This invention relates to ferrules for use on walking sticks, crutches and the like in particular to ferrules formed of resilient material such as rubber for fitting over the ends of walking sticks and crutches as a prevention against wear of the stick end, and for gripping purposes. It is common for persons such as semi-gripless or the like using walking sticks or crutches as an aid to walking, to incline the stick or crutches at an angle from the body in order to increase support for the body. However owing to the angle of incline of the stick or crutch, only a portion of the end of the stick or the ferrule thereon, is in contact with the ground. Thus the gripping surface of the stick with the ground is substantially reduced.

Although ferrules formed of material having gripping qualities have been used, it has been found that on inclined or slippery ground surfaces, the limited gripping surface presented to the ground when the stick or crutches are inclined at an angle, is often insufficient to support a person with a result that falls caused by the slipping of sticks and crutches are quite frequent.

With these factors in mind it is the object of the invention to overcome the aforesaid disadvantages by providing an improved ground gripping ferrule for use with walking sticks, crutches and the like, capable of presenting a full gripping surface to the ground regardless of the angle the stick or crutch may be brought to in support of the user.

According to one aspect of the invention the improved ground gripping ferrule for use on walking sticks, crutches and the like comprises material having resilient qualities, provided with an interior bore open to one end of the ferrule and closed to the opposed end of the ferrule, ground gripping means provided at the closed end of the ferrule adapted to act as a grip on a ground surface when the ferrule is in use and in position with the bore engaged on a stick end, and a bendable neck formed in the exterior wall of the ferrule and located between the ground gripping means and a point in line with the closed end of the bore, to enable the sections of the ferrule defined by the bendable neck, to be inclined at an angle in relation to each other.

According to a further aspect of the invention the improved ground gripping ferrule is cylindrical in shape and provided with a bore open to one end of the ferrule, a bendable neck located between the inner closed end of the bore and the closed end of the ferrule, the bendable neck being less in circumference than the circumference of the cylindrical ferrule and ground gripping means incorporated on the closed end of the ferrule adapted to grip a ground surface.

The invention will now be further described with reference to the accompanying drawing which illustrates five embodiments of the invention.

In the drawings:
Fig. 1 is a side elevation of the first embodiment of the invention;
Fig. 6 illustrates the third embodiment of the invention, wherein the ferrule 1 incorporates means whereby the gripping ability of the ferrule 1 is further advanced by suction. Such an arrangement is carried into effect by providing the ferrule 1 with a concave or dished-gripping surface 8 in the form of a vacuum or suction cup (see Fig. 6) capable of being flattened on to a ground surface so that air between the concave gripping surface 8 and the ground surface, will be expelled to cause adhesion of the gripping surface 8 to the ground surface under a more or less vacuum condition. The grip created by the suction between the concave gripping surface 8 and the ground surface, is sufficient to provide a firm ground grip for a walking stick or crutch 5 during use of the latter.

Figs. 7 and 8 illustrate the fourth embodiment of the invention where the ferrule 1 is provided with at least one small bore passage 9 leading from the concave gripping surface 8, through the ferrule 1 and opening onto the exterior of the ferrule 1 in the recess 4. With the ferrule 1 pushed against a ground surface and with the air contained in the enclosed area between the concave surface 8 and ground surface expelled, air is permitted to slowly re-enter the enclosed area via the passage 9 so that the ferrule 1 is adhered to the ground surface only during the period of unequal pressures of air, the grip being provided by the reduction of the pressure of air within the enclosed area, as previously described, the duration of which is controlled by the rate air is permitted to re-enter the enclosed area by way of the air passage 9 to equalize the pressure to atmospheric pressure and release the ferrule 1. In this instance the passage 9 is small in diameter so that pressure will not equalize at once to release the ferrule 1, but only after the lapse of a short spell of time, sufficient to maintain the ferrule 1 gripped to the ground surface while the walking stick or crutch 5 is placed on the ground during walking.

As illustrated in Figs. 9 and 10, the gripping arrangement provided by the partial suction, may be used in conjunction with a tread 10. The tread 10 dividing the concave gripping surface 8 into a plurality of compartments 11 each of which is communicated to the exterior of the ferrule 1 by a passage 9 so that upon the ferrule 1 being pressed onto a ground surface to flatten the concave gripping surface 8 each compartment 11 acts to grip the ground surface by suction action in conjunction with the tread 10 (see Fig. 9).

What I do claim and desire to obtain by Letters Patent of the United States of America is:

A ground engaging ferrule for attachment to a walking stick, crutch and the like to prevent the slippage of the same, comprising an elongated body portion of resilient material having a socket therein for receiving the lower end of the walking stick, a concave formation at the free end of the body portion, a tread of cross configuration dividing the concave formation into four ground gripping suction compartments of equal area capable of gripping a ground surface when the ferrule is forced onto the ground surface to expel the air from the areas bounded by said suction compartments, and further means defining a small bore passage leading from each suction compartment to points outside the ferrule whereby the duration of grip is determined by the time required for air to re-enter and re-fill the areas bounded by the suction compartments by way of the said passages.

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