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Moy(10) **Pub. No.: US 2010/0313334 A1**(43) **Pub. Date: Dec. 16, 2010**(54) **HAT WITH ELECTRONIC DISPLAY****Publication Classification**(75) Inventor: **Aaron Moy**, Eden Prairie, MN
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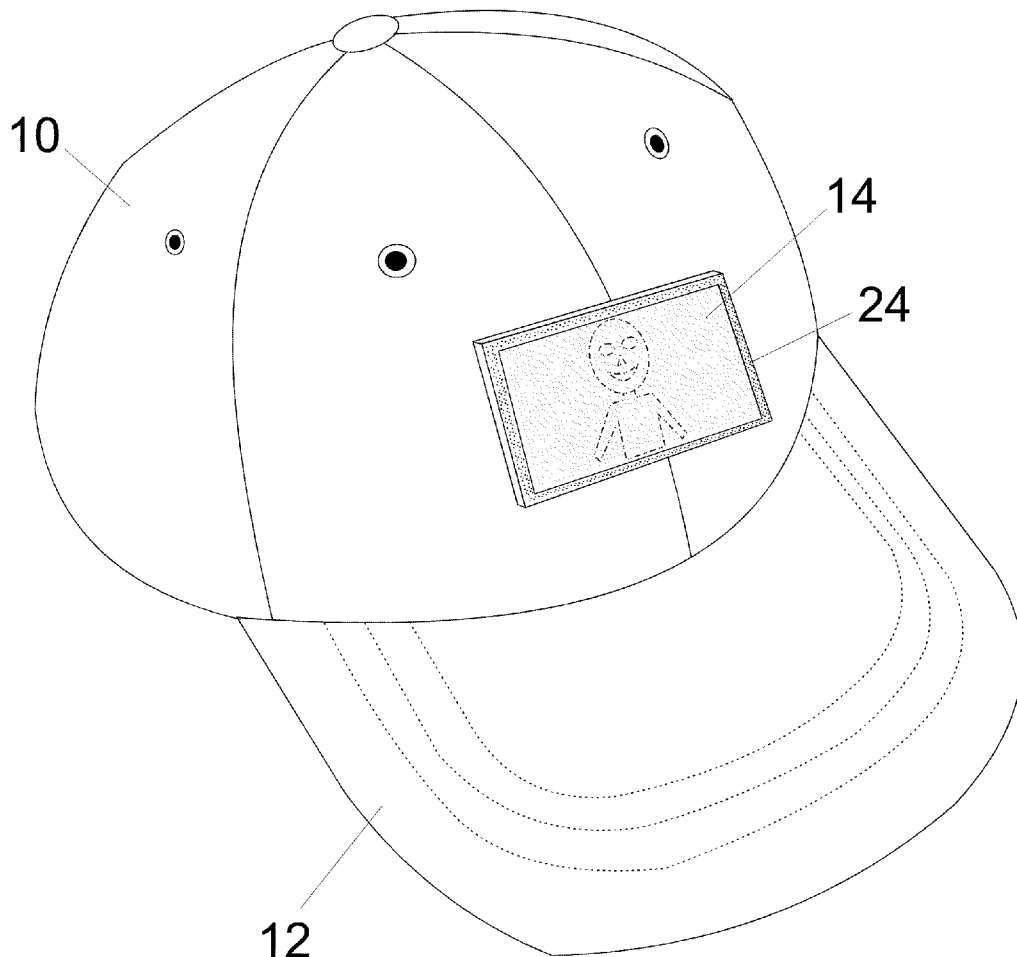
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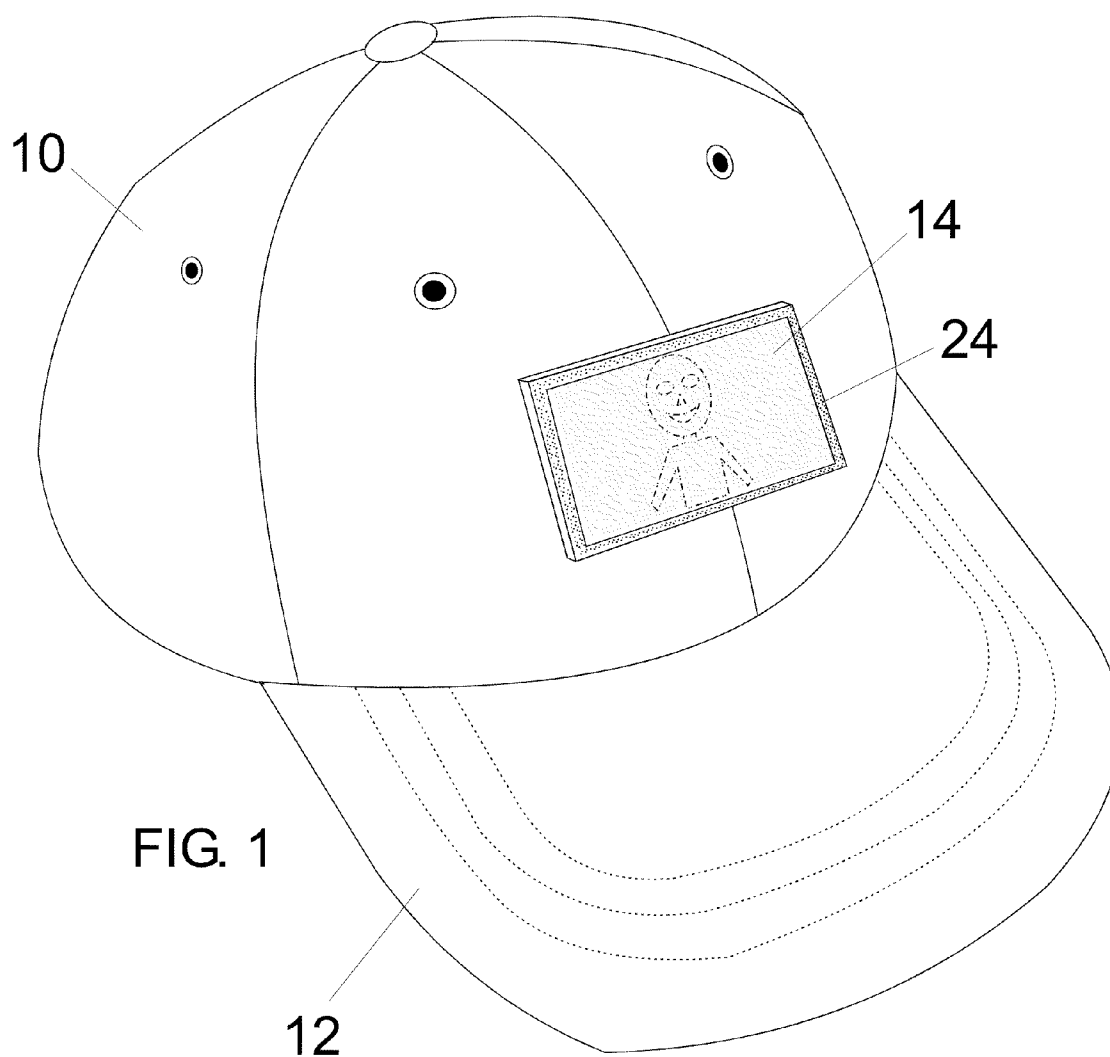
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Eden Prairie, MN 55347 (US)(57) **ABSTRACT**(73) Assignee: **BOBBLESIGNS.COM LLC**,
Eden Prairie, MN (US)(21) Appl. No.: **12/813,482**(22) Filed: **Jun. 10, 2010**

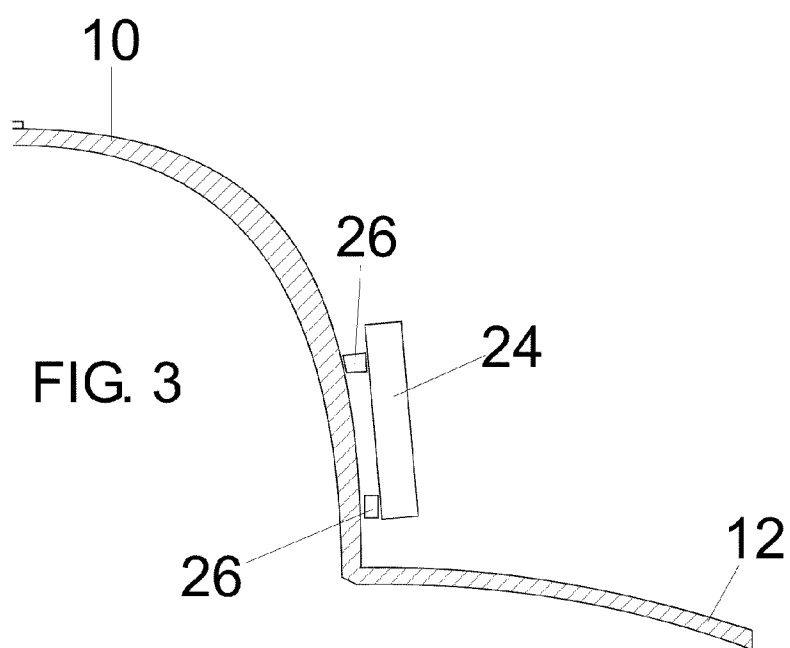
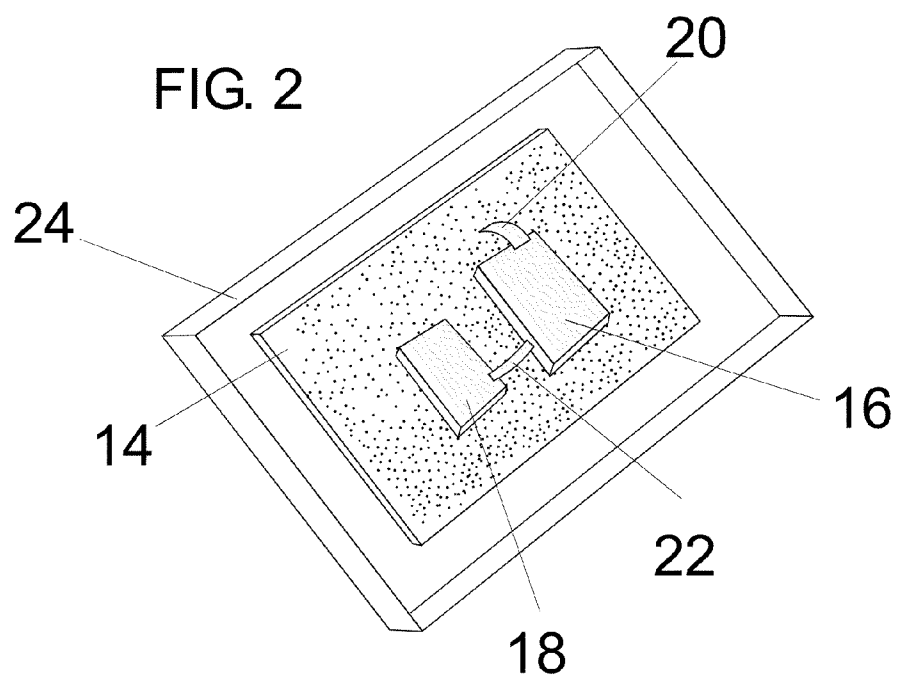
Embodiments of the invention generally provide a wearable hat to which is attached a video display **14**. A central processing unit **16** within the device controls the images which are visible on display **14**. The user may select digital representations of images, drawings, motion pictures or text and place these digital representations into digital data storage media accessible to central processing unit **16**. The user may select the order and duration of the images to be shown on display **14**, and the image display sequence is executed by **16** during the operation of the invention. Electrical energy is supplied by electrical power source **18**. While the device is in operation, the user may wear this device on top of their scalp in a manner customary for the wearing of hats.

Related U.S. Application Data

(60) Provisional application No. 61/186,370, filed on Jun. 11, 2009.







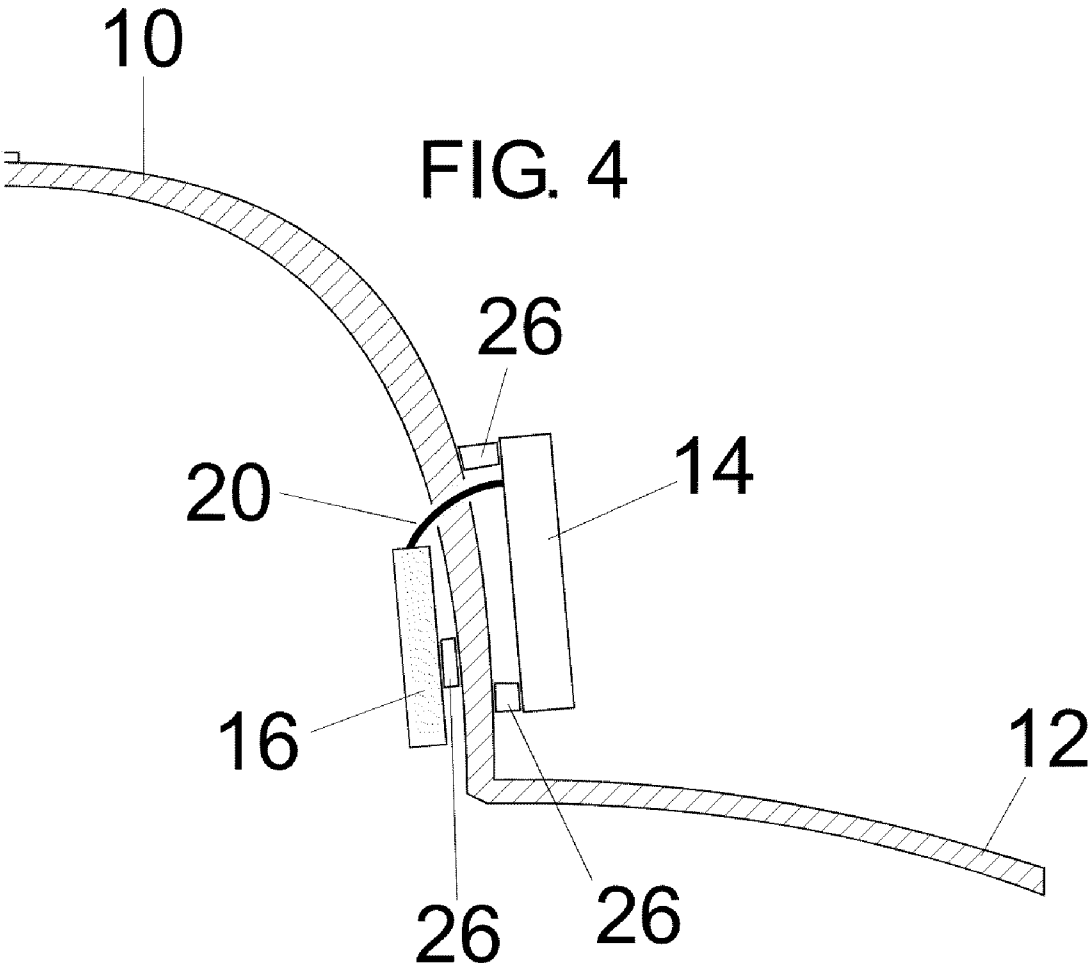
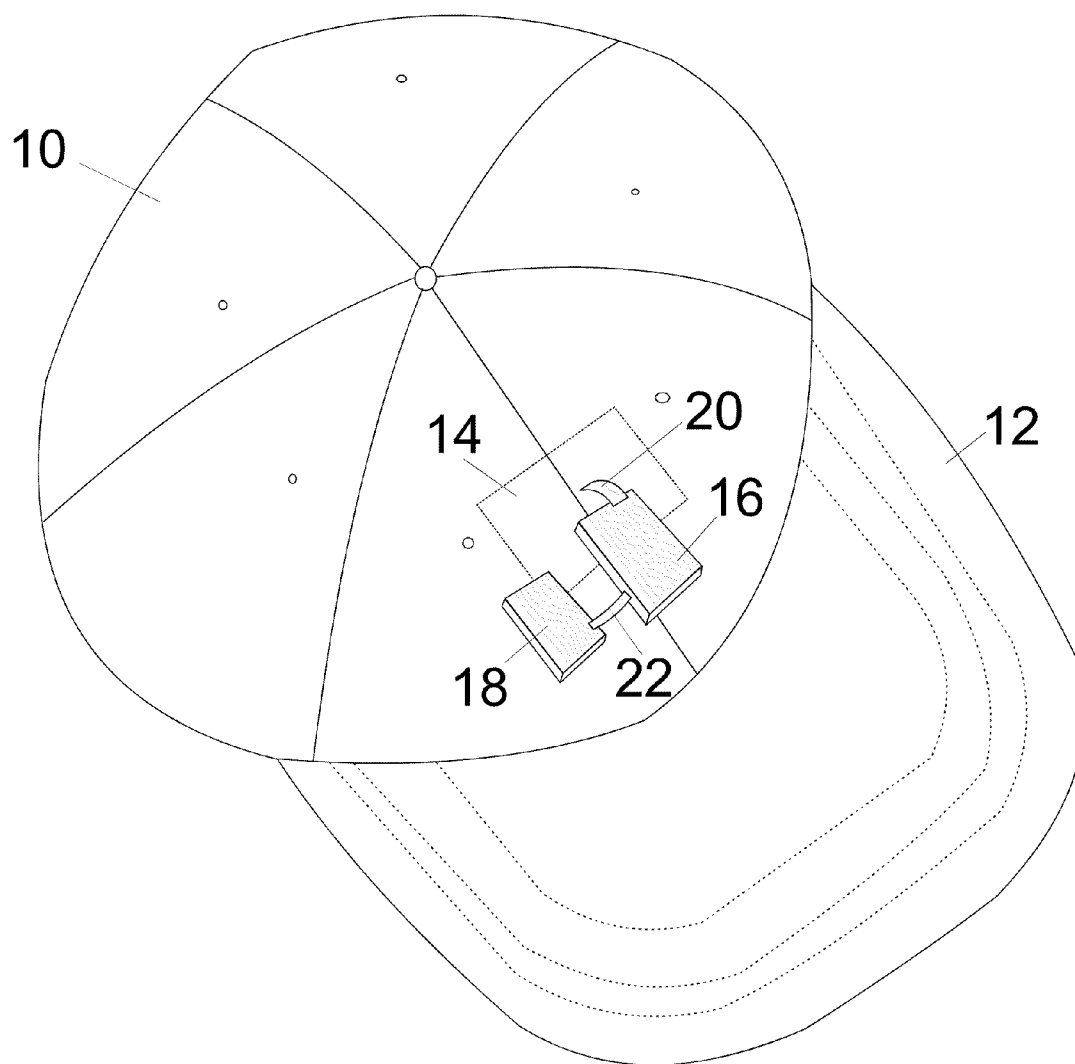
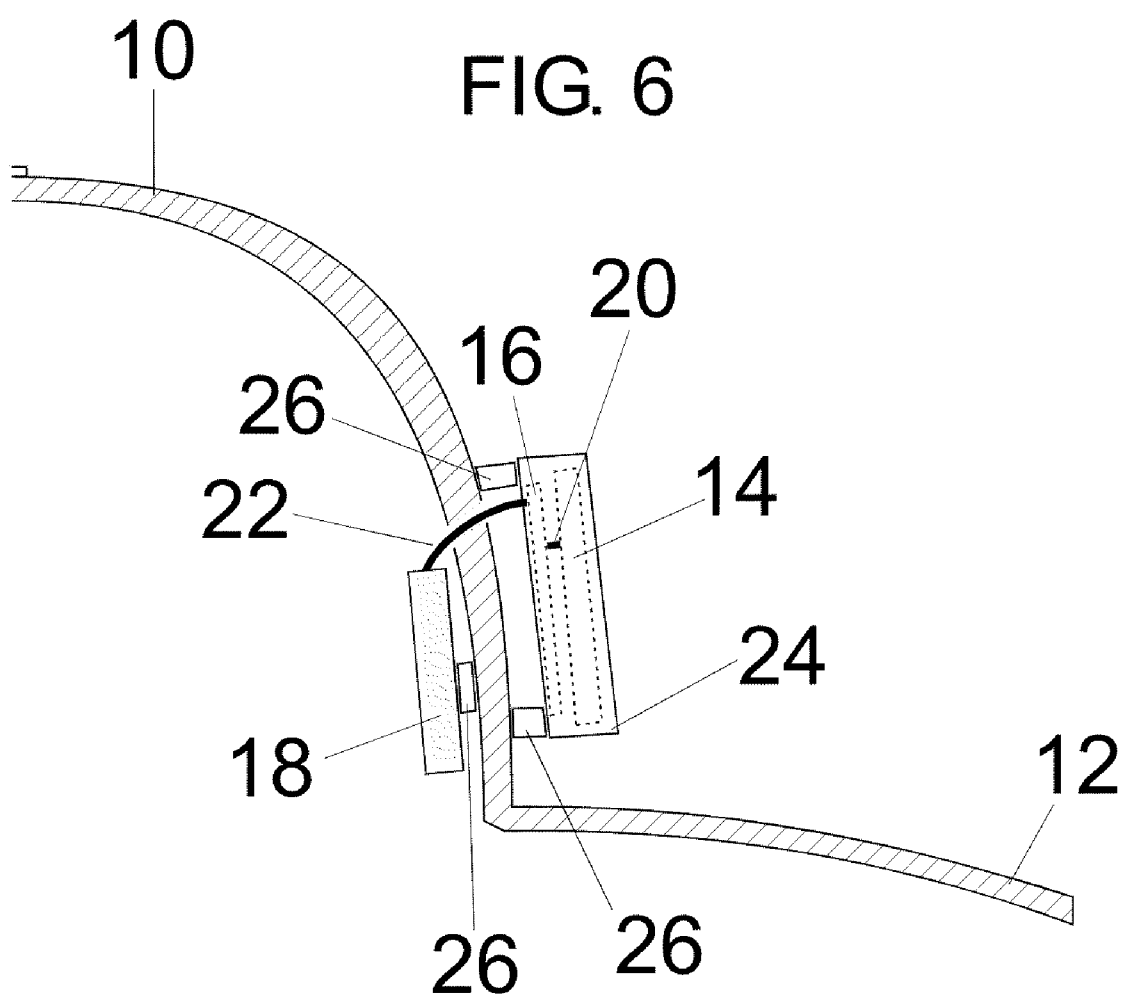
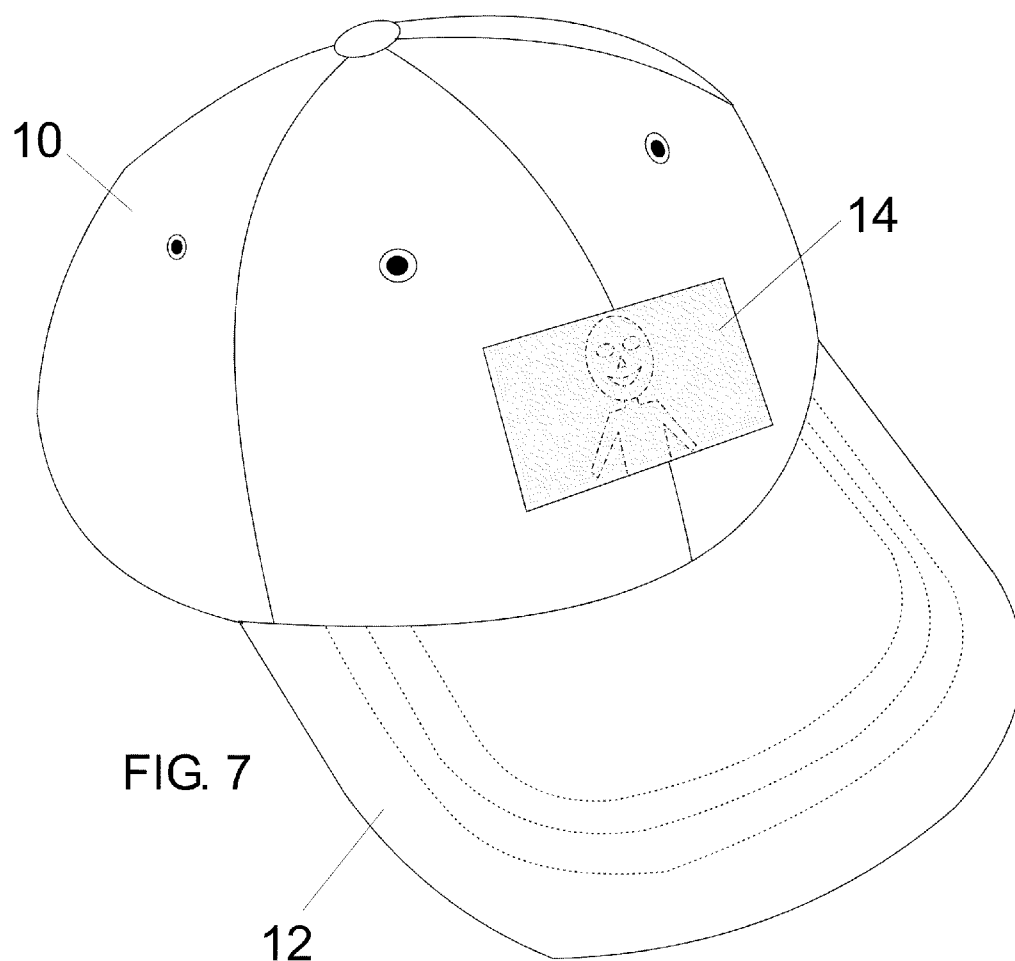
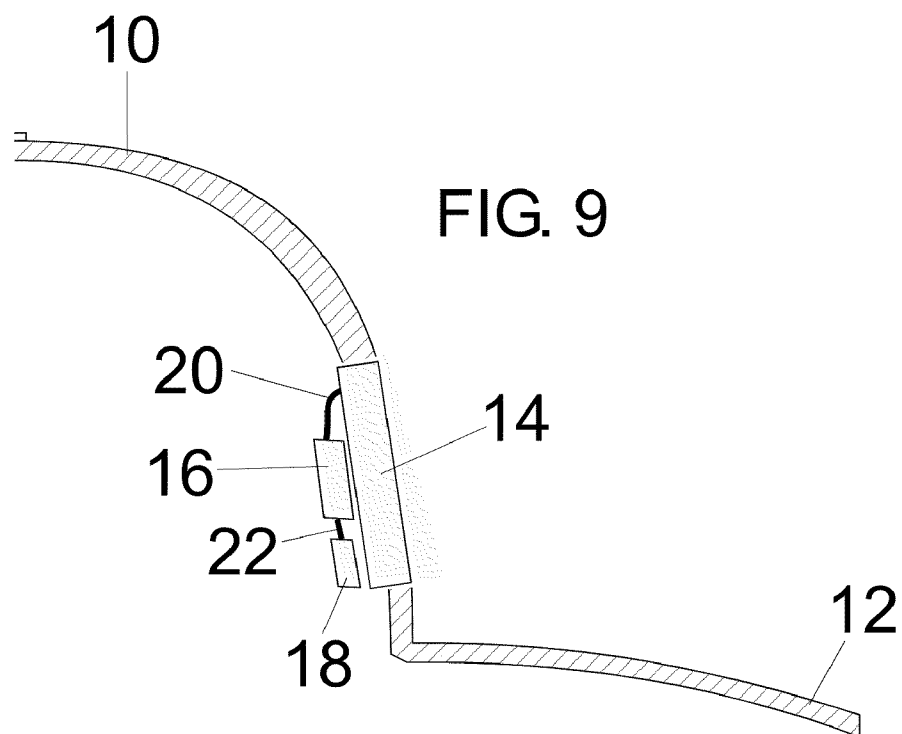
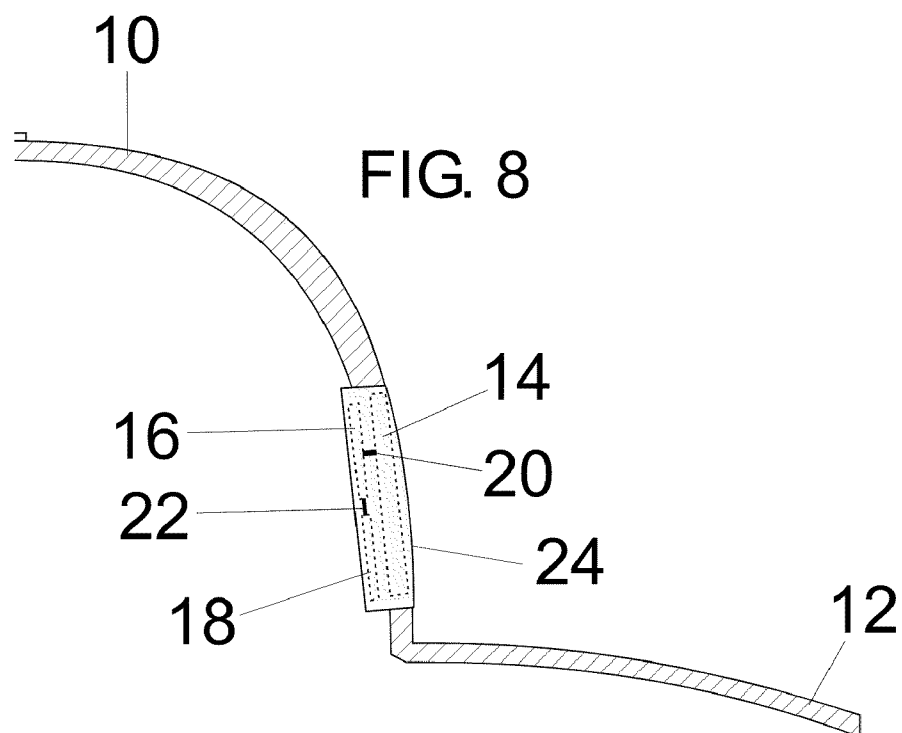


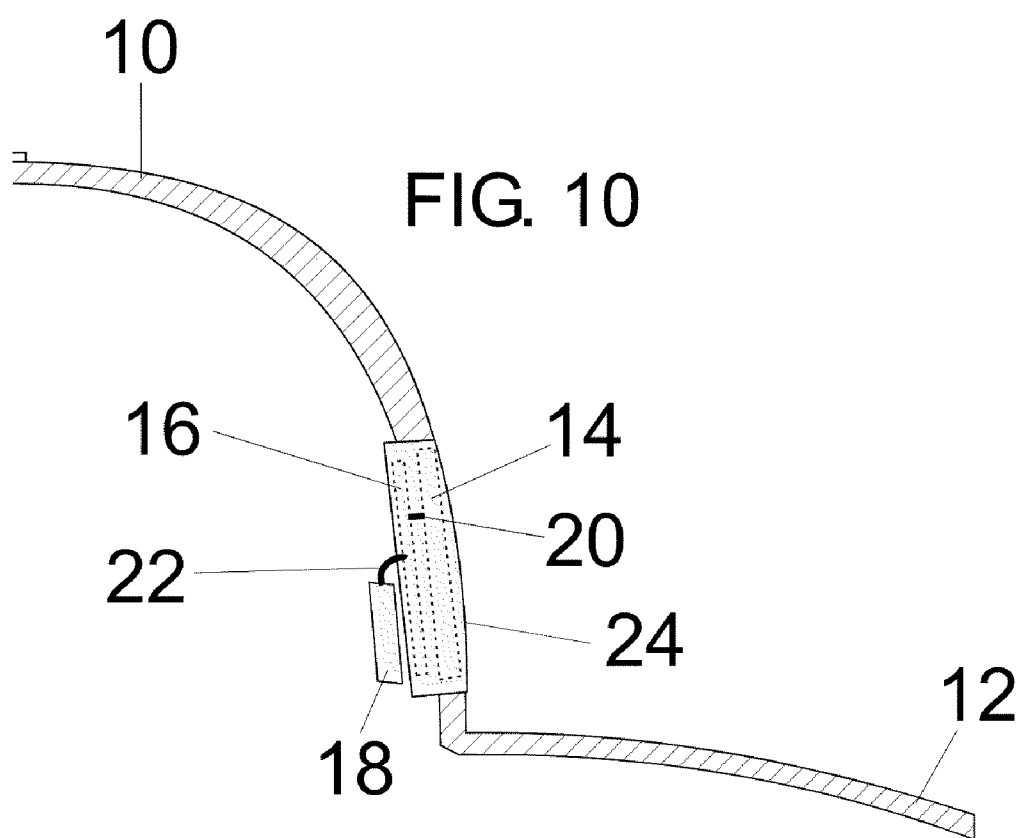
FIG. 5

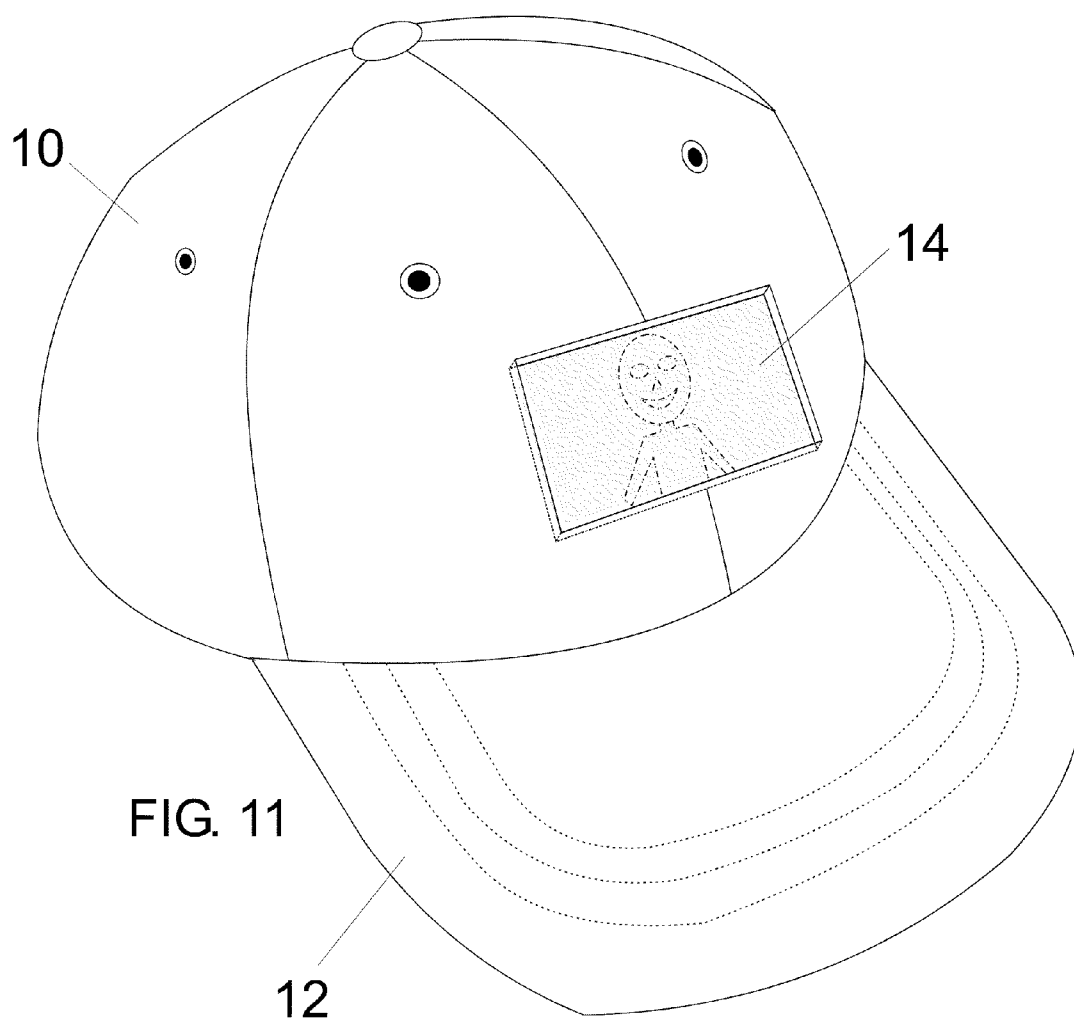


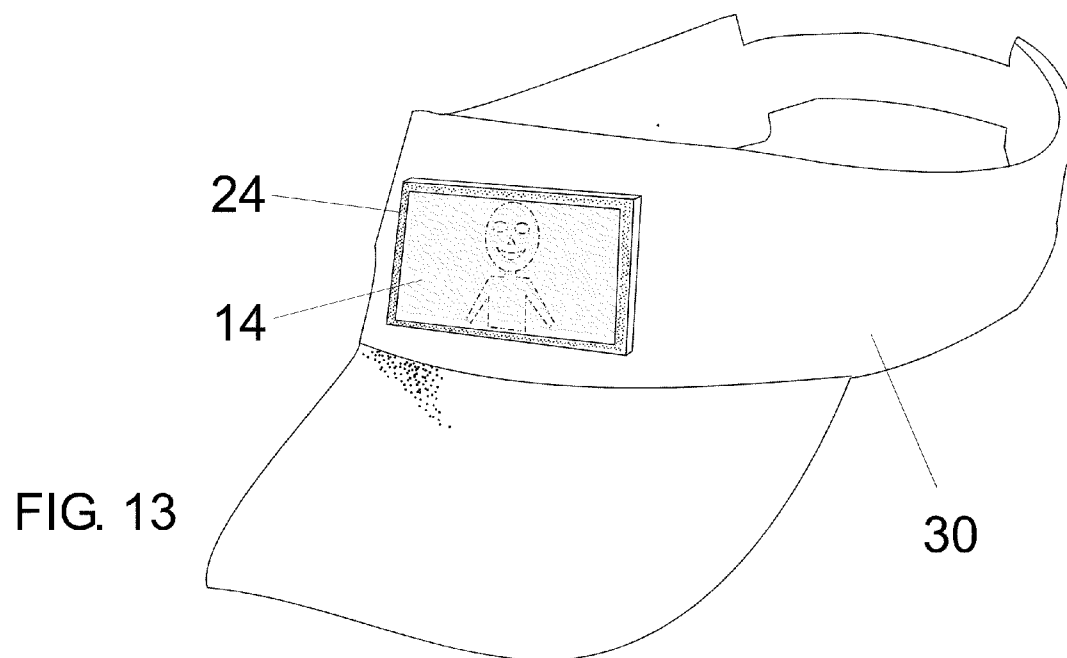
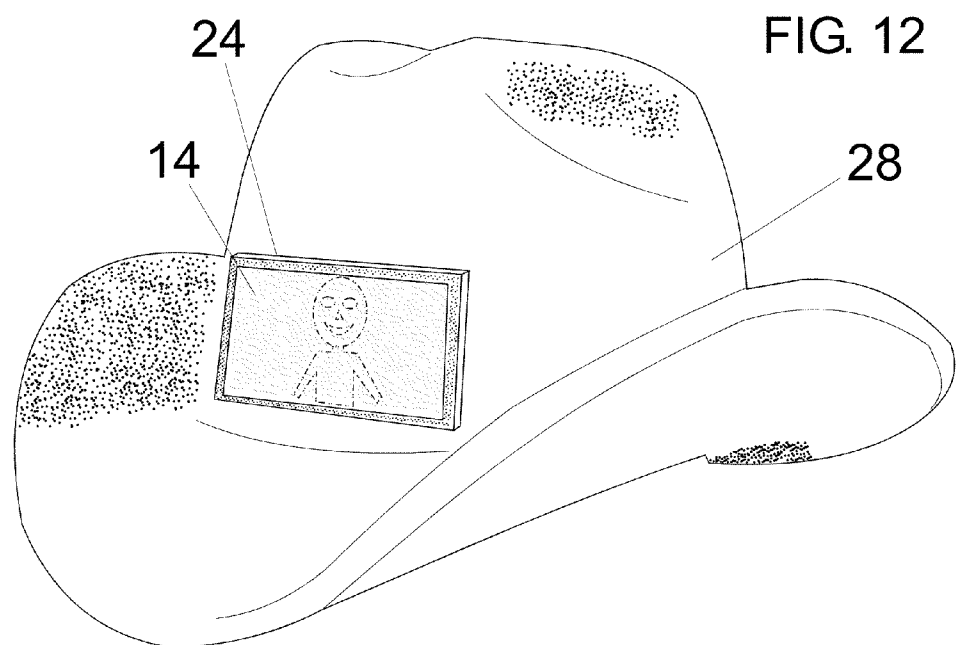


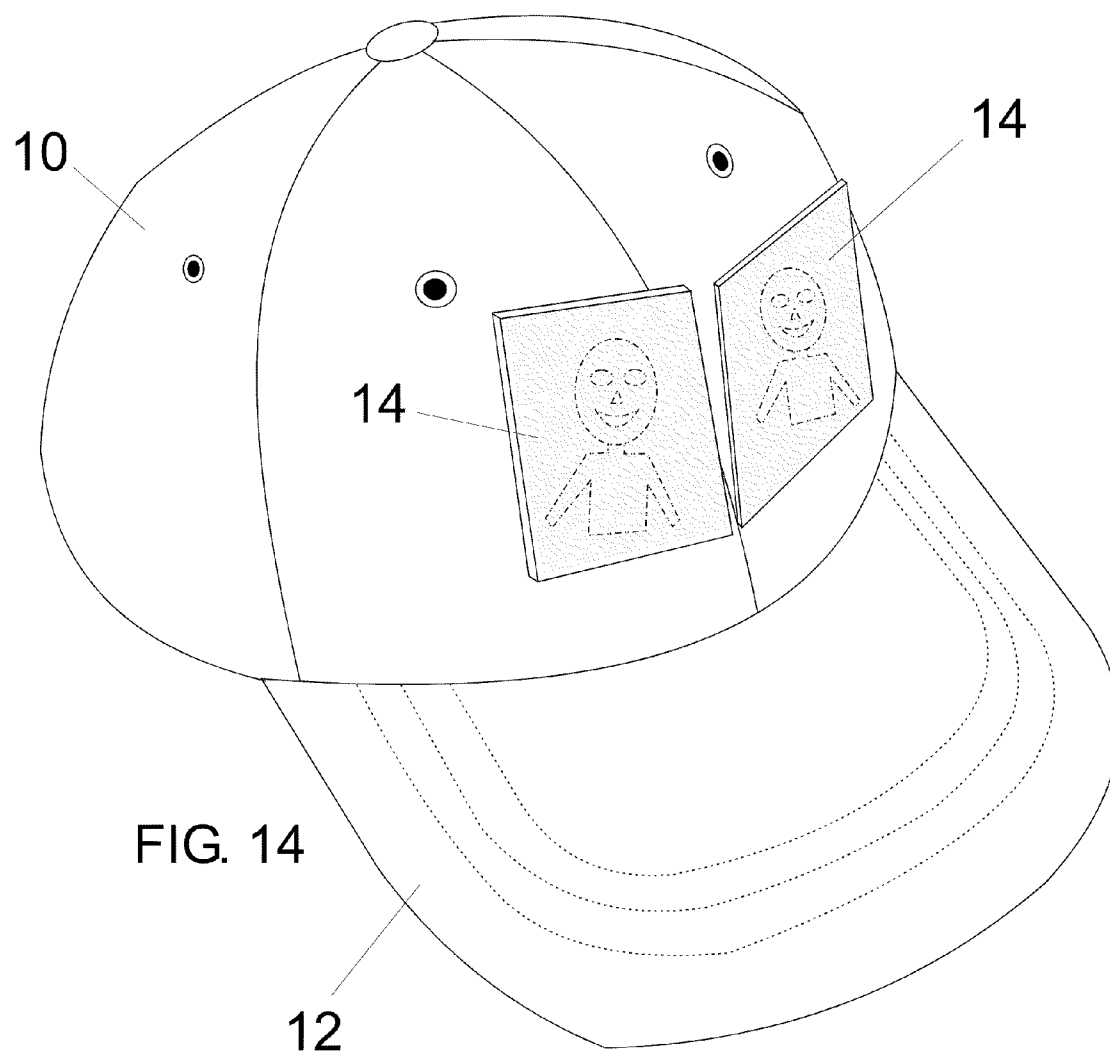












HAT WITH ELECTRONIC DISPLAY**CROSS-REFERENCE TO RELATED APPLICATIONS**

[0001] This application claims the benefit of provisional patent application Ser. No. 61,186,370, filed 2009 Jun. 11 by the present inventor.

FEDERALLY SPONSORED RESEARCH

[0002] Not Applicable

SEQUENCE LISTING OR PROGRAM

[0003] Not Applicable

BACKGROUND

[0004] 1. Field of Invention

[0005] This invention relates generally to a hat that is combined with an electronic visual display such that the user may convey images, messages or motion pictures to those in the proximity.

[0006] 2. Prior Art

[0007] Attire worn on the head, hats in particular, are utilized by users for both physical comfort, such as providing warmth or shade, as well as a means of personal self expression. Of particular note are hats that are often decorated with static text or graphic items, such as sports team logos. Previous inventions have attempted to make hats more noticeable, distinct or customizable. In U.S. Pat. No. 7,243,377, Ashy describes an invention where the prominent graphic attached to a hat may be interchanged readily through the employment of temporary fasteners such as magnets or tape. Similarly in U.S. Pat. No. 5,359,734, Rathburn discussed an invention to exchange logos on headgear. Ferguson contemplated the idea of affixing photographs to clothing in U.S. Pat. No. 6,729,058. In both these cases, hats could be personalized by the user, but the images displayed on the hat are passive and unassuming, and changes to the images require manual interaction with the user that last many seconds.

[0008] Other inventors have attempted to add glamour to headwear through the use of electronic accoutrements. Thornock (in U.S. Pat. No. 5,088,127) and Power-fardy (in U.S. Pat. No. 5,462,471) each attached electrically powered motors to hats to attract attention by waving or rotating objects. In U.S. Pat. No. 6,168,286, Duffy describes attaching a light to the bill of a hat to illuminate from the front a logo affixed to the hat crown. The invention of Ratcliffe et al. (U.S. Pat. No. 5,680,718) created a hat graphic that appeared to be self-illuminating to spectators. Heminover, in U.S. Pat. No. 4,231,079, placed individual lights around a hat that were electronically programmed to flash in a choreographed manner. More recently, Vanderschuit used a decorative strip of light emitters affixed to the bill of a hat in U.S. Pat. No. 7,052,154.

[0009] Attaching light emitting devices to headwear may also serve a purpose other than novelty. Pfaeffle (in U.S. Pat. No. 5,931,559) and Glatt (in U.S. Pat. No. 5,758,947) combined light with helmets as a means of increasing safety by making the user more visible to others. Waters (in U.S. Pat. No. 6,659,618) and Polaire (in U.S. Pat. No. 6,721,962) each presented inventions in which lights attached to the hat illuminated the immediate area ahead of the device user. A complex invention combined a hat with a video camera and a video display as defined by Buskop in U.S. Pat. No. 7,598,

928. As written in said patent, the device is primarily for use by people functioning as tour guides for groups. U. S. Design Patent D603,585 depicts a hat with a window-like area attached. However, this design patent is purely ornamental and no function or utility is represented by Capriola, the listed inventor of said design patent.

[0010] These previous attempts have suffered from the inability to quickly and easily customize the appearance of the hat after manufacture. At best, for the hats that employed a series of light emitters, the user could only adjust the frequency, intensity or pattern in which the light emitters were activated. For those inventions that offered interchangeable graphics, such changes elicited physical effort from the user which required several seconds at minimum to accomplish.

[0011] Static, passive graphics on headwear could be replaced by illuminated electronic displays that are commonplace in myriad products already. Such displays can utilize varied technical approaches, including but not limited to thin film transistor liquid crystals (U.S. Pat. No. 6,583,777), light emitting diodes (U.S. Pat. No. 5,184,114) and organic light emitting diodes (U.S. Pat. No. 7,538,343). To date, no disclosed device has mated electronically addressable image displays with headwear, as does the present invention described henceforth.

SUMMARY

[0012] The present invention is a new device for displaying photographic, video or text images on a wearable apparatus commonly known as a hat or cap. This device is portable, allowing the user to advertise or otherwise communicate to those around him or her via a portion of the hat that conveys visual media electronically. The electronic display portion of this device generally consists of an array of picture elements which are individually addressable and changeable such that the pattern of light being emitted by this display is representative of a drawing, photograph, motion picture or conveyance of language. Current implementations of this display technology include backlit liquid crystal displays (LCD), light emitting diodes (LED), organic light emitting diodes (OLED) and electroluminescent (EL) displays, although other display technologies may be employed as part of the present invention.

[0013] A processing unit controls the images which appear on the display. A user may store digital representations of drawings, photographs, motion pictures, text and/or pictographic symbols on media accessible to the processing unit, from which the processing unit will subsequently evoke a variation of colors and intensities of light on the display such that images are externally viewable by spectators. Because the user has control of the images that are to be viewed, the invention is readily customizable in expressing or communicating that which the user desires to convey. For example, the user may wish to display digital photographs or videos of select persons, animated characters, company or sports team logos, places, machinery or ideas. In an exemplary mode of this present invention, a specific photographic image may be shown indefinitely on the display screen of the device, or a series of images and/or videos may be shown, each being shown for a given duration. The present invention need not be implemented on a specific style of hat. That is, the electronic video display may be incorporated on varying styles of head-

wear including, but not limited to, baseball caps, cowboy hats, stocking hats, top hats, protective helmets and the like.

DRAWINGS

Figures

[0014] FIG. 1 is a frontal view of the device in the preferred embodiment

[0015] FIG. 2 is an underside view of the display enclosure portion of the device in the preferred embodiment

[0016] FIG. 3 is a cross sectional view of the device in the preferred embodiment

[0017] FIG. 4 is a cross sectional view of the device in an alternative embodiment where the display screen connects to additional components transecting the hat

[0018] FIG. 5 is an underside view of the device in an alternative embodiment where the display screen connects to additional components transecting the hat

[0019] FIG. 6 is a cross sectional view of the device in an alternative embodiment where the display housing connects to an additional component transecting the hat

[0020] FIG. 7 is a frontal view of the device in an alternative embodiment where the display screen is mounted flush with the outer surface of the crown of the hat

[0021] FIG. 8 is a cross sectional view of the device in an alternative embodiment where the display enclosure is mounted flush with the outer surface of the crown of the hat

[0022] FIG. 9 is a cross sectional view of the device in an alternative embodiment where the display screen is mounted flush with the outer surface of the crown of the hat

[0023] FIG. 10 is a cross sectional view of the device in an alternative embodiment where the display enclosure is mounted flush with the outer surface of the crown of the hat

[0024] FIG. 11 is a frontal view of the device in an alternative embodiment where the display screen is mounted along the inside surface of the crown of the hat

[0025] FIG. 12 is a frontal view of the device employed on a cowboy style hat

[0026] FIG. 13 is a frontal view of the device employed on a visor style hat

[0027] FIG. 14 is a frontal view of the device in an alternative embodiment utilizing multiple display screens

REFERENCES NUMERALS

- [0028] 10 Crown of a hat
- [0029] 12 Brim of a hat
- [0030] 14 Display screen
- [0031] 16 Central processing unit
- [0032] 18 Electrical power source
- [0033] 20 Display control conduit
- [0034] 22 Electrical power conduit
- [0035] 24 Display enclosure
- [0036] 26 Fastener
- [0037] 28 Cowboy-style hat
- [0038] 30 Visor-style hat
- [0039] DETAILED DESCRIPTION

FIGS. 1 THRU 3—Preferred Embodiment

[0040] FIG. 1 is a view of the assembled device in best mode from an angle slightly above and in front. In this instance, a hat similar to one in the style of a baseball cap is depicted, consisting of a crown portion 10 which envelops the top of the head of the user when worn, and a brim portion 12

which extends outwardly from the crown 10. The display screen 14 is attached inside display housing 24. The display housing 24 also contains an electrical power source, electrical power conduit, central processing unit and display control conduit, which are not externally viewable. The display housing 24 is affixed to the outer surface of crown 10 above brim 12. A phantom image of a human is depicted on 14 to exemplify where an image can be viewed. While the display housing 24 could be placed anywhere on the outer surface of the hat, the location above brim 12 is where logos or other graphics are traditionally placed. While display screen 14 is depicted as having a rectangular shape in FIG. 1, the actual shape of 14 utilized in practice may be of any practicable shape or outline.

[0041] FIG. 2 is a rear exposed view of the display housing 24. Display screen 14 is attached to the inner surface of 24, with the viewable image surface of 14 facing out the front side of 24. A portion of 24 is cut out to permit the image displayed on 14 to be externally viewable. Central processing unit 16 connects to 14 via display control cable 20. Electrical power source 18 connects to central processing unit 16 via electrical conduit 22.

[0042] FIG. 3 is a cross sectional view of the device. Display housing 24 attaches to hat crown 10 utilizing fasteners 26. Components internal to 24, those being 14, 16, 18, 20 and 22 are not depicted in this view. Hat brim 12 is shown for spatial reference.

Assembly and Operation—Preferred Embodiment

[0043] The present invention may be implemented with any style of hat. The baseball cap is a popular hat style and will thus serve as the choice of hat for the illustration of the preferred embodiment. Such a hat typically is constructed in a manner that the crown portion 10 is fabricated from a pliable material. Sections of the pliable material are sewn or glued together to form the shape of 10. Brim 12 is semi-rigid such that it reasonably maintains a designed shape, although 12 need not be a necessary portion of the device. For the purposes of executing a baseball style cap, 10 attaches to 12 and together 10 and 12 form a wearable piece of headgear.

[0044] The most conspicuous portion of the present invention is the electronic display screen 14 (FIG. 1). The function of display screen 14 is to generate patterns and colors of light so as to convey the appearance of images to those viewing 14 from the front, emissive surface. For the purposes of this discussion, images include visual representations of photographs, motion pictures, drawings, charts, text or pictographs. The actual implementation of 14 is a choice left to the discretion of the fabricator. Display screens currently employed in consumer devices rely on technologies such as backlit thin-film transistor liquid crystal displays (LCDs), light emitting diodes (LEDs) and organic light emitting diodes (OLEDs). Any of these aforementioned technologies can be employed as the display screen 14, but other suitable technologies for 14 may also be chosen as well which will continue to be encompassed by the scope of the present invention. In the preferred embodiment, 14 contains an array of individually addressable picture elements (pixels), and each pixel is capable of emitting light with the appearance of a particular, configurable color. In combination, these pixels are capable of generating a pattern of light that mimics light which reflects off a photograph. 14 may also serve an additional function of sensing when and where the externally viewable portion of display

screen **14** is touched, and be able to relay this information to another component of the present invention.

[0045] Central processing unit **16** is an electronic component with the function of dictating and controlling the images displayed by **14**. **16** controls the light intensities and colors emitted by the pixels of **14** in proper combination so as to generate the appearance of a recognized image on **14**. **16** also controls the order and duration of when images appear on **14**. In the preferred embodiment, **16** has access to an electronic storage collection which contains digital representations of images. Examples of suitable electronic storage include, but are not limited to, flash memory, hard disk drive, solid state disk drive and random access memory. **16** is then able to retrieve the digital image data from said electronic storage and instruct **14** to recreate the image based on this digital data onto the viewable screen. Access to the digital data may be through either a direct physical connection to the storage media, or through a wireless means such as radio communication or modulated photon signal. **16** conveys control signals to display screen **14** via display control conduit **20**. **20** may be a single physical conduit, or may be divided into multiple instances of **20** as the fabricator of this present invention deems practical. **16** may also control the flow of electrical energy to and from electrical power source **18** via electrical power conduit **22**.

[0046] Electrical power source **18** provides the electrical energy required for operation of the electrical components of the present invention. In the preferred embodiment, **18** may take the form of a rechargeable battery. That is, a battery whose internal chemical potential state may be refreshed by supplying additional external electrical current. Examples of such components are batteries employing lithium-ion, lithium polymer, nickel metal hydride or nickel cadmium electrochemical materials. The fabricator may also select other options for **18**, such as, but not limited to, a non-rechargeable battery, a storage capacitor, a fuel cell or a thermoelectric generator.

[0047] In the preferred embodiment, major components of the present invention **14**, **16**, **18**, **20** and **22** may be housed together inside display housing **24** (FIG. 2). **24** is a shell which can add robustness and aesthetic appeal to the device by protecting and hiding from casual view the internal components. **24** could be made out of a material such as plastic. **24** could also house additional components such as electronic contact switches, external power connectors, external data transfer cable connectors or removable storage media. **24** then attaches to the outside portion of hat crown **10** via fasteners **26** (FIG. 3). Fasteners **26** serve to keep **24** physically attached to **10** and need not be identical to one another. Examples of fasteners **24** that could be employed by the invention are, but not limited to, adhesive, epoxy adhesive, hot glue adhesive, adhesive covered foam, nuts and bolts, magnets, snaps or hook-and-loop fabric sheets. The number, location and size of the instances of **26** are left to the determination of the fabricator as to what said fabricator deems necessary and practicable.

[0048] To operate the device after assembly, the user may verify that the electrical power source **18** has ample stored energy to provide electrical energy to the electronic system components during use of the device. In the preferred embodiment, a source of external electrical current may be temporarily connected by the user to central processing unit **16**. **16** may then redirect the current via electrical conduit **22** to **18** if the instance of **18** is a rechargeable battery. **16** may

monitor the voltage level being output by **18** to determine the level of stored energy by **18**, and **16** may report this value to the user by conveying a message on display screen **14** via display control conduit **20**. Once **18** has been recharged to an acceptable level of stored energy, the temporary source of external current is disconnected from **16**.

[0049] The user may then modify the contents of the digital data storage collection to which **16** has access. In the preferred embodiment, **16** contains an amount of digital storage volume to hold copies of digital data. This storage may take the form of, but is not limited to, flash memory or hard disk drive. The user may attach one end of a digital data transfer cable to **16**, and the other end of the data transfer cable to another external device such as a computer, telephone or camera. The user then chooses the digital files to be transferred from the external device to the storage medium of **16**, and then the user initiates said transfer. The digital files will contain representations of the images, videos, text, pictographs or sequence of computer instructions. After completion of the digital data transfer, the user will disconnect the external data transfer cable from **16**.

[0050] The user then chooses the sequence and duration of visibility for the images, video or text to be displayed on display screen **14**, as well as possible visual effects to occur during transitions between images. In the preferred embodiment, the settings and sequence for image display are communicated to the user via text and icons that are shown on **14** when **16** is in a state dedicated to defining the configuration of the device. The user may interact with **16** through electronic switches connected to **16**, through a touch sensitive feedback function of display screen **14**, or a combination of both. Touch sensitive feedback may be employed using common technologies such as, but not limited to, capacitive touchscreens or resistive touchscreens. In general, these touchscreens will not only allow the image from the light emitting display array **14** to be viewed, but also sense when a person or object contacts an area of the externally viewable screen with moderate force. Said touchscreen can sense where on the touchscreen physical contact has been made, and relay this information to **16** in the form of a geometric coordinate. The firmware which operates **16** may then couple the feedback from said touchscreen with locations of icons or virtual buttons which are simultaneously displayed on **14** to determine configuration or selections made by the user in defining the state of the device. Additionally, the user may elect to have the display settings determined by an algorithm built into the operating firmware of central processing unit **16**.

[0051] Once the user completes configuration of the device, the user may initiate **16** to begin executing the display of selected images to be shown on display screen **14**. The user may then place the hat on the top of his head in a manner customary to the wearing of headwear. Typically the inner concave portion of hat **10** makes direct contact with the outer surface of the scalp on the head of a person. When the hat has a brim it is customary to orient said brim **12** to a position such that **12** is vertically above the face of the user (FIG. 1). In this manner the outwardly viewable portion of display screen **14** is visible to those persons or cameras in the frontal proximity of the user. In this best mode, the succession of images displayed on **14** may illicit a sense of awe or amusement to persons within viewing range of the present invention, or said persons may receive a message or intellectual conveyance from the user of the present invention, or a combination thereof. The user may also elect to orient hat brim **12** in any

other rotationally angular position relative to their face as is commonplace among wearers of hats.

[0052] At the discretion of the user, the user may choose to initiate a state of the device such that electrical power is removed from display screen 14. During the lifetime of an instance of the fabricated invention, the user may refresh the electrical power supply 18, modify the contents of the stored digital data, or modify the sequence or algorithms selected for the display of the digital images. The user may also choose to modify the firmware instruction set which operates central processing unit 16 through the exchange of digital data. The user may choose to operate the present invention with a source of external electrical power physically connected to the device.

Additional Embodiments—FIGS. 4 Thru 14

[0053] Alternative embodiments exist which provide slight differences in the construction or configuration of present invention, all of which continue to be encompassed by the scope and spirit of the present invention. In the preferred embodiment, central processing unit 16 had access to internally stored digital data. One alternative to internal data storage is removable data storage, such as a removable flash memory card. The user could place digital files directly on a removable flash memory card external to the present invention, and then insert said card into the present invention such that 16 has the ability to retrieve the digital data contents stored on the card. The invention could be constructed to also use a combination of internal digital data storage and removable data storage.

[0054] In the preferred embodiment a physical cable was discussed as a means to transfer digital data from external sources to the central processing unit 16. An alternative to said physical connection is a wireless transfer of data. This could be accomplished by adding functionality to 16 such that 16 may receive data via radio frequency communications or modulated light. It may also be possible for 16 to receive digital image, video or message data in real time via wireless communications instead of accessing data kept in digital storage.

[0055] In the preferred embodiment the user configured the operation of the present invention through interaction with 16 via electrical switches, touchscreen feedback, or a combination of both. It is also possible for the user to define the sequence and display of images externally from the device, such as on a computer, and create a digital data file containing these definitions. This digital definition file could then be transferred to, interpreted by and executed by 16.

[0056] In the construction of the device, the user may elect to physically separate components. One justification for this is to reduce the size of the components externally visible to casual observers of the constructed invention. FIG. 4 is a cross sectional view of an alternative embodiment where several parts of the invention are distributed to locations both along the interior and exterior surface of crown 10. Display screen 14 attaches to crown 10 via fasteners 26. As was discussed for the preferred embodiment, fasteners 26 need not be identical to one another and may be realized in the form of, but not limited to, adhesive, epoxy adhesive, adhesive covered foam, hot glue adhesive, nuts and bolts, magnets, snaps or hook-and-loop fabric sheets. Display control cable 20 connects 14 to central processing unit 16 by piercing 10. A hole may be previously cut into 10 to permit the passage of 20. 16 is held in place to the inner surface of 10 using fastener 26. The

number, location and size of the instances of 26 are left to the determination of the fabricator as to what said fabricator deems necessary and practicable. Hat brim 12 is shown for spatial reference.

[0057] FIG. 5 is an underside view of the alternative embodiment of the device where several components are located within the inside surface of hat crown 10. The perspective of FIG. 5 is the view of the inner surface of crown 10 that is in direct contact with the scalp of the user when the hat is worn. In this case, display screen 14 lies on the opposite outer surface of 10. 14 connects to central processing unit 16 via control cable 20, where control cable 20 transects 10. Electrical power source 18 connects to central processing unit 16 via electrical power conduit 22. Hat brim 12 is shown for spatial reference.

[0058] An embodiment could also be chosen that groups central processing unit 16 together with display screen 14, but locates the electrical power source 18 along the inner surface of hat crown 10. FIG. 6 is a cross sectional view of the device in an alternative embodiment where central processing unit 16, display control cable 20 and display screen 14 are housed together inside display enclosure 24. 24 is affixed to the outside surface of 10 via fasteners 26. Electrical power source 18 connects to 16 via electrical power conduit 22. 22 transects hat crown surface 10. A hole may be previously cut into 10 to permit the passage of 22. The number, location and size of the instances of 26 are left to the determination of the fabricator as to what said fabricator deems necessary and practicable. 18 attaches to the inner surface of 10 via fastener 26. Hat brim 12 is shown for spatial reference.

[0059] It may also be possible to mount display screen 14 in such a manner that the image generating surface of 14 appears to be mounted flush with the outer surface of hat crown 10. FIG. 7 shows a frontal outside view of this alternative embodiment. In this instance a portion of the material that comprises crown 10 is removed such that the display screen 14 fills the space vacated by the removal of material. Hat brim 12 is shown for spatial reference. FIG. 8 shows a cross sectional view of this alternative embodiment where display housing 24 is affixed to hat crown 10 such that the outer surface of 24 appears flush with the outer surface of 10. Inside 24 is display screen 14, mounted in such a manner that the image producing surface of 14 faces toward the outer surface of 10. Also within 24 are central processing unit 16 and electrical power source 18. 14 connects to 16 via display control conduit 20. 18 connects to 16 via electrical power conduit 22. Hat brim 12 is shown for spatial reference.

[0060] FIG. 9 shows a cross sectional view of the device in an alternative embodiment where display screen 14 is affixed to hat crown 10 such that the outer surface of 14 appears flush with the outer surface of 10. 14 connects to central processing unit 16 via display control conduit 20. Electrical power source 18 connects to 16 via electrical power conduit 22. 20, 16, 22 and 18 lay on the back side of 14, within the interior volume of 10. Hat brim 12 is shown for spatial reference.

[0061] FIG. 10 shows a cross sectional view of the device in an alternative embodiment where display housing 24 is affixed to hat crown 10 such that the outer surface of 24 appears flush with the outer surface of 10. Inside 24 is display screen 14, mounted in such a manner that the image producing surface of 14 faces toward the outer surface of 10. Also within 24 is central processing unit 16. 14 connects to 16 via display control conduit 20. Electrical power source 18 lays on

the back side of **24**. **18** connects to **16** via electrical power conduit **22**. Hat brim **12** is shown for spatial reference.

[0062] It may also be possible to construct the present invention in such a manner that display screen **14** appears to be recessed behind the outer surface of hat crown **10**. FIG. **11** shows a frontal perspective view of this alternative embodiment of the device. Display screen **14** is mounted along the interior surface of hat crown **10** such that a discernable distance separates the viewable image surface **14** and the outer surface of **10**. Hat brim **12** is shown for spatial reference.

[0063] It has been stressed how the present invention may be implemented on different styles of hats. FIG. **12** shows an alternative embodiment of the device where display screen **14** is enclosed by display housing **24**. **24** is affixed to the outward, front side of cowboy style hat **28**, with the image producing surface of **14** facing in the direction of the front of the hat. Also within **24** are central processing unit **16**, electrical power source **18**, display control conduit **20** and electrical power conduit **22**, the connections between which follow the same methodology as previously described in other embodiments.

[0064] FIG. **13** shows an alternative embodiment of the device where display screen **14** is enclosed by display housing **24**. **24** is affixed to the outward, front side of visor style hat **30**, with the image producing surface of **14** facing in the direction of the front of the hat. Also within **24** are central processing unit **16**, electrical power source **18**, display control conduit **20** and electrical power conduit **22**, the connections between which follow the same methodology as previously described in other embodiments.

[0065] The present invention need not be limited to a single instance of display screen **14**. FIG. **14** shows an alternative embodiment of the device that utilizes multiple instances of display screen **14** attached to the outer surface of hat crown **10**. Hat brim **12** is shown for spatial reference. The multiple instances of **14** may all be controlled by a single instance of central processing unit **16**. The multiple instances of **14** may all also be controlled by a multiple instances of central processing unit **16**. The images displayed by the instances of **14** may be identical to, coordinated with, or independent from one another, based on the discretion of the user.

[0066] Regardless of the choice of physical construction, the operation of the devices with alternative embodiments remains similar to that of the preferred embodiment. Refreshing of the electrical power source, modification of the stored digital data, and selection and execution of the image display sequence are performed in a manner similar to that previously described for the preferred embodiment.

Conclusion, Ramifications, and Scope

[0067] Accordingly, the reader will understand that the hat with electronic display provides a means for the user to easily customize their headgear and convey an opinion in a novel and dazzling manner. Quite often a static fabric patch is affixed to hats, especially baseball cap style hats, which displays the logo of a particular company, product or sports organization. The present invention adds flair to headwear since the electronic screen will display images with vibrancy. Additionally, the displayed images could be motion pictures which will capture the attention of onlookers far more than an unchanging image. The use of digital media among consumers is widespread, ensuring that there is both a market for and a capability of users to transfer photos and motion pictures to the present invention in order to create a tailored, expressive

piece of wardrobe. Examples of this market include customized digital wallpapers available on cellular telephones and digital photo frames.

[0068] The electronic displays need not be limited to any particular technological approach. Although the drawings presented depict image display screens with a flat, rectangular shape, the employment of screens with other shapes, or screens with curved surfaces, is also conceivable in the fabrication of the present invention. If technologically feasible, the display screen of the present invention could encompass a large circumference of the hat, or even completely surround the hat exterior. The headwear also need not be constructed from a flexible material. The present invention is equally as applicable to headwear with hard, rigid surfaces, such as helmets. Nor is it essential that the hat chosen for the implementation of the device have a brim.

[0069] It is not necessary that the contents of the digital storage media of the present invention, or the image display sequence definition, be modifiable by the end user. It is possible for the hat with electronic display to be preloaded with digital content by the distributor or agents thereof. A manufacturer could choose to sell a manifestation of this invention in unassembled form, allowing the end user to complete construction. It is conceivable that an audio speaker could be added to the present invention so that the device provides aural as well as visual stimuli.

[0070] Although the description above has presented some specificities about shape, style and choice of materials, these should only be considered aids to visualization of the construction and operation of the device. By no means should said specificities be interpreted as limitations of any embodiment. Accordingly, the scope of the invention should be judged by the claims of this patent and their legal equivalents.

I claim:

1. A headwear capable of displaying electronically generated images comprising: a hat body, an electronic screen display upon which representations of digital images may be visible, an electronic central processing unit which dictates the images visible on said electronic screen, and an electrical power source which provides electrical energy to said electronic central processing unit.

2. The headwear of claim 1, wherein said electronic central processing unit includes an information storage medium to place into and retrieve from a collection of data in digital form.

3. The headwear of claim 1, wherein said electronic central processing unit includes an information storage medium to place into and retrieve from a collection of data in digital form, and said information storage medium is removable.

4. The headwear of claim 1, wherein said electrical power source comprises an electrochemical material.

5. The headwear of claim 1, wherein said electrical power source comprises an electrochemical material, and the potential energy of said electrochemical material may be increased through the application of an electrical current through said electrochemical material.

6. The headwear of claim 1, wherein said electronic central processing unit includes a wireless communications medium that enables said electronic central processing unit to receive data from external devices.

7. The headwear of claim 1, wherein said electronic screen display senses tactile contact upon the outwardly visible surface of said electronic screen display, and said electronic

screen display communicates the location of said tactile contact to said central processing unit.

8. A headwear capable of displaying electronically generated images comprising: a hat body, multiple instances of electronic screen displays upon which representations of digital images may be visible, an electronic central processing unit which dictates the images visible on said electronic screens, and an electrical power source which provides electrical energy to said electronic central processing unit.

9. The headwear of claim 8, wherein said electronic central processing unit includes an information storage medium to place into and retrieve from a collection of data in digital form.

10. The headwear of claim 8, wherein said electronic central processing unit includes an information storage medium to place into and retrieve from a collection of data in digital form, and said information storage medium is removable.

11. The headwear of claim 8, wherein said electrical power source comprises an electrochemical material.

12. The headwear of claim 8, wherein said electrical power source comprises an electrochemical material, and the potential energy of said electrochemical material may be increased through the application of an electrical current through said electrochemical material.

13. The headwear of claim 8, wherein said electronic central processing unit includes a wireless communications medium that enables said electronic central processing unit to receive data from external devices.

14. The headwear of claim 8, wherein at least one instance of said electronic screen displays senses tactile contact upon the outwardly visible surface of said electronic screen display, and said instance of electronic screen display communicates the location of said tactile contact to said central processing unit.

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