

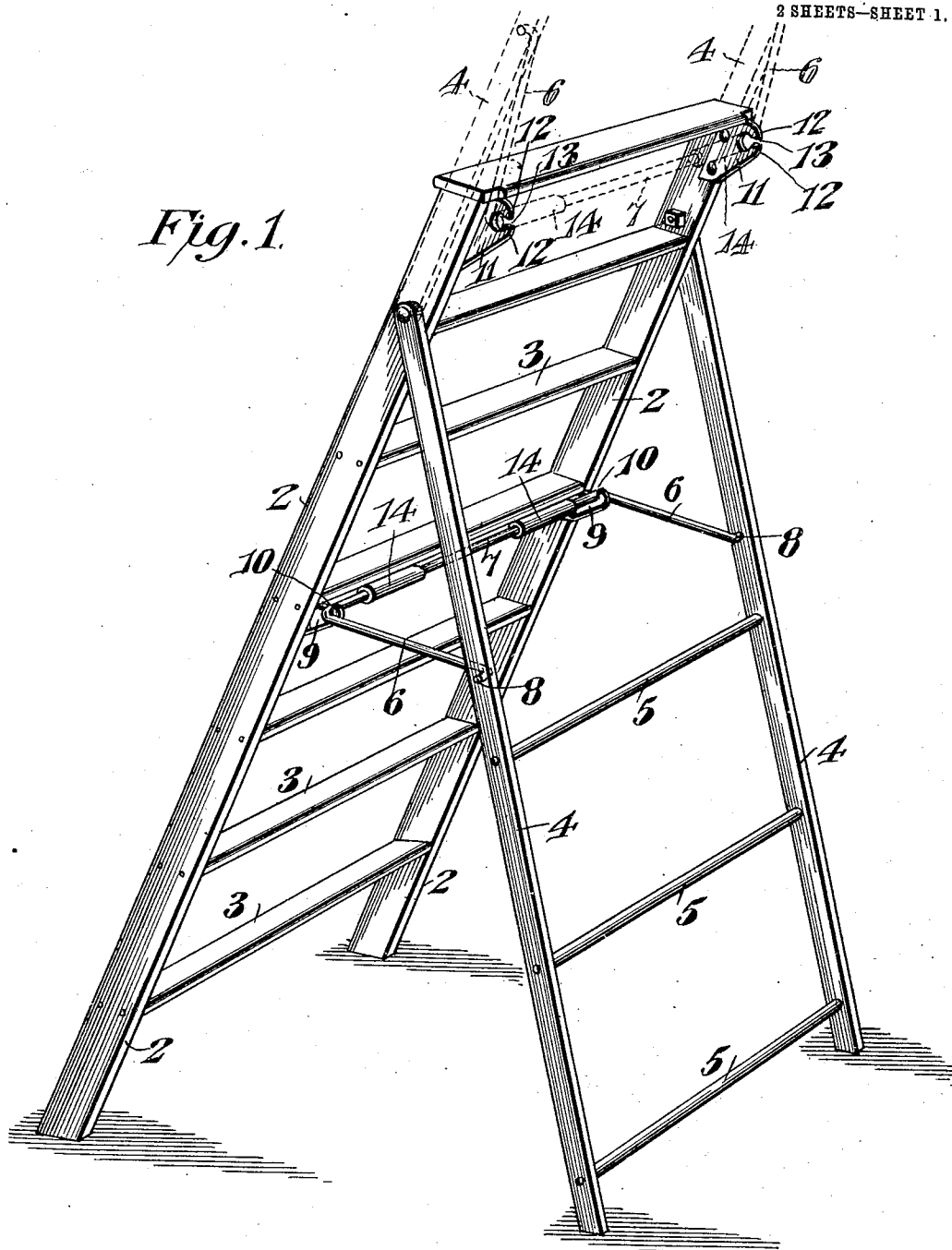
944,849.

J. E. DUNCAN.
CONVERTIBLE LADDER.
APPLICATION FILED MAR. 15, 1909.

Patented Dec. 28, 1909.

2 SHEETS—SHEET 1.

Fig. 1.



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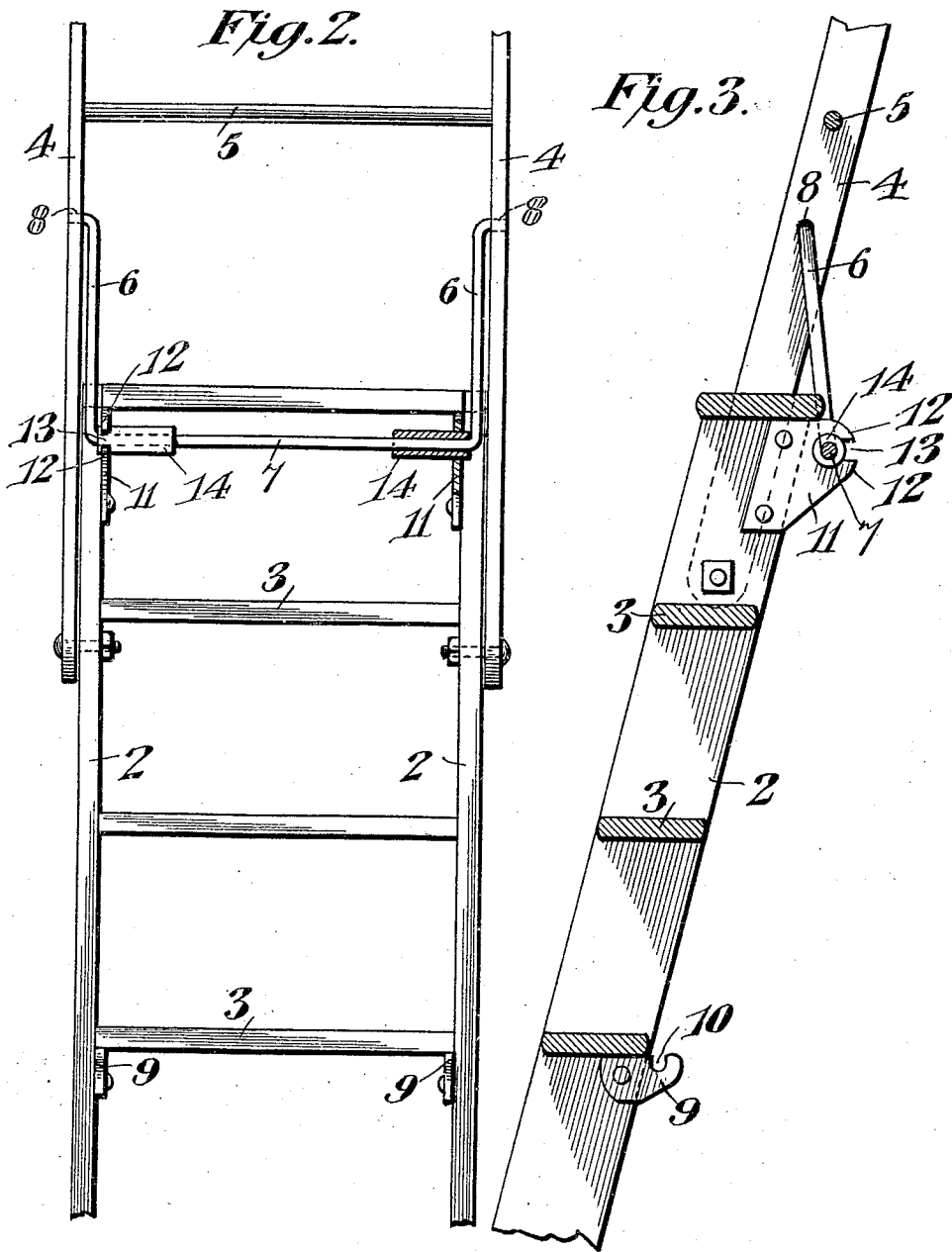
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

JAMES E. DUNCAN, OF ELTON, LOUISIANA.

CONVERTIBLE LADDER.

944,849.

Specification of Letters Patent. Patented Dec. 28, 1909.

Application filed March 15, 1909. Serial No. 483,455.

To all whom it may concern:

Be it known that I, JAMES E. DUNCAN, a citizen of the United States, residing at Elton, in the parish of Calcasieu and State of Louisiana, have invented a new and useful Convertible Ladder, of which the following is a specification.

My invention relates to step-ladders and particularly to a ladder, which, in one position, forms an ordinary step-ladder with the usual bracing legs, and in the other position forms an extended straight ladder not supported by legs, the legs being turned upward, forming the upper section of the extended ladder.

My invention consists in the arrangement of parts which permit this conversion and also in a peculiar brace lock which locks the braces in such position as to hold the ladder in its extended relation.

In the drawings, Figure 1 is a perspective view of my ladder with the supporting legs turned down; Fig. 2 is a face view of the two sections of the ladder extended; Fig. 3 is a longitudinal section of Fig. 2.

The embodiment of my invention disclosed in the drawing includes the opposed stiles, 2, and the steps, 3, connected together in the usual manner. Opposed legs 4 are pivoted at their upper ends to the stiles 2 by bolts or in any other desired way. These legs are connected in each other by a series of rungs, 5. To the legs 4 a bail-shaped brace is attached having the opposed arms 6, and the cross bar 7, made in one piece. The ends of the arms are outwardly turned as at 8 to engage with the legs 4. Upon the stiles 2 are mounted the rearwardly projecting brackets or hooks, 9, having notches 10 in the upper edges thereof. When the ladder is arranged as in Fig. 1, the cross bar 7 engages with these notches, thus preventing the legs from spreading, and holding the legs in their usual or bracing position.

By turning the legs 4 upward they will form an extension of the stiles 2, but in this position they must be held against any pivotal turning movement. To this end I provide the upper pair of outwardly projecting brackets or hooks 11. Each of these brackets is cut out to form the opposed circular jaws, 12, whose ends are spaced as at 13 just suffi-

ciently to permit the passage of the transverse bar, 7. The diameter of this bar is of course less than the inside diameter of the jaws 12, hence, it can be easily inserted or taken out therefrom by a rearward movement of the cross bar.

To prevent any chance of an accidental detachment of the brace cross bar 7 from the brackets 11, which is, of course, particularly necessary when the ladder is extended, I provide the loose shiftable sleeves 14, surrounding the cross bar 7. When the brace is engaged with the lower brackets 9, these sleeves are not used, as shown in Fig. 1, but when the legs 4 are raised, as shown in Fig. 3, the cross bar 7 is inserted into the jaws 12, and the sleeves are shifted to the extremities of the cross bar and forced endwise into the jaws 12. As the sleeves are of greater diameter than the openings, 11, they cannot be forced out through the openings and the cross bar 7 is therefore locked in place, thus holding the brace against any accidental detachment from the brackets, and the brace holds the legs extended. When it is desired to release the legs from their extended position it is only necessary to shift the sleeves 14, whereupon the cross bar may be readily moved out through the opening 13 in the brackets and the legs moved down to their former position. The braces, 6, 7, being pivotally attached to the legs 4, it can be folded up within the legs, and the legs, of course, may be folded up against the stiles 2 in the usual manner.

My ladder, it will be seen, differs in form nowise from the usual step-ladder and may be used in the same manner and for the same purposes. By the addition of the upper brackets, however, and the use of the peculiar braces, 7, 6, I can convert the ladder as above described, while the sleeves absolutely lock the braces in engagement with the brackets, and prevent the possibility of any accidental detachment therefrom and any change in the relative position of the legs 4 and the stiles 2.

It will be noted that my invention comprises an ordinary ladder section having hooks projecting from the rear side near the upper end and a separate pair of hooks projecting from the main section of the

ladder at an intermediate point, and a separate ladder section pivotally connected to the main ladder section and having a swinging bail which, in one position, is engaged with the intermediate pair of hooks to form a step-ladder, and in another position is engaged with the end pair of hooks to provide an extension ladder.

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

1. A ladder comprising two sections hingedly connected, one section being adjustable to different positions for forming a brace for the other section or an extension thereof, the point of pivotal connection of the combined bracing and extension section with the other section being disposed below the top of the latter, a bracing device connected with the combined bracing and extension section, and means on the other section spaced above and below the said point of pivotal connection and with either of which means said device engages for holding the said combined bracing and extension section in its different positions, said bracing device comprising a pair of arms united by a connecting portion, the arms of which are disposed approximately horizontally between the said sections or approximately vertically behind the sections when the combined bracing and extension section is in different positions.

2. A ladder comprising a main section, an extension section hingedly connected therewith and movable to a position for bracing the main section, a bracing device hingedly connected with the extension section, brackets on the main section having notches in their top edges in which the bracing device is adapted to rest when the extension section is in position to brace the main section, and additional brackets on the main section having seats for receiving the bracing device when the extension section is in extended position, and means for locking the said device in engagement with the seats of the last-mentioned brackets, the points of pivotal connection between the main and extension sections being disposed between the two sets of brackets, and the bracing device being disposed wholly above or below the said points of pivotal connection when the extension section is in different positions.

3. A ladder comprising a main section, an extension section having its lower end overlapping the upper end of the main section and pivotally connected therewith, brackets secured to the main section and extending rearwardly therefrom at a point above the pivotal connection between the sections, a bracing device pivotally connected with the extension section at a point

above the bracket and pivotal connection between the sections and inclined rearwardly out of alinement with the said sections, and seats on the brackets with which the bottom of the bracing device engages.

4. A ladder having opposed stiles and opposed legs, the legs pivoted to the stiles, a cross bar having arms pivotally connected to the legs, a shiftable sleeve on the cross bar, and a projecting member on one of the stiles having opposed circular jaws, spaced from each other at their ends, said space being large enough to permit the introduction of the cross bar but being smaller than the diameter of the sleeve.

5. A ladder having opposed stiles and opposed legs pivoted to the stiles, a cross bar having arms pivotally mounted on the legs, a projecting member on one of the stiles having opposed spaced jaws, and laterally shiftable means for interlocking said cross bar with said spaced jaws.

6. A ladder having opposed stiles and opposed legs pivoted to the stiles, a cross bar connected with the legs, a projecting member on one of the stiles having opposed spaced jaws, and means mounted on the cross bar and shiftable laterally thereon for interlocking the cross bar with the jaws.

7. A ladder having opposed stiles and opposed legs pivoted to the stiles for movement into alinement therewith, said legs having rungs, a cross bar having angular arms pivotally mounted at their ends in the legs, laterally shiftable sleeves mounted on the cross bar, notched brackets projecting from the stiles for engagement with the cross bar when the legs are in an angular position relative to the stiles, and brackets mounted on the upper end of the stiles having opposed spaced circular jaws with which said sleeves engage to interlock the cross bar to the brackets when the legs are upwardly turned into alinement with the stiles.

8. A ladder having opposed stiles and opposed legs pivoted to the stiles, a cross bar having angular arms pivotally mounted at their ends in the legs, a laterally shiftable sleeve on the cross bar, and a bracket mounted to project rearwardly from one of the stiles, said bracket having a circular notch therein of the same diameter as the sleeve, said notch being open at one side, the opening being of the same width as the diameter of the cross bar.

9. A ladder comprising a main section having two pairs or sets of hooks, one pair located near the upper end of the said section and the other pair at an intermediate point thereof, in combination with a separate ladder section pivoted to the main section and provided with a swinging bail which, in one position of the separate sec-

tion, is engaged with the intermediate pair
of hooks to form a step-ladder, and in the
extended position of the separate ladder sec-
tion is engaged with the pair of hooks at
5 the upper end of the main section whereby
an extension ladder is provided.

In testimony, that I claim the foregoing

as my own, I have hereto affixed my signa-
ture in the presence of two witnesses.

JAMES E. DUNCAN.

Witnesses:

ROBERT LIGON,
JOS. D. CARLTON.