

PATENT SPECIFICATION

716,012



Date of Application and filing Complete

Specification: Sept. 30, 1952.

No. 24507/52.

Complete Specification Published: Sept. 22, 1954.

Index at acceptance:—Class 97(1), J18B.

COMPLETE SPECIFICATION

Improvements relating to Periscopes

I, RUDOLF GUNDLACH, of French Nationality, of 5, Avenue Georges Bizet, Le Vesinet, Seine et Oise, France, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to collapsible portable periscopes and is concerned with the provision of a periscope suitable for example, for the use of members of the audience in cinemas, theatres, public meetings, open air spectacles such as processions, sporting competitions or the like, whether out of doors or under cover.

For such applications a periscope is of considerable assistance due to the fact that the eyes are situated at a considerably lower level than the top of the head so that the view of one person will be obstructed by a person at the same level in front. It is, however, in practice desirable that such a periscope should be of small size and capable of being collapsed so as to be carried in the pocket or a bag and yet capable of being readily opened to its operative position.

According to the present invention a collapsible portable periscope comprises top and bottom walls carrying reflectors which are substantially parallel when erected, front and rear walls, and side walls each of quadrilateral shape having substantially parallel edges adjoining the top and bottom walls, and upwardly diverging edges adjoining the front and back walls, the walls being arranged to fold substantially flat on one another.

Preferably the front wall is hinged to the bottom wall and the rear wall is hinged to the top wall and one side wall has its parallel edges hinged one to the top wall and the other to the bottom wall, whilst the other side wall has one of its parallel edges hinged to the top or bottom wall. The top, bottom, front and rear walls may be rectangular.

In one form of the invention each side wall is in the form of a trapezium having a pair of slightly diverging edges inclined at approximately 45° to the parallel edges. For example one of the diverging edges may be inclined at just over 45° and the other at just under 45° to the parallel edges.

Such a construction may be arranged to fold in either of two ways. In one arrangement in the operative position one edge of one side wall is separable from the adjacent edge of the top or bottom wall so that by folding this side wall about its opposite edge and the other side wall about both its parallel edges the front and bottom walls can be superimposed on the rear and top walls and the side walls. In an alternative arrangement both side edges of the bottom wall are hinged respectively to the shorter parallel edges of the two side walls whilst both side edges of the top wall are hinged respectively to both longer parallel edges of the side walls, the side walls being formed with one or more re-entrant hinges between and parallel to their parallel edges, as as to form a tubular structure which can be collapsed by folding in the side walls in re-entrant fashion so that the bottom and front walls are superimposed on the top and rear walls with the interposition of the folded side walls.

In many cases it may be desirable that the periscope should not hamper the user in the use of his hands, for example for writing, or obstruct his eyes or prevent him from reading. Thus in one form of the invention the periscope has means for attaching it to the head of the user so as to be supported thereby.

A specific embodiment of the invention will be described by way of example with reference to the accompanying drawings, in which:—

Fig. 1 is a rear elevation of the periscope, that is to say an elevation as seen by the user;

Fig. 2 is a sectional elevation on the line A—A of Fig. 1 in the operative position,

Fig. 3 is a view similar to Fig. 2 showing the periscope partially collapsed,

5 Fig. 4 is a sectional plan on the line B—B of Fig. 1,

Figs. 5 to 7 are diagrams of the periscope in various stages of folding, Fig. 5 showing it completely flat or developed, Fig. 6 showing it partially folded, and Fig. 7 showing it completely folded, and

Fig. 8 is a view similar to Fig. 7 showing a modified arrangement in the completely folded position.

15 The body of the periscope is built up from a number of walls of suitable sheet material hinged together. These comprise a bottom wall 1 which in the operative position of Figs. 1 and 2 is inclined at 45° to the vertical, and carries a reflecting surface, a top wall 2 which lies parallel to the bottom wall and is of larger size. The top and bottom walls are both rectangular and are of the same width as shown in Fig. 1. The structure is completed by a right side wall 3 a left side wall 4, a rear wall 5 and a front wall 6. As shown in Fig. 5 the front and rear walls are rectangular and are of the same width as the top and bottom walls whilst the side walls are each in the form of a trapezium having a pair of parallel edges adjoining the top and bottom walls and a pair of upwardly diverging edges adjoining the front and back walls.

35 These various walls are hinged together in the manner indicated in Fig. 5, that is to say the lower edge of the front wall is hinged to the upper edge of the bottom wall along the line b-d. The righthand edge of the bottom wall is hinged to the lower edge of the righthand side wall 3 along the line c-d. The righthand edge of the top wall (appearing on the left in Fig. 5) is hinged to the upper edge of the righthand side wall 3 along the line e-f. The lower edge of the top wall is hinged to the upper edge of the rear wall along the line e-g and finally the left hand edge of the top wall 2 (appearing at the right in Fig. 5) is hinged to the top edge of the left hand side wall 4 along the line g-h.

To erect the periscope from the flat condition of Fig. 5 the side walls 3 and 4 are hinged about the lines e-f and g-h so as to lie at right angles to the top wall and the bottom wall is hinged about the line c-d so as to lie parallel to the top wall, thus bringing the left hand edge of the bottom wall a-b close to the lower edge a¹-b¹ of the left hand side wall 4 and forming the body into a generally tubular structure substantially as shown in Fig. 3. The front and rear walls are then turned about the hinges b-d and e-g so as to adjoin the side walls 3 and 4 and the body is retained in this position by tabs 9 secured to the front and rear walls which

enter slots 10 carried by the side walls. Four sets of such tabs and slots will be provided in all, namely two tabs at each of the front and rear walls, and two slots on each of the side walls.

As will be seen from the drawings the height of each of the front and rear walls is chosen so as to allow a forwardly facing opening 8 opposite the top wall and rearwardly facing opening 7 opposite the bottom wall for the light to enter and leave the periscope.

To enable the periscope to be supported by the head of the user a flexible band 11, which is preferably elastic, is passed through two slots 12 in the front wall 6 and can extend round the back of the user's head. A pad 13 carried by the rear wall of the periscope bears against the forehead of the user to retain it in a convenient position. The tabs and slots 9 and 10 are normally retained by their own resilience or friction but it will be appreciated that the tension in the band 11 serves as an additional safeguard to prevent them from becoming unintentionally separated. If desired the flexible band 11 may be passed twice round the periscope.

If desired the bottom wall may be provided with a socket 14 to receive an additional support to rest on the user's nose. This may assist in spacing the periscope from the user's eyes and facilitate the use of spectacles.

To fold the periscope from the position of Fig. 5 to enable it to be carried in the pocket or in a bag the first step is to hinge the front wall 6, bottom wall 1 and right hand side wall 3 about the line e-f to the position shown in Fig. 6. It will be seen that the distance between the parallel edges c-d and e-f of the side wall is equal to the width of the top and rear walls and also equal to the width of the bottom and front walls so that the edge c-d coincides with the edge h-g-i. Accordingly the second fold can be carried out about this line so as to bring the walls of the position shown in Fig. 7 in which the front and bottom walls are superimposed on the top and rear walls and on the side walls as shown in Fig. 7. In other words all the walls are folded to within the limits defined by the top and rear walls within the rectangle f-h-i-j of Fig. 5.

It will be apparent that the folding can be done either in the same direction or in opposite directions as this will only affect the order in which the walls are superimposed. In general the side walls 3 and 4, when folded, will always be separated by a pair of walls, namely either the front and bottom walls 6 and 1, or the top and rear walls 3 and 5.

Fig. 8 shows a modified arrangement for folding the periscope. In this case the lower edge a¹-b¹ of the left hand side wall is permanently hinged to the left hand edge a-b

of the bottom wall so that the body is permanently maintained in the generally tubular form substantially as shown in Fig. 3. Each of the side walls 3 and 4 is, however, provided with a re-entrant hinge midway between and parallel to its parallel edges as shown in Fig. 8 at k-l and m-n. Thus to fold the periscope flat from the position of Fig. 3 the re-entrant hinges of opposite side walls are pressed inwards towards one another so that the front and bottom walls approach the top and rear walls. As shown in Fig. 8 the dimensions are such that the re-entrant hinges k-l and m-n lie close together or abut one another when the front and bottom walls 6 and 1 lie flat on the top and rear walls 2 and 5.

In the case of a very high periscope where the re-entrant hinges would tend to overlap it may be desirable to provide two or more re-entrant hinges in each side wall.

As in the arrangement of Figs. 6 and 7 the arrangement of Fig. 8 is retained in its erect position by tabs and slots 9 and 10. These serve to hold the re-entrant hinges spaced apart so that the periscope is prevented from collapsing and forms a rigid structure.

What I claim is:—

1. A collapsible portable periscope comprising top and bottom walls carrying reflectors which are substantially parallel when erected, front and rear walls, and side walls each of quadrilateral shape having substantially parallel edges adjoining the top and bottom walls, and upwardly diverging edges adjoining the front and back walls, the walls being arranged to fold substantially flat on one another.

2. A periscope as claimed in Claim 1 in which the front wall is hinged to the bottom wall and the rear wall is hinged to the top wall and one side wall has its parallel edges hinged one to the top and the other to the bottom wall, whilst the other side wall has one of its parallel edges hinged to the top or the bottom wall.

3. A periscope as claimed in Claim 2 in which the top, bottom, front and rear walls are rectangular.

4. A periscope as claimed in Claim 3 in which each side wall is in the form of a trapezium having a pair of slightly diverging edges inclined at approximately 45° to the

parallel edges.

5. A periscope as claimed in Claim 4 in which one of the diverging edges is inclined at just over 45° and the other at just under 45° to the parallel sides.

6. A periscope as claimed in any one of Claims 2 to 5 in which in the operative position one edge of one side wall is separable from the adjacent edge of the top or bottom so that by folding this side wall about its opposite edge and the other side wall about its parallel edges the front and bottom walls can be superimposed on the rear and top walls and the side walls.

7. A periscope as claimed in any one of Claims 2 to 6 in which both side edges of the bottom wall are hinged respectively to the shorter parallel edges of the two side walls whilst both side edges of the top wall are hinged respectively to both longer parallel edges of the side walls, the side walls being formed with one or more re-entrant hinges between and parallel to their parallel edges, so as to form a tubular structure which can be collapsed by folding in the side walls in re-entrant fashion so that the bottom and front walls are superimposed on the top and rear walls with the interposition of the folded side walls.

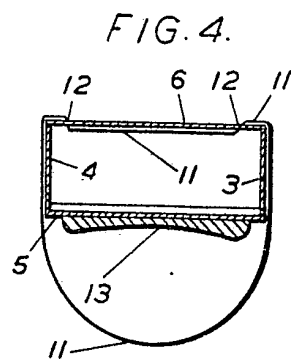
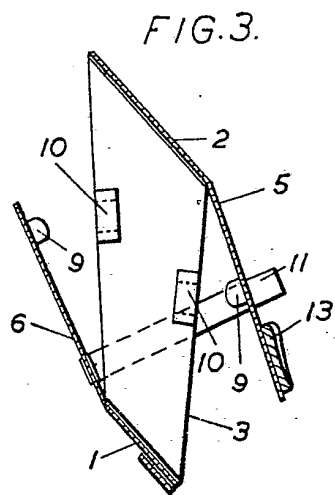
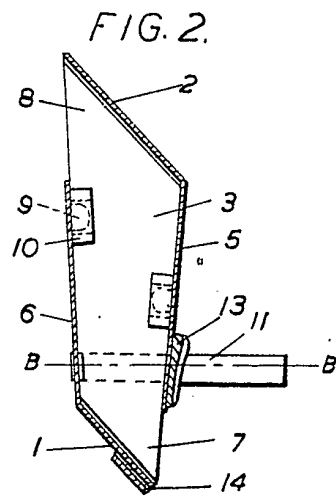
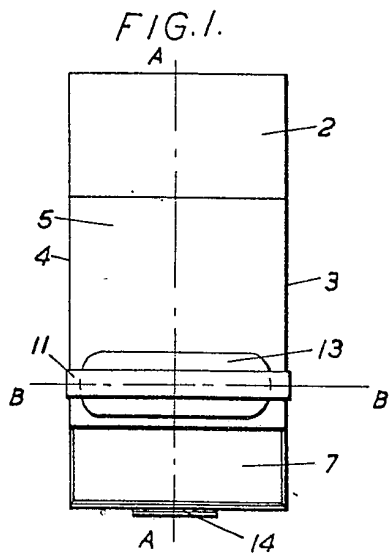
8. A periscope as claimed in any one of the preceding claims having means for attaching it to the head of the user so as to be supported thereby.

9. A periscope as claimed in Claim 8 in which the means for attaching the periscope to the head of the user also serves to prevent inadvertent collapse of the periscope.

10. A periscope as claimed in Claim 9 in which the adjacent edges of the front and rear walls and the side walls are provided with tongue and slot securing means, and the means for attaching the periscope to the head of the user comprises an elastic band arranged to pass round the head of the user and also serving to retain the tongue and slot connectors in engagement.

11. A collapsible portable periscope as specifically described herein with reference to Figs. 1 to 5 and adapted to fold as described with reference to Figs. 6 and 7 or with reference to Fig. 8.

KILBURN & STRODE.
Agents for the Applicant.



716,012 COMPLETE SPECIFICATION

2 SHEETS

This drawing is a reproduction of the Original on a reduced scale.

SHEETS 1 & 2

