CLAIMS

1. Mobile support for an information acquisition instrument ~~(21)~~, said support comprising:

- a main cradle ~~(11)~~ which is subjected to a rising vertical motive force,
- a secondary cradle ~~(12)~~ to which there are connected a plurality of flexible mechanical links ~~(17)~~ for exerting a retention force that keeps the support balanced with respect to the vertical motive force, the lengths of the flexible mechanical links being modifiable in order to cause the support to move in a working volume, and
- an articulation ~~(13)~~ connecting the main cradle ~~(11)~~ to the secondary cradle ~~(12)~~,

~~characterized in that~~wherein the rising vertical motive force is buoyancy generated by a hollow body ~~(14)~~ connected to the main cradle ~~(11)~~ by flexible mechanical tethers ~~(15)~~ that are kept in a taut state by said buoyancy, the secondary cradle ~~(12)~~ being disposed beneath the main cradle ~~(11)~~ and the flexible mechanical tethers ~~(15)~~ allowing limited rotation of the hollow body ~~(14)~~ with respect to the main cradle ~~(11)~~ by action on the length of said tethers ~~(15)~~, the centre of said rotation being the centre of the hollow body ~~(14)~~.

2. Support according to ~~c~~claim 1, ~~characterized in that~~ wherein the articulation ~~(13)~~ comprises a gimbal in order that the orientation of the main cradle is kept constant with respect to the vertical direction by the vertical motive force.

3. Support according to either of ~~c~~claims 1 ~~and~~ or 2, ~~characterized in that~~wherein the articulation between the main

cradle ~~(11)~~ and the secondary cradle ~~(12)~~ has a degree of pivoting freedom about a vertical axis.

4. Support according to ~~c~~Claim 3, ~~characterized in that it comprises~~further comprising an actuator able to bring about a pivoting movement of the main cradle about the vertical axis.

5. Support according to any one of ~~c~~Claims 1 to 4, ~~characterized in that~~wherein the retention force is exerted on the secondary cradle ~~(12)~~ by at least three flexible mechanical links ~~(17)~~ that are each connected to a reference plane by one of their ends.

6. Support according to ~~c~~Claim 5, ~~characterized in that it comprises~~further comprising motors ~~(18)~~ that are located in the reference plane and are able to adjust the length of the flexible mechanical links ~~(17)~~ in order to move the support with respect to the reference plane.

7. Support according to any one of ~~c~~Claims 1 to 6, ~~characterized in that~~wherein the hollow body ~~(14)~~ is a balloon, the filling gas of which is helium.

8. Support according to any one of ~~c~~Claims 1 to 7, ~~characterized in that~~wherein the information acquisition instrument ~~(21)~~ is loaded onto a plate ~~(16)~~ fixed to the hollow body ~~(14)~~ associated with the main cradle ~~(11)~~, said plate ~~(16)~~ being counterbalanced by a counter-plate ~~(19)~~ symmetrical to the plate ~~(16)~~ with respect to the centre of the hollow body ~~(14)~~.

9. Support according to any one of ~~c~~Claims 1 to 8, ~~characterized in that~~wherein the flexible mechanical tethers ~~(15)~~ are secured to the wall of the hollow body ~~(14)~~ by one of their ends and, by their other end, to an adjusting device ~~(15a)~~ that is disposed on the main cradle ~~(11)~~ and acts on the length of said tethers ~~(15)~~

in order to produce a rotation of the hollow body ~~(14)~~ through a desired angle.

10. Support according to ~~c~~claim 9, ~~characterized in that~~wherein the adjusting device ~~(15a)~~ is able to produce a rotation of the hollow body ~~(14)~~ through an angle of between 0° and at least 90° in at least one meridian plane of the sphere.

11. Support according to any one of ~~c~~claims 1 to 10, ~~characterized in that~~wherein the connection between the main cradle ~~(11)~~ and the hollow body ~~(14)~~ is produced by means of at least two flexible mechanical tethers ~~(15)~~, the attachment points ~~(20)~~ of which to the hollow body ~~(14)~~ are located 180° apart on one and the same circle of the hollow body ~~(14)~~, the plane of which is at a distance from the centre of said hollow body ~~(14)~~, said circle being horizontal in a reference position of the hollow body ~~(14)~~ with respect to the main cradle ~~(11)~~.

12. Support according to ~~c~~claim 11, ~~characterized in that~~wherein each flexible mechanical tether ~~(15)~~ is associated with a guide element ~~(25)~~, the guide elements being carried on the wall of the hollow body ~~(14)~~ and being disposed on an equatorial circle of said hollow body which is in a plane parallel to the circle in which the attachment points ~~(20)~~ of the at least two flexible mechanical tethers ~~(15)~~ on the hollow body ~~(14)~~ are located.

13. Support according to ~~c~~claim 12, ~~characterized in that~~wherein each flexible mechanical tether ~~(15)~~, in the vicinity of its associated guide element ~~(25)~~, is covered with a sheath ~~(28)~~ that prevents friction of the tether ~~(15)~~ against the hollow body ~~(14)~~.

14. Support according to either of ~~C~~claims 12 ~~and or~~ 13, ~~characterized in that~~wherein each guide element ~~(25)~~ comprises at least one damping stop in order to prevent the inspected element being damaged by the support in the event of the hollow body ~~(14)~~ pressing against or striking said examined element.

15. Support according to any one of Claims 1 to 14, further comprising an instrumentation cradle that includes:

- a main platform ~~(106)~~ connected under the secondary cradle ~~(112)~~ by a cable ~~(103)~~,
- a winch ~~(111)~~ that is able to adjust the length of the cable ~~(103)~~, allowing a vertical movement of the main platform ~~(106)~~ with respect to the secondary cradle ~~(112)~~,
- an information acquisition instrument ~~(21)~~ carried by the platform.

16. Support according to ~~C~~claim 15, further including:

- a secondary platform ~~(102)~~, and
- a second articulation ~~(101)~~,

the secondary platform ~~(102)~~ being connected to the bottom of the main platform ~~(106)~~ by the second articulation ~~(101)~~, the acquisition instrument being suspended from the secondary platform ~~(102)~~.

17. Support according to ~~C~~claim 16, in which the secondary platform ~~(102)~~ further includes an actuator that is able to act on the acquisition instrument ~~(104)~~ in order to adjust an orientation of the acquisition instrument ~~(104)~~ with respect to the secondary platform ~~(102)~~.

18. Support according to any one of ~~c~~claims 1 to 17, in which the information acquisition instrument ~~(21)~~ comprises at least one instrument selected from the group formed by a video camera, a thermal imaging camera, a gas detector and a dimensional measurement sensor.

19. Support according to any one of ~~c~~claims 1 to 18, in which the hollow body is spherical or cylindrical.

20. Use of a support according to any one of c~~c~~laims 1 to 19 for examining and/or inspecting the state of the walls of a closed chamber or of a tank.

21. Use according to ~~c~~claim 20, ~~characterized in that~~wherein the tank examined and/or inspected is a tank for transporting liquefied natural gas, the wall of said tank comprising a primary metallic membrane.