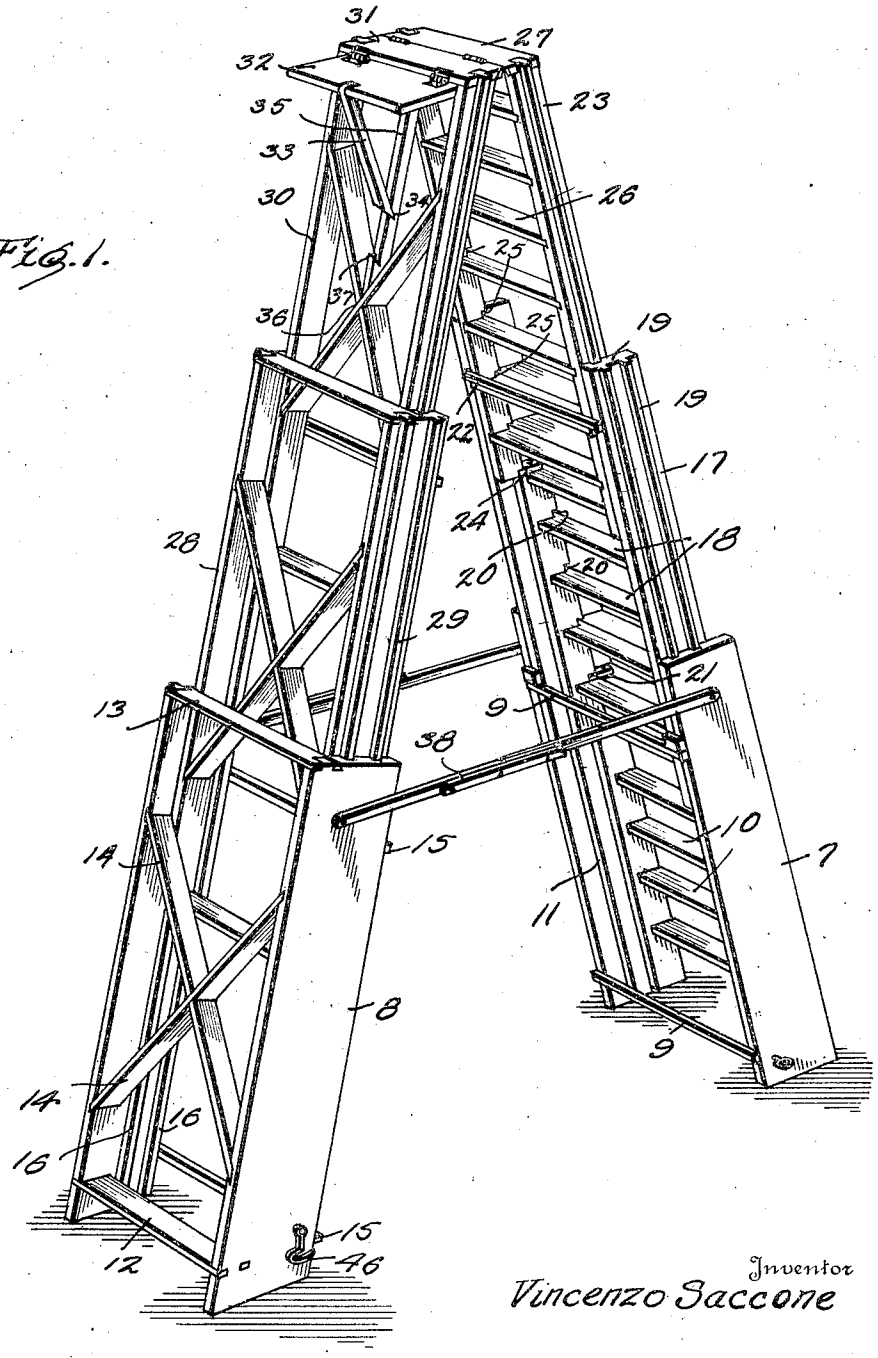
Jan. 9, 1923. 1,441,529

V. SACCONE.
EXTENSION STEPLADDER.
FILED MAR. 25, 1921.

2 SHEETS-SHEET 1

FIG. 1.



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2 SHEETS-SHEET 2

Fig. 2.

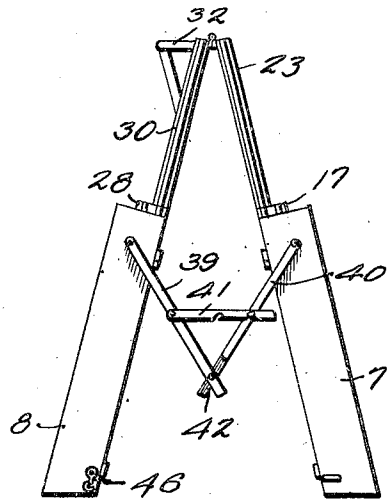


Fig. 3.

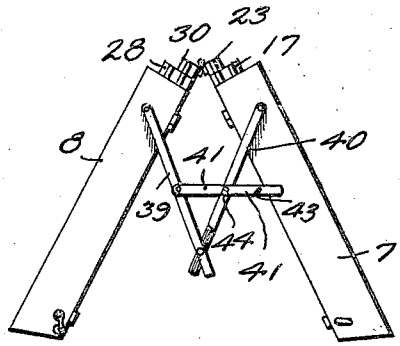


Fig. 4.

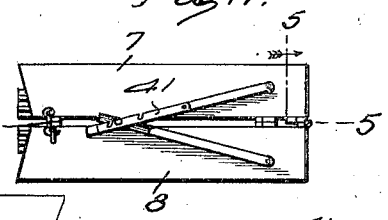


Fig. 5.

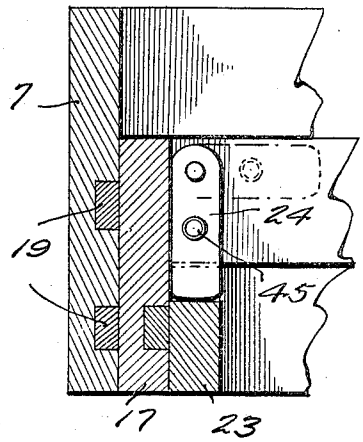
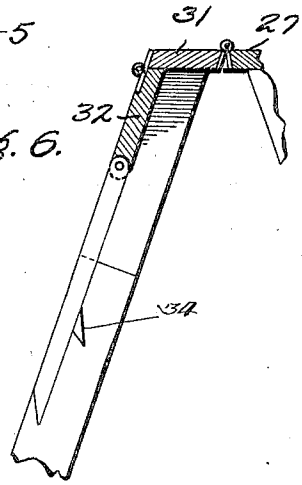


Fig. 6.



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Patented Jan. 9, 1923. 1,441,529

UNITED STATES PATENT OFFICE.

VINCENZO SACCONE, OF JOHNSTOWN, PENNSYLVANIA.

EXTENSION STEPLADDER.

Application filed March 25, 1921. Serial No. 455,474.

To all whom it may concern:

Be it known that I, VINCENZO SACCONE, a subject of the King of Italy, residing at Johnstown, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Extension Stepladders, of which the following is a specification.

This invention relates to step ladders of the extensible type.

Objects of the invention are to provide a ladder comprising a plurality of complemental sections; to permit sliding movement of the sections, one within the other, whereby any one or all of the sections may be used; and to provide means for holding the sections in any desired position of adjustment.

A coordinate object of the invention is to provide a multi-part ladder which may be collapsed and folded so as to occupy a minimum amount of space when not in use, yet permitting the ladder to be quickly set up into an operative position when desired.

The above and other objects of this invention will be more fully understood from the following description of the invention taken in connection with the accompanying drawings, wherein:

Fig. 1, is a perspective view of a ladder constructed in accordance with this invention.

Fig. 2, is a side elevational view thereof, showing one series of sections in a partially elevated position.

Fig. 3, is a side elevational view of the ladder showing the extensible series of sections folded into the base sections and illustrating the manner of use of the latter.

Fig. 4, is an elevational view of the ladder collapsed and folded.

Fig. 5, is a sectional view taken on the line 5—5 of Fig. 4, looking in the direction of the arrow, and

Fig. 6, is a detail fragmentary sectional view showing the manner in which the upper sections are hingedly connected and the manner of mounting the supporting shelf on one of the sections.

The device of this invention consists of a pair of base sections 7 and 8, each of which embodies a pair of relatively wide sides. The inner marginal edges of the sides of the section 7 are engaged by bracing struts 9, one of which is arranged adjacent each end of said sections. The sides are spanned, adjacent their front margins by steps 10, which may be of the usual or any desired configuration. The inner face of each of the sides of the section 7, between the steps and struts 9, is provided with vertical grooves 11, which extend from one end of each side to the other.

The section 8 has the sides thereof connected adjacent the lower end by a strut 12, and at the upper end by a strut 13. The intermediate portion of said sides are engaged by crossed brace bars 14. Transversely extending struts 15 are engaged with the inner lateral margins of said sides, thereby, in conjunction with the struts 12 and 13, and bracing bars 14, producing a rigid structure to sustain any reasonable stress which may be imposed thereon. The inner faces of the sides of said section 8 are also provided with vertically extending grooves, which, as indicated at 16, are arranged between the bars 14 and struts 15.

Slidably mounted in the section 7 is a step section generally designated 17, which consists of side pieces spanned by steps 18. The outer faces of the sides of the section 17 have ribs 19 formed thereon which complement the grooves 11 in the sides of the section 7 and are slidably mounted therein. If desired the sides of the section 17 may be provided with recesses 20 arranged directly above each step so as to receive pawls, such as that indicated at 21, and carried by one of the steps 10 of the section 7 to hold the section 17 in a predetermined adjusted position. If desired, the sides of the intermediate section 17 may be equipped with bracing struts, such as the one indicated at 22.

An upper step section designated 23 is slidably mounted in the intermediate section 17 in the same manner as the latter section is mounted in the base section 7. The said upper section 23 is held in any desired position of adjustment by a pawl 24, as shown to advantage in Fig. 5. This pawl may be engaged with any one of a series of recesses 25, which are formed in the section 23, preferably directly above

steps 26. Also, similar recesses may be formed in the lower terminals of the bottom of the sides of the section 23, to be engaged by the pawl 24 as illustrated to advantage in Fig. 1. The upper terminals of the sides of the section 23 are engaged by a flat top 27.

The base section 8 has slidably mounted therein an intermediate bracing section 28, the sides of which have ribs 29 formed thereon, which are slidably mounted in the grooves 16 of the section 8. The section 28 is almost identical in configuration to the section 8 and will therefore not be described in detail.

An upper prop section indicated 30 is slidably mounted in the intermediate bracing section 28 and is equipped with lateral ribs which engage complemental grooves formed in the inner faces of the sides of the section 28. The upper ends of the sides of the section 30 carry a flat top 31, which is hingedly connected to the flat top 27 of the upper step section 23, so as to form a support at the top of the sections 23 and 30.

Hingedly connected to the top 31 is a shelf 32 which may be held in a horizontal position, as shown to advantage in Fig. 1, by a supporting bar 33. The lower end of said bar is beveled and adapted for engagement in a correspondingly formed groove 34, arranged in a vertically extending standard 35. The standard depends from the top 31 and terminates between, and is secured to, bracing bars 36, which engage the sides of the upper bracing section 30. The standard 35 is wider at the bottom and has a second recess, as indicated at 37, formed therein, which is adapted to receive the lower end of the bar 33 when the shelf 32 is in a folded position, as shown in Fig. 6. Consequently, the shelf will be prevented from swinging outwardly during opening or closing movement of the sections of the ladder.

In order to limit spreading movement of the step sections and prop sections, selective bracing means generally designated 38 is provided, which in this instance consists of a plurality of pivotally connected rods 39, 40 and 41. Each of the rods 39 has one end thereof pivotally connected to the lower or base bracing section 8, while one end of each of the rods 40 is pivotally connected to the base section 7. The free ends of the rods 39 and 40 are pivotally connected, as indicated at 42, and are adapted to overlap as shown to advantage in Figs. 1, 2 and 3. The selective feature of these rods is attained by use of the rods 41, one end of each of which is pivotally mounted on the rod 39. One marginal edge of the rod 41 has notches 43 formed therein, any one of which is engageable with a stud 44 carried by the rod 40 so as to limit spreading movement of the step sections and prop sections in harmony with the vertical adjustment of the said sections.

In use of this device, it is apparent that only the base sections 7 and 8 may be used if desired, as shown in Fig. 3 of the drawings. When used in this manner the bracing means is positioned substantially as shown in this figure. A partial extension of the ladder may be attained by elevating the sections 23 and 30 into the position shown in Fig. 2 of the drawings, which will require a change in the bracing means 38. Further, the ladder may be completely extended by raising the intermediate sections 17 and 28 as well as the upper sections 23 and 30, as shown in Fig. 1. When in this position, the bracing means 38 assumes a substantially horizontal position. It is to be understood that the pawls 21 and 24 are engageable with the recesses in the sections 17 and 23, respectively, so as to hold said sections in any desired position of adjustment. In order to facilitate movement of said pawls, a finger piece 45 such as that shown on the pawl 24 in Fig. 5 of the drawings, may be used. It will be appreciated that immaterial of the position of the sections undue spreading movement thereof will be prevented by the bracing means 38. Moreover, accidental collapsing of the sections will be prevented by the pawls 21 and 24. When it is desired, however, to collapse the sections it is appreciated that this may be readily accomplished in an expeditious manner. When collapsed the device will be substantially as shown in Fig. 4, and if desired may be locked by a hasp fastening 46 or the like. Since the ladder is relative flat when folded, it is appreciated that it will occupy a minimum amount of space when not in use and may be conveniently transported. To insure substantial anchoring of the ladder when in operation, the lower terminals of the sections 7 and 8 may be beveled in a manner shown in the drawings.

It is to be understood that the ladder may be constructed of wood or any other suitable material, and may be of any desired size and shape. Moreover, various changes may be made in this device within the scope of the appended claims.

What is claimed is:

1. A ladder including base sections one of which constitutes a step section and the other a prop section, a plurality of auxiliary step sections slidably mounted in said base step section, a plurality of auxiliary prop sections slidably mounted in the base prop section, said auxiliary step and prop sections being collapsible completely within the respective base section to permit said base sections to be folded together into a relatively small rectangular shaped struc-

ture, and means to hold said base sections folded together.

2. An extension ladder including telescoping step and prop sections, a shelf hingedly connected to the top of one of said prop sections and equipped with a pendent supporting bar engaged with a part of the prop section to hold said shelf in a horizontal position, said shelf and bar being foldable completely within the plane of the section carrying the same substantially as described.

In testimony whereof I affix my signature.

VINCENZO SACCONE.