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(54) Tubular mast door

(57) A door (28) for covering an inspecting opening in a tubular mast (26), such as a lamp post, the door (28) being hingedly connected to the mast (26) by hinge means (12, 14, 16). The hinge means (12, 14, 16) comprises a hinge pin (16) slidable transversely with respect to its length in a retaining means (14) and the hinge pin (16) being slidable out of retention by the retaining means (14) to disconnect the hinge means (12, 14, 16) and permit removal of the door (28) from the mast (26).

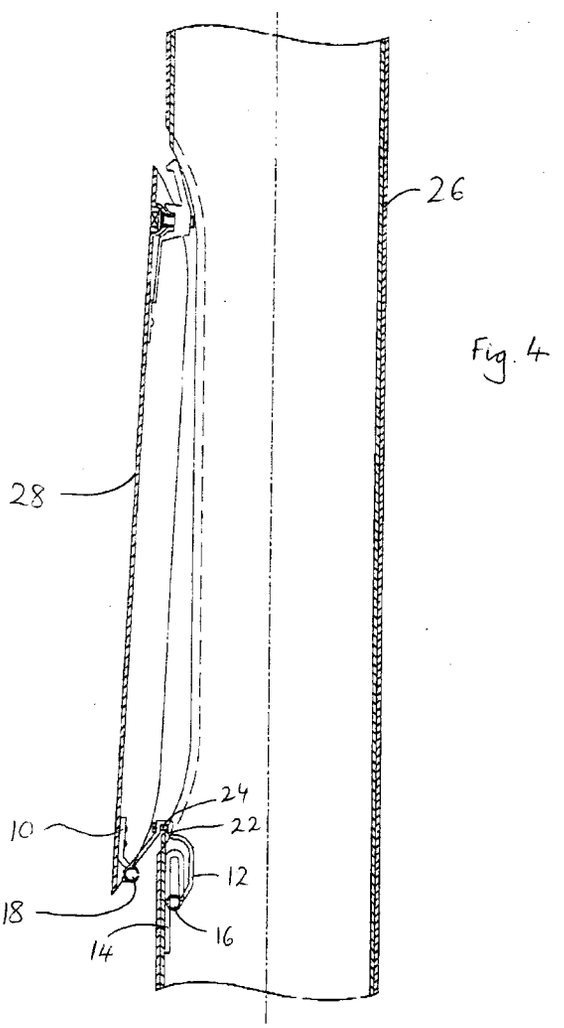

Fig. 4

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Description

The invention relates to doors of the kind used for covering an opening in a tubular mast.

Tubular masts are widely used as lamp posts, flag poles, roadside signals and the like and are typically made of metal. In most cases, such tubular masts are provided with an opening in their lower region to provide access for inspection or maintenance of the electrical equipment inside or to provide access to the flag raising and lowering mechanism as the case may be. It is usually necessary to provide the inspection opening with a cover such as a lid or door both to protect members of the public from potentially hazardous electrical equipment and also to protect the equipment within the mast from damage caused by vandals or other unauthorised use or abuse of the equipment.

Covers for this purpose have been disclosed in prior proposals such as GB 2,110 256 and NL 147,222. These covers have upper and lower latches. The upper latch may be loosened by unscrewing, allowing the cover to be raised and the bottom latch to escape outwardly from the opening. The cover is then slid downwardly to release the upper latch from the opening and the door is then completely detached from the mast. However if the cover is removed completely, particularly for long periods of time, then there is a risk of losing the cover.

Accordingly the present invention provides a door for covering an inspection opening in a tubular mast, the door being provided with a disconnectable hinge means, said hinge means comprising a hinge pin slidable transversely with respect to its length in a retaining means.

Providing a hinge enables the door to remain attached to the mast when in the open position and the slidable arrangement of the hinge pin in the retaining means permits the same opening procedure to be adhered to as with prior covers which is convenient for maintenance staff who may be unaware of the presence of any hinge. Furthermore, since the hinge is disconnectable, the door can be removed entirely if so desired.

Preferably the retaining means comprises a hook-shaped piece, the hinge pin being slidable out of retention by the retaining means.

Advantageously the hinge pin is provided on a connecting piece which is joined by a further hinge means to a fixing piece.

Beneficially the connecting piece is substantially U-shaped, and the hinge pin and the further hinge means are provided one at each tip of the U-shaped piece respectively.

Preferably the fixing piece is attached to the door and the retaining means is attached to the tubular mast.

Advantageously the disconnectable hinge means further comprises an abutment screw having a first position in which the door cannot be removed from the mast and a second position in which the door can be removed and reattached to the mast; the door being openable and closeable with the abutment screw in both the first and second positions.

The abutment screw permits the door to hinge open and closed in the usual manner, but inhibits inadvertent detachment of the door from the mast.

Preferably the abutment screw is provided on the connecting piece and when the hinge pin is slid so as to attempt to disengage it from retention by the retaining means, the abutment screw in its first position abuts a lip of the opening in the tubular mast, thereby preventing removal of the door.

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

Figures 1 to 5 illustrate the procedure for opening a door according to the invention;

Figures 6 to 8 illustrate the procedure for detaching a door according to the invention from a tubular mast; and

Figures 9 (a), (b), and (c) show three views of a disconnectable hinge means for a door according to the invention.

The disconnectable hinge means for the tubular mast door shown in Figures 9 (a), (b), and (c) comprises a fixing piece 10, a U-shaped connecting piece 12, and a hook-shaped retaining means 14.

The connecting piece is provided with a hinge pin 16 that can slide transversely of its axis inside the retaining means 14. A further hinge means 18 is provided which pivotally joins the connecting piece 12 to the fixing piece 10, which is provided with a protrusion 20. The connecting piece 12 is formed with a recess or groove 22, into which an abutment screw 24 projects.

Figure 1 shows a tubular mast 26 with a door 28 in a nearly fully closed position. The fixing piece 10 is secured to the door 28 and the retaining means is secured to the mast 26. Holes are provided in the fixing piece 10 and retaining means 14 for securing them to the door and to the tubular mast respectively, by means of, for example, bolts or rivets. In this figure the latch bolt 30 has been shown unscrewed slightly to loosen the upper latch 32 to allow the door 28 to tilt away from the mast 26 at the upper end. In the fully closed position, the latch 32 holds the upper end portion of the door 28 flush against the mast 26, and the lower end portion of the door 28 is held flush against the mast 26 by the lip of the inspection opening being interposed between the lower end portion of the door 28 and the protrusion 20 of the fixing piece 10.

With the latch 32 loosened as in Figure 1, the door 28 may be slid upwards to the position shown in Figure 2. This moves the lip of the opening out from between the lower end portion of the door 28 and the protrusion 20 on the fixing piece 10. On sliding the door 28 to the position of Figure 2, the hinge pin 16 of the disconnectable hinge means slides transversely with respect to its

length within the retaining means 14.

From the position of Figure 2, the lower end of the door 28 may be moved away from the mast to incline the door 28 as in Figure 3. In this motion, the connecting piece 12 rotates, pivoting about the disconnectable hinge means joining the connecting piece 12 to the retaining means 14, and about the further hinge means 18 joining the connecting piece 12 to the fixing piece 10.

The door 28 can be slid downwards from the position of Figure 3 to disengage the latch 32 from the upper end of the door 28 from the lip of the opening as shown in Figure 4. The lower lip of the opening enters a recess 22 in the connecting piece 12 and contacts the abutment screw 24. The abutment screw 24 prevents the connecting piece 12 from sliding further down and stops the hinge pin 16 disengaging from under the retaining means 14. In this position the connecting piece 12 holds the lower end portion of the door 28 spaced apart from the mast 26, conveniently permitting the door 28 to rotate about the further hinge means 18 to depend downwardly against the mast 26 as shown in Figure 5. The inspection opening is now fully accessible, but the door 28 is still retained on the mast. The reverse procedure is used to close the door 28 over the inspection opening.

If it should be desired to remove the door completely from the mast, the abutment screw 24 is unscrewed so that it no longer projects into the recess 22 in the connecting piece 12 and the lower lip of the opening can project further into the recess 22 so that the connecting piece moves downward to the position as shown in Figure 6. If the door is then rotated to the position shown in Figure 7, it is possible to tilt the connecting piece 12 so that the hinge pin 16 is released from beneath the hook-shaped retaining means 14. The door 28 can be lifted upwardly from the resulting position in Figure 8 and removed completely from the mast 26. To reattach the door 28 to the mast 26, the reverse procedure is followed.

Claims

1. A door (28) for covering an inspection opening in a tubular mast (26), the door (28) being provided with a disconnectable hinge means (12, 14, 16), said hinge means comprising a hinge pin (16) slidable transversely with respect to its length in a retaining means (14).

2. A door (28) according to claim 1, wherein the retaining means (14) comprises a hook-shaped piece, the hinge pin (16) being slidable out of retention by the retaining means (14).

3. A door (28) according to claim 1 or 2, wherein the hinge pin (16) is provided on a connecting piece (12) which is joined by a further hinge means (18) to a fixing piece (10).

4. A door (28) according to claim 3, wherein the connecting piece (12) is substantially U-shaped, and the hinge pin (16) and the further hinge means (18) are provided one at each tip of the U-shaped piece (12) respectively.

5. A door (28) according to claim 3 or 4, wherein the fixing piece (10) is attached to the door (28) and the retaining means (14) is attached to the tubular mast (26).

6. A door (28) according to any one of the preceding claims, wherein the disconnectable hinge means (12, 14, 16) further comprises an abutment screw (24) having a first position in which the door (28) cannot be removed from the mast (26) and a second position in which the door (28) can be removed and reattached to the mast (26) ; the door (28) being openable and closeable with the abutment screw (24) in both the first and second positions.

7. A door according to claims 3 and 6, wherein the abutment screw (24) is provided on the connecting piece (12).

8. A door according to claim 6 or 7, wherein when the hinge pin (16) is slid so as to attempt to disengage it from retention by the retaining means (14), the abutment screw (24) in its first position abuts a lip of the opening in the tubular mast (26), thereby preventing removal of the door (28).

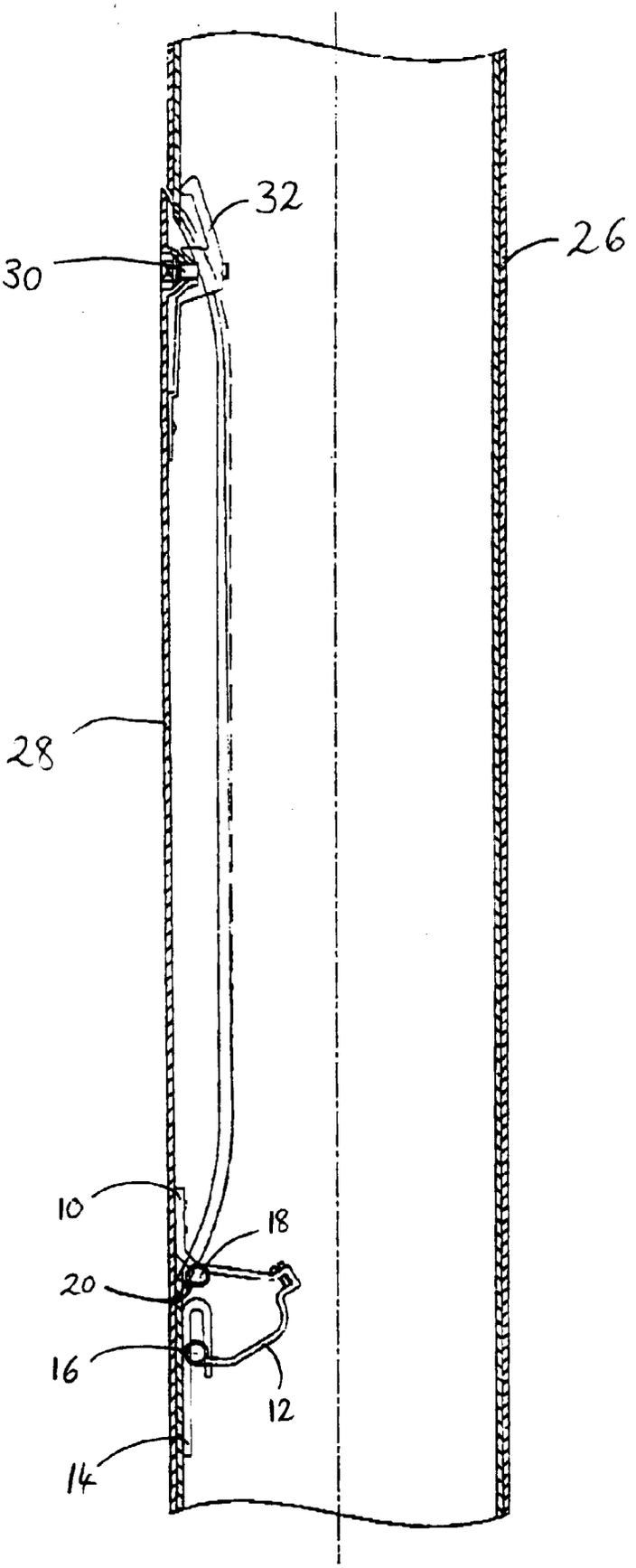


Fig. 1

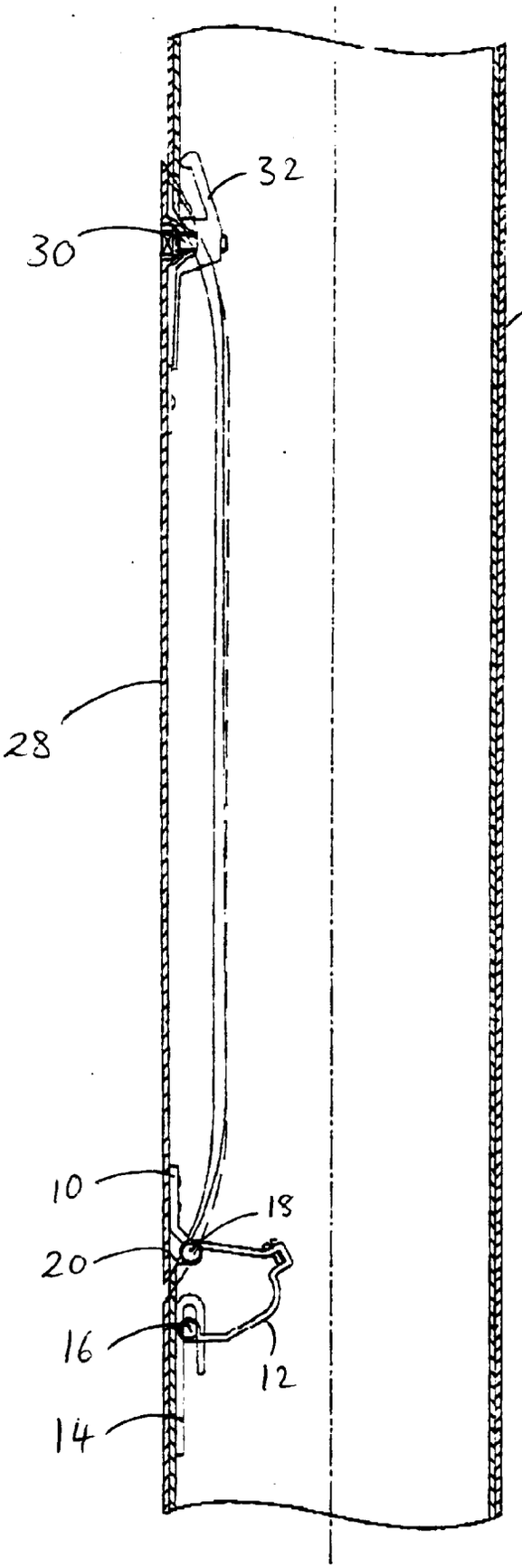


Fig. 2

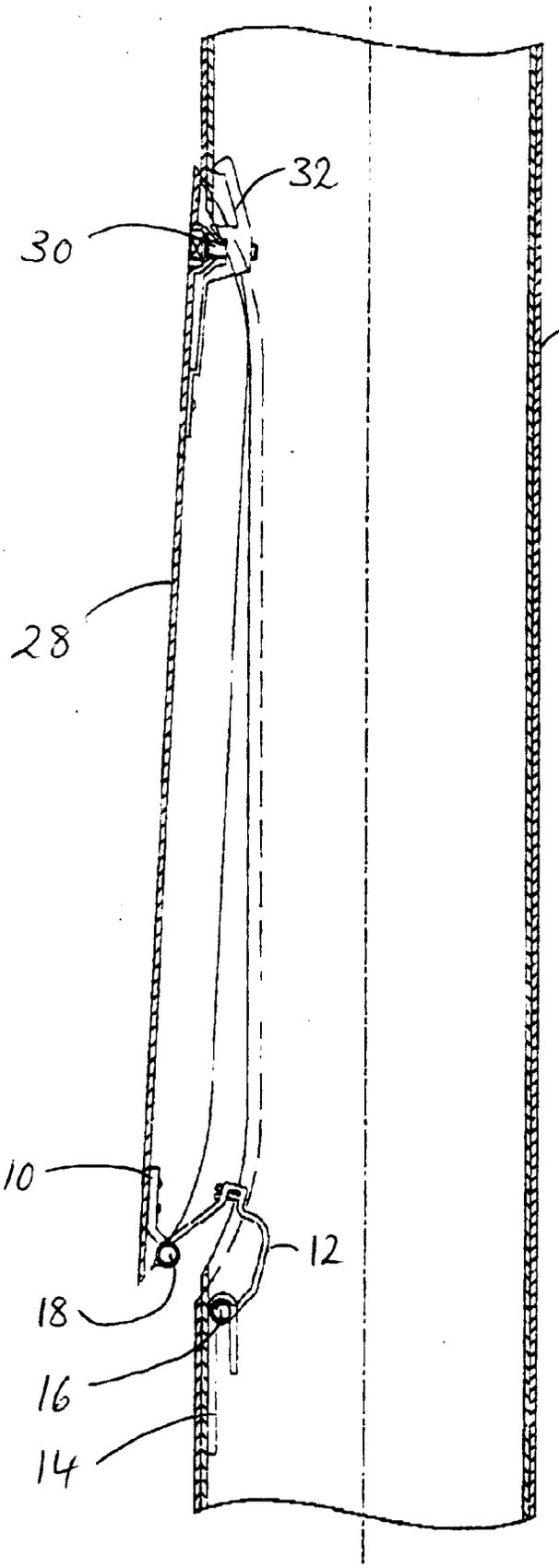


Fig. 3.

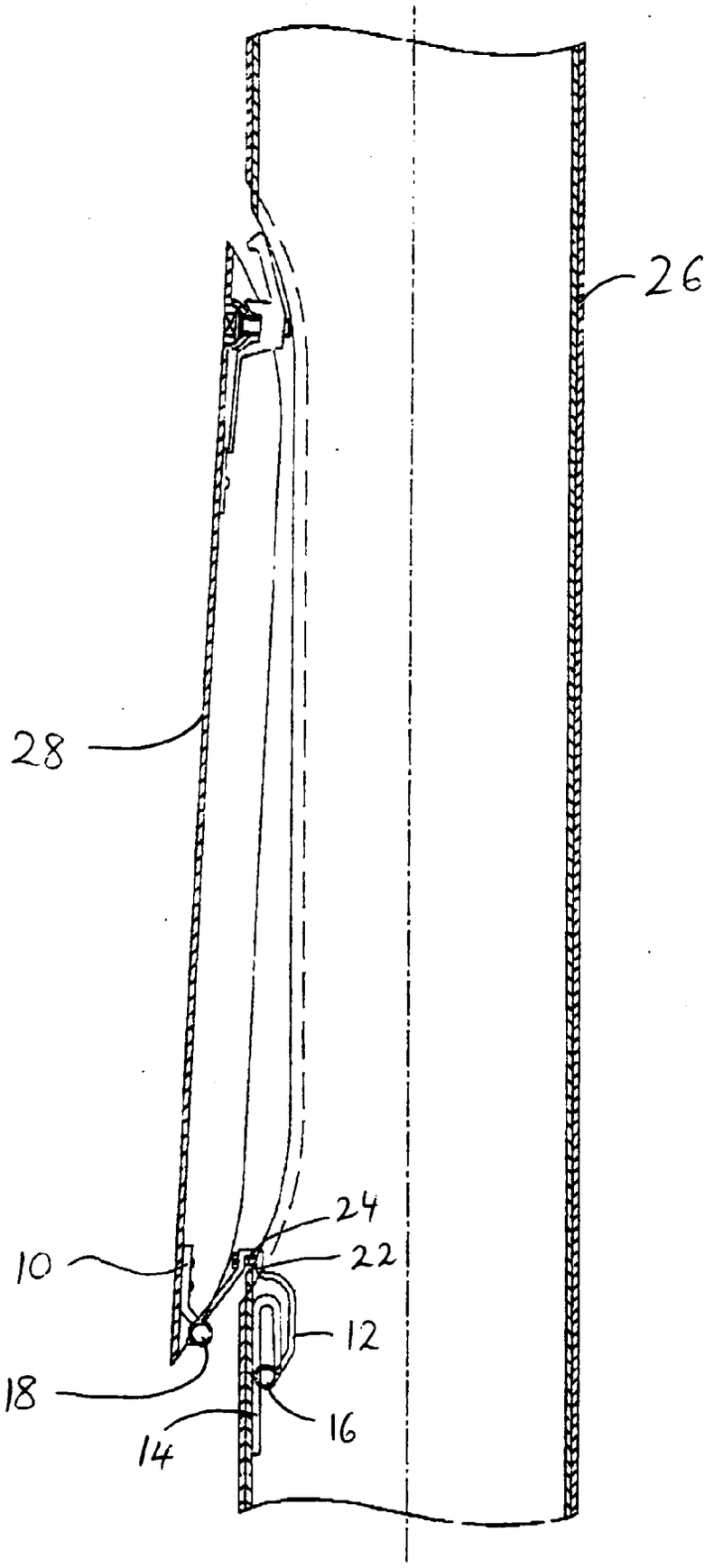


Fig. 4

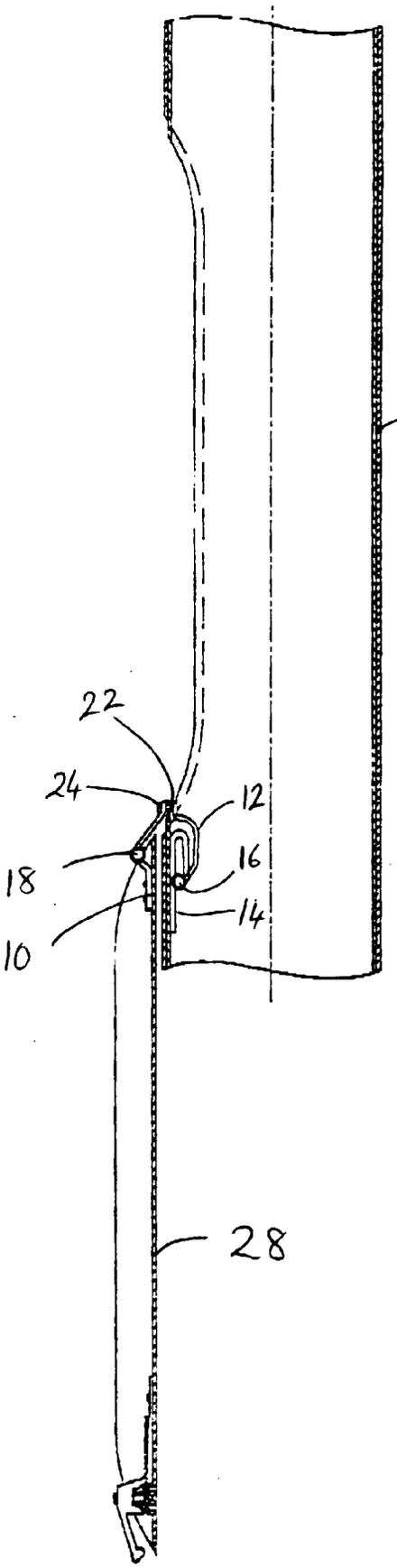


Fig 5.

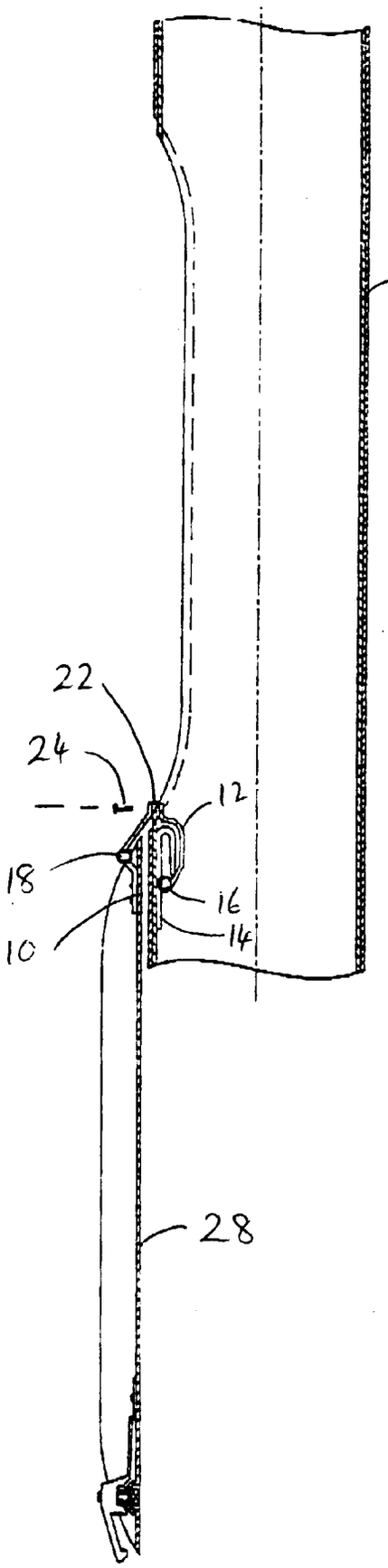


Fig. 6

Fig. 7

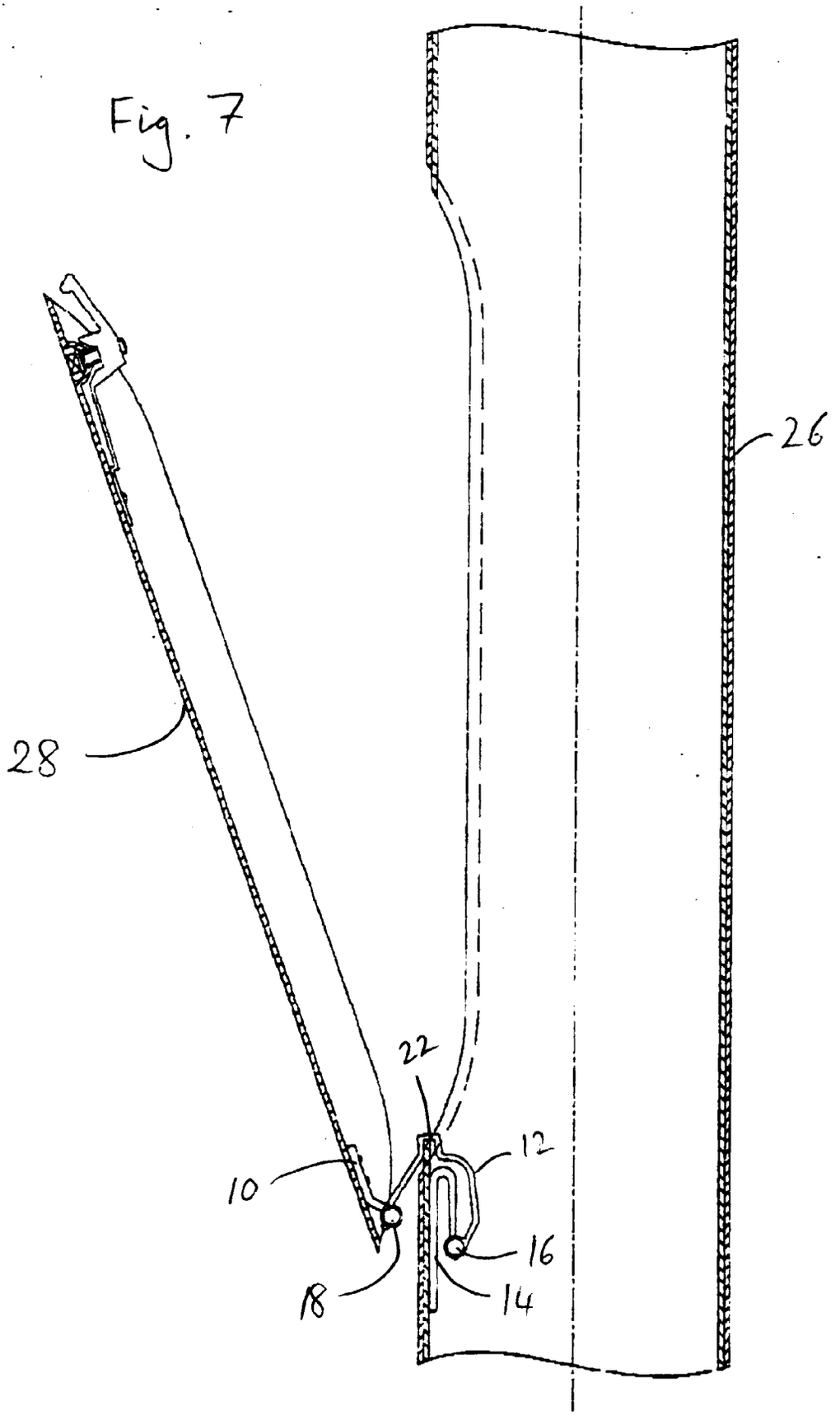
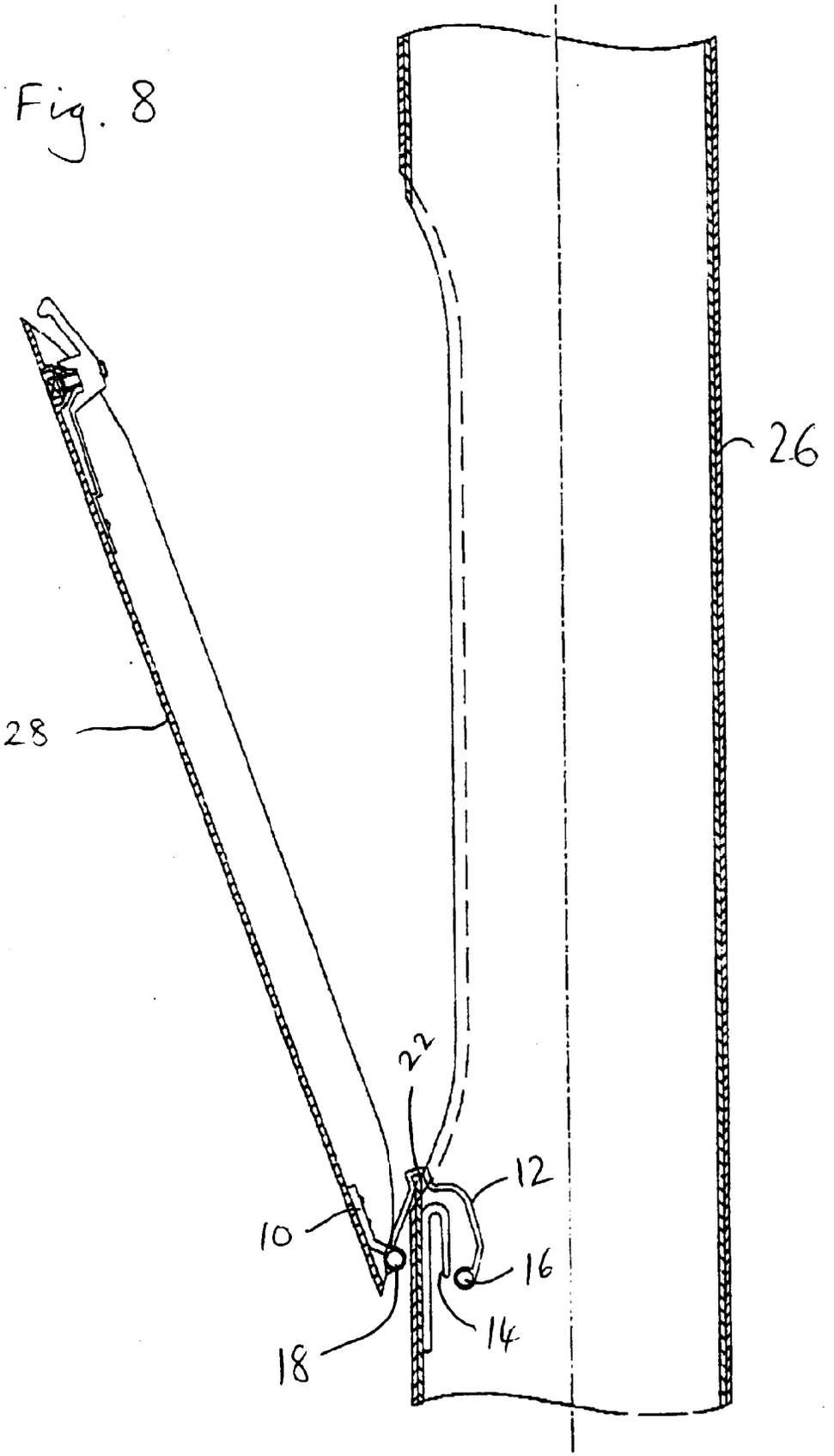


Fig. 8



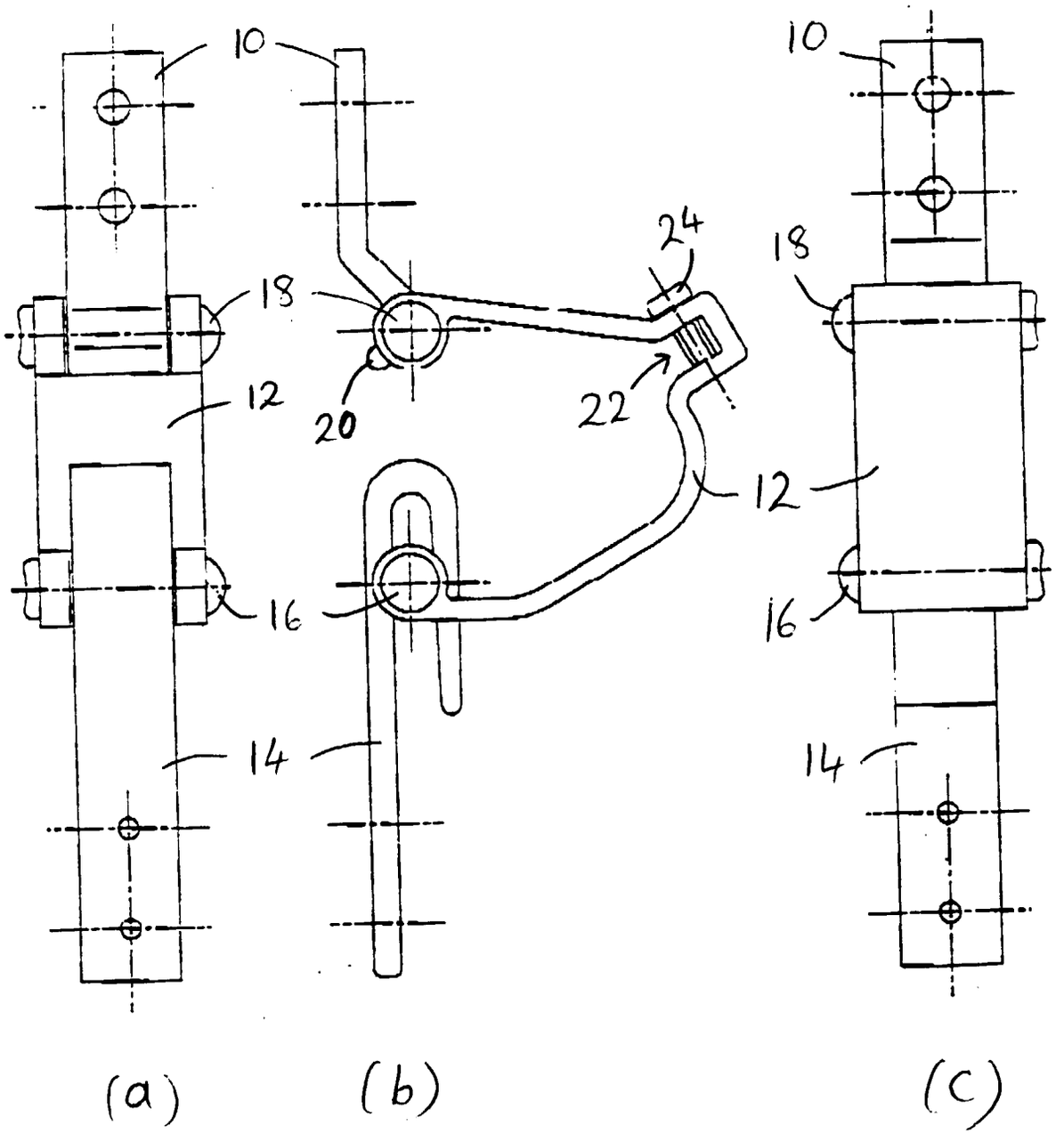


Fig. 9

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EUROPEAN SEARCH REPORT

Application Number
EP 96 30 4683

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.6)
X	DE-A-43 18 607 (GRASS AG) 8 December 1994 * column 4, line 3 - line 31; figures 1-3 *	1	E04H12/08 E05D3/06
Y		2-5	

Y	US-A-3 266 859 (J. CHAMPLIN) 16 August 1966 * column 1, line 54 - column 2, line 7; figures 1-3 *	2	
A		1	

Y	EP-A-0 317 037 (BOEING CO) 24 May 1989 * column 3, line 50 - column 5, line 22; figures 1-9 *	3-5	

A	NL-A-9 301 343 (HUBERTUS GERARDUS JACOBUS VERH) 16 February 1995 * figure 7 *	1	

A	GB-A-1 027 943 (COHEN BROTHERS) 4 May 1966		

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

E04H
E05D
F21V

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	25 September 1996	Kriekoukis, S

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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