L. W. GREIN.

ANTISLIP DEVICE.

APPLICATION FILED JAN. 27, 1921.

1,408,730. Patented Mar. 7, 1922.

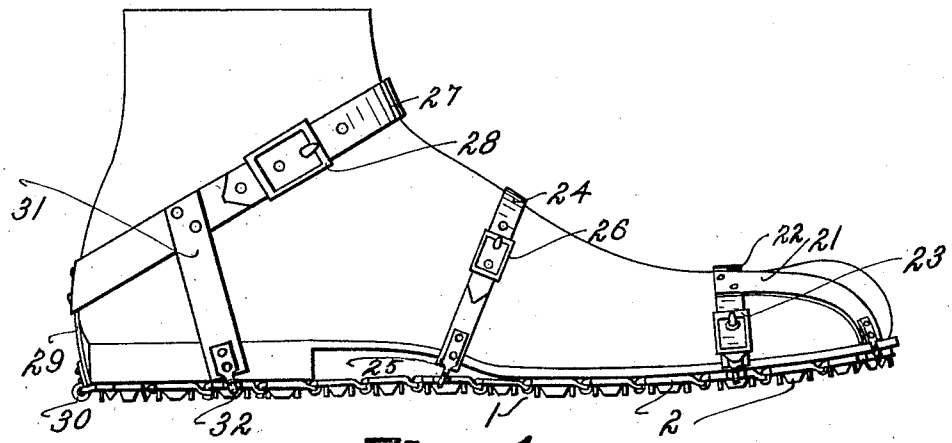


Fig. 1

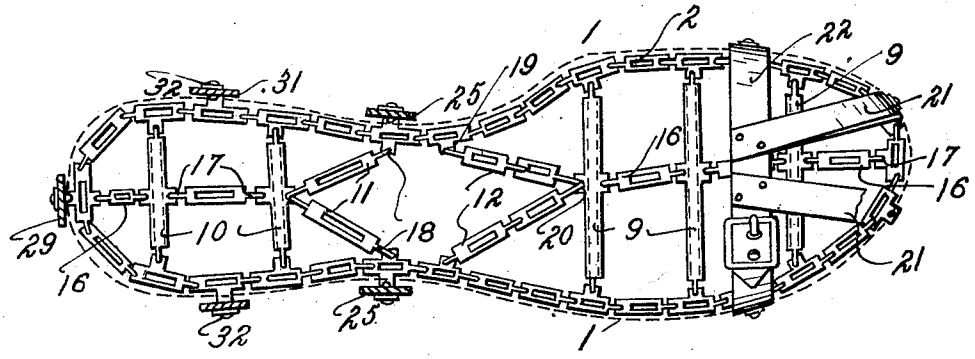


Fig. 2

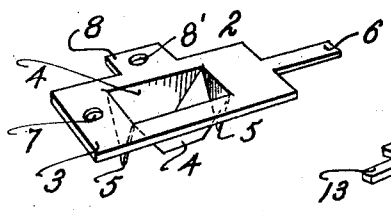


Fig. 3

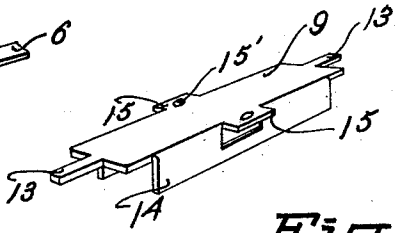


Fig. 4

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ANTISLIP DEVICE.

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To all whom it may concern:

Be it known that I, LEONARD W. GREIN, a citizen of the United States, residing at Cheney, in Spokane County and State of Washington, have invented certain new and useful Improvements in Antislip Devices, of which the following is a specification.

My present invention relates to improvements in anti slipping devices for use in connection with the boot or shoe, and designed to be worn when walking on slippery or ice covered surfaces, snow, soft ground, or other surfaces where such a device is required to facilitate walking. The primary object of the invention is the provision of a detachable, anti-slipping device which is provided with friction surfaces or devices under both the ball and heel of the foot, which device is flexible and comfortable, and enables the wearer to proceed with assurance and facility without danger of the feet slipping either sidewise or to the front or rear.

To this end the invention consists in certain novel combinations and arrangements of parts, in an anti-slipping device of the sandal type, which embody a chain or link belt conforming to the outline of the shoe together with intermediate members in connection with the chain or link belt, and in certain other novel features as will be hereinafter more particularly pointed out and claimed.

In the accompanying drawings I have illustrated one complete example of the physical embodiment of my invention wherein the parts are combined and arranged according to the best mode I have thus far devised for the practical application of the principles of my invention.

Figure 1 is a side elevation of a shoe having attached thereto the anti-slipping device of my invention, ready for use.

Figure 2 is a bottom plan view of the device, detached from the shoe.

Figure 3 is a detail perspective view of an enlarged link member of the chain or link belt.

Figure 4 is a perspective view of one of the intermediate members or friction devices.

In the preferred form of my invention I preferably utilize a continuous chain or link belt, designated as a whole by the numeral 1, which is made up of links 2 and conforms to the outline of the shoe. The chain may be made in different sizes to accommodate different sizes of shoes or boots, and the links are preferably stamped from sheet metal or steel, in a suitable machine for the purpose.

The links 2 of the chain 1, each includes a flat horizontal and rectangular shaped plate 3, and the body of the plate is punched to form a pair of spaced, longitudinally extending, integral and parallel flanges 4, and a complementary pair of transversely extending triangular spurs 5, 5. When the device is applied to the shoe these flanges 4 extend toward the front and rear where the links are located at the sides of the foot, and the spurs 5 extend laterally of the foot or shoe, thus affording frictional contact with the surface walked upon and support from slipping either laterally or to the front and rear. At the toe and heel portions of the device the relative positions of the flanges and spurs are changed, as the continuous belt or chain extends around these portions, and here the flanges and spurs also are effective in insuring safety from slipping.

The links of the chain are of sufficient length to insure flexibility in accord with the movement of the foot or shoe while walking, and the links are joined at their ends by means of the complementary attaching or joining tongues 6 and openings 7, the former at one end of the plate 3 and the latter at the opposite end. Thus the tongue of one plate is passed through and turned under the opening 7 of the adjoining plate, to form the continuous belt or chain 1, which follows the outline or edge of the bottom of the shoe, as indicated in Figures 1 and 2.

Some of the links 2, at their inner sides have lateral flanges 8 extending from the base plate 3, and are perforated as at 8′ for the attachment or jointing of the intermediate frictional elements designated as 9, 10, 11, and 12. The friction elements 9 and 10 are similar in construction, but vary in size and extend transversely of the shoe, the elements 9, shown as three in number being located beneath the ball of the foot and the elements 10, two of which are shown, being located beneath the heel of the foot.

In Figure 4 the construction of the elements or friction plates is exemplified, the plate being formed with longitudinally extending end tongues 13 to be joined to the eyes 8′ of the lateral flanges 8 of the links of the chain, and each plate (9 or 10) is provided with a pair of downturned longitudinal flanges 14, and a pair of lateral flanges

15, the whole being struck up from sheet metal in suitable machines. The spaced, transversely arranged elements 9 and 10 are connected to each other and to the chain at the toe and heel by means of centrally disposed, longitudinal links 16 similar to the links 2 but provided with a pair of end tongues 17 bent and hooked into the eyes 15′ of the lateral flanges 15 of the transverse members and to the links of the chain as shown. The transverse members 9 thus brace and maintain the form of the chain beneath the ball of the foot, and the members 10, in addition to their function as frictional tread members, also brace and retain the heel portion of the chain.

The diagonally extending elements 11 and 12 are located beneath the instep of the foot or below the arch thereof and they join the front and rear portions of the anti-slipping device to maintain its proper shape. The two angularly disposed members 11 have a common attachment to the front transverse plate 10, and their diverging ends are joined at opposite points on the chain by tongues 18 pivoted in one of the eyes 8′ of the links. The angularly disposed plates 12 beneath the arch of the foot are preferably made up, each of a pair of links, joined at 19 at opposite sides of the chain, and their converging ends pivoted at 20 to the rear transverse plate 9 under the ball of the foot. Thus it will be apparent that a comparatively light, but effective, flexible attachment is provided for the bottom of the shoe, of which the ball and heel portions are joined by intermediate, diagonally extending braces, the whole being adapted for frictional contact with the surface of the ice or ground, well braced both laterally and longitudinally, and capable of flexing freely to adapt itself to the movement of the foot in walking.

The anti-slipping device is attached to or detached from the shoe by means of straps, in the nature of a sandal, and for convenience I utilize a pair of toe thongs 21, 21 which join the toe strap 22 with the chain at the point or toe portion of the chain, and a buckle 23 may be utilized to secure the device at the toe of the shoe. An arch or instep strap 24 has its ends 25 attached to the opposite sides of the chain, and a buckle 26 is employed to secure the device at this point. An ankle strap 27 with its buckle 28 is attached to a rear heel plate 29 and this plate is pivotally jointed at 30 to the extreme heel portion of the chain. The ankle strap encircles the foot about the ankle, and a pair of heel straps 31, one at each side of the heel extend from the ankle strap to the chain, where they are attached as at 32. By this arrangement of straps and buckles the anti-slipping device may be attached as a sandal to the shoe, beneath the sole and heel thereof and provides a stable and comfortable support which has frictional contact with the surface traveled over at a multiplicity of points and is flexible to bend or flex with the shoe in walking, maintaining at all times a well braced position of the supporting foot of the wearer.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is—

1. In an anti-slip device, a continuous belt comprising links each having an end locking tongue and tongue-opening to form flexible joints, said links each having a pair of opposed flanges and a pair of opposed spurs for contact with the ground, and intermediate contact members connecting portions of said belt.

2. In an anti-slip device, a continuous belt comprising links each formed of a flat plate having a complementary end locking tongue and tongue-opening, each said plate having a pair of opposed flanges and a pair of opposed spurs for contact with the ground, some of said plates having lateral perforated flanges, and intermediate members connecting said lateral flanges.

3. In an anti slip device, a continuous belt comprising links each formed of a flat plate having a complementary end locking tongue and tongue-opening, each said plate having contact devices at its under side, some of said plates having lateral perforated flanges, and intermediate members having locking tongues connected to said lateral flanges.

In testimony whereof I affix my signature.

LEONARD W. GREIN.