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(54) Adjustable ventilator.

(57) Adjustable ventilator (2) having an elongated rotatable shut-off element (4, 96) in an elongated housing and made of section material, having a dimension in a first direction (h) transverse to the longitudinal axis greater than the dimension perpendicular thereto, with two outer walls (40, 42, 100, 100') running in the first direction and at a distance from each other, and with between the end edges (40a, 42a; 104, 108) a nesting space for a sealing strip (56).

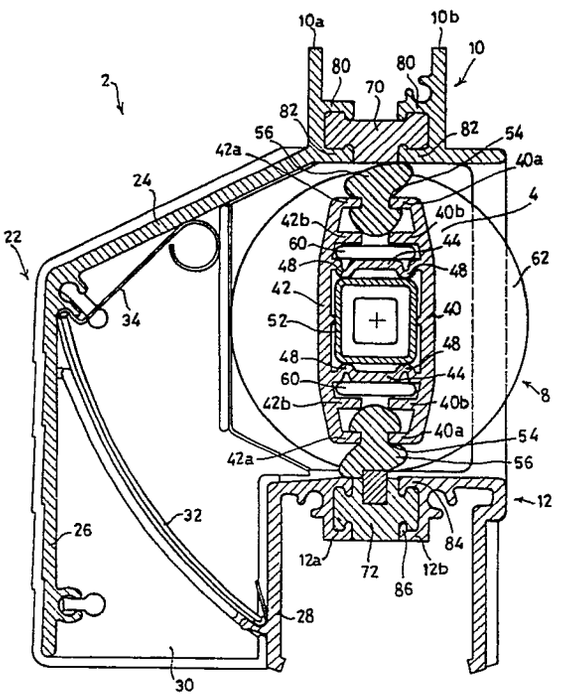

Fig. 1.

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The invention relates to an adjustable ventilator with an elongated shut-off element accommodated in an elongated housing and rotatable about a longitudinal axis.

Such an adjustable ventilator is known per se in various embodiments. The shut-off element in these cases is always in the form of a hollow cylinder which is accommodated between sealing elements in the housing and from the cylindrical surface of which two elongated passage openings lying opposite each other are cut out. In one, first position of said cylinder the passage openings lie in line with the housing opening, so that air can flow through the hollow cylinder, and in a second position, in which the hollow cylinder is rotated through 90° relative to the first position, the continuous cylinder wall parts shut off the air passage. Intermediate positions are possible.

The disadvantage of this known ventilator that the use of a cylinder of excessively large diameter is required in order to achieve a large air passage, as a result of which the dimensions of the ventilator itself become unacceptably large. Besides, such ventilators cannot be made with great length while retaining easy rotatability of the shut-off element, and they have a relatively large number of parts, in particular the seals between the cylinder casing and the housing. A good seal also requires an accurate fit and good guidance of the cylindrical shut-off element in the housing, which again makes turning in the housing difficult.

The object of the invention is to eliminate these disadvantages. This object is achieved according to the invention in that the shut-off element made of section material is of a dimension in a first direction transverse to the longitudinal axis which is greater than the dimension in a second direction which is perpendicular to the first, the shut-off element has two outside walls running in the first direction and lying at a distance from each other, and having between the end edges thereof a nesting space for a sealing strip, and these walls are connected to each other by connecting legs lying on either side of the axis of rotation.

These measures not only produce such strength of the shut-off element that the ventilator can be made in great lengths, but also achieve a considerably greater air passage than that which can be achieved with a known ventilator of corresponding dimensions; the air resistance is lower, so that the ventilation properties are better. Less material is also needed for the production of the simply designed ventilator, and the shut-off element is much easier to rotate. It has also been found that in the open position the shape of the shut-off element has a beneficial effect on the air passage.

Preferred embodiments of the invention are described in Claims 2 to 9.

The invention is explained with reference to the drawing, in which:

Figure 1 is a cross-section through the ventilator according to the invention, along the line I - I in Figure 2;

Figure 2 is a rear view of this ventilator;

Figure 3 is a top view of the ventilator;

Figure 4 is a detail cross-section showing the fixing of the shut-off element;

Figure 5 shows a cross-section of a second embodiment of the ventilator according to the invention;

Figure 6 shows in cross-section part of the shut-off element used therein.

The ventilator 2 according to the invention has an elongated shut-off element 4 which is supported in a manner to be described in greater detail so that it rotates about the longitudinal axis 6 thereof.

This shut-off element 4 is accommodated in an elongated housing manufactured by extrusion and having an air passage 8 which is bounded by the top edge 10, the bottom edge 12, a right end piece 14 with the head plate 16 connecting to it, and a left end piece 18 with the head plate 20 connecting to it. The top edge 10 merges into a water baffle 22 comprising a downward sloping part 24 which continues into a straight downward running part 26; at a distance from this lies the also straight downward running part 28 which connects to the bottom edge 12. This forms an air inlet opening 30 containing a filter gauze 32 which is retained by one or more spring-loaded retaining clips 34.

As can be seen from the figures, the shut-off element 4 has a height h (see Figure 2) which is considerably greater than its width or thickness so that, when the shut-off element 4 is rotated out of the position shown in Figure 1 through 90° clockwise or anticlockwise, air can flow virtually unimpeded from the inlet opening 30 to the passage 8. In the position shown this opening is shut off.

The shut-off element 4 also comprises a section part and has two outer walls 40, 42 which are interconnected by means of connecting legs 44, each with two ridges 48. These ridges lie resiliently against a square metal reinforcement tube 52 which is accommodated in the shut-off element 4 and which gives the shut-off element the necessary rigidity in the lengthwise direction and makes it possible to produce the ventilator in very great lengths (for example, up to 3 metres).

The end edges 40a, 42a of the walls 40, 42 are flanged towards each other and engage in a constriction 54 of a sealing strip 56. Below these flanged end edges 40a, 42a short ribs 40b, 42b facing each other go out from the walls 40, 42 and with the end edges 40a, 42a determine a nesting space for the bottom part of the sealing strip 56.

The ribs 40b, 42b with the connecting legs 48 also determine a nesting space 58 (see Figure 4) for the lips 60 of a carrier 62 which is provided with a nesting groove 64 for an operating cord 66 and with a cylindrical bearing stub 68 which is rotatably supported in the end piece 14, 18, so that the whole unit is easy to fit or remove. The carrier 62 also has a stub 63 which is rectangular in cross-section and which fits inside the tube 52.

A thermal barrier, formed by a plastic filling 70, 72, is provided both in the top edge 10 and the bottom edge 12.

Initially the legs 10a and 10b are connected to each other by the transverse ribs 80, and the transverse ribs 82 end at a distance from each other; the legs 12a, 12b are also initially connected by the ribs 84, and the ribs 86 end at a distance from each other. Through the openings thus formed the spaces thus obtained are filled with setting plastic 70, 72, and after setting thereof the other ribs are milled, so that no further metallic contact exists between the parts interconnected by the plastic filling. If desired, an additional sealing element, as indicated by 88, can be provided in the plastic filling.

Figure 5 shows an embodiment which is essentially the same as the one described above but in which the shut-off element has a somewhat different configuration. Parts which correspond to the ones disclosed in the preceeding figures are indicated with the same reference numerals as used in these figures.

The shut-off element in this embodiment, indicated as a whole with 96, comprises two identical parts (98a, 98b) which are combined with each other in an inverted relationship. Each of these parts, one of which is shown in figure 6 comprises in cross-section a wall 100 with at the one edge a hook-shaped rib 102 and at the other edge a similar hook-shaped rib 104 with, at short distance thereunder, a leg 106 which ends in an upstanding, also hook-shaped rib 108. Both the wall 100 and the leg 106 are provided with ridges 110, 112 respectively. As figure 4 shows the two parts 98, 98' are combined with each other in an inverted relationship, such that the hook 102 of the one part fits behind and around the hook 108' of the other part, and vice-versa. Within the space delimited by the walls 100, 100' on the one hand and the legs 106, 106' on the other hand fits a reinforcing member 114.

This embodiment has the advantage that the fitting of the reinforcing member is much more easily done as this member is simply placed within one of the parts whereafter the other part is is clipped around it.

The shut-off element can be rotated around its axis by means of a suitable driver (not shown) fitting in the space within the reinforcing member 114.

Claims

1. Adjustable ventilator (2) with an elongated shut-off element (4, 96) accommodated in an elongated housing and rotatable about a longitudinal axis, characterized in that the shut-off element (4, 96), made of section material, is of a dimension in a first direction (h) transverse to the longitudinal axis which is greater than the dimension in a second direction which is perpendicular to the first, the shut-off element (4, 96) has two outer walls (40, 42, 100, 100') running in the first direction and lying at a distance from each other, and having between the end edges (40a, 42a; 104, 108) thereof a nesting space for a sealing strip (56), with connecting legs (44, 106, 106') between these walls lying on either side of the axis of rotation.

2. Ventilator according to claim 1, characterized in that the shut-off element (96) consists of a first and a second, identical part (98a, 98b) interconnected combined in inverted relationship, each part having in cross-section an outer wall (100, 100') part with at each end edge a short inwardly directed hook-shaped rib (102, 104, 102', 104') and at one end at short distance thereunder a connecting leg (106, 106') extending to the outer wall of the other part and terminating in an upwardly directed hook-shaped rib (108, 108') surrounded by the inwardly directed rib of the other, opposite, part.

3. Ventilator according to claim 1-2, characterized by a reinforcement element (52, 114) accommodated in the space bounded by the connecting legs.

4. Ventilator according to claim 3, characterized in that the reinforcement element (52, 114) comprises a reinforcing tube with square cross-section, enclosed by the connecting legs (44, 106, 106').

5. Ventilator according to claim 4, characterized in that the connecting legs (44, 106, 106') are provided with ridges (48, 112) resting resiliently against the reinforcing tube.

6. Ventilator according to claims 1 - 4, characterized in that an additional rib (40b, 42b) extends between each connecting leg and an outer wall, for determining a nesting space for a driver which projects from a rotatably mounted carrier connecting to the shut-off element.

7. Ventilator according to claims 1 - 6, characterized in that the end edges of the shut-off element walls (40a, 42a; 104, 102') are flanged towards each other and engage in a constriction, running in the longitudinal direction, of a sealing strip (56) situated partially inside and partially outside the shut-off element.

8. Ventilator according to claims 1 - 7, characterized in that the housing is provided at the front side with a water baffle (22) extending from the top edge thereof and having a short downward slanting part, merging into a straight downward running part having at a distance from it and parallel to it a shut-off edge connecting to the bottom edge of the housing.

9. Ventilator according to claim 8, characterized in that a filter gauze (32) is provided, extending from the transition between the downward slanting part and the straight downward running part, on the one hand, and the bottom edge of the opposite-lying protective edge, on the other.

10. Ventilator according to claim 9, characterized in that the top and bottom edges of each housing are each formed by two section parts (10a, 10b, 12a, 12b) lying at a distance from each other and separated from each other by a plastic connecting piece (70, 72).

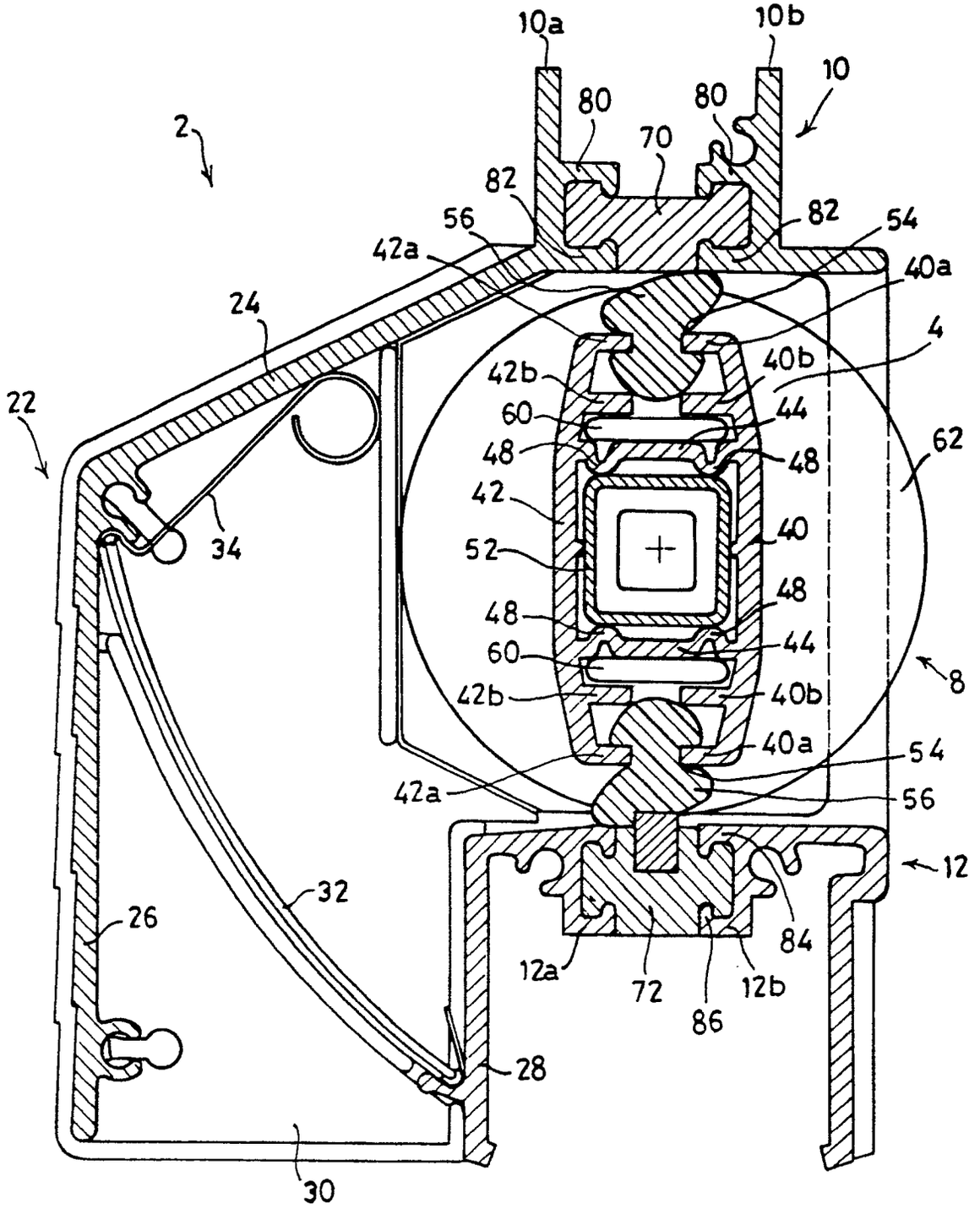
10a
10b
10
80
80
70
2
82
82
56
54
42a
40a
24
4
40b
42b
44
60
62
48
48
22
42
40
52
48
48
44
60
8
42b
40b
40a
54
42a
56
12
32
26
84
12a
72
12b
86
28
30
34

Fig. 1.

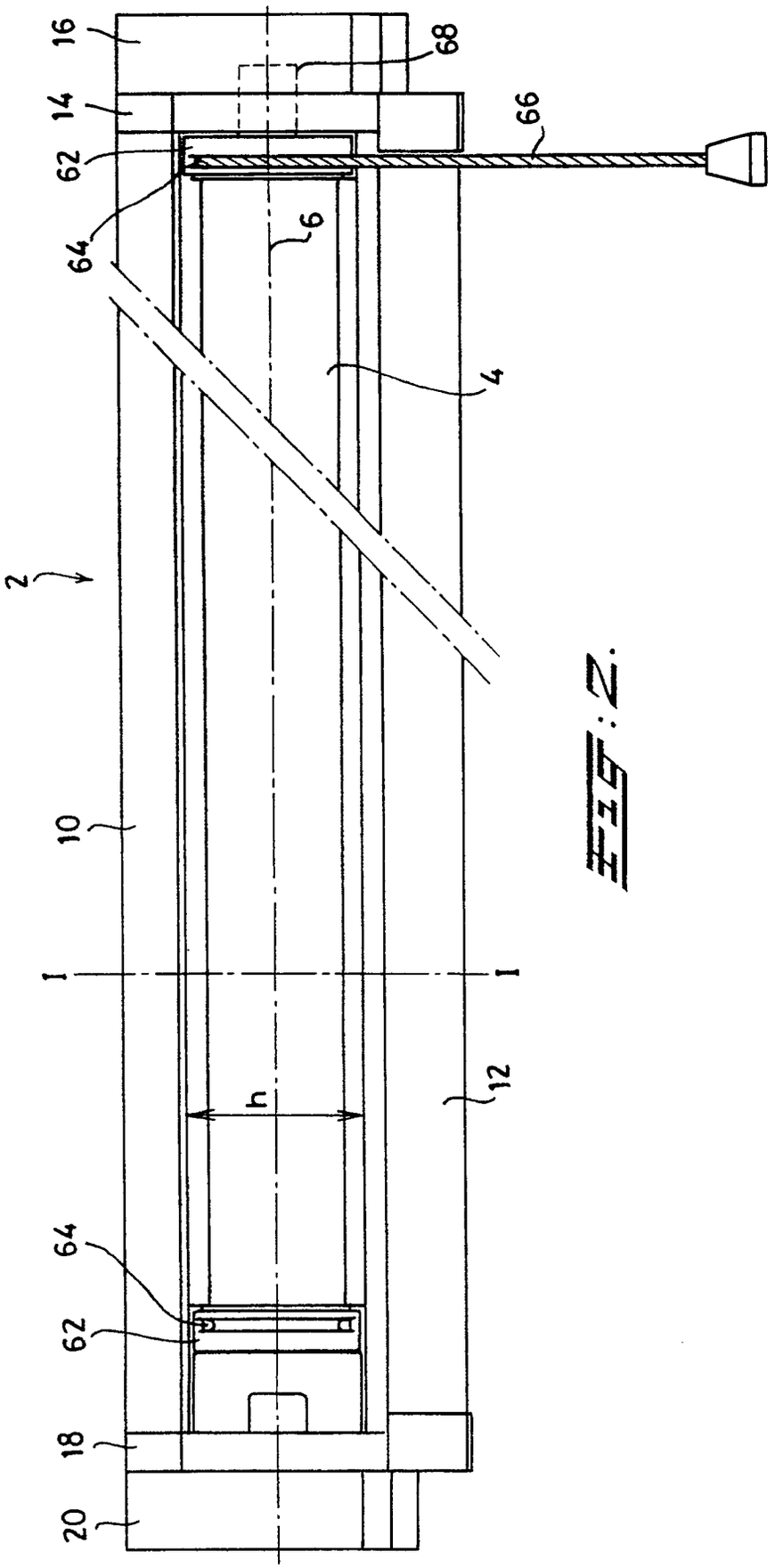

FIG. 2.

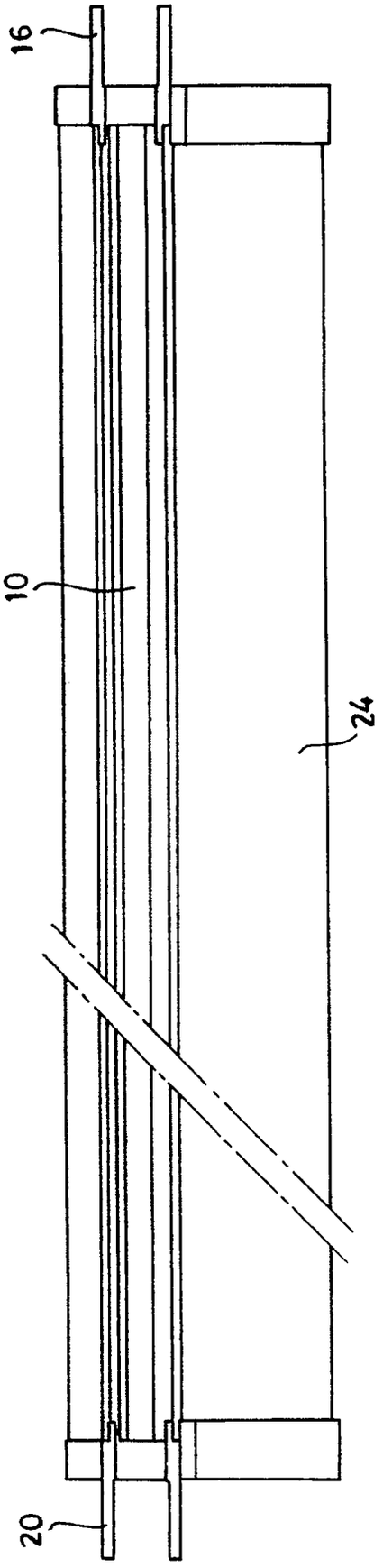

FIG. 2

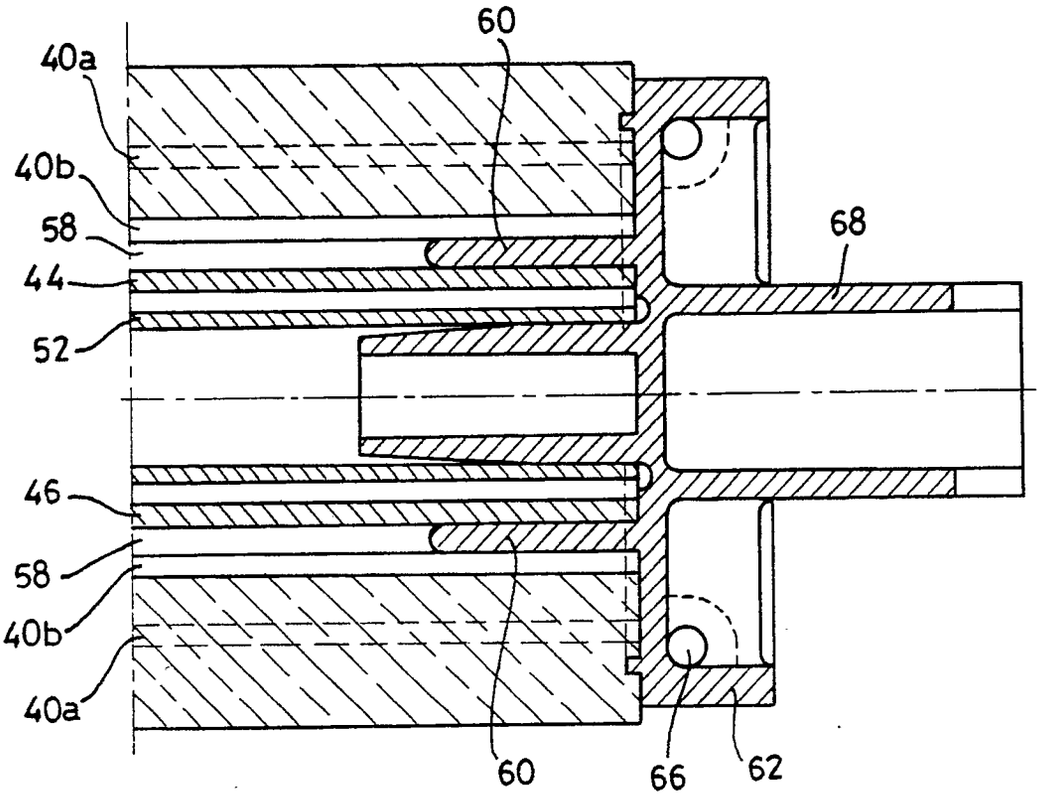

Fig. 4.

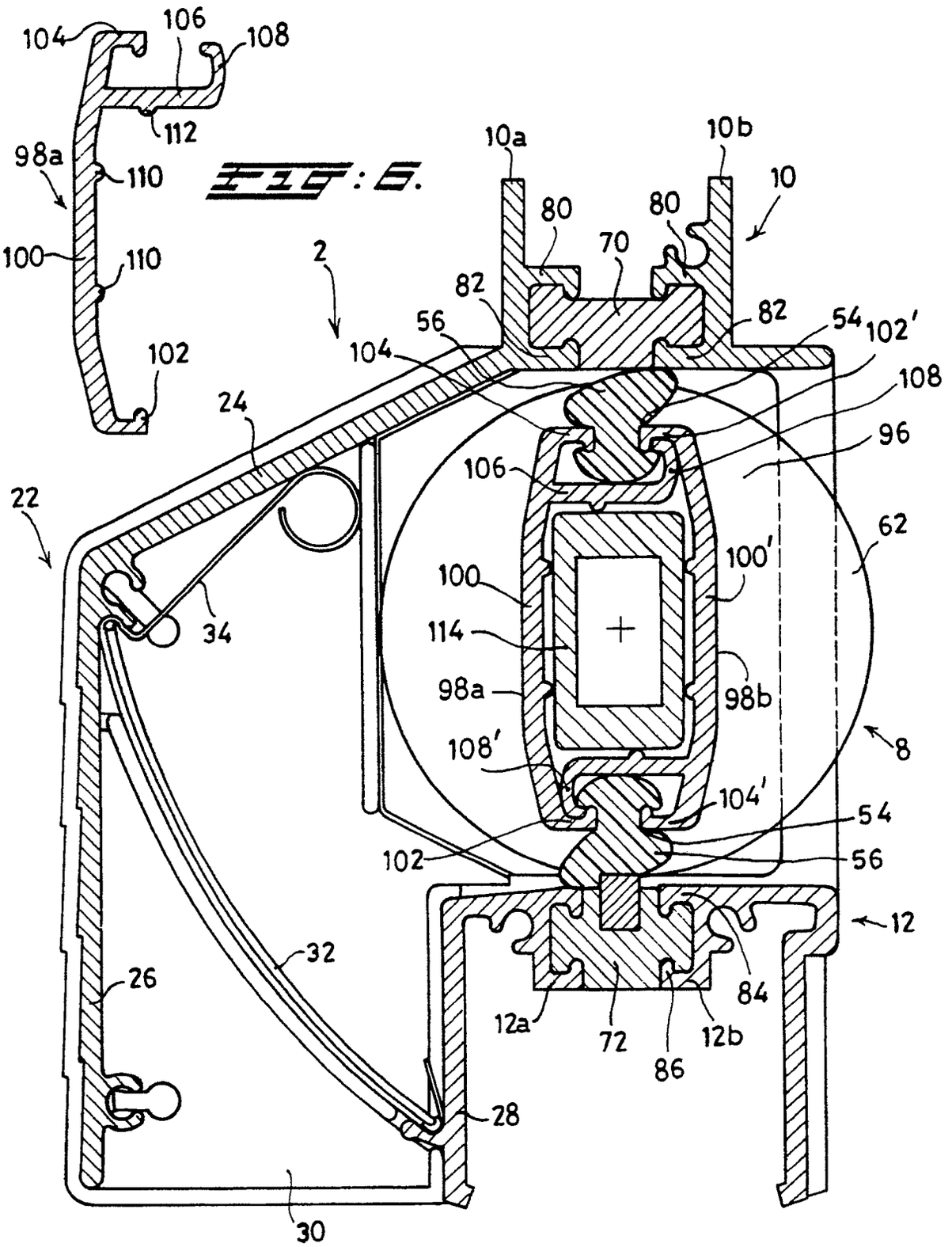
104
106
108
112
98a
110
100
110
102
10a
10b
10
80
80
70
2
82
82
56
54
102'
104
108
24
96
106
22
62
100'
100
34
114
98a
98b
8
108'
104'
54
102
56
12
32
26
84
12a
72
86
12b
28
30

Fig: 6.

Fig: 5.

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EUROPEAN SEARCH REPORT

Application Number

EP 91 20 0741

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)
X,A	GB-A-2 100 418 (FOGGINI ET AL) * page 1, line 89 - line 94; figure 1 *	1,2-10	E 06 B 7/06 F 24 F 13/18
X,A	EP-A-0 115 824 (HARDWARE & SYSTEMS PATENTS LTD) * page 10, line 5 - line 27; figures 2,3,4 *	1,2-10	
A	DE-B-1 259 002 (SCHÖLL) * column 4, line 15 - line 41; figures 2,3 *	1-10	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

E 06 B
F 24 F

The present search report has been drawn up for all claims

Place of search	Date of completion of search	Examiner
The Hague	01 July 91	KUKIDIS S.

CATEGORY OF CITED DOCUMENTS

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