(No Model.)

J. I. IVESTER.

FLEXIBLE EXTENSION LADDER.

No. 312,354. Patented Feb. 17, 1885.

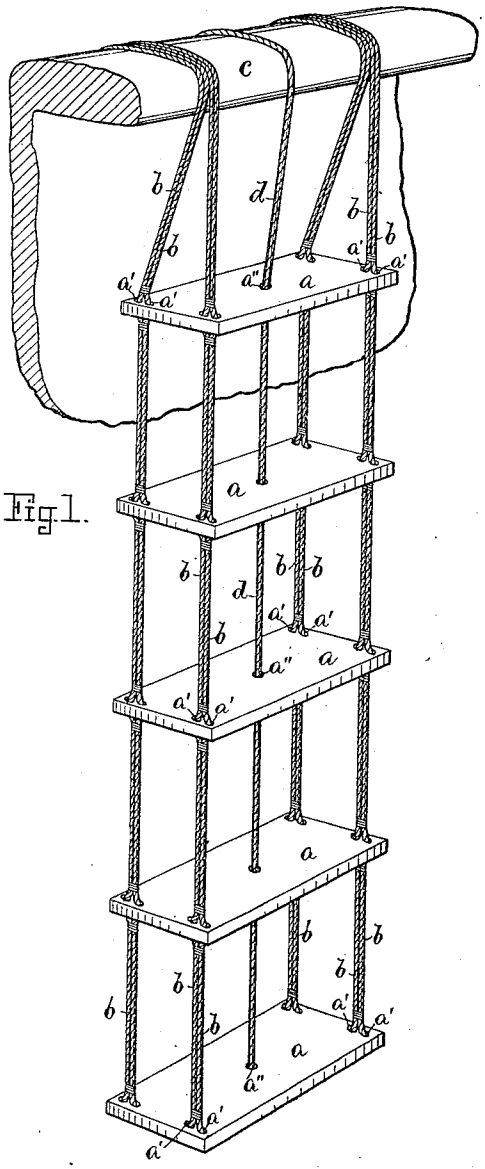


Fig. 1.

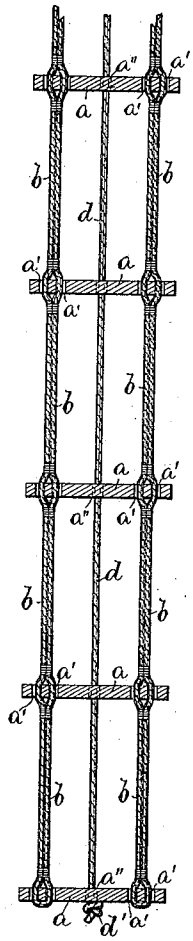


Fig. 3.

Fig. 2.

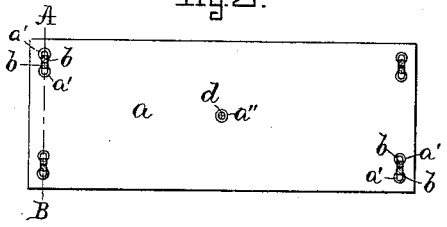
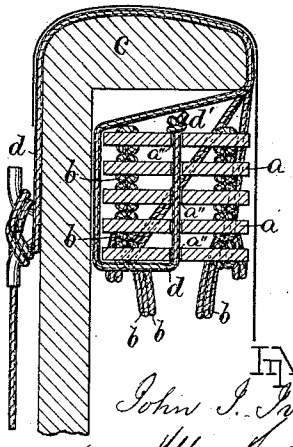


Fig. 4.



Witnesses

Henry Chadbourn.

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by Alban Andrew, his atty.

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UNITED STATES PATENT OFFICE.

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FLEXIBLE EXTENSION-LADDER.

SPECIFICATION forming part of Letters Patent No. 312,354, dated February 17, 1885.

Application filed December 4, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN I. IVESTER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Flexible Extension-Ladders; and I do hereby declare that the same are fully described in the following specification and illustrated in the accompanying drawings.

This invention relates to improvements in flexible extension-ladders particularly adapted for use on board ships, although it is equally useful as a fire-escape, or for other purposes where a flexible extension-ladder may be required.

The invention is carried out as follows, reference being had to the accompanying drawings, where Figure 1 represents a perspective view of the ladder shown as extended while in use. Fig. 2 represents a plan view of the steps. Fig. 3 represents a vertical section on the line A B, shown in Fig. 2; and Fig. 4 represents a side view of the improved ladder as folded together when not required for use.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

The invention is composed of a series of steps or plates, *a a a*, having in each of their respective four corners a pair of perforations, *a' a'*, through which pass the corner supporting and flexible twin ropes *b b*, as shown. Above and below each step or plate *a* each set of twin ropes *b b* are united together by winding a cord around such pair of ropes, or they may be secured together in any other equivalent or well-known manner, so as to prevent the plates or steps *a a* from slipping on the said supporting-ropes, and to secure said steps or plates at a proper distance apart on the said flexible supporting twin ropes. The upper ends of the ropes *b b b b* may be secured in a suitable manner to the railing *c* of a vessel, or to any other part of the hull, stays, or deck, as may be desired.

In case the ladder is to be used as a fire-escape, the upper ends of the aforesaid supporting-ropes *b b* may be secured to the window-sill, or to a suitable bracket attached to the wall, or in any other way to serve the purpose for which the ladder may be intended.

The manner of securing the upper end of the ladder is immaterial, and it may be accomplished in various ways without departing from the essence of my invention. The lower ends of the twin ropes *b b* are firmly secured to the lowest step, *a*, in the series in any suitable manner, as may be found practical. Each step or plate *a* is provided with a central perforation, *a''*, through which passes loosely the hoisting-rope *d*, the lower end of which is secured to the lowest step *a* in the series either by having a knot, *d'*, on said hoisting-rope below the lowest step, as shown in Fig. 3, or in any other suitable or equivalent manner. By means of said hoisting-rope *d* the steps of which the ladder is composed may be hauled up and closed together outside of the vessel, below the railing thereof, and secured in such a position when not required for use, as shown in Fig. 4; or it may be folded together and packed away on deck if not to be used for some time, although I prefer to draw it up and suspend it when not in use, so as to be ready for use at any required moment; and to protect the ladder when so folded together I may prefer to add a piece of canvas or sail-cloth, *e*, secured to the railing so as to hang down on the outside of the folded ladder, as shown in Fig. 4.

By the use of the twin ropes *b b*, a pair in each corner of the plates *a a*, I am able to secure the latter in their respective places very firmly to said twin ropes, and by such construction the steps *a a* are prevented from tipping when a person is going up or down on the ladder.

What I wish to secure by Letters Patent, and claim, is—

The herein-described flexible extension-ladder, consisting of the corner twin ropes, *b b*, passing through perforations in the rigid steps *a a a*, and secured above and below such steps, in combination with the hoisting-rope *d*, passing loosely through a perforation in each step and secured to the lowest one in the series, substantially in a manner and for the purpose set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN I. IVESTER.

Witnesses:
ALBAN ANDRÉN,
HENRY CHADBOURN.