United States Patent

Summersby

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[45] **Dec. 5, 1972**

[54] **VISUAL COMMUNICATION APPARATUS**

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[21] Appl. No.: **71,674**

[52] **U.S. Cl.**.....**116/20,** 40/33

[51] **Int. Cl.**.....**G08b 9/00**

[58] **Field of Search** 116/18, 20; 35/10.2, 14; 40/67, 72, 33, 137; 340/366

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[57] **ABSTRACT**

A visual communication apparatus of primarily synthetic resin material and including a plurality of pivotable mirrored surfaces operated by a single actuator to cause the mirrored surfaces to pivot from a usual misaligned position to an aligned position whereby light may be reflected. A spring biases the mirrored surfaces to the misaligned position. A light source and a sight may be included as convenient accessories.

7 Claims, 8 Drawing Figures

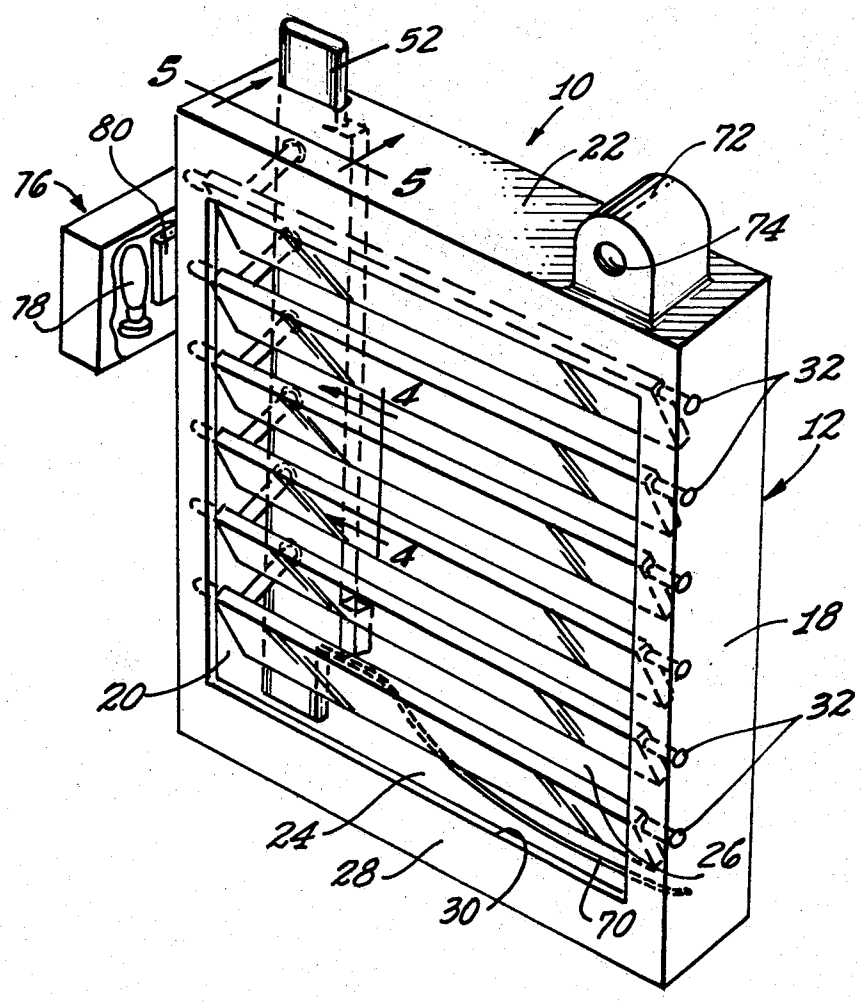

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FIG. 1

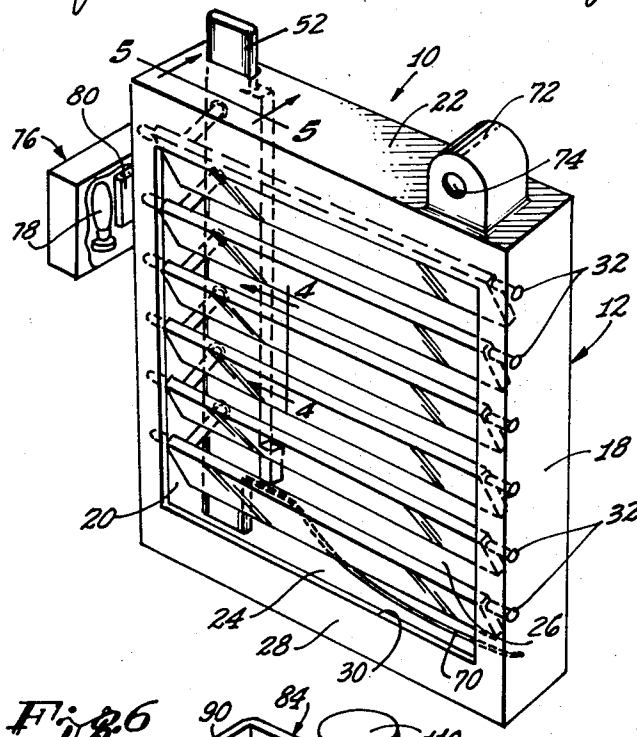


FIG. 2

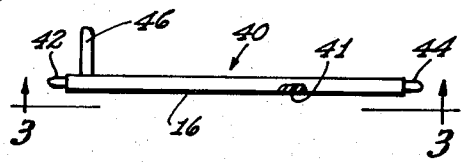


FIG. 3

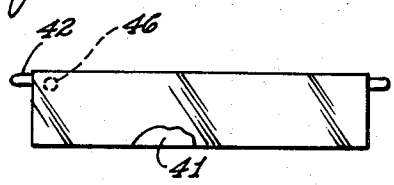


FIG. 4

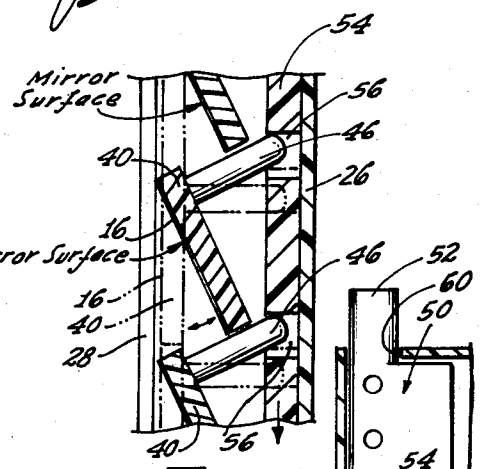


FIG. 6

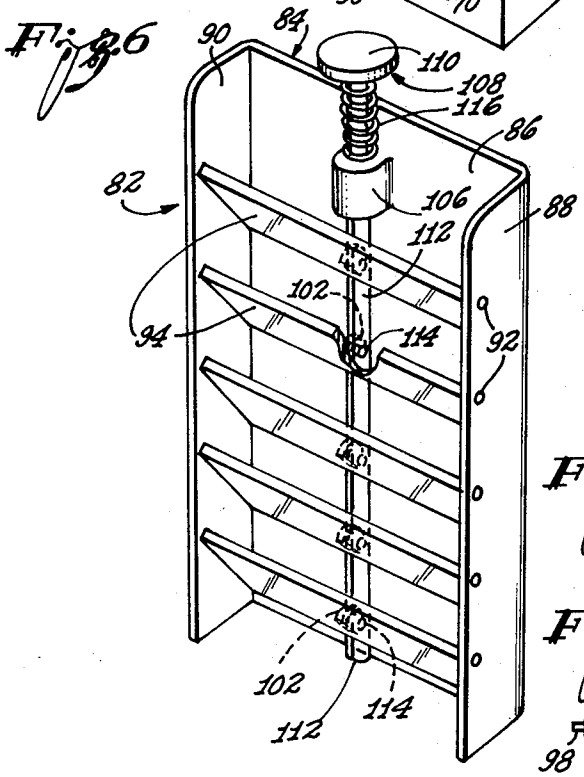


FIG. 5

FIG. 7

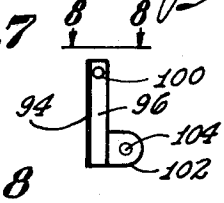
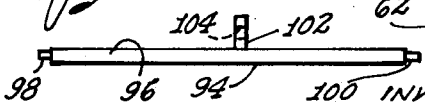


FIG. 8



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VISUAL COMMUNICATION APPARATUS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a visual communication apparatus, and more particularly to a visual communication apparatus which may be conveniently used in a survival kit because of its ability to be hand-held, its rugged construction, its relative inexpensiveness, an its floatability.

2. Description of the Prior Art

Mirrored surfaces or other shinny devices have long been used for visual communication, as have other types of signalling devices, including the common flashlight. However, none of the prior art has provided a totally acceptable apparatus which has the attributes described hereinafter to be included in a simple, inexpensive, but effective survival kit, or carried as a standard piece of equipment on hikes.

SUMMARY OF THE INVENTION

The present invention is a new and improved visual communication apparatus comprising a housing; a plurality of mirrored surfaces pivotally connected to the housing and adapted to be pivoted between a position whereby the mirrored surfaces are aligned in a plane to transmit a signal by reflecting light and a position whereby the mirrored surfaces are misaligned; means supported by the housing and connected to the mirrored surfaces for pivoting the mirrored surfaces in a preselected manner; and means connected to the housing for biasing the mirrored surfaces to the misaligned position.

An object of the present invention is to provide a visual communication apparatus which may be easily hand-held.

Another object of the present invention is to provide a visual communication apparatus which is light in weight, yet rugged in construction.

Still another object of the present invention is to provide a visual communication apparatus which is relatively inexpensive.

Another object of the present invention is to provide a visual communication apparatus which is simply operated requiring a minimal amount of instruction as to use.

A still further object of the present invention is to provide a visual communication apparatus which is floatable in water.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a visual communication apparatus illustrating the mirrored surfaces in a misaligned position.

FIG. **2** is a plan view of a plate support for the mirrored surfaces.

FIG. **3** is an elevational view of the plate support taken along line **3—3** of FIG. **2**.

FIG. **4** is an elevational sectional view of the visual communication apparatus taken along line **4—4** of FIG. **1**.

FIG. **5** is an elevational sectional view of the visual communication apparatus taken along line **5—5** of FIG. **1**.

FIG. **6** is a perspective view of another embodiment of a visual communication apparatus.

FIG. **7** is an elevational view of a plate support used in the FIG. **6** embodiment.

FIG. **8** is a plan view of the plate support as viewed along line **8—8** of FIG. **7**.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIG. **1**, there is illustrated a visual communication apparatus **10** including a housing **12** and a number of mirrored surfaces **16** which are pivotable from a position as shown where they are misaligned to a position where they are aligned, as will be explained in more detail hereinbelow. In the aligned position, the visual communication apparatus **10** is capable of transmitting a signal by reflecting light from a light source, usually the sun. Devices which transmit signals by reflecting light from the sun are generically termed "heliographs,"while more broadly they may be termed "semaphores."However, an even more generic term for such devices is "visual communication apparatus" and this latter term will be used throughout the present specification and claims.

In order to appreciate the fact that the apparatus **10** may be hand-held, is light in weight, and is rugged in construction, the apparatus will be described in more detail by once again referring to FIG. **1**. The housing **12** comprises two side walls **18, 20**, a top wall **22**, a bottom wall **24**, a rear wall **26**, and a front wall **28** having a large cutout **30**. Each of the side walls **18, 20** have a plurality of aligned openings, such as the openings **32** of the side wall **18**. The housing **12** is formed in an integral unit of a suitable synthetic resin material, such as a styrene, a polyolifin, or a polypropylene.

Referring now to FIGS. **2** and **3**, there is illustrated in more detail the mirrored surfaces **16** as they are supported to provide the pivoting motion to move the mirrored surfaces from their misaligned to their aligned positions. The mirrored surfaces **16** are each formed of a coating of aluminum (which may be applied by a known vacuum metal deposition process) upon a support plate **40**. The plate has a rectangular frontal surface **41** upon which the mirrored surface is coated, and includes two laterally extending arms **42, 44** which are positionable in a pair of openings, one in the side wall **20** and the other in the side wall **18** of the housing, and provides the simple structure which allows the mirrored surfaces to pivot or rotate relative the housing. In addition, the plate **40** includes a rearwardly extending arm **46** which is disposed essentially perpendicular to the plane of the mirrored surface and perpendicular to the direction of the arms **42, 44**. As will be explained in more detail, the rearwardly extending arm is a link which cooperates to pivot the plate.

Referring now to FIGS. **4** and **5**, the pivoting of the mirrored surfaces is accomplished by a reciprocating actuator **50**, which is comprised of a plunger **52** integral with an elongated plate **54**. The plate **54** has a number of aligned openings, such as the openings **56** and a bottom shoulder **58**. The reciprocating actuator is slideable adjacent the rear wall **26** of the housing and is retained in place by having the plunger **52** project through an opening **60** in the top wall. A downward projecting element **62**, having generally the same form as the plunger **52**, is slideable through an opening **64** in the bottom wall **24**.

Referring now to FIG. 4, it is noted that the rearwardly extending arm **46** of each of the plates **40** extends into an opening **56** of the reciprocating actuator, so that as the plunger **52** of the actuator is depressed the elongated plate element **54** will move in a downward direction, as depicted in the views of FIGS. **4** and **5**, thereby pivoting the arms **46** as well as the mirrored surfaces **16** to a position shown in phantom where all of the mirrored surfaces are in alignment paralleling the plane of the rearwall **26**. In order to return the mirrored surfaces to a misaligned position, as shown in solid line in FIG. **4**, a spring **70** (FIGS. **1** and **5**) is provided to bias the reciprocating actuator upwardly once the depressing force on the plunger **52** has been removed. The biasing force is created by constructing the spring **70** of a curved wire having one end portion bear against the shoulder **58** of the reciprocating actuator while the other end portion bears against the bottom surface **24** of the housing. In this fashion, a signal is transmitted by reflecting light from a source, such as the sun, by depressing the plunger **52** with the finger; an absence of reflection is achieved simply by releasing the depressing force to allow the spring to return the reciprocating actuator to its upright position.

Included on the apparatus **10** are two accessories which are shown for purposes of illustration and provide the apparatus with more versatility, should it be desired. Mounted to the upper surface and integral therewith is a sight **72** which is a sleeve having an opening **74**. The apparatus may be aimed by having the apparatus operator view the signal target through the opening. Attached to the side wall **20** is a light source and power supply housing **76** which contains a light bulb **78** powered by a small battery **80**, shown in diagrammatic form. The purpose of the light is to provide an alternate source to the sun and allows the visual communication apparatus to be operated at night or under hazy conditions.

In operation, an operator grasps the apparatus using both hands and aims the apparatus in the direction of the signal target or sights the target through the sight **72**, much like the operation of a camera. With one finger, the plunger **52** is depressed in any predetermined sequence, such as when sending Morse code. For example, when the plunger **52** is depressed, light is reflected toward the target; the plunger may be depressed for any length of time to indicate either a short or long signal. When the force supplied by the finger is relieved from the plunger, the spring **70** will bias the plunger upwardly and cause the mirrored surfaces to be misaligned so that there is an absence of light reflection, which in some cases may be a signal in itself. Under hazy or dark conditions, the light reflection may come from the light bulb **78**, rather than the sun, but in all other respects the operation of the apparatus is the same. For ease of operation, a copy of the Morse and/or International code may be bonded to the outer face of the rear wall **26** (not shown).

Referring now to FIG. **6**, there is illustrated another embodiment of a visual communication apparatus **82** including a housing **84** having a channel shape with a base wall **86** and two side walls **88, 90**. Each of the side walls has a plurality of aligned openings, such as the openings **92**. Connected between the side walls **88, 90** and pivotal relative the side walls are a number of mirrored surfaces, such as the mirrored surfaces **94**. Each of the mirrored surfaces are supported by a rectangular plate element **96** (FIGS. **7** and **8**) which has two laterally extending arms **98, 100** for being aligned within the openings of the side walls **88, 90** in a manner similar to that described for the FIG. **1** embodiment. In addition, the plate **96** includes a rearwardly extending flange **102** having an opening **104**.

Connected to the housing by being slideable through a sleeve **106** made integral with the housing is a reciprocating actuator **108** having a plunger **110** and an elongated rod element **112**. The elongated rod element **112** has a series of openings, such as the opening **114** which is alignable with the opening **104** of the support plate to receive a pin (not shown) to connect the elongated rod element and each of the support plates, but yet still allow relative rotatable movements. Located between the sleeve **106** and the plunger **110** is a compression spring **116**, which functions in much the same manner as the spring **70** of the FIG. **1** embodiment. As with the FIG. **1** embodiment, the mirrored surfaces are coated upon the support plate; the material of the support plates and the housing may be of any suitable synthetic resin.

In operation, the plunger is selectively depressed with an operator's finger to cause the mirrored surfaces to be pivoted to an aligned position to transmit a reflected light signal. When the force upon the plunger is relieved, the biasing spring will cause the elongated rod element to return to the position shown in FIG. **6** thereby pivoting the mirrored surfaces to a slanted or misaligned position, as shown.

While only two embodiments have been shown of the present invention, it is readily understood that various changes, modifications, and variations can be made to the invention, such as changing the design of the housing structure, the method of coating the support plates, or of pivoting the support plates, without departing from the spirit and scope of the appended claims.

I claim:

1. A visual communication apparatus comprising:

a housing including two side walls, bottom and top walls, each of said side walls having a plurality of aligned openings;

a plurality of mirrored surfaced pivotally connected to said housing and adapted to be pivoted between a position whereby said mirrored surfaces are aligned in a plane to transmit a signal by reflecting light and a position whereby said mirrored surfaces are misaligned;

means supported by said housing and connected to said mirrored surfaces for pivoting said mirrored surfaces in a preselected manner, the pivoting means including a reciprocating actuator comprising a plunger integral with an elongated element having a shoulder and a plurality of aligned openings, said pivoting means further including a plurality of plates to which the mirrored surfaces are connected, each plate having integral oppositely disposed laterally extending arms and an integral third arm extending essentially perpendicular to said laterally extending arms, said laterally extending arms being received by the openings of said housing side walls and said third arm being received by the openings of said elongated element; and

means connected to said housing for biasing said mirrored surfaces to said misaligned position, the biasing means comprising a spring bearing against the bottom wall of said housing and said elongated element whereby depressing said plunger pivots the mirrored surfaces to an aligned position and releasing said plunger allows said spring to bias said mirrored surfaces to a misaligned position.

2. An apparatus as claimed in claim 1 including a sight connected to said top wall for aiding the aiming of said mirrored surfaces and thereby the transmitted signal.

3. An apparatus as claimed in claim 1 including a source of light and power supply connected to said housing to allow operation in the absence of sunlight.

4. An apparatus as claimed in claim 3 including a sight connected to said top wall for aiding the aiming of said mirrored surfaces and thereby the transmitted signal.

5. A visual communication apparatus comprising:

a hand holdable housing having a bottom wall and two side walls, each side wall having a plurality of openings;

a plurality of plates, each plate including a mirrored surface and two integral oppositely disposed arms, said arms being received within the openings of said housing walls to allow the mirrored surfaces to be pivoted between an aligned position whereby a signal may be transmitted and a misaligned position, each plate also having a third integral arm extending generally perpendicular to the first mentioned two arms;

an actuator including an integral plunger and an elongated plate having a plurality of aligned openings, each opening receiving a third arm from a corresponding mirrored surface; and

spring means positioned between said bottom wall and a portion of said actuator for biasing said actuator to an upward position thereby causing said mirrored surfaces to be in said misaligned position.

6. An apparatus as claimed in claim 5 wherein said spring means is a curved metal wire having one end portion in contact with the bottom wall and the other end portion in contact with said elongated plate.

7. An apparatus as claimed in claim 6 wherein said housing includes a top wall having a slot through which said plunger moves responsive to an operator's finger.

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