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73 Proprietor: **TECMAS S.n.c. di ASCARI E SIGHINOLFI, Via Don Milani, 59, I-41100 Modena(IT)**

72 Inventor: **Ascari, Giuliano, Via E. Porta, 82, I-41100 Modena(IT)**
Inventor: **Sighinolfi, Silvano, Via C. Menotti, 52, I-41100 Modena(IT)**

74 Representative: **Modiano, Guido et al, MODIANO, JOSIF, PISANTY & STAUB Modiano & Associati Via Meravigli, 16, I-20123 Milano(IT)**

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Description

The present invention relates to a display device. In the field of advertising, it is known that it is of the utmost importance to have equipment which allows one to "convey" visual messages to the public, to attract attention to a specific desired subject.

These messages are "transmitted" by various means, such as radio and television media, advertising panels, posters and others.

There has been a requirement for equipment which allows the sequential conveyance of a plurality of messages by means which are substantially economical, positionable without undue difficulty, simple and quick to actuate in practice and of modest cost.

Known from US-A-3, 824, 721 is an outdoor travelling display device for a series of panels having signs thereon, in which panels are suspended freely in end-to-end relationship from an endless chain, maintained tensioned by a suspended weight and trained in a horizontal plane adjacent and beneath the top wall of a housing for the device. The chain is maintained tensioned by a suspended weight and driven with a series of equally spaced dwells to index a panel behind a viewing screen of the device and hold the panel in position for viewing for a preselected time interval, and then index a next succeeding panel into a position for viewing.

However, such device is not devoid of inconveniences, not least of which is the fact that the panels, which hang freely from hooks engaging with screw eyes attached to the chain, are not subjected to tensioning and thus cannot be maintained in a taught condition.

Also known from CH-A-159, 582 is a device comprising a frame rotatably supporting a plurality of rollers having axes and being arranged substantially parallel to each other, a plurality of flexible panels adapted for bearing subject matter to be displayed, link means interconnecting said plurality of panels to define a loop-like formation extending around said rollers, motor means for driving said loop-like formation of panels around said rollers, and tensioning means acting on at least one of said rollers for longitudinally tensioning the loop-like formation of panels in a direction perpendicular to said axes of said rollers, as defined in the precharacterizing clause of claim 1.

However, while this device envisages tensioning of the loop-like formation of flexible panels in one direction perpendicular to the axes of the rollers, it cannot achieve tensioning of the panels in more than one direction, and in particular, it cannot achieve tensioning of the panels in a direction parallel to the axes of the rollers.

Accordingly, the technical aim of the present invention is to overcome the inconveniences encountered in the known types of display devices, and in particular to provide a display device which allows the tensioning of a loop-like formation of panels bearing signs to be displayed in more than one direction so as to maintain the panels in a perfectly

taught condition, and preferably by permitting tensioning of a loop-like formation of panels in two substantially perpendicular directions.

Within the above aim, an object of the present invention is to provide a display device which, as well as permitting said tensioning of the loop-like formation of panels in two substantially perpendicular directions, also allows the individual substitution of one or more of the plurality of advertisements or messages without necessarily implying the disassembly of the entire loop-like formation.

This aim and object and other objects which will become apparent hereinafter, are achieved by a display device as defined in claim 1.

Further characteristics and advantages of the invention will become apparent from the description of a preferred, but not exclusive, embodiment of a display device according to the invention, shown by way of example in the accompanying illustrative, non limitative drawings, wherein:

Fig. 1 is a partly cut-away perspective view of the overall structure of the display device according to the invention, showing the rollers and the traction means;

Fig. 2 is a schematic top plan view of the display device according to the invention; and

Fig. 3 is a partly sectional detail view, to an enlarged scale, illustrating an end of a roller and said traction means.

More in detail, with reference to the above-cited drawing figures, the display device according to the invention, generally indicated by the reference numeral 1 comprises a plurality of panels 2 and a frame 3, adapted for rotatably supporting a plurality of rollers 4 which in the illustrated example have substantially vertical axes, said frame 3 advantageously defining a substantially parallelepipedal form and has at least one open face wherethrough said panels 2 may be viewed.

Said rollers 4 are adapted for the tensioning and entraining said plurality of flexible panels 2, which are expediently joined together in a closed-loop formation, which is movable relatively to the frame and attached to traction means 5 which are arranged movable in related guides 6, which in the exemplified embodiment are horizontal and are placed at the base and at the top of the frame 3. Adjustment means 7 are also provided for adjusting the tension of said closed-loop formation or belt of panels 2, as well as means 8 for illuminating the same, which will be described hereinafter.

Said traction means 5 are preferably composed of two substantially parallel chains 9, each chain being advantageously arranged in a corresponding closed-loop formation and adapted to be driven by drive means such as a motor 10. Expediently, interposed between each chain 9 and the inner surfaces of the guides 6 are anti-friction means 11, which may comprise, for instance, inserts or liners, advantageously made of self-lubricating material. The chains are also provided with a plurality of connection elements which, in the illustrated example comprise a plurality of plates 12, which are advanta-

geously substantially equidistantly spaced from each other and adapted for engagement relationship with resilient elements 13, interposed respectively between the lower chain and the base edge 2a of each panel and between the upper chain and the top edge 2b of each panel 2.

The means 7 for adjusting the tension of the closed-loop formation of panels 2 advantageously comprise at least one adjustment roller 4a, which, in a similar manner to the rollers 4, is also freely rotatably mounted on the frame 3. The ends of the roller 4a are supported by respective heads, which are provided with dowels 14, which dowels are slideable and selectively lockable at a desired position along holes 15, essentially extending parallel to each other and, in the case of employing substantially vertical rollers, as in the illustrated example, the holes 15 may be provided in the base and in the top of the frame 3, and define a substantially horizontal extension.

The operation of the device according to the invention, in the preferred illustrated embodiment thereof, is as follows: the panels 2 may be joined to each other by any suitable link means, e.g. a bound seam 16, as schematically illustrated in Fig. 2, clips, edge binders or the like link elements, to form a closed-loop formation or belt, which belt is simultaneously wound around the plurality of rollers 4, and the tensioning roller 4a, which, although in the illustrated embodiment are mounted vertically, may be alternatively mounted horizontally, when it is desired to provide vertically movable panels. As mentioned hereinabove, the rollers are freely rotatable, and supported by the frame 3.

The respective opposite upper edge 2a and lower edge 2b of each panel 2 in the plurality of panels are engaged, by elastic elements 13, interposed between the edges 2a, 2b and the plates 12, which are rigidly coupled to the chains 9.

The arrangement of the plurality of elements 13 ensures that the panels 2 are always properly automatically maintained in a taut condition in the direction of the axes of the rollers 4, whilst the arrangement of rollers 4 including the adjustment roller 4a, permits this result to be perfected in a horizontal direction by intervening on the adjustment elements 7, i.e. by sliding the dowels 14 along the respective slots 15 and locking them at a desired position, to preset the required tension of the belt or closed-loop formation of panels 2, in the direction of the longitudinal extension of the chains.

Thus, by operating the motor 10, the chains entrain, in the case illustrated, the panels 2 in a horizontal direction, which can therefore alternate to the viewing of the public through one of the larger vertical faces of the frame 3.

Obviously, any suitable external panels may be applied to the frame 3 as desired, to protect the mechanism from the elements, and to define any number of desired openings wherethrough the panels 2 may be observed. Such openings may define any desired conformation according to the optical effects one wishes to achieve. Alternatively, one or more of such external covering elements or panels of transparent material, or the panels 2 them-

selves may be made of weather resistant material, advantageously a translucent material.

For nighttime display, illuminating means 8 may also be provided, which can be arranged either behind the same panels 2, making them visible by making use of the partial transparency of the material which composes them, or by illuminating the visible part thereof in a direct manner.

If the substitution of one or more of said panels 2 is required, it is sufficient to disengage it from both of the adjacent panels, which nevertheless maintain their correct position, by releasing the links 16, and disengaging the panel to be substituted from the chains 9 by removing the resilient elements 13.

The new panel 2 is then positioned by reversing the procedure required to effect removal of the replaced panel.

In practice, it has been found that the invention thus described fully achieves the proposed aim and object.

The invention thus conceived is susceptible of several modifications and variations, all of which fall within the scope of the inventive concept; thus, as an example, the duration of the exposure of each panel can be extended for a preset time by an electronic programmer or by a time-controlled electro-mechanical device.

Claims

1. A display device (1) comprising a frame (3) rotatably supporting a plurality of rollers (4) having axes and being arranged substantially parallel to each other, a plurality of flexible panels (2) adapted for bearing subject matter to be displayed, link means (16) interconnecting said plurality of panels (2) to define a loop-like formation extending around said rollers (4), motor means (10) for driving said loop-like formation of panels around said rollers (4), and first tensioning means (7, 14, 15) acting on at least one (4a) of said rollers for longitudinally tensioning the loop-like formation of panels (2) in a first direction perpendicular to said axes of said rollers (4), characterized in that it further comprises at least two guides (6) located at substantially opposite faces of said frame (3) and each slideably supporting traction elements (5, 9), and second tensioning means (12, 13) interposed between opposite edges (2a, 2b) of each panel in said loop-like formation of panels (2) and said traction elements (5, 9), thereby transversely tensioning said loop-like formation of panels (2) in a second direction parallel to said axes of said rollers (4).

2. Display device according to claim 1, characterized in that said first tensioning means (7) act on at least one adjustment roller (4a) and comprise dowels (14) rigidly associated with said adjustment roller (4a) and elongate holes (15) formed in opposite faces of said frame (3) and extending perpendicular to said axes of said rollers (4), said dowels (14) being slideable along said holes (15) and lockable at a desired position therein.

3. Display device according to claim 1, characterized in that said traction elements (5) comprise chains (9) adapted to be driven by said motor means

(10) along said guides (6) and in that said second tensioning means comprise elastic elements (13) interposed between said opposite edges (2a, 2b) of said panels (2) and said chains (9).

4. Display device according to claims 1 and 3, characterized in that said second tensioning means (12, 13) further comprise a plurality of connection plates (12) rigidly associated with said chains (9), said plurality of elastic elements (13) each extending parallel to said axes of said rollers (2) between at least one of said connection plates (12) and one of said edges (2a, 2b) of said panels (2).

5. Display device according to one or more of the preceding claims, characterized in that said first tensioning means (7, 14, 15) act in a substantially orthogonal direction with respect to said second tensioning means (12, 13), thereby tensioning each panel (2) in said loop-like formation in at least two directions.

6. Display device according to claim 1 and 3 or 4, characterized in that said elastic elements (13) are releasable from said chains (9) for permitting substitution of panels (2) in said loop-like formation upon release of said link means (16).

Patentansprüche

1. Ausstellungseinrichtung (1) mit einem Rahmen (3), welcher eine Vielzahl von um Rollenachsen drehbare Rollen (4) trägt, die im wesentlichen parallel zueinander angeordnet sind, ferner eine Vielzahl von flexiblen Tafeln (2) zum Aufnehmen der darzubietenden Dinge, ferner Verbindungseinrichtungen (16) zum Verbinden der Tafeln (2) zu einer Anordnung in Form einer geschlossenen, um die Rollen (4) herum verlaufenden Schleife, ferner Antriebsmittel (10) zum Antreiben der schleifenartigen Anordnung der Tafeln um die Rollen (4) herum, sowie erste, wenigstens auf eine (4a) der Rollen wirkende Spannmittel (7, 14, 15) zum Längsspannen der schleifenartigen Anordnung von Tafeln (2) in einer ersten, rechtwinklig zu den Rollenachsen stehenden Richtung, dadurch gekennzeichnet, daß sie ferner wenigstens zwei Führungen (6) hat, die an im wesentlichen einander abgewandten Seiten des Rahmens (3) angeordnet sind und jeweils gleitend gelagerte Zug-elemente (5, 9) aufnehmen, sowie ferner zweite Spannmittel (12, 13), die zwischen einander abgewandten Rändern (2a, 2b) der jeweiligen Tafeln der schleifenartigen Anordnung von Tafeln (2) und den Zugelementen (5, 9) angeordnet sind und die schleifenartige Anordnung von Tafeln (2) quer in einer Richtung spannen, die parallel zu den Achsen der Rollen (4) liegt.

2. Ausstellungseinrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die ersten Spannmittel (7) auf wenigstens eine Spannrolle (4a) wirken und daß sie mit der Spannrolle (4a) fest verbundene Fortsätze (14) umfassen sowie in einander gegenüberliegenden Flächen des Rahmens (3) ausgebildete Langlöcher, die sich quer zu den Achsen der Rollen (4) erstrecken, wobei die Fortsätze (14) in den Langlöchern (15) verschiebbar und in beliebigen Positionen arretierbar sind.

3. Ausstellungseinrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die Zugelemente (5) Ketten (9) umfassen, die dazu ausgelegt sind, durch die Antriebsmittel (10) entlang den Führungen (6) bewegt zu werden und daß die zweiten Spannmittel elastische Elemente (13) umfassen, die zwischen den einander abgewandten Rändern (2a, 2b) der Tafeln (2) und den Ketten (9) angeordnet sind.

4. Ausstellungseinrichtung nach den Ansprüchen 1 und 3, dadurch gekennzeichnet, daß die zweiten Spannmittel (12, 13) ferner eine Vielzahl von Verbindungsplatten (12) umfassen, die starr mit den Ketten (9) verbunden sind, wobei die Vielzahl der elastischen Elemente (13) sich jeweils parallel zu den Achsen der Rollen (4) jeweils zwischen wenigstens einer dieser Verbindungsplatten (12) und einem der Ränder (2a, 2b) der Tafeln (2) erstrecken.

5. Ausstellungseinrichtung nach einem oder mehreren der vorangehenden Ansprüche, dadurch gekennzeichnet, daß die ersten Spannmittel (7, 14, 15) im wesentlichen in einer rechtwinklig zu den zweiten Spannmitteln (12, 13) stehenden Richtung wirken, so daß jede Tafel (2) der schleifenartigen Anordnung in wenigstens zwei Richtungen gespannt wird.

6. Ausstellungseinrichtung nach Anspruch 1 und 3 oder 4, dadurch gekennzeichnet, daß die elastischen Elemente (13) von den Ketten (9) lösbar sind, so daß ein Austausch von Tafeln (2) der schleifenartigen Anordnung nach Lösen der Verbindungsmittel (16) möglich ist.

Revendications

1. Dispositif d'affichage (1) comportant un châssis (3) supportant à rotation une pluralité de galets (4) possédant des axes et étant disposés sensiblement parallèlement les uns aux autres, une pluralité de panneaux (2) flexibles aptes à porter le contenu à afficher, des moyens de liaison (16) reliant entre eux lesdits panneaux (2) pour définir une structure en forme de boucle s'étendant autour desdits galets (4), des moyens moteurs (10) pour entraîner ladite structure en forme de boucle des panneaux autour desdits galets (4), et des premiers moyens tendeurs (7, 14, 15) agissant sur au moins un (4a) desdits galets pour tendre longitudinalement la structure en forme de boucle des panneaux (2) dans une première direction perpendiculaire auxdits axes desdits galets (4), caractérisé par le fait qu'il comprend en outre au moins deux guides (6) disposés sur des faces sensiblement opposées dudit châssis (3) et supportant chacun de manière coulissante des éléments de traction (5, 9) et des second moyens tendeurs (12, 13) interposés entre des bords opposés (2a, 2b) de chaque panneau dans ladite structure en forme de boucle des panneaux (2) et lesdits éléments de traction (5, 9) pour tendre transversalement ladite structure en forme de boucle des panneaux (2) dans une seconde direction parallèle auxdits axes desdits galets (4).

2. Dispositif d'affichage selon la revendication 1, caractérisé par le fait que lesdits premiers moyens tendeurs (7) agissent sur au moins un galet de réglage (4a) et comprennent des goujons (14) solitaires dudit galet de réglage (4a) et des trous allongés (15)

formés dans des faces opposées dudit châssis (3) et s'étendant perpendiculairement auxdits axes desdits galets (4), lesdits goujons (14) étant susceptibles de coulisser le long desdits trous (14) et étant susceptibles d'être bloqués à une position désirée dans ceux-ci. 5

3. Dispositif d'affichage selon la revendication 1, caractérisé par le fait que lesdits éléments de traction (5) comprennent des chaînes (9) aptes à être entraînées par lesdits moyens moteurs (10) le long desdits guides (6) et que lesdits second moyens tendeurs comprennent des éléments élastiques (13) interposés entre lesdits bords opposés (2a, 2b) desdits panneaux (2) et lesdites chaînes (9). 10

4. Dispositif d'affichage selon les revendications 1 et 3, caractérisé par le fait que lesdits second moyens tendeurs (12, 13) comprennent en outre une pluralité de plaques de connexion (12) solidaires desdites chaînes (9), lesdits éléments élastiques (13) s'étendant chacun parallèlement auxdits axes desdits galets (4) entre au moins l'une desdites plaques de connexion (12) et l'un desdits bords (2a, 2b) desdits panneaux (2). 15 20

5. Dispositif d'affichage selon une ou plusieurs des revendications précédentes, caractérisé par le fait que lesdits premiers moyens tendeurs (7, 14, 15) agissent dans une direction sensiblement orthogonale par rapport auxdits seconds moyens tendeurs (12, 13), ce par quoi chaque panneau (2) dans ladite structure en forme de boucle est tendu dans au moins deux directions. 25 30

6. Dispositif d'affichage selon la revendication 1 et 3 ou 4, caractérisé par le fait que lesdits éléments élastiques (13) sont libérables desdites chaînes (9) pour permettre la substitution de panneaux (2) dans ladite structure en forme de boucle par suite de la libération desdits moyens de liaison (16). 35 40

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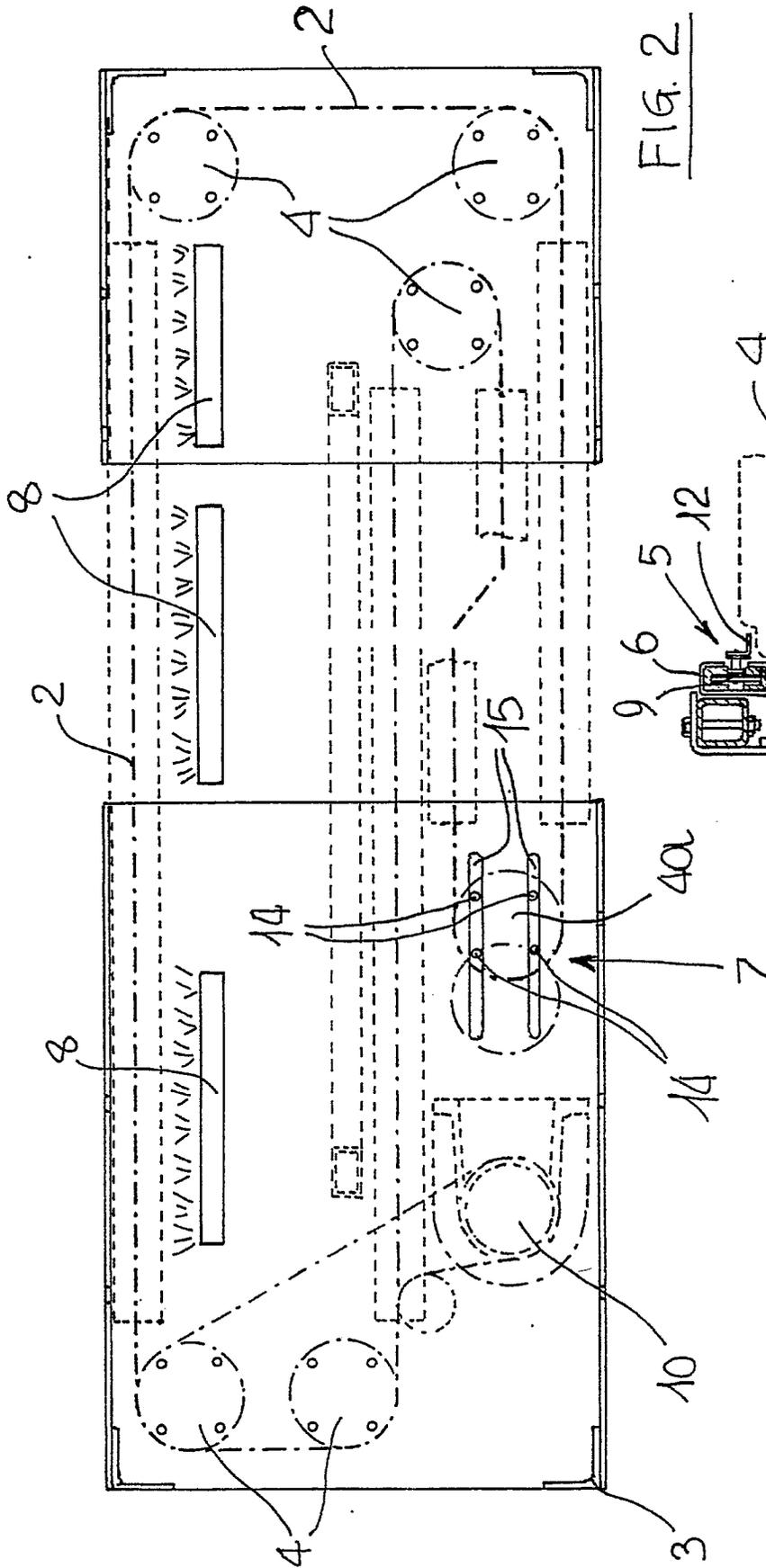


FIG. 2

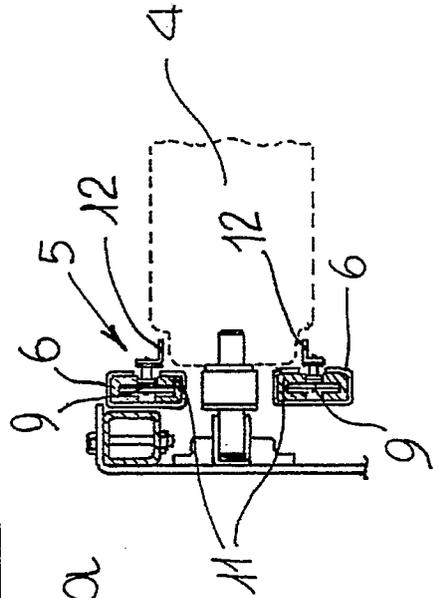


FIG. 3

