To all whom it may concern:

Be it known that I, José Garza Zertuche, a citizen of Mexico, and a resident of Mexico City, D. F., Mexico, have invented a new and Improved Non-Slip Device, of which the following is a description.

My invention relates to a non-slip device comprising a suction cup which when in use is secured to an article such as an article of footwear for man or horses, the cup being sustained inverted in a manner to present its open side to the ground for collapsing under the imposed pressure and effecting a holding action on the ground to prevent slipping.

The general object of my invention is to insure the suction and the holding action of the cup when presented to the ground under pressure and having means whereby the vacuum and suction will be broken when the pressure is relieved, a more specific object of the invention being to provide a suction cup for the stated purpose presenting a vent opening of such a character and in such a position as to be closed by the under surface of the article carrying the cup when the cup is presented to the ground and pressure is consequently exerted thereon as in walking and whereby the vent will be opened upon the pressure being relieved.

Reference is to be had to the accompanying drawings forming a part of this specification, it being understood that the drawings are merely illustrative of one example of the invention.

Figure 1 is a side elevation showing two of my improved suction cups and an article of footwear adapted to be secured to a boot or shoe.

Fig. 2 is a detail in longitudinal vertical section through the rear portion of said article and the adjacent suction cup.

In the illustrated example my improved suction cups are applied to an article of footwear to be attached to a boot or shoe but it will be understood that the cups may be employed on an article to be applied to a horse's hoof or in other situations.

Two of my improved suction cups 10 are secured in the illustrated example to the under side of a plate or board 11, hereinafter referred to as a plate. Said plate has the curved member 12 at the rear end to conform generally to the heel of the shoe and a curved toe piece 13 to conform generally to the boot or shoe at the toe. Suitable means may be employed to secure the device in position, there being shown convergent straps 14 riveted or otherwise secured as at 14a to plate 11, the ends of the straps being adjustably secured by a buckle 15. The one cup 10 is secured beneath the heel portion of the plate 11 and the other in position to lie beneath the ball of the foot when the device is worn but the cups may be of various sizes and can be employed in any suitable number on the plate 11 or equivalent supporting member. The cup is formed with a flat central area 10a perforated to receive a fastening rivet 16 or the like which passes through the top of the cup at the center and if desirable through washers 16a, 16b at the inner and outer surfaces of the cup.

I produce a vent orifice 17 in the cup 10 and produce a protuberance 18 about the orifice, said protuberance presenting a flat outer surface to insure an effective contact between the protuberance and the under surface of the plate 11 or the under surface of the equivalent supporting means presented by the article to which the cup is applied. The protuberance 18 and the orifice 17 are disposed between the top and bottom of the cup and by reason of the flaring exterior, said protuberance will be below the plate 11 when the cup is in normal form and will be quickly brought into contact with the plate 11 when the cup is collapsed. The lower edge 19 of the cup lies in a single plane for effective contact with the ground.

In use when a cup is placed against the ground as in walking and caused to collapse downward thereon the cup will be caused to collapse as will be obvious and the protuberance 18 will be brought into contact with the plate 11, thereby closing the orifice 17 and insuring a holding suction to prevent slipping. When, however, the pressure on the top of the cup is relieved, its resiliency will cause it to resume its normal flaring appearance and the protuberance 18 will move away from contact with the plate 11, thereby venting the cup at the opening 17 and breaking the holding action of the cup.

I would state in conclusion that while the illustrated example constitutes a practical embodiment of my invention, I do not limit
myself strictly to the mechanical details herein illustrated since manifestly the same can be considerably varied without departure from the spirit of the invention as defined in the appended claims.

Having thus described my invention, I claim:

1. As an article of manufacture, a non-slip device comprising a resilient suction cup, and an article carrying said cup and adapted to secure it in position, said cup having a vent opening and said article presenting a surface into contact with which the vented portion of the cup moves when collapsed, for the closing of said vent opening.

2. As an article of manufacture, a non-slip device including a resilient suction cup, and an article carrying the same, said cup having a vent opening, and being collapsible toward said article under pressure, the said article constituting a closure of the vent opening in the collapsed form of the cup, and the cup serving to cause automatic venting upon the pressure being relieved.

3. As a new article of manufacture, a suction cup having a vent opening extending from the interior through the flaring exterior of the cup between the top and bottom of the same.

4. As a new article of manufacture, a non-slip device comprising a suction cup, and an article on which said cup is carried, said cup having a vent opening automatically closing under pressure and opening upon the pressure being relieved.

5. As a new article of manufacture, a non-slip attachment of the class described, said attachment presenting a suction cup to prevent slipping, said cup having a vent opening adapted to be automatically closed under pressure exerted on the cup and tending to automatically open in the absence of pressure on the cup.

JOSÉ GARZA ZERTUCHE.