

No. 748,068.

PATENTED DEC. 29, 1903.

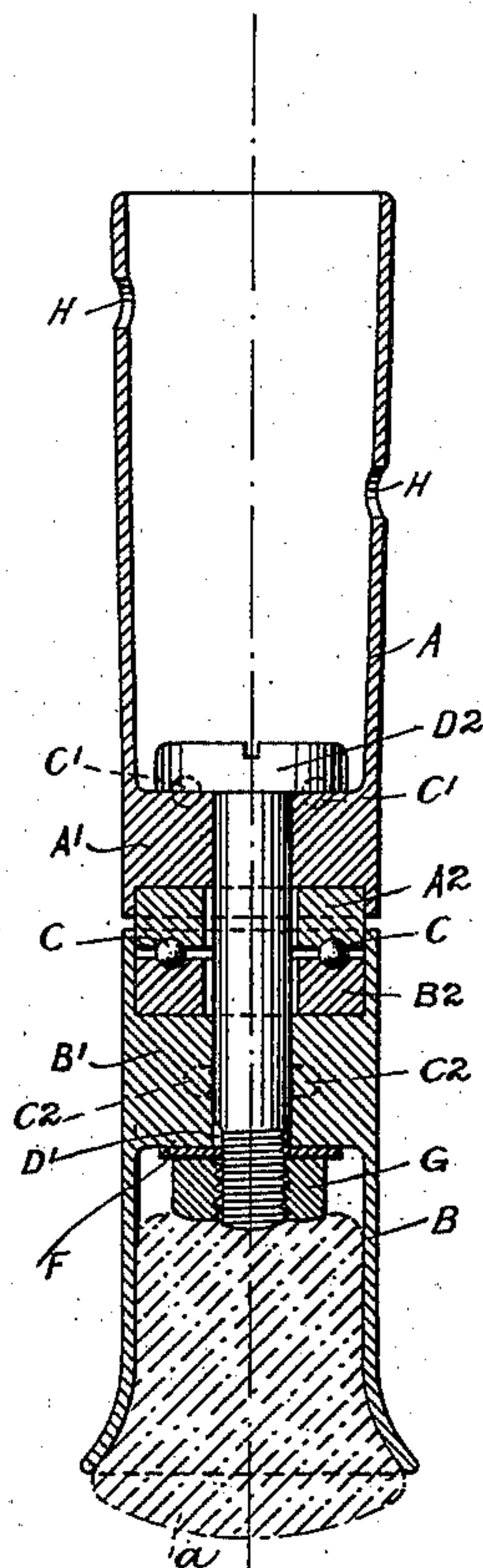
J. H. HAMMOND & W. BRIDGEWATER.

CRUTCH.

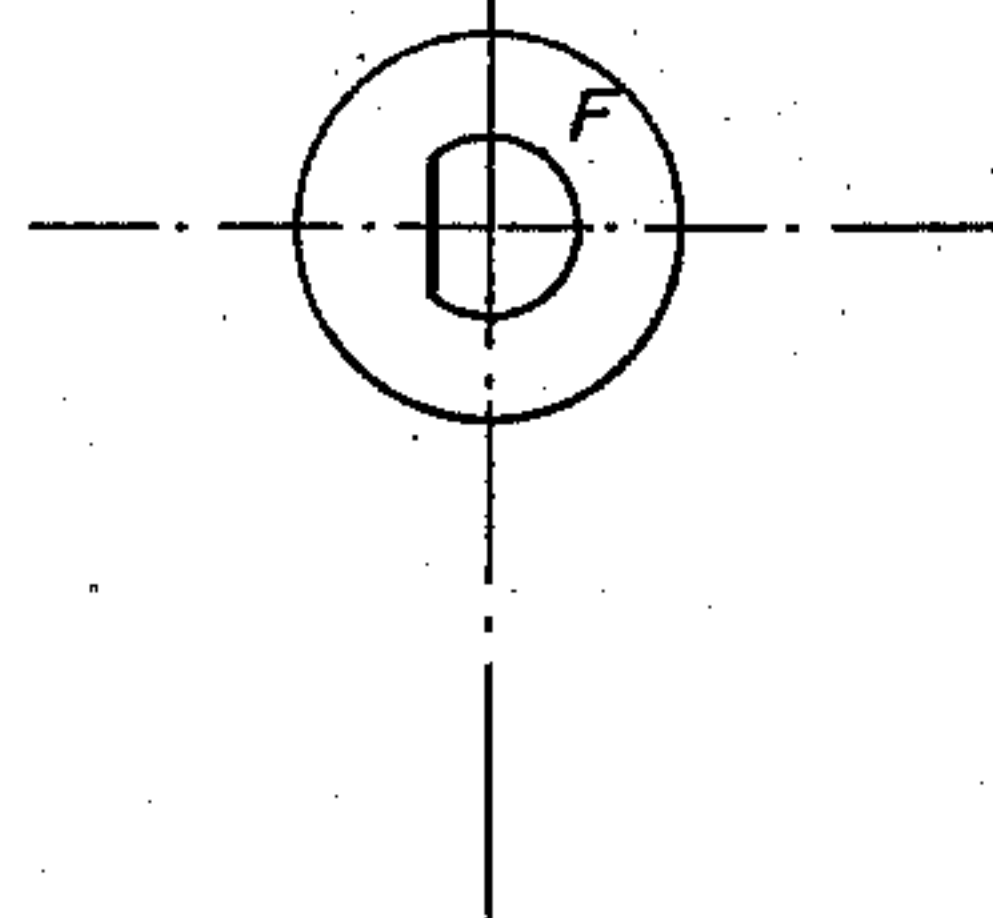
APPLICATION FILED MAY 31, 1902.

NO MODEL.

*Fig. 1.*



*Fig. 2.*



Witnesses.

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# UNITED STATES PATENT OFFICE.

JAMES HILL HAMMOND AND WILLIAM BRIDGEWATER, OF LEICESTER,  
ENGLAND.

## CRUTCH.

SPECIFICATION forming part of Letters Patent No. 748,068, dated December 29, 1903.

Application filed May 31, 1902. Serial No. 109,678. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES HILL HAMMOND, a resident of 42 Humberstone Gate, and WILLIAM BRIDGEWATER, a resident of 30½ St. Peter's Lane, Leicester, in the county of Leicester, England, subjects of the King of England, have invented certain Improvements Relating to Crutches and Analogous Supports for the Human Body, of which the following is a specification.

This invention consists of improvements relating to crutches and analogous supports for the human body, and is designed with a view of forming crutches and wooden legs in such a manner as to effect a saving of wear upon the yielding substance, such as rubber or equivalent, which comes in contact with the ground, in addition to which a special feature of the invention consists in forming the crutch or wooden leg in two parts so adapted that when the bottom part of the crutch or wooden leg is resting upon the ground the upper part is free to turn or move round in unison with the movements of the user. In crutches especially this feature is beneficial, as the upper part of the crutch, which is placed underneath the armpit, can turn, and thereby obviate the wearing out caused by the motion of the body of the rubber or other material and the clothing and at the same time removing the cause of injury or injurious abnormal growths occasioned by the use of crutches as ordinarily constructed.

To carry out the invention, we provide two separate cylindrical or tubular parts, one of which receives therein the lower end of the crutch, stick, or wooden leg, and the other part is adapted to receive the means for affording the yielding contact with the ground. Each tubular part may have formed therein with or suitably affixed therein a body of metal, and through both of said bodies a bolt, spindle, or equivalent is passed. Part of the body in one tube may be adapted to slightly enter the other tube, and the meeting faces of the two bodies of metal are suitably recessed to receive a number of balls. The said bolt or spindle passes through both bodies, as before stated, and receives on its end a suitable washer, which may be recessed,

or the head of said bolt or spindle may be recessed at its under face, together with the face of the adjoining body, for a second set of balls. It will be seen, therefore, that when the bottom of the crutch or wooden leg is upon the ground the upper part is free to turn. Means may be provided in both tubes to prevent the other parts which enter the tubes coming into contact with and interfering with the parts described. The end of the spindle or washer may be adapted to be turned by a screw-driver or other means to draw the parts suitably together. The yielding means may be afforded by inserting in the bottom tube a solid rubber plug or a hollow or a pneumatic plug or by incasing the said tube with a rubber cap, or the same result may be attained by having a spring in the bottom tube and a plug of any suitable substance to bear against said spring and come into contact with the ground. We may form the bottom tube bell-mouthed, either to receive a plug or be incased.

The invention will be more fully understood from the following further description with reference to the accompanying drawings, in which—

Figure 1 is a vertical central section showing the two separate cylindrical bodies or tubes, before referred to, inclosing the parts which allow the bottom part to turn independently of the upper one. Fig. 2 is a plan of a washer hereinafter referred to.

A and B are two cylindrical bodies or tubes, preferably of the shape shown—i. e., the upper tube A is preferably slightly conical to receive the lower end of the crutch-stick or wooden leg and the lower part B is preferably bell-mouthed to receive the resilient rubber plug *a*, or it may be partially incased in a rubber cap. (Not shown in the drawings, as it may be of the ordinary formation and readily applied.) Each of the said cylindrical bodies or tubes A B is provided with an internal body of metal A' B', respectively, which said metal bodies may be formed integral with the bodies or tubes A B or fixed in position therein by any suitable means. It is optional whether the said two bodies A' B' are formed of steel or cast malleable and case-hardened and cupped or recessed to re-



ceive a number of balls C or whether separate steel washers or cups A<sup>2</sup> B<sup>2</sup>, as shown, are employed to receive said balls C.

5 The bolt D passes centrally through the two bodies A' B', and it is optional whether it is fixed in position to hold the parts together, as shown in the drawings, or placed the reverse way up. The threaded end of said bolt is flattened at D' to receive the  
10 washer F, (shown in plan in Fig. 2,) which fits thereover, and said washer is thereby prevented from turning independently of the bolt. The nut G, screwed on the end of the bolt D, draws the several parts together, so  
15 that the two bodies A and B, with the several parts contained in each, may move round on the circle of balls C in unison with the movements of the body of the user.

20 While we have shown in Fig. 1 of the accompanying drawings the preferred form of our invention, we wish it to be understood that the several details may be altered in various ways. For instance, we may find it desirable to have a circle of balls C' (shown by  
25 dotted circles) located under the head D<sup>2</sup> of the bolt D or another circle of balls, C<sup>2</sup>, (also shown by dotted circles,) located in the bot-

tom body B'; but such variations are comprised within the scope of this invention and readily suggest themselves and may be applied by any ordinary workman skilled in the art to which this invention appertains. 30

The appliance as shown is complete and can be readily affixed to a crutch-stick, wooden leg, or ordinary walking-stick by means of  
35 screws passing through openings H, formed in the top body A.

We claim—

A crutch or support comprising in combination with the body portion a rigid tube at  
40 its lower end portion, a bottom tube connected to the tube on the body portion by a bolt passing centrally through a plate in each tube, balls located between said plates and a resilient plug or cap in the bottom tube, sub-  
45 stantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JAMES HILL HAMMOND.

WILLIAM BRIDGEWATER.

Witnesses:

T. S. SHOULER,

WALTER W. BALL.