(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 632 424 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
04.06.1997 Bulletin 1997/23

(51) Int Cl.[6]: **G09F 11/02**

(21) Application number: **94304647.4**

(22) Date of filing: **27.06.1994**

(54) **Rotary display unit**

Drehbare Anzeigevorrichtung

Dispositif d'affichage rotatif

(84) Designated Contracting States:
CH DE ES FR GB LI

(30) Priority: **29.06.1993 GB 9313387**

(43) Date of publication of application:
04.01.1995 Bulletin 1995/01

(73) Proprietor: **POWERGRAPHIC DISPLAYS LIMITED**
High Wycombe
Buckinghamshire HP12 3RS (GB)

(72) Inventors:
- **Butler, Edward Maurice Pierce**
High Wycombe,
Buckinghamshire HP10 8PG (GB)
- **Bright, Richard Julian**
Maidenhead, Berkshire SL6 3PH (GB)

(74) Representative: **Allam, Peter Clerk**
LLOYD WISE, TREGEAR & CO.,
Commonwealth House,
1-19 New Oxford Street
London WC1A 1LW (GB)

(56) References cited:
DE-A- 2 726 352
US-A- 2 728 622
US-A- 3 273 271
US-A- 3 475 845

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 0 632 424 B1

Description

This invention relates to a rotary vane display apparatus of the kind employing a plurality of elongate members each having a plurality of display faces and each rotatable to provide a plurality of display surfaces for the apparatus.

The conventional apparatus of this kind employs members of triangular cross-section, commonly referred to as vanes or louvres, each having three display faces. The vanes are mounted in parallel and are synchronously rotatable about their long axes to provide three successively presented, display surfaces for the overall display unit. An example of such a rotary display unit is disclosed in EP-A 0249,396. Such units have found wide acceptance in providing changing displays of advertising material or other information.

There are numerous other examples of rotary vane display units of this type. Reference may be made, for example, to U.S. patents 3 367 049 (Noreen) and 3 383 785 (Werner) and to British patent specification GB 2 134 301A (Prismavision). EP-A- 0 249 396 (F. S. Displays) also discloses a particular form of cam drive for the set of vanes that extends along one side of the display. The cam drive has a respective cam for each vane that engages a respective cam follower member inserted in the end of each vane. The particular camming arrangement disclosed is unidirectional. It is also known in synchronously rotating the sets of vanes from one display face to the next to arrange a successive offset of the cams so that each display change ripples along the set of vanes before they achieve a common dwell period at which the next stationary display face is presented. It is further known from US-A-3 273 271 to provide a spring-biassed retention of the vanes in their operative position, the vanes being disengageable from their normal mounting by an axial movement against the spring bias.

Rotary vane display units have been made in various sizes from units accommodating conventional advertising poster sizes to large units intended to be seen by the public from some distance away. Smaller units have been produced which will fit into a shop counter.

We have identified a market for a compact, and preferably free-standing display unit, whose dimensions may range down to say 150 x 150 mm. of display area or less. Such displays could find wide acceptance if they can be manufactured inexpensively using a minimum of components and with ease of assembly and disassembly. There will be described hereinafter a new design of rotary vane display unit which has emerged from a consideration of the above factors. The design to be described also has the ability of being driven bidirectionally, that is the order of presentation of the display surfaces can be reversed.

The preferred practice of the present invention enables us to provide a rotary vane display apparatus which may be realised in a compact form with a relatively small number of parts.

There will be described a vane assembly and a means of mounting the vanes which enables the vanes to be readily inserted, and more particularly enables a fresh set of vanes bearing new display material to be prepared as a set and inserted on site into the display unit.

There will be described a cam drive, similar to that known from DE-A-2 726 352 which acts directly on the vanes without the need of any special cam follower. The cam drive to be particularly described uses cams which are capable of a bi-directional drive of the vanes.

The present invention relates to a rotary vane display apparatus of the kind comprising a plurality of vanes mounted in parallel for rotation about their longitudinal axes, and each vane having a plurality of display facets, and means to drive said vanes for rotation about their respective axes to provide a plurality of display surfaces.

In accordance with the present invention a rotary vane display apparatus of this kind is characterized in that each vane has a pin portion at one end received for rotation in a bearing provided by a respective apertured yieldable spring member, said spring member having a fixed end portion and a free end portion such that said pin portion is receivable in said respective aperture by engagement of said free end portion by said pin portion to cause said spring member to flex about its fixed end and allow said pin portion to be slid towards said respective aperture.

In the embodiments of the invention described below each of the vanes is mounted at one end for rotation in a bearing provided by a respective apertured spring finger. The spring fingers may be comprised in a strip or succession of strips along one side of the vanes. In a presently preferred embodiment the spring fingers are upstanding, that is they project toward the display surface provided by the vanes and the free end of each finger is provided with a camming surface, for example, as by chamfering, to allow the associated vane end to be pressed down against the resilience of the finger to have a bearing portion at the vane end enter the respective aperture. The vane is then held rotatably in place - preferably with the spring finger providing a longitudinal force on the vane.

In the embodiments to be described, each vane comprises a member of uniform cross-section, for example an equi-sided polygon such as an equilateral triangle, and a cam drive arrangement is provided to intermittently rotate the vanes about their axes, the cam drive arrangement acting directly on an end portion of each vane member. More particularly there will be described a respective cam acting on each vane end portion which is of a configuration that allows the cam to rotate the associated vane in either direction.

It is a further feature of the described embodiments that each vane comprises a member of hollow uniform cross-section, and a respective bearing member is re-

ceived in each end portion of each vane, all the bearing members being of the same construction. Each bearing member has a spigot or pin for seating in a bearing aperture to form a plain bearing therewith.

The present invention and its practice will be further described with reference to the accompanying drawings in which:

Fig. 1 shows a plan view of a rotary display unit embodying the invention the upper fascia surround being removed and only some of the vanes being shown.

Fig. 2 is an end view of one vane showing a bearing inserted therein;

Fig. 3 is a section taken along the axis of one vane;

Fig. 4 is a face view of a portion of a strip of resilient fingers that support and engage one end of each vane;

Fig. 5 is a transverse section parallel to the vanes of a presently preferred modification of the embodiment of Figs. 1-4, using a modified arrangement of resilient fingers with additional provision to allow easy insertion of the vanes;

Fig. 6 is a simplified partial view of a set of vanes assembled for insertion in the modified apparatus of Fig. 5;

Figs. 7, 8 and 9 show top, side and perspective views respectively of a cam for driving one vane; and

Figs. 10a to 10c are diagrammatic views illustrating the cam action on the associated vane.

The unit illustrated in Fig. 1 has a housing in the form of a shallow rectangular tray 10. A set of vanes 20 is mounted at the open side of the housing 10, the vanes being rotatably mounted in parallel along the housing 10 between a strip 22 of material secured to one long wall of the tray and a strip 24 comprising a set of resilient fingers secured to the other long wall. The vanes are identical of conventional triangular cross-section and are supported for rotation about their longitudinal axes A (Fig. 2) by equi-spaced bearing apertures (40 in Fig. 3) along the strip 22 and by respective apertured fingers of the strip 24 to be further described below. The fingers are likewise equispaced at the same pitch as the vanes.

Referring to Fig. 2, each vane 20 is an extrusion, e. g. of aluminium, of hollow equilateral triangular cross section and has a respective bearing member 26 inserted in each end as is seen in Fig. 3. Each bearing member 26, of Acetal copolymer for example, has a body portion 28 which is a push fit into the respective end of the vane. The body 28 is cup-shaped as indicated by dotted line 30 to assist in making it a resilient fit. The member 26 is located by a flange 32 that seats against the end of the vane but preferably does not project beyond the outer surface of the vane. Each bearing member also has an outwardly directed spigot or pin 38 that seats in an aperture 40 in the strip 22 at one end of a vane and in an aperture 42 in a finger 44 of strip 24 at the other end of the vane, thereby providing simple plain bearings. The outer surface of each flange is urged by the resilient action of the fingers to bear against the strip 22 at one vane end or the finger at the other end.

The vanes are rotated by a cam drive assembly 50 as seen in dash outline in Fig. 1. The drive assembly extends adjacent strip 22 below the vanes as seen in Fig. 1 to directly engage the adjacent end portion 52 of each vane. This portion is reserved for cam-driving and the display surfaces are provided by the remainder of the vane over the length D. The cams are not shown in Figs. 3 and 4 and are described below. The set of vanes 20 are shown in the display or dwell position in Figs. 1-3 with a display facet upwards. There is a cam for each vane which is described further below. The cams are supported on a shaft 54 rotatably mounted in bushes 56 mounted on the shorter end walls of the housing 10. In the illustrated embodiment a mains-driven, synchronous motor assembly 58 with appropriate gearing is mounted on the outside of the bottom wall of the housing 10 and has a shaft projecting into the housing and coupled to cam assembly shaft 54 by a mitre or bevel gear arrangement 60.

The strip 24 of resilient fingers 44 will be further described with reference to Figs. 3 and 4. The fingers 44 are spaced at the pitch of the vanes and each has a bearing aperture 42 sized to accommodate a respective bearing spigot 38 to provide a plain bearing therefor. The strip is configured to allow each finger to flex with respect to a continuous longitudinal portion 25 without affecting its neighbours. As seen in Fig. 3 each finger 44 bears on the flange 38 of the respective bearing member 26 to urge the flange 30 at the other end of the vane against strip 22. A vane can readily be inserted by pressing it against its locating finger 44 and sliding it down to aperture 40 against the resilience of the finger; or released by applying pressure to the finger 44 enabling the pin 38 to be removed from the bearing aperture 40.

As will be seen from Fig. 3, the strip 24 is L-shaped having a fastening portion 61 extending from longitudinal portion 25, from which fingers 44 freely depend, that is secured to a rail or bar 62 secured to the adjacent long wall of housing 10. The strip may be formed of resilient metal, such as spring steel, or of a resilient plastics material.

Fig. 5 shows a modification of the unit described thus far. The modification is concerned with the strip 24 of resilient fingers. Other parts not shown in Fig. 5, such as the cam drive assembly at the right of the figure, remain as previously described. Parts similar in function to those already described carry the same reference numeral increased by 100.

In the modification of Fig. 5, a support tray 110 has the height of one long side reduced along a portion of its length as compared with tray 10 to leave an upstanding flange 200 for supporting a resilient finger strip 124. The finger strip 124 is of essentially the same configu-

ration as the strip 24 in Fig. 4 but is of planar form. There is no portion 61. In the modified arrangement of Fig. 5, the strip 124 has the fingers projecting upwardly, the continuous longitudinal portion 125 of the strip being clamped between flange 200 and a stiff bar 204. These parts may be joined in any suitable fashion as by rivets 206.

Each finger 144 has a bearing aperture 142 aligned with a bearing aperture 140 in the opposite wall 208 of tray 110. If desired the bearing apertures 140 could be provided in a separate member as in Fig. 3. The top of each finger 144 is chamfered downwardly and inwardly at 210 to guide a respective vane 152 into position. Fig. 5 shows a vane being inserted. The spigot 38 at the end of the vane adjacent wall 208 is inserted in bearing 140. The spigot 138 at the other end is then pressed into position by movement of the vane end in the direction of arrow. The spigot engages chamfered edge 210 to flex the finger 144 outwardly and is slid down into alignment with bearing aperture 142 so as to enter the aperture where the vane is held for rotation under the resilience of the spring.

This insertion action has particular advantage in loading the unit with a set of display vanes to which display material is affixed. For this purpose, it is known to mount the set of vanes in a jig at a site remote from that at which the display unit is located. The jig holds the vanes in the same relative positions as they would have in the unit and the display material is applied. Fig. 6 shows by way of example three vanes of a set 220 mounted in a jig (not shown) so as to provide an upper display surface to which display material is secured, the display material being cut into parallel strips 222 secured to respective vane facets. It is important that the spacing pitch P of the vane axes in the jig be the same as that of the vanes in the display unit.

Having secured the display material strips 222 and assuming display surface to which the material is applied is the last of the three to be so treated, the whole surface carrying the display material is now overlaid by a releasable adhesive film 226. The vanes can now be released from the jig and taken to the appropriate display unit as an integral assembly. They can then be inserted in the display unit, each vane being in its correct position for the unit and each being pressed into place as described with reference to Fig. 5. Once the vanes are received in the display unit the releasable film 226 is peeled away.

The finger strip 124 may be of spring metal as previously described though a plastics material is preferred in order to provide the chamfered camming edge 210. A plastics strip would be expected to be of greater thickness than one of, say, spring steel and this greater thickness enables a better camming edge 210 to be formed.

The vanes are readily releasable from the display unit. The pin 38, 138 at the right-hand end of each vane (as seen in Fig. 5) is simply inserted into or extracted from the fixed bearing aperture 40, 140. The other pin is released from the aperture in its spring finger 24, 124 by pressing the finger outwardly. This is particularly easy with the embodiment of Fig. 5 in which the free end of the finger can be manipulated.

The cam drive assembly 50 will now be more fully described. It comprises a set of cams 70, one for each vane, mounted on the shaft 54 seen in Fig. 1. It is noted that the shaft 54 and the aperture 72 through each cam by which it is mounted on the shaft, are of matching non-circular cross-section so that each cam is positively located on the drive shaft. A regular polygonal shape is preferred, such as square, hexagonal or octagonal. Such arrangements provide the possibility of mounting the cams at different angles about the shaft so that instead of all vanes turning at the same time, as is the case with the cams aligned, the changing of the display can, for example, be rippled along the display.

Referring to Figs. 7, 8 and 9 the cam 70 is provided with a square hole 72 extending axially through the cam. The axis is marked B-B. Fig. 7 shows a side view. The cam has a circumferential, rounded V-shaped groove 74 in which the lower edge of vane end portion 52 (Figs. 1-3) seats during the dwell time of the display. The guide groove 74 is interrupted by a camming wall 76 extending obliquely to the groove 74 as is best seen in Fig. 7.

The wall 76 extends at about 30° to the line of groove 74 (60° to axis B-B as seen in Fig. 7). It is of a narrow trapezoidal cross-section being narrower at the top 78 than at its base 80. The top 80 of the wall is also slightly concave in shape as is seen in Fig. 8 with the lowest point 82 at the middle of the wall aligned with groove 74. The wall is contoured so that it does not engage the lower edge of a vane 20 in Figs. 2 and 3 riding in groove 74 until the middle portion 82 of the wall comes into contact with the edge of the vane. Thus taking the cam as seen in Fig. 7, if the cam is rotating about axis B-B with the upper part of the cam moving into the paper and the lower edge portion 84 of a vane riding in the upper portion of groove 74, the upper left part 86 of the camming wall reaches a position virtually flush with the vane surface before camming commences. At this moment the wall part 86 is virtually upright as seen from the left of Fig. 7. This position is diagrammatically illustrated in Fig. 10a. As the middle portion 82 of the cam wall engages the vane surface, the latter is deflected to the right and the vane turns counterclockwise. The camming continues as the rising lower right part 90 of the wall slides along the vane until the vane has been turned 60° as illustrated in Fig. 10b. It will be understood that the wall is at an oblique angle to the plane of the paper. The continued rising of the wall part 90 acts on the face of the vane and causing further rotation for another 60° to a position where the wall part 90 is upright as seen from the right of Fig. 7. At this point the surface of the wall lies substantially flush with and is moving away from the vane surface 88, thereby leaving the new lower edge of the vane to ride in the dwell position in groove 74. This position is illustrated in Fig. 10c.

The camming action is essentially effected from the middle of wall 68 to its trailing edge in the direction of rotation and occupies about 90° of the total cam rotation, leaving 270° of rotation as the dwell period. For unidirectional camming the upper part 78 of the wall could be omitted though some wall is necessary to provide a smooth lead in to the camming action. The symmetry of design illustrated in Figs. 7-9 enables the cam to be driven in the opposite direction to that described thereby reversing the rotation of the vane and the order of presentation of the display surfaces.

The construction of the rotary display unit described is economical in the number of components used. The vane extrusions are of straight forward triangular shape, the bearing parts are the same at both ends, and the camming is effected on the vane itself. The resilient fingers provide a means of readily inserting or removing vanes from the housing. A compact structure is achieved.

The vanes may be of materials other than metal or plastics. Other materials such as cardboard or compressed paper laminate might be used, particularly where the vanes were intended for displays that would be thrown away subsequently, e.g. for short-term promotions.

Claims

1. A rotary vane display apparatus comprising a plurality of vanes (20) mounted in parallel for rotation about their longitudinal axes, each vane having a plurality of display facets, and means (50) to drive said vanes for rotation about their respective axes to provide a plurality of display surfaces, characterized in that each vane has a pin portion (38, 138) at one end received for rotation in a bearing (42, 142) provided by a respective apertured yieldable spring member (44, 144), said spring member (44, 144) having a fixed end portion (25, 125) and a free end portion (210) such that said pin portion (38, 138) is receivable in said respective aperture (42, 142) by engagement of said free end portion (210) by said pin portion to cause said spring member (44, 144) to flex about its fixed end and allow said pin portion (38, 138) to be slid towards said respective aperture (42, 142).

2. A rotary vane display apparatus as claimed in Claim 1, in which said free end portion (210) of each spring member (44, 144) comprises a camming surface (210) engageable by a pin portion (38, 138) to cause the spring member (44, 144) to yield.

3. A rotary vane display apparatus as claimed in Claim 2 in which said free end portion (210) of each spring member (44, 144) is chamfered to provide said camming surface (210).

4. A rotary vane display apparatus as claimed in Claim 1, 2, or 3 in which each vane comprises a member of uniform, equi-sided polygonal cross-section, for example an equilateral triangle, and said drive means comprises a cam drive arrangement for intermittently rotating the vanes about their axes, said cam drive arrangement acting directly on an end portion of each vane member.

5. A rotary vane display apparatus as claimed in Claim 4 in which said cam drive arrangement comprises a respective cam acting on each vane end portion, the cams being mounted on a common drive shaft, and each cam being of a configuration that allows the cam to drive the associated vane in either direction.

6. A rotary vane display apparatus as claimed in Claim 4 or 5 in which said cross-section is hollow and a respective bearing member (26) including a pin portion is received in each end portion of each hollow vane member, all the bearing members being of the same construction.

7. A rotary vane display apparatus as claimed in Claim 1, 2, or 3 in which each vane comprises a hollow member of uniform, equi-sided polygonal cross-section, for example an equilateral triangle, and said drive means comprises a cam drive arrangement for intermittently rotating the vanes about their axes, said cam drive arrangement acting directly on an end portion of each hollow vane member.

8. A rotary vane display apparatus as claimed in Claim 7 in which a respective bearing member (26) including a pin portion is received in each end portion of each hollow vane member, all the bearing members being of the same construction.

9. A rotary vane display apparatus as claimed in Claim 6 or 8 in which the pin portion of each bearing member at the other end of each vane is received in a respective one of a plurality of further bearing apertures and forms a plain bearing therewith.

10. A rotary vane display apparatus as claimed in any preceding claim comprising a housing having a base and opposed side walls upstanding from the base, said spring members being mounted along one of said side walls, said plurality of vanes being rotatably supported at one end by respective ones of said spring members and being rotatably supported at the other end at the other of said side walls.

11. A rotary vane display apparatus as claimed in Claim 10 in which said one side wall is of lesser height from the base than said other side walls and said

fixed end portions of said spring members are fixed to said one side wall and project upwardly therefrom with respect to said base.

12. A rotary vane display apparatus as claimed in Claim 10 or 11 as dependent on Claim 4, 5, 6 or 7 in which said cam drive arrangement is located between said base and said plurality of vanes.

Patentansprüche

1. Eine Anzeigenvorrichtung aus drehbaren Prismen, die mehrere Prismen (20) aufweist, welche zur Rotation um ihre Längsachsen parallel montiert sind, wobei jedes Prisma mehrere Anzeigenflächen aufweist, und Vorrichtungen (50), um die Prismen zur Rotation um ihre jeweiligen Achsen anzutreiben, um mehrere Anzeigenflächen zur Verfügung zu stellen,
dadurch gekennzeichnet,
daß jedes Prisma an einem Ende ein Bolzenteil (38,138) aufweist, welches für die Rotation in einem Lager (42,142) aufgenommen ist, das durch ein jeweiliges nachgebendes Federglied (44,144) mit Öffnungen zur Verfügung gestellt wird, wobei das Federglied (44,144) ein befestigtes Endstück (25,125) und ein freies Endstück (210) aufweist, so daß das Bolzenteil (38,138) in der jeweiligen Öffnung (42,142) aufgenommen werden kann, indem das Bolzenteil bei dem freien Endstück (210) so eingesetzt wird, daß sich das Federglied dadurch um sein befestigtes Ende beugt, und ermöglicht, daß das Bolzenteil (38,138) bis zur jeweiligen Öffnung (42,142) eingeschoben werden kann.

2. Eine Anzeigenvorrichtung aus drehbaren Prismen nach Anspruch 1, bei welcher das freie Endstück (21o) jedes Federgliedes (44,144) eine Eingriffsfläche (210) aufweist, an der ein Bolzenteil (38,138) eingreifen kann, wobei das Federglied (44,144) nachgibt.

3. Eine Anzeigenvorrichtung aus drehbaren Prismen nach Anspruch 2, bei welcher das freie Endstück (210) jedes Federgliedes (44,144) abgeschrägt ist, um diese Eingriffsfläche bereitzustellen.

4. Eine Anzeigenvorrichtung aus drehbaren Prismen nach Anspruch 1, 2 oder 3, bei welcher jedes Prisma ein Glied von einheitlichem, gleichseitigem vieleckigem Querschnitt, z.B. einem gleichseitigem Dreieck, aufweist, und die Antriebsvorrichtung eine Nockenantriebsvorrichtung für die periodische Rotation der Prismen um ihre Achsen umfasst, wobei die Nockenantriebsvorrichtung unmittelbar an einem Endstück jedes Prismengliedes wirkt.

5. Eine Anzeigenvorrichtung aus drehbaren Prismen nach Anspruch 4, bei welcher die Nockenantriebsvorrichtung einen jeweiligen Nocken aufweist, der auf jedes Prismenendstück wirkt, wobei die Nocken auf einer gemeinsamen Antriebswelle montiert sind, und jeder Nocken so ausgeführt ist, daß es möglich ist, daß die Nocken das verbundene Prisma in jeder Richtung antreiben.

6. Eine Anzeigenvorrichtung aus drehbaren Prismen nach Anspruch 4 oder 5, bei welcher der Querschnitt hohl ist, und bei welcher ein entsprechendes Lagerglied (26) einschließlich eines Bolzenteiles in jedem Endstück jedes hohlen Prismengliedes aufgenommen ist, wobei alle Lagerglieder denselben Aufbau aufweisen.

7. Eine Anzeigenvorrichtung aus drehbaren Prismen nach Anspruch 1, 2 oder 3, bei welcher jedes Prisma ein hohles Glied von einheitlichem, gleichseitigem vieleckigem Querschnitt aufweist, beispielsweise ein gleichseitiges Dreieck, und die Antriebsvorrichtung eine Nockenantriebsvorrichtung für die periodische Rotation der Prismen um ihre Achsen umfasst, wobei die Nockenantriebsvorrichtung unmittelbar an einem Endstück jedes hohlen Prismengliedes wirkt.

8. Eine Anzeigenvorrichtung aus drehbaren Prismen nach Anspruch 7, bei welcher ein entsprechendes Lagerglied (26) einschließlich eines entsprechenden Bolzenteiles in jedem Endstück jedes hohlen Prismengliedes aufgenommen ist, wobei alle Lagerglieder denselben Aufbau aufweisen.

9. Eine Anzeigenvorrichtung aus drehbaren Prismen nach Anspruch 6 oder 8, bei welcher das Bolzenteil jedes Lagergliedes an der anderen Seite jedes Prismas in einer jeweiligen von mehreren weiteren Lageröffnungen eingesetzt ist , und mit denen ein einfaches Lager bildet.

10. Eine Anzeigenvorrichtung aus drehbaren Prismen nach einem der vorhergehenden Ansprüche, die ein Gehäuse aufweist, welches eine Basis und gegenüberliegende Seitenwände besitzt, die auf der Basis aufrecht stehen, wobei die Federglieder entlang einer der Seitenwände befestigt sind, und wobei die mehreren Prismen an einem Ende durch das jeweilige Federglied drehbar gehaltert sind, und an dem anderen Ende an der anderen der Seitenwände drehbar gehaltert sind.

11. Eine Anzeigenvorrichtung aus drehbaren Prismen nach Anspruch 10, bei welcher die eine Seitenwand eine geringere Höhe von der Basis aus aufweist, und wobei die befestigten Endstücken der Federglieder an dieser einen Seitenwand befestigt sind

und von dort aus in Bezug auf die Basis nach oben ragen.

12. Eine Anzeigenvorrichtung aus drehbaren Prismen nach Anspruch 10 oder 11, soweit von Anspruch 4,5,6 oder 7 abhängig, bei welcher die Nockenantriebsvorrichtung zwischen der Basis und den mehreren Prismen angeordnet ist.

Revendications

1. Dispositif d'affichage à prismes tournants comprenant :

- une pluralité de prismes (20) montés parallèlement de manière à tourner autour de leur axe longitudinal, chaque prisme ayant une pluralité de facettes de présentation et
- un moyen (50) pour commander la rotation de ces prismes autour de leur axe respectif de manière à obtenir une pluralité de surfaces de présentation,

caractérisé en ce qu'une extrémité de chaque prisme possède une tige (38, 138) reçue de manière à pouvoir tourner dans un support (42, 142) constitué par un élément élastique flexible perforé (44, 144) ayant une extrémité fixe (25, 125) et une extrémité libre (210) de telle sorte que la tige (38, 138) est susceptible d'être reçue dans le trou correspondant (42, 142) en entraînant, sous l'action de la tige, l'extrémité libre (210) à faire fléchir cet élément élastique (44, 144) autour de son extrémité fixe permettant ainsi à cette tige (38, 138) d'être glissée vers l'ouverture respective (42, 142).

2. Dispositif d'affichage à prismes tournants selon la revendication 1, dans lequel l'extrémité libre (210) de chaque élément élastique (44, 144) comprend une surface de déverrouillage (210) susceptible d'être en prise avec la tige (38, 138) pour que l'élément élastique fléchisse.

3. Dispositif d'affichage à prismes tournants selon la revendication 2, dans lequel l'extrémité libre (210) de chaque élément élastique (44, 144) est chanfreinée pour constituer la surface de verrouillage (210).

4. Dispositif d'affichage à prismes tournants selon l'une des revendications 1, 2 ou 3, dans lequel chaque prisme comprend un élément de section uniforme polygonale dont chaque arête est de même longueur, représentant par exemple un triangle équilatéral, et le moyen de commande comprend un système d'entraînement par came destiné à faire tourner par intermittence les prismes autour de leur axe, ce système agissant directement sur une extrémité de chaque élément de prisme.

5. Dispositif d'affichage à prismes tournants selon la revendication 4, dans lequel le système d'entraînement par came comprend une came par extrémité de prisme agissant sur celle-ci, cette came étant montée sur un arbre commun de commande et chaque came ayant une conception lui permettant d'entraîner dans toute direction le prisme associé.

6. Dispositif d'affichage à prismes tournants selon l'une des revendications 4 ou 5, dans lequel ladite section est creuse et un élément porteur (26) comportant une tige est reçu dans chaque extrémité de cet élément creux de prisme, tous les éléments porteurs ayant la même conception.

7. Dispositif d'affichage à prismes tournants selon l'une des revendications 1, 2 ou 3 dans lequel chaque prisme comprend un élément creux de section uniforme polygonale dont les arêtes ont toutes la même longueur, représentant par exemple un triangle équilatéral, et le moyen de commande comprend un système d'entraînement par came destiné à faire tourner par intermittence les prismes autour de leur axe, ce système d'entraînement agissant directement sur une extrémité de chaque élément creux des prismes.

8. Dispositif d'affichage à prismes tournants selon la revendication 7, dans lequel l'élément porteur (26) comprenant une tige est reçu dans chaque extrémité de chaque élément creux de prisme, tous les éléments porteurs ayant la même conception.

9. Dispositif d'affichage à prismes tournants selon l'une des revendications 6 ou 8, dans lequel la tige de chaque élément porteur situé à l'autre extrémité de chaque prisme est reçue dans un trou correspondant appartenant à une pluralité d'autres trous porteurs et forme un pallier lisse avec ce dernier.

10. Dispositif d'affichage à prismes tournants selon l'une quelconque des revendications précédentes, comprenant une enveloppe ayant une base de laquelle partent des parois latérales verticales, lesdits éléments élastiques étant disposés le long d'une de ces parois, la pluralité de prismes étant portée de manière à pouvoir tourner à une extrémité sur l'élément élastique correspondant et à l'autre extrémité sur l'autre paroi.

11. Dispositif d'affichage à prismes tournants selon la revendication 10, dans lequel la première paroi est, en partant de la base, d'une hauteur inférieure à l'autre paroi et les extrémités fixes des éléments élastiques sont fixées à cette paroi latérale et se projettent vers le haut par rapport à cette base.

12. Dispositif d'affichage à prismes tournants selon l'une des revendications 10 ou 11 lorsqu'elle dépend des revendications 4, 5, 6 ou 7, dans lequel le système d'entraînement par came est situé entre la base et la pluralité de prismes.

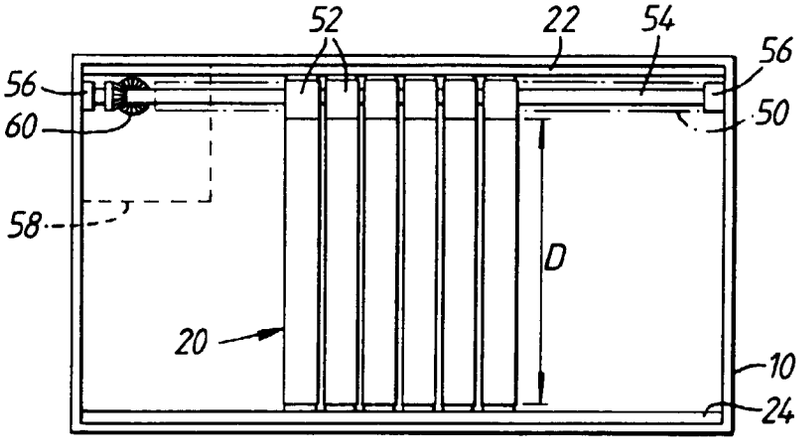


Fig.1

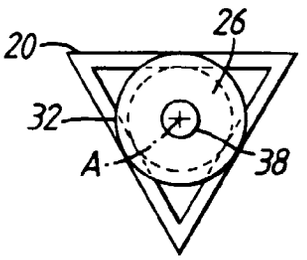


Fig.2

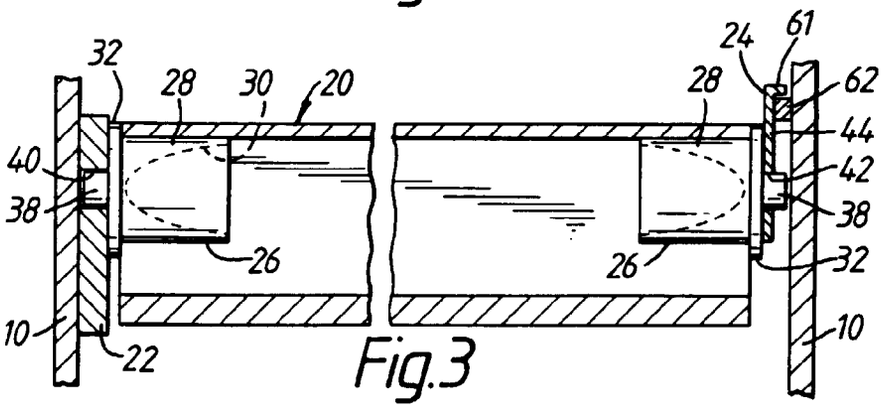


Fig.3

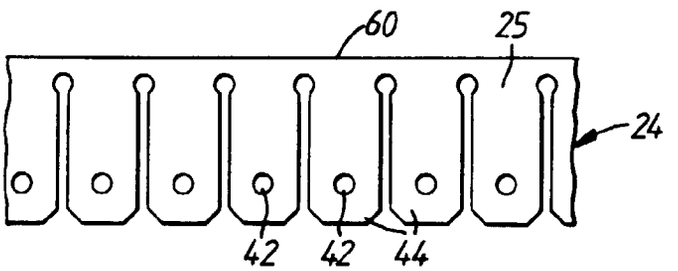


Fig.4

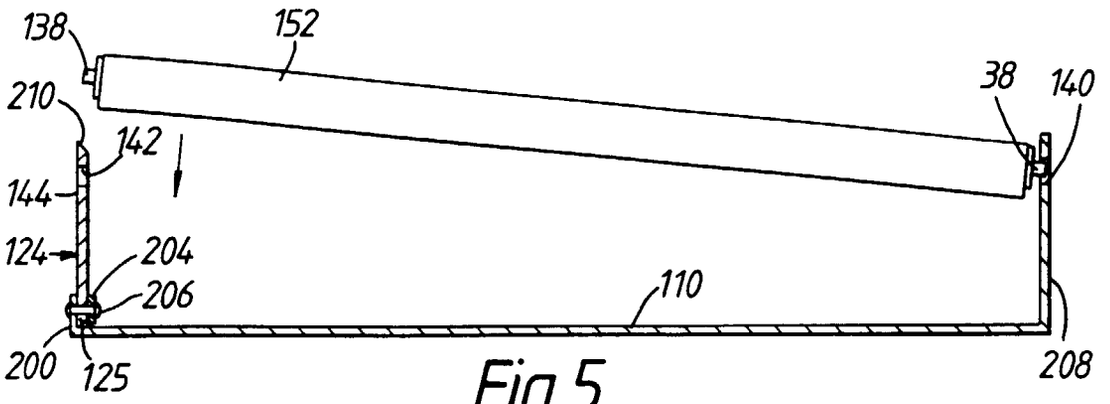


Fig.5

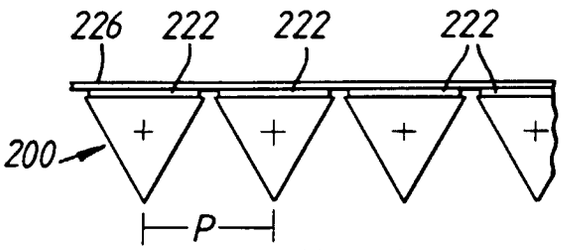


Fig.6

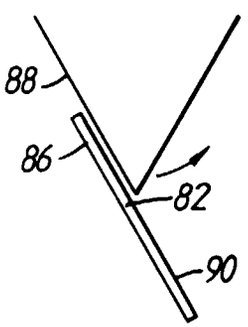


Fig.10a

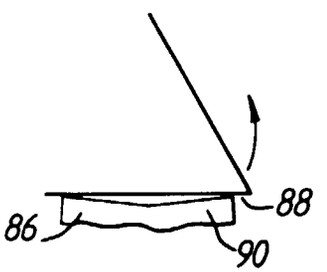


Fig.10c

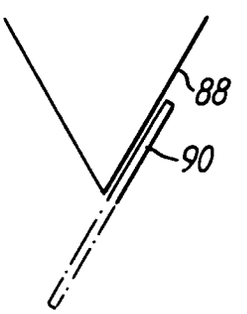


Fig.10c

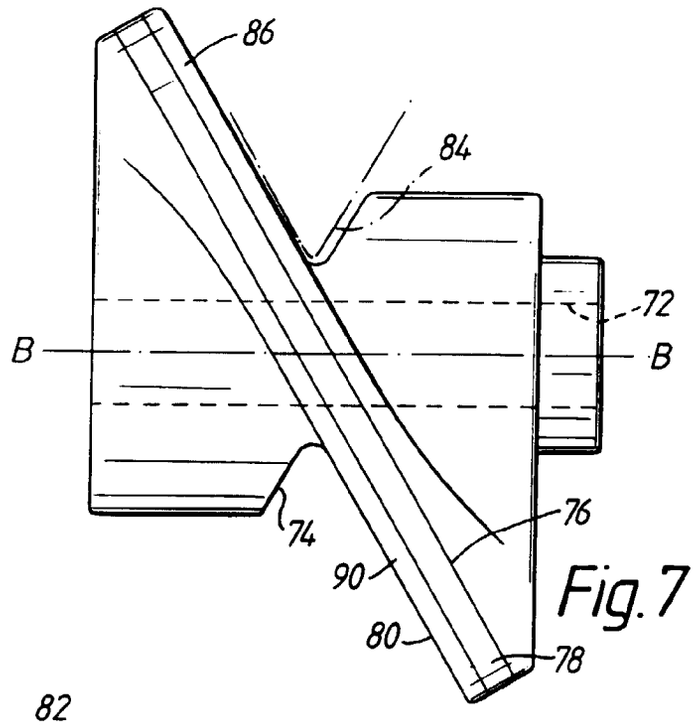


Fig.7

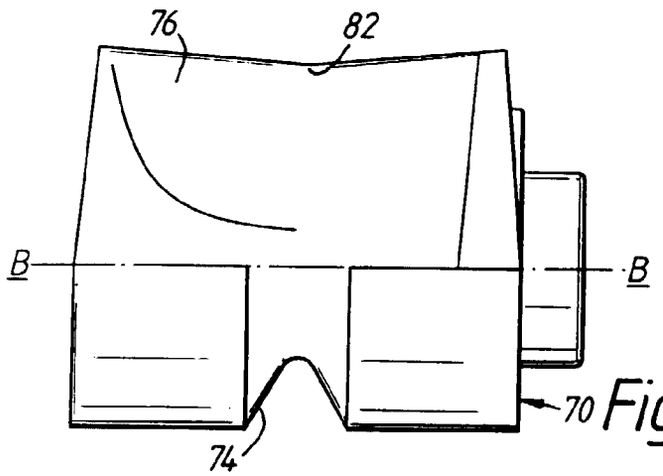


Fig.8

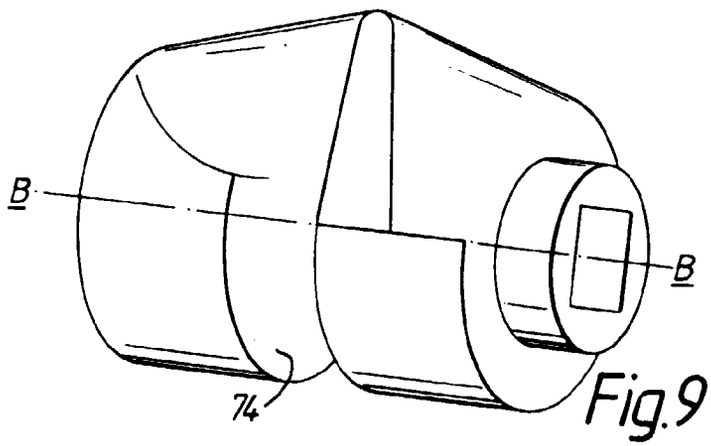


Fig.9