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(54) Case combined variable magnification spectacles

(57) Case combined variable magnification spectacles comprising a plurality of spectacle lens elements 1,2 each consisting of a narrow plate having a pair of lenses, and an accommodation case 3 for receiving the lens elements 1,2 in overlapping fashion. All or a portion of the lens elements is adapted to selectively shift from an enclosed position within the accommodation case 3 to an exposed working position through a selective operation employing either or both of reciprocating movement and rotating movement at 9 of the elements, and an engagement mechanism 9 for preventing the lens elements and the case from being completely separated each other is provided in the spectacles.

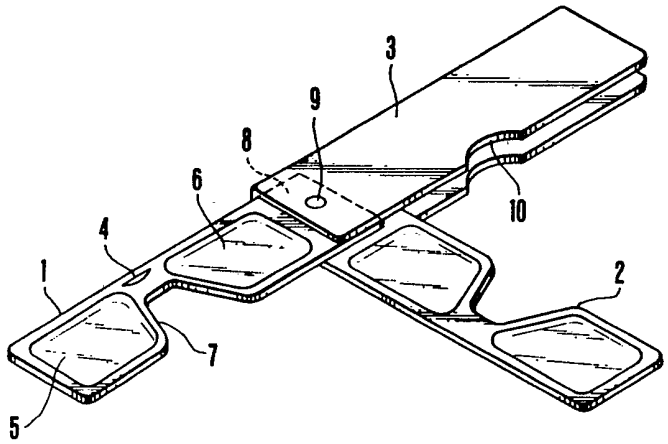

FIG.3

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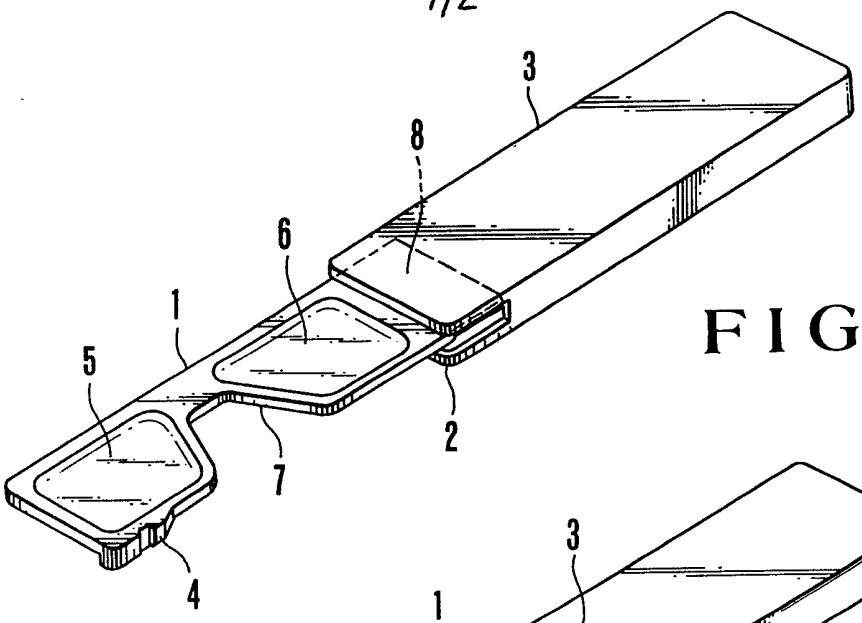

FIG.1

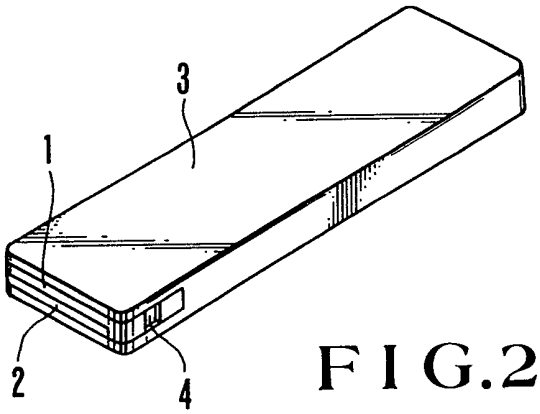

FIG.2

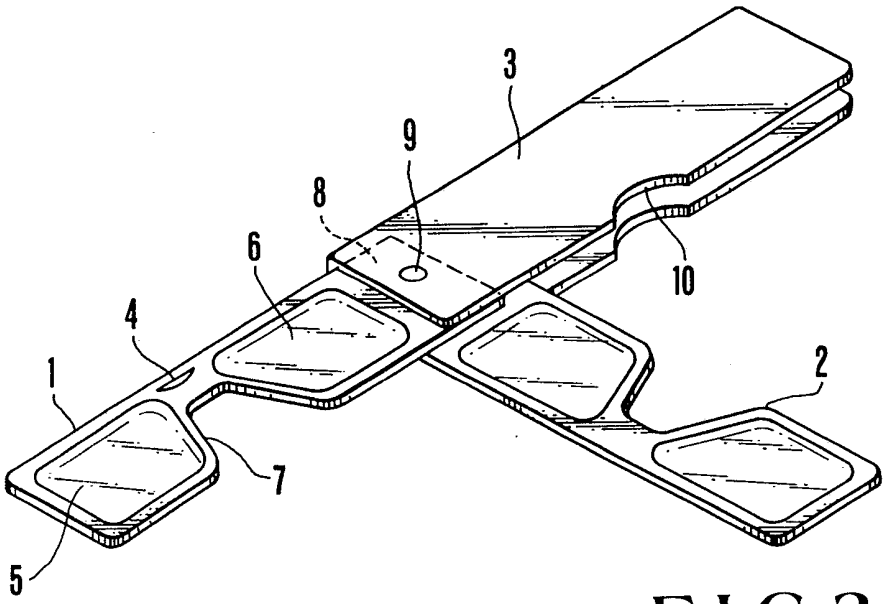

FIG.3

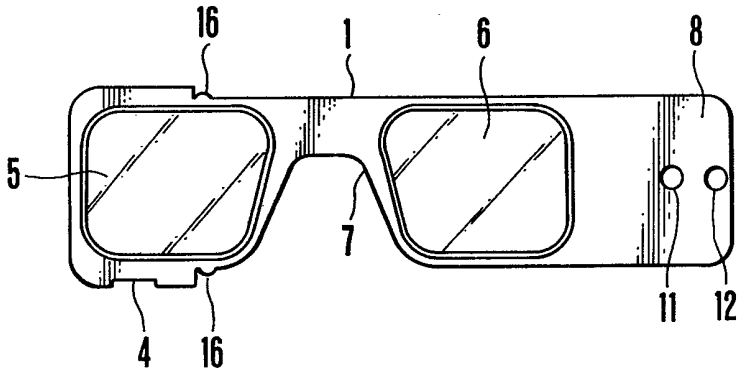

FIG.4(a)

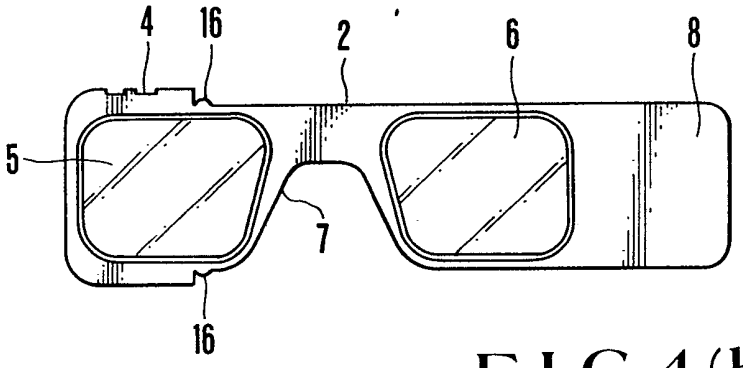

FIG.4(b)

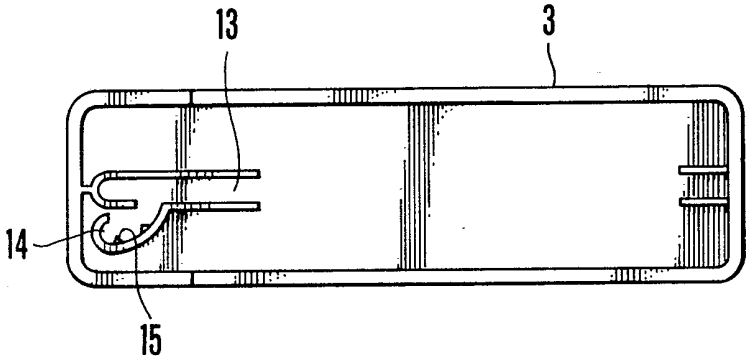

FIG.5

SPECIFICATION

Case combined variable magnification spectacles

BACKGROUND OF THE INVENTION

This invention relates to spectacles.

Since prior art spectacles are composed of a single kind of lense, a several classes of spectacles each containing different magnification lense should be prepared in proportion to a distance to the object or a size thereof. Further, a condition of presbyopia progresses as a person grows older, so that most people repeatedly purchase new spectacles which have higher magnification degrees.

In addition, since usual spectacles are provided with temples, a troublesome handling is needed to put on or to take off the spectacles, so that it is inconvenient for utilizing spectacles within a short time. It also needs a troublesome action to accommodate spectacles into a protecting case. As a result, spectacles often become dirty or cracked.

SUMMARY OF THE INVENTION

It is an object of the present invention to solve the above problems and to provide simplified spectacles which are portable and convenient for miscellaneous applications based upon a functional construction thereof.

The foregoing and other objects of the invention are accomplished by providing case combine variable magnification spectacles comprising a plurality of spectacle lense elements each consisting of a narrow plate having a pair of lenses, and an accommodation case for receiving said lense elements in overlapping fashion, characterized in that; all or a portion of said lense elements is adapted to selectively shift from an enclosed position within said accommodation case to an exposed working position through a selective operation employing either or both of reciprocating movement and rotating movement of the elements, and an engagement mechanism for preventing the lense elements and the case from being completely separated each other is provided in the spectacles.

According to the present invention, a plurality of different magnification lense elements are selectively taken out from the case and utilized as several phased magnified spectacles. Therefore, this spectacles can be used under miscellaneous circumstances and provide convenient fashion to many users and applications. The accommodation case of the spectacles are used as a handle while working. Since complete separation between the case and the lense elements is prevented, it is convenient for carrying without being damaged on the way. In view of the fact that the rate of the aged increases more and more, and we are confronted with a high density information society emitting a great deal of written information by fine characters, the present invention can provide a useful and convenient goods for out society.

Other features and advantages of the invention will become apparent from the following description of embodiments with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of a first embodiment of the spectacles according to the invention.

Figure 2 is a perspective view illustrating an accommodated condition of the first embodiment.

Figure 3 is a perspective view of a second embodiment of the invention.

Figure 4(a)(b) is an enlarged plan view illustrating two spectacle lense elements of a third embodiment similar to the first embodiment.

Figure 5 is an inside plan view illustrating an inside surface of a top wall section of the accommodation case adapted to the lense elements in Fig. 4.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to Figs. 1 and 2, there is shown a first embodiment of the invention in which a generally rectangular plastic spectacle lense element 1 is illustrated. The element 1 is composed of a plastic plate having a pair of lenses 5 and 6 integrally formed in the plastic plate corresponding to imaginary lense holes therein. Between the lenses 5 and 6, a cutout portion 7 is arranged corresponding to a nose position of a user, and an engagement portion 8 is arranged at the right end of the element 1 on the drawing. On a projecting edge opposite to the engagement portion 8, a finger knob 4 is located at a corner of the edge. The finger knob 4 is preferably formed in a rugged shape so as to avoid slipping of a finger. Two lense elements 1 and 2 are preferably of different magnification, and in that case three stages of magnification can be obtained through first and second modes of single application of each element 1 and 2 and a third mode of overlapping application of the two elements. Such two lense elements 1 and 2 are accommodated in a flat rectangular case 3 by inserting them from an open edge of the case. While the lense elements 1 and 2 are taken out from the case, as mentioned below, a projection formed in the engagement portion 8 and a cavity arranged inside the cae prevent the elements from being separated each other when the elements reach the distal end of the case to be exposed almost completely. If a user broaden the open edge of the case 3 which is made by elastic materials, he can take out the lense elements 1 and 2 and can replace them with new ones. The finger knob 4 of the element 1 and that of the element 2 are preferably arranged on opposite sides of

the open edge of the case 3 in order that the user can select to take out a necessary one.

Fig. 3 illustrates a second embodiment of the invention in which each of lense elements 1 and 2 is provided with a projection which defines an engagement pivot 9. In this pivot position each projection engages with a shallow cavity formed inside of the case 3. Since a large side and a small side of the rectangular case 3 are provided with longitudinal openings, each of the lense elements 1 and 2 can be taken out through the rotary movement about the pivot 9. At the center of the large side opening of the case 3 a cutout portion 10 is arranged, and a finger notch 4 corresponding to the cutout portion 10 is engraved in an intermediate portion between the two lenses 5 and 6 of each element.

When this spectacles are used, the case 3 is employed as a horizontally directed handle. If it is desired to use the case as a vertically directed handle, the engagement portion 8 may be provided with a locking member and the case also may be provided with an engaging hole in its inside in such a way that the element can be held at right angle to the case 3. In another way, the case may be provided with a stop plate adjacent the large side opening thereof in such a way that the element can be held at 270 degrees angle to the case by abutting with the stop plate.

Fig. 4(a) (b) and Fig. 5 illustrate a third embodiment of the invention. Fig. 4(a) (b) is an enlarged view of the spectacle lense element in the first embodiment of Figs. 1 and 2 with small modification in detail. One of the finger knobs 4 is located on the upper side and the other is located on the lower side of the element in order that a user can select an object of desire to take out from the case 3. It is preferable to make the two finger knobs in different shapes so that a user can identify the knob through a visual perception or a sense of touch. Further, it is also preferable to attach a color symbol or an identification mark to the finger knob itself or to the side portion adjacent the knob.

In the third embodiment, the engagement portion 8 is provided with circular projections 11 and 12. The projection 11 acts as a rotary shaft when the lense element 1 is taken out at the maximum exposed position. On the other hand, the projection 12 acts as a guide member and a stop member of the element 1 to control reciprocating and rotating movements thereof. The actions of the projections 11 and 12 will be understood from Fig. 5 which illustrates an inside surface of the top wall section of the case. There are shown undulation lines defining the central straight passage 13 and an arcuate cavity 14 diverged from the passage 13. The projection 11 travels along the central straight passage 13 and terminates at the end thereof, whereby complete separation of the lense elements 1 and 2 from the case 3 is prevented. In this distal end of the passage 13, when the elements 1 and 2 rotate within the case 3, the other projection 12 enters into the arcuate cavity 14 and moves along the wall of the cavity. Then, the projection 12 rotates 90 degrees angle until it terminates in abutment with an end wall of the cavity 14. This cavity 14 is not necessarily closed at the end. It is possible to make a stop position of a lense element in which the element abuts with a stop member located at the edge of the open side of the case accord with a 90 degrees rotating position of the projection 12 within the cavity 14. Because the arcuate cavity 14 is diverged from the passage 13 only at one side, reverse rotations of the elements 1 and 2 are prevented. The arcuate cavity 14 may be provided with one or several notches 15 so that overlapping anglesh between the lense element 1 or 2 and the case 3 can be selected appropriate angles between 90 and 180 degrees, for example, 135 degrees, or 120 and 150 degrees as intermediate detent angles. The projections 11 and 12 and the corresponding central passage 13 are not necessarily arranged on a center line of the spectacles.

Corresponding to the enclosed position in which the lense elements 1 and 2 are accomodated within the case 3, several ribs can be formed inside of the case so that the ribs engage with notches 16 adjacent the finger knob 4 or with the projection 12 thereby holding the elements within the enclosed position.

In the abovementioned embodiments, the accommodation case and the lense elements are formed in rectangular shapes, but it is also possible to take a narrow elliptical shape, an arcuate shape or other non-symmetrical shape so far as the shape does not obstruct the reciprocating and rotating movement of the elements.

According to the case combined variable magnification spectacles of the present invention, since a plurality of lense elements are accomodated in the case, there is no need for carrying several kinds of spectacles while going out. When two classes of magnification are applied to two lense elements 1 and 2, three stage magnifications, that is, a first magnification of the element 1, a second magnification of the element 2 and a third magnification of combined elements 1 and 2 are obtained. Likewise, when three classes of magnification are applied to three elements, seven stage magnifications are obtained by way of arrangement and combination, so that the most appropriate magnification can be selected and employed at any time.

When high stage magnification is required two or more lenses are overlapped, so that well focused images having less distortion than usual single layer spectacles are ob-

tained.

The accommodation case can be utilized as a handle when it is used, and it is convenient for speedy action to take out or to insert the element into the case. Because the case and spectacles are combined in a single unit, no anxiety is given to a user about such a matter that the lenses become dirty or ruined while it is carried. Therefore, the spectacles are well designed as portable goods.

When a convex lense is employed as a lense element, the spectacles provide variable magnification spectacles for the aged or for twin lense reading glasses. Such twin lense reading glasses can conveniently satisfy three dimentional observation which is not obtained by usual single lense reading glass.

When a concave lense is employed as a lense element, the spectacles provide variable magnification spectacles for a shortsighted person.

CLAIMS

1. Case combined variable magnification spectacles comprising a plurality of spectacle lense elements each consisting of a narrow plate having a pair of lenses, and an accommodation case for receiving said lense elements in overlapping fashion, characterized in that;

all or a portion of said lense elements is adapted to selectively shift from a enclosed position within said accommodation case to an exposed working position through a selective operation employing either or both of reciprocating movement and rotating movement of the elements, and an engagement mechanism for preventing the lense elements and the case from being completely separated each other is provided in the spectacles.

2. Spectacles according to claim 1, substantially as described with reference to the drawings.

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