United States Patent [19]

Johnston et al.

[11] **3,730,198**

[45] **May 1, 1973**

[54] COLLAPSIBLE CRUTCH

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[22] Filed: **Mar. 1, 1972**

[21] Appl. No.: **230,730**

[52] **U.S. Cl.** **135/50,** 135/51, 135/52

[51] **Int. Cl.** **A61h 3/02**

[58] **Field of Search** 135/49–53

[56] **References Cited**

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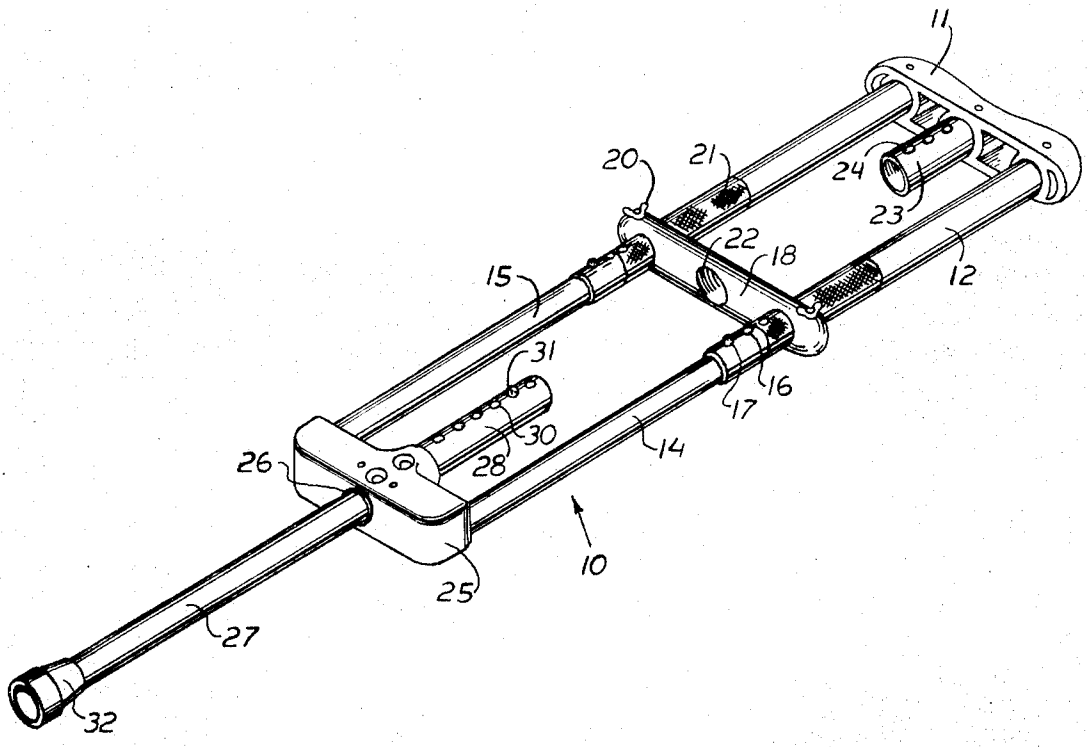
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Primary Examiner—Peter M. Caun
Attorney—Duckworth and Hobby

[57] **ABSTRACT**

A collapsible crutch apparatus having a telescoping frame and a telescoping leg, both being adapted to telescope the crutch into a collapsed position for locking in a collapsed position for storage in a container. The frame and the leg can be telescoped from a collapsed position to a desired length and locked in position with a quick connecting lock. The dual collapsing system allows the crutch to be transported and stored in a relatively small storage container and then to be quickly expanded for use.

8 Claims, 5 Drawing Figures



Patented May 1, 1973 3,730,198

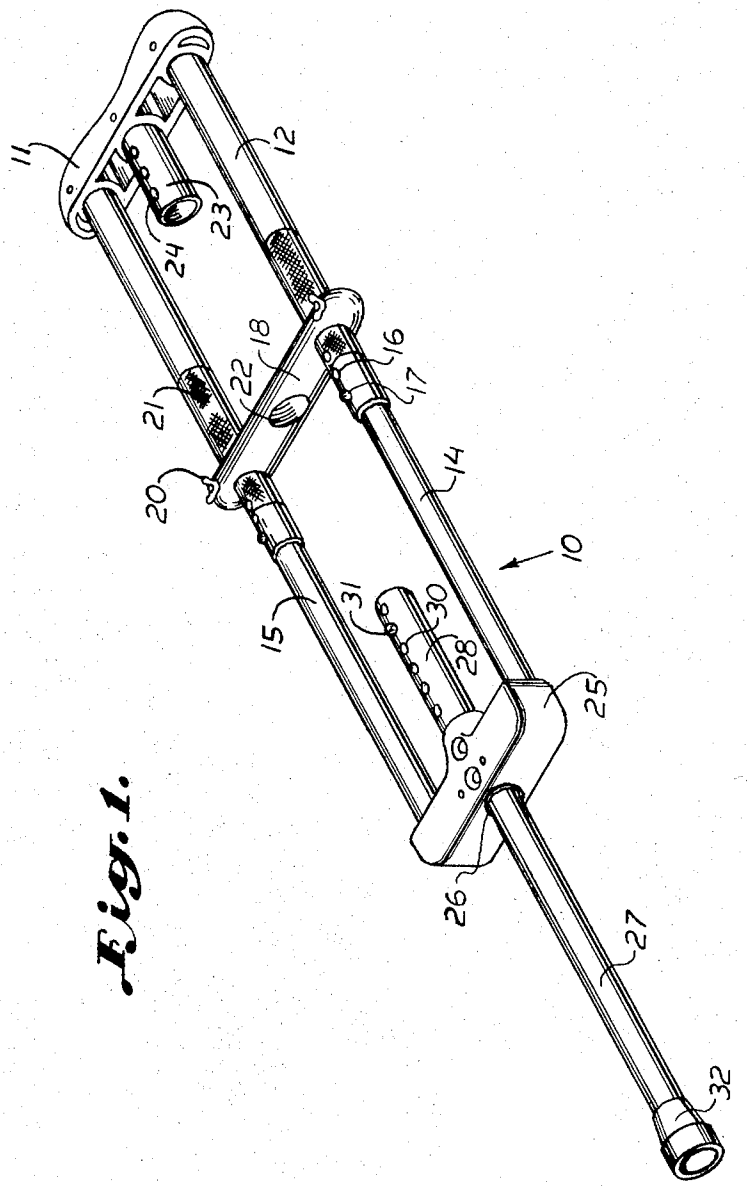


Fig. 1.

Fig. 2.

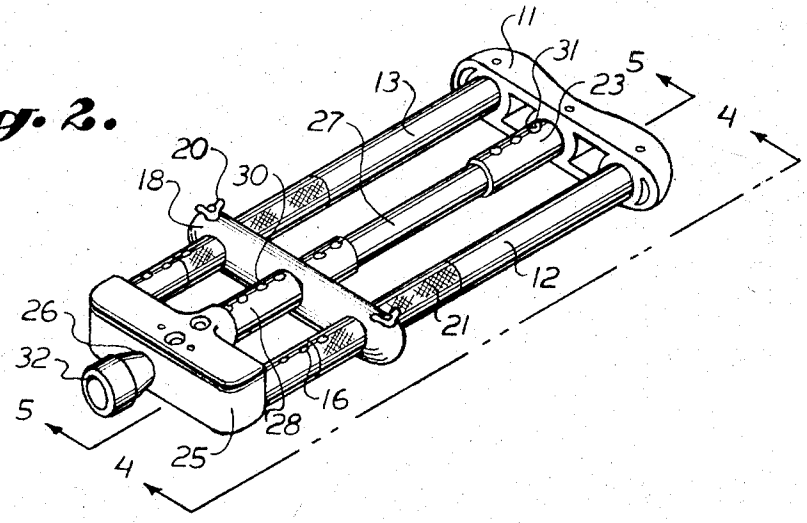


Fig. 3

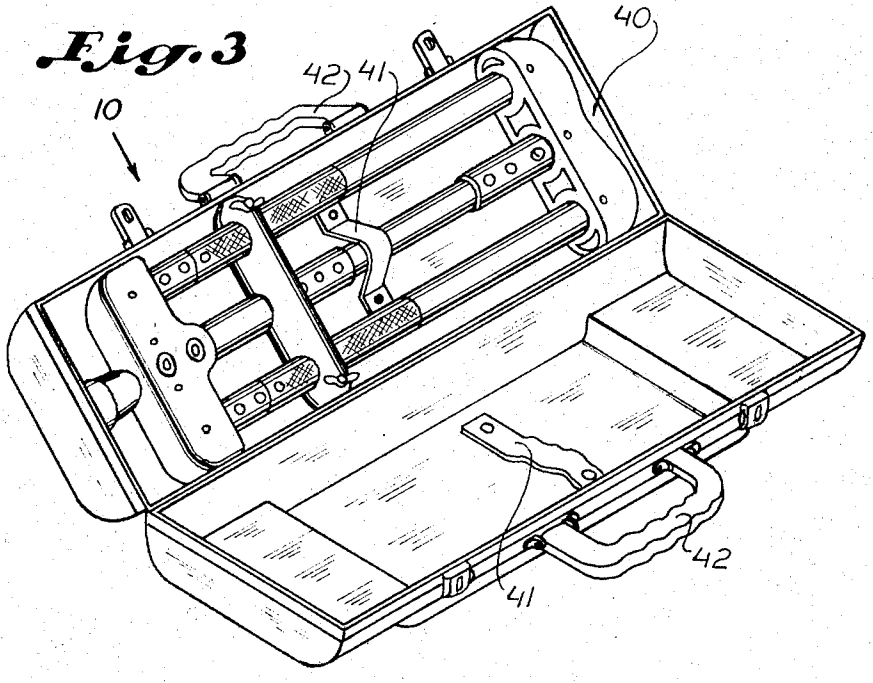


Fig. 4.

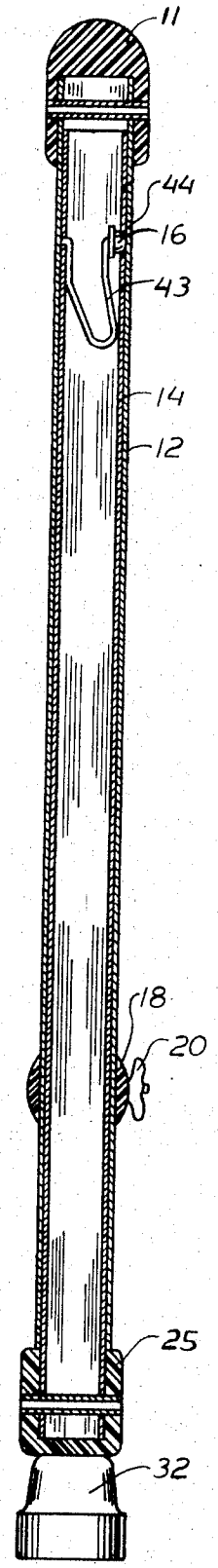
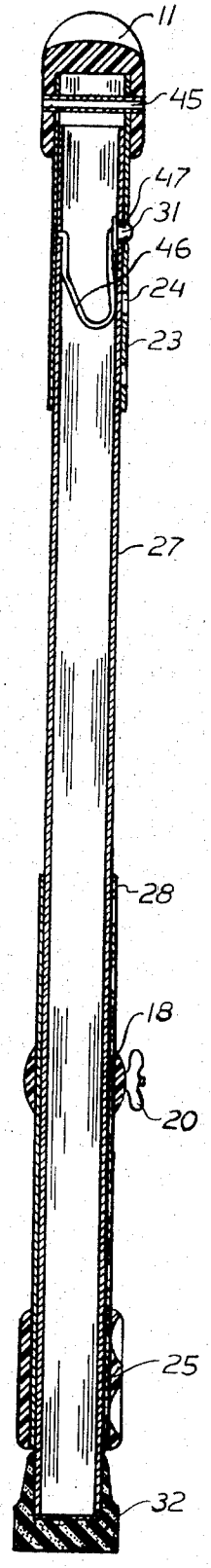


Fig. 5



COLLAPSIBLE CRUTCH

BACKGROUND OF THE INVENTION

The present invention relates to crutches and especially to collapsible crutches of a telescoping type for reducing the size of the crutch for storage or transportation. Crutches are used as an aid to walking and customarily comprise a lightweight frame having an upper armpit rest adapted to support the user's weight chiefly at that point and a handle at arm's length on the armpit rest. A lower section of the crutch becomes a single vertical shaft terminating as a small area of ground contact which may typically be a rubber tip placed over the single vertical shaft to cover the small area of ground contact. Such conventional crutches because of their overall length are awkward to store when not in use. Accordingly, various proposals have been made for collapsing crutches to a smaller size for storage and transportation, and a great number of a prior patents have been directed towards a folding type crutch which may be easily stored. Various proposals have been made to construct crutches in a telescopic form or for temporary storage. Such proposals have not been commercially acceptable to potential users for one or more of several reasons. In some cases it was plainly evident that the designs offered did not function properly after they had been exposed to hard usage. In other cases, the relative safety of locking mechanisms was achieved only at the expense of objectionable awkwardness or complexity. Typical prior patents directed to collapsible telescoping crutches may be seen in U.S. Pat. No. 2,544,957 for a Telescoping Crutch where a leg member can be adjusted longitudinally of a frame section and then provides means for locking the leg section to the remainder of the frame. U.S. Pat. No. 3,301,268 provides a telescoping crutch in which the locking system is incorporated in the hand grip of the crutch and also which provides a larger surface for the foot of the crutch. U.S. Pat. No. 2,426,074 provides a collapsible crutch in which the vertically extending leg collapses or extends in between a pair of tubular frames and has a locking member for locking the leg in place. U.S. Pat. No. 2,264,015 teaches a similar collapsing telescoping of the vertically extending leg along with a special locking system for locking the leg in place. U.S. Pat. No. 2,172,047 teaches a collapsible or telescoping vertically extending leg which is connected to the hand gripping member which is slidably connected to the pair of tubular frame members and has the locking for the vertical leg in the hand gripping member for locking the hand member at a desired position.

The present invention, on the other hand, is directed towards collapsing the crutch to a greater extent for a more compact storage for transportation and provides a means for collapsing the frame in a telescoping manner and also collapsing the vertically extending leg simultaneously with the vertically extending leg and being adapted to be locked to the bottom of the armpit rest for locking in its collapsed position. Both the frame and the leg can then be telescoped to the desired length and locked with a quick attaching lock into the desired length. The present invention provides separate means for adjusting the hand gripping member and utilizes a combination of plastic and aluminum to produce a lightweight but strong crutch.

SUMMARY OF THE INVENTION

The present invention is directed to crutches and especially to a collapsible crutch having a telescoping tubular frame with a pair of elongated telescoping tubes connected together at one end by an armpit rest, and at the other end by a leg supporting member. A hand gripping member is connected between the telescoping tubular frames and is adjustable for a user of the crutch. A single extending vertical leg member passes through the leg support portion of the frame and may be locked at a desired position and the extended position may be collapsed to pass through the hand gripping member and when the frame is also collapsed, to be locked to the armpit rest for holding the crutch in its collapsed position for storage in a container. Releasing the single quick detach lock of the armpit rest will allow the crutch to be extended to the desired length by extending the releassd leg, and locking it onto the leg support which includes a supporting sleeve with holes therein for catching the leg at different points as desired. Next the telescoping tubular frame members are extended to a predetermined length and locking with quick attaching locks. A sleeve is connected to the bottom of the armpit rest for locking the leg in its collapsed position to and has holes therein for a spring snap to engage.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects, features and advantages of this invention will be apparent from a study of the written description and the drawings in which

FIG. 1 is a perspective view of one preferred embodiment of the crutch in an extended position;

FIG. 2 is a perspective view of the crutch of FIG. 1 in a collapsed position;

FIG. 3 is a perspective view of the crutch in accordance with FIGS. 1 and 2 in a collapsed position and placed in a storage container;

FIG. 4 is a sectional view taken along lines 4—4 of FIG. 2; and

FIG. 5 is a sectional view taken along lines 5—5 of FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, a preferred embodiment of a crutch **10** can be seen in FIGS. **1** and **2** in an expanded and collapsed position respectively. The crutch has an armpit rest **11** which may be made of a molded plastic of similar material as desired, and is connected to a frame having two tubular members **12** and **13** with second tubular members **14** and **15** adapted to telescope within members **12** and **13** respectively. Tubular members **12** and **13** have holes or apertures **16** therein adapted to receive a spring, latch or catch **17** which is connected to members **14** and **15** so that when the frame is telescoped as shown in FIG. **1**, the telescoping members **14** and **15** may be locked in any of the three holds **16** provided by letting a spring biased member **17** slip into the holes **16**. In the collapsed position, the members **16** will be held down by the tubular members **12** and **13**, allowing the frame to telescope though without having a means for locking it in a collapsed position. The tubular members **12** and **13**

have a hand gripping member **18** which is held with wing or butterfly nuts **20** bolting it to the desired position which may be bolted to a special gripping surface **21** on the frame members **12** and **13**, if desired. Hand gripping member has an aperture or opening **22** passing therethrough and the armpit **11** has a sleeve **23** connected to the bottom thereof which sleeve has a plurality of openings **24** therein. The end of the frame members **14** and **12** are fixedly attached together by frame or leg holding member **25** which may be made of plastic or similar molding material, as desired, and has an opening **26** therethrough for sliding a leg **27** through the leg support member **25**. The leg support member **25** also has a leg supporting sleeve **28** attached thereto and extending between the frame members **14** and **15**. Leg support sleeve **28** has a plurality of holes **30** therein for locking the leg **27** to, with a spring biased latching member **31** located in the leg **27** for engaging or fitting into any of the plurality of holes **30** to lock the leg **27** at a predetermined length. Leg **27** also has a rubber cap or tip **32** thereon which engages the surface when the crutch is being used and will normally be of a material such as rubber which gives a good frictional engagement as well as some resilience to the tip. The frame members and leg **27** may all be made of aluminum tubing to reduce the weight of the crutch, and which is commercially available. In the collapsed position, as shown in FIG. **2**, the frame members **14** and **15** are released from their locks **17** by pushing the member **17** in and allowing it to slide into the frame tubes **12** and **13**, while the leg **27** is released from the leg support sleeve **28** by pushing in the latch member **31**. The collapsing of the tubular frames members **14** and **15** allow the sleeve **28** to slide through the opening **22** of the hand gripping member **18** and collapsing of the leg **27** allows it to slide until the rubber cap **32** engages the bottom of the leg supporting frame **25** and also allows the leg **27** end to slide into the sleeve **23** and the locking member **31** to engage one of the plurality of holes **24** in the sleeve **23**. This holds the crutch **10** in its collapsed position by locking not only the leg but the telescoping frame members **14** and **15** in a collapsed position. The gripping handle **18** once adjusted for a patient remains in its fixed position.

FIG. **3** illustrates a crutch in its collapsed position as in FIG. **2** but placed in a container **40** which container is adapted to carry a pair of crutches, one on each side, and has a single snap connection **41** for holding each crutch in a side. Container has handles **42** for carrying one or two crutches in their collapsed position. Advantageously, the present crutch collapses to a very small length so that it is carried in a very small container **40** as is illustrated from FIG. **3**. Thus, two crutches can be carried in a container that would not normally be recognized as a container for crutches. Then, the crutches can be rapidly extended into their extended position by simply a release of one quick disconnect lock having latch member **31** connected to one of the openings **24** in the sleeve **23**, and then reconnecting the quick-connect lock to the sleeve **28**. This frees the telescoping members **14** and **15** to slide out until they engage opening **16** of tubes **12** and **13** and the crutch is extended and ready for use. The armpit rest **11** and leg support member **35**, along with the sleeves **28** and **23** can be held to each other and to the frame members in any manner desired, but are illustrated as having pins and may also be molded together or glued and locked in any manner desired.

Turning now to FIGS. **4** and **5**, sectional view can be seen having a latch member **16** spring biased by spring member **43** and in a collapsed position as it passes through an opening **44** in the frame member **14** which has been extended into the frame member **12**. Frame member **12** blocks the latching member **16** allowing the leg **14** to slide within the leg **12**. The tip **32** along with the bottom frame member **25** and the hand gripping member **18** having the wing nut **20** can also be seen in this view along with the armpit rest or support **11**. In FIG. **5**, the leg **27** can be seen collapsed within the locking sleeve **23** which is connected to the armpit rest **11** with a pin **45** and in which locking member **31** can be seen to be spring biased by spring **46** and passing through an opening **47** in the leg **27** and also through one of the openings **24** of the sleeve **23** for locking the leg **27** in a collapsed position. This view similarly shows the tip **32**, leg support **25** and leg support sleeve **28** along with the handgrip member **18** and wing nut **20**.

It should be clear at this point that a collapsible crutch has been provided which collapses into an unusually short length in a very rapid manner and may be locked in a collapsed position and rapidly extended and locked into an extended position adjusted to any length desired and which may be easily stored and transported. However, this invention is not to be construed as limited to the particular forms disclosed herein, since these are to be regarded as illustrative rather than restrictive.

We claim:

1. A collapsible crutch apparatus comprising in combination:

a. telescoping frame having a pair of elongated telescoping tubes connected together at one end by an armpit rest member and at the other end thereof by a leg supporting member;

b. a handgripping member connected between said elongated telescoping tubes between the ends thereof and having an opening therein;

c. a leg member passing through said leg supporting member and being supported by said leg supporting member;

d. leg locking means for locking said leg to said leg supporting means in said crutch apparatus expanded position and for locking said crutch apparatus to said armpit rest in its collapsed position; and

e. frame locking means for locking said pair of elongated telescoping tubes in their expanded position and for releasing said elongated telescoping tubes for collapsing said crutch apparatus.

2. The apparatus in accordance with claim **1** in which said leg supporting member includes a sleeve attached thereto for attaching said leg member to for supporting said leg when said leg passes therethrough.

3. The apparatus in accordance with claim **2** in which said armpit rest has a sleeve attached thereto for receiving said leg member for locking said leg in its collapsed position.

4. The apparatus in accordance with claim **3**, in which said armpit rest has an opening for said leg member to pass therethrough for locking said leg

member in said armpit rest sleeve when said crutch is in its collapsed position.

5. The apparatus in accordance with claim 1 in which said handgripping member is locked to said elongated telescoping tubes by tightening said handgripping member into frictional contact with a frictional engaging surface on said elongated telescoping tubes.

6. The apparatus in accordance with claim 5 in which said leg locking means includes apertures in said leg support sleeve for engaging a spring biased latch member located at said leg member for holding said leg member at any one of said plurality of apertures.

7. The apparatus in accordance with claim 6 in which said armpit rest sleeve has a plurality of apertures therein for engaging said latch member on said leg member for holding said crutch in its collapsed position;

8. The apparatus in accordance with claim 7 in which each pair of elongated telescoping tubes has an outer tube having a plurality of apertures therein and an inner tube for telescoping in said outer tube and having a spring biased latch member adapted to be received by said aperture and said outer member for locking said crutch in its expanded position.

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