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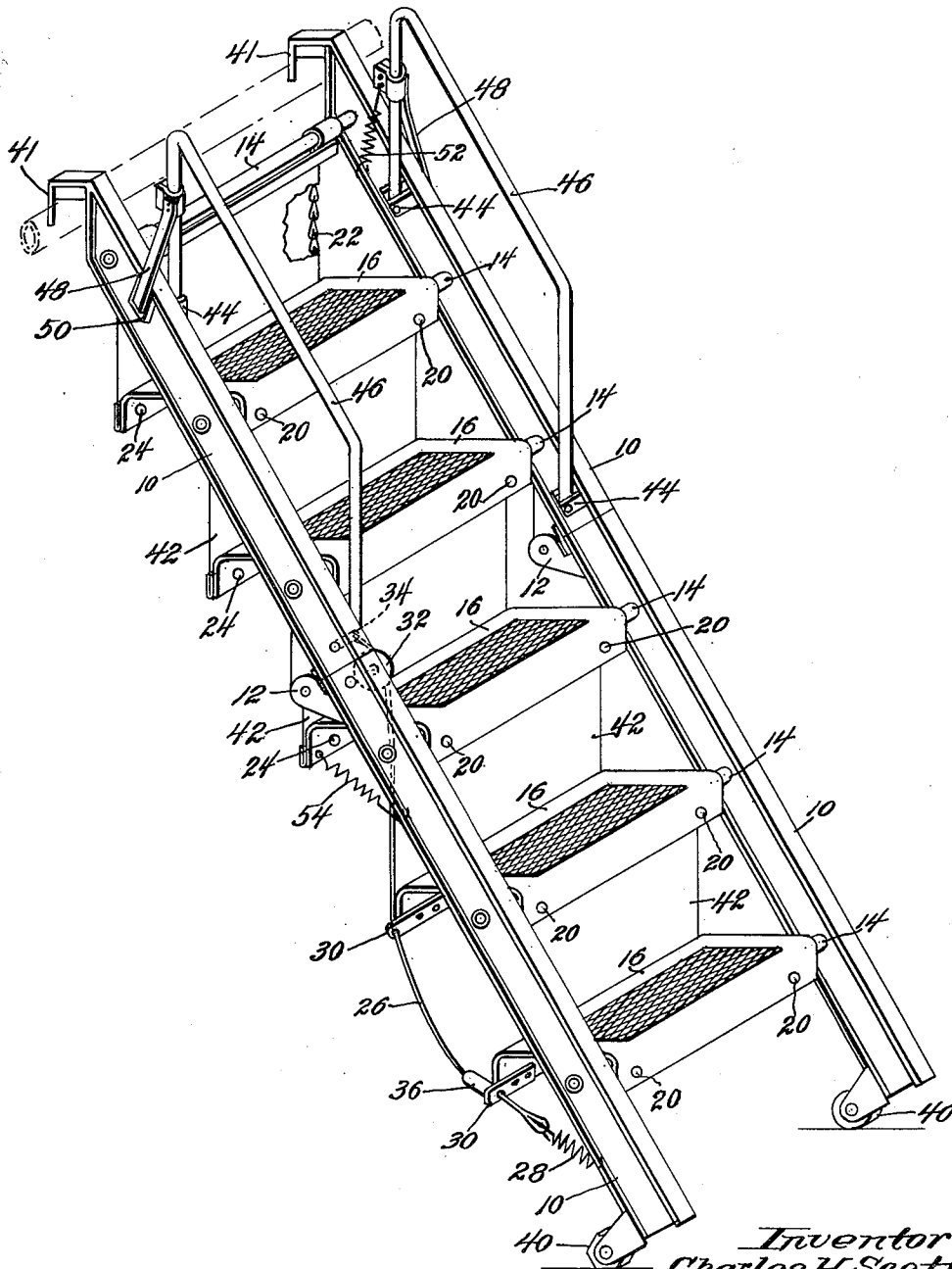
C. H. SCOTT
PORTABLE STAIRWAY

2,551,345

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2 Sheets-Sheet 1

Fig 1



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Fig. 2

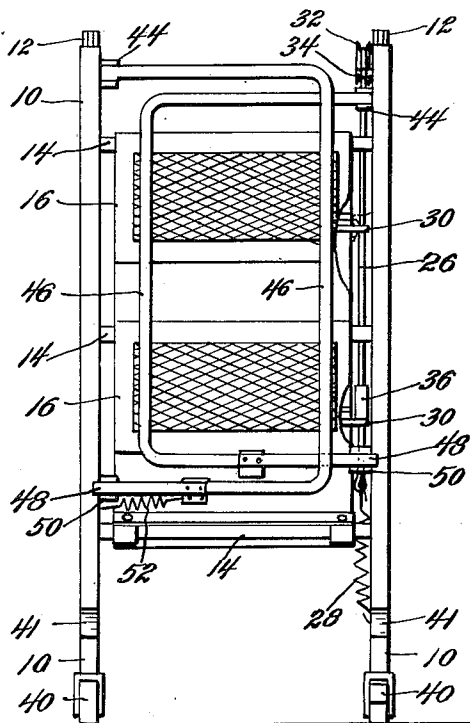
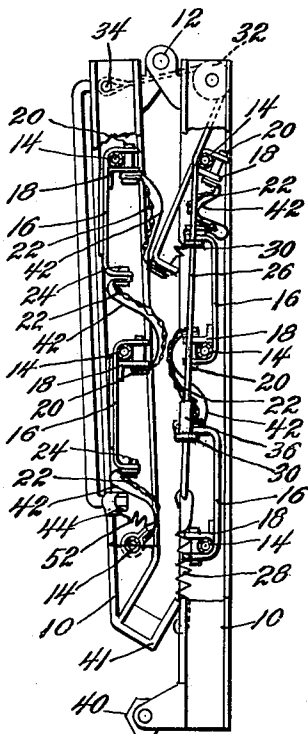


Fig. 3



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UNITED STATES PATENT OFFICE

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PORTABLE STAIRWAY

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Application April 14, 1949, Serial No. 87,406

1 Claim. (Cl. 189—43)

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This invention relates to collapsible, portable stairways and particularly to that type of stairway adapted to be used for boarding and disembarking from airplanes, boats and the like.

The principal object of this invention is to provide a light and collapsible stairway that can be easily and quickly manipulated when the airplane or boat is at rest and can be conveniently stowed aboard when underway.

Another object of this invention is to provide a stairway of the type herein described that is sufficiently strong to withstand loads placed thereon when in use and the handling thereof when shipping or unshipping the same.

Other objects together with the means embodying this invention will appear from the following description taken in conjunction with the accompanying drawings in which:

Fig. 1 is a perspective view of the stairway extended for use,

Fig. 2 is an elevational view of the collapsed stairway, and

Fig. 3 is a side view of the collapsed stairway partly in section.

On each side of the stairway of this invention are two frames, 10, 10 made of light metal such as aluminum and shaped in cross section preferably like an I beam. Each frame is broken in two but held together approximately in the middle of the same by hinges 12, 12. Between the frames and holding the same apart in spaced parallel relationship to each other are a plurality of rungs 14, 14 each of which is preferably tubular in cross section and made of the same metal as the frames. The ends of the rungs are soldered or otherwise secured in holes in the leg of the I of the frames. To each rung, except the uppermost one, is fastened a step or tread 16 by means of a pair of lugs 18, 18 and bolt pins 20, 20, Fig. 3. The steps are preferably U-shaped in cross section and are made of the same metal as the frames and rungs. The lugs 18 are secured near the underside of the elbow of the forward leg of the strap. The pins 20 pass through the lugs and the forward leg of the step, the shanks of said pins being adjacent to the rungs, thereby securing the steps to the rungs around which the steps may be swung or rotated.

When the stairway is in use, the steps are held in horizontal position preferably by means of chain 22, 22 attached at their upper ends to the inner ends of the pins 20 and at their lower ends to pins 24, 24 which are secured to the rearward legs of the steps.

Attached to the lower half of one of the frames

is cable 26, the lower end of which is secured to spring 28 fastened to the lower end of the frame. The cable passes through flanges 30, 30 extending laterally from the lower edge portion of the rearward legs of the lower steps up and over pulley 32 rotatably mounted on the inside of the frame just below the break in the upper and lower frame members. The upper end of the cable is attached to a pin 34 just above said break. When the stairway is in use, tension of the cable is relieved by means of lug 36 attached to the cable at a point where it is caused to abut the lowermost flange 30 by the action of the spring 28.

To the lowermost ends of the frames are attached rollers of wheels 40, 40 one of which may be a flat wheel to prevent the foot of the stairway rolling out of position. To the uppermost end of the frames are attached hooks 41, 41 which are capable of being placed over gunwales, sills and the like.

From the pins 20 are hung pieces of cloth 42, 42 preferably of canvas, the lower edge of which is secured to the pins 24. Said pieces serve as risers to prevent the user's feet from overstepping the treads.

On the inside of each upper member of each frame, is secured by means of hinges 44, 44 hand rail 46. To the upper vertical leg of each hand rail is attached a flat spring 48 to the end of which is fastened a lug 50 which, when the hand rails are in use, bears inwardly against the frame underneath the upper crossing of the I of the frame. To the upper vertical leg of one of the hand rails is secured a spring 52 extending from said leg inwardly and downwardly to the lower crossing of the I of the frame.

To collapse the stairway the upper and lower members of the frame are folded towards each other around the hinges 12, 12. Due to the position of the pulley 32 and the pin 34, the cable 26 becomes taut causing by means of the flanges 30, 30 the lower steps to fold in towards the frame. A spring 54 attached at one end to the rearward leg of the upper step of the lower frame members and at the other end to the frame causes said step to fold in towards the frame in a rotational direction opposite to that in which the lower steps are folded. As the upper and lower members meet each other, Fig. 3, the steps of the upper frames are merely collapsed toward the upper frame by being brought up against the elements of the lower frame.

Preferably at the start of the folding operation, the lugs 50 are lifted so that the hand rails 46

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may be folded inwardly, the one having the spring 52 secured thereto being folded over the other, Fig. 2.

I claim:

A portable, collapsible stairway comprising lateral and parallel supporting frames, each of which is broken into upper and lower sections held together by hinges, a plurality of parallel rungs extending between and at right angles to said frames, a plurality of stairway treads, the front edge portions of which are rotatably mounted on said rungs, flexible supporting means extending between said rungs and the rear edge portions of said treads, a pulley secured to one of said frames below and adjacent to one of said hinges, a pin secured to said frame above and adjacent to said hinge, flexible means secured at one end to said pin, passing over said pulley and through holes in the rear edge por-

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tions of all but the uppermost of the treads of said lower section, and secured at the other end to a spring attached to the frame, a stop secured to said flexible means above the hole in the rear edge portion of the lowermost tread and a spring extending between the rear edge portion of said uppermost tread and one of said frames.

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REFERENCES CITED

The following references are of record in the file of this patent:

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