

A Cassette and an Appurtenant Apparatus having a Screen for Cyclical Displaying of a Plurality of Pictures.

The invention relates to a cassette for an apparatus having a screen for cyclical showing of a plurality of pictures, each being composed of picture segments on at least two groups of horizontal strips, the strips in each individual group being made in one continuous sheet and being separated from one another by horizontal cutting lines extending between two marginal portions of the sheet, and the various sheets being placed upon each other in such manner that the strips carrying the picture segments are gathered in a number of piles equal to the number of strips in each sheet, and the number of strips in each pile being equal to the number of picture forming groups, and each single sheet - with the group of strips formed therein - being displaceable in the plane relative to the other sheets, i.e. relative to the other strips in the piles, in such manner that the picture segments on them become visible and together with picture segments on at least one more displaced group of strips in another sheet form a continuous picture.

The word cassette as used herein is meant to denote an easily replaceable unit comprising a plurality of groups of strips, where the strips in each group are forming a picture and the strips in the different groups are overlapping each other in a louverlike manner and are mutually displaceable by simultaneously moving all strips in one and the same group relative to all other groups, whereby edge portions of the strips in the group in question will become visible and together with edge portions of other displaced strips are adapted to constitute a complete picture.

In known cassettes, each strip is suspended in straps which are moved up and down by guide means which in timed periods are displacing picture carrying edge portions of the individual groups of strips into a visible position in order to display a number of pictures sequentially (cf. Danish Patent Application No. 369/70). This method of

suspending and moving the picture carrying strips is rather complicated, and has the effect that the cassette becomes rather thick, and that each individual picture must be composed of relatively narrow edge portions on three or more groups of strips, since each strip can only be displaced along a fraction of its height, because the strips of the different groups which together form a picture, with a view to an adequate control must overlap each other like persiennes or louvers, in the position of rest as well as in the position of display thereof.

Further, from U.S. Patent Specification No. 3,659,367 it is known to use two sheets, each of which is divided in a plurality of picture carrying strips by means of cutting lines which at their ends join a short cutting line situated perpendicular to the first cutting line in the marginal portion of the sheet. By mutual displacement of the sheets two different pictures can be shown alternately, but it is not possible to produce a greater number of pictures, e.g. 5 or 6 pictures successively, by one single cassette.

It is the object of the invention to provide a relatively thin cassette of the kind dealt with, which is easy to produce and is easily replaceable and which is adapted to display a greater number of pictures than hitherto possible, said cassette having strips which by simple guide means can be displaced safely over a substantial part of their height, preferably in such manner that only two groups of picture carrying strips are needed to form a whole picture.

Further, it is an object of the invention to provide an apparatus having simple guide means for safe control of the strip movements.

The cassette according to the invention is characteristic in that when disposed in use for displaying pictures in a vertical frame the cutting lines between the strips in a picture forming group in any sheet in a foremost pile of sheets join openings at their ends at the marginal portions which are all extending away from the cutting line in the same vertical direction, and that the

(17) cutting lines between the strips in a second picture forming group in a second sheet in a rearmost pile of sheets join openings (5) at their ends in the marginal portions which extend away from the cutting line in a direction opposite to that of the direction of the first mentioned openings (4), the strips (1b, 1c) in each of the sheets of the foremost pile cooperating with the strips (2b, 2c) in one of the sheets in the rearmost pile to form a picture when mutually displaced.

The simultaneously displaceable strips in each group are made by simple punching in a sheet, e.g. a sheet showing a complete picture, and the displacement of a group of strips is simply effectuated by displacement of the sheet of which they form part, by means of guide means engaging the marginal portions of the sheets. The cassette that consists of flat sheets lying upon one another, has a small thickness compared to the number of different pictures that can be shown, and because the openings in the sheets to be moved when showing a picture are extending in opposite directions, it has become possible to show for instance 6 different pictures successively.

As the strips in two groups or two sheets can be mutually displaced over the entire strip height, a preferred embodiment of the invention is characteristic in that the strips in those groups that together are forming a complete picture are arranged in only two sheets, each of which is carrying a complete picture on the group of picture carrying strips formed in the sheet. Since each picture to be displayed requires only two identical picture sheets or possibly only one picture, the picture forming segments of which are distributed on the two sheets and spaced from one another by a strip width, a saving as well as a reduced cassette thickness are obtained when comparing with known cassettes containing three or more identical picture sheets for each picture to be displayed.

The openings at the ends of the cutting lines may for instance be isosceles triangles which can be punched by a simple tool.

If desired, the cassette according to the invention may simply comprise two piles each consisting of two sheets, and conveniently the foremost pair of sheets may be picture-less and the rearmost pair of sheets showing a single picture.

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Advantageously the cassette may be made so as to show several, say five or six different pictures successively. According to the invention, this can be effectuated in that the sheets cooperating in pairs and carrying the same picture are arranged each within their own set of sheets, and that the openings in all the sheets in one set are extending in opposite direction of the openings in all the sheets in the other set. By placing a preferably picture-less stationary front sheet in front of the sheets in each of the sheet piles, a secure guidance of the sheets with the picture forming strips is obtained, and it has become possible to arrange an advantageous pause between the display of the individual pictures.

Advantageously, the sheets with the picture forming strips may in their marginal portions have means, e.g. securing holes or clamps. Hereby it is ascertained that they will be correctly arranged in vertically moveable guide means in a display apparatus which according to the invention has corresponding gripping means to be coupled to the marginal portions of the picture forming sheets.

The invention is explained in greater detail in the following with reference to the drawing where

Figure 1 shows a first front sheet in an embodiment of the cassette according to the invention,

Figure 2 shows a partial picture of a second front sheet in the same cassette,

Figure 3 and 4 in plane view and in a vertical section respectively, the two front sheets shown in their relative positions in a display apparatus,

Figure 5 a front view of a part of the cassette in which the rearmost of two cooperating picture sheets has been displaced so upwardly that a display zone on each strip has become visible,

Figure 6 a partial picture illustrating the positions of the individual strips in the cassette in the condition shown in Figure 5,

Figure 7 a part of the cassette in which the foremost picture sheet cooperating with the picture sheet in Figure 5 has been moved upwards in such manner that the display zones of the strips have become visible and are completing the display zones on the picture sheet shown in Figure 5, and

Figure 8 a partial picture illustrating the relative positions of the strips in the situation shown in Figure 7.

The embodiment to be described of the cassette according to the invention, has a front sheet 1 which by a plurality of cutting lines 3 has been divided in pictureless strips 1a forming a group. At each end of the cutting lines 3 an opening 4 has been punched out, forming an isoscele triangle extending upwardly from the cutting line. As appears from Figures 6 and 8 a number of picture carrying sheets (two sheets in the case shown) have been arranged behind the front sheet, said sheets being provided with strips 1b, 1c which in their initial position are lying directly behind the strips 1a. These sheets are punched out in the same manner as the front sheet 1 in Figure 1.

Behind this first-mentioned set of sheets a second set of sheets is located, the sheets having punched cutting lines 3 and triangular openings 5 extending downwards from the corresponding cutting line 3 as shown in Figure 2. Behind the front sheet 2 is a picture carrying sheet having strips 2b constituting a picture similar to the one formed by the strips 1b in the first picture carrying sheet of the first set, and rearmost is a second picture carrying sheet with strips 2c carrying a picture which is identical with the picture formed by the strips 1c in the last sheet of the first set.

The cassette is placed in a display apparatus, not shown, having holding and guiding means engaging the marginal portions of the sheets and holding the front sheets 1 and 2 aligned in their positions shown in Figures 3 and 4, while the strips 1b and 1c, not shown, in Figure 4 are extending



0 analogous with the strips 1a to the right thereof, and the strips 2b and 2c, not shown, are extending analogous with the strips 2c and are lying between the strips 1a and 2a in Figure 4. The holding and guiding means can move the
5 picture carrying sheets with the strips 1b, 1c, 2b, 2c individually in vertical direction. The guiding means are actuated by a motor and programmed to move in such manner that after a picture-less screen formed by the strips 2a, successively after each other follow a picture constituted
10 by the strips 1b and 2b and then a picture constituted by the strips 1c and 2c, possibly with a picture-less screen between each picture. For the sake of simplicity it is here shown and described only how two pictures are alternating, but it will be understood that several pictures, e.g. six
15 pictures, can be successively displayed, in which case a corresponding number of picture carrying sheets with piles of strips lying upon each other are provided. If desired, a cassette can also comprise more than two picture carrying sheets having cooperating identical pictures, each of which
20 is divided in a group of strips. However, it is an essential advantage of the cassette according to the invention, that more than two identical picture carrying sheets for each picture to be displayed are not required. The guiding means in the displaying apparatus are advantageously provided
25 with pinlike members adapted to engage corresponding apertures 6 (Figure 2) in the marginal portions of the sheets in order to ensure correct locating of the sheets in the apparatus. The marginal portions of the sheets could also be provided with clips or projecting lugs cooperating with
30 gripping members on the guiding means.

When a picture corresponding to the one constituted by the strips 1b and the strips 2b respectively, is to be displayed, the sheets are moving in the following manner:

By an upward pull in the first picture carrying
35 sheet in the second set of sheets, the strips 2b are moved up beyond the upper edges of the strips 1a in the first front sheet, so that visible display zones with picture

portions appear as shown in Figures 5 and 6. Simultaneously or immediately after or before, the first picture carrying sheet in the first set of sheets is pulled upwards in such manner that visible picture segments on the strips 1b will fill in the space between the visible picture portions of the strips 2b, whereby the complete picture will become visible, see Figures 7 and 8. It appears that it is the upper half of the strips 2b and the upper half of the strips 1b that become visible, or in other words, the picture on the picture carrying sheet of the first set (behind the first front sheet) must be displaced by the half height of a strip downwards relative to the picture on the picture carrying sheet with the strips 2b in the second set of sheets (behind the second front sheet).

It will be obvious that the openings 4, 5, which behind the first set of sheets extend upwards from the cutting lines 3 and in the second set of sheets extend downwards from the cutting lines 3, may have other shapes than that shown, of an isosceles triangle. Further, it will be obvious that the openings in the foremost set of sheets might point downwards from the cutting lines and in the rearmost set of sheets might point upwards from the cutting lines, whereby the strips in the rearmost set of sheets will extend downwards, and the displacement of the picture carrying sheets will be carried out in a downward direction. However, when a picture is illuminated by light from above, which most frequently will be the case, it is preferable that the cassette is constructed as shown in the drawing, because shadows from the free horizontal edges of the strips hereby may be avoided.

Further, if desired, the sheets may be placed in an arbitrary oblique position or lying horizontally or with both side edges horizontally, but in the same vertical or slanting plane and with the vertical or slanting strips being illuminated from one side.

It will be understood that by the invention a flat cassette has been provided, in which the sheets can be moved



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so as to cyclically display a plurality of pictures as the sheets are driven upwardly and downwardly in reciprocating movements by guiding means engaging the marginal portions of the sheets.

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Claims:

1. A cassette as herein defined for an apparatus having a screen for cyclical showing of a plurality of pictures, which pictures when displayed in use in a vertical frame are each composed of picture segments on two groups of interleaved horizontal strips (1b, 2b, 1c, 2c), the strips in each individual group being made in one continuous sheet and being separated from one another by horizontal cutting lines (3) extending between two marginal portions of the sheet, and the sheets being placed upon each other in such manner that the strips carrying the picture segments are gathered in two piles and the number of strips in each pile being equal to the number of picture forming groups, and each single sheet - with the group of strips formed therein - being displaceable in the plane relative to the other sheets, i.e. relative to the other strips in the piles, in such manner that the picture segments (1b or 1c) on them become visible and together with picture segments (2b or 2c) on a cooperating displaced group of strips in another sheet form a continuous picture, characterized in that the cutting lines (3) between the strips (1b resp. 1c) in a picture forming group in any sheet in a foremost pile of sheets join openings (4) at their ends at the marginal portions which are all extending away from the cutting line (3) in the same vertical direction, and that the cutting lines (3) between the strips (2b resp. 2c) in a second picture forming group in a second sheet in a rearmost pile of sheets join openings (5) at their ends in the marginal portions which extend away from the cutting line in a direction opposite to that of the direction of the first mentioned openings (4), the strips (1b, 1c) in each of the sheets of the foremost pile cooperating with the strips (2b, 2c) in one of the sheets in the rearmost pile to form a picture when mutually displaced.

2. A cassette according to claim 1 characterized in that the openings (4, 5) at the ends of the horizontal cutting lines (3) are isosceles triangles having their bases situated on the cutting lines.



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3. A cassette according to claim 2 characterized in that in front of the sheets of each pile of sheets is placed a preferably picture-less front sheet (1,2 respectively) adapted to be secured stationary in an advertising apparatus, and that the strips (2a) in the rearmost front sheet have been carried up between the strips (1a) in the foremost front sheet and are lying upon these strips.

4. A cassette according to claim 3, characterized in that the sheets with the picture forming strips (1b, 1c; 2b, 2c) in their marginal portions have means (6) for coupling of the sheets to vertically reciprocating moving mechanisms.

5. An apparatus for displaying pictures in a cassette according to claims 1-4 and having a display screen and holding and guiding means for vertical displacement of picture carrying strips relative to each other, characterized in that the guiding means comprise gripping members adapted to engage lateral sections of each of the sheets with picture carrying strips in a cassette.
