Title: CELLULAR TELEPHONE, ARRANGEMENT FOR FIXING OF A CABLE, AND CASING FOR A CELLULAR TELEPHONE

Abstract: The invention is intended for a cellular telephone to which a hands-free device is connectable, where the cellular telephone further comprises means for fixation of a cable included in the hands-free device in wound state around the casing of the cellular telephone. The invention reduces the risk that entanglement will occur when the cellular telephone is stored, together with the cable of the hands-free device, in the pocket of a user.
Title:
Cellular telephone, arrangement for fixing of a cable, and casing for a cellular telephone.

Technical field.

This patent application relates to a cellular telephone, an arrangement for fixing of a cable wrapped around the casing of a cellular telephone, and a casing comprising means for fixing of a cable. In particular a cellular telephone is contemplated, exhibiting a casing onto which a hands-free device comprising a cable and thereto connected communication devices can be connected, an arrangement for fixing of a cable belonging to a hands-free device intended for winding around the casing of the cellular telephone, and a casing for a cellular telephone exhibiting means for fixing of a cable in a wound state around the casing.

State of the art

Cellular telephones are increasingly equipped with so called hands-free devices. Such a device comprises a cable and thereto connected communication devices such as a loudspeaker and a microphone. The loudspeaker is usually designed to permit the user to place it in the external ear which permits good mediation of sound even in noisy environments. The microphone is usually placed along the cable at a distance from the loudspeaker, which is adapted to be placed at a correct distance from the mouth of the user during use. During use, the cable is connected to a communications port at the telephone, which means that the telephone can be utilized for ordinary use and for hands-free use.

Technical problem.

When the hands-free function of the telephone is in use, the telephone is usually placed in a pocket in one of the garments of the user. The cable of the hands-free device exhibits a length
that is sufficient to allow a flexible placement of the telephone, such as in a chest pocket of the user, in a jacket pocket of the user, etc. This means that the length of the cable in many instances exceeds the necessary length of the cable. When the telephone is stored in a pocket together with the cable, there is a great risk that the cable will get entangled, which means that the response time may be prolonged, with a risk of missed calls as a consequence. Thus, the problem is constituted of providing means to facilitate storing and handling of a hands-free cable.

**Short description of the invention.**

By equipping the cellular telephone with means for fixing of a cable, belonging to a hands-free device, in a state twined around the casing of the cellular telephone according to the characterizing part of claim 1, a possibility is offered to fix the cable around the cellular telephone, whereby the risk that the twined cable coil detaches from the telephone is reduced significantly, which results in a corresponding degree of reduction of the risk for entanglement of the cable.

Providing the telephone with a means for fixing of a cable belonging to a hands-free device, in a state wound around the casing of the cellular telephone, which means comprises means for preventing the slipping of a cable in a wound state around the casing of the cellular telephone according to claim 2, offers in a preferred embodiment improved opportunities to fix the cable, whereby the risk that the wound coil of cable detaches from the telephone is further reduced since the reel of twined cable is effectively prevented from slipping off the casing of the cellular telephone.

Providing the cellular telephone with a means for fixing of a cable belonging to a hands-free device, in a state wound around the casing of the cellular telephone, which means are arranged for interaction with an antenna mounted on said mobile telephone according to claim 5, offers, in a particularly preferred embodiment, the opportunity to fix the cable reel in its taut position, while the cable is easily releasable by an axial displacement of the cable upwardly along the extension of the antenna.
In an embodiment of the invention according to claim 16, the antenna of the cellular telephone interacts with an arrangement for fixing of the cable in a state wound around the casing of the cellular telephone.

Providing the cellular telephone with a means for fixing of a cable belonging to a hands-free device, in a state wound around the casing of the cellular telephone, which means comprises means for holding of a cable in a taut state according to claim 6, offers, in a preferred embodiment, the opportunity to fix the cable reel in its taut position whereby the cable reel is effectively prevented from sliding off the casing of the cellular telephone.

By providing an arrangement for fixing a cable in a wound state around the casing of a cellular telephone according to the characterizing part of claim 22, an opportunity is offered to fix said cable in a wound state around the casing of the cellular telephone, whereby the risk that the cable reel wound around the cellular telephone will come loose from the telephone is significantly reduced, which results in a corresponding degree of reduction in the risk of entanglement of the cable. This arrangement can be mounted separately on already existing cellular telephones, which entails that the risk for entanglement can be reduced also for such products.

By providing a casing for a cellular telephone exhibiting means for fixing of a cable in a wound state around the casing, an opportunity is offered to provide the invention at replaceable casings for cellular telephones.

Further preferred embodiments of the invention are stated in the dependent claims.

Description of figures.

A number of exemplifying embodiments of the invention will be described in detail below with reference to the enclosed drawing figures, in which

Fig. 1 shows a frontal view of the invention in which the means for fixation comprises two button-shaped protrusions, and in which a cable of a hands-free device is shown in a non-wound state,
Fig. 2 shows a frontal view of the invention in which the means for fixation comprises two button-shaped protrusion, and in which a cable of a hands-free device is shown in a wound state,

Fig. 2a shows an alternative embodiment of the invention, in which a multitude of button-shaped protrusions are deposited on the casing of the cellular telephone,

Fig. 3 shows an enlargement of a detail in Fig. 2,

Fig. 4 shows a side view of the invention in which the means for fixation comprises a button-shaped protrusion and a hook,

Figs. 5 a-b show a detailed drawing of two implementations of a hook intended for mounting on a cellular telephone to obtain a means for fixation according to the invention,

Fig. 6 shows a frontal view of the invention, in which the fixation means comprises a hook formed from a conical antenna, and a pin mounted in connection to the base of the antenna,

Fig. 7 shows a side view of a detailed drawing of an antenna of a cellular telephone equipped with a hook, which is formed by the antenna and a pin, which is supported by a pin mounted to the antenna, where the pin extends from the casing of the cellular telephone,

Fig. 8 shows a side view of a detailed drawing of an antenna of a cellular telephone equipped with a hook, which is formed by the antenna and a pin, which is supported by a pin mounted to the antenna, where the pin extends towards the casing of the cellular telephone,

Fig. 9 shows a side view of a detailed drawing of an antenna of a cellular telephone equipped with a hook formed by the antenna and a pin, which is supported by a pin mounted to the antenna, where the pin extends both away from and towards the casing of the cellular telephone,
Fig. 10a shows a top view of an antenna belonging to a cellular telephone, equipped with a curved plate which is equipped with a groove that allows fixing a cable belonging to a hands-free device.

Fig. 10b shows a side view of an antenna belonging to a cellular telephone, equipped with a curved plate which is equipped with a groove that allows fixing a cable belonging to a hands-free device.

Fig. 11 shows a perspective view of a cellular telephone equipped with an arrangement for fixing of a cable, comprising a ring-shaped base supporting a pin, which, together with the antenna, forms a hook, and a second elongated element which comprises further means for fixation of a cable, and

Fig. 12 shows an embodiment of the invention, where the means for fixation of a cable comprises grooves situated around the edges of the cellular telephone.

**Description of exemplifying embodiments.**

In Fig. 1 is shown a frontal view of a cellular telephone 1, which shows a casing 2 surrounding necessary electronics, an antenna 3, a display unit 4, and a keyboard 5. The cellular telephone further comprises a loudspeaker 6, and a microphone 7. In the cellular telephone is arranged a communications port 8. The casing of the cellular telephone is substantially box-shaped and comprises a front 20 with a keyboard 5 and a display 4, a back (not shown), two side surfaces 21, 22, one upper limiting surface 24, and a lower limiting surface 23. The cellular telephone 1 is in itself of a known kind, and therefore its functions will not be described further.

A hands-free device 9 may be connected to the communications port 8. The hands-free device 9 comprises a connector 10, which is connectable to said communications port 8, a cable connecting the telephone to a loudspeaker 12 and a microphone 13. The hands-free device 9 is of a known kind, and will therefore not be described further.
According to the invention the cellular telephone further exhibits means for fixation 14 of the cable 11 included in said hands-free device 9. In the embodiment showed in Fig. 1 the fixation device comprises first and second button-shaped protrusions. These button-shaped protrusions 15, 16 are preferably situated on the two side surfaces 21, 22 of the surface of the casing 2. The button-shaped protrusions 15, 16 may be constituted by an integrated part of the casing 2, or alternatively be designed as separately mounted details. In a preferred embodiment the button-shaped protrusions 15, 16 consist of control keys for the cellular telephone 1, through which keys functions of the cellular telephone, such as, for example volume control and on/off function may be controlled.

The button-shaped protrusions 15, 16 extend outwards from the casing, and thereby form a support against which a wound cable can rest. Fig. 2 shows the same cellular telephone as Fig. 1, but with the cable 11 of the hands-free device 9 wound around the casing 2 of the cellular telephone. The wound cable 11 forms a cable reel 17, which cannot be displaced over the button-shaped protrusions, whereby there is no risk that the cable reel, or part thereof, becomes detached from the telephone. In order for the button-shaped protrusions 15, 16 to fulfil, in a satisfactory way, their function as a means to prevent the slipping of a cable in a wound state, the button-shaped protrusions exhibit an extension in a plane vertical to the casing of the cellular telephone, the extension being in the same order of magnitude as, or exceeding, the diameter of the cable 11.

In a preferred embodiment, the transition between the casing 2 and the button-shaped protrusion 15, 16 is relatively steep.

Fig. 3 shows an enlargement of the area around the button-shaped protrusion 16 and the cable 11. The cable 11 is intended to contact the button-shaped protrusion 16 in a point of contact 18. The position of the point of contact may vary somewhat depending on the cross-sectional geometry of the cable 11, and the position of the cable with respect to the base. When the cable 11 is positioned correctly, the cable is in close contact with the base, but is also possible that the cable 11 is pushed upwards part of the way along the button-shaped protrusion. The point of contact 18 is normally situated at the distance of half the diameter of the cable 11. In this area the button-shaped protrusion should be relatively steep compared to the casing 2 of the cellular telephone.
To further improve the fixating quality of the button-shaped protrusions 15, 16 the protrusions may be manufactured from, or coated with, a material that gives rise to higher friction when the cable 11 slides against the button-shaped protrusion 15, 16. An example of a suitable material is rubber.

The embodiment of the invention shown in Fig. 1 exhibits, in accordance with what has been mentioned above, two button-shaped protrusions 15, 16 which are placed on either side surface 21, 22 of the casing. The two button-shaped protrusions 15, 16 are situated at different distances, d1 and d2, respectively, from the lower limiting surface of the cellular telephone. This entails that the two button-shaped protrusions define an intermediate area 25 of the casing 2 of the cellular telephone, where the cable 11 is intended to be wound. The two button-shaped protrusions 15, 16 are, according to the preferred embodiment of Fig. 1, situated on either opposite side 21, 22. By placing the button-shaped protrusions on opposite sides, the laps of cable in the cable reel 17 are prevented from sloping too much in relation to the transverse direction of the telephone, which would mean a risk that the tension between the cable and the base will be reduced, and, therefore, a risk that the cable reel will come loose.

Fig. 2a shows an alternative embodiment of the invention, in which the casing 2 of the cellular telephone exhibits 8 button-shaped protrusions 26 a-d and 27 a-d, situated on the edges 28 a-d that separates the front 20 and the back (not shown) of the cellular telephone from its side surfaces 21, 22. By placing the button-shaped protrusions along the edges, the button-shaped protrusions 26 a-d and 27 a-d will be situated where the cable 11 contacts the casing 2 of the cellular telephone with the biggest tension, which results in that the ability of the button-shaped protrusions to prevent slipping of the cable reel 17 or part thereof is further improved.

Fig. 4 shows an alternative embodiment of the invention, where the casing 2 of the cellular telephone is equipped with means for fixation of a cable 11 in a wound state around the casing 2 of the cellular telephone, which means comprises a means, in the form of a button-shaped protrusion 16, for preventing slippage of a cable wound around the casing of the cellular telephone, as well as means, in the form of a hook 28, for maintaining the cable in a taut state. The function of the hook 28 is to maintain the tension in the cable 11 after it has been wound around the casing 2 of the cellular telephone. By ascertaining that the cable effectively
contacts the casing of the cellular telephone with sufficient tension, the cable reel 17 is efficiently prevented from slipping from the casing of the cellular telephone. This means that the means for fixation 14 of the cable 11 in wound state around the casing of the cellular telephone with relatively good result may be constituted solely by a hook 28, even though the use of button-shaped protrusions together with a hook provides a better means for fixation. The hook 28 exhibits an opening 29 through which the cable 9 may be introduced and thereafter retained by the hook 28 by way of a pinching force against the cable. For this purpose the hook is designed with an opening diameter d3, slightly below the diameter of the cable to be fixated. Fig. 5 shows to embodiments of the hook, where Fig. 5a shows a hook, the opening of which exhibits a passage 30, with an opening diameter which is below the opening diameter of a pinching area 31, situated inside said passage 30, in the direction of the base 32 of the hook. This entails that a cable must be made to pass the passage 30 with a certain force, before it thereafter can be retained by the hook in the pinching area 31. The diameter d3 in the pinching area is adjusted to the diameter of the cable, and is slightly below the diameter of the cable.

Fig. 5b shows an alternative embodiment of the hook 28, in which the hook is equipped with a protrusion 33 exhibiting a hook-like shape. The purpose of the protrusion 33 is to support the cable 9, and thereby prevent the slippage of the cable reel 17 along the casing 2 of the cellular telephone in a direction away from the hook 28 and the hook-shaped protrusion 33. This means that the protrusion 33 fulfills the same function as a button-shaped protrusion that has been described in connection to abovementioned embodiments.

Fig. 5b shows an alternative embodiment of the hook 28, where the hook is not designed with the passage 30 that has been described in connection to the hook according to the embodiment in Fig. 5a. To achieve satisfactory function of the retaining qualities of the hook, the hook has to be equipped with a smaller angle of aperture α, and a greater free length of the arm 34 of the hook in comparison to a passage 30 together with a pinching area 31. To assure that the hook retains a cable with sufficient force, the hook is preferably coated with, or manufactured from, a material producing sufficient friction between cable and hook, e.g. rubber.

The embodiment according to Fig. 5a may be equipped with a hook-shaped protrusion in accordance to what has been described in connection to the embodiment of Fig. 5b. Further,
the embodiment according to Fig. 5b may be manufactured without the hook-shaped protrusion.

According to yet another (not shown) embodiment, the hook is manufactured from plate metal, which may be fastened to the casing of the cellular telephone, for example by way of a nipple.

Fig. 6 shows an embodiment in which the means 14 for fixation of the cable 11 in wound state around the casing of the cellular telephone comprises a hook 28, which is formed by the cone-shaped antenna of the cellular telephone and a pin 35, which is mounted in connection to the antenna 3. The pin may be mounted either on the upper limiting surface 24 of the cellular telephone, on a base which is attached either against the upper limiting surface 24 of the cellular telephone, or the antenna 3 of the cellular telephone (see Figs. 7 – 9). In a specially preferred embodiment this base consists of a ring-shaped element 36, or a ring-shaped element that has been split open, intended to be threaded on the antenna 3 of the cellular telephone.

Figs. 7 – 9 show three different embodiments of the means for fixation 14 of the cable 11 in wound state around the cellular telephone1. In these three embodiments an antenna 3 of a cellular telephone is shown, which antenna supports a base 36, connected to the antenna 3. The base 36 may alternatively be constituted by a part integrated in the antenna. To said base 36, a pin 35 is arranged. This pin 35 may be mounted upon, or constitute an integrated part of, said base 36, alternatively said antenna in the case when the base is designed in integration with the antenna.

In Fig. 7 the pin 35 extends from the base 36 along the antenna 3 in the direction away from the upper limiting surface (not shown) of the cellular telephone. The base 36 and the pin 35 in this embodiment form a lower supporting surface 37, extending from the limiting surface 38 of the antenna. The cable 11 may therefore first be slightly upwound around the antenna, and thereafter be brought to contact against the supporting surface 37, in order to subsequently be folded around the base 36 and be attached into the opening 29 in the hook. In this embodiment the cable is detached from its locking to the hook 28 by being lifted upwards, in a direction away from the upper limiting surface of the cellular telephone. The stiffness of the cable automatically results in its partial unwinding.
In Fig. 8 the pin 35 extends from the base 35 along the antenna 3 in the direction towards the upper limiting surface (not shown) of the cellular telephone. The base 36 and the pin 35 in this embodiment form an upper supporting surface 39, extending outward from the limiting surface 38 of the antenna. The cable 11 may therefore first be unwound somewhat around the antenna, and thereafter attached into the opening 29 in the hook, then folded around the base 36, and brought to contact against the supporting surface 39. In this embodiment the cable 11 is detached from its locking to the hook 28 by lifting the cable upward, and moving it towards the opening in the hook.

Fig. 9 shows an embodiment in which the pin 35 is brought to extend partly in a direction away from the upper limiting surface of the cellular telephone, and partly towards the upper limiting surface of the cellular telephone. According to this embodiment it is possible to achieve two hooks, which allows more secure fixation, alternatively one of the two openings 40, 41 may have the function solely of a support in which the cable 11 is not pinched.

Figs. 10 a-b show an embodiment of the invention, in which the means for fixation 14 of a cable 11 in wound state around the casing of the cellular telephone comprises a plate 42 attached to the antenna 3 of the cellular telephone. The plate 42 is mounted in such a way that a space 43 is created between the antenna 3 and the plate 42. The cable 11 may thus be placed in this space 43, whereby the cable may be fixed. To this end the cross section of the groove 43 is adjusted according to the diameter of the cable 11. In one embodiment the plate is designed from a flexible material, whereby the space 43 may be designed with a cross section slightly less than the diameter of the cable 11, whereby the cable may be secured to the groove by pinching. It is also possible to obtain a retaining force acting on the cable, provided that the cross section of the space 43 slightly exceeds the diameter of the cable. This embodiment is preferred if the plate is manufactured from a non-flexible material. The stiffness of the cable entails that the cable has a tendency to straighten after having been bent and introduced in the space 43. Through this spring quality of the cable, a pinching of the cable to the groove is achieved, even though the space is wider than the diameter of the cable. In a preferred embodiment the plate is arched and mounted coaxially to the antenna.

Fig. 11 shows a preferred embodiment of the invention, in which an arrangement 44 for fixation of a cable to a cellular telephone in a wound state around the casing of the cellular
telephone. The arrangement 44 comprises a base 36, intended for mounting in connection to an antenna mounted on the antenna 3. The base 36 supports means for fixation 14 of said cable. The base consists of a housing 36, which may be ring-shaped or ring-shaped with an slit 45. By designing the housing with a slit, the housing may be put in place by, through a slight spring action, pinching it against the antenna 3. The base 36 supports a pin 35, extending along the antenna 3 of the cellular telephone, whereby a hook 28 is formed from the antenna 3 of the cellular telephone and the pin 28. The base 36 further supports an elongated protrusion 46, extending along the casing of the cellular telephone. In a preferred embodiment the elongated protrusion 46 exhibits further means 47 for fixation of a cable in a wound state around a cellular telephone. In a preferred embodiment these means consist of two button-shaped protrusions 47. The housing 46 may be mounted on the cellular telephone in arrears, which entails that the arrangement may be sold separately in order to provide the invention for products that are already placed on the market.

Fig. 12 shows an embodiment of the invention, in which the means for fixation of cable comprises grooves situated around the edges 28a, b of the cellular telephone, separating the front 20 of the cellular telephone from its side surfaces 21, 22. It is also conceivable to arrange these grooves along the other edges, separating the back from the side surfaces 21, 22.

In a preferred embodiment the grooves 48 are situated along the two edges 28a, b, situated at different distances d1 and d2 from the lower limiting surface of the cellular telephone. This entails that the grooves define an intermediate partial area 25 of the casing 2 of the cellular telephone, where the cable 11 is intended to be wound. In a further preferred embodiment at least the edges of the front exhibit a multitude of grooves, for example, three, whereby different amounts of cable may be wound with good fixation. The cellular telephone may further be equipped with a hook 28, which may be implemented according to in connection to other embodiments described above.

The invention may be utilized for cellular telephones of all different types and embodiments, provided that a hands-free device comprising a cable is connected, or connectable, to the cellular telephone. Thus, the invention is not limited to any special type of cellular telephone.
Claims.

1) Cellular telephone (1) to which a hands-free device (9) comprising a cable (11) and thereto connected communication devices (12, 13) is connectable, characterized in that the cellular telephone further exhibits means (14) for fixation of said cable in a wound state around the cellular telephone.

2) Cellular telephone according to claim 1, characterized in that said means for fixation comprises means (15, 16) for preventing slipping of a cable wound around a casing arranged at the cellular telephone.

3) Cellular telephone according to claim 2, characterized in that said means (15, 16) for preventing slipping consists of two button-shaped protrusions (15, 16) mounted on opposite sides of a casing (2) arranged at the cellular telephone.

4) Cellular telephone according to any of the claims 2 – 3, characterized in that at least one of said button-shaped protrusions (15, 16) consists of a control key controlling a function of the telephone.

5) Cellular telephone according to any of the preceding claims, characterized in that said means for fixation of said cable are arranged for interaction with an antenna (3) mounted on said mobile telephone.

6) Cellular telephone according to any of the claims 1 – 5, characterized in that said means for fixation (14) comprises means (28, 35, 42, 43) for fixation of the cable in a taut state.
7) Cellular telephone according to claim 6,

*characterized in*

that said means for fixation is comprised of a hook (28).

8) Cellular telephone according to claim 7,

*characterized in*

that said hook is formed from an antenna (3) mounted on the cellular telephone and a pin (35) mounted next to said antenna (3).

9) Cellular telephone according to claim 7,

*characterized in*

that said hook is formed from an antenna (3) mounted on the cellular telephone and a pin (35) mounted on a base (36) arranged on the antenna (3) of the cellular telephone.

10) Cellular telephone according to any of the claims 1 – 9,

*characterized in*

that said means for fixation (14) comprises a groove (43, 48) which is intended to, during fixation of said cable, at least partly envelope said cable (11).

11) Cellular telephone according to claim 10,

*characterized in*

that said groove (43) is situated on an arched plate (42) which is arranged in connection to the antenna (3) of the cellular telephone.

12) Cellular telephone according to any of the claims 9 – 11,

*characterized in*

that said base consists of a housing (36) which is intended to at least partly envelope the antenna (3) of the cellular telephone.

13) Cellular telephone according to any of the claims 9 – 12,

*characterized in*

that an elongated element (46), which extends along a casing (2) arranged at the cellular telephone, is attached to said base (36).
14) Cellular telephone according to claim 13,

characterized in

that said elongated element exhibits further means for fixation (49) of said cable in wound state around the cellular telephone.

15) Cellular telephone according to claim 14,

characterized in

that said further means for fixation (49) consists of two button-shaped protrusions.

16) Arrangement for fixation of a cable (11) in wound state to a cellular telephone (1) around the casing (2) of the cellular telephone,

characterized in

that said arrangement comprises a base (36) which is intended to be mounted in connection to an antenna (3) mounted on the cellular telephone and that said base supports means (28, 42, 43) for fixation of said cable.

17) Arrangement according to claim 16,

characterized in

that said means for fixation is formed from a hook (28) which is formed from an antenna (3) arranged on the cellular telephone and a pin (35) mounted on said base.

18) Arrangement according to claim 16,

characterized in

that said base (36) supports an arched plate (42) which exhibits e groove (43) that allows pinching of the cable (11).

19) Arrangement according to any of the claims 16 – 18,

characterized in

that said base (36) consists of a housing intended to at least partly envelope the antenna (3) of the cellular telephone.

20) Arrangement according to any of the claims 16 – 19,

characterized in

that an elongated element (46), extending along a casing (2) arranged at the cellular
telephone, is attached to said base (36).

21) Arrangement according to claim 20,
   characterized in
   that said elongated element (46) exhibits further means (49) for fixation of said cable in wound state around the cellular telephone.

22) Casing for a cellular telephone,
   characterized in
   that the casing (2) exhibits means (14) for fixation of a cable in wound state around said casing according to any of the claims 2 – 14.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04M 1/15
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04M, H02G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE, DK, FI, NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>X</td>
<td>US 5845197 A (M. HADA ET AL), 1 December 1998 (01.12.98), column 1, line 48 - column 2, line 32; column 7, line 11 - line 34, figure 10 --</td>
<td>1, 2, 6, 7, 10, 22</td>
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Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

  "A" document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search: 24 January 2001

Date of mailing of the international search report: 13-02-2001

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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