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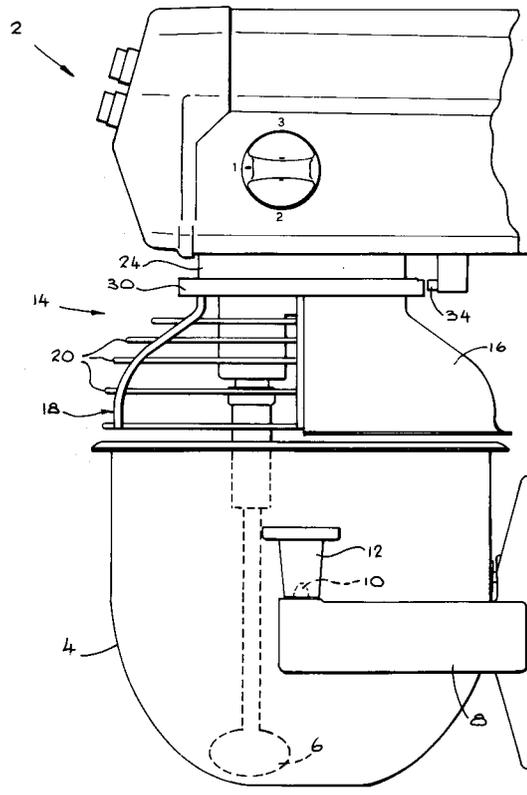
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Improvements in and relating to food mixers.

A food mixer of the type comprising a body, a bowl (4) releasibly mounted on the body, and a motor for moving a food processing implement within the bowl is described. A guard assembly (14) is provided above the bowl to prevent access to the bowl when mixing is taking place. The guard assembly comprises two parts (16, 18) which are complementary in shape. One of the parts (18) is rotatable between at least two positions, a first closed position in which it prevents access to the bowl and a second open position about or within the second part. The second part is mounted in a fixed position relative the body of the mixer.

FIG. 1



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This invention relates to food mixers and more particularly to guards for preventing the operator of such mixers from entering the mixing zone thereof, especially when the mixer is in use.

Food mixers normally comprise a motor to which various mixing implements, for example whisks, beaters, blades and so on, may be attached. The mixing implement extends into a bowl which is attached to and removable from the mixer. Such mixers may be used for catering or other industrial mixing purposes and will hereafter be referred to as a "mixer of the type described".

When these mixers are used in the work place, safety is obviously a major concern. It is therefore desirable to provide means which prevent an operator coming into contact with the mixing implement, especially when the mixing implement is rotating.

Often a guard is used which fits around the top of the bowl. The guard may be solid or comprise a number of bars, spaced apart at such a distance that a hand may not be inserted between them. The guard is pivotally connected to the mixer so that access to the bowl is permitted by swinging the guard upwardly or outwardly. In order to increase the safety of the mixer the guard is usually so arranged that, when it is swung away from the edge of the bowl, the motor is stopped to prevent rotation of the mixing implement. However such a swinging movement of the guard takes up valuable space within the kitchen.

A food mixer in accordance with the invention comprises a body, a bowl releasably mounted on the bowl, a motor for moving a food processing implement within the bowl and a guard assembly above the bowl comprising two parts, complementary in shape, one of which is rotatable between at least two positions, a first closed position in which it prevents access to the bowl and a second open position about or within the second part, which second part is mounted in a fixed position relative to the bowl.

The rotatable part of the guard assembly when open, remains within the profile of the fixed part of the guard assembly which therefore does not require extra clearance when opened.

Preferably the rotatable and fixed parts of the guard assembly are both partially hemispherical in shape. The guard assembly preferably has a portion formed with bars to allow an operator to see into the bowl and to add further ingredients whilst the mixing implement rotates.

The rotatable part of the guard assembly is preferably secured to the fixed part by means of a ring, or other fixing device.

The mixer preferably includes means for sensing movement of the rotatable part of the guard assembly relative the body operatively connected

to or integral with means for preventing energisation of the motor when the rotatable part is not in the closed position. This means preferably comprises a switch and an activator provided respectively on the body of the mixer and the rotatable part of the guard assembly. The switch and the activator are preferably arranged to be directly opposite each other when the guard assembly is completely closed. When the activator moves relative to the switch, owing to movement of the rotatable part of the guard assembly, the switch will trip and prevent motor energisation. The switch is sensitive to the proximity of the activator and will therefore detect a relatively small movement of the rotatable part of the guard assembly. This arrangement ensures that the motor cannot be energised when the guard assembly is open or it has been removed for cleaning.

The rotatable part of the guard assembly is preferably not locked in place but rather is free to move at all times, so that should an object be inserted into the bowl and be caught by the mixing implement, any resulting slight movement imparted to the rotatable part of the guard will cause the switch to disconnect power to the motor. Preferably means are also provided between the bowl and the body of the mixer to deactivate the motor when the bowl is not properly set in its working position.

The invention will now be further described by way of example with reference to the accompanying drawings in which:-

Figure 1 is a side view of a food mixer in accordance with the invention.

Figure 2 is a plan view of the guard assembly of the mixer of Figure 1.

Figure 3 is a section (on an enlarged scale) on the line A-A of Figure 2.

Figure 4 is a section on the line B-B of Figure 2.

As shown in Figure 1, a food mixer 2 has a bowl 4 into which extends a mixing implement 6. The upper end of the mixing implement engages with a bearing which is driven by a motor (not shown). The bowl 4 is supported by arms 8 and may be removed by lowering the arms and then lifting the bowl, to disengage an engaging means 10 which co-operates with brackets 12 provided on the side of the bowl.

A guard assembly 14 is provided around the top of the bowl 4 to prevent access to the bowl. The rear half 16 of the guard assembly is fixed relative to the front half 18, which in the embodiment illustrated is in the form of a 'cage' comprising a number of horizontal bars 20 spaced and supported by upright bars 22. This arrangement allows the operator to see into the bowl and to add further ingredients during mixing whilst preventing access to the mixing zone.

As can be seen from Figures 2 and 3 the fixed

part 16 of the guard assembly is attached to a central housing 24 which may house gearing. The outer perimeter of the housing is provided with a fixing device 26 by which the fixed part 16 of the guard assembly is mounted to the body of the mixer 2. A semi-circular gutter 28 is provided on the bottom edge of housing 24 in order to catch any fluid or the like which may fall from the housing. The front half 18 of the guard assembly 14 is carried on a retaining ring 30 by means of the upright bars 22. The retaining ring 30 is mounted in a slidable manner on the fixing device 26 of the housing 24, so allowing the front half 18 to rotate about the central axis X-X of the guard assembly and over the fixed part 16, to an open position in which the interior of the bowl 4 is accessible.

No clearance around the mixer is required since the profile of the guard assembly 14 remains substantially the same, whether the rotatable part 18 is in the closed or open position.

Referring now to Figure 4, means for sensing movement of the rotatable part 18 relative the body of the mixer 2 will be described. An activator 32 is attached to a region of the retaining ring 30 and a switch 34 is provided on the body of the mixer 2. The activator 32 and the switch 34 are so arranged that they are opposite one another when the guard assembly 14 is fully closed. The switch 34 and activator 32 are such that when the activator 32 is opposite the switch 34, the switch 34 will be in a first of two states and when the activator 32 moves away from the switch 34, the switch 34 assumes the other state. Therefore, when the rotatable part 18 of the guard assembly 14 is moved from the closed position, either intentionally or by accident, the activator 32 will move away from the switch 34, so causing the switch 34 to change state, i.e. to trip.

The switch 34 is connected in such a way as to control the motor. In the first state, with the guard assembly 14 fully closed, the switch 34 permits energisation of the motor and therefore the rotor, and hence mixing implement 6, is capable of operating in a normal manner. However in the second state, when the rotatable part 18 is moved and the switch 34 tripped, the motor will be disabled, so that the mixing implement 6 within the bowl cannot rotate. As soon as the guard assembly 14 is closed again, the rotor will be enabled and the mixer may be used in the normal manner when the rotatable part is not in the closed position.

The housing 24 is provided with means, such as a bayonet attachment 36, for connecting the guard assembly 14 to the body of the mixer. The guard assembly may be a standard fitting of the mixer or may be obtained separately and fitted to an existing machine. The guard assembly may be completely removed from the mixer, for example

for cleaning. This will cause the switch to trip and render the mixer inoperable.

Claims

1. A food mixer comprising a body, a bowl releasably mounted on the body, a motor for moving a food processing implement within the bowl and a guard assembly above the bowl comprising two parts, complementary in shape, one of which is rotatable between at least two positions, a first closed position in which it prevents access to the bowl and a second open position about or within the second part, which second part is mounted in a fixed position relative to the bowl.
2. A food mixer as claimed in Claim 1, wherein the rotatable and fixed parts of the guard assembly are both partially hemispherical in shape.
3. A food mixer as claimed in Claim 1 or Claim 2, wherein a portion of the guard assembly comprises spaced bars.
4. A food mixer as claimed in any preceding Claim, wherein the rotatable part of the guard assembly is secured to the fixed part thereof by means of a fixing device.
5. A food mixer as claimed in any preceding Claim, wherein the guard assembly is removably mounted to the body.
6. A food mixer as claimed in any preceding Claim, wherein means are provided for sensing movement of the rotatable part of the guard assembly relative to the body operatively connected to, or integral with, means for preventing energisation of the motor.
7. A food mixer as claimed in Claim 7, wherein the sensing means comprises a switch and an activator therefor provided respectively on the body of the mixer and the rotatable part of the guard assembly, the switch when activated by the activator preventing energisation of the motor, the activator being arranged to activate the switch when the rotatable part of the guard assembly is not in the closed position.
8. A food mixer as claimed in Claim 8, wherein the switch and the activator are so positioned as to be directly opposite each other when the rotatable part of the guard assembly is in the closed position.

9. A food mixer as claimed in any preceding Claim, wherein the rotatable part of the guard assembly is so mounted that it is free to move in response to pressure thereon from the contents of the bowl. 5
10. A food mixer as claimed in any preceding Claim, wherein means is provided to prevent energisation of the motor when the bowl is not in a predetermined position relative the body. 10

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FIG. 1

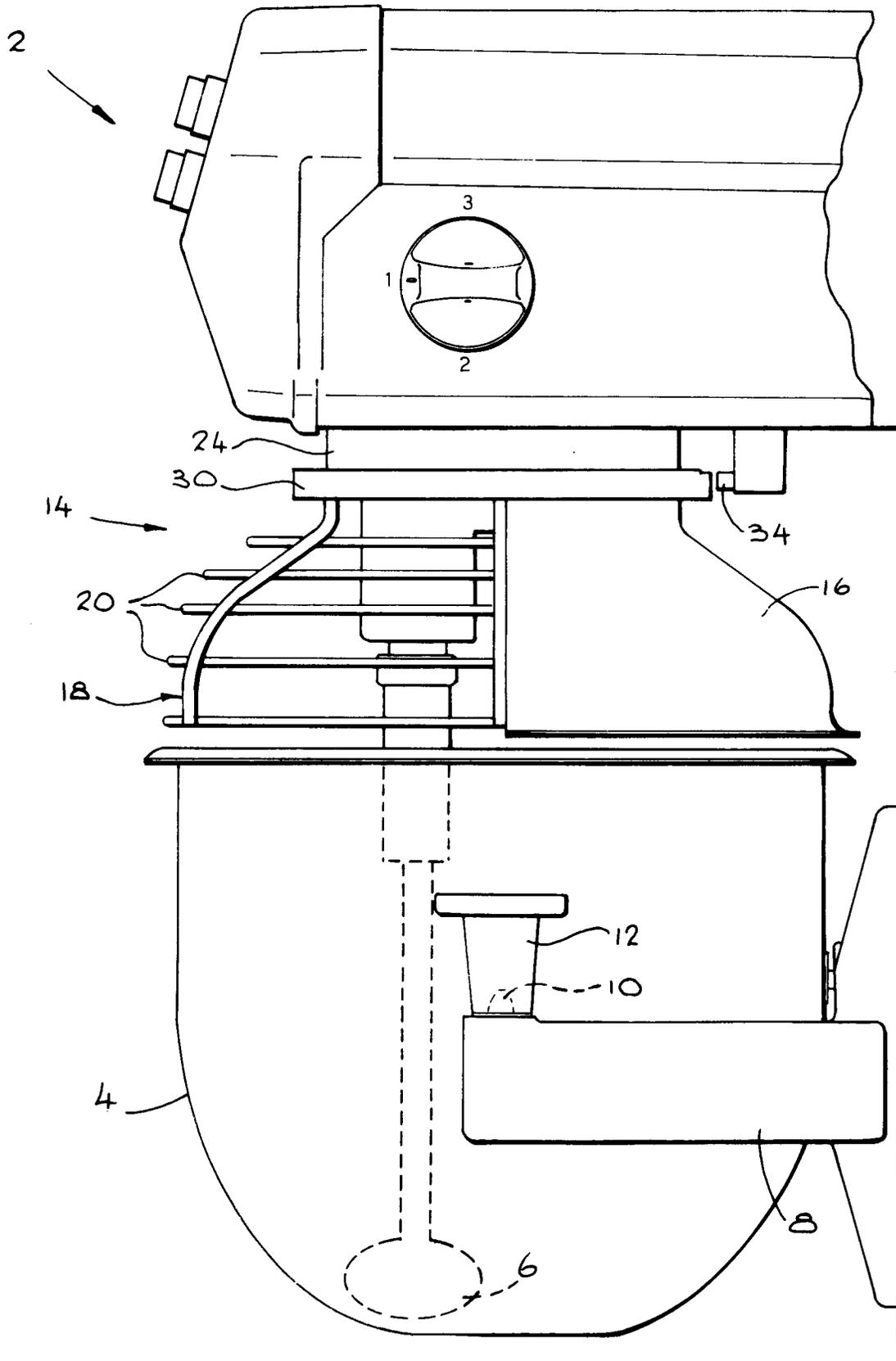


FIG. 2

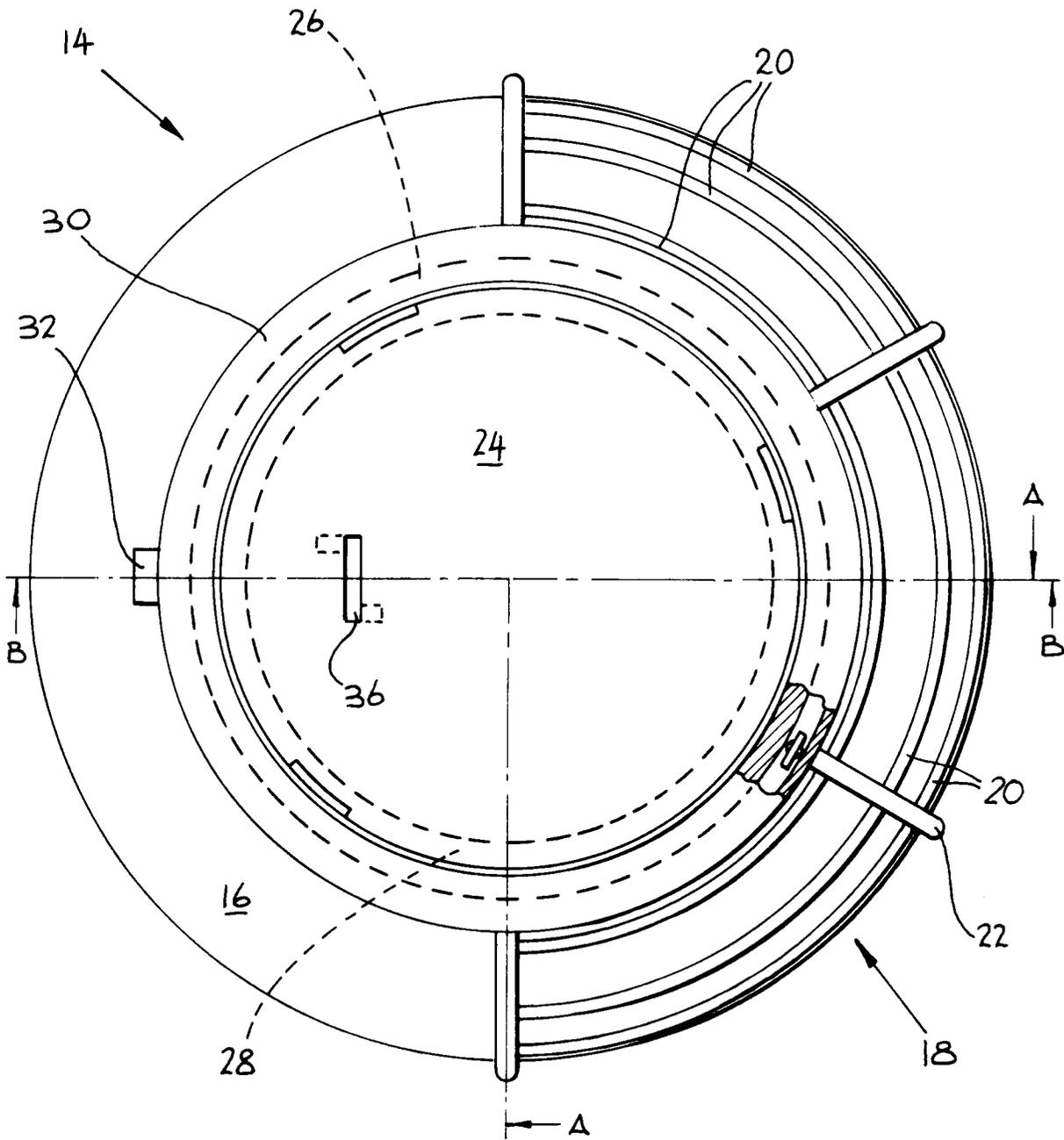


FIG. 3

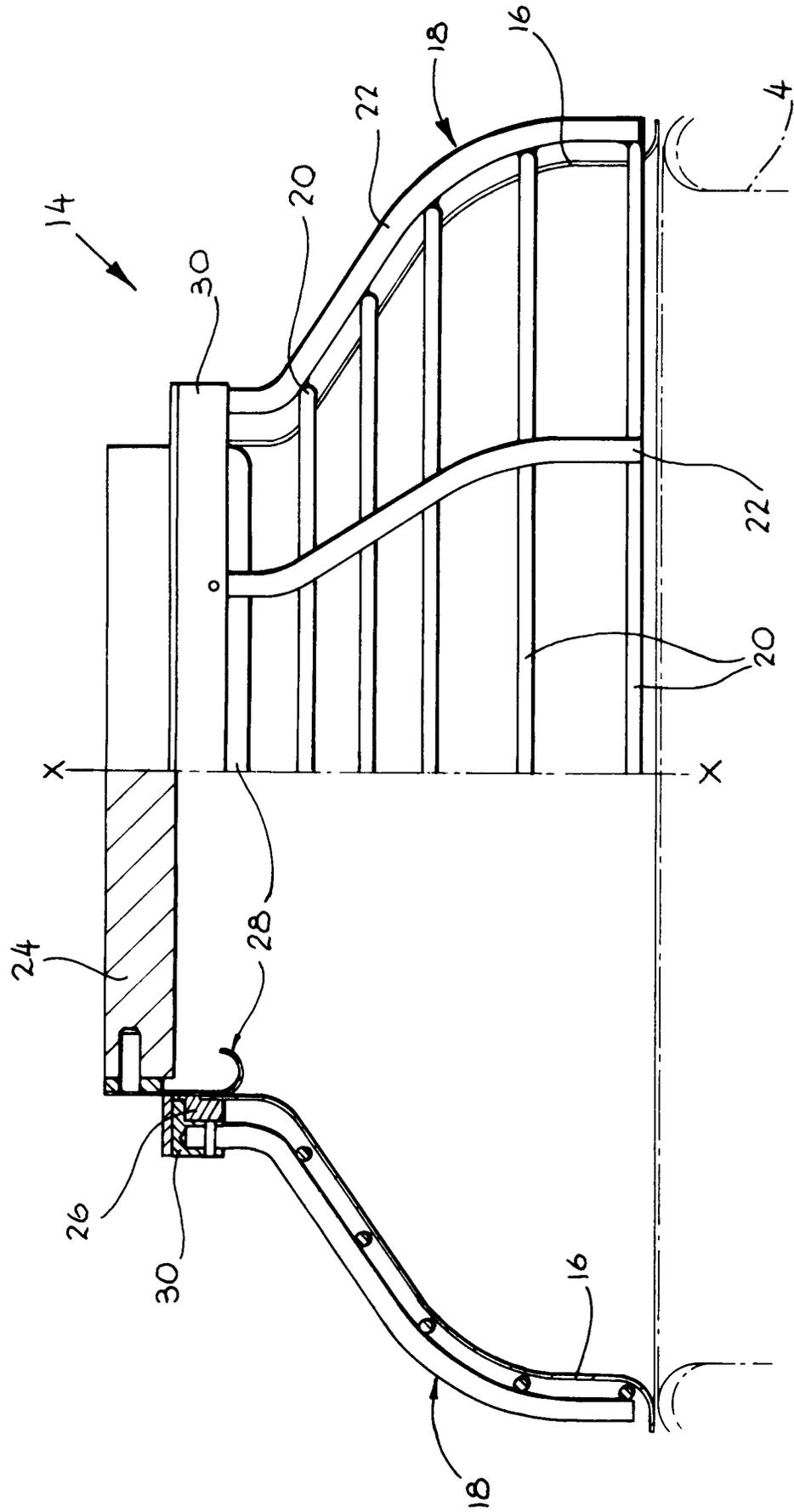
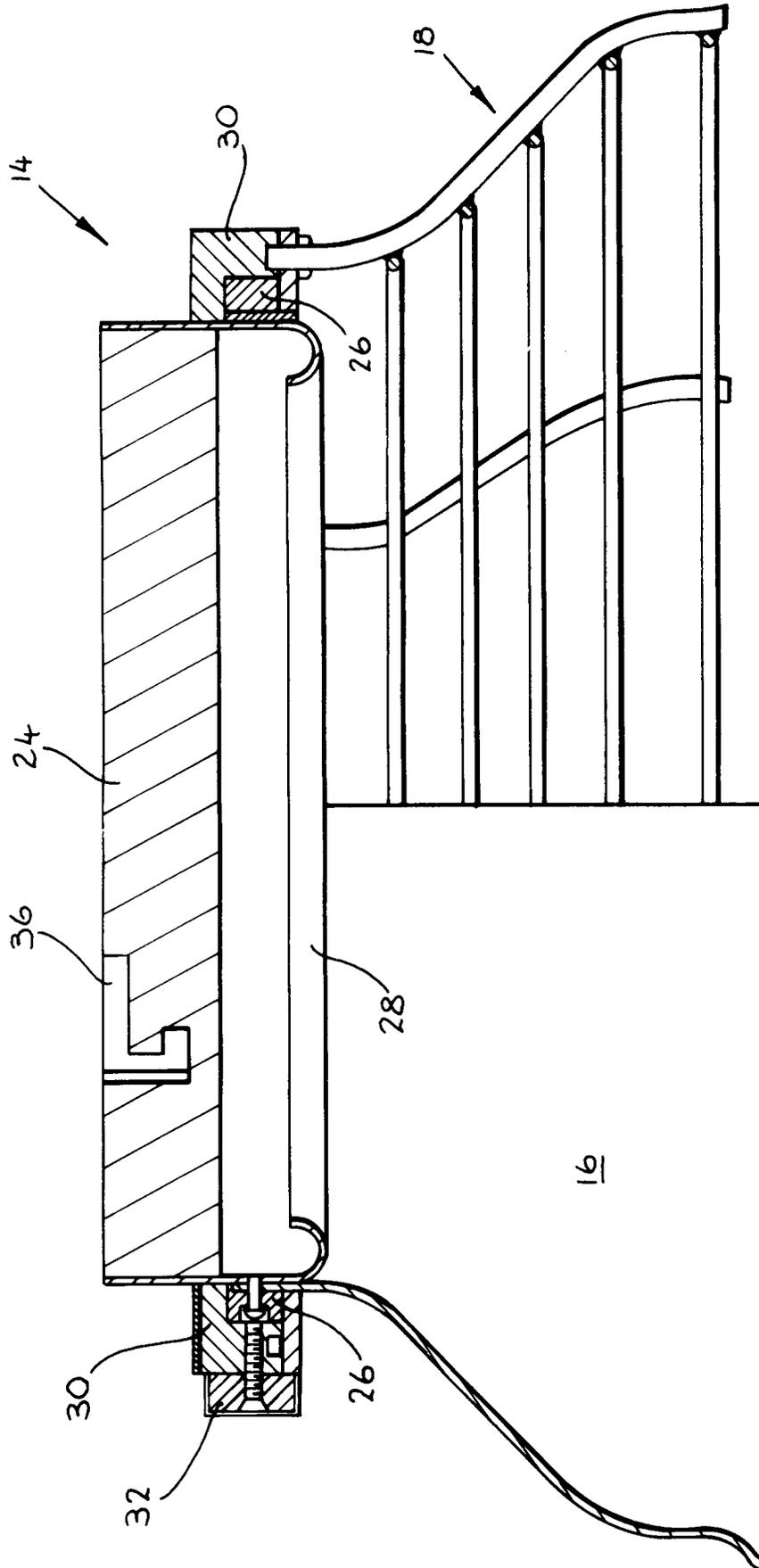


FIG. 4





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EUROPEAN SEARCH REPORT

Application Number

EP 91 30 4224

| 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.5) |
| A | FR-A-2 575 142 (LOISELET) * Figure 3 * --- | 1 | B 01 F 15/00 |
| A | DE-C- 294 633 (JUNG) * Whole document * --- | 1 | |
| E | EP-A-0 399 878 (NAUD) * Figure 6 * --- | 1 | |
| A | US-A-2 867 064 (HERMANSSON) --- | | |
| A | DE-A-3 411 394 (CREMER) ----- | | |
| | | | TECHNICAL FIELDS SEARCHED (Int. Cl.5) |
| | | | B 01 F A 21 C F 16 P A 47 J |
| The present search report has been drawn up for all claims | | | |
| Place of search | Date of completion of the search | Examiner | |
| THE HAGUE | 04-11-1991 | PEETERS S. | |
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