

INSTRUCTIONS
(a) ~~is~~ Convention
application Insert
"Convention"

(a) CONVENTION

AUSTRALIA

Patents Act

64 1976

(b) Delete one

APPLICATION FOR A (b) STANDARD ~~PATENT~~ PATENT

(c) Insert FULL
name(s) of
applicant(s)

I/~~We~~ (c) A L M, société de droit français

(d) Insert FULL
address(es) of
applicant(s)

of (d) Immeuble Babylone - 63, rue de Paris -
93310 LE PRE-SAINT-GERVAIS (FRANCE)

(e) Delete one

hereby apply for the grant of a (e) Standard/~~Petty~~ Patent for an invention entitled

(f) Insert TITLE
of invention

(f) " MEDICAL PROJECTOR, MORE PARTICULARLY FOR A SURGICAL USE "

(g) Insert "complete"
or "provisional"
or "petty patent"

which is described in the accompanying (g) complete specification.

(Note: The following applies only to Convention applications)

Details of basic application(s)

(h) Insert number,
country and
filing date for
the/or each
basic application

	Application No.	Country	Filing Date
(h)	90 01322	FRANCE	February 6, 1990

Address for Service:

PHILLIPS ORMONDE AND FITZPATRICK
Patent and Trade Mark Attorneys
367 Collins Street
Melbourne, Australia 3000

(i) Insert date
of signing

M 024512 050291

Dated (i)

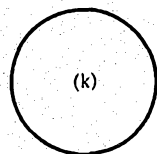
October 16, 1990

(j) Signature of
applicant(s)
(For body
corporate
see headnote*)

(j)

Jean-Pierre RAVUT
Directeur Général

(k) Corporate seal
if any



Note: No legalization
or other witness
required

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PHILLIPS ORMONDE AND FITZPATRICK
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Melbourne, Australia

AUSTRALIA

Patents Act

DECLARATION IN SUPPORT OF A CONVENTION APPLICATION FOR A PATENT

In support of the Convention Application made for a patent for an invention entitled:

MEDICAL PROJECTOR, MORE PARTICULARLY FOR A SURGICAL USE

I/~~we~~.....Jean-Pierre.RAVUT..... (Full Name)

of Immeuble.Babylone.r.63,.rue.de.Paris..93310.LE-PRE-SAINT-.. (Full Address)
GERVAIS (FRANCE)

do solemnly and sincerely declare as follows:

1. I am/~~we~~ are authorized to make this declaration on behalf of A L M, societe de droit francais, the applicant(s) for the patent.
2. The basic application(s) as defined by section 141 of the Act were made in FRANCE on 6 February 1990, A L M, societe de droit français.

3. Jean Hubert: 67, avenue Parmentier, 75011 Paris, France; is/~~are~~ the actual inventor(s) of the invention and the facts upon which A L M, societe de droit francais is/~~are~~ entitled to make the application are as follows:

The applicant(s) is/~~are~~ the assignee of the actual inventor(s).

4. The basic application(s) referred to in paragraph 2 of this Declaration was/~~were~~ the first application(s) made in a Convention country in respect of the invention the subject of the application.

Declared at LE-PRE-SAINT-GERVAIS this 4th..... day of March... 1991

ALM

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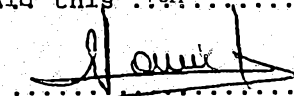
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To: The Commissioner of Patents



Jean-Pierre RAVUT
Directeur Général

(Signature)
(Typed Name)

PHILLIPS ORMONDE & FITZPATRICK

Our Ref : 195655

POF Code: 1290/124240



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(12) PATENT ABRIDGMENT (11) Document No. AU-B-70256/91
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 641976

- (54) Title
MEDICAL PROJECTOR, MORE PARTICULARLY FOR A SURGICAL USE
- International Patent Classification(s)
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- (71) Applicant(s)
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- (74) Attorney or Agent
PHILLIPS ORMONDE & FITZPATRICK , 367 Collins Street, MELBOURNE VIC 3000
- (56) Prior Art Documents
US 4801815
US 4538214
US 4517632
- (57) Claim

1. Medical projector, more particularly for surgical use, of the type including an illuminating cupola articulately mounted about different positioning and orientation axes, and provided on at least a portion of its wider peripheral outline with a protective flange of a flexible material wherein the protective flange of flexible material is dimensioned so as to constitute a gripping device for an operator to operate the cupola.

2. Projector according to claim 1, wherein the protective flange is formed with an inner chamber.

3. Projector according to claim 2, of the type where at least one orientation articulation includes an articulation blocking means of the type provided with resilient brake and a blocking/unblocking device, wherein the chamber is bound on the side constituting the outer face of the flange, by a sufficiently thin wall to be deformed by manual pressure and wherein the chamber comprises controlled means, capable of deformation by local depression of said thin wall part, to control the articulation blocking means.

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4. Projector according to claim 3, wherein the control means comprise a tube for transferring the pressure of the internal chamber towards a pressure detector of the articulation blocking means.

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COMPLETE SPECIFICATION
(ORIGINAL)

Application Number:
Lodged:

Complete Specification Lodged:
Accepted:
Published:

Priority

Related Art:

Applicant(s):

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Complete Specification for the invention entitled:

MEDICAL PROJECTOR, MORE PARTICULARLY FOR A SURGICAL USE

Our Ref : 195655
POF Code: 1290/124240

The following statement is a full description of this invention, including the best method of performing it known to applicant(s):

BACKGROUND OF THE INVENTION

a) Field of the Invention

The present invention concerns a medical projector, more particularly for surgical use of the type comprising an illuminating cupola articulately mounted about different positioning and orientation axes, and provided, on at least a portion of its wider peripheral outline, with a protecting flange of flexible material.

b) Description of the Prior Art

A projector of this type has been described in FR-A-1.241.989. This kind of illuminating material which hangs over an operating table is adapted to be operated by the surgeon or his assistants, and in a manner to permanently obtain a sufficient illumination of the operating site during the entire operation. Because the object of the illuminating cupola of the projector is to illuminate an operating side notwithstanding the working position of the surgeon, its diametrical dimension is substantial and, since it is associated with different support arms which are articulated with one another, it constitutes a system which is necessarily cumbersome. The illuminating cupola is adapted to be moved by the operator at a height of the order of two meters above ground level, with the result that, at any moment, it can be directly moved by the operator.

In the above document, handling of the cupola is carried out by means of a handle located at the center of the optical portion thereof.

SUMMARY OF THE INVENTION

It is an object of the invention to facilitate the operation and the adjustment of the position of the illuminating cupola.

For this purpose, according to a characteristic of the invention, the protecting flange of flexible material is dimensioned so as to constitute



According to this invention there is provided a medical projector, more particularly for surgical use, of the type including an illuminating cupola articulately mounted about different positioning and orientation axes, and provided on at least a portion of its wider peripheral outline with a protective flange of a flexible material wherein the protective flange of flexible material is dimensioned so as to constitute a gripping device for an operator to operate the cupola.

To facilitate its assembly and to limit the inertia of the cupola, it is preferred that the protecting flange is formed with an inner chamber.

Projectors, for example, those of large dimensions, are presently provided with means for blocking into position, articulations of orientations of the type provided with spring loaded brakes and blocking/unblocking device as described in the document FR-A-2.536.832. According to a preferred aspect of the invention, the blocking means are controlled by a control circuit with capacitive effect comprising captors disposed in the central handle or in a handling hoop.

According to another preferred aspect of the invention, the chamber is bound on the outer phase of the flange by a wall which is sufficiently thin to be deformed by manual pressure and comprises control means, which are susceptible to be deformed by local depression of said thin wall portion to control the articulation blocking means.

With such an arrangement, the flange provides the operations of protection against shocks, handling and control of the blocking means, by permitting the working of electrical or pneumatical control means which are not sensitive to environmental conditions of an operating site notwithstanding the relative positioning of the cupola and of the operator.



BRIEF DESCRIPTION OF THE DRAWINGS

Other characteristics and advantages of the invention will appear from the description which follows of embodiments given by way of examples, with reference to the annexed drawings in which:

Figure 1 is a perspective view of an illuminating device projectors, according to the invention;

Figure 2 is a cross-section view of a detail of the projector of Figure 1;

Figures 3 and 4 are views similar to Figure 2 showing two variants;

Figure 5 is a cross-section view of a centrally mounted operating handle of a projector.

DESCRIPTION OF PREFERRED EMBODIMENTS

With reference to figures 1 and 2, a surgical illuminating device 1 generally comprises a main illuminating cupola 2 rotatably mounted F_1 about a horizontal axis $X_1X'_1$, by means of a pair of diametrically opposed pivot pins - of which one appears at 3 - mounted at the ends of two arms 4 and 5 which are unitary with a fork 6. Fork 6 is articulately mounted according to F_2 about an axis $X_2X'_2$ on a substantially vertically extending arm 7, which itself is rotatably mounted according to F_3 about axis $X_3X'_3$ on a horizontally extending support arm 8 which is rotatably articulated according to F_4 about vertical axis $X_4X'_4$ on a tubular support 9 fixedly mounted at the ceiling of an operating room by means of a circular coupling 10.

Thus, cupola 2 may be oriented by rotation about axis $X_1X'_1$, brought nearer or moved away by rotation about axis $X_2X'_2$, and positioned in space, by rotation about axes $X_3X'_3$ and $X_4X'_4$.

In practice, there is provided at least one additional projector with cupola 16 of more restricted dimensions, said cupola 16 being mounted

about an axis $Y_1Y'_1$ of a fork shaped support articulately mounted to rotate about an axis $Y_2Y'_2$ on an arm 17 which itself is articulately mounted according to axis $Y_3Y'_3$ on an arm 10 which is articulated according to F_4 about axis $X_4X'_4$ of the tubular support 9.

As better illustrated in Figure 2, each illuminating cupola 2, 16, having a wide lower edge, is provided on its periphery with a flange of flexible material which protects each cupola against shocks 22. Each cupola has an inner outline defining an annular shoulder 24, an annular central snapping groove 25 of the outer edge of cupola 2-16 and a wide annular groove 26 holding an optical plate 27. The outer shape 28 of the protective flange 22 has a convex rounded shape so as to permit the reception of any shock between the cupola 2(16) and a surrounding object and between cupolas 2 and 16. This protective flange 22 is recessed to form an inner ~~recess~~^{chamber} 29 to increase its flexibility and facilitate its assembly.

Flange 22 is transversely dimensioned so as to constitute a gripping device which can be operated by an operator as represented in Figures 2, 3 and 4. In this manner, by simple direct gripping of this flange 22, it is possible to ensure all desired re-orientation according to axis $X_1X'_1$ ($Y_1Y'_1$), $X_2X'_2$ ($Y_2Y'_2$), $X_3X'_3$ ($Y_3Y'_3$) and even $X_4X'_4$, without requiring operating hoops unitary with the cupola.

According to the invention, ~~recess~~^{chamber} 29 constitutes an annular ~~recess~~^{chamber} and the flexibility of the material constituting the flange 22 and the thickness of its wall 23 defining its outer boundary are adapted to permit a depression of the flange 22 by simple pressure between the thumb and the index of the hand of the operator. In the embodiment of figure 3, the effect of a light overpressure thus



obtained is transferred by a fine tube 32 towards a pressure detector 40, which is associated with an articulation blocking means 41 to ensure the unblocking or the reblocking of usual brakes provided on the various articulations (XX') (YY'). These brakes, of known type, are made of a friction surface which is unitary with an arm and is adapted to resiliently rest against a cooperating surface which is unitary with another arm and the resilient action can be counterbalanced by the electromagnetic effect of a magnet which is energized by a current supplied under the control of a signal here produced by pressure detector 40.

Thus, the system of transfer of the signal of the pressure detector can provide a permanent energization of the electromagnets used for unblocking the articulation brakes during the entire phase of overpressure, whose disappearance results in the putting to rest of the electromagnets and the reblocking of the brakes, or the unblocking may take place on the occasion of a first signal corresponding to a first overpressure of said unblocking and this can take place until the production of a second overpressure called reblocking of the brakes.

Instead of utilizing the overpressure effect described above, it is possible, as a variant, as illustrated in Figure 4, to use a control means with electrical contacts, for example in the form of two annular conductive studs 33 and 34 fixedly mounted with mutual small distance apart on the inner walls of the ~~recess~~^{chamber} 29 to be contacted together under the effect of a slight manual deformation of flange 22. Each annular stud 33(34) is connected by means of a conductor 35 (36) and a transfer device, to the blocking means 41 to supply to the latter a control signal for the unblocking-reblocking of the articulation brakes.



With reference to Figure 5, a central operating handle 51 intended for a fine adjustment of the illuminating cupola 2 (16) is made in the form of a rigid sleeve 50 which is mounted on an outwardly axially projecting nipple 52 of the cupola central support 53 and defines an axial inner recess 54. The rigid sleeve 51 is fixedly mounted in position by means of a snap 63 articulated at 55 and activatable by a locking spring 56. The rigid handle 51 has an arm 57 which produces the escape of snap 63 when it is lowered down. Around this sleeve 51 there is an engaged flexible sheet 58 which is locked by engagement of an end shoulder 59 past an edge 60 of the rigid sleeve 51. There is thus also produced an annular recess 61 which communicates via 54 with a tube 62 for connection with the pressure detector 40. Gripping of the handle by the surgeon thus produces an overpressure which is transferred to the detector and, as described previously, ensures the unblocking of the articulation brakes of the cupola support arms. It is to be noted that the handle is easily removable in order to be sterilized.

The present invention is applicable to the illumination of operating tables, to systems of distribution in operating rooms and rooms of intensive cares and to apparatus used in radiology.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

5 1. Medical projector, more particularly for surgical use, of the type including an illuminating cupola articulately mounted about different positioning and orientation axes, and provided on at least a portion of its wider peripheral outline with a protective flange of a flexible material wherein the protective flange of flexible material is dimensioned so as to constitute a gripping device for an operator to operate the cupola.

10 2. Projector according to claim 1, wherein the protective flange is formed with an inner chamber.

15 3. Projector according to claim 2, of the type where at least one orientation articulation includes an articulation blocking means of the type provided with resilient brake and a blocking/unblocking device, wherein the chamber is bound on the side constituting the outer face of the flange, by a sufficiently thin wall to be deformed by manual pressure and wherein the chamber comprises controlled means, capable of deformation by local depression of said thin wall part, to control the articulation blocking means.

20 4. Projector according to claim 3, wherein the control means comprise a tube for transferring the pressure of the internal chamber towards a pressure detector of the articulation blocking means.

25 5. Projector according to claim 4, wherein the control means comprise two crown shaped studs inside the chamber, at a short distance from one another, one of said studs being unitary with said thin wall part, said studs being electrically connected to the articulation blocking means.

30 6. Projector according to any one of claims 1 to 5, wherein the protective flange of flexible material is provided, on the inner face thereof, with a first groove for receiving a peripheral edge of the cupola.

35 7. Projector according to any one of claims 1 to 6, wherein the protective flange of flexible material is provided, on the inner face thereof, with a second groove for holding an optical plate.



8. Projector according to claim 4, which additionally includes a central operating handle comprising an annular deformable chamber in communication with the pressure detector.

5 9. A medical projector substantially as hereinbefore described with particular reference to any one of the accompanying drawings.

10 DATED: 27 July 1993

PHILLIPS ORMONDE & FITZPATRICK

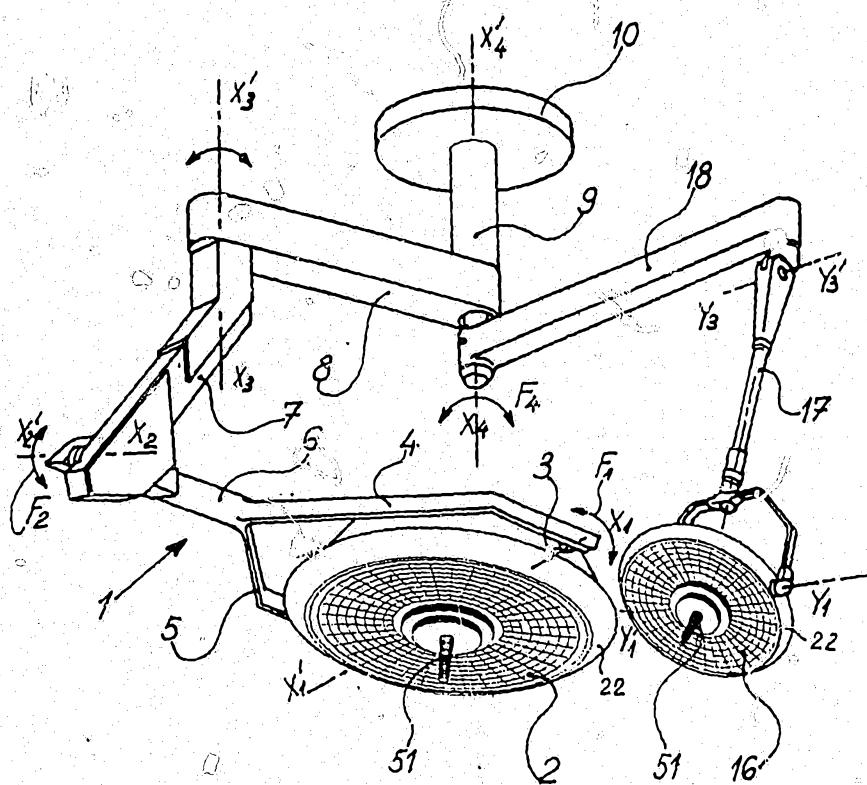
Attorneys for:

A L M, SOCIETE DE DROIT FRANCAIS

David B Fitzpatrick



Fig. 1



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Fig. 2

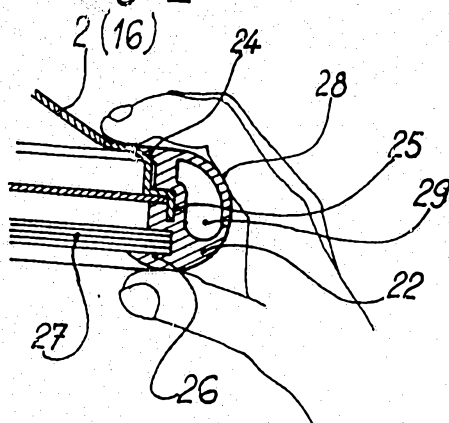
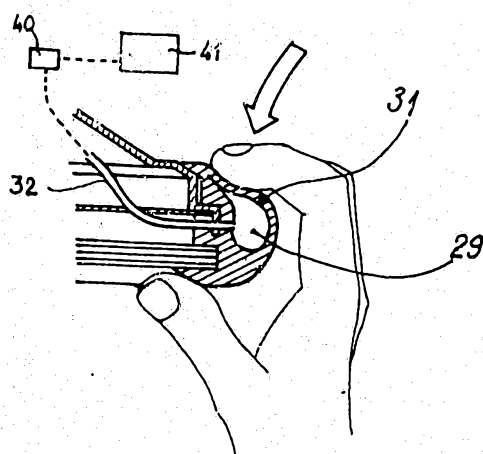


Fig. 3



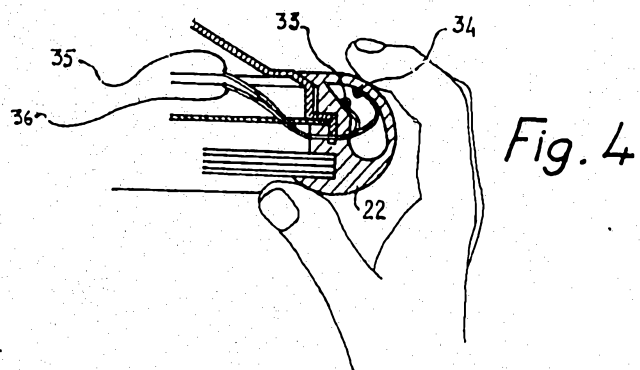


Fig. 5

