

(19) **DANMARK**



Patent- og
Varemærkestyrelsen

(10) **DK/EP 1536618 T3**

(12) **Oversættelse af
europæisk patentskrift**

-
- (51) Int.Cl.: **H 04 M 1/725 (2006.01)** **H 04 M 1/247 (2006.01)**
- (45) Oversættelsen bekendtgjort den: **2015-04-27**
- (80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2015-01-28**
- (86) Europæisk ansøgning nr.: **04026246.1**
- (86) Europæisk indleveringsdag: **2004-11-05**
- (87) Den europæiske ansøgnings publiceringsdag: **2005-06-01**
- (30) Prioritet: **2003-11-25 DE 10355364**
- (84) Designerede stater: **AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LU MC NL PL PT RO SE SI SK TR**
- (73) Patenthaver: **Vodafone Holding GmbH, Mannesmannufer 2, 40213 Düsseldorf, Tyskland**
- (72) Opfinder: **Fassmer, Jens, Linner Strasse 14, 40668 Meerbusch, Tyskland**
Jantsch, Peter, Almende 101, 41468 Neuss, Tyskland
Carter, Phillip, 6 Springdale, Wallingford OX10 0HQ, Storbritannien
- (74) Fuldmægtig i Danmark: **Zacco Denmark A/S, Arne Jacobsens Allé 15, 2300 København S, Danmark**
- (54) Benævnelse: **Koblingsindretning til skift mellem video- og talekommunikation ved mobile radioterminaler**
- (56) Fremdragne publikationer:
EP-A- 0 796 026
US-A- 6 009 336
US-A1- 2001 044 321
US-B1- 6 466 202

Technical Field

The invention relates to a mobile terminal, especially for the GSM and UMTS standard, which is designed for both voice and video communication and comprises a switching mechanism which switches the video or image communication on or off while the voice communication is running.

State of the art

Especially through the use of digital technology and the increase of transmission capacities it is now possible to transmit not only acoustic signals but also video signals over mobile networks, which function particularly according to the GSM (= Global Service for Mobile Communications) and UMTS standard (= Universal Mobile Telecommunications System). Thereby a video communication between two mobile terminal subscribers can be established, provided that the mobile terminals are designed therefore. In this respect it applies the more data can be transmitted in a time interval the better is the image quality, since the resolution is in direct correlation to the amount of data transferred.

The costs of the transfer usually depend on the amount of data transferred. In case of a "video call" considerable fees can accumulate.

Regarding the existing video capable mobile terminals a connection can be established either as a video call or as a pure voice call. The subscriber who wishes a video call dials for this the number of the communication partner and activates the communication establishment by choosing a menu option or a corresponding assigned button. To obtain a traditional call the same number is dialed, but by choosing the menu option or a corresponding assigned button. However, the connection always has to be terminated if switching between the both modes is desired. A switching of the modes without a disconnection is not provided by conventional devices.

It is further known to create images with digital cameras, which are incorporated into a mobile terminal, and send these as a MMS (= Multimedia Message Service) possibly together with a text message. Drawback of this communication type is that

the subscribers do not have a direct contact to each other. The contact always takes place time-delayed. It can therefore not replace a direct connection between subscribers, like a call or a video call.

5 In US patent US 6,009,336 a mobile terminal with two housings is disclosed, which are coupled to each other via a detachable and pivotable interlocking. According to the coupling and choosing of control elements by the user the mobile terminal is switched into different operating modes. Thereby for example during an existing connection a video communication to another partner can be initiated. A camera of the mobile terminal is switched on and corresponding images of the user are sent
10 via the mobile network to the other partner. In the video call mode additional to the voice, images are transferred via the existing connection. By selecting of a further control element of the mobile terminal the mobile terminal is reset to a voice-call mode.

15 In EP 0 796 026 A2 a housing for a mobile terminal is described, which comprises a camera with a cover. By opening the cover a bidirectional video connection between a called terminal and the mobile terminal is activated. For that the call must be connected and be accepted from the opposite party.

US 6,466,202 B1 discloses a further mobile terminal with a switch to operate a call. If a called terminal supports video calls automatically a video communication is established via the telephone connection. With a further switch the video
20 communication is terminated and the connection is terminated.

Disclosure of the invention

The object of the invention is therefore to provide a mobile terminal designed for voice and video or image communication, which avoids the disadvantages of the
25 prior art and which can change between the voice and video communication without interruption of the connection.

According to the invention the object is solved by a mobile terminal, especially for the GSM and UMTS standard, which is designed for both voice and video or image communication and comprises a switching mechanism, which switches the video or

image communication on or off while the voice communication is running, wherein the mobile terminal is designed in such a way, that upon actuation of the switching mechanism a voice call is held and a video call will be built up in addition to the held voice call.

- 5 Preferably the switching mechanism connects the voice and video communication in parallel. By this measure the voice communication as well as the video or image communication is maintained.

A preferred embodiment of the invention results in that a switch button, switch lever or a menu item of a menu is provided for the actuation of the switching mechanism.

- 10 In this way the user can switch between both communication modes at will by a simple manual actuation. Alternatively or additionally to the manual switching mechanism means for voice control are provided, by means of which the switching mechanism is controlled.

- 15 Further advantages result from the subject-matter of the dependent claims as well as the figures and the corresponding description.

Brief description of the drawing

Fig. 1 shows in a schematic sketch a few inventive mobile terminals, which communicate via a mobile network.

- 20 Fig. 2 shows a diagram with respect to the amount of data/time when switching on and off the video or image mode.

Fig. 3 shows a diagram for switching on video communication in addition to voice communication.

Preferred Embodiment

In Fig. 1 a mobile radio network is referred to with 10. The mobile radio network 10 is symbolically represented as a radio mast. Over the mobile radio network 10 two mobile subscribers A and B communicate with each other. Therefore they have mobile terminals 12 and 14. The mobile terminals 12 and 14 are designed for a transmission of a video communication. Therefore they each have a digital camera 16, 18, which creates the video data. The digital cameras 16, 18 are in the present embodiment integrated into the housing 20, 22 of the mobile terminals 12, 14. But the digital cameras 16, 18 can generally be designed as separate components, which are connected to the mobile terminals 12, 14 for a data transmission over the mobile radio network 10.

The mobile terminals 12, 14 each have a display 24, 26. The displays 24, 26 support graphical animation. They are thus able to process video data. On each display 24 or 26 an image 36, 38 of the mobile telephone subscriber A respectively B is shown. Further the mobile terminals each have a microphone 28, 30 for voice input and a loudspeaker 32, 34 for voice output.

The mobile terminals 12, 14 further each comprise a switching mechanism 40 and 42 with switch buttons 40a respectively 42a. Below the switching mechanism 40, 42 in each case a control panel is located, with which the mobile terminals 12, 14 can be controlled. In addition the mobile terminals 12, 14 can be controlled by a voice control. The commands given over the microphone 28 or 30 are recognized by a not shown processor as commands and executed accordingly.

With the switching means 40, 42 of the present embodiment three different connection variants are possible:

The first variant is that with actuation of the switch button 40a respectively 42a the video connection or the voice connection is switched on or off automatically. In doing so e.g. the corresponding number for a voice call is dialed. The mobile terminal 12 respectively 14 obtains the number for the video call or for the voice call via a list of already placed calls or from the send CLI (= Calling Line Identification), which is send via the connection with the remote station. In case that different numbers are used for video and voice calls, the video respectively voice number is derived out of an address database of the mobile terminals 12, 14.

The second variant is that with actuation of the switch buttons 40a, 42a the voice call is hold. In addition to the held voice call then a video call is set up. After a successful video call the voice call is either terminated or held during the whole video call to minimize a dead time during the changeover. The number for the video call or for the voice call is as well obtained by the mobile terminal 12 respectively 14 over a list of already placed calls or from a send CLI. In case that different numbers are used for video and voice calls, the video respectively voice number is derived out of an address database of the mobile terminals 12, 14.

In a third variant a video call is set up parallel to the voice call or to the video call a voice call is set up by actuating the switch buttons 40a, 42a. The voice connection can be maintained or be terminated afterwards too. The necessary numbers for the connection are derived according to the previous variants.

In Fig. 2 a diagram with respect to the amount of data/time when switching on and off the video or image mode is shown. On the ordinate 46 the capacity respectively amount of data and on the abscissa 44 the time respectively call duration is depicted. The scaling is chosen arbitrarily and only illustrates the circumstances of the case. During the video transmission significantly more data have to be transmitted than during the voice transmission. In case of a continuously video communication the level of the transmitted data would be at the dashed line 48. Accordingly in case of a continuously voice transmission the level of the transmitted data would be at the dashed line 50. Continuous graph 52 shows the changing of the transmitted amount of data during a switching between voice and video call.

Fig. 3 shows a diagram 54 with a time flow of two different switching operations 56, 58 when a switching on a video communication 60. At the first switching operation 56 it is switched from a pure voice communication 62 to a video communication 60. Thereby the voice component 62 is integrated into the data stream of the video communication 60, that is only one channel with a corresponding bandwidth is used. At the second switching operation 58 the video communication 60 is also switched in addition to the voice communication 62. At this the video and voice data are provided in two separate channels. The voice data of the voice

communication 62 are not contained in the data stream of the video communication 60.

Patentkrav

- 5
1. Mobil radioterminal (12, 14), især til GSM- og UMTS-standarden, hvor den mobile radioterminal er udformet både til tale- og video- eller billedkommunikation og har en koblingsmekanisme (40, 42) til rådighed, som tilkobler eller frakobler video- eller billedkommunikationen til talekommunikationen, **kendetegnet ved, at** den mobile radioterminal (12, 14) er udformet på en sådan måde, at der, når koblingsmekanismen (40, 42) aktiveres, holdes et taleopkald, og der opbygges et videoopkald til det holdte taleopkald.
- 10
2. Mobil radioterminal (12, 14), som er udformet både til tale- og videokommunikation, ifølge krav 1, **kendetegnet ved, at** koblingsmekanismen (40, 42) parallelkobler tale- og videokommunikationen.
- 15
3. Mobil radioterminal (12, 14), som er udformet til både tale- og videokommunikation, ifølge et af kravene 1 eller 2, **kendetegnet ved, at** der er tilvejebragt en kontaktknap, -arm (40a, 42a) eller en menuregistrering af en menu til aktivering af koblingsmekanismen (40, 42).
- 20
4. Mobil radioterminal (12, 14), som er udformet til både tale- og videokommunikation, ifølge et af kravene 1 til 3, **kendetegnet ved, at** der er tilvejebragt midler til talestyring (28, 30), med hvilke koblingsmekanismen (40, 42) styres.

25

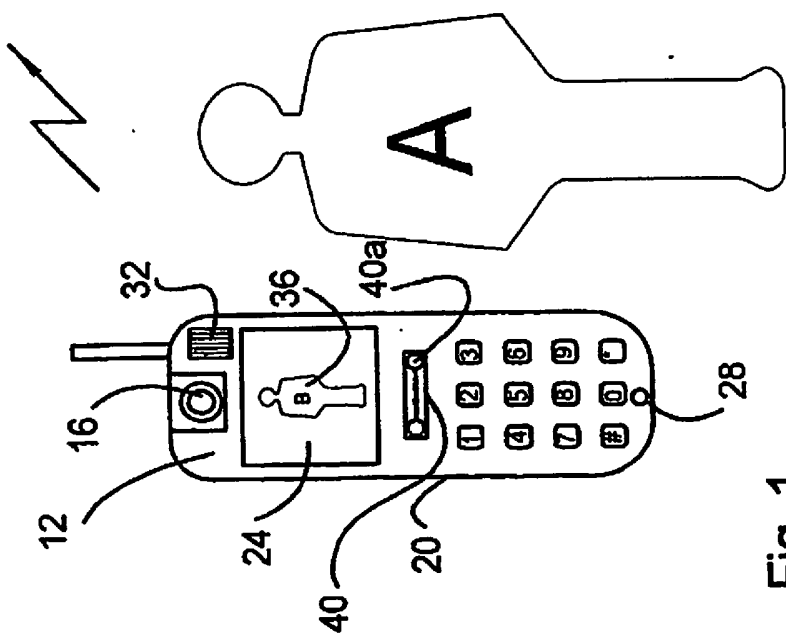
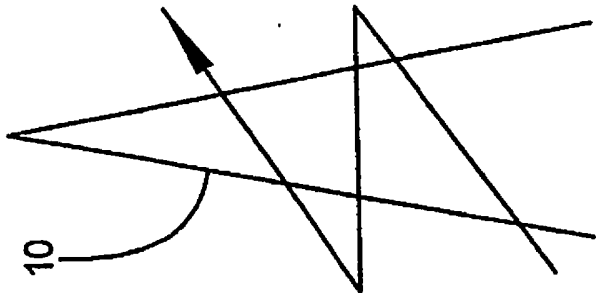
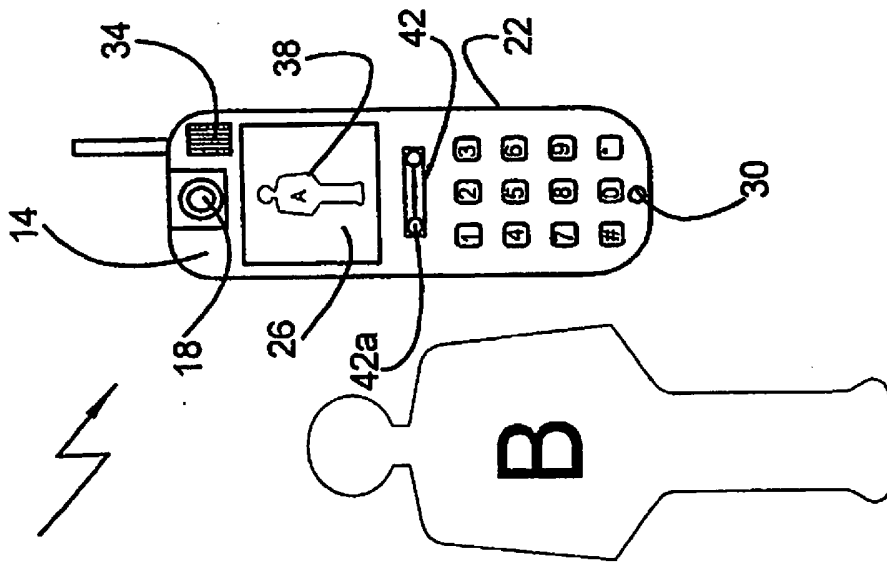


Fig. 1

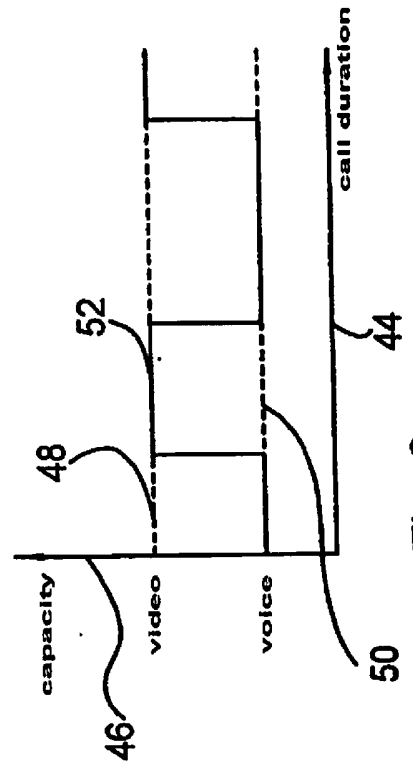


Fig. 2

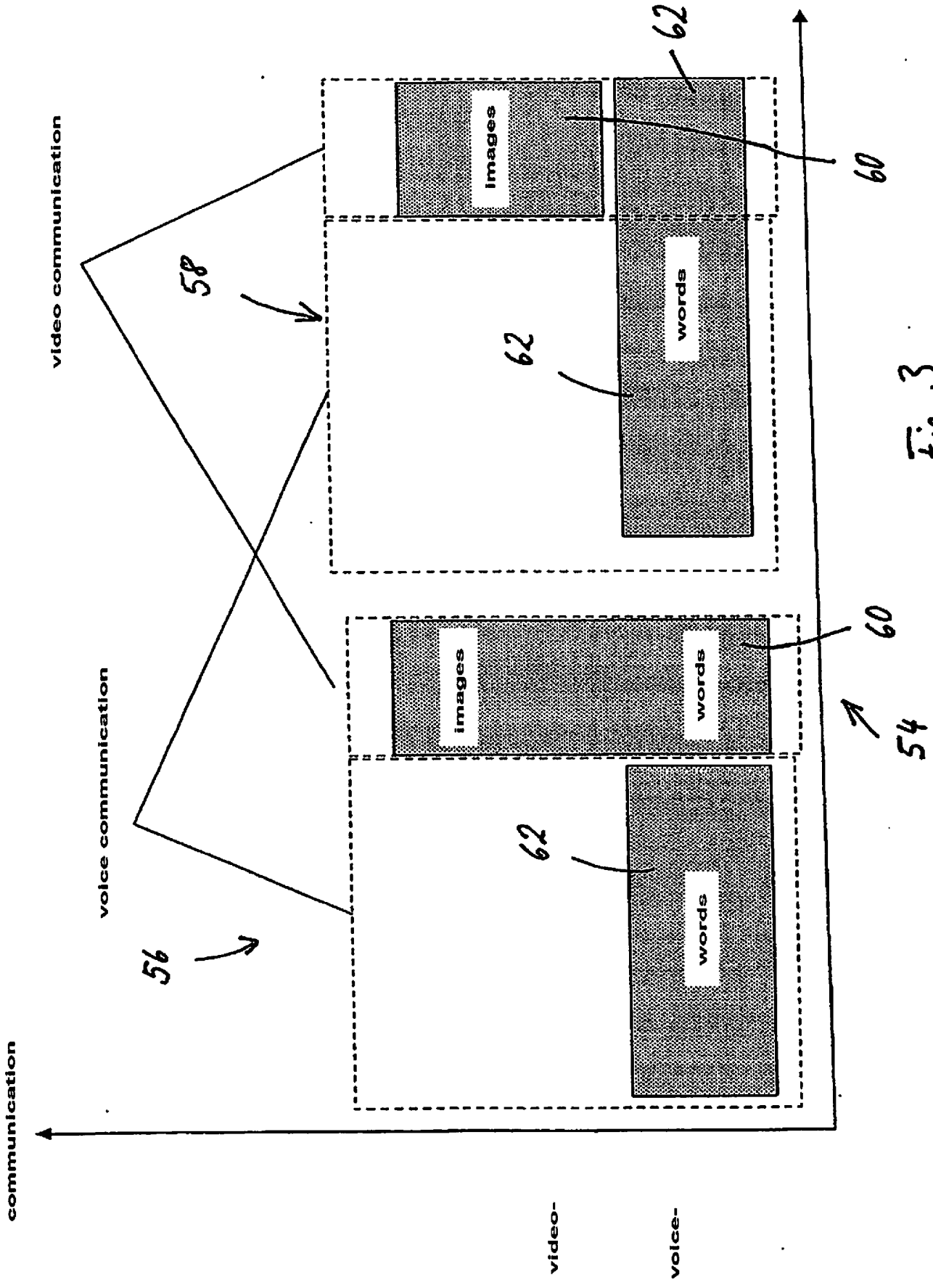


Fig. 3