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(54) Battery-operated electric blind

(57) A battery-operated electric blind is constructed to include a headrail having an outer frame surface and an inner frame surface defining a holding chamber, a slat set, a power drive installed in the holding chamber of the headrail and coupled to the slat set. The outer frame surface of the headrail has a battery chamber for holding a battery to provide electricity to the power drive. The battery chamber has an opening extended to the outside of the headrail.

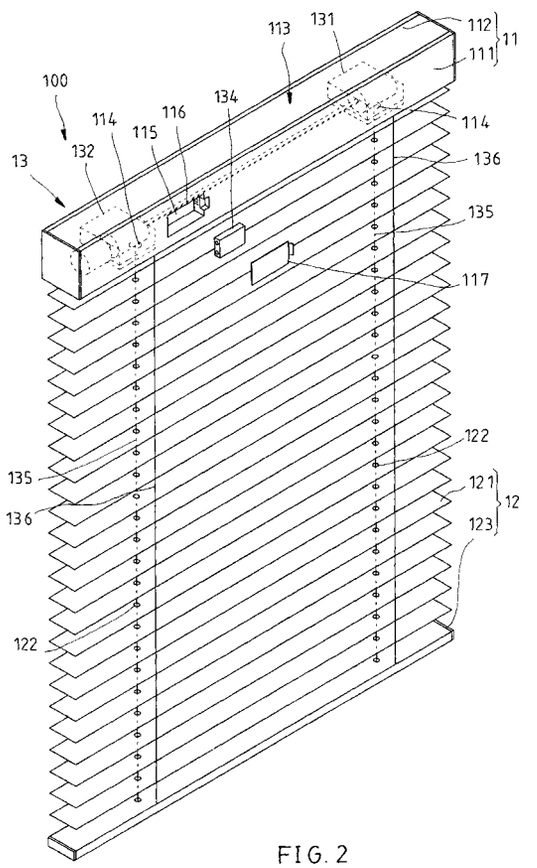

FIG. 2

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention:

[0001] The present invention relates to blinds and, more specifically, to a battery-operated electric blind, which enables the user to replace the battery conveniently.

2. Description of the Related Art:

[0002] A regular electric Venetian blind, as shown in FIG. 1, comprises a headrail **1** defining a holding chamber, a bottom rail **2**, a plurality of slats **3** arranged in parallel between the headrail **1** and the bottom rail **2**, a power drive **4** installed in the holding chamber of the headrail **1**. The power drive **4** comprises a transmission mechanism **5**, a reversible motor **6**, and a battery **7**. The transmission mechanism **5** is coupled to the bottom rail **2** and/or the slats **3** by an amplitude modulation lift cord or frequency modulation lift cord. The motor **6** is coupled to the transmission mechanism **5**. The battery **7** is electrically connected to the motor **6** to provide the motor **6** with the necessary working voltage, for enabling the motor **6** to drive the transmission mechanism **5** in lifting the bottom rail **2** and the slats **3**, or tilting the slats **3**. Due to limited service life, the battery **7**, either dry type or storage type, must be replaced when battery power was low. However, because the battery **7** is mounted inside the holding chamber of the headrail **1** behind its front sidewall, it is difficult to access to the battery **7**. When replacing the battery **7**, the user has to insert the hand through the top open side of the headrail 1 to pick up the battery **7**. If the headrail **1** is directly attached to the ceiling **8** and stopped against the pilaster **9**, the user must detach or tilt the headrail **1** from the ceiling **8** when replacing the battery **7**.

SUMMARY OF THE INVENTION

[0003] The present invention has been accomplished under the circumstances in view. It is therefore the main object of the present invention to provide a battery-operated electric blind, which enables the user to detach the battery for a replacement conveniently.

[0004] To achieve this object of the present invention, the battery-operated electric blind comprises a headrail having an outer frame surface and an inner frame surface defining a holding chamber, a slat set, and a power drive installed in the holding chamber of the headrail and coupled to the slat set. The outer frame surface of the headrail is provided with a battery chamber adapted for holding a battery which is electrically connected to the power drive. The battery chamber has an opening extended to the outside of the headrail through which the battery is inserted into the battery chamber.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005]

FIG. 1 is a perspective view of a battery-operated electric blind according to the prior art.

FIG. 2 is a perspective exploded view of a battery-operated electric blind according to a first embodiment of the present invention.

FIG. 3 is a top view of the battery-operated electric blind shown in FIG. 2.

FIG. 4 is a perspective exploded view of a battery-operated electric blind according to a second embodiment of the present invention.

FIG. 5 is a top view of the battery-operated electric blind shown in FIG. 4.

FIG. 6 is a perspective exploded view of a battery-operated electric blind according to a third embodiment of the present invention.

FIG. 7 is a side view of the battery-operated electric blind shown in FIG. 6.

FIG. 8 is a perspective exploded view of a battery-operated electric blind according to a fourth embodiment of the present invention.

FIG. 9 is a top view of the battery-operated electric blind shown in FIG. 8.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0006] Referring to FIGS. 2 and 3, a battery-operated electric blind **100** in accordance with a first embodiment of the present invention is shown comprised of a headrail **11**, a slat set **12**, and a power drive **13**.

[0007] The headrail **11** is fixedly mounted on the top side of the window (not shown). The headrail has an outer frame surface **111** and an inner frame surface **112** that defines a top-open holding chamber **113** therein. The headrail **11** has two through holes **114** bilaterally disposed at the bottom thereof in communication with the holding chamber **113**, and a front recess disposed at a front side of the outer frame surface and forming a battery chamber **115**. The battery chamber **115** has a front opening **116** in the front side of the outer frame surface **111** in communication with the outside, and an inner through hole **118** in communication with the holding chamber **113**. Further, a battery lid **117** is provided for closing the front opening **116** of the battery chamber **115**.

[0008] The slat set **12** is comprised of a plurality of slats **121** and a bottom rail **123**. Each slat **121** has two wire holes **122** corresponding to the through holes **114** of the headrail **11**.

[0009] The power drive **13** comprises an amplitude modulation control unit **131**, a frequency modulation control unit **132**, a motor unit **133**, and a battery **134**.

[0010] The amplitude modulation control unit **131** is installed in the holding chamber **113** of the headrail **11**,

comprising two amplitude modulation lift cords **135** respectively inserted through the through holes **114** and the wire holes **122** of each slat **121** and then fixedly connected to the bottom rail **123** for controlling lifting and positioning of the bottom rail **123** to adjust the extending area of the slats **121**. The frequency modulation control unit **132** is installed in the holding chamber **113** of the headrail **11**, comprising two frequency modulation lift cords **136** respectively inserted through the through holes **114** and fixedly connected to the slats **121** and the bottom rail **123** for controlling tilting of the slats **121** to regulate the amount of light passing through. The motor unit **133** is installed in the holding chamber **113** and connected to the amplitude modulation control unit **131** and the frequency modulation control unit **132**, and controlled to drive the amplitude modulation control unit **131** and the frequency modulation control unit **132**. The battery **134** can be a dry battery (cylindrical battery, rectangular battery, mercury battery, etc.) or storage battery (planar rechargeable battery) that provides the motor unit **133** with the necessary working voltage. The battery **134** is inserted through the opening **116** into the inside of the battery chamber **115**, and secured to the electric contact terminals (not shown) in the battery chamber **115**. The electric contact terminals are electrically connected to the motor unit **133** by an electric wire being extended through the inner through hole **118**. After installation of the battery **134** in the battery chamber **115**, the battery lid **134** is fastened to the opening **116** to stop the battery **134** inside the battery chamber **115** and to keep the battery chamber **115** from sight.

[0011] FIGS. 4 and 5 show a battery-operated electric blind **200** constructed according to a second embodiment of the present invention. Similar to the aforesaid first embodiment of the present invention, the battery-operated electric blind **200** is comprised of a headrail **21**, a slat set **22**, and a power drive **23**. The headrail **21** has a through hole **212**. A battery holder **24** is fixedly fastened to the outer frame surface **211** of the headrail **21** and provided with a battery chamber **241** for receiving a battery **234**. The battery holder **24** has an opening **242** disposed in communication with the battery chamber **241** and the outside, and electric contact means (not shown) electrically connected to the motor unit **231** of the power drive **23** and adapted to contact the terminals of the battery **234**. Further, the battery holder **24** is provided with a lid **25**. After installation of the battery **234** in the battery holder **24**, the battery chamber **241** is closed with the lid **25**.

[0012] FIGS. 6 and 7 show a third embodiment of the present invention. According to this embodiment, the battery holder **24'** is installed in the bottom side of the outer frame surface **211'** of the headrail **21'**.

[0013] FIGS. 8 and 9 show a battery-operated electric blind **300** according to a fourth embodiment of the present invention. Similar to the aforesaid embodiments of the present invention, the battery-operated electric blind **300** is comprised of a headrail **31**, a slat set **32**, and a power drive **33**. The outer frame surface **311** of the headrail **31** has an opening **318** disposed in communication with the holding chamber **313** of the headrail **31**. A battery holder **34** is provided inside the holding chamber **313**, having electric contact terminals **341** electrically connected to the motor unit **331** of the power drive **33** and adapted for contacting the terminals of the battery **334**. After insertion of the battery **334** through the opening **318** into the battery holder **34** and set into contact with the electric contact terminals **341**, a lid **319** is fastened to the outer frame surface **311** to close the opening **318**.

Claims

1. A battery-operated electric blind comprising:

a headrail, said headrail having an outer frame surface and an inner frame surface defining a holding chamber;
a slat set;
a power drive installed in said holding chamber of said headrail and coupled to said slat set;

wherein said outer frame surface of said headrail has a battery chamber for holding a battery which is electrically connected to said power drive, said battery chamber having an opening extended to the outside of said headrail.

2. The battery-operated electric blind as claimed in claim 1, further comprising a lid adapted to close the opening of said battery chamber.

3. The battery-operated electric blind as claimed in claim 1, wherein said outer frame surface of said headrail has a recess forming said battery chamber.

4. The battery-operated electric blind as claimed in claim 3, wherein said battery chamber has an inner through hole disposed in communication with the holding chamber of said headrail, and conductor means inserted through said inner through hole and electrically connected to said power drive.

5. The battery-operated electric blind as claimed in claim 1, further comprising a battery holder fixedly mounted on said outer frame surface and defining said battery chamber, and the opening of said battery chamber formed in one side of said battery holder.

6. A battery-operated electric blind comprising:

a headrail, said headrail having an outer frame surface and an inner frame surface defining a holding chamber;

a slat set;
a power drive installed in said holding chamber of said headrail and coupled to said slat set;

wherein said headrail has an opening disposed in communication with said holding chamber, and a battery holder fixedly mounted inside said holding chamber corresponding in location to said opening and electrically connected to said power drive such that a battery is inserted through said opening into said battery holder to provide electricity to said power drive.

7. The battery-operated electric blind as claimed in claim 6, further comprising a lid adapted to close the opening of said headrail.

8. The battery-operated electric blind as claimed in claim 7, wherein said battery holder comprises electric contact terminal means electrically connected to said power drive and facing the opening for contacting the battery to be inserted through the opening into said battery holder.

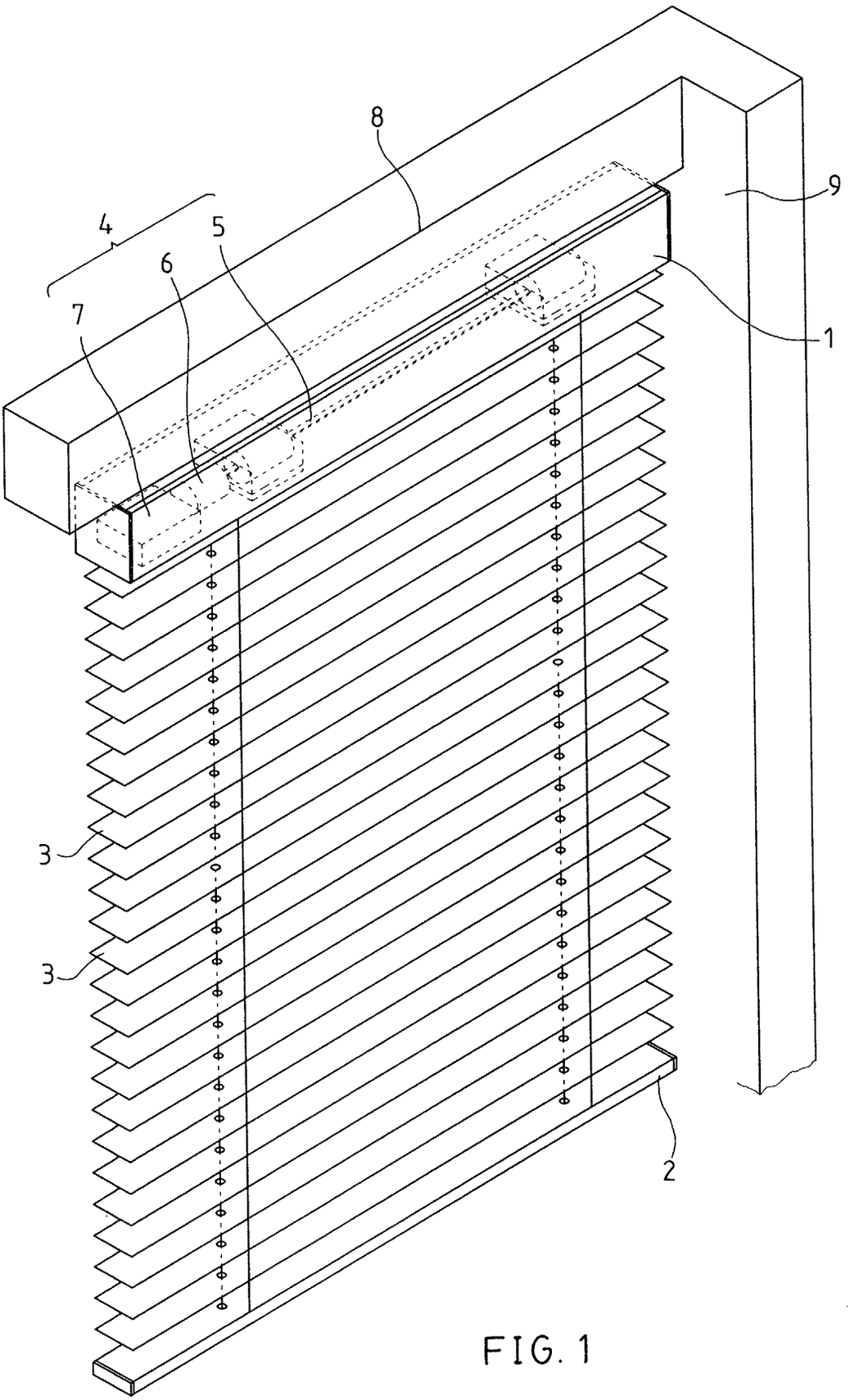

FIG. 1

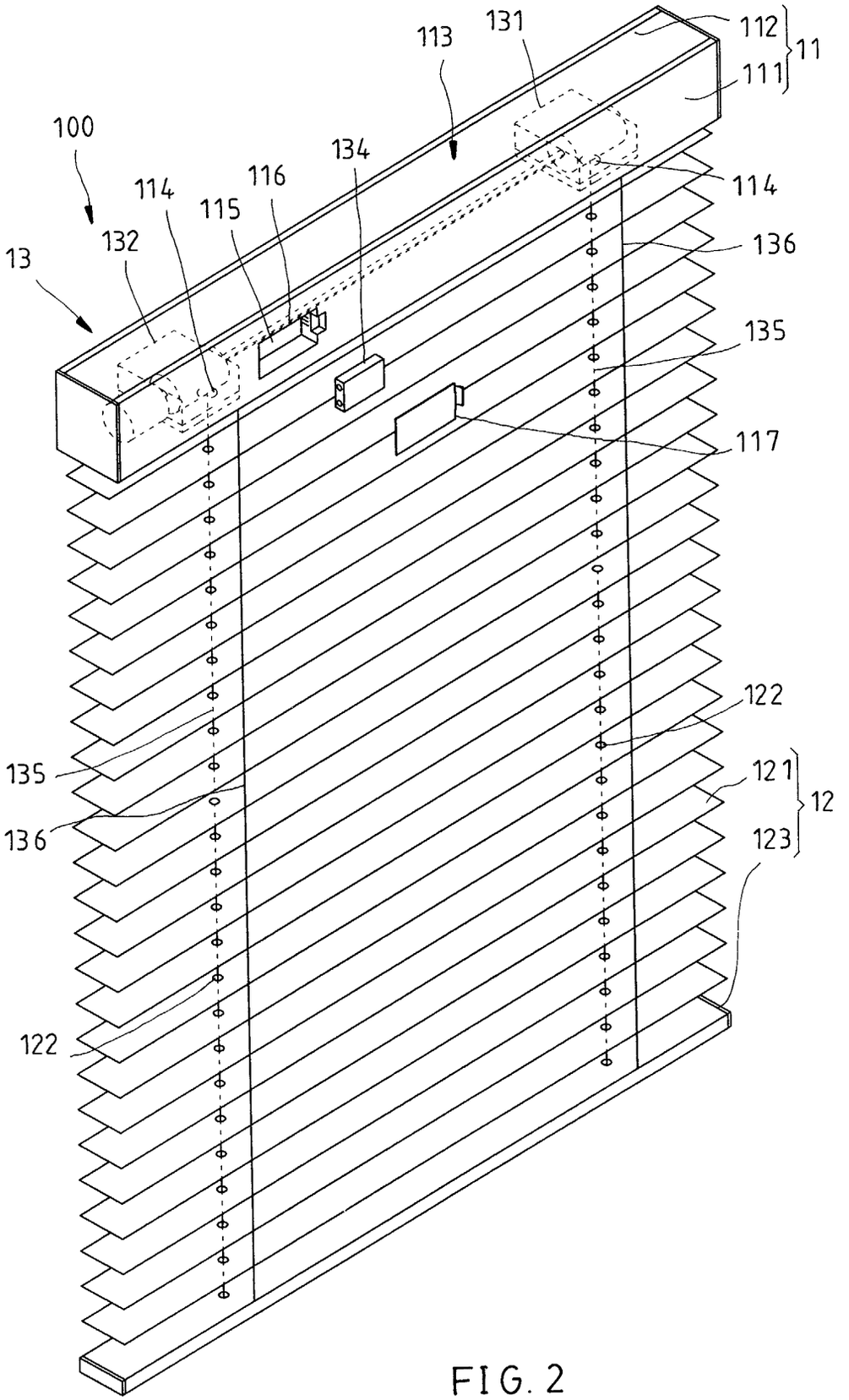
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FIG. 2

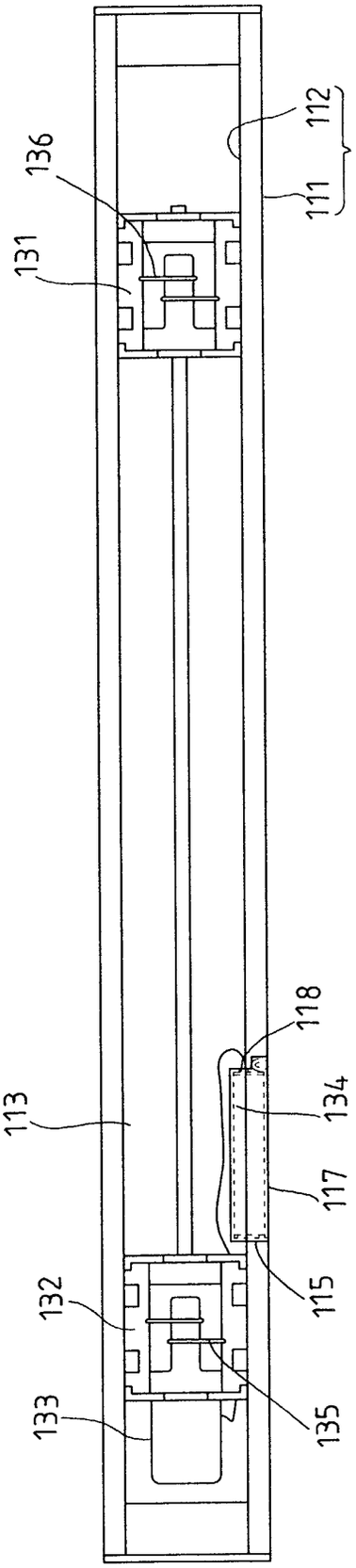
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FIG. 3

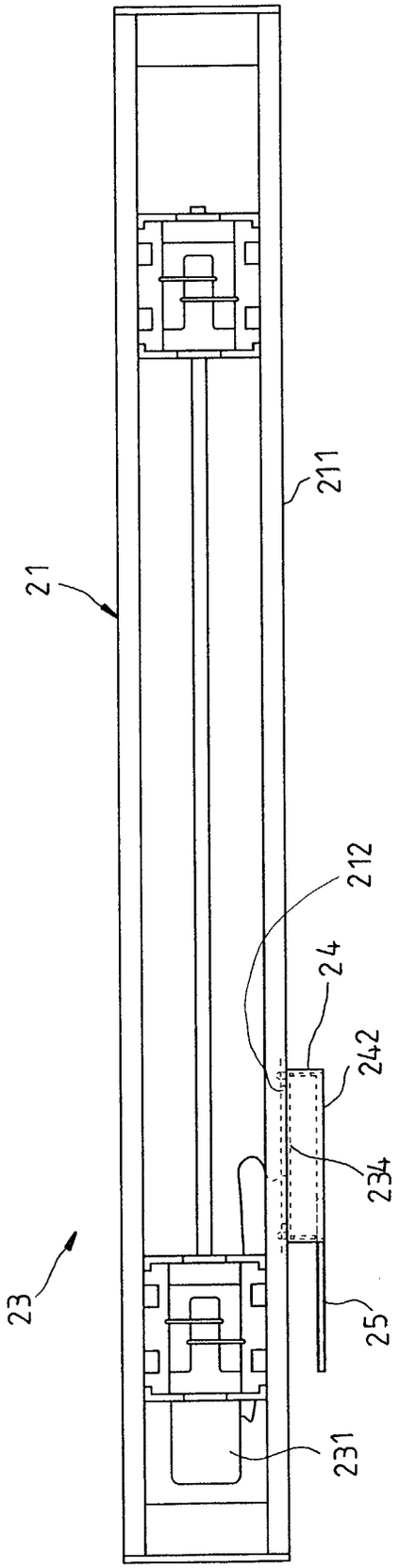
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FIG. 5

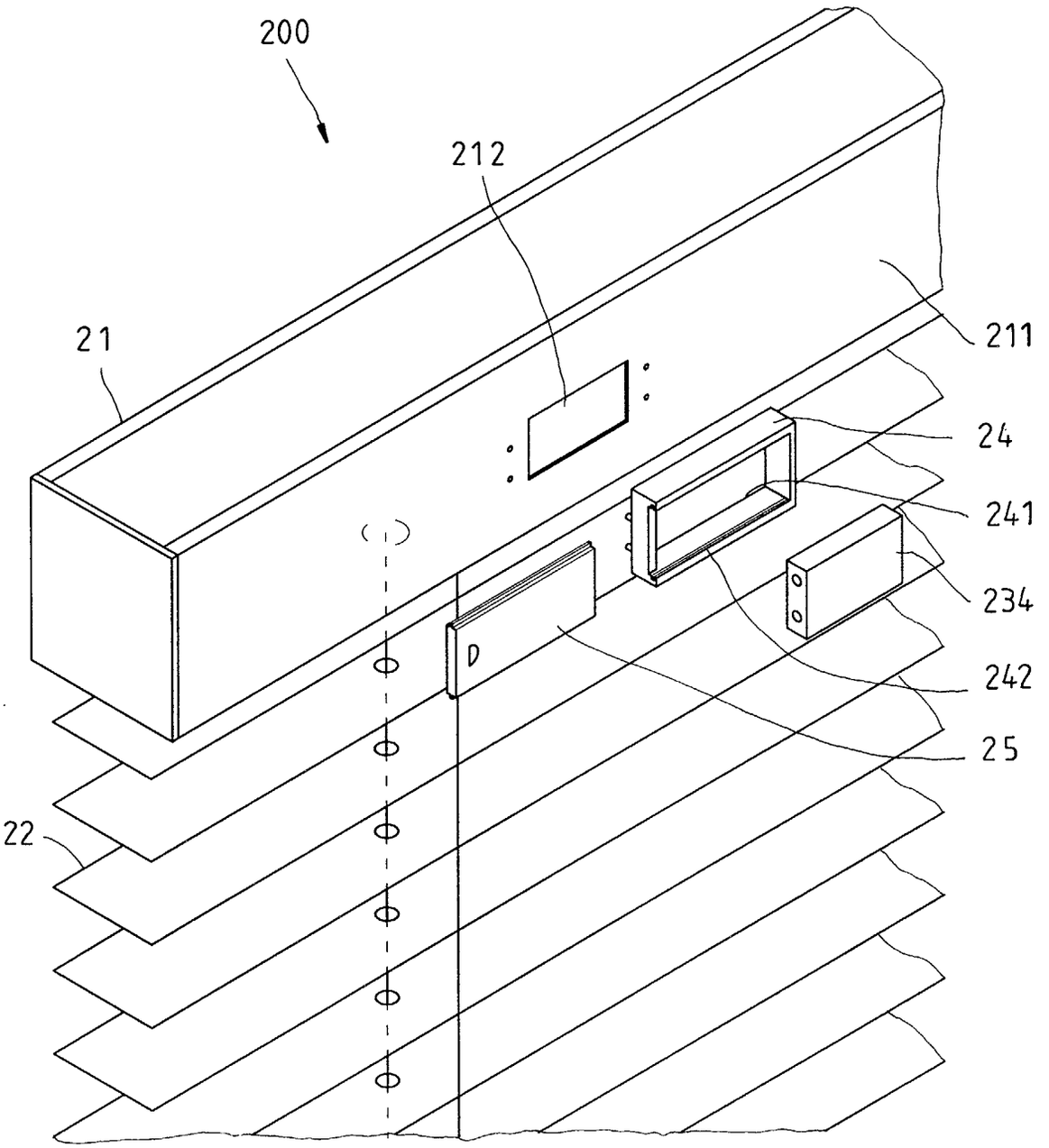

FIG. 4

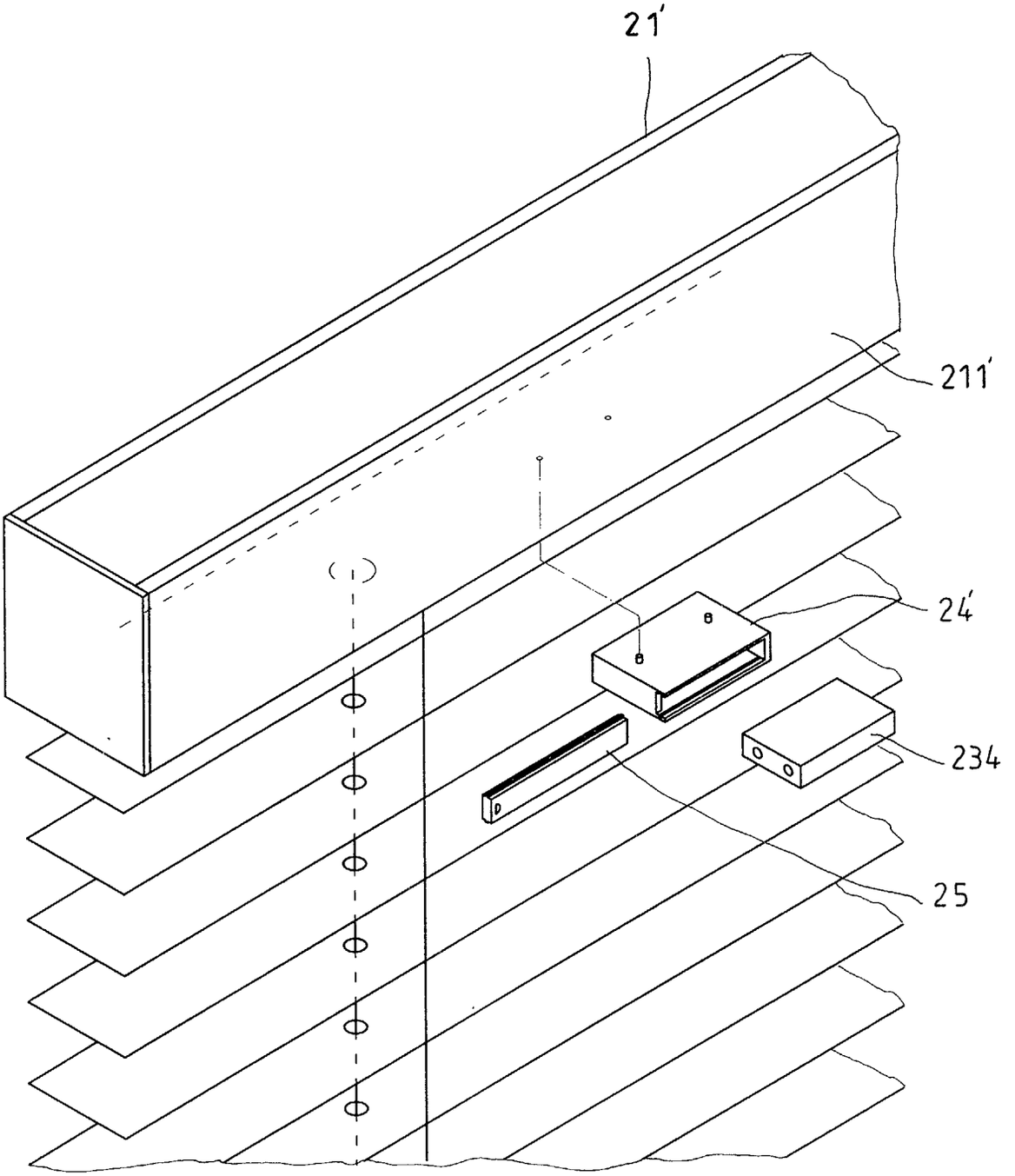

FIG. 6

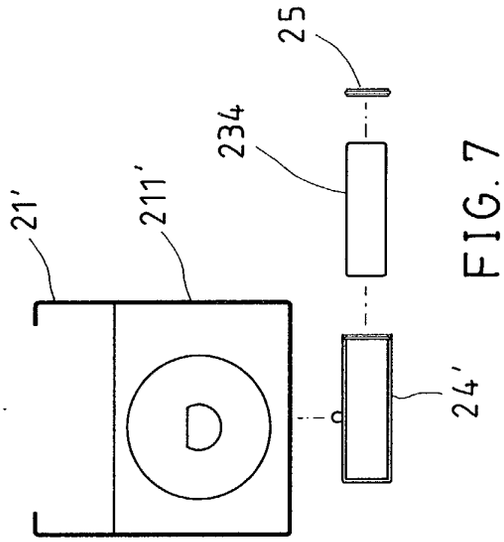

FIG. 7

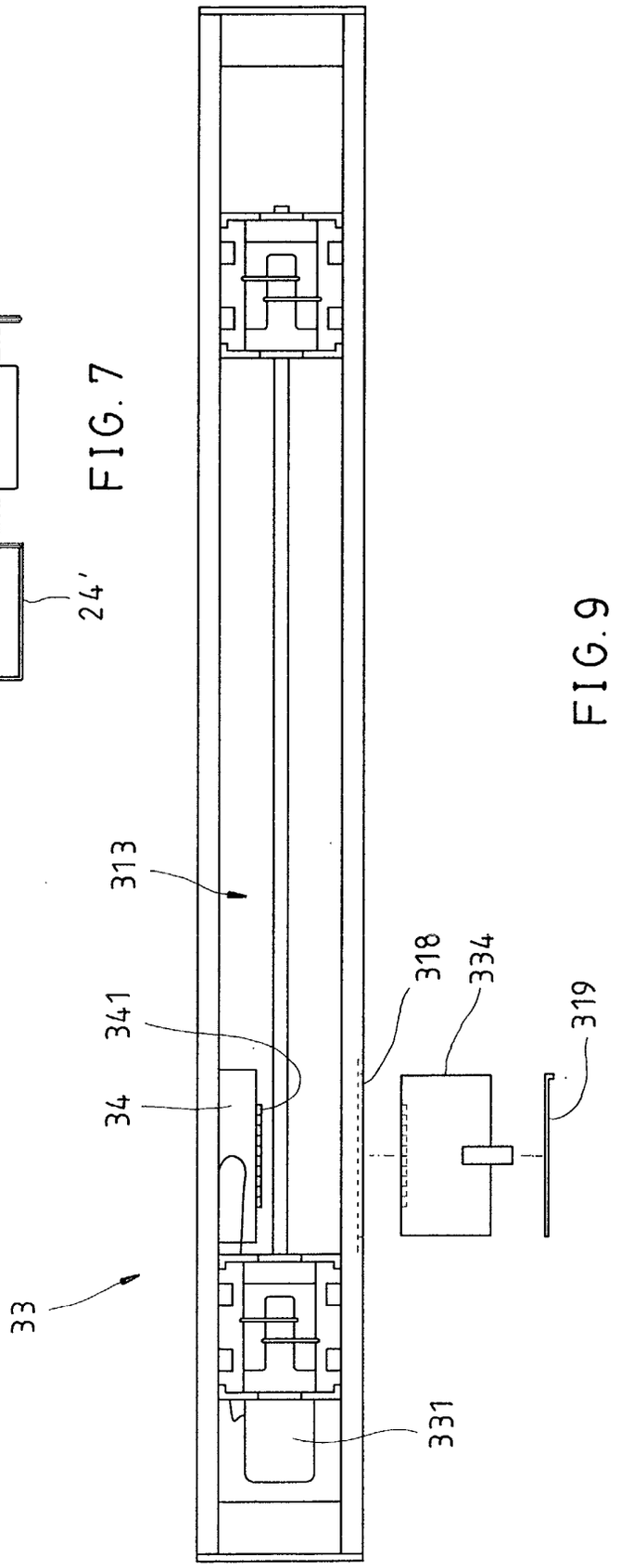

FIG. 9

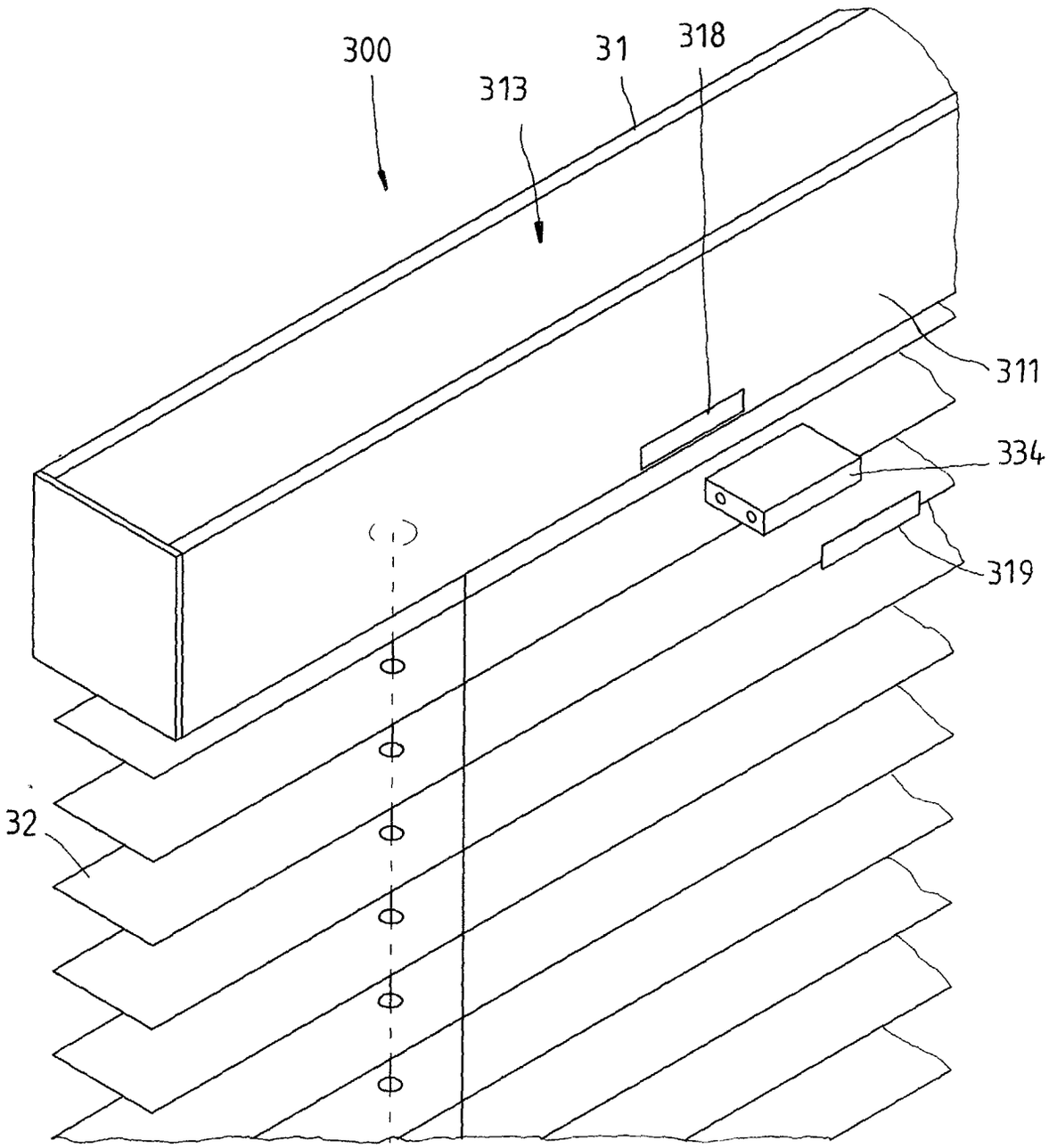

FIG. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 02 25 4015

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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	5 November 2002	Knerr, G

CATEGORY OF CITED DOCUMENTS

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