

May 19, 1970

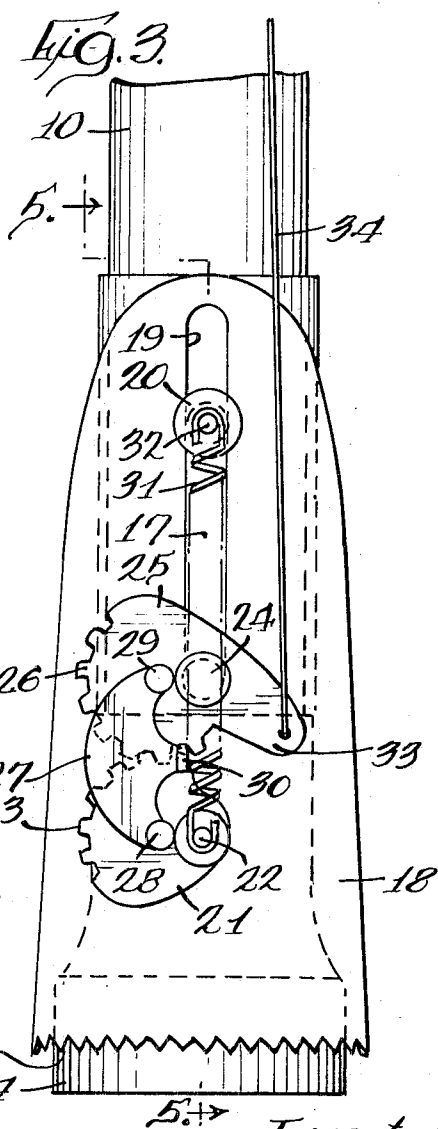
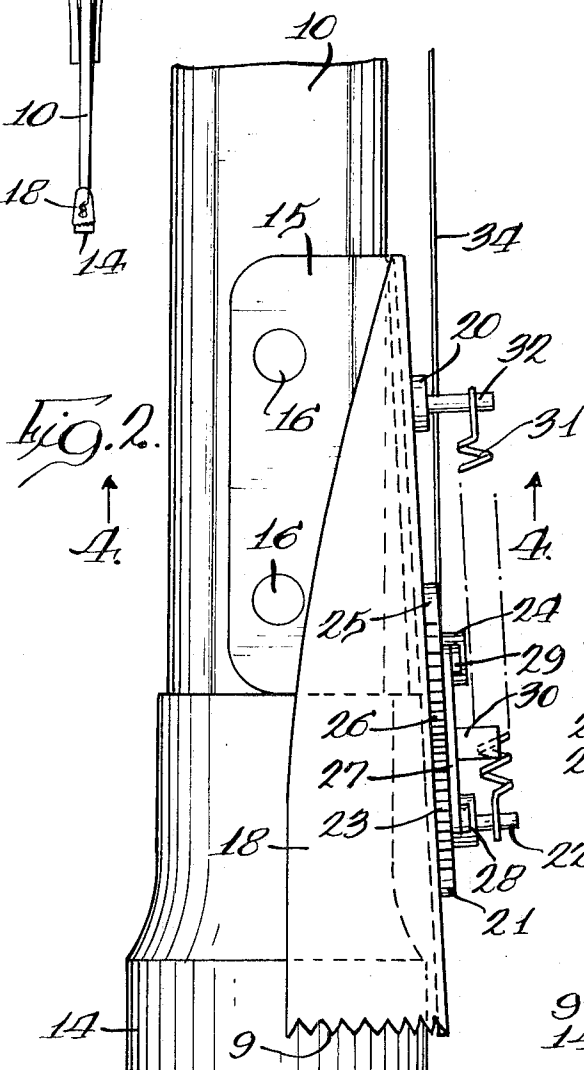
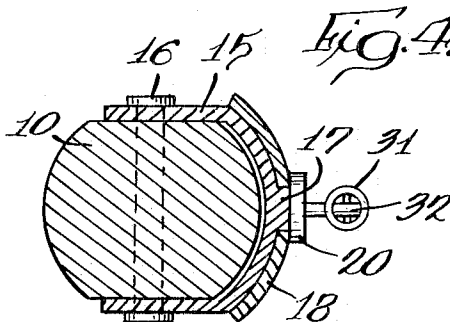
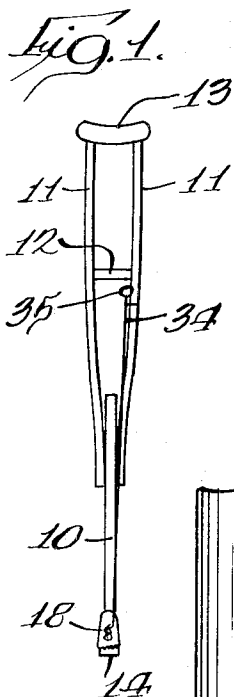
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3,512,541

TRACTION DEVICE FOR CRUTCHES

Filed Oct. 22, 1968

2 Sheets-Sheet 1



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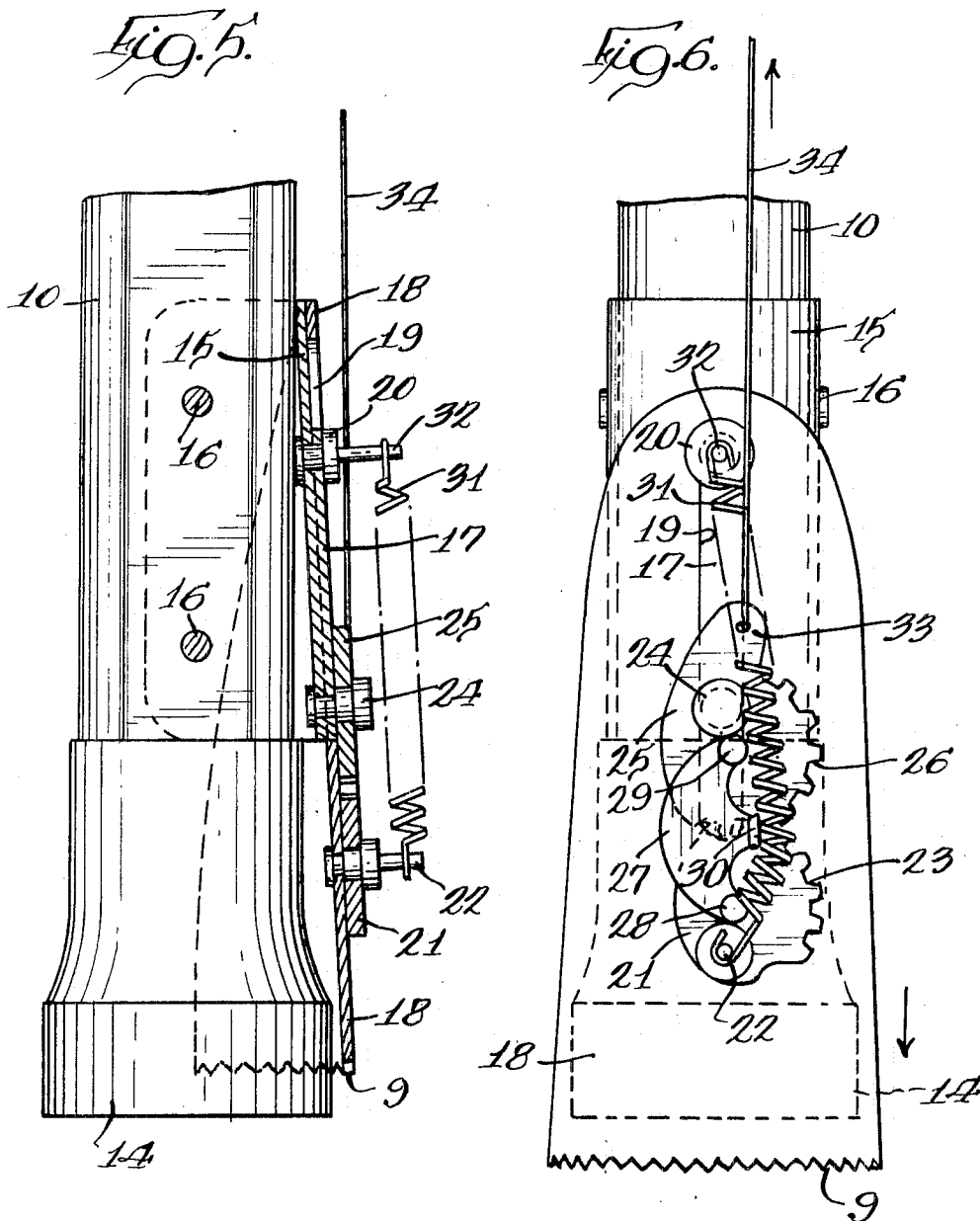
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TRACTION DEVICE FOR CRUTCHES

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TRACTION DEVICE FOR CRUTCHES

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3 Claims

ABSTRACT OF THE DISCLOSURE

The combination with the leg of a crutch, cane or the like walking aid of a gripper element reciprocally mounted thereon adjacent the tip of the crutch, lanyard means on said crutch including a finger gripping element reciprocally carried adjacent the cross bar of said crutch, and cam means carried by said crutch engaged to and between said gripper element and said lanyard whereby upward movement of said lanyard by means of its finger gripping element causes said interposed cam means to urge said gripping element downwardly beyond the crutch tip and in operative position.

The present invention relates to traction grips for walking aids, particularly crutches, which can be readily attached to a crutch by means of one or two screws adjacent the bottom of the leg of the crutch and can be conveniently operated by the finger of the user to bring the traction grip into operative position and to be readily released from such gripping operative position.

The traction device of the present invention provides a novel means for bringing a gripper element disposed adjacent, for example, the tip of the crutch into gripping relationship by causing it to slide downwardly over the edge of the crutch tip when a lanyard is drawn upwardly by the finger of the user disposed in a finger ring attached to the lanyard. In other words, the drawing of the lanyard in an upward direction causes movement of the gripping element in the opposite direction, the device being further provided with spring means for return of the gripper element to inoperative position.

The device of the present invention is characterized by the employment of double-toothed cam and lever combination whereby movement of the cams by means of the lever secured to one of them causes the gripper element to reciprocate longitudinally of the crutch leg while being retained thereon by means of a bar and slot arrangement, all of which will become evident from a further consideration of the following specification and accompanying drawings, wherein:

FIG. 1 is a side elevational view of a crutch embodying the gripper device of the present invention.

FIG. 2 is a relatively enlarged side elevational view of the tip of a crutch embodying the gripper device of the present invention.

FIG. 3 is a similar front elevational view.

FIG. 4 is a section on the line 4—4 of FIG. 2.

FIG. 5 is a view similar to that of FIG. 2, but in longitudinal section.

FIG. 6 is a view similar to that of FIG. 3 but with the cams moved so as to project the gripper element downwardly below the tip of the crutch.

Referring to the drawings, FIG. 1 generally illustrates a crutch having a leg portion 10, arms 11, 11, a cross bar 12, a head 13, and tip 14.

As shown in FIG. 2, there is secured to the leg of the crutch 10 adjacent its tip 14 a saddle plate 15 by means of the screws 16, 16. This saddle carries a bar 17 as indicated in FIGS. 3, 4 and 5. Disposed over this saddle plate 15 is the slidable gripper element 18 which preferably is arcuate in transverse contour so as to substan-

tially conform to the curvature of the crutch leg 10 and its tip and so that it can reciprocate over the latter. The lower edge 9 of gripper element 18 is desirably serrated as shown to better bite into a slippery surface such as ice. The gripper element 18 is formed with a longitudinal slot 19 so as to receive therein the bar 17. Extending from the bar 17 adjacent its upper end is the boss 20 which extends over the lateral defines of the slot 19 so as to retain the gripping element 18 in slidable engagement with the saddle 15.

Secured to and between the saddle 15 and the gripper element 18 are cam means comprising a double-toothed cam and lever combination. One of these toothed cams is indicated at 21 and is pivotally secured at 22 to the gripping element 18 and moves therewith and is pivoted thereon, pivoting being at a point eccentric to the center on which its teeth 23 are generated. A second toothed cam 25 is pivoted at 24 to the lower portion of the fixed bar 17, this second toothed cam likewise having teeth 26 and the cam being pivoted at a point eccentric to the center on which the teeth 26 are generated. The two cams are further tied together by an arm 27 pivoted at 28 and 29 to the cams 21 and 25 respectively at the centers at which their respective teeth are generated. This arm 27 desirably is provided with an upstanding lug 30 as an abutment for spring 31 which is secured between the pin 32 projecting from boss 20 and pivot pin 22. The spring 31 tends to urge the gripper plate 18 upwardly, that is in a retracted position and desirably the spring 31 is disposed outwardly of lug 30 so that it can press thereagainst when the teeth 26 and 23 are meshed to a point beyond center. The cam 25 carries the lever arm 33 to which is attached a lanyard 34 which can be composed of for example piano wire, and which desirably terminates at its upper end in a ring 35 adjacent the cross bar 12 of the crutch. This ring 35 is disposed adjacent the finger of the user of the crutch and upon drawing it upwardly past the crutch tip 14 by means of the interposed tooth cams 21 and 25 into firm gripping engagement with a surface covered with, for example ice so as to prevent slipping.

I claim:

1. The combination with a crutch of a gripper element reciprocally mounted thereon adjacent the tip of the crutch, lanyard means on said crutch including a finger gripping element reciprocally carried adjacent the cross bar of said crutch, and cam means carried by said crutch engaged to and between said gripper element and said lanyard whereby upward movement of said lanyard by means of its finger gripping element causes said interposed cam means to urge said gripping element downwardly beyond the crutch tip and in operative position, and wherein said cam means comprises a meshed pair of toothed cam and lever arm combinations, and wherein one of said cams is pivoted to said gripping element and the other is pivoted to a retainer bar secured to the leg of the crutch, said retainer bar being slidably received in a longitudinal slot formed in said gripping element.

2. The combination with a crutch of a gripper element reciprocally mounted thereon adjacent the tip of the crutch, lanyard means on said crutch including a finger gripping element reciprocally carried adjacent the cross bar of said crutch, and cam means carried by said crutch engaged to and between said gripper element and said lanyard whereby upward movement of said lanyard by means of its finger gripping element causes said interposed cam means to urge said gripping element downwardly beyond the crutch tip and in operative position, and wherein said cam means comprises a meshed pair of toothed cam and lever arm combinations, one of said

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cams being pivoted to said gripping element and the other being pivoted to a longitudinally extending retainer bar projecting from a saddle secured to the leg of the crutch, said gripping member being slidably secured over said saddle and formed with a longitudinal slot receiving said bar.

3. The device of claim 2 wherein said lanyard is secured to a lever arm extending from the second one of said cams, a connecting link pivotally engaged at its opposed ends to said cams, and spring means extending from said bar to the pivot of said first cam for normally

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retracting said gripper element after it has been urged outwardly by action of the lanyard on said second cam lever arm.

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PETER M. CAUN, Primary Examiner