Aug. 18, 1959 C. E. LEAVITT ET AL 2,900,041

SECTIONAL LADDERS

Filed June 28, 1957

2 Sheets-Sheet 1

Fig. 1

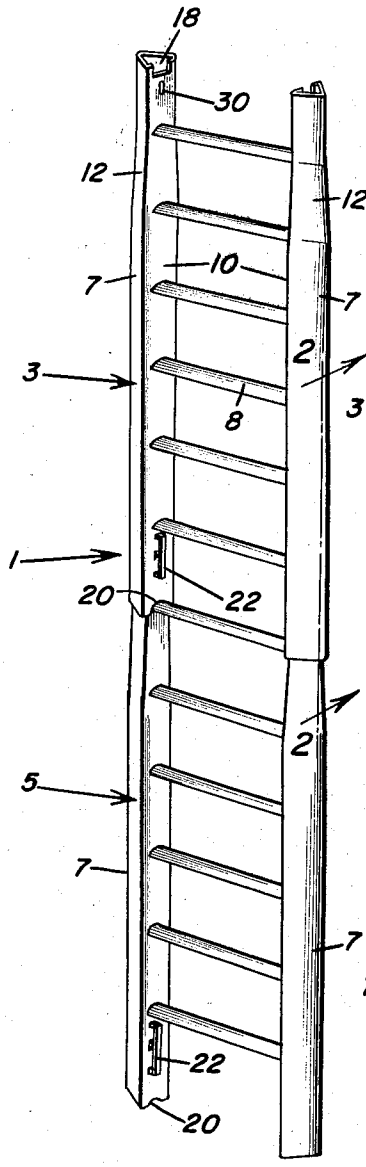


Fig. 2

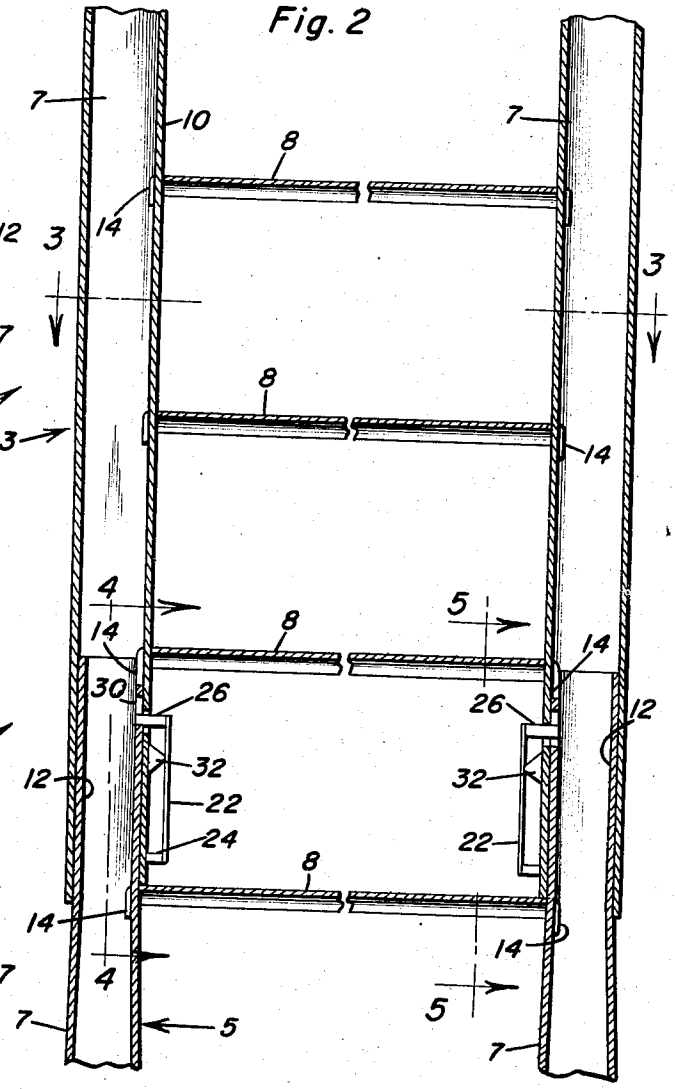
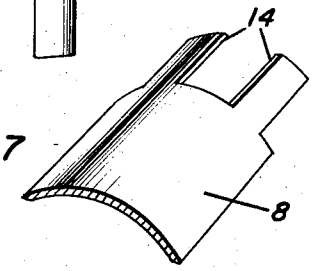


Fig. 7



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Fig. 3

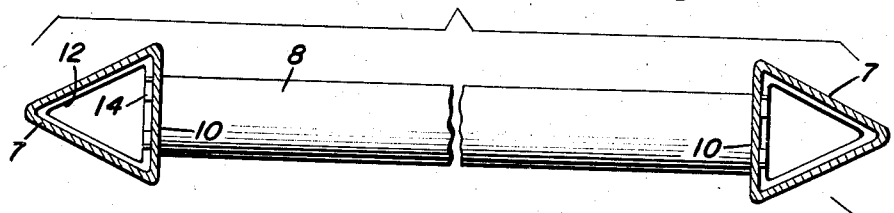


Fig. 4

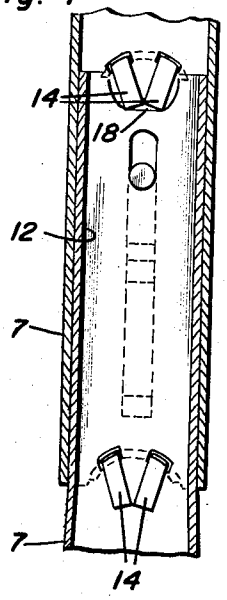
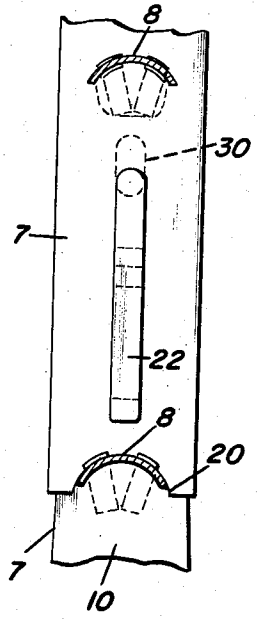


Fig. 5



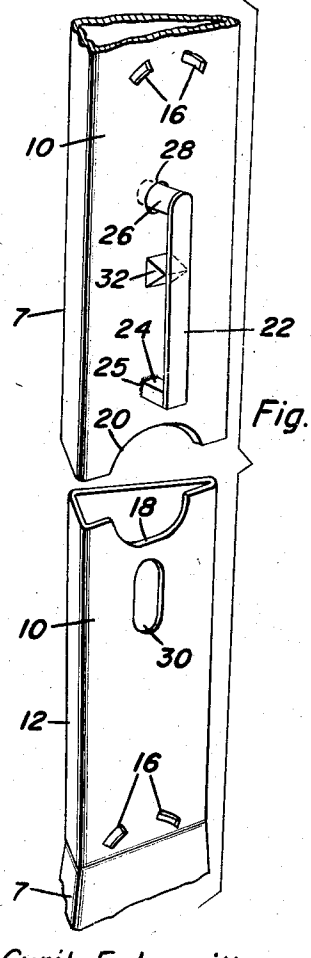
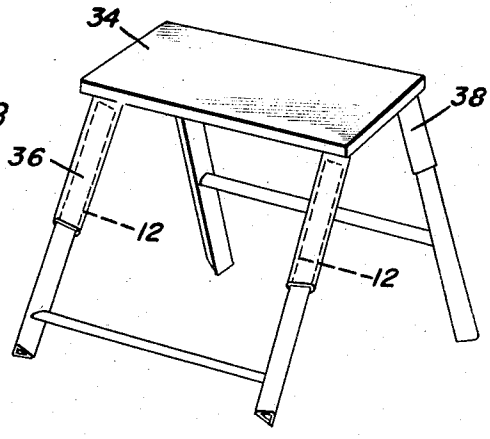


Fig. 6

Fig. 8



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SECTIONAL LADDERS

Cyril E. Leavitt and Charles E. Whitehurst, Marianna, Fla.

Application June 28, 1957, Serial No. 668,636

1 Claim. (Cl. 182—178)

Our invention relates to improvements in sectional ladders of the type adapted for use either as a straight ladder or a step ladder.

The primary object of our invention is to provide a simply constructed inexpensive sectional ladder which may be easily and quickly lengthened or shortened by telescopically connecting the desired number of sections together to form a straight ladder of desired length, together with means for connecting two of the sections together to form a step ladder to which other sections may be added to increase the height thereof if desired.

Another object is to provide in conjunction with the above, practical, quick-acting, snap action means for locking the sections telescopically connected in straight ladder form and which is easy to release and requires no tools to release the same.

Still another object is to provide means for telescopically connecting the ladder sections together which will not stick or freeze and prevent the sections from being disconnected.

Yet another object is to provide a ladder with strong but very lightweight side members and cross members, or rounds, together with means for rigidly connecting the cross members or rounds, to the side members without using any separate connecting parts.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view of our improved ladder with two sections connected together to form a straight ladder;

Figure 2 is an enlarged fragmentary view in longitudinal section taken on the line 2—2 of Figure 1 and partly broken away;

Figure 3 is a view in cross section of the same taken on the line 3—3 of Figure 2;

Figure 4 is an enlarged fragmentary view in longitudinal section taken on the line 4—4 of Figure 2;

Figure 5 is an enlarged fragmentary view in longitudinal section taken on the line 5—5 of Figure 2;

Figure 6 is an enlarged fragmentary exploded view in perspective illustrating in detail the means for telescopically connecting the ladder sections together and details of the locking means;

Figure 7 is an enlarged fragmentary view in perspective, partly in section, of one of the cross members or rounds before it is connected to the side members; and

Figure 8 is a fragmentary perspective view on a smaller scale of means for connecting two of the ladder sections together to form a step ladder.

Referring to the drawings by numerals, and first to Figures 1 to 7, according to our invention, a sectional ladder designated generally by the numeral 1 is provided comprising a plurality of ladder sections which may

be connected together to form a straight ladder including, as shown for illustration purposes, a pair of upper and lower like ladder sections 3, 5.

Each ladder section 3, 5 comprises a pair of tubular side members 7 of aluminum, or similar light strong metal, and transverse members, or rounds 8, cross connecting the side members 7 and of the same material, preferably as said side members 7. The transverse members 8 are generally rectangular and of arcuate upwardly bowed cross section for width and strength and formed out of sheet metal, and the side members 7 are of triangular cross section for strength and to provide flat confronting inner sides, or faces 10, in each pair for fitting flush against the ends of the transverse members 8.

The means for telescopically connecting the ladder sections 3, 5 comprises reduced upper end portions 12 on the side members 7 of the sections 3, 5 for slidably fitting in the lower end portions of the side members of an upper section, such as section 3.

The transverse members 8 are connected to the side members 7 by means of rectangular bendable end tabs 14 on said members 8 inserted through arcuately arranged pairs of rectangular openings 16 in the inner sides, of faces 10, of said members 7 and bent downwardly inside the side members 7 flat against said inner sides or faces 10, all as best shown in Figures 2 to 5.

The tabs 14 on the lowermost transverse member 8 of the upper ladder section 3 form part of stop means establishing the telescopically connected position of the ladder sections 3, 5. The remainder of the stop means comprises terminal notches 18 in the inner sides 10 of the reduced end portions 12 of the lower section seating the tabs 14 on said lowermost member 8, and notches 20 at the lower ends of the upper section 3 in its sides 10 fitting over the uppermost transverse member 8 of the lower section 5.

The locking means comprises a pair of leaf springs 22 extending longitudinally along the inner sides of faces 10 of the upper section 3 at its lower end and having terminal lugs 4 at one end welded as at 25, to said sides and spacing said springs from said sides. A pair of locking pins 26 on the other ends of the springs 22 are urged thereby through holes 28 in the inner sides of faces 10 of the upper section 3 to snap into a pair of longitudinal slots 30 in the inner sides, or faces 10 and reduced upper end portions 12 of the lower section 5. A pair of triangular lugs 32 are provided on the inner sides of faces 10 of the upper section 3 intermediate the ends of the springs 22 and against which said springs may be manually pressed to flex the same in a direction to withdraw the locking pins 26 from the slots 30, whereby to unlock the ladder sections 3, 5.

As previously noted, the sections 3, 5 are alike and in this connection each section 3, 5 is provided in its reduced end portions 12 with the previously described notches 18 and slots 30 and at its lower end portions with the previously described locking means for coaction with the slots 30, and each section is provided at its lower end portion with the described springs 22, lugs 24, 32, locking pins 26 and holes 28, so that the sections 3, 5 are interchangeable and other like ladder sections may be attached thereto to provide a straight ladder of any desired length.

Referring now to Figure 8, according to our invention, means is provided for securing together a pair of the improved ladder sections, for instance the sections 3, 5 to form a step ladder. This means comprises a rectangular crown panel 34 having front and rear pairs of depending, tubular corner sockets 36, 38 of triangular cross section fitting downwardly over the upper reduced end portions 12 of the side members 7 of the pair of sections 3, 5 when said sections are detached from each other, the

front pair of sockets **36** inclining downwardly and forwardly of the panel **34** and the rear pair of sockets **38** inclining downwardly and rearwardly from said panel, so that the sections **3**, **4** are connected together in downwardly diverging relation like the usual step ladder.

The use and operation of our invention will be readily understood from the preceding description of parts and operation thereof, and further description is therefore deemed to be unnecessary.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

A ladder comprising a pair of ladder sections each embodying a pair of tubular side members, and transverse members connecting the side members, the side members of each pair having ends telescopically slidable together to connect said sections together, one transverse member of one section having end tabs inserted through slots in the side members of said one section and seating against the ends of the side members of the other section

to limit slidable telescoping movement of said ends together, a pair of longitudinally extending leaf springs on said ends of one pair of side members fixed at one end thereto and spaced therefrom and having locking pins on the other ends thereof snapped through openings in said ends of the side members in the limit of telescopic movement thereof, and a pair of triangular lugs on said ends of said one pair of side members intermediate the ends of and behind said springs and against which said springs are flexible toward said ends of said one pair of side members to withdraw said pins from said openings.

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