The pattern repeats throughout the array. The bottom layer of **FIG. 16C** has a pixel array wherein the sub-pixel pattern in the top row has from left to right clear Clr and red the bottom row has clear Clr and clear Clr. This pattern results in a pixel **FIG. 16D** having a top row from left to right transmitting red and green(G) and a bottom row transmitting blue(B) and clear (clr). The array has pixels which are all the same. However the pattern in the top layer has no adjacent colors which are the same making the array more difficult to make. The bottom layer has an array with mostly clear Clr sub-pixels but the red(R) sub-pixels are never adjacent making it more difficult to make the red(R) sub-pixels.

[**0375**] To make the pixel arrays easier to manufacture, **FIG. 17A** shows the pixel array of **FIG. 16A** with rows **1** and **2** reversed in the top layer and the bottom layer. The top layer now has in rows **2** and **3** a green, red GR sub-pixel adjacent a green red GR sub-pixel and a clear Clr sub-pixel adjacent a clear Clr sub-pixel. Similarly with the array extended beyond what is shown it is easy to see that a green blue GB sub-pixel and a blue sub-pixel will also be adjacent. This doubles the size of the sub-pixels and makes the top layer easier to manufacture. The pattern on the bottom layer is also easier to manufacture because rows **2** and **3** are all clear Clr making **8** sub-pixels adjacent with the same color. However as shown in **FIG. 17D** the transmissive color pixel has a top pixel with a mirror image of the bottom pixel. When the pixel sizes are small the human eye will not be able to tell that the pixels are different and the images shown will not be distorted by the different sub-pixel patterns in the adjacent pixels.

[**0376**] To further enlarge the sub-pixel sizes, the arrows in **FIG. 18B** for the top layer show the top left clear Clr and bottom right green, blue GB sub-pixels exchanging positions and the bottom left and top right sub-pixels exchanging positions. Now the array, by extension, has in the top row with two adjacent clear Clr sub-pixels then two adjacent green, red GR sub-pixels then two adjacent clear Clr sub-pixels again etc. The second row has two blue(B) sub-pixels then two green, blue GB sub-pixels etc. Similarly the third and fourth rows also always have two adjacent sub-pixels of the same color. The sub-pixels can now all be twice the size when manufactured making the top layer easier to manufacture. The bottom layer in **FIG. 18** is the same complexity to make as in **FIG. 17C** with two adjacent columns of clear Clr sub-pixels instead of two adjacent rows. **FIG. 17D** shows that all the adjacent columns of pixels will be mirror images of each other. If the pixels are small enough the human eye will not see any distortion of the images displayed by this difference in pixels.

[**0377**] As the arrows in **FIG. 17** show the top two rows from **FIG. 16** can be exchanged in the top and bottom layers. The top layer **FIG. 19B** now shows groups of four adjacent sub-pixels for green, red GR, clear Clr, green, blue GB and blue(B) in a pixel array. Since the manufactured sub-pixel sizes are now four times the size of one sub-pixel it is much easier to make the top layer. The bottom layer **FIG. 19C** shows that the second and third rows and the second and third columns are all clear sub-pixels making it easy to make and the array will have squares of four adjacent red sub-pixels for ease of manufacture of the bottom layer.

[**0378**] The transmissive array of pixels will have sub-pixels as shown in **FIG. 19D** with each adjacent sub-pixel being different and the mirror image of the adjacent pixel either diagonally, top to bottom or left to right. With sufficiently small pixel sizes the human eye will not be able to tell each adjacent pixel has a different sub-pixel arrangement. **FIG. 20** shows a new pixel array wherein each pixel has a top layer with green, red GR, Clear Clr, green(G) and blue(B) a bottom layer with, Clear Clr, Clear Clr, blue(B) and green(G) in the positions as shown in **FIG. 20**B and **FIG. 20C** as shown. The resulting transmitted light is as shown in **FIG. 22***c* having blue B, clear Clr, red(R) and green(G) sub-pixels. **FIG. 21** shows an equivalent pixel array to the one shown in **FIG. 20**. However in the sub-pixels for transmitting red instead of using a green(G) sub-pixel in the top layer and a blue(B) in the bottom layer of **FIG. 20** we now use a clear Clr sub-pixel in the top layer and a green, blue GB sub-pixel in the bottom layer. This now provides two clear Clr sub-pixels in the top layer pixels which can be rearranged in patterns of adjacent clear portions for ease of manufacture. **FIG. 22D** shows the same resultant pixel as **FIG. 21D** however the top layer sub-pixels as shown in **FIG. 22**B and the bottom layer sub-pixels of **FIG. 24***b* have been altered to show that the same results are obtained by changing a sub-pixel such as clear Clr in the top layer with the green blue GB layer in the bottom layer. And changing the green, red GR in the top layer to green(G) while changing the corresponding bottom layer sub-pixel from Clear Clr to red R.

[**0379**] The sub-pixel arrangement of **FIGS. 23B and 23C** are the equivalent of **22**B and **22**C as the transmitted light shown in **FIG. 22**D and **FIG. 23D** are the same. The difference being the green blue GB sub-pixel of **FIG. 22B** paired with the clear Clr of **FIG. 22C** has been replaced with the equivalent pair of the green(G) sub-pixel of **FIG. 23**B and the blue(B) sub-pixel of **FIG. 23C**. This substitution yields a column of green sub-pixels in the top layer as shown in **FIG. 23B** which is easier to make.

[**0380**] Similarly combining the green sub-pixel top layer of **FIG. 23**B and blue sub-pixel **FIG. 23C** to form the clear Clr sub-pixel of the top layer of **FIG. 24**B and the green blue GB sub-pixel of **FIG. 24C** forms top layer **24**B and bottom layer **24**C with a pattern that can be rearranged to form rows and columns with the same color sub-pixels for ease of manufacturing as shown above in FIGS. **16-20**.

[**0381**] As illustrated above, between switching patterns in just the top and bottom layers and between the top and bottom layers different patterns of pixels and sub-pixels can be formed. Combinations with adjacent sub-pixels of the same color in each layer are preferred for ease of manufacture.

[**0382**] **FIG. 28** shows another embodiment of stacking where the stack of **FIG. 5** is repeated with opposite handedness cholesteric liquid crystals to form a four layer stack transmitting any polarized light with a correct color. Portion **100**R is for right handed cholesteric liquid crystals and portion **100**L is for left handed cholesteric liquid crystals. The stack is made by polymerizing portion **15**L, **15**R, **25**L and **25**R in separate steps to form the four portion stack in one layer **105**.

[**0383**] The polymerizable cholesteric liquid crystal materials used to make the reflective materials above can be mixtures of polymerizable and non-polymerizable components. The polymerizable components may be monomers,