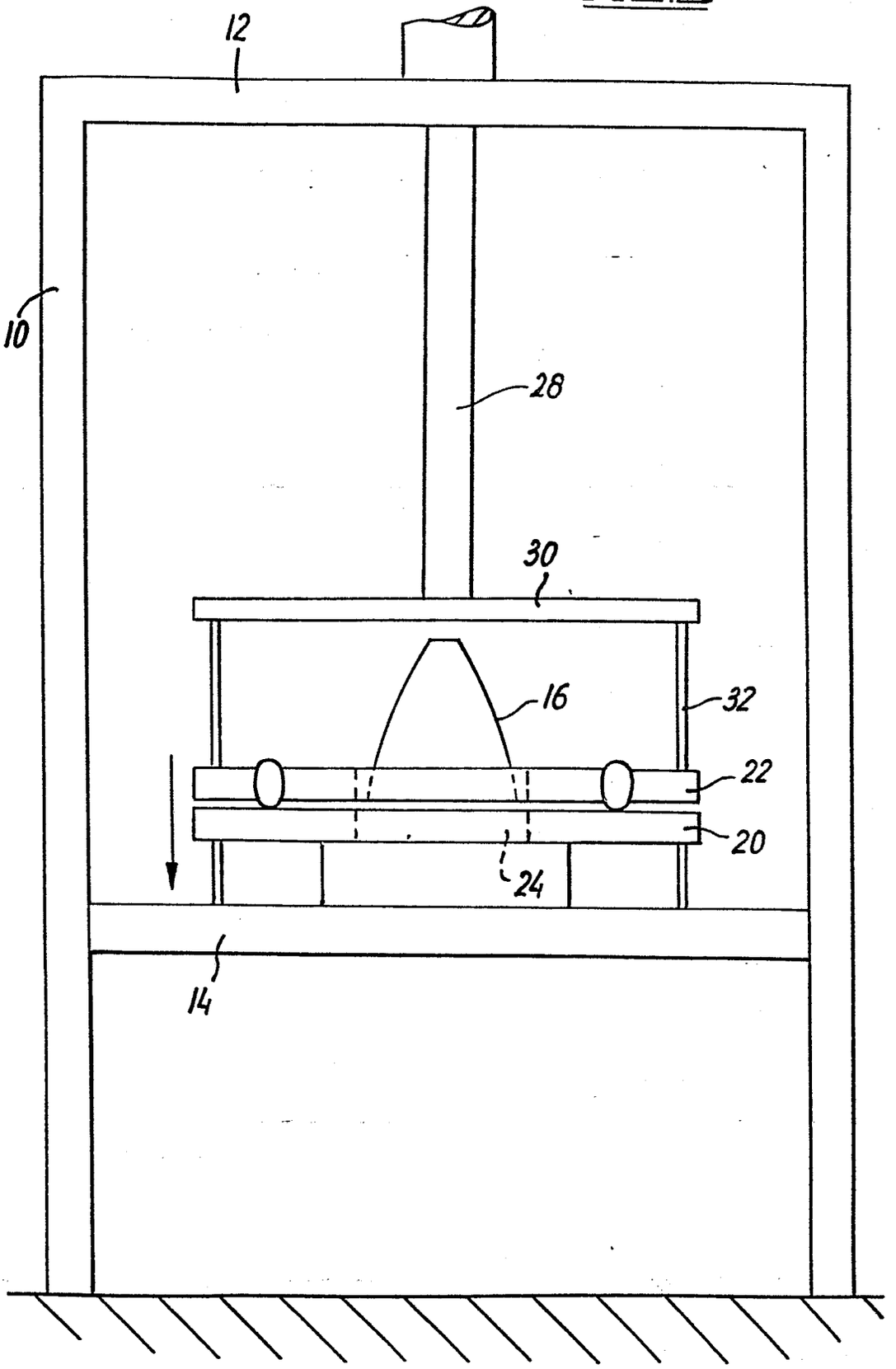
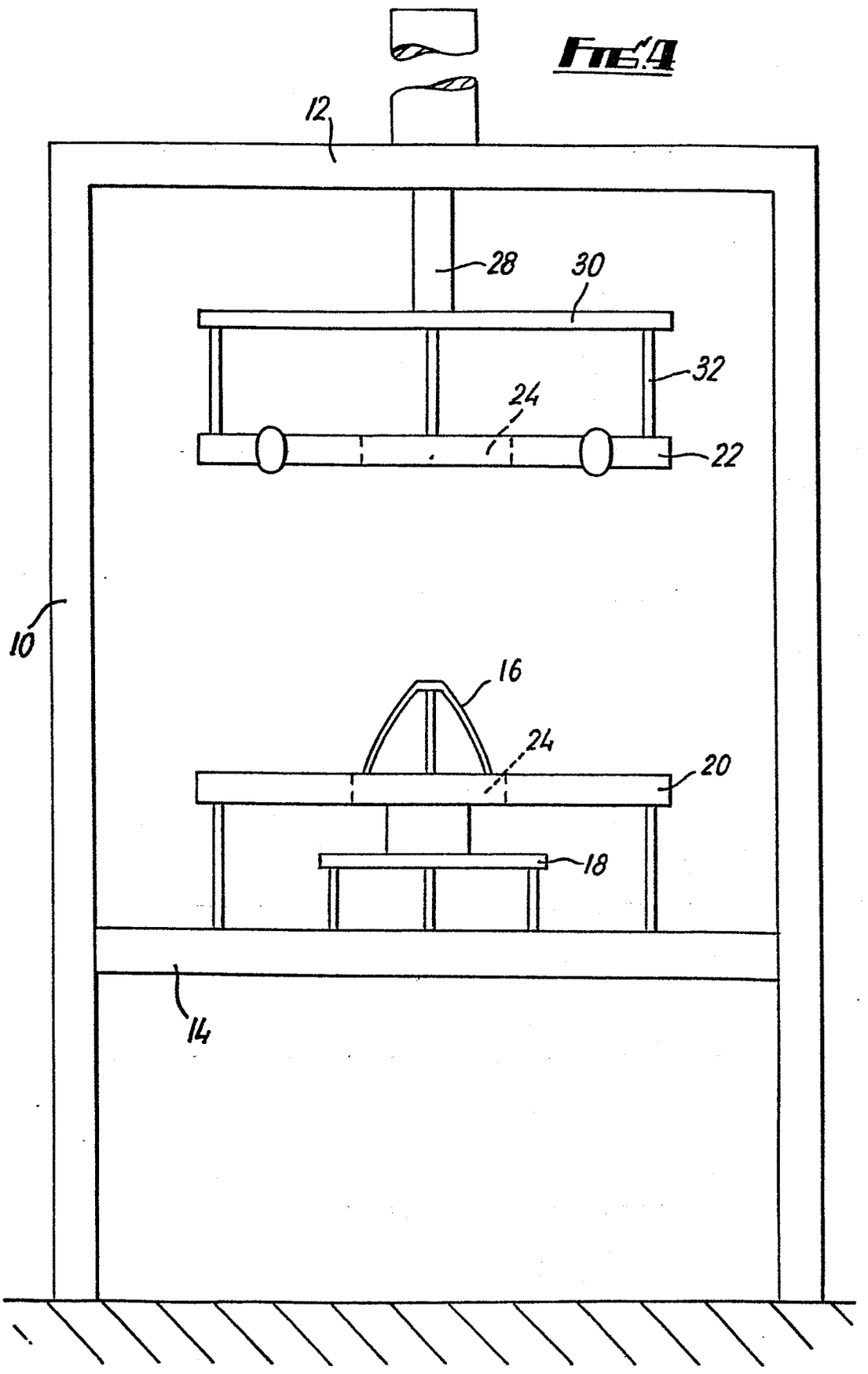


FIG.4



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EUROPEAN SEARCH REPORT

0125886
Application number

EP 84 30 3158

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	GB-A- 932 973 (BARBER) * Page 1, lines 22-38 *	1	F 21 V 1/26
A	DE-B-1 028 934 (KRÖLL) * Figure 1 *	1	
A	US-A-4 205 036 (TRAME) * Column 4, lines 38-58 *	1	
A	FR-A-1 029 355 (BARYLA) * Figures 1,2 *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl. ³)

F 21 V

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	09-08-1984	FOUCRAY R.B.F.

CATEGORY OF CITED DOCUMENTS

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