United States Patent

Akin, Jr. et al.

[15] **3,642,345**

[45] **Feb. 15, 1972**

[54] SKELETAL CASE FOR BINOCULARS

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[21] Appl. No.: **25,965**

[52] **U.S. Cl.** **350/65**

[51] **Int. Cl.** **G02b 23/18**

[58] **Field of Search** 350/65, 72, 71; 33/50, 50.5

[56] **References Cited**

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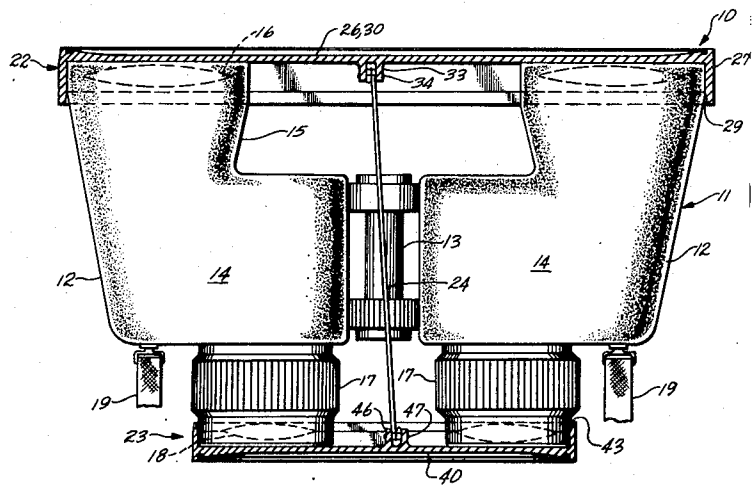
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[57] **ABSTRACT**

A skeletal open-frame case providing protective covers for objective and ocular lenses of a binocular. The case has lens-covering caps or panels which are connected by a flexible strap, or which are made of magnetic material to be attracted to the binocular and to each other. The case collapses into a compact pocket-storable configuration when not in use.

1 Claim, 10 Drawing Figures



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SHEET 1 OF 2

FIG. 1

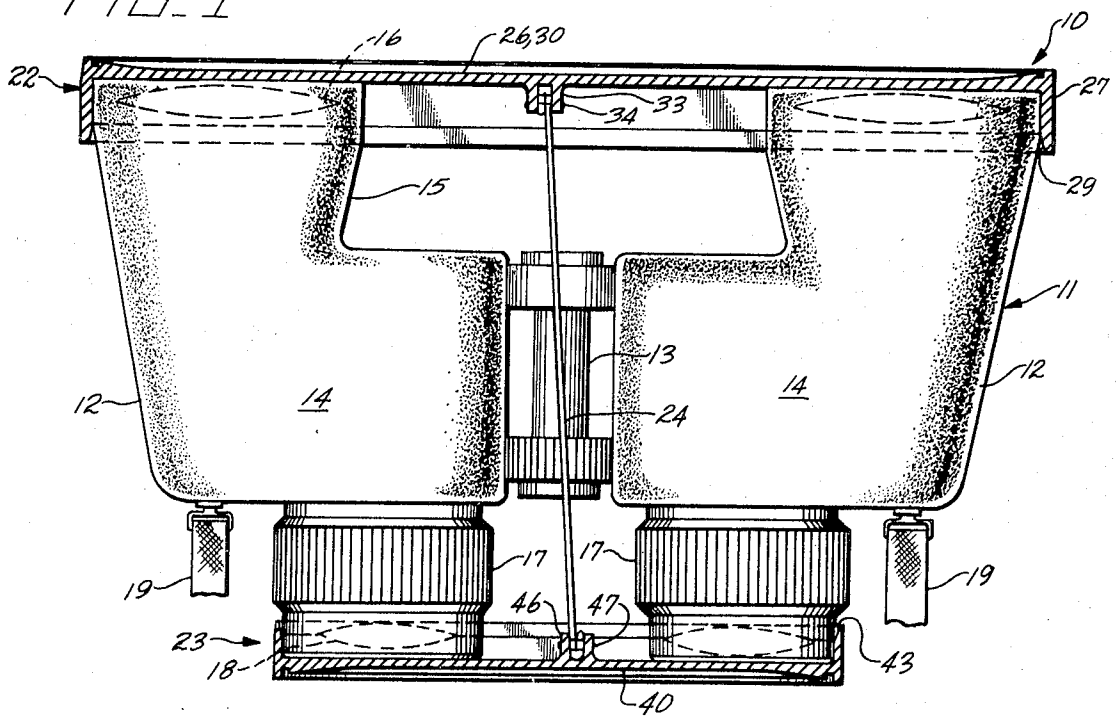
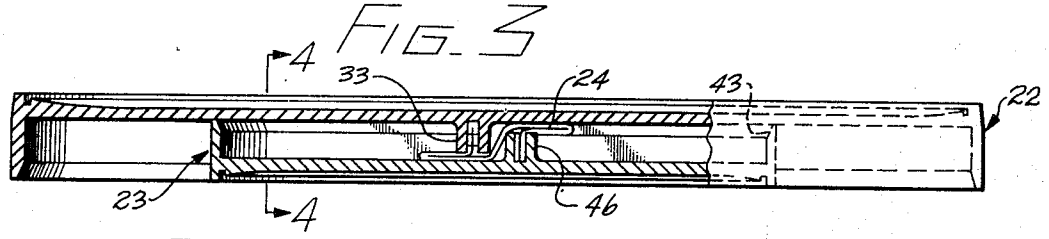


FIG. 3



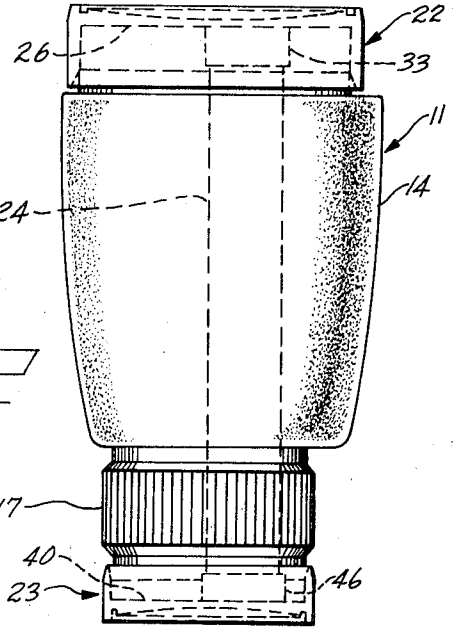
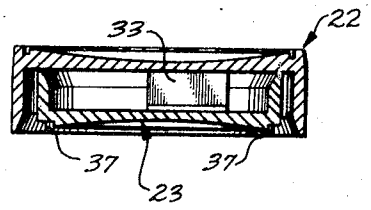


FIG. 2

FIG. 4



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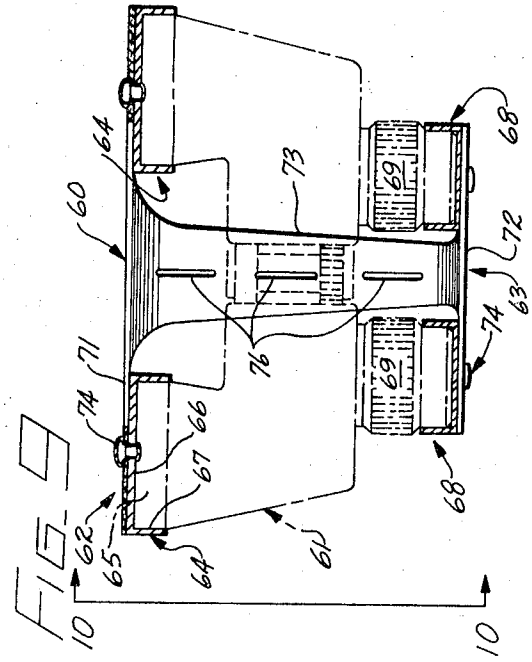


FIG. 9

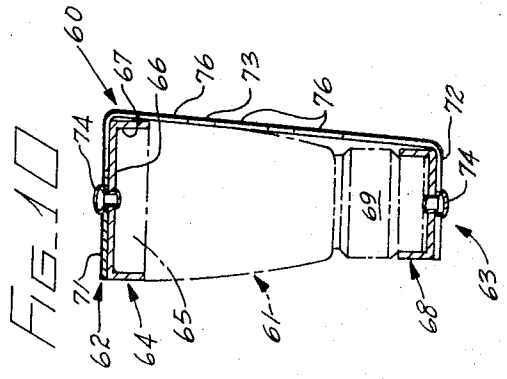


FIG. 10

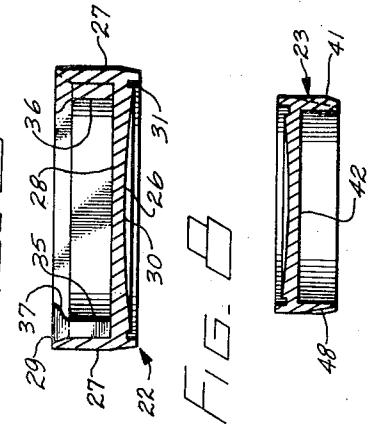


FIG. 6

FIG. 8

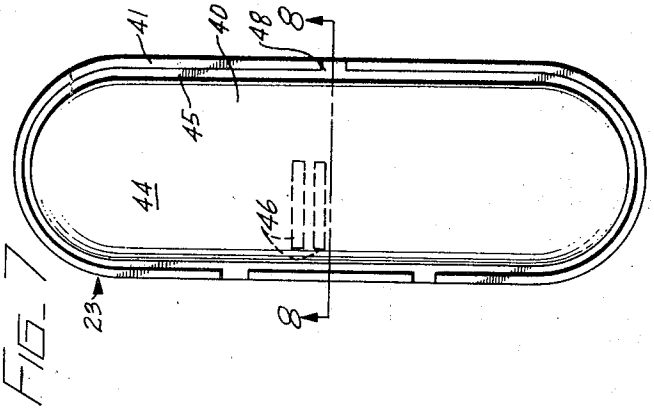


FIG. 7

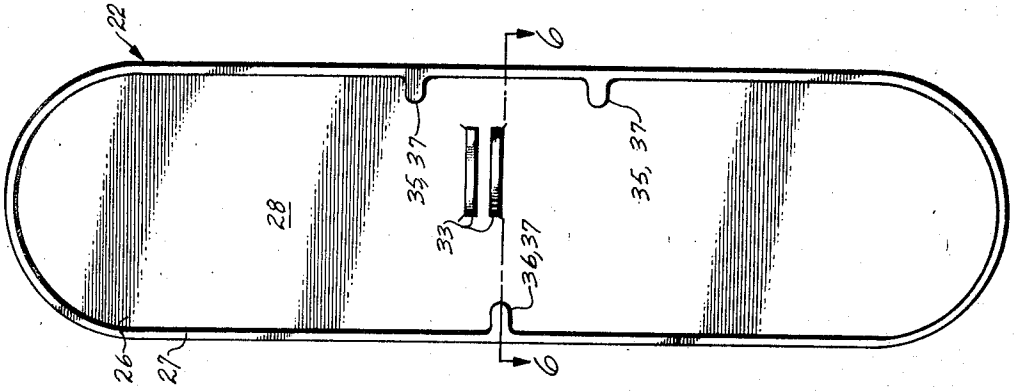


FIG. 5

SKELETAL CASE FOR BINOCULARS

BACKGROUND OF THE INVENTION

Binoculars are conventionally sold with a rigid case which holds and protects the unit when not in use. The case is typically made of leather or plastic, and has a hinged lid which is secured to enclose the binocular during storage. A strap is also normally provided to sling the case from the user's shoulder.

The conventional case provides good protection for a binocular, but presents several problems to both manufacturers and users of such instruments. Modern materials and techniques have resulted in the marketing of high-quality binoculars at lower prices than in the past, but a corresponding cost saving in case construction has not been achieved. The conventional case has become a substantial part of the total cost of a binocular system, and it tends to limit further price decreases on low-cost units.

Conventional cases are rigid and bulky, and tend to be in the way when the binoculars are in use. Known cases also have features which are unnecessary with modern binoculars. For example, the case shoulder strap is redundant as it duplicates the carrying strap which is provided on the binocular. The availability of tough scuff-resistant outer skins or coatings for the binocular body or housing has in most cases made it unnecessary to provide auxiliary protection for any surfaces other than the lenses.

The skeletal case of this invention solves these problems, and provides a low-cost cover for objective and ocular lenses which are usually the only surfaces of modern binoculars which must be protected from finger marks, abrasion or fogging arising from careless handling or exposure to dust, rain, etc. The skeletal case is simple and quick to install and remove, and collapses into a pocket-size package for convenient storage when the binoculars are in use. The case can also be secured to the front of the user's shirt or coat to prevent swaying of the binoculars when they are carried by a neck strap.

SUMMARY OF THE INVENTION

Briefly stated, this invention relates to a skeletal lens-protecting case for use with binoculars having objective and eyepiece lenses. The case includes objective cover means and eyepiece cover means configured to fit over the respective objective and eyepiece lenses. Preferably, the cover means are members having substantially flat panels extending over the respective lenses, and each panel has a peripheral wall extending therefrom to seat against lens housings of the binoculars.

In one form, a flexible coupling means such as an elastic strap is secured to and connects together the objective and eyepiece cover means. Alternatively, the cover means are made of magnetic material which adheres to the binocular when the cover is in place. The skeletal case is free of rigid portions surrounding the binocular body and extending between the cover means, and a majority of the binocular body is exposed and uncovered when the case is in place. The case is collapsible when not in use by moving the two cover means against each other, and magnetic or mechanical means are provided for releasably securing these units together. In one form, the coupling strap includes buttonholes or other forms of fasteners to secure the strap to the user's clothing whereby swaying of the binoculars with respect to the user's body is prevented.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevation, partly in section, of a skeletal case according to the invention and installed on a conventional binocular;

FIG. 2 is a side elevation of the assembly shown in FIG. 1;

FIG. 3 is a front elevation, partly broken away and in section, of the skeletal case in collapsed form;

FIG. 4 is a view on line 4—4 of FIG. 3;

FIG. 5 is an elevation of an inner face of an objective cover panel;

FIG. 6 is a view on line 6—6 of FIG. 5;

FIG. 7 is an elevation of an outer surface of an eyepiece cover panel;

FIG. 8 is a view on line 8—8 of FIG. 7;

FIG. 9 is an elevation, partly in section, of another form of the skeletal case mounted on a binocular; and

FIG. 10 is a side elevation, partly in section, of the assembly shown in FIG. 9.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIGS. 1 and 2, a skeletal case 10 according to the invention is shown in position on a binocular 11. The binocular is of a conventional type having a pair of telescopes or monoculars 12 connected together by a hinge member 13. Each monocular has a hollow body 14 which encloses an image-erecting system such as a pair of prisms (not shown). A forward end of body 14 defines an objective housing 15 in which is mounted an objective lens system 16. The rear end of the body defines an ocular or eyepiece housing 17 in which is mounted an eyepiece lens system 18. The binocular also has a conventional neck strap 19, a portion of which is shown in FIG. 1.

Skeletal case 10 includes an objective cover member 22, an eyepiece cover member 23, and a flexible and elastic ribbon or strap 24 which couples together the two cover members. Objective cover member 22 is shown in detail in FIGS. 1, 5 and 6, and includes an elongated panel 26 with a peripheral wall 27 extending laterally from an inner face 28 of the panel. Wall 27 terminates in a tapered portion 29 which permits the panel to be readily slipped over objective housings 15 of binocular 11 as shown in FIG. 1. An outer face 30 of panel 26 is slightly concave and defines a peripheral groove 31. These features are primarily decorative, but the peripheral groove also provides added flexibility for wall 27 when it is slipped over the objective-lens housings of the binocular.

A pair of spaced-apart mounting tabs 33 extend from inner face 28 and are integrally formed with panel 26. As shown in FIG. 1, one end of strap 24 is doubled over and fitted between tabs 33 to be secured thereto by a pin or staple 34. A pair of guide ribs 35 (FIGS. 5 and 6) are integrally formed on the inner surface of one side of peripheral wall 27 on opposite sides of the lateral center line of panel 26. A third guide rib 36 is integrally formed on the opposing face of wall 27 and is positioned approximately on the lateral center line of the panel. As best seen in FIG. 6, the end of each of ribs 35 and 36 remote from inner face 28 of the panel defines an inwardly extending foot or lip 37.

Eyepiece cover member 23 is shown in detail in FIGS. 1, 7 and 8, and includes an elongated panel 40 with a peripheral wall 41 extending from an inner face 42 of the panel. The portions of wall 41 which curve around the opposite ends of panel 40 have tapered portions 43 (see FIG. 1) so the eyepiece cover member can be readily slipped over eyepiece housings 17 of the binocular.

An outer face 44 of the eyepiece panel is concave and includes a peripheral groove 45 in the same fashion as the objective cover panel. A pair of spaced-apart mounting tabs 46 extend from inner face 42 of the panel, and the rear end of strap 24 is doubled over between the tabs and secured thereto with a pin or staple 47 (FIG. 1). Wall 41 defines three tapered grooves or keyways 48 spaced to mate with guide ribs 35 and 36 on the objective cover member.

Preferably, the objective and eyepiece cover members are molded from a plastic material such as polyethylene. This material is slightly flexible and resilient, and will not scratch optical surfaces. Strap 24 is preferably made of an elastic material such as synthetic rubber cords with a cotton or nylon covering.

In use, the objective and eyepiece cover members are slipped over the respective objective and eyepiece housings of the binocular as shown in FIG. 1. Panels 26 and 40 extend over and cover the objective and eyepiece lens systems respectively, and these optical surfaces are thereby protected

when the binoculars are not in use. The case is removed simply by snapping the cover members off the lens housings.

If a relatively nonelastic material such as leather is selected for strap **24**, the usual focus mechanism permits eyepiece housings **17** to be retracted toward bodies **14** to permit installation or removal of the cover members, and extension of the eyepieces places the strap under tension to hold the cover members in place. As best seen in FIG. **2**, mounting tabs **33** and **46** are positioned off the longitudinal center line of panels **26** and **40** so strap **24** can extend between the cover members without interference with hinge member **13** of the binocular.

When the binoculars are in use, case **10** is removed and collapsed into pocket-size form as shown in FIGS. **3** and **4**. Eyepiece cover member **23** nests within objective cover member **22**, and is guided into a correct position by guide ribs **35** which slide in keyways **48**. When the eyepiece cover member is fully seated within the objective cover member, lips **37** on the guide ribs snap over the edges of outer face **44** to secure the two members together. The eyepiece cover member is readily released from the seated position simply by flexing the walls of the objective cover member slightly outwardly so the eyepiece member can slip past lips **37**.

As best seen in FIG. **3**, mounting tabs **33** and **46** are positioned on opposite sides of the lateral center line of the respective cover members. The mounting tabs are thereby positioned side by side without interference when the cover members are nested together, and strap **24** fits between the tabs without adding to the overall bulk of the collapsed case. When the case components are collapsed and nested together as shown in FIGS. **3** and **4**, the entire assembly is compact and readily stored in the user's shirt or coat pocket.

The peripheral walls on the cover members are narrow or shallow to minimize the thickness of the collapsed case for pocket storage, while still providing protection against sideways slipping of the mounted cover members which could uncover the binocular lenses. For example, wall **27** is preferably extended less than one-half inch from inner face **28** of panel **26**, and this panel has an overall thickness (including wall **27**) of about nine-sixteenths inch. Eyepiece cover member **23** has a slightly smaller overall thickness so it can be nested within the objective cover member as shown in FIG. **3**. The resulting overall thickness of the collapsed case is only slightly over one-half inch, and the case is thus substantially flat and easily fitted in a shirt or jacket pocket.

In another form, objective and eyepiece cover members **22** and **23** are made of a magnetic plastic material such as sold under the trademark "Plastiform" by the Magnetics Division of Leyman Corporation, Cincinnati, Ohio. These flexible rubber-bonded barrium-ferrite composite materials are further described in U.S. Pat. No. 2,999,275. If the binocular lens housings are made of steel or a similar magnetically attracted material, strap **24** is deleted from case **10** as the magnetized portions of the cover members will adhere magnetically to the binocular body when the case is installed. The cover members will also adhere magnetically to each other when nested together in the collapsed case configuration, and lips **37** can be eliminated. Other forms of fastening means (for example, cloth fasteners as sold under the trademark "Velcro") can also be used to secure the cover members to the binocular lens housings and to each other.

Another form of the invention is shown in FIGS. **9** and **10** which illustrate a skeletal case **60** mounted on a binocular **61**. Case **60** includes an objective cover member assembly **62** and an eyepiece cover member assembly **63**. Assembly **62** has a pair of caps **64** fitted over objective lens housings **65** of binocular **61**. Each cap **64** has a panel **66** fitting over and covering the binocular objective lens, and a cylindrical peripheral wall **67** extending from the panel and fitting over the objective lens housing.

Eyepiece cover member assembly **63** is constructed in similar fashion with a pair of caps **68** fitted over respective eyepiece housings **69** of binocular **61**. Objective caps **64** are connected together by a strap **71**, and eyepiece caps **68** are similarly connected by a strap **72**. The straps connecting these caps are in turn coupled together by a third strap **73** extending therebetween. Preferably, straps **71–73** are integrally formed from a single piece of flexible material which may be leather or preferably a slightly elastic plastic. Straps **71** and **72** are preferably secured to lens caps **64** and **68** with snap fasteners **74** of a conventional type. The strap assembly can thus be used with caps of various sizes to fit specific binoculars.

Preferably, strap **73** includes a series of spaced-apart openings or buttonholes **76** as shown in FIG. **9**. When the binoculars are supported by a neck strap and the skeletal case is in place, a button on the user's shirt or jacket can be secured to the strap through one of the buttonholes to prevent swaying of the binoculars. Several buttonholes are provided so one of the holes will be in alignment with a button on the shirt or jacket. Alternatively, a tab (not shown) can be secured to strap **72** to be fastened over a button, or to attach to a body strap around the user's chest. Another approach is to secure a patch of thistle-cloth fastener material (sold under the trademark Velcro) to strap **73**, and a mating patch of this material to the user's shirt or jacket. All of these fasteners have the common goal of restraining the binoculars and case from uncontrolled swaying as the user walks or runs. Any of these styles of antisway fasteners can of course also be used on skeletal case **10** as described above, and the fastening means is preferably installed on strap **24** of this case.

There has been described a binocular case which is skeletal in form for collapsibility into a compact configuration when not in use. The case is simple and easy to manufacture, and will fit any conventional style of binocular. The skeletal case provides protection for delicate optical surfaces of the binocular, but is free of the awkward bulkiness which characterizes conventional rigid binocular cases.

What is claimed is:

1. A skeletal lens-protecting case for a binocular having a body supporting a pair of spaced-apart telescopes with objective and eyepiece lenses, the case comprising:

an objective cover panel and a smaller eyepiece cover panel, the panels being elongated to fit over and cover both objective lenses and both eyepiece lenses respectively, the panels being substantially flat and each having a narrow peripheral wall extending therefrom to seat against the binocular body to prevent sideways slippage of the panel which would expose the lenses; and

a flexible coupling means secured to and extending between the panels to prevent the panels from lifting away from the lenses;

the case being collapsible into substantially flat form when removed from the binocular by nesting the eyepiece cover panel within the objective cover panel, the case including securing means comprising a plurality of ribs on the wall of one panel and a matching plurality of grooves on the wall of the other panel to guide the panels into a nested position, the ribs having lips extending therefrom to grip the other panel in the nested position;

panel including a tab extending therefrom for attachment to the flexible coupling means, the tabs being offset from centerlines of the panels so the tabs nest side by side when the panels are nested.

* * * * *

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,642,345 Dated February 15, 1972

Inventor(s) Alfred A. Akin, Jr. and Russell E. Prentice

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 4, Claim 1, line 63, before "panel" insert --each--.

Signed and sealed this 29th day of August 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents