

SUPPORT APPARATUS FOR PORTABLE COMMUNICATION DEVICES
ABLE TO BE APPLIED ON A MOTORCYCLE

The present invention relates to a support
5 apparatus for portable communication devices, for
example cellular phones, smartphones and satellite
navigators, able to be applied in particular on a
motorcycle.

A satellite navigator is a digital electronic
10 device provided with the capability of receiving the
GPS (Global Positioning System) radio satellite signal,
integrated with a road database system. A satellite
navigator is designed to assist the driver of a vehicle
in road navigation, indicating interactively to him/her
15 the route to be followed to reach any destination pre-
set by the driver him/herself starting from his/her
initial position.

A smartphone is a transmitting and receiving
mobile radio device with computation, memory and data
20 connection capabilities, based on an operating system
for mobile devices and often provided with its own
satellite navigation system. Hence, a smartphone can be
used by the driver of a vehicle not only to verify the
arrival of telephone calls, but also to set and
25 identify a determined route.

Containers and/or support devices are known, which
enable the driver of a motor vehicle, typically an
automobile or a truck, temporarily to fix a smartphone
and/or a satellite navigator on the windshield or on
30 the dashboard of the motor vehicle. In this way, the
driver of the motor vehicle can make use of determined
features of the aforesaid devices without compromising

driving safety.

Recently, containers and/or support apparatuses have been proposed on the market which make it possible to temporarily fix a smartphone and/or a satellite
5 navigator on the handlebar of a motorcycle. The motorcyclist, too, then, can verify the arrival of telephone calls or use the satellite navigation feature of a smartphone while riding his/her own motorcycle.

These containers for smartphones and/or satellite
10 navigators able to be applied on motorcycles can be both integrated on the handlebar of the motorcycle, and provided with a hooking system designed to be reversibly coupled, in the best possible way, with the components of the steering system of one or more
15 different motorcycles. Moreover, since smartphones and satellite navigators having highly different shapes and dimensions exist on the market, containers must be adequately dimensioned to effectively retain most smartphones and satellite navigators present on the
20 market.

For example, a known embodiment of a container for smartphones and/or satellite navigators consists of a small semi-rigid bag. Hence, it is readily apparent that there is a need to provide bags of various
25 dimensions in relation to the dimensions of the very numerous models of smartphones and satellite navigators present on the market.

In addition, known bags are normally provided with at least one transparent wall that enables users to
30 view the screen of the smartphone and/or of the satellite navigator when it is housed in the respective bag. While on one hand this transparent wall provides

protection for the device contained in the bag, on the other hand it may compromise the visibility of the screen of the device itself, for example because of the presence of light reflexes or of condensation.

5 An object of the present invention therefore is to provide a support apparatus for portable communication devices, for example cellular telephones, smartphones and satellite navigators, able to be applied in particular on a motorcycle, which is capable of solving
10 the aforementioned drawbacks of the prior art in an extremely simple, economical and particularly functional manner.

 In detail, an object of the present invention is to provide a support apparatus for portable
15 communication devices able to be applied on a motorcycle that makes it possible to fix devices of different shape and dimensions in a simple and intuitive manner.

 Another object of the present invention is to
20 provide a support apparatus for portable communication devices able to be applied on a motorcycle that makes it possible to improve the visibility of the device.

 These and other objects according to the present invention are achieving by providing a support
25 apparatus for portable communication devices, for example cellular phones, smartphones and satellite navigators, able to be applied in particular on a motorcycle, as set forth in claim 1.

 Further features of the invention are described by
30 the dependent claims, which are an integral part of the present description.

 The features and advantages of a support apparatus

for portable communication devices able to be applied on a motorcycle according to the present invention will be more readily apparent from the following exemplifying and not limiting description, referred to
5 the accompanying schematic drawings in which:

figure 1 is a perspective view of a preferred embodiment of the support apparatus for portable communication devices according to the present invention, whereon a generic smartphone is retained;

10 figure 2 is another perspective view of the apparatus of figure 1, without the presence of the smartphone;

figure 3 is another perspective view of the apparatus of figure 1, without the presence of the
15 smartphone;

figure 4 is an exploded view showing all the components of the apparatus of figure 1;

figures 5 and 6 show the positioning of some components of the apparatus of figure 1 which are not
20 visible when the apparatus is fully assembled; and

figure 7 shows the operation of the apparatus of figure 1 in a configuration that precedes the positioning of the smartphone.

With reference to the figures, a preferred
25 embodiment is shown of the support apparatus for portable communication devices according to the present invention, indicated in its entirety with the reference number 10. The apparatus 10 comprises an upper fixing block 12, arranged to receive and retain a generic
30 portable communication device 100, for example a smartphone or a satellite navigator, and a lower fixing block 14, arranged to be removably fixed on a generic

motorcycle. The lower fixing block 14 can comprise a clamp 16 arranged to be rigidly fixed around a tubular component of the motorcycle, for example a component of the handlebar of such motorcycle.

5 The upper fixing block 12 and the lower fixing block 14 are mutually joined by an articulated connecting means 18 (figure 3), for example a ball joint. The upper fixing block 12 is provided with a resting base 20 for the portable communication device
10 100. The resting base 20 is substantially flat and provided with a pair of lateral edges 20A and 20B substantially parallel to one another, as well as with a front edge 20C and a rear edge 20D, also substantially parallel to one another.

15 The upper fixing block 12 comprises a plurality of hooking means 22, 24 and 26 configured to retain the portable communication device 100 on the respective resting base 20. In detail, the upper fixing block 12 comprises a pair of lateral hooking means 22 and 24,
20 positioned respectively at the intersection between the lateral edges 20A and 20B and the rear edge 20D of the resting base 20. Each lateral hooking means 22 and 24 has substantially "L" shape and it is thus configured to retain a portable communication device 100 at two
25 respective corners.

 The upper fixing block 12 then comprises at least one front hooking means 26, positioned at the front edge 20C of the resting base 20. Each front hooking means 26 has substantially flat shape and it is thus
30 configured to retain a portable communication device 100 at a lateral edge thereof. Preferably, a single front hooking means 26 is provided, positioned at the

median axis, or central axis, of the front edge 20C of the resting base 20.

As shown in figure 3, each lateral hooking means 22 and 24 is provided below, i.e. below the resting
5 base 20, with a respective opening lever 28 and 30. Each lateral hooking means 22 and 24 is provided with
respective elastic connecting elements to the resting base 20. Each lateral hooking means 22 and 24 is then
arranged to move from a first idle configuration, in
10 which said lateral hooking means 22 and 24 are
substantially in contact with the respective lateral
edges 20A and 20B of the resting base 20 and in which
the respective elastic connecting elements are
substantially not biased (figure 2), to a second
15 intermediate configuration, in which the respective
elastic connecting elements of each lateral hooking
means 22 and 24 are biased to move away, by a
predefined and variable portion of length, said lateral
hooking means 22, 24 from the respective lateral edges
20 20A, 20B of the resting base 20 (figure 1).

Similarly, front hooking means 26, too, is
provided with respective elastic connecting elements to
the resting base 20. The front hooking means 26 is in
turn arranged to move from a first idle configuration,
25 in which such front hooking means 26 is substantially
in contact with the front edge 20C of the resting base
20 and in which the respective elastic connecting
elements are substantially non biased (figure 2), to a
second intermediate configuration, in which the elastic
30 connecting elements of the front hooking means 26 are
biased to move away, by a predefined and variable
portion of length, such front hooking means 26 from the

front edge 20C of the resting base 20 (figure 1).

It is thus possible to house and retain on the resting base 20 a portable communication device 100 of any dimensions in length and width, although
5 substantially square or rectangular (as in fact are nearly all portable communication devices available on the market). The particular "L" shape of the lateral hooking means 22 and 24 makes superfluous the presence of additional hooking means positioned at the rear edge
10 20D of the resting base 20, which is the edge oriented towards the rider of the motorcycle. The visibility of the screen of the portable communication device 100 is thus total.

With reference to figure 4, which shows all the
15 components of the apparatus 10, it is noted that the resting base 20 consists of a lower plate 32 and of an upper plate 34, mutually joined by screws 48 with respective clamping nuts 50. Both in the lower plate 32, and in the upper plate 34 of the resting base 20
20 lateral 36 and front 38 linear guides are obtained, inside which the elastic connecting elements of each lateral hooking means 22 and 24 and of the front hooking means 26 respectively slide.

In detail, the elastic connecting elements of each
25 lateral hooking means 22, 24 are made of at least one lateral guide rod 40 and of a respective return spring 42, both operatively connected to a respective lateral hooking means 22, 24. Similarly, the elastic connecting elements of the front hooking means 26 are made of at
30 least one front guide rod 44 and of a respective return spring 46, both operatively connected to such front hooking means 26.

Preferably, each lateral hooking means 22, 24 is provided with two respective lateral guide rods 40, parallel to one another, whereas the front hooking means 26 is provided with three front guide rods 44, at least two of which are parallel to one another. Also preferably, each lateral hooking means 22 and 24 and front hooking means 26 is fixed to the respective lateral guide rods 40 and front guide rods 44 by screws 48.

The return springs 42 for the two lateral guide rods 40 are fitted around said lateral guide rods 40. The assemblies thus made are then inserted, opposite two by two, into the lateral linear guides 36 obtained in the lower plate 32 and in the upper plate 34 of the resting base 20. The lateral guide rods 40 are screwed two by two to the opening levers 28 and 30. Each screw 48 is screwed on a thread 52 obtained on a proximal end of each lateral guide rod 40. On the distal end of each lateral guide rod 40 the lateral hooking means 22 and 24 are screwed. Lastly, the positioning of the lateral guide rods 40 is guaranteed by screwing the lower plate 32 to the upper plate 34. The positioning of these components, which are not visible when the apparatus 10 is fully assembled, is shown in figure 5.

The mounting of the front hooking means 26, which is guided by three front guide rods 44, is also similar. On the two front guide rods 44, parallel to each other, are respectively fitted the two return springs 46, whereas the assemblies thus constituted are positioned in the two respective front linear guides 38 obtained in the lower plate 32 and in the upper plate 34 of the resting base 20. To the front guide rods 44

is then screwed the front hooking means 26 and the position of the entire assembly thus constituted is assured fixing the ball joint 18 to the resting base 20. The positioning of these components, which are not
5 visible when the apparatus 10 is fully assembled, is shown in figure 6.

The operation of the apparatus 10 takes place in the following way. By moving the opening levers 28 and 30 closer to each other, a corresponding move of the
10 lateral hooking means 22 and 24 away from the respective lateral edges 20A and 20B of the resting base 20 is generated, with the consequent compression of the return spring 42. It is then possible to act manually on the front hooking means 26, moving it away
15 from the front edge 20C of the resting base 20 generating the compression of the respective return springs 42. This configuration of the apparatus 10 is shown in figure 7.

At this point, it is possible to rest portable
20 communication devices 100 of various dimensions on the resting base 20, between the lateral hooking means 22 and 24 and the front hooking means 26. At the time the opening levers 28 and 30 and the front hooking means 26 are released, the reaction of the various return
25 springs 42 tends to push all the lateral hooking means 22 and 24 and front hooking means 26 so as to abut against the respective edges and/or corners of the portable communication device 100, bringing all hooking means 22, 24 and 26 to the third configuration of
30 closure or of engagement with such portable communication device 100. The portable communication device 100 is then retained and blocked on the

apparatus 10, as shown for example in figure 1.

To improve the seal and the positioning of the apparatus 10 on the motorcycle, both at least the upper plate 34 of the resting base 20, and all lateral
5 hooking means 22, 24 and front hooking means 26 are obtained by bi-injection moulding with two different types of materials (plastic and rubber), so that the part in contact with the portable communication device 100 is made of rubber. Changing the length of the guide
10 rods 40 and 44 and the shape of the lateral hooking means 22, 24 and front hooking means 26 it is possible to create multiple versions of the apparatus 10, so as to adapt it in future also to portable communication devices 100 that will have different dimensions from
15 the current ones. The spherical shape of the articulated connecting means 18 allows an effective capability of orienting the resting base 20, so as to optimise the visibility of the screen with respect to the riding position of the motorcycle rider.

20 It was thus seen that the support apparatus for portable communication devices able to be applied on a motorcycle according to the present invention achieves all the objects set out above.

The support apparatus for portable communication
25 devices able to be applied on a motorcycle of the present invention thus conceived is susceptible to many modifications and variants, all falling within the same inventive concept; furthermore, all details can be replaced by equivalent technical elements. In practice,
30 the materials used, as well as their shapes and dimensions, can be of any type according to the technical requirements.

The scope of protection of the invention is therefore defined by the appended claims.

CLAIMS

1. Support apparatus (10) for portable communication devices comprising:

- an upper fixing block (12), arranged to receive and retain a generic portable communication device (100);
and
- a lower fixing block (14), arranged to be removably fixed on a motorcycle,

wherein the upper fixing block (12) and the lower fixing block (14) are mutually joined by an articulated connecting means (18) and wherein the upper fixing block (12) comprises:

- a resting base (20) for the portable communication device (100), said resting base (20) being substantially flat and being provided with a pair of side edges (20A, 20B) substantially parallel to each other, as well as with a front edge (20C) and a rear edge (20D), also substantially parallel to each other, the resting base (20) being made of a lower plate (32) and of an upper plate (34), mutually joined by screws (48) with respective clamping nuts (50);
- a pair of side hooking means (22, 24), respectively placed at the intersection between the side edges (20A, 20B) and the rear edge (20D) of the resting base (20);
and
- at least one front hooking means (26), placed at the front edge (20C) of the resting base (20),
wherein each side hooking means (22, 24) and said at least one front hooking means (26) are provided with respective elastic connecting elements (40, 42; 44, 46) on the resting base (20), each of said side hooking means (22, 24) and said at least one front hooking means (26) being arranged to move between:
 - a first idle configuration, wherein said side hooking

means (22, 24) are substantially in contact with the respective side edges (20A, 20B) of the resting base (20), wherein said at least one front hooking means (26) is substantially in contact with the front edge (20C) of the resting base (20) and wherein the respective elastic connecting elements (40, 42; 44, 46) are substantially not biased;

- a second intermediate configuration, wherein the respective elastic connecting elements (40, 42; 44, 46) of each side hooking means (22, 24) and of said at least one front hooking means (26) are biased in order to move away, for a predefined and variable section of length, said side hooking means (22, 24) from the respective side edges (20A, 20B) of the resting base (20) and said at least one front hooking means (26) from the front edge (20C) of the resting base (20), and wherein it is possible to rest the portable communication device (100) on the resting base (20), between the side (22, 24) and front (26) hooking means; and
- a third closing configuration, wherein the reaction of the elastic connecting elements (40, 42; 44, 46) pushes all the side (22, 24) and front (26) hooking means so as to abut against respective edges and/or corners of the portable communication device (100), which is then retained and blocked on the apparatus (10)

characterized in that both in the lower plate (32) and in the upper plate (34) of the resting base (20) side (36) and front (38) linear guides are obtained, inside which the elastic connecting elements (40, 42; 44, 46) of each side hooking means (22, 24) and of said at least one front hooking means (26) respectively slide, the elastic connecting elements (40, 42) of each side hooking means (22, 24) being made of at least one side guide rod (40) and of a respective return spring (42), both operatively connected to a respective side hooking means (22, 24),

wherein each side hooking means (22, 24) is provided below the resting base (20) with a respective opening lever (28, 30), by moving the opening levers (28, 30) closer to each other, a corresponding movement of the lateral hooking means (22, 24) away from the respective lateral edges (20A, 20B) of the resting base (20) being generated with the consequent compression of the return spring (42).

2. Apparatus (10) according to claim 1, characterized in that each side hooking means (22, 24) has substantially the shape of a L and is therefore configured to retain a portable communication device (100) at two respective corners.

3. Apparatus (10) according to claim 1 or 2, characterized in that each front hooking means (26) has substantially a flat shape and is therefore configured to retain a portable communication device (100) at one side edge thereof.

4. Apparatus (10) according to claim 3, characterized in that each front hooking means comprises a single front hooking means (26), placed at the median axis, or central axis, of the front edge (20C) of the resting base (20).

5. Apparatus (10) according to any one of claims 1 to 4, characterized in that the elastic connecting elements (44, 46) of said at least one front hooking means (26) are made of at least one front guide rod (44) and of a respective return spring (46), both operatively connected to said at least one front hooking means (26).

6. Apparatus (10) according to claim 5, characterized in that each side hooking means (22, 24) is provided with two respective side guide rods (40), parallel to each other,

whereas said at least one front hooking means (26) is provided with three front guide rods (44), at least two of them parallel to each other.

7. Apparatus (10) according to claim 6, characterized in that the return springs (42) for the two side guide rods (40) are fitted around said side guide rods (40) and the assemblies created in this way are inserted, opposite two by two, in the side linear guides (36) obtained in the lower plate (32) and in the upper plate (34) of the resting base (20), wherein the side guide rods (40) are screwed two by two to the opening levers (28, 30), wherein each screw (48) is screwed on a thread (52) obtained on a proximal end of each side guide rod (40), wherein on the distal end of each side guide rod (40) the side hooking means (22, 24) are screwed and wherein the positioning of the side guide rods (40) is guaranteed by screwing the lower plate (32) to the upper plate (34).
8. Apparatus (10) according to claim 6 or 7, characterized in that on the two front guide rods (44) parallel to each other are respectively fitted the two return springs (46) and the assemblies created in this way are positioned in the two respective front linear guides (38) obtained in the lower plate (32) and in the upper plate (34) of the resting base (20), wherein said at least one front hooking means (26) is screwed on said front guide rods (44) and wherein the position of the total assembly created in this way is guaranteed by fixing the articulated connecting means (18) to the resting base (20).
9. Apparatus (10) according to any one of the previous claims, characterized in that both at least the upper plate (34) of the resting base (20) and all the side (22, 24) and front

(26) hooking means are obtained through bi-injection moulding with two different materials.

10. Apparatus (10) according to any one of the previous claims, characterized in that the articulated connecting means (18) is made by a ball joint.

11. Apparatus (10) according to any one of the previous claims, characterized in that the lower fixing block (14) comprises a clamp (16) arranged to be rigidly fixed around a tubular component of the motorcycle.