Feb. 23, 1943. T. CEDERQUIST 2,312,148

COMBINATION STEP LADDER

Filed June 26, 1941 3 Sheets-Sheet 1

FIG 1

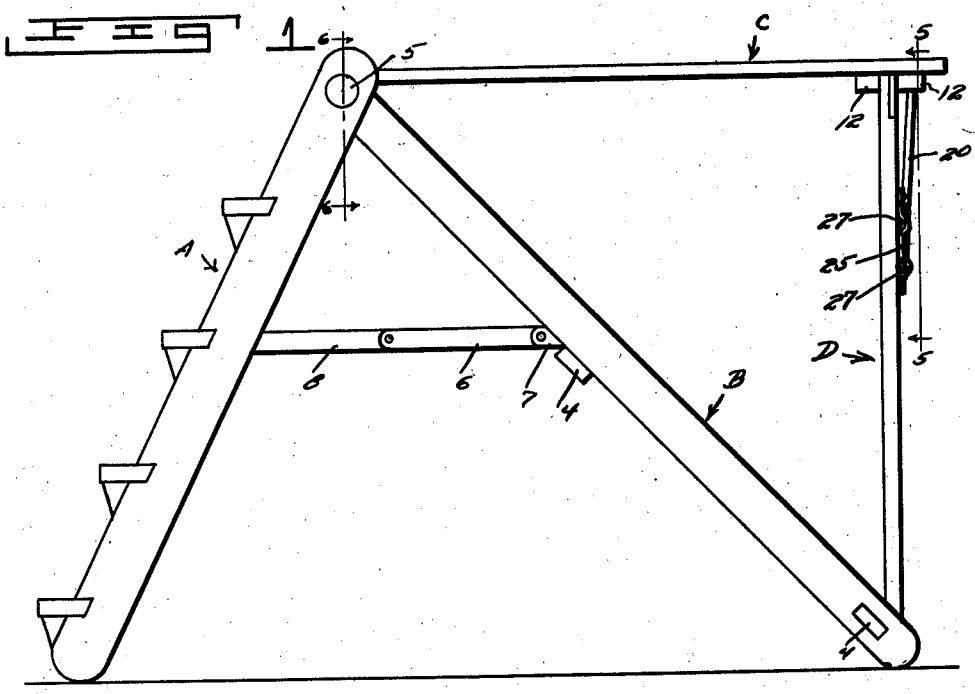



FIG 9

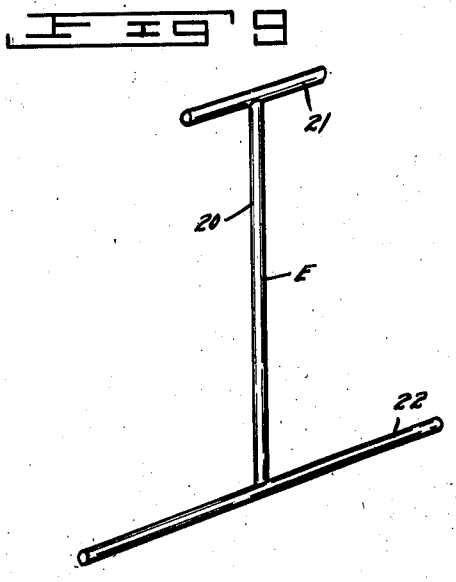
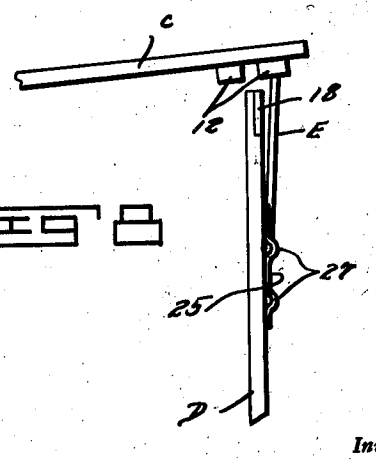



FIG 9




Inventor

TAGE CEDERQUIST

By Clarence A. O'Brien

Attorney

Feb. 23, 1943. T. CEDERQUIST 2,312,148

COMBINATION STEP LADDER

Filed June 26, 1941 3 Sheets-Sheet 2

FIG 4

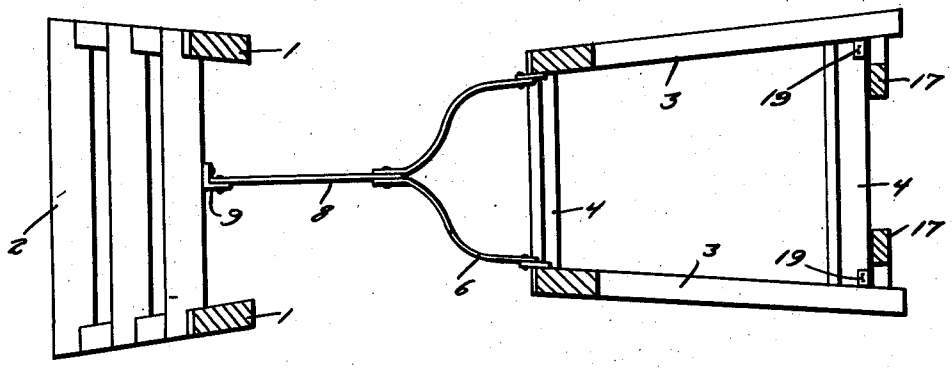
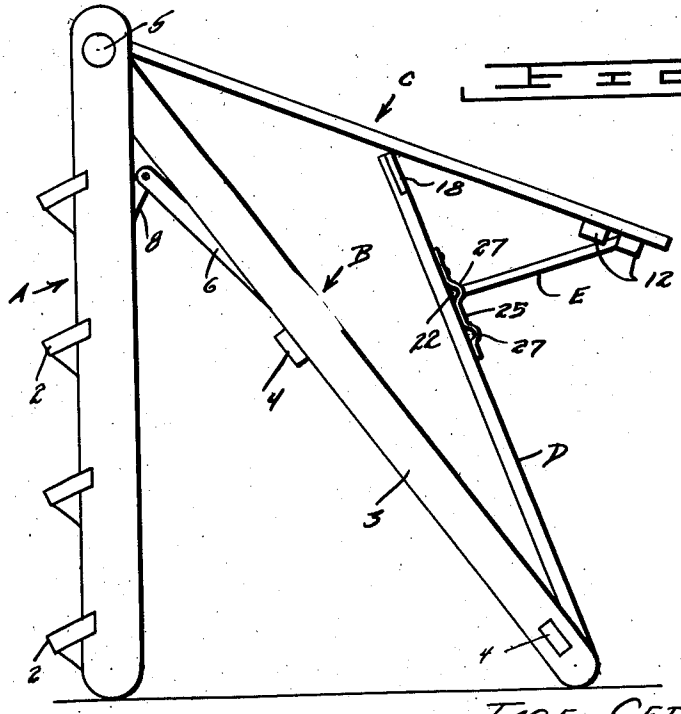



FIG 2




Inventor

TAGE CEDERQUIST

By Clarence A. O'Brien

Attorney

Feb. 23, 1943. T. CEDERQUIST 2,312,148

COMBINATION STEP LADDER

Filed June 26, 1941 3 Sheets-Sheet 3

FIG 3

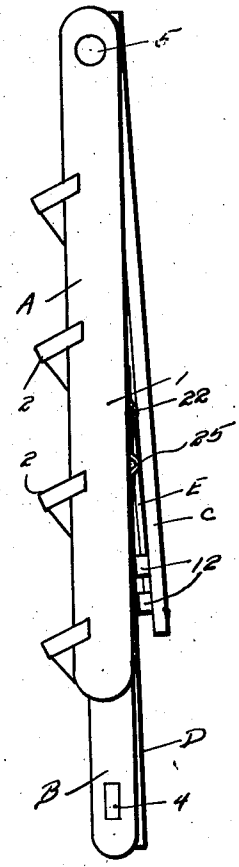



FIG 5

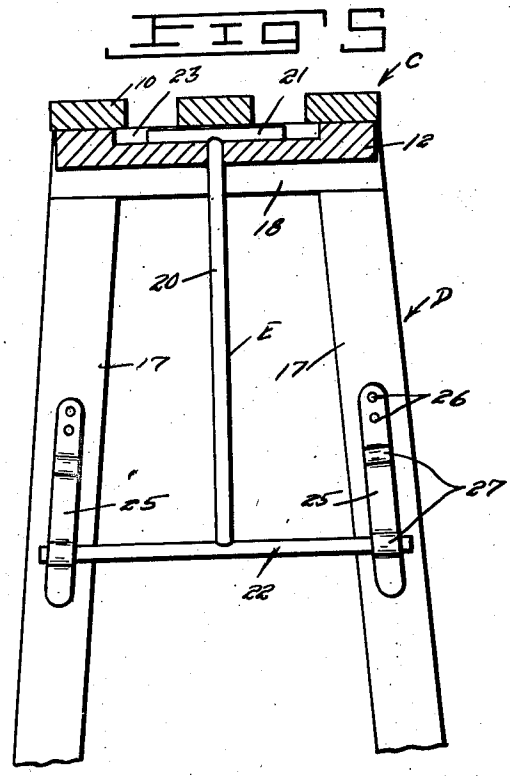



FIG 6

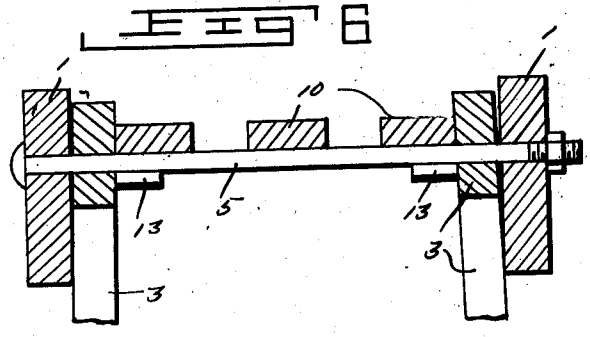
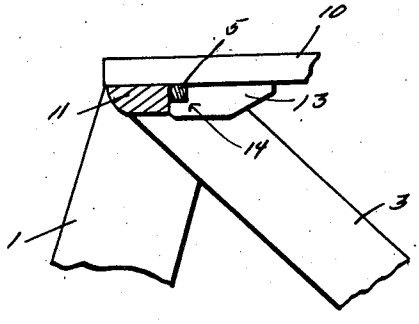



FIG 7




Inventor

TAGE CEDERQUIST

By Clarence A. O'Brien

Attorney

Patented Feb. 23, 1943

2,312,148

# UNITED STATES PATENT OFFICE

2,312,148

## COMBINATION STEPLADDER

Tage Cederquist, Rockford, Ill.

Application June 26, 1941, Serial No. 399,906

2 Claims. (Cl. 228—4)

This invention relates to a combination step ladder, the general object of the invention being to provide means for supporting a platform in horizontal position at the top of the ladder so that a person can walk up the ladder and then move over the platform, with means whereby the parts can be folded so that the device will occupy but little space when stored or when being carried about.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is an elevational view showing the device in operative position.

Figure 2 is a similar view but showing the parts in position and about to be folded.

Figure 3 is a side view showing the parts in folded position.

Figure 4 is a view in horizontal section of Fig. 1, taken just above the spreader bars.

Figure 5 is a section on the line 5—5 of Figure 1.

Figure 6 is a section on the line 6—6 of Figure 1.

Figure 7 is a fragmentary vertical sectional view through the upper part of the step ladder and the front part of the platform.

Figure 8 is a fragmentary elevational view showing how the rear part of the platform can be raised to remove it from the front part of the vertical leg member.

Figure 9 is a view of the bar member which connects the rear end of the platform to the spring means carried by the vertical leg section.

In these views the letter A indicates the step section which is composed of the two upright side pieces 1 and the steps 2. The prop section of the step ladder is shown at B and is composed of the two upright side members 3 connected together by the cross pieces 4 and a long bolt 5 passes through the upper ends of the side members 1 of the step section and the upper ends of the members 3 of the prop section for pivotally connecting the parts together, it being seen that the members 3 are placed inwardly of the members 1.

A yoke-shaped member 6 has its ends pivotally connected to the links 7 which, in turn, are pivotally connected to the inner faces of the members 3 of the prop section adjacent the upper cross piece 4 and a bar 8 has one end pivoted to the bight of the yoke member and its other end pivoted to a bracket 9 on the inner edge of one of the steps 2 of the step section. These parts are so formed that by moving the members 6 and 8 upwardly the prop section B can be folded between the members 1 of the step ladder as shown in Figure 3. The yoke member 6 is made of two sections with an end of the bar 8 pivoted between the adjacent ends of the two sections so that during the folding operation the bar 8 will pass into the yoke 6 so that the sections A and B can be folded closely together as shown in Figure 3.

The letter C indicates a platform which is composed of the spaced longitudinally extending strips 10 connected together by the front cross piece 11 and a pair of spaced rear cross pieces 12. Blocks 13 are connected to the under faces of the front ends of the outer strips 10, see Figure 7, and the front ends of these blocks are notched as shown at 14 to receive portions of the bolt 15 and these blocks have the notched front ends abutting the rear edge of the front cross piece 11 so that the front end of the platform is permanently but pivotally connected with the bolt.

Thus the platform can be swung upwardly and downwardly on the bolt. A normally vertical leg section D is provided for holding the rear end of the platform in raised position and the upper end of this member is adapted to fit between the two cross pieces 12 and said leg section D includes the two upright pieces 17 connected together at their upper ends by a cross piece 18 and their lower ends are connected by the hinges 19 with the lower cross piece 4 of the prop section B, see Figure 4.

A bar member E, see Figure 9, includes a vertical part 20, a short cross piece 21 and a long cross piece 22. The upper cross piece 21 is located in a groove 23 formed in the upper face of the outer cross member 12 of the platform with the part 20 passing through a hole in the cross piece 12 and the ends of the lower cross piece 22 are engaged by the spring strips 25 attached at their upper ends to the outer faces of the limbs 17 of the leg section D as shown at 26. The lower ends of the spring strips are free and each strip is provided with upper and lower depressions 27 for receiving the member 22. The inner member 12 is formed with a transverse

notch or groove therein for the passage of part 20 when the parts are in folded position.

From the foregoing it will be seen that when the parts are in the position shown in Figure 1 the leg section D will extend upwardly with its upper end in the space formed by the cross pieces 12 and with the bar 22 having its ends in the lower recesses 27 of the spring strips 25 so that the platform is held on the leg section D with the upper end of the leg section in the space between the two members 12. Of course, the prop section B of the ladder extends downwardly and rearwardly as shown in Figure 1. Then a person can move up the step section and move about on the platform without danger of the parts collapsing.

Then when the device is to be folded the rear end of the platform is pulled upwardly which moves the bar 22 upwardly against the friction exerted by the spring strips until the ends of the bar seat themselves in the upper recesses 27. This will move the cross bars 12 of the platform above the upper end of the leg section D and then the leg member can be swung inwardly and downwardly with the upper end of the part 20 passing through the opening in the central portion of the rear cross bar 12 and through the notch or slot in the said cross bar 12 so that the leg section D can be moved against the prop section B and the platform against the prop section D. Then by moving the members 6 and 8 upwardly the prop section B of the step ladder can be swung inwardly against the step section so that the parts will be in the folded position shown in Figure 3.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts provided that such changes fall within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. In a step ladder, a pair of step and prop sections, respectively, pivotally connected at upper ends thereof for relative swinging movement toward and from each other into and from side-by-side folded position, a platform swingably mounted at one end on the pivot of said sections for folding alongside the prop section and unfolding into horizontal position, a leg section pivoted to the lower end of the prop section for folding alongside the prop section intermediate the same and said platform and unfolding into vertical position beneath the other end of said platform to support the latter in horizontal position, and means to lock the leg section to the platform when said leg section and platform are folded and unfolded, respectively, comprising a member pivoted to the platform to depend therefrom and including a lower cross bar, and a pair of leaf springs on opposite sides of the leg section, respectively, each provided with a pair of depressions, one to receive the cross bar when the platform and leg section are unfolded, and the other to receive the cross bar when the platform is raised relative to the unfolded leg section, said springs coacting with said sides of the leg section to provide links to guide the leg section and platform to folded position.

2. In a step ladder, a pair of step and prop sections, respectively, pivotally connected at upper ends thereof for relative swinging movement toward and from each other into and from side-by-side folded position, a platform swingably mounted at one end on the pivot of said sections for folding alongside the top section and unfolding into horizontal position, a leg section pivoted to the lower end of the prop section for folding alongside the prop section intermediate the same and said platform and unfolding into vertical position beneath the other end of said platform to support the latter in horizontal position, and means to lock the leg section to the platform when said leg section and platform are folded and unfolded, respectively, comprising a pair of spaced cleats on said platform adapted to be lowered into straddling relation to the upper end of said leg section and raised clear thereof by lowering and raising of the platform, respectively, when the leg section is unfolded, a member pivoted to the platform to depend therefrom and including a lower cross bar, and a pair of leaf springs on opposite sides of the leg section, respectively, each provided with a pair of depressions, one to receive said bar when the platform is lowered, and the other to receive said bar when the cleats are raised clear of the upper end of the leg section, said springs coacting with said sides of the leg section to provide links to guide the leg section and platform to folded position.

TAGE CEDERQUIST.