

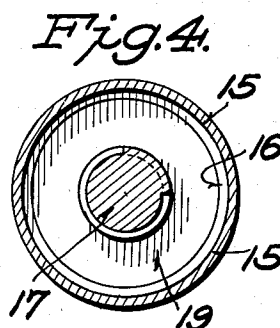
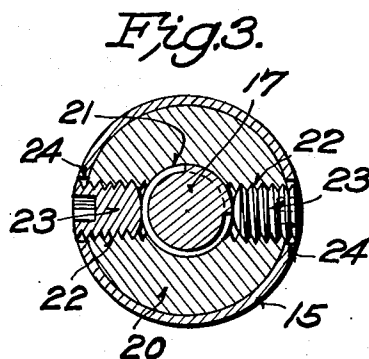
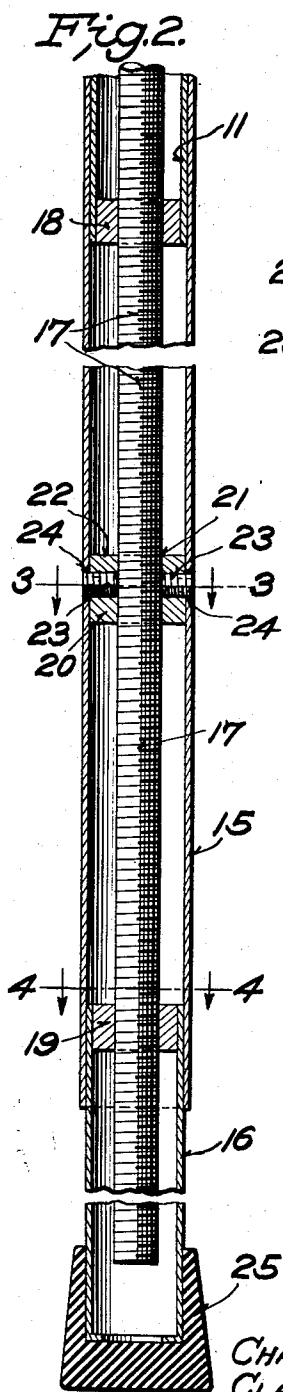
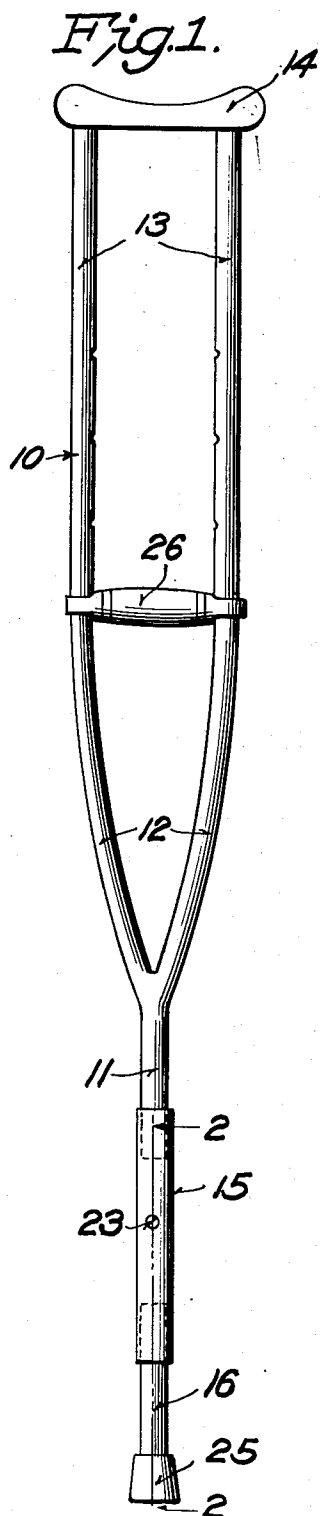
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ADJUSTABLE CRUTCH

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ADJUSTABLE CRUTCH

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2 Claims. (Cl. 135—50)

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Our invention relates to crutches which may be varied in length so that they may be used by adults of different heights as well as by children.

One object of the invention is to provide an improved adjustable crutch having a lower end portion which is extensible without the use of any tool and which in appearance will differ only slightly from the now commonly used crutch.

Another object is to provide an adjustable crutch which is strong and durable, which is composed of few and simple parts capable of being quickly assembled and also easily disassembled for cleaning, and which will have a large range of adjustment.

Another object is to provide a crutch having a lower end portion composed of adjustably telescoped sections, some of which may be detached to adapt the main portion of the crutch for use by a child.

With the above and other objects and advantages in view, the invention resides in the novel combinations and arrangements of parts and the novel features of construction hereinafter described and claimed, and illustrated in the accompanying drawings which show the present preferred embodiment of the invention.

In the drawings:

Fig. 1 is a side view of a crutch embodying our invention and adapted for use by an adult;

Fig. 2 is a longitudinal sectional view on an enlarged scale of the lower adjustable portion of the crutch; and

Figs. 3 and 4 are further enlarged cross sectional views taken respectively on the lines 3—3 and 4—4 in Fig. 2.

Referring more in detail to the drawings the numeral 10 denotes as a whole the main portion or body of the crutch which is made of lightweight material such as aluminum or an alloy. The crutch body 10 includes a straight tubular lower end portion 11 which is united to the downwardly converging lower ends 12 of two parallel side bars or arms 13, the latter having their upper ends connected by an arm rest 14 of any desired form and construction. While the parts 12, 13 may be made solid of wood, metal or a plastic, the lower end section 11 is made of tubular metal. The length of the body is such that if the usual elastic anti-slip cap or tip is applied to the end of portion 11, the crutch may be used by a child.

The end portion 11 forms one section of the longitudinally extensible lower portion of the

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crutch when it is to be used by an adult. The adjustable end also includes an intermediate section or tube 15 and a lower cylindrical section or tube 16. The outer or intermediate section 15 has its upper end telescoped over the inner upper body section 11 and its lower end telescoped over the inner lower or foot section 16, as shown in Fig. 2, so that by relatively sliding these parts the length of the crutch may be varied. Axially positioned in the three sections 11, 15 and 16 is an externally screw threaded shaft or rod 17 the upper portion of which screws into a cylindrical nut 18 welded in the lower portion of the section 11, and the lower portion of which screws into a cylindrical nut 19 welded in the upper portion of the section 16. The screw rod 17 has its intermediate portion fixed to the outer section 15 by means of a cylindrical plug 20 formed with a screw threaded bore 21 to receive the rod 17 and one or more transverse and screw threaded holes 22 which receive Allen screws 23. The latter are disposed in openings 24 in the section 15 and their inner ends engage the screw threads of the rod 17 as shown in Figs. 2 and 3. It will be seen that when the lower intermediate section 16 is rotated while the section 15 is held, the nut 19 will travel along the screw 17 to vary the extent to which section 16 projects out of section 15 and hence vary the length of the crutch. The length may be further varied by rotating the section 15 with respect to the section 11, to cause the nut 18 to travel on the screw and vary the extent to which section 15 telescopes over the section 11. A very wide range of adjustment is thus provided; and it will be noted that loosening the set screws 23, the position of the screw rod 17 in the plug 20 may be changed. It will be further noted that the construction is such that the parts may be quickly and easily assembled or disassembled for cleaning or repairs. The provision of the central screw rod between the nuts welded to the sections 11 and 16 produce a strong structure and prevents any weight or load being placed on the Allen screws.

The usual elastic anti-slip cap or tip 25 may be removably applied to the lower end of section 16. If the crutch is to be used by a child, the screw 17 and attached parts may be entirely removed; and the cap 25 then removed from the section 16 and applied to the lower end of the section 11. Since the crutch may be used by either adults or children, we provide a hand-grip 26 which is adjustable longitudinally along the side bars 13 throughout a sufficient range that

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will enable the handgrip being spaced from the arm rest 14 a distance corresponding to that between the arm pit and hand of the user. While any suitable adjustable handgrip may be employed, we preferably use the structure disclosed in our application Serial No. 281,075, filed April 8, 1952.

It will be obvious that the plug 20 need not have its bore screw threaded and that the rod 17 need not have the screw threads extending from end to end of the rod so long as the bore of the plug is large enough to pass over the screw threads. While two of the Allen screws are shown it will be understood that more or less may be used.

It will be noted that while the screw adjustment is in the nature of a turn-buckle, the screw rod 17 has threads which extend only in one direction and hence the body section 11 and the foot section 16 are independently adjustable relative to the intermediate section 15. This arrangement permits of not only a large range of adjustment of the length of the crutch for adults but permits of a very fine degree of adjustment. Further the structure provides an extremely strong and rigid connection between the several parts in all positions of adjustment, and effectively prevents any load being put on the Allen screws. At the same time the parts may be readily disassembled for cleaning or to enable the anti-slipping tip 25 to be transferred from the foot section 16 to the body section 11 to adapt the crutch for use by a child.

From the foregoing, taken in connection with the accompanying drawing, it will be seen that novel and advantageous provision has been made for carrying out the objects of the invention, and while preferences have been disclosed, attention is invited to the possibility of making variations within the scope of the invention as claimed.

We claim:

1. In a crutch having a body with an adjustable lower portion, said portion comprising a body section, a foot section and an intermediate section, said body and foot sections having tubular cylindrical ends of the same diameter and spaced in longitudinal alinement, said intermediate section being a cylindrical tube having an internal diameter to slidably telescope said tubular ends of the body and foot sections, a screw rod of greater length than said intermediate section disposed axially in the latter and having its ends extending into the tubular ends of the body and foot sections, said rod having external screw threads extending in the same direction substantially continuously from end to end of the rod, nuts to travel on the threaded end portions of said rod, one nut being fixed in the tubular end

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of the body section and the other in the tubular end of the foot section, a cylindrical plug in said intermediate section and through which said screw rod extends, said plug having at least one radially extending screw threaded hole to aline with a hole formed in the intermediate section, and a screw to detachably fasten said intermediate section to said screw rod, said screw being in said threaded hole and having one end engaged with said screw rod and its other end disposed in said hole in the intermediate section.

2. An adjustable crutch for adults having a detachable lower portion to permit the use of the crutch by a child, comprising a body section having at its lower end a cylindrical tubular portion containing a nut and adapted to hold an anti-slipping tip when the crutch is to be used by a child, a cylindrical tubular foot section of the same diameter as said lower end of the body section and disposed in longitudinal alinement therewith, said foot section having a nut in its top and its lower end being adapted to receive an anti-slipping tip, a cylindrical tube forming an intermediate section and having an internal diameter to slidably telescope the tubular lower end of the body section and the upper end of the foot section, a screw rod of greater length than said intermediate section disposed axially in the latter and having its ends extending into the body and foot sections, said rod having external screw threads extending in the same direction continuously from end to end of the rod, the threaded end portions of the rod being engaged with said nuts, a cylindrical plug having a screw threaded bore to receive said screw rod and also having an external diameter to slidably fit said intermediate section, said plug having at least one radially extending screw threaded hole to aline with a hole in the central portion of said intermediate section, and a screw to adjustably and detachably fasten said intermediate section to said screw rod, said screw being in said threaded hole and having one end engaged with said screw rod and its other end disposed in said hole in the intermediate section.

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