(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 482 591 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
01.12.2004 Bulletin 2004/49

(51) Int Cl.[7]: **H01Q 1/12**

(21) Application number: **03076698.4**

(22) Date of filing: **28.05.2003**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR
Designated Extension States:
AL LT LV MK

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(54) **Method and system for the installation of an antenna on a roof**

(57) Method and system for the installation of an antenna on a roof. More specifically the invention relates to installing an antenna for mobile communications, where the antenna can be placed near a cabinet without having to drill holes in the roof.

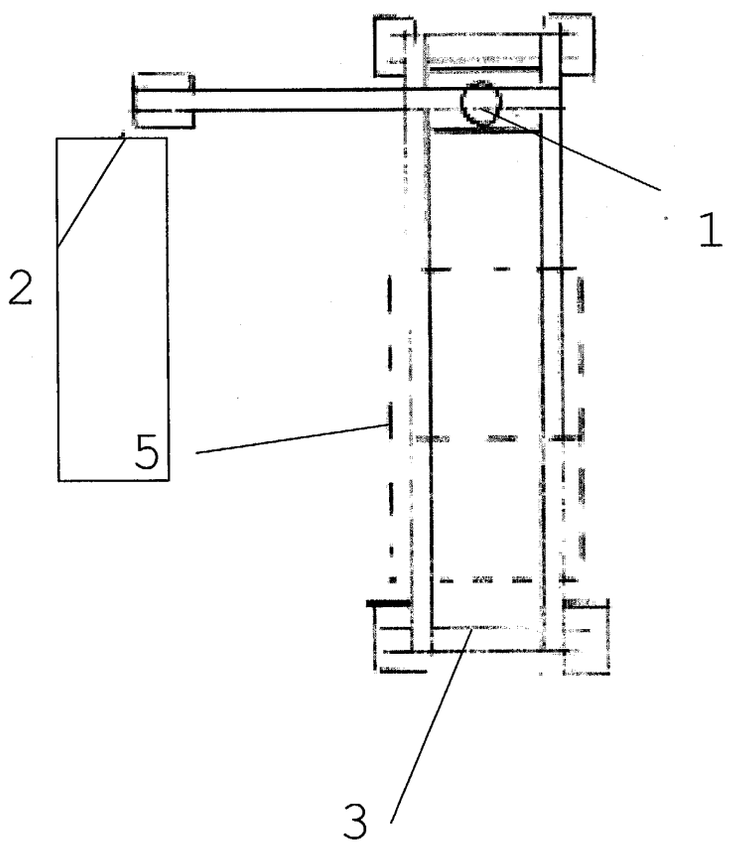

Fig.1

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Description

Field of the invention

[0001] The invention relates to installing antennas on a roof. More specifically the invention relates to installing an antenna for mobile communications, where the antenna can be placed near a cabinet without having to drill holes in the roof.

Background of the invention

[0002] Antennas for mobile communications are often placed on high places to achieve better coverage. The roof of a building is an ideal place for such antennas. Antennas are mounted on the roof by securely connecting them to the roof using bolts. A disadvantage of such mounting is that holes have to be made in the roof, possibly damaging it. It is also possible to place an antenna without fixating it to the roof by applying a heavy weight to the bottom of the antenna, comparable to how a parasol can be placed on the ground. This solution is not secure enough, since heavy weather conditions can make the antenna flip over.

[0003] Antennas are placed at the edges or in the corners of a roof to avoid creating a shadow in the coverage. The roof itself can create this shadow because it is blocking the signals of the antenna. Also objects on the roof, even other antennas, can create a shadow. A disadvantage of placing antennas at the edges or in the corners of the roof is that there need to be installed cables and cable paths to the cabinet, which is usually placed somewhere more to the middle of the roof. The cables create a path loss which has to be compensated by installing a mast head amplifier to the antenna. Because the antennas are at dangerous places special safety facilities must be arranged, such as e.g. a fence or roof lights. To be able to withstand lightning special arrangements have to be made as well, like grounding the antennas and install grounding cables over the roof.

Problem definition

[0004] There are no solutions to place an antenna securely without having to drill holes in a roof and secure the antenna with bolts. Moreover there is no solution to do this near the cabinet of the antenna, instead of at the edge or in the corner of the roof.

Aim of the invention

[0005] The aim of the invention is to overcome the disadvantages as described above. There should be a solution to place an antenna securely to a roof without having to drill holes and use bolts. Moreover the antenna should be installable near the cabinet of the antenna.

Summary of the invention

[0006] The present invention provides a solution for installing an antenna securely to a roof near the cabinet of the antenna, without having to drill holes and use bolts.

[0007] According to an aspect of the invention a method and system are provided for installing an antenna on a roof. The method can comprise the following steps or a subset of the following steps:

- Placing a longitudinal girder by frictionally connecting the longitudinal girder to a base frame. It is also possible that the longitudinal girder is clamped to the base frame. The base frame can be a base frame to which a cabinet of the antenna is connected.
- Connecting a cantilever and a central top mast to the longitudinal girder. The top mast can have a maximum height of 6 meters.

The system can comprise:

- A longitudinal girder which is frictionally connected to a base frame. It is also possible that the longitudinal girder is clamped to the base frame. The base frame can be a base frame to which a cabinet of the antenna is connected.
- A cantilever and a central top mast which are connected to the longitudinal girder. The top mast can have a maximum height of 6 meters.

Brief description of the drawings

[0008] The invention will be explained in greater detail by reference to exemplary embodiments shown in the drawings, in which:

Fig.1 shows a top view of an antenna installation according to an embodiment of the invention.
Fig.2 shows a side view of an antenna installation according to an embodiment of the invention.

Detailed description of the invention

[0009] For the purpose of teaching of the invention, preferred embodiments of the method and system of the invention are described in the sequel. It will be apparent to the person skilled in the art that other alternative and equivalent embodiments of the invention can be conceived and reduced to practice without departing from the true spirit of the invention, the scope of the invention being only limited by the claims as finally granted.

Preferred embodiment

[0010] The longitudinal girder (1) can be placed so that drilling of holes is not necessary, since the construc-

tion elements are clipped together.
The idea is now to add a cantilever (2) and a central top mast (4) and thus create a compact unit.
The central mast should not exceed a height of 6 metres.

[0011] This combination has become possible due to coverage measurements, which have proved that the area to be kept free of obstacles on the roof of the building can be considerably smaller than originally assumed, in order to cover areas with many buildings. Should the coverage be shadowed it can be filled with reflections. Thus lower antennas can be set up even behind antennas of other network operators.

[0012] With this compact combination base frame considerable infrastructure costs can be saved

- antenna cables between cabinet and antenna girder
- cable paths
- mast head amplifier
- paths to the corner pole
- safety facilities
- roof lights
- various lightning protection devices

Claims

1. A method for installing an antenna in which the method comprises the following steps

   placing a longitudinal girder (1) by frictionally connecting the longitudinal girder to a base frame (3);
   connecting a cantilever (2) and a central top mast (4) to the longitudinal girder (1).

2. Method according to claim 1 in which the longitudinal girder (1) is clamped to the base frame.

3. Method according to claim 1 or 2 in which the central top mast (4) has a maximum height of 6 meters.

4. Method according to claims 1-3 in which the base frame (3) is a base frame to which a cabinet (5) of the antenna is connected.

5. A system for installing an antenna in which the system comprises

   a longitudinal girder (1) which is frictionally connected to a base frame (3);
   a cantilever (2) and a central top mast (4) which are connected to the longitudinal girder (1).

6. System according to claim 5 in which the longitudinal girder (1) is clamped to the base frame (3).

7. System according to claim 5 or 6 in which the central top mast (4) has a maximum height of 6 meters.

8. System according to claims 5-7 in which the base frame (3) is a base frame to which a cabinet (5) of the antenna is connected.

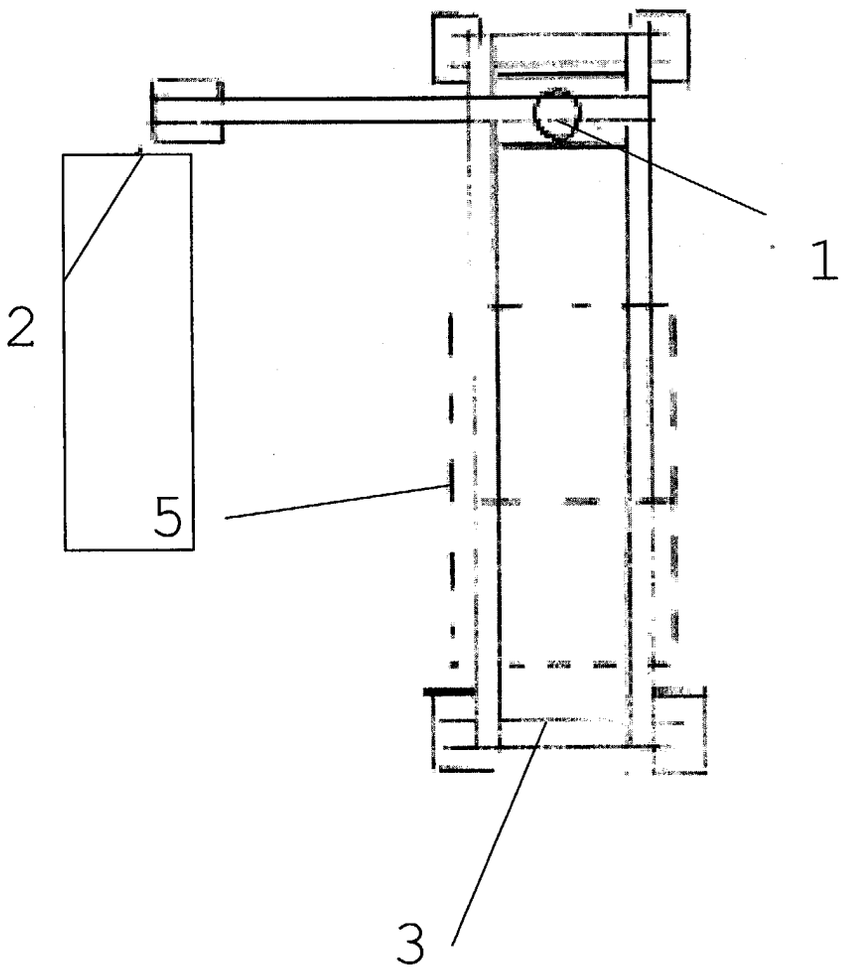

Fig.1

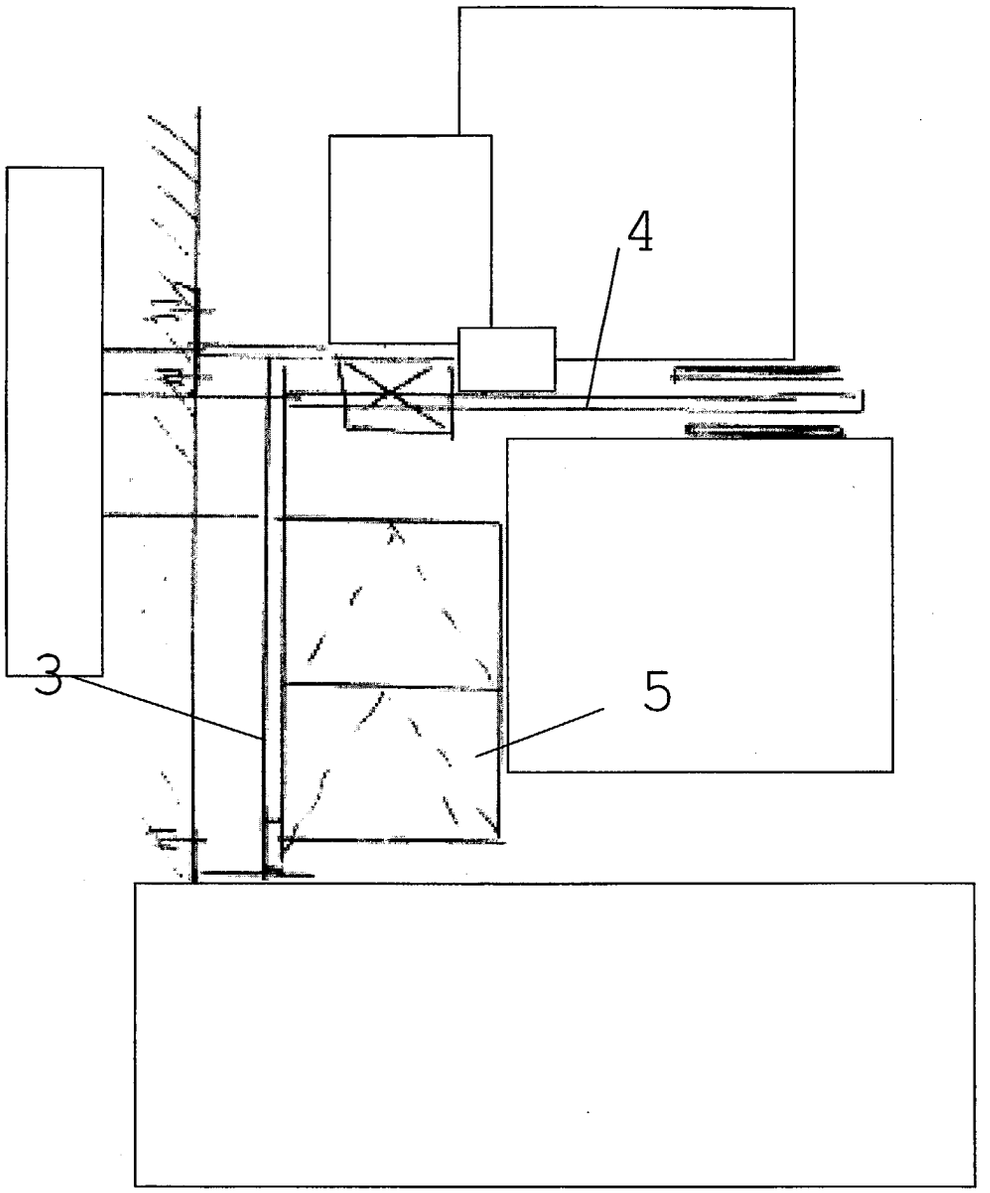

Fig.2

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EUROPEAN SEARCH REPORT

Application Number
EP 03 07 6698

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	WO 03 001628 A (BANZHAF JOHANN) 3 January 2003 (2003-01-03) * the whole document * ---	1-8	H01Q1/12
A	US 4 649 675 A (MOLDOVAN NICHOLAS ET AL) 17 March 1987 (1987-03-17) * the whole document * ---	1-8	
A	DE 100 00 884 A (KORFLUER REINHOLD) 9 August 2001 (2001-08-09) * the whole document * -----	1-8	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

H01Q

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	17 October 2003	Moumen, A

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 07 6698

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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17-10-2003

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82