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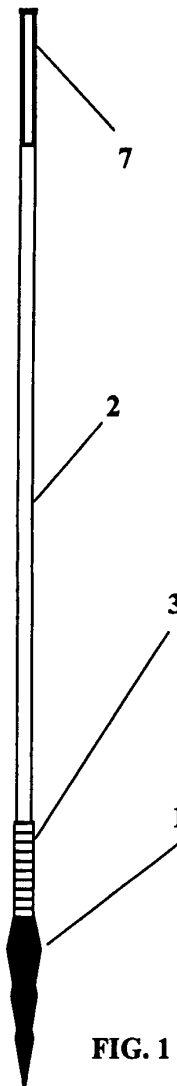
**20122 Milano (IT)**

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(54) **Articulated pole for ski slopes, reinforced**

(57) It is hereby described an articulated pole for ski slopes, of the kind including a ferrule to be driven into the snow or into the ground and an above-ground portion consisting of a tubular element connected to the base to the said ferrule by means of a joint which allows the said tubular element to bend after being hit, comprising strengthening elements of the free end portion of the said tubular element, consisting of a strengthening element fitted to the tubular element itself, at the top end or the free end portion of the pole.

Preferably, the said strengthening element consists of an extension of the cap which closes the top end portion of the pole.



**FIG. 1**

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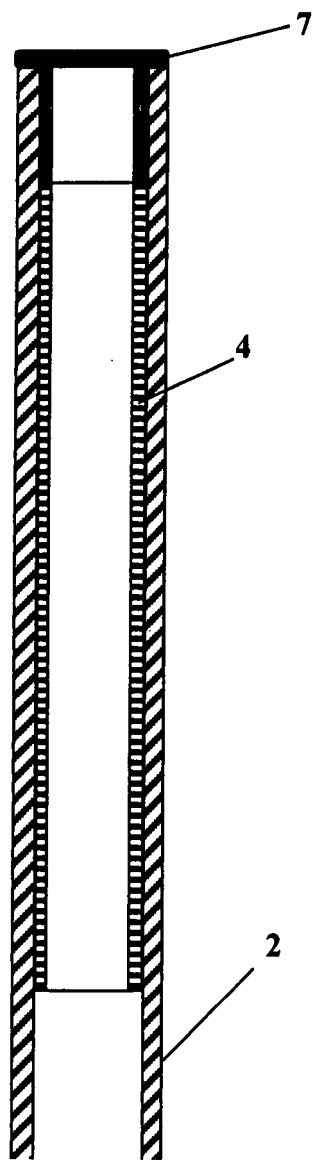


FIG. 2

## Description

**[0001]** This invention relates to an articulated pole for ski slopes, of the kind including a ferrule to be driven into the snow and an above-ground pole consisting of a tubular element connected to the said ferrule by a joint which allows the tubular element to bend after being hit, in which, in proximity to the top end portion of the pole, a strengthening element made in such a way as to strengthen this area is provided, in such a way as to avoid any possible break in the event the pole, after being hit, bangs against the ground.

**[0002]** More particularly, this strengthening element consists of a part of tube to be fitted to the top end portion of the pole, for example a tube which is fitted inside the pole in proximity to the free end portion, and secured according to known systems, for example by gluing, welding or similar method.

**[0003]** According to a preferred embodiment, this strengthening element may consist of an extension, also having a tubular shape, of the cap which closes the top end portion of the pole.

**[0004]** According to an alternative embodiment of the invention, the strengthening element may also consist of an outer protective case which is fitted on the top end portion of the pole, also secured according to known systems.

**[0005]** Also in this event, the case may be made in the shape of a jacket which forms a single body with the closing cap and which projects downwardly from the latter.

**[0006]** As is known, the slalom poles used to mark the track on the ski slopes substantially consist of a tubular element which stick out of the ground for a length of approximately 180-200 cm. and which is connected by a joint with an elastic return element to a ferrule which is driven into the snow or into the ground. If during a ski race a skier hits a pole, such pole may deflect and bend in such a way as to reduce the impact with the athlete, and then return in the erect position by means of the elastic return element, which usually consists of a spring, of the joint.

**[0007]** When the said poles are used to mark the track on ski slopes where sporting events take place, such poles are often subject to considerable hits.

**[0008]** Over the last years, in particular, the development of construction materials has allowed to manufacture skis which enable the athletes to reach considerably higher performances than in the past, with a noticeable progress in speed and, accordingly, in the intensity of the impact against the poles.

**[0009]** Furthermore, the new techniques allow the athletes to pass much closer to the pole, even brushing it, with the consequence that the impact does not occur any more between the athlete's arm and the central part of the pole, but often at the base, with the shin-bone or the ski boot which impacts the pole in proximity to the joint, and transmitting such an energy as to hustle the pole

against the ground.

**[0010]** In such event the portion of the tube which is subject to the higher strain is the peripheral one, that is the free end portion, since it is the one which impacts at higher speed and, as a consequence of it, it is the portion which is subject to the most frequent breakages.

**[0011]** The present invention seeks to overcome this drawback, by proposing an articulated pole for ski slopes, provided with a strengthening element capable of strengthening the end portion of the pole.

**[0012]** The solution shall take account of the requirements such poles must comply with, according to which the type approval rules prescribe that the tube must be made of a homogeneous material and without any projection, smooth, in such a way as to avoid any friction, and must be light but with a fixed weight/suppleness ratio in order to avoid the so called "whip" effect.

**[0013]** Any strengthening element of the pole shall be therefore as light as possible, in such a way as not to alter the behaviour of the pole itself.

**[0014]** For this purpose, according to the invention, the pole is fitted with a reinforcing element only at the free end portion, for a length which may vary from approx. 5-6 cm. up to approx. 40 cm.

**[0015]** The present invention will now be more particularly described, by way of example only, with reference to the accompanying figures, in which:

■ figure 1 is the view of a pole according to the invention;

■ figure 2 is the section of the end portion of the pole;

■ figure 3 is the section of the end portion of the pole, according to a different embodiment of the same idea of solution;

■ figure 4 is a view of the pole according to the invention;

■ figure 5 is the section of the end portion of the pole of figure 4;

■ figure 6, also in section, shows the end portion of the pole of figure 4, according to a different embodiment.

**[0016]** With reference to figures 1-3, the pole according to the invention consists of a ferrule 1, to be driven into the snow or into the ground and a tubular element 2 which forms the actual pole, connected to the ferrule by a flexible joint 3 which may consist, for example, of a spring, of a flexible cable anchored by means of springs to the ferrule and to the pole or of other known system and which brings the element 2 back to a substantially vertical position.

**[0017]** The top end portion of the pole 2 is closed by the cap 7.

**[0018]** The pole may be made of different materials, even if preferably a plastic material is used, offering the necessary characteristics of lightness, resistance and suppleness.

**[0019]** The pole has generally a diameter between 23

and 30 mm. and a length between 180 and 200 cm.

[0020] According to the invention, the pole is strengthened, at the top end portion, by an inner reinforced tube indicated with 4, fitted into the tubular element 2 and fixed according to known systems.

[0021] For example, the strengthening element 4 may be glued, welded, or made in a single body with the cap 7 which, in turn, is fitted to the pole under pressure, or by screwing or by other known systems.

[0022] As an alternative, this strengthening element may consist of the cap itself, which in such case has a proper length, as shown in figure 3.

[0023] A series of tests carried out by the applicant has proven that a strengthening element having a double length with respect to the tube diameter offers good results, with a considerable decrease of breakage cases further to impact with the ground.

[0024] The length of the strengthening element shall not, however, generally exceed 40 cm., since longer elements would increase too much the weight and therefore the inertia of the pole, with a consequent progressive decay of the lightness and suppleness characteristics of the said pole.

[0025] This solution, which provides for a strengthening of the end portion of the pole from the inside, turns out to be particularly suitable in case of poles used during the races due to the fact that, the external aspect of the pole being unaltered, the requirements are satisfied and a new type approval is not required.

[0026] It is however possible to provide for different embodiments, such as those shown in the figures 4-6 which follow. In this case, an external protective case 6 covering the top end portion of the tubular element 2 is fitted on the body 2 of the pole.

[0027] This solution, which provides for the strengthening of the pole by fitting an external element, turns out to be more suitable to be used during the trainings, when the use of articulated poles is rather intensive, resulting in a significant reduction both of the breakages and the damages to the skis.

[0028] In addition to the foregoing, the solution which provides for the application of an external strengthening element, offers additional advantages, among which:

- possibility to create fluorescent strengthening elements or elements having such a suitable colour as to improve in any case their visibility from afar;
- possibility, in case of breakage, to replace only the end portion and not the entire pole;
- possibility to create poles with a soft coating material and, therefore, having a reduced impact. Also in this case it is possible to create the protective external case in a single body with the cap, which in this case shall have a sufficient length, as shown in figure 6.

[0029] The pole according to the invention is characterised, as compared to the poles according to known systems, by an improved strength and resistance to the

impacts without affecting the characteristics of lightness or suppleness of the pole, thus resulting in a better usability of the product. Of course, the dimensions, as well as the materials used, may vary according to the needs of use.

## Claims

1. Articulated pole for ski slopes, of the kind including a ferrule to be driven into the snow or into the ground and an above-ground portion consisting of a tubular element connected at the base to the said ferrule by means of a joint which allows the said tubular element to bend after being hit, **characterised in that** it provides for strengthening means of the free end portion of the said tubular element.
2. Articulated pole for ski slopes according to claim 1, **characterised in that** the said strengthening element of the tubular element consists of a strengthening tube fitted inside the said tubular element, at the top end or the free end portion of the pole.
3. Articulated pole for ski slopes according to claim 2, **characterised in that** the said strengthening element consists of an extension of the cap which closes the top end portion of the pole.
4. Articulated pole for ski slopes according to claim 1, **characterised in that** the said strengthening element consists of a case fitted on the external portion of the pole, just close to its top end portion.
5. Articulated pole for ski slopes according to claim 4, **characterised in that** the said case forms a single body with the cap which closes the said pole.
6. Articulated pole for ski slopes according to claim 2, wherein the said strengthening element has a length not less than two diameters of the pole itself.  
6a) Articulated pole for ski slopes according to claim 4, wherein the said strengthening element has a length not less than two diameters of the pole itself.
7. Articulated pole for ski slopes according to claim 4, **characterised in that** the said strengthening element is visible from the outside and is made of fluorescent material.

