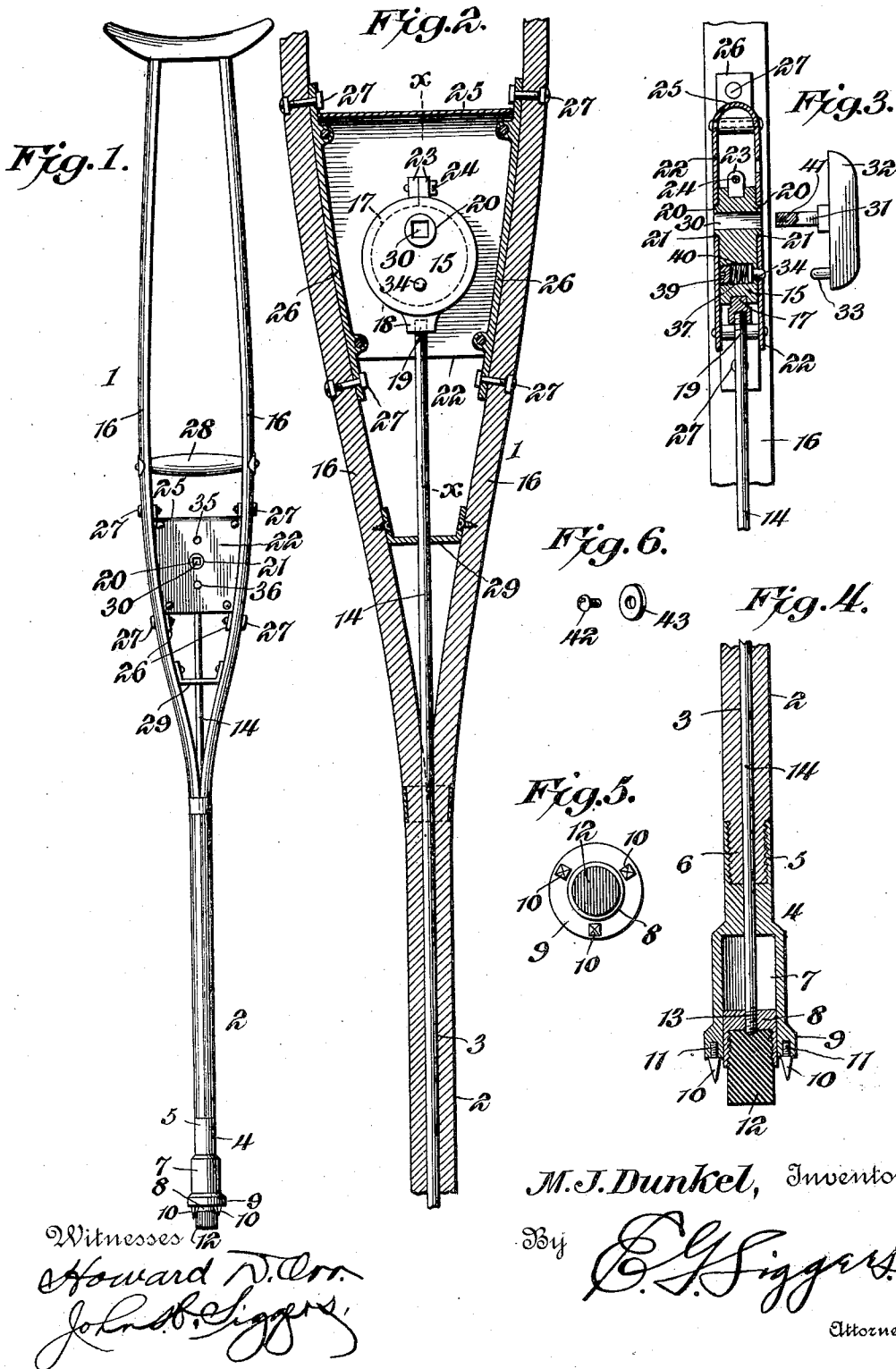


No. 862,455.

PATENTED AUG. 6, 1907.

M. J. DUNKEL.
CRUTCH.

APPLICATION FILED APR. 13, 1907.



UNITED STATES PATENT OFFICE.

MARK JONES DUNKEL, OF NEW BLOOMFIELD, PENNSYLVANIA.

CRUTCH.

No. 862,455.

Specification of Letters Patent.

Patented Aug. 6, 1907.

Application filed April 13, 1907. Serial No. 368,113.

To all whom it may concern:

Be it known that I, MARK JONES DUNKEL, a citizen of the United States, residing at New Bloomfield, in the county of Perry and State of Pennsylvania, have invented a new and useful Crutch, of which the following is a specification.

The invention relates to improvements in crutches.

The object of the present invention is to improve the construction of crutches, and to provide a simple and comparatively inexpensive one, designed particularly for use in winter and having means for presenting either a plurality of spikes, or a cushion to the supporting surface to prevent the crutch from slipping on ice, slippery pavements and similar surfaces, or to avoid injuring the carpet or floor of an apartment or the like.

A further object of the invention is to provide a crutch of this character, in which it will be unnecessary to perforate the cushion of rubber, or other material, so that the same will not be weakened or its effectiveness and durability impaired.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawing, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing:—Figure 1 is an elevation of a crutch, constructed in accordance with this invention. Fig. 2 is an enlarged longitudinal sectional view of the central portion of the same. Fig. 3 is a sectional view, taken substantially on the line $x-x$ of Fig. 2, the key being arranged for insertion in the opening of the cam. Fig. 4 is an enlarged sectional view of the lower portion of the crutch. Fig. 5 is a plan view. Fig. 6 is a detail view of the screw and washer for retaining the key in engagement with the cam.

Like numerals of reference designate corresponding parts in all the figures of the drawing.

1 designates a crutch, designed to be constructed of wood or any other suitable material and to be manufactured in various sizes to suit the size or weight of the person by whom it is to be used. The crutch is provided in its lower portion 2 with a longitudinal bore or opening 3, and it has a metallic ferrule 4, secured to its lower end. The metallic ferrule 4 is provided with an upper interiorly threaded socket 5 for the reception of the lower end 6 of the crutch, the lower end being slightly reduced and threaded to fit the socket 5 and the outer faces of the parts being preferably flush, as shown. The said ferrule is also provided with a lower depending socket 7, forming a tubular guide for a socket or holder 8 and having an enlarged lower rim or peripheral portion 9 on which are mounted spurs 10.

The spurs or projections 10, which are pointed for engaging ice and other slippery surfaces, are provided with threaded shanks 11, which are screwed into suitable threaded bores or perforations of the enlarged portion or rim of the lower socket 7. The spurs or projections, which are arranged in an annular series and which may be of any desired number, are removable to enable new spurs and projections to be substituted for those in the crutch; when the same become worn or dull.

The socket or holder 8, which slides vertically in the lower guiding portion of the ferrule 4, is interiorly threaded to receive a cylindrical cushion or block 12 of rubber, leather, or other suitable material, which is adapted to be moved downward and to project beyond the spurs or projections to prevent the latter from coming in contact with a floor, carpet or other surface to avoid tearing, scratching, marring, or otherwise injuring the same. Any other suitable means may, however, be employed for retaining the cushion in the socket or holder. The spurs or projections are mounted on the ferrule to secure great strength and durability, and at the same time to avoid perforating the elastic block or cushion so that the durability and efficiency of the latter will not be impaired.

The upper wall of the socket or holder is thickened and is provided at the center with a threaded perforation for the reception of a lower threaded end 13 of a connecting rod 14, which is operated by a cam or eccentric 15. The connecting rod passes through the bore or opening 3 of the lower portion of the crutch and extends upwardly therefrom into the space between the sides 16 of the upper portion of the crutch, and is connected at its upper end with a strap or ring 17 of the eccentric or cam. The strap or ring is provided at the bottom with an enlargement or lug 18, having a threaded socket for the reception of the upper end 19 of the rod, which is also threaded.

The cam or eccentric, which is circular, is provided with a peripheral groove to receive the strap or ring 17, and it has eccentrically arranged trunnions or pivot portions 20, which are journaled in suitable bearing openings 21 of the sides of a casing 22. The strap or ring is split at the top, the terminals 23 of the split portion being extended upwardly and connected together by a screw 24, which pierces one of the terminals and engages a threaded opening in the other.

The casing, which conceals the cam or eccentric, is provided with sides, which are connected at the top at 25, and it has suitable end walls 26, which are extended beyond the top and bottom of the casing and which are perforated for the reception of bolts 27, or other suitable fastening devices for securing the casing to the sides of the upper portion of the crutch. The casing, which is arranged in the space between the sides of the upper portion of the crutch, is located a short distance below the handle 28 of the crutch, and the latter is provided

at a point below the casing with a metallic cross piece 29, having a central perforation through which the connecting rod passes. The cross piece 29, which forms a guide for the connecting rod, has its terminals bent upwardly and secured to the inner faces of the sides of the upper portion of the crutch by suitable fastening devices.

The cam is provided with a polygonal opening 30, extending through the pivots or trunnions and adapted to be engaged by a polygonal shank 31 of a key 32. The shank 31 and the opening are preferably rectangular in cross section, but they may be of any other polygonal shape. The key, which is provided with an enlarged body portion to form a handle or grip, has a rounded projection or lug 33 extending from the body portion and arranged in parallelism with the shank and adapted to engage a spring actuated bolt 34 of the cam. The cam is adapted to be rotated one half of a revolution to either project the cushion 12 beyond the spurs or projections, or to move the cushion upwardly within the guiding socket or portion 7 of the ferrule 4 to permit the spurs to project beyond it, and the said bolt 34 is adapted to engage upper and lower apertures 35 and 36 of the casing for locking the cam or eccentric in either of the said positions. The key, when inserted in the opening 30 of the cam or eccentric, is adapted to depress the bolt 34 by means of the projection 33, and when the bolt or projection, which has its outer end rounded, is slightly depressed, the key may be readily rotated to carry the bolt beyond the aperture. As soon as the bolt is brought opposite the other aperture, it automatically springs outwardly and locks the cam or eccentric against further rotary movement. The bolt is provided at its inner portion with a head, and is engaged by a spring 37, arranged in a perforation of the cam or eccentric and retained therein and in engagement with the bolt by means of a screw plug 39, one end of the opening 40 of the cam being interiorly threaded to receive the plug. The plug is provided at its outer end with a groove to receive the blade of a screw-driver for enabling it to be readily removed, when desired.

The shank 31 of the key is provided at its outer end with a threaded bore or socket 41, adapted to be engaged by a screw 42 for retaining the key in the opening of the cam or eccentric. A washer 43 is interposed between the head of the screw and the contiguous pivot portion or trunnion, and the key may form a permanent portion of the crutch. The key, however, may be carried in the pocket and when it is desired to render the key detachable the screw 42 is removed.

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

1. The combination of a crutch provided at the bottom with a socket, spurs or projections located at the walls of the socket and having shanks detachably secured to the same, and a cushion mounted in the socket and operable in the space between the spurs or projections.

2. The combination of a crutch provided at the bottom with a socket having an enlarged lower end provided with threaded bores, spurs or projections having threaded shanks detachably secured within the said threaded bores, and a cushion movably mounted in the socket and arranged to project through the space between the spurs or projections.

3. The combination of a crutch, means movably mounted at the lower end of the crutch for engaging the ground or other surface, a casing mounted on the crutch, a cam or eccentric arranged within the casing and connected with the said engaging means, and a key-operated locking device mounted on the cam and engaging the casing.

4. The combination of a crutch provided at its lower end with a socket having rigid surface-engaging means, a holder slidable in the socket, a cushion secured in the holder and adapted to be extended beyond the socket, a connecting rod secured at its lower end to the holder, and operating mechanism connected with the upper end of the connecting rod.

5. The combination of a crutch having extensible surface-engaging means, a casing mounted on the crutch and having opposite apertures, a rotary cam or eccentric mounted within the casing and connected with the said means, a locking device carried by the eccentric and arranged to engage either of the said apertures of the casing, and a key for rotating the cam or eccentric, said key being provided with means for disengaging the locking device from the casing.

6. The combination of a crutch having extensible surface-engaging means, a casing mounted on the crutch and having opposite apertures, a rotary cam or eccentric mounted within the casing and connected with the said means, a spring actuated bolt mounted on the cam or eccentric and arranged to engage either of the apertures of the casing, and a key for rotating the cam or eccentric provided with means for disengaging the bolt from the casing.

7. The combination of a crutch having extensible surface-engaging means, a casing provided with apertures, a rotary cam or eccentric mounted within the casing and connected with the said means and having a threaded opening, a bolt mounted within the opening for engaging the apertures of the casing, a threaded plug secured within the opening of the cam or eccentric, a spring interposed between the plug and the bolt, and a key having a projection to extend into the apertures of the casing to depress the bolt, said key being also provided with means for rotating the cam or eccentric.

8. The combination of a crutch having extensible surface-engaging means, a casing mounted on the crutch, a cam or eccentric provided with journals mounted within the casing and having a polygonal opening, a locking device carried by the cam or eccentric for engaging the casing, and a key having a polygonal shank to engage the opening of the cam or eccentric and provided with means for operating the locking device to release the said cam or eccentric.

9. The combination of a crutch having extensible surface-engaging means, a cam or eccentric for operating the same, locking means for holding the cam or eccentric, a key for rotating the cam or eccentric provided with means for rotating the locking device, and means for detachably securing the key to the cam or eccentric.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

MARK JONES DUNKEL.

Witnesses:

H. L. DARLINGTON,
J. C. LIGHTNER.