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(54) LCD DEVICE FOR SHOWING MULTIPLE PICTURES

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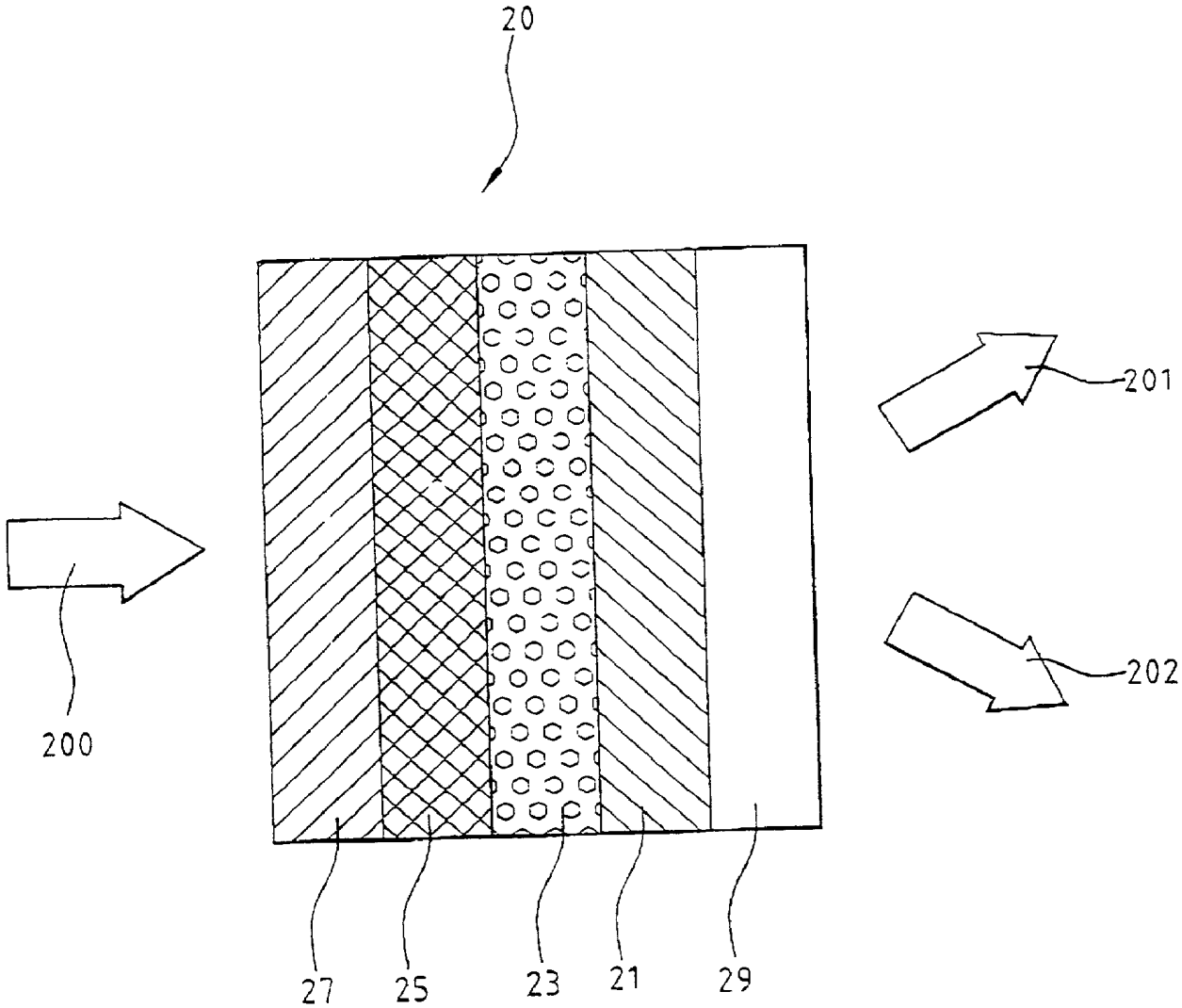
(57) **ABSTRACT**

An liquid crystal display (LCD) device comprises: a control circuit for providing video signals of a plurality of pictures in sequence; a voltage-level shift circuit for shifting and applying different voltage levels on crystal molecules in the LCD device to twist them to different orientations in order to create different rotary polarization effects; and a light-guiding filter layer for filtering and scattering light in different orientations to make it possible for viewing pictures from various angles. The light-guiding filter layer may be placed in front of or behind a color-filter layer or combined with the latter to form a unitary layer.



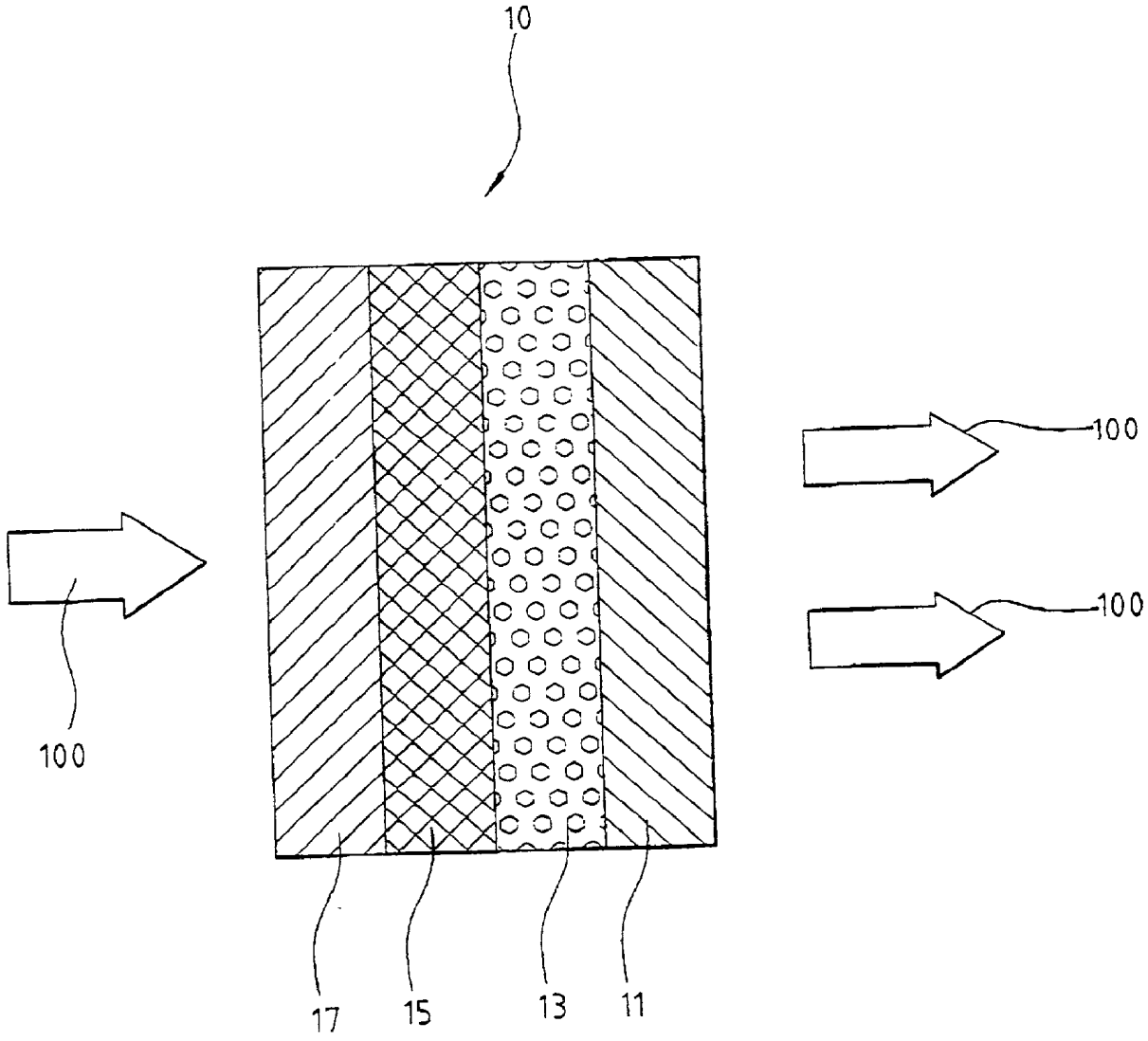


FIG. 1

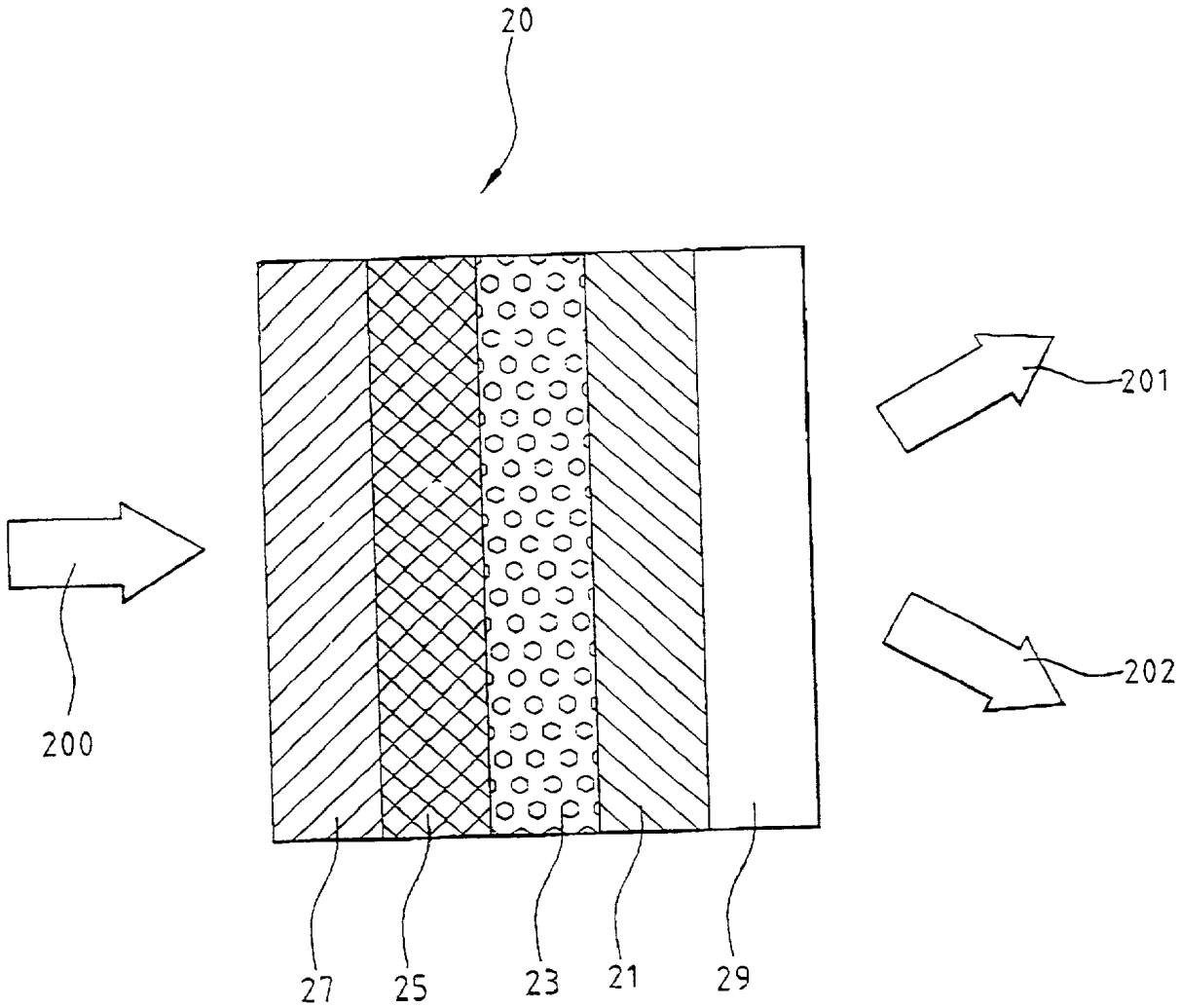


FIG. 2

LCD DEVICE FOR SHOWING MULTIPLE PICTURES

FIELD OF THE INVENTION

[0001] This invention relates generally to a liquid crystal display (LCD), particularly to LCD device for showing multiple pictures.

BACKGROUND OF THE INVENTION

[0002] As shown in **FIG. 1, a** conventional liquid crystal display (LCD) device **10** usually comprises at least a color filter layer **11**, a liquid crystal layer **13**, a vitreous substrate **15**, and a deflection layer **17**. When a voltage is applied to the liquid crystal layer **13**, the crystal molecules therein are forced to twist an angle to display different transparent degrees of an incident ray **100** and have an image emerged.

[0003] However, the conventional LCD device **10** can only show a monotonous picture only, it fails to show a plurality of video pictures synchronously, therefore, a user has to purchase some more LCD devices when viewing multiple pictures simultaneously is desired.

SUMMARY OF THE INVENTION

[0004] The primary object of this invention is to provide a LCD device for showing multiple pictures synchronously.

[0005] In order to realize said object, the LCD device of this invention comprises: a control circuit for providing video signals of a plurality of pictures in sequence; a voltage-level shift circuit for shifting and applying different voltage levels on crystal molecules in the LCD device to twist them to different orientations in order to create different rotary polarization effects; and a light-guiding filter layer for filtering and scattering light in different angles to make it possible for viewing pictures from various orientations.

[0006] For more detailed information regarding advantages or features of this invention, at least an example of preferred embodiment will be elucidated below with reference to the annexed drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The related drawings in connection with the detailed description of this invention to be made later are described briefly as follows, in which:

[0008] **FIG. 1** shows the structure of a conventional LCD device; and

[0009] **FIG. 2** shows the structure of a LCD device of this invention.

DETAILED DESCRIPTION OF THE INVENTION

[0010] As illustrated in **FIG. 2, a** LCD device **20** of this invention comprises at least: a color filter layer **21**, a liquid crystal layer **23**, a vitreous substrate **25**, a deflection layer **27**, and a light-guiding filter layer **29**. When a voltage is applied on the liquid crystal layer **23**, the inside crystal molecules of the layer are twisted to have different transparent degrees of an incident ray **200** created and images emerged.

[0011] This invention is characterized in comprising: a control circuit for providing video signals of a plurality of pictures in sequence; a voltage-level shift circuit for shifting and applying different voltage levels on crystal molecules in the LCD device and twist them to different orientations in order to create different rotary polarization effects of an incident ray; and a light-guiding filter layer for filtering and scattering light in different orientations **201**, **202** to make it possible for viewing pictures from various angles, wherein the light-guiding filter layer may be placed in front of or behind a color-filter layer or combined with the latter to form a unitary layer.

[0012] In the above described, at least one preferred embodiment has been described in detail with reference to the drawings annexed, and it is apparent that numerous variations or modifications may be made without departing from the true spirit and scope thereof, as set forth in the claims below.

What is claimed is:

1. A liquid crystal display (LCD) device for showing multiple pictures, comprising:

a control circuit for providing video signals of a plurality of pictures in sequence;

a voltage-level shift circuit for shifting and applying different voltage levels on crystal molecules in the LCD device to twist them to different orientations in order to create different rotary polarization effects; and

a light-guiding filter layer for filtering and scattering light in different orientations to make it possible for viewing pictures from various angles.

2. The LCD device according to claim 1, wherein the light-guiding filter layer may be placed in front of or behind a color-filter layer or combined with the latter to form a unitary layer.

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专利名称(译)	用于显示多张图片的LCD设备		
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[标]申请(专利权)人(译)	天瀚科技股份有限公司		
申请(专利权)人(译)	AIPTEK INTERNATIONAL INC.		
当前申请(专利权)人(译)	AIPTEK INTERNATIONAL INC.		
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摘要(译)

一种液晶显示（LCD）装置，包括：控制电路，用于依次提供多个图像的视频信号;电压电平移位电路，用于在LCD装置中的晶体分子上移动和施加不同的电压电平，以将它们扭曲到不同的方向，以产生不同的旋转极化效应;以及用于过滤和散射不同方向的光的光导滤光层，使得可以从各种角度观看图像。光导滤光器层可以放置在滤色器层的前面或后面，或者与滤色器层结合以形成整体层。