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(54) Control device for the rotation of rotating panels of advertising posters.

(57) Control device for the rotation of rotating panels of advertising posters comprising a toothed sprocket (1) mounted idly on the transmission shaft (2) of an electric motor (3), and comprised between two clutch discs (4) and (4') held in adherence by an elastic means (6) with an adjustable load. The toothed sprocket (1) is connected with a second sprocket (17) keyed on the main control axle (12). On said axle (12) are keyed bevel pinions (13) coupled with an equal number of bevel gears (14), coaxial to the rotation axes (18) of the rotating panels (15) forming the advertising posters.

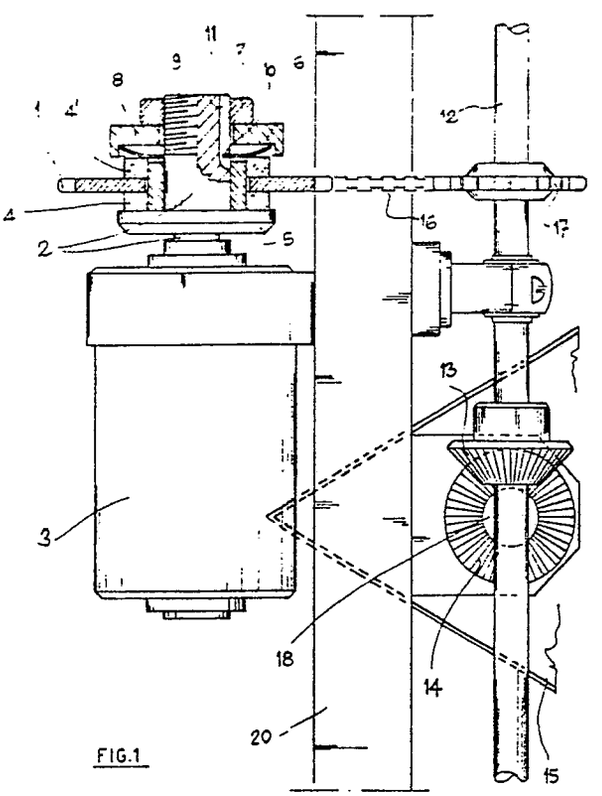

FIG.1

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CONTROL DEVICE FOR THE ROTATION OF ROTATING PANELS OF ADVERTISING POSTERS

The present invention refers to a control device for the rotation of rotating panels of advertising posters.

More in particular, the present invention refers to a control device for the rotation of rotating panels of advertising posters of the type comprising a main control shaft driven by a motor and coupling members between rotating panels and control shaft in equal number to that of the strips forming the panels.

As known, the rotating panels of advertising posters consist of a plurality of parallel strips, each equipped with a rotating movement synchronized with that of the other strips. For the synchronous movement of the panel strips, various devices have been proposed, which, however, present some drawbacks which make them unsuitable for application to all advertising posters with rotating panels.

Thus, for example, a device of synchronous rotation of the strips of a rotating panel is known which comprises equidistant, aligned cams, shaped like small flanges, comprising radial grooves with connected, aligned mouths and radial projecting lateral conveyors. Said cams are coupled to sleeves, equipped with radial fins, keyed to the ends of the rotating panels, with a number of fins equal to that of the parallel strips forming said panels, and positioned at right angles to said cams.

Right-angled connections are thus obtained between rotating panels and control shaft, with rotation pitch equal to the number of faces, or strips, of said panels. Said means of movement are presently and preferably constructed in plastic material as it is simpler to mold, cheaper and sufficiently valid to resist moderate rotation torques, necessary to make said panels rotate.

The abovementioned rotating device is satisfactory and valid for applications to advertising posters with rotating panels applied in zones outside the reach of the public, while it is easily subject to undesired damage which makes subsequent frequent heavy maintenance and repairs necessary, when said device is applied to advertising posters placed in zones within the reach of the public.

In particular, this happens to panels installed in sports fields for football, oval ball and similar, at the sides of the fields and behind the goal-posts, at ground height. In these cases, in fact, it often happens that the players, in the heat of the action and during runs, hit the posters violently, breaking the radial conveyors of the cams and radial fins of the connecting sleeves.

Similar damage is often caused also by sports photographers, who, in the search for special images, weigh heavily on the panels, without caring about the effects on the structures.

In these cases, if the sudden violent pressure is exercised on the panels while the motor starts the phase of periodic rotation of the strips, or rotation is already in course, it is evident that the overload strongly stresses the system and the weakest parts formed by the abovementioned cams and sleeves which may be subject to breakages.

The object of the present invention is to provide a control device for the rotation of the strips of rotating panels of advertising posters which do not present the above drawbacks. According to the present invention, this and other objects which will be seen from the following description are obtained by means of a control device comprising an electric control motor equipped with small transmission shaft and a means of transmission of the rotating motion of said small shaft to the rotating panels, in which said means of transmission comprises a main control axle driven by said small transmission shaft through the interposition of an adjustable clutch, and a plurality of bevel pinions keyed on said main shaft and coupled with an equal number of bevel gears, coaxial to the rotation axes of the rotating panels.

In the control device of the present invention, the pairs of bevel gears (pinions and gears) are metallic and the control motor of periodic rotation is equipped with an adjustable clutch whose load is sufficient to make the panels rotate and causes detachment as soon as any minimum overload takes place.

The advantages obtained by the use of the present control device mainly consist in the fact that the advertising posters with rotating panels, installed at ground level along the sides of sports fields and similar, are capable of resisting impact, pressure and/or loads. In fact, in the presence of such sudden, involuntary external actions, rotation of the panel strips is prevented and there is therefore no breakage or damage to the mechanical parts and, fundamentally, no physical damage to the persons involved.

The control device of the rotating panels of the present invention may be better understood from the following detailed description in which reference is made to the attached drawings which show a preferred, illustrative but unbinding implementation of the invention, and in which:

figure 1 is the schematic cross-section of the adjustable clutch applied to the transmission shaft of the control motor;

figure 2 is the lateral schematic view of a

panel with end support and a bevel control torque, and

figure 3 is the lateral schematic overall view of an advertising poster.

With reference to the figures, the rotation control device of the rotating panels (15) of advertising posters (20) comprises a sprocket (1) mounted idly on the small transmission shaft (2) of a control motor (3).

The sprocket (1) is positioned between two clutch rings (4) and (4′) and is guided and gripped by said rings.

The small transmission shaft (2) has the end part (9) threaded. A clutch ring (4) is placed between the fixed thrust bearing (5), integral with the lower part of the small transmission shaft (2), and one side of the sprocket (1), while the other clutch ring (4′) is placed between the other side of the sprocket (1) and the surface of a cup spring (6) which is elastically loaded by means of a ring nut (7) acting on a pressure and guiding cap (8)

The ring nut (7) is screwed on the threaded end (9) of the small shaft (2) and suitably fixed in position once the load necessary for sprocket clutch is found and the sprocket is correctly positioned.

The rotary motion given by the motor (3) through the small shaft (2) is transmitted to the sprocket (1) through the adherence by friction exercised on the clutch rings (4) and (4′) of the cup spring (6).

Said cup spring (6) is keyed to the small shaft (2) by means of a tooth (10) engaged in a longitudinal groove (11), obtained along said threading (9).

The pressure exercised by the cup spring (6) is sufficient to transmit the rotary motion given by the control motor (3) to the sprocket (1) and therefore to the main control axle (12) on which bevel pinions (13) are keyed which are engaged in an equal number of bevel gears (14), at right angles, keyed to the ends of the rotation axes (18) of the rotating panels (15).

The control motor (3), equipped with timers, thus causes rotation of the rotating panels (15), according to the times established.

If, for any accidental and/or unforeseen reason, the rotating panels (15) suffer impediments to rotation, the pressure of the cup spring (6) is not sufficient to transmit the necessary power and the clutch rings (4) and (4′) slide on the sides of the sprocket (1), cancelling the grip.

It is thus prevented that the right-angled bevel pinions (13) and (14) may break or suffer damage, or that the motor (3) may burn under an overload and damage to persons is prevented if the impediment to panel rotation is caused by a sudden impact, by the insertion of a limb between the panels etc.

Breakage of the right-angled bevel pinions (13) and gears (14) is also prevented by their strong metal construction and their transmission, in abnormal load conditions, is cancelled by means of the abovementioned clutch disks (4) and (4′) applied to the transmission members.

The connection between sprocket (1), coupled to clutch with small transmission shaft (2) of the motor (3), and the axle (12) is preferably obtained by means of a chain (16) which connects said sprocket (1) with a second sprocket (17) keyed on the same axle (12).

The device, as illustrated according to a preferred but unbinding implementation, therefore makes it possible to absorb any sort of impact or temporary impediment to rotation, to then automatically resume the timed movement of the panels when said causes of interruption are removed.

All excluding any risk of damage to persons.

The connection with adjustable clutch between the transmission shaft (2) of the motor (3) and the sprocket (1) may be substituted with other known types-of clutch, according to the present invention.

Claims

1) Control device for the rotation of rotating panels of advertising posters comprising an electric control motor equipped with a small transmission shaft and a means of transmission of the rotating movement of said small shaft to the rotating panels, characterized by the fact that said means of transmission comprises a main control axle (12) driven by said small transmission shaft (2) through the interposition of an adjustable clutch and a plurality of bevel pinions (13) keyed on said main axle (12) and connected with an equal number of bevel gears (14), coaxial to the rotation axes (18) of the rotating panels.

2) Device according to claim 1, characterized by the fact that the adjustable clutch comprises an idle sprocket (1) mounted idly on the small transmission shaft (2) and placed between two clutch discs (4) and (4′) which are held in contact with the sides of said sprocket by a shoulder thrust bearing (5), integral to said small shaft, and a cup spring (6) whose pressure force is adjusted by a pressure cap (8), pressed by a threaded ring nut (7), screwed to the end (9) of said small shaft.

3) Device according to claim 2, characterized by the fact that said cup spring (6) is connected to the small control shaft (2), of the motor (3), by means of a tooth (10) engaged in a groove (11) of the small shaft (2).

4) Device according to any of the previous claims, characterized by the fact that the sprocket

(1) is connected by means of a chain (16) to a sprocket (17) keyed on the control axle (12).

5) Device according to any of the previous claims, characterized by the fact that the bevel toothed pinions (13) and besvel gears (14) are of metal.

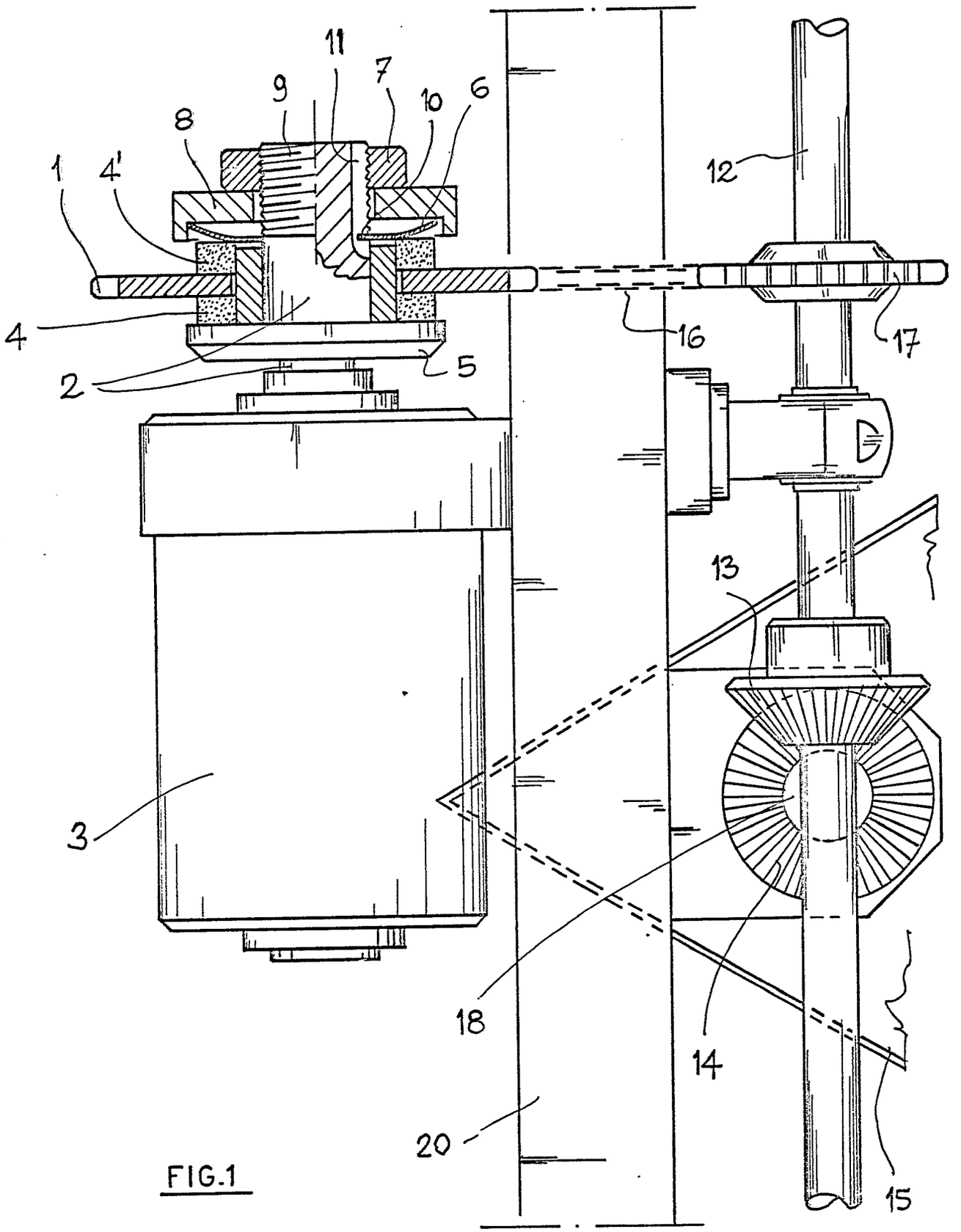
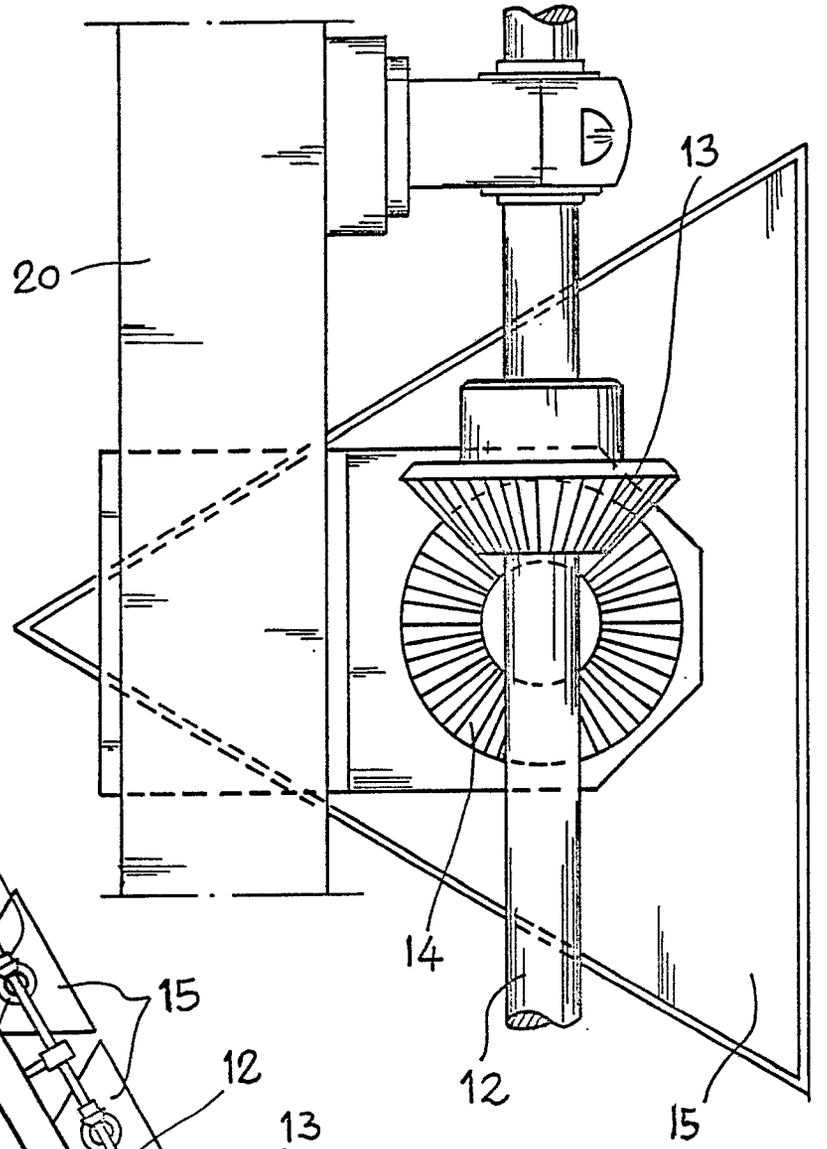


FIG.1

FIG. 2



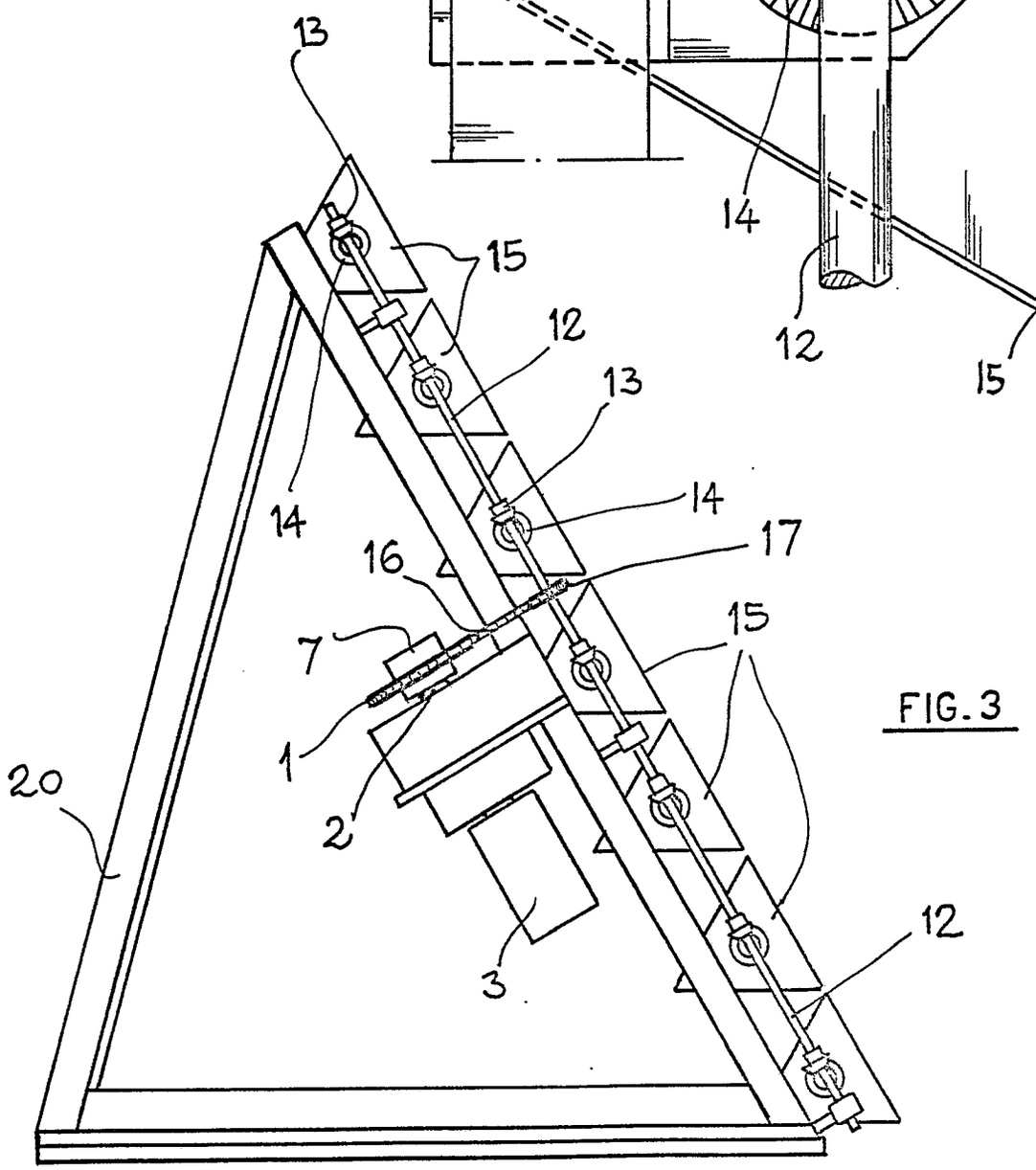


FIG. 3

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EUROPEAN SEARCH REPORT

Application Number

EP 89 11 3313

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	GB-A-2 105 895 (ULTRAVISION LTD) * Claims 1,12; page 4, line 90 - page 5, line 6; figures 6,7,12 *	1	G 09 F 11/02
A	---	2	
A	AU-A- 13 246 (VIVIAN EXPOSITIONS CO.) * Page 9, paragraphs 3-4; figures 3,9 *	1,4	
A	--- BE-A- 898 294 (PHILIP ARCKENS) * Claims 1,6; page 7, line 27 - page 8, line 3; figures 1-3 *	1	
	-----		TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			G 09 F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	23-10-1989	FRANSEN L.J.L.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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E : earlier patent document, but published on, or after the filing date
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