

1,233,686.

J. W. MOORE.
SHIP'S LADDER AND GANGWAY.
APPLICATION FILED JAN. 21, 1916.

Patented July 17, 1917.
2 SHEETS—SHEET 1.

FIG. 1.

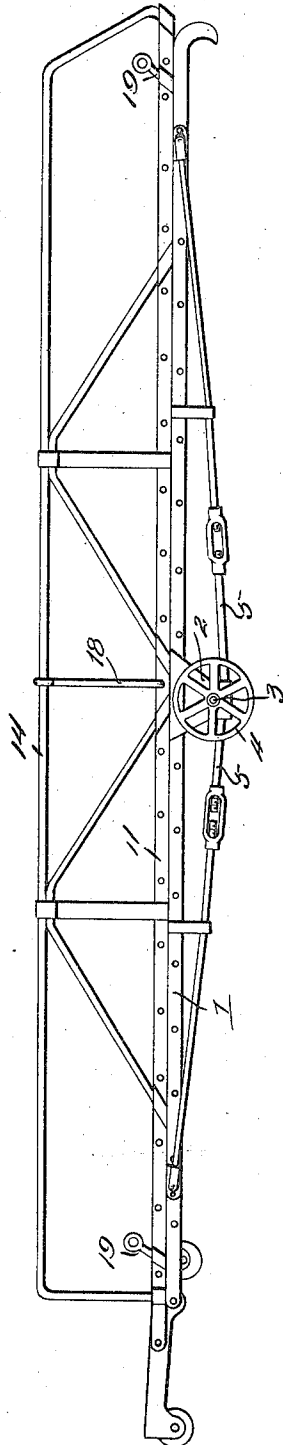
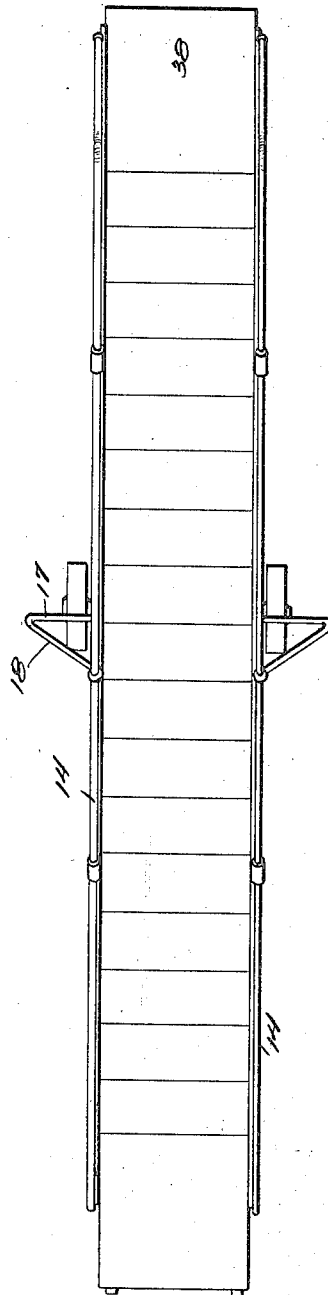


FIG. 2.



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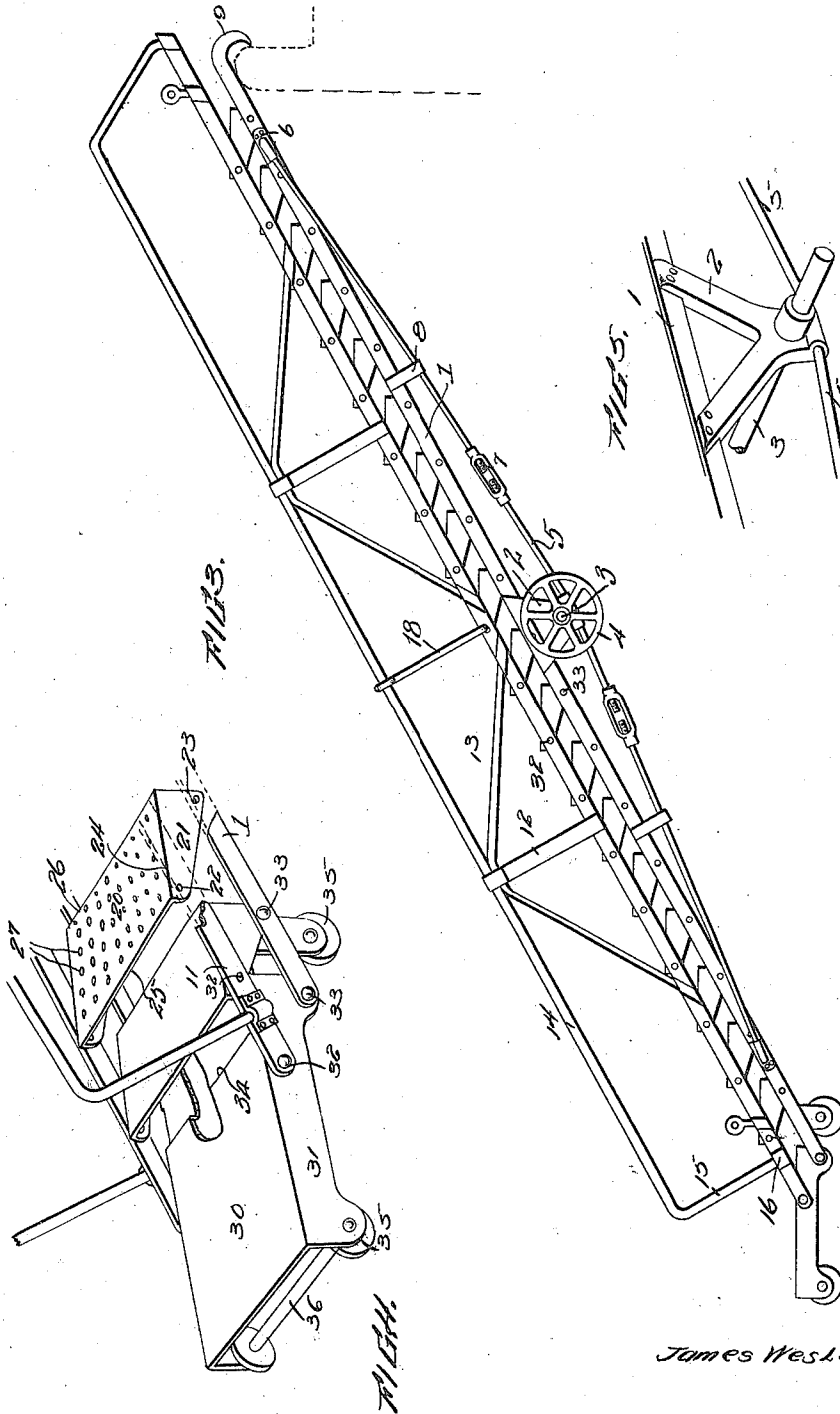
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UNITED STATES PATENT OFFICE.

JAMES WESLEY MOORE, OF PORTSMOUTH, VIRGINIA.

SHIP'S LADDER AND GANGWAY.

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Application filed January 21, 1916. Serial No. 73,457.

To all whom it may concern:

Be it known that I, JAMES WESLEY MOORE, a citizen of the United States, residing at Portsmouth, in the county of Norfolk and State of Virginia, have invented certain new and useful Improvements in Ships' Ladders and Gangways, and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to collapsible ladders, and more especially to those which are employed for boarding ships over their sides; and the object of the same is to construct a ladder of this character so that its steps remain horizontal, no matter what the inclination of the ladder itself, and as the inclination is reduced toward horizontal the steps come nearer and nearer into line and finally actually into line so as to produce a flat gangway. It is also the object of the present invention to apply certain features of improvement to devices of this kind to render them lighter and yet stronger, all as hereinafter more fully described and claimed and as shown in the drawings wherein:

Figure 1 is a side elevation and Fig. 2 is a plan view of this device flattened out or collapsed.

Fig. 3 is a side elevation showing the device standing at about an angle of 30 degrees whereby it could be used as a gangway as between a large or high ship and a comparatively low wharf.

Fig. 4 is an enlarged perspective detail of the lower end of the device, partly broken away and Fig. 5 is a detail of the bracket hereinafter described.

The transverse members of this device are steps which pivotally connect the longitudinal members. The latter run across both ends of the steps and consist of upper side bars and lower side bars, preferably made of light strap metal and lying directly over each other so that they come in contact edge to edge when the device is collapsed to its flat condition as seen in Fig. 1. Each lower side bar 1 carries at about its mid-length a dependent bracket 2 (best seen in Fig. 5) and through these brackets is passed an axle 3 on which may be mounted wheels 4 so that the gangway as seen in Fig. 1 may be trundled around on the wharf or on the deck by one man, as it is my intention that the entire structure shall be substantially

balanced over these wheels. The latter may be removed if desired, but I prefer to supply them when the article is manufactured and sold. Each bracket also constitutes a strut for trusses 5 which lead from points 6 on the side bar 1, and each truss has a turn-buckle or other tightening device 7 inserted within its length so that it may be adjusted from time to time to keep the parts taut. Additional struts or connections may be provided at the points 8 between the trusses and side bar if desired. The upper end of the side bar is by preference hooked as shown at 9 so that it may be passed over some elevated member such as that indicated in dotted lines in Fig. 3.

Each upper side bar 11 is of substantially the same length and material as the lower side bar, and overlies it directly as has been suggested, and this bar carries uprights or posts 12, suitably braced as at 13, which posts support a hand-rail 14 having its ends 15 downturned and connected with the side bar at the points 16. For preventing spreading of the hand-rails between their ends or between the points where they are connected with their side bars, a stout cross bar 17 runs through the two upper side bars 11 and is carried out for some distance beyond them as best seen in Fig. 2, then bent and carried upward and inward as at 18, and its ends united with the hand-rails as shown. Eye-bolts 19 are carried by the upper side bars 11 so that the entire device may be suspended at one or both ends from a point overhead on the dock or on ship-board.

Disposed between the two pairs of side bars are steps, each by preference made of a single piece of sheet metal comprising a flat tread 20 and two down-turned end plates 21, each being of substantially triangular shape best seen in Fig. 4 and pierced with holes 22 and 23 respectively near the bend 24 and the front edge 25 of the tread, and remote from the bend but near the rear edge 26 of the tread. In other words, the end plate 21 is wider toward the rear edge of the step, and the hole 23 stands at a greater distance from the tread than the hole 22. The body of the tread may be provided with openings such as slots or perforations as indicated at 27, or it may be otherwise formed to give it lightness without sacrificing strength, and also to prevent slipping of the feet thereon in wet or icy weather.

Each step is pivotally connected with the side bars by a rivet 32 passing through the upper side bar 11 and through the hole 22, and another rivet 33 passing through the lower side bar 1 and the hole 23; and the rod 17 forming the mid-length brace for the hand-rails will by preference take the place of the appropriate rivets 32 as the railings and their braces are carried exclusively by the upper side bars. Of course the truck and the trusses are carried exclusively by the lower side bars.

At the lower end of the device is a small platform 30 preferably comprising a flat sheet metal tread with down-turned end plates 31 like the steps, and the side bars extend by said plates and pivoted to each of them by rivets 32 and 33 as shown in Fig. 4. The body of the platform is offset slightly as at 34 and dropped at its upper portion where it extends in under the lowermost step, and this permits the device to be folded flat as seen in Fig. 1. The corners of the platform are supported on rollers or wheels 35, preferably having their own axles 36. In other words, this platform is practically a widened lower step having wheels at its corners, and its service is to rest on the wharf when such wharf is quite low, the wheels perhaps riding to and fro a little over the boarding of the wharf as the ship rises and falls or rocks slightly and as these motions are communicated to the gangway by the hooks 9. The upper step also may be widened as seen at 38, but otherwise its structure is the same as any of the intermediate steps. Obviously they are all pivoted in parallelism, and obviously also they will all fold edge to edge when the side bars are moved toward each other to collapse the device into the shape of a gangway, and the steps will all open when the side bars are separated to elevate the device into approximately the position of a ladder. I have shown it at about a 30 degree elevation in Fig. 3, but if properly made this device when used as a ship's ladder could assume a much steeper elevation. In this position

the weight of passengers ascending or descending is thrown onto the side bars and by them by the lowermost pivots onto the platform 30 whose wheels 35 rest on the dock. When the device is collapsed into the shape of a gangway as seen in Fig. 1, the weight of the passengers is borne by both pairs of side bars, the uppermost now lying in close contact with the lowermost so that they have the greatest supporting capacity; and at this time the trusses and struts are useful especially where the gangway has a considerable reach and there are likely to be a number of passengers at one time upon it. The materials and proportions of parts are not essential to the invention.

What I claim is:

1. A folding gangway comprising upper and lower sets of stringers set edgewise, trussing for the stringers, the trussing for the top stringers forming hand rails, steps pivoted at their front and rear portions of each end to the upper and lower sets of stringers; and a brace mounted in the upper stringers and projecting outwardly therefrom and then bent upwardly toward and secured to the hand rails, the trussing of the lower stringers including struts forming a bearing, and a transverse shaft in said bearing having rollers at each end.

2. In a gangway, upper and lower sets of stringers set edgewise, trussing for the stringers, the trussing for the top stringers forming hand rails, steps pivoted at their front and rear portions of each end to the upper and lower sets of stringers, and a brace mounted in the upper stringers and projecting outwardly therefrom and then bent upwardly toward and secured to the hand rails, the brace extending through the stringers and forming a pivot for one of the steps.

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

JAMES WESLEY MOORE.

Witnesses:

T. J. O'ROURKE,
WM. S. KING.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."