

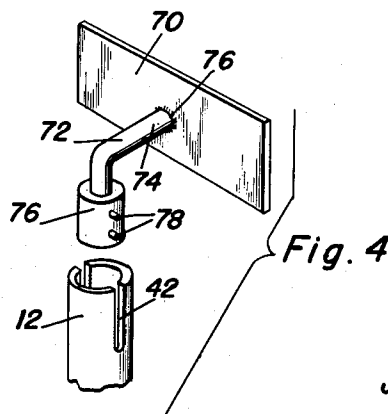
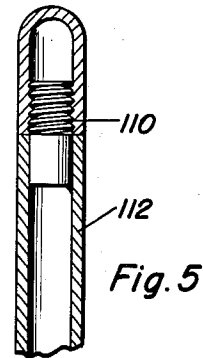
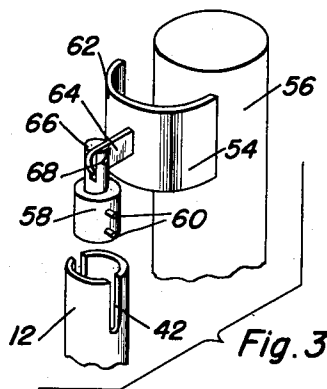
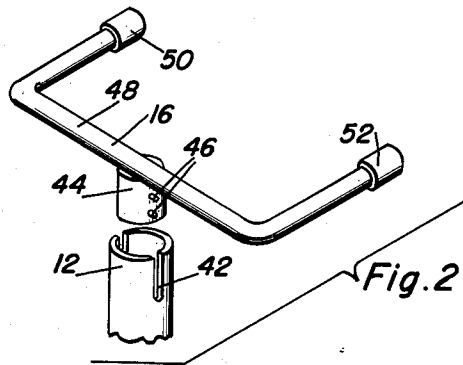
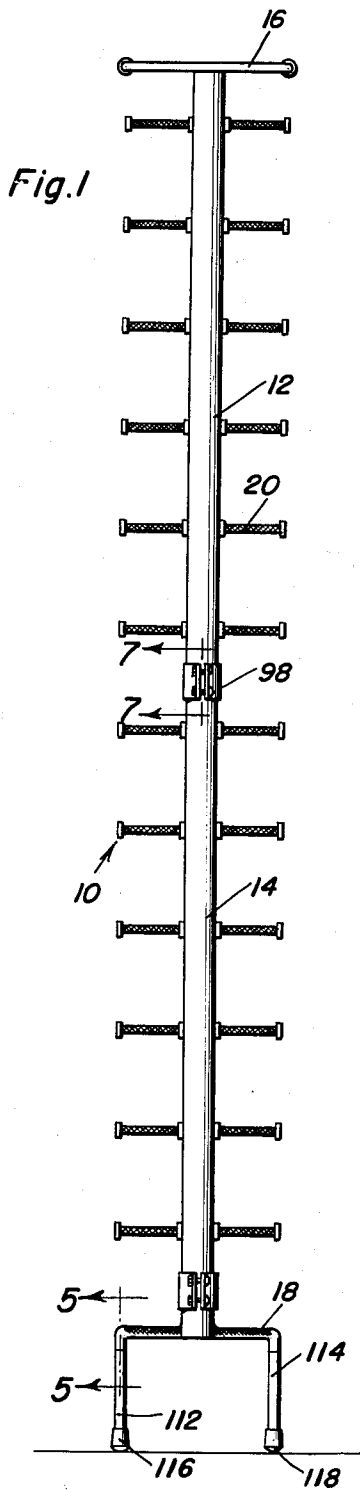
May 8, 1956

J. E. SMITH
SECTIONAL LADDER

2,744,674

Filed Sept. 21, 1954

2 Sheets-Sheet 1



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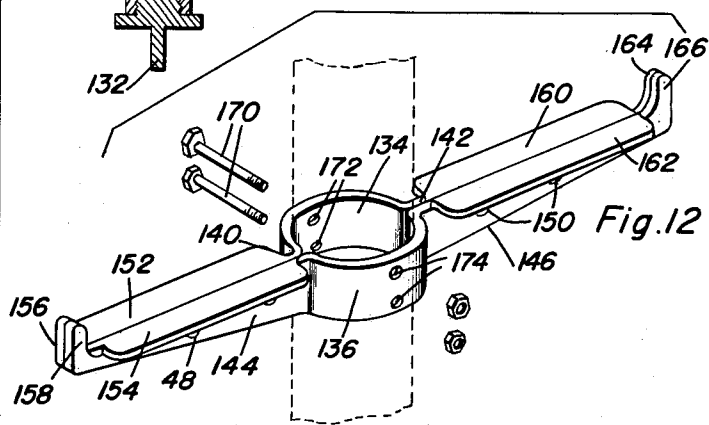
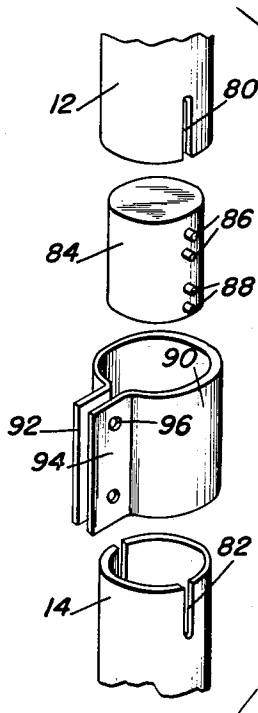
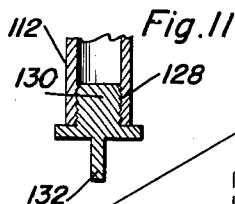
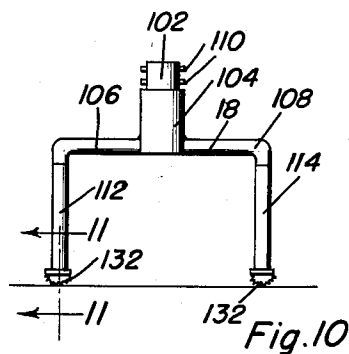
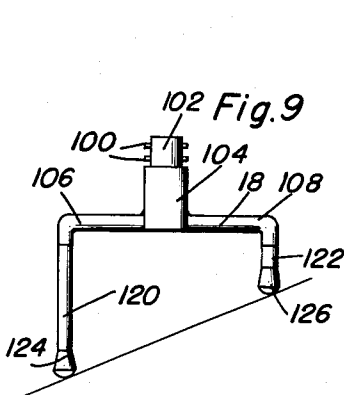
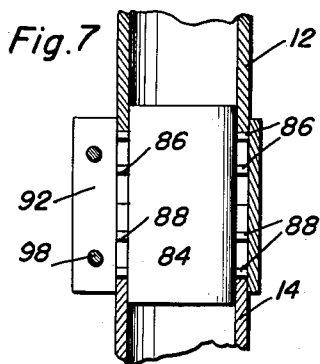
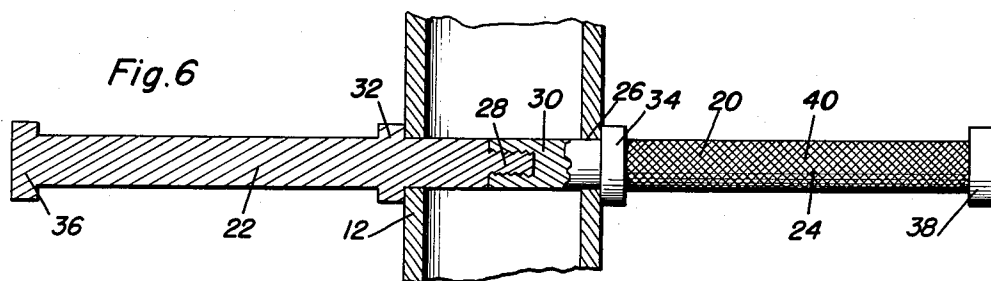
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J. E. SMITH
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SECTIONAL LADDER

John E. Smith, Huntington, W. Va.

Application September 21, 1954, Serial No. 457,325

1 Claim. (Cl. 228—34)

This invention relates to ladder construction and more particularly to a novel sectional ladder.

The primary object of the present invention resides in the provision of a sectional ladder formed of individual sections of any suitable size which can be easily vertically superposed so as to form a ladder of a desired height.

A further object of the invention resides in the provision of a novel coupling means for use in connecting the various sections of a novel sectional ladder.

One of the important features of the invention resides in the provision of a novel top support member for supporting the ladder against a particular type of upper supporting structure as may be necessary or desired.

Still another object of the invention resides in the provision of a base member so constructed as to enable the sectional ladder to be utilized on various types of terrain.

Still another object of the invention resides in the provision of suitable step members which may be easily secured to the vertical standards of the sectional ladder in a simple and convenient manner.

Still further objects and features of this invention reside in the provision of a sectional stepladder that is strong and durable, simple in construction and assembly, highly satisfactory in use, and which is capable of being manufactured from various readily available materials including aluminum, so as to be comparatively light in weight.

These, together with the various ancillary objects and features of the invention which will become apparent as the following description proceeds, are attained by this sectional ladder, a preferred embodiment of which has been illustrated in the accompanying drawings, by way of example only, wherein:

Figure 1 is an elevational view of the sectional ladder comprising the present invention;

Figure 2 is a perspective view of one form of top support member;

Figure 3 is an exploded perspective view of a modified form of top support member adapted to support the upper end of the ladder against a cylindrical member;

Figure 4 is an exploded perspective view of a further form of top support member which is adapted to support the upper end of the ladder against the small branches of a tree or the like;

Figure 5 is a vertical sectional detail view as taken along the plane of line 5—5 in Figure 1, illustrating the construction of a portion of the base member;

Figure 6 is an enlarged sectional detail view illustrating the construction of one form of step member;

Figure 7 is an enlarged sectional detail view as taken along the plane of line 7—7 in Figure 1 illustrating the construction of the coupling means for holding the standards in vertically superposed position;

Figure 8 is an exploded perspective view of the coupling means;

Figure 9 is an elevational view of a base member

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adapted to support the ladder on an uneven or slanting surface;

Figure 10 is an elevational view of a base member adapted to support the sectional ladder on a slick or smooth surface;

Figure 11 is an enlarged sectional detail view as taken along the plane of line 11—11 in Figure 10; and

Figure 12 is an exploded perspective view of a modified form of step member.

With continuing reference to the accompanying drawings wherein like reference numerals designate similar parts throughout the various views, reference numeral 10 is used to generally designate the sectional ladder comprising the present invention. The sectional ladder 10 includes an uppermost tubular standard 12 and a lowermost tubular standard 14 with any number of intermediate standards, not shown, being adapted to be inserted between the uppermost standard 12 and the lowermost standard 14. Carried by the uppermost standard 12 is a suitable top support member 16 while a base member 18 is detachably secured to the lower portion of the lowermost standard 14.

A plurality of step members 20 are adapted to be secured to the standards 12 and 14 in spaced relationship. The construction of the step members 20 can be best seen in Figure 6 and these step members 20 include step sections 22 and 24, which are adapted to extend inwardly through an aperture 26 in the standards 12 or 14. The step section 22 has an externally threaded end portion 28 of reduced cross sectional area while the step section 20 has an internally threaded end portion 30. The end 30 is threadedly engaged with the end 28 within the tubular standard so as to cause collars 32 and 34 on the step sections 22 and 24 to bear against the standard 12. Other collars as at 36 and 38 are formed on the ends of the step sections 22 and 24 and provide a guard for preventing the foot of a person using the stepladder from slipping off the step sections. The step sections are adapted to have their outer surfaces knurled or corrugated as at 40 to provide an anti-slip surface.

Referring now to Figure 2, it will be noted that the upper end of the standard 12 is provided with a notch 42 which opens into the upper edge thereof. Receivable within the standard 12 is a fitting 44 forming a part of the top support member 16, the fitting 44 having diametrically opposed pairs of lugs or pins 46 extending outwardly therefrom and adapted to seat in the notches 46. Further, attached to the fitting 44 is a substantially U-shaped member 48 which may terminate in resilient end pieces as at 50 and 52, for bearing engagement with a vertical support surface such as a part of a building or the like.

In Figure 3 there is disclosed a modified form of top member which is generally designated by reference numeral 54 and which is adapted to enable the upper end of the ladder to be supported against a cylindrical member such as the member 56 which may be a telegraph or telephone pole, or the like. This form of support member 54 includes a fitting 58 having lugs 60 extending outwardly therefrom and adapted to seat within the notch 42 in the uppermost standard 12. Further, an arcuate plate 62 having an ear 64 extending outwardly therefrom is pivotally attached to a bifurcated member 66 by means of a pin or shaft 68, the ear being received between the furcations of the bifurcated member 66 which is attached to the fitting 58. In this manner the arcuate plate 62 is adapted to bear against the supporting surface 56.

For use in supporting the upper end of the ladder against the smaller limbs of a tree or the like, there is provided a flat plate 70 forming the major portion of an upper support member 72 which includes a substan-

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tially L-shaped member 74 welded or otherwise secured as at 76 to the plate 70 and which is secured to a fitting 76 having lugs 78 receivable within the notch 42 in the standard 12.

Referring now to Figures 1, 7 and 8, it will be noted that the lower end of the standard 12 is provided with a notch 80 therein which opens into the lower edge of the standard 12. Likewise, the upper end of the standard 14 or of any other intermediate standard, not shown, may be provided with a notch 82 opening into the uppermost edge thereof. Received within the tubular standards 12 and 14 is a fitting 84 having pairs of lugs extending diametrically outwardly therefrom and indicated at 86 and 88, respectively, which are received within the notches 80 and 82 thereby holding the standards 12 and 14 against relative rotation. Further, clampingly holding the standards 12 and 14 in abutting relationship is a clamp member 90 which has flanges 92 and 94 which are apertured as at 96 for reception of bolts or other fasteners which are adapted to extend therethrough and which are indicated at 98, Figs. 1 and 7, for the purpose of clampingly holding the standards 12 and 14 in an assembled relationship.

The lower end of the lowermost standard 14 is suitably notched for reception of the lugs 100 of the fitting portion 102 of the base member 18. The base member 18 further includes an enlarged cylindrical portion 104 which has outwardly and downwardly extending L-shaped arms 106 and 108 forming a substantially U-shaped member. The arms 106 and 108 are, as can be best seen in Figure 5, internally threaded as at 110 for reception of legs 112 and 114 which may be provided with a rubber tip as at 116 and 118, respectively. As is shown in Figure 9, in cases where the ladder is adapted to be utilized on uneven surfaces or on sloping surfaces, legs 120 and 122 of differing sizes may be utilized. Further, in lieu of the rubber tipped portions 116 and 118 as are utilized on the legs 112 and 114 or the rubber tipped members 124 and 126 which are shown utilized on the base member shown in Figure 9, the legs may be internally threaded as at 128, see Fig. 11, for reception of a threaded plug 130 having a tubed arcuate lower surface 132, see Fig. 10. This enables the ladder to be utilized on comparatively smooth or slippery surfaces.

In Fig. 12 there is disclosed a modified form of step construction which includes clamp portions 134 and 136 having outwardly extending wings as at 140, 142, and 144, 146. The portions 140 and 144 are secured together by means of rivets 148 while rivets 150 are utilized to secure the portions 142 and 146 together. Horizontally extending flanges 152 and 154 form the upper surfaces of the portions 140 and 144 to also terminate in stops 156 and 158 serving to prevent the foot of the user of the ladder from slipping off of the steps. Further, flanges

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160 and 162 form the upper parts of the portions 142 and 146 and stops 164 and 166 form the ends of the portions 142 and 146, respectively.

By means of bolts 170 which extend through the apertures 172 and 174 in the clamp portions 134 and 136 and through aligned apertures in the standards, the step members are secured to the standards in spaced relationship.

Since from the foregoing the construction and advantages of this sectional ladder are readily apparent, further description is believed to be unnecessary.

However, since numerous modifications will readily occur to those skilled in the art after a consideration of the foregoing specification and accompanying drawings, it is not intended to limit the invention to the precise embodiments as shown and described, but all suitable modifications and equivalents may be readily resorted to which fall within the scope of the appended claim.

What is claimed as new is as follows:

A sectional ladder comprising a plurality of vertically superposed tubular standards, coupling means joining said standards, the adjacent ends of said standards having notches therethrough opening into said adjacent ends, a cylindrical fitting received in said adjacent ends, said fitting having lugs extending outwardly therefrom received in said notches, a clamp positioned over said adjacent ends and extending therebetween, vertically spaced apertures through said standards, pairs of step sections having an internally threaded end, the other of each of said pairs of step sections having an externally threaded end threadedly engaged in said internally threaded end within said tubular standards, inner collars on said step sections, said collars abutting said standard to lock said step sections to said standard, and outer collars on the outer ends of said step sections spaced from said inner collars, said step sections being knurled.

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