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Currence, Jr.

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[54] **CLIMBING ASSEMBLY HAVING REMOVABLE STEPS**

[75] Inventor: **Wilburn C. Currence, Jr.**, Centralia, Mo., 65240

[73] Assignee: **A. B. Chance Co.**, Centralia, Mo.

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[52] **U.S. Cl.**.....**182/92,** 182/189

[51] **Int. Cl.**.....**E06c 1/38**

[58] **Field of Search** ..182/90, 92, 100, 189; 248/315, 248/224

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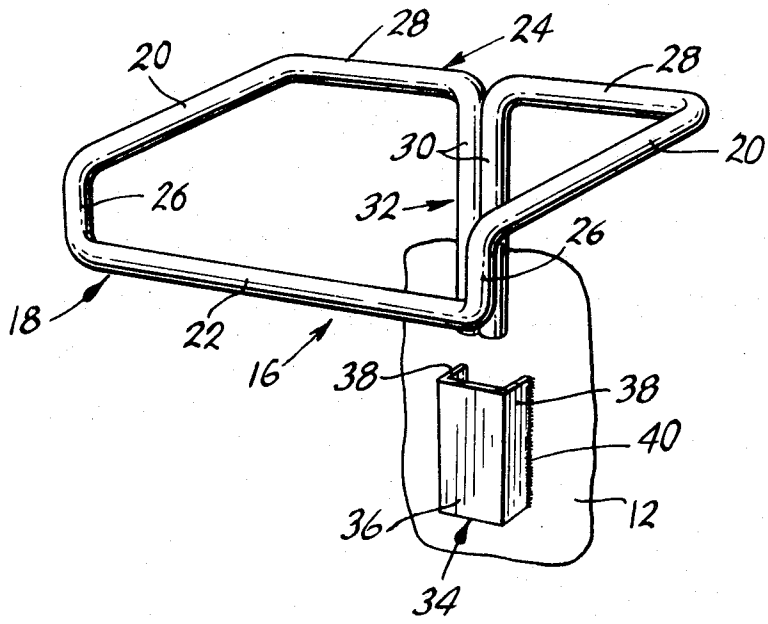
Primary Examiner—Reinaldo P. Machado

Attorney—Schmidt, Johnson, Hovey & Williams

[57] **ABSTRACT**

A climbing assembly for transmission poles and the like includes a series of removable steps in the nature of open frames having downturned stems insertable into tubular brackets welded or otherwise rigidly affixed to the poles. The steps are provided with rungs of a size and disposition to permit their further use as working platforms or stages and are offset for safety purposes. The releasable attachment is such as to obviate lateral or other movement during use to preclude accident or injury.

4 Claims, 4 Drawing Figures



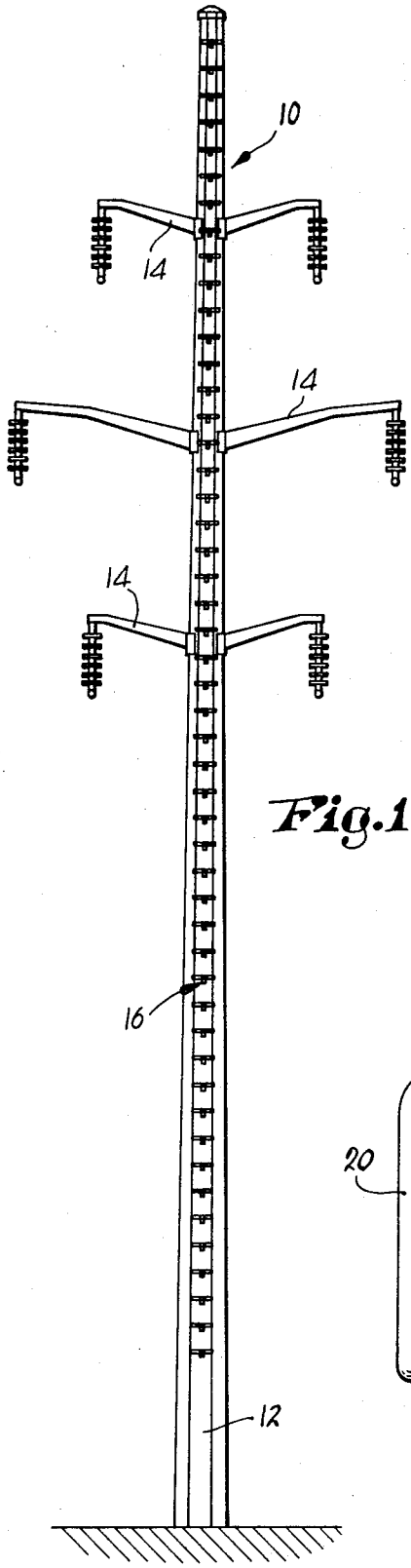


Fig.1.

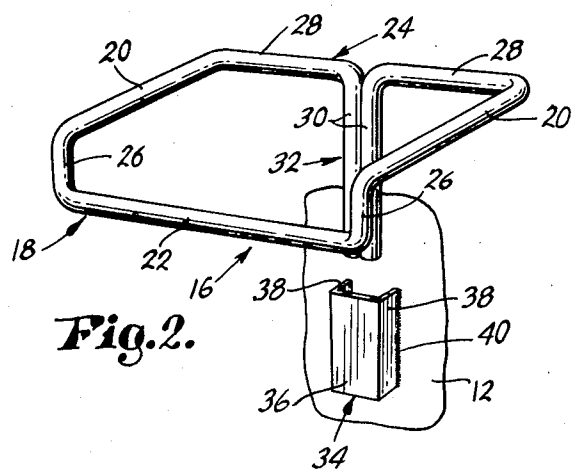


Fig.2.

Fig.3.

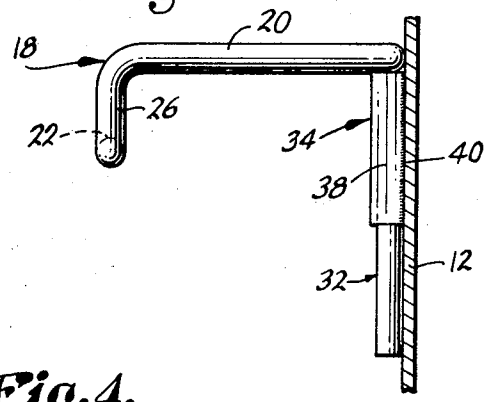
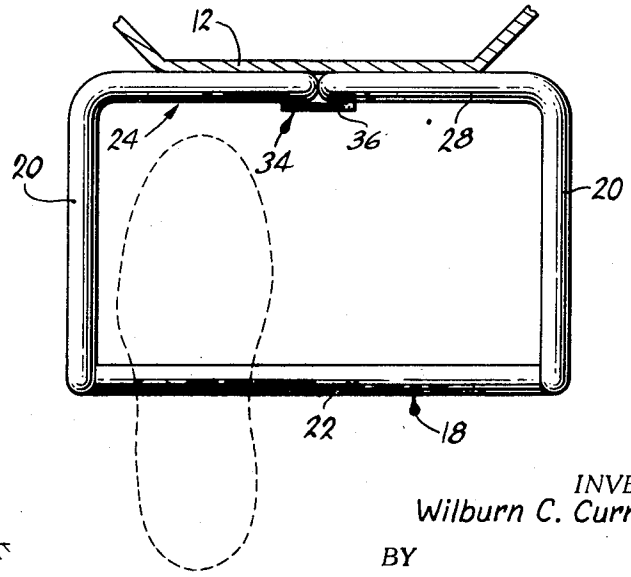


Fig.4.



INVENTOR.
Wilburn C. Currence Jr.

BY

Schmidt, Johnson, Hovey & Williams
ATTORNEYS.

CLIMBING ASSEMBLY HAVING REMOVABLE STEPS

SUMMARY OF INVENTION

The steps of the climbing assembly of the present invention are especially adapted for use in connection with relatively large diameter poles which cannot be embraced by the arms of the climber. Thus, since his entire support must be in the steps themselves they are made in a manner to permit hand-over-hand climbing without need for stabilization by grasping the pole itself. Moreover, since it is often desirable to use the steps on successive poles during erection and attachment of transmission lines, they are readily attachable during climbing and as easily removed on final descent.

BACKGROUND OF INVENTION

It has been the universal practice in the provision of climbing assemblies for transmission poles to provide two rows of steps extending laterally in opposite directions with one row disposed to each foot respectively of the climber. During climbing, the user grasps the pole itself by encircling his arms therearound to stabilize himself and prevent backward falling. It is also common to use safety belts in impaling relationship to the pole. Such construction is manifestly not suitable for large diameter poles.

OBJECTS OF INVENTION

It is, therefore, an important object of my present invention to provide a climbing assembly which is especially useful in connection with large diameter poles wherein the safety factor is absent because of inability of the climber to grasp the pole itself and prevent from falling during climbing and during the course of his work while using one of the steps of the assembly as a stage or platform.

Another important object of the invention is the provision of an assembly for climbing transmission poles wherein the steps of the series thereof are individually and interchangeably mounted on the poles through releasable construction permitting attachment during ascent and removal, if desired, during descent to thereby allow subsequent use on other poles.

A further important object of the instant invention is to provide identical mounting arrangements for all of the steps made to eliminate the need for tools and fasteners, and constructed to provide great strength and stability through proper interengagement between several portions of the step and the surface of the pole on which the steps are mounted.

A still further object of my invention is to provide a step of the aforementioned character and purpose which embodies additional functions, including hand-over-hand climbing; safety belt attachment means; anti-slip characteristics; and capability of use rather universally on many types of poles varying in dimensions, heights, materials, wall thicknesses and the like.

BRIEF DESCRIPTION OF DRAWING

FIG. 1 is a front elevational view of a climbing assembly having removable steps made in accordance with the present invention;

FIG. 2 is an enlarged, fragmentary perspective view illustrating one of the steps in position for mounting on the transmission pole;

FIG. 3 is an enlarged, fragmentary, vertical cross-sectional view through a portion of the pole showing one of the step units in side elevation; and

FIG. 4 is an enlarged, fragmentary, horizontal cross-sectional view through a portion of the pole showing one of the step units in plan.

DETAILED DESCRIPTION

In FIG. 1 of the drawing there is illustrated a somewhat conventional transmission pole broadly designated by the numeral **10**, usually made of metal and being hollow throughout its length. These poles are usually polygonal in cross section as illustrated in part by FIG. 4, presenting at least one flat wall **12**. Poles **10** are relatively large, ranging from 36 inches to 90 inches in diameter at their lower ends and having heights as great as 30 feet to 140 feet.

FIG. 1 also illustrates a series of conventional structures **14** from which the transmission lines are suspended. Manifestly, as is well understood, it becomes necessary to climb poles **10** from time to time especially during initial erection and performance of work adjacent the structures **14**. For this purpose, poles **10** are normally provided with steps used by the workman but, for the most part, such steps are in the nature of short protuberances extending in opposite directions as, for example, in U.S. Letters Pat. No. 3,399,746, dated Sept. 3, 1968, and owned by the assignee of the instant application. Steps of such nature are not suitable for poles **10** because it is not possible for the climber to grasp the pole by encircling his arms therearound; therefore, it becomes necessary as illustrated in the drawing to arrange the steps, broadly designated by the numeral **16**, on the outer face of but one wall **12** of the pole **10** in continuous row and to construct the step **16** in a manner to permit hand-over-hand climbing.

Accordingly, the step **16** is in the nature of an open, continuous polygonal frame **18** preferably made from an initially straight length of round rod stock material, formed or otherwise constructed to present of pair of laterally spaced, parallel, elongated sides **20**. Frame **18** also includes an elongated rung **22** at normally forwardmost ends of the sides **20—20**, and a crosspiece **24** at the normally rearmost ends of the sides **20—20**, it being understood that the rung **22** and the crosspiece **24** integrally interconnect the sides **20—20**.

The frame **18** of each of the series of identical steps **16** is also provided with short, downturned arms **26** integral with the sides **20** and with the rung **22** disposing the rung **22** below the level of the sides **20** in perpendicular relationship to the latter and in parallel relationship to the crosspiece **24**. The crosspiece **24** is made up of a pair of identical sections **28** that terminate in downturned legs **30**, presenting a mounting or attachment stem **32** that has its longitudinal, upright axis generally perpendicular to the crosspiece **24**. Legs **30—30** are preferably connected rigidly in any suitable manner such as by welding.

An elongated, tubular bracket **34** is provided on the outer face of walls **12** for each step **16** respectively, adapted to removably receive the stem **32** of the cor-

responding step **16**. Bracket **34** is preferably U-shaped in cross section presenting a bight **36** in spaced parallelism to the wall **12** and a pair of flanges **38** integral with and extending from the bight **36** toward the wall **12** to which the flanges **38—38** are firmly attached such as by lines of weld **40**.

OPERATION

The series of steps **16** may be mounted on the pole **10** prior to erection or subsequently by use of a tag line from a derrick and may be easily and quickly inserted into the brackets **34** successively by the climber as he ascends the pole **10**. This is accomplished simply by inserting the stems **32** into the tubular brackets **34** through the open, uppermost ends thereof to a position where the stems **32** project downwardly beyond the lowermost open ends of the brackets **34** as best illustrated in FIG. **3** of the drawing.

In such mounted position of the steps **16** on the pole **10**, the sections **28—28** of the crosspieces **24** rest firmly upon the upper edges of the flanges **38—38** with the sections **28—28** as well as the stem **32** bearing generally against the outer face of the wall **12**.

Accordingly, as the climber steps onto the rung **22** in the manner illustrated by FIG. **4**, there is little, if any, tendency on the part of the step **16** to swing in any direction or become displaced from the bracket **34**, presenting a sturdy, rigid, stabilized condition. Such stabilizing relationship of the stem **32** and the crosspiece **24** with respect to the wall **12** is enhanced by the firm support of the sections **28—28** by the flanges **38—38**; by the fact that there is insufficient clearance between the wall **12** and the bight **36** to permit any substantial rotation of the stem **32** within the bracket **34**; and by the fact that stem **32** cannot shift or swing in a sidewise direction between the flanges **38—38**.

It is to be understood that while it is desirable that there be a relatively tight fit because of the similar cross-sectional configurations of the bracket **34** and the stem **32**, sufficient tolerance should be maintained to permit insertion of the stem **32** into the brackets **34** and removal therefrom without the need for using any tool or auxiliary fasteners.

Another feature which is not to be overlooked lies in the fact that the arms **26—26** effectively prevent skidding of the shoe of the climber laterally off the rung **32** providing therefore a very important safety factor.

The steps **16** are advantageous additionally because of the fact that the rungs **22** are adapted to receive both feet of the climber when he reaches the point of working on the pole **10** such the the rungs **22** serve as stages or platforms at the working zones. Moreover, inasmuch as the normal safety belt used by climbers in this field will not encircle the large diameter pole **10**, the rungs **22** may also be used to receive such safety belt and positively prevent accidental falling of the workman from the pole **10**.

Because of the fact that steps **16** are normally handled by the workman, both on ascent and descent, it is desirable and necessary that the steps **16** be of a lightweight construction and such attributes to be found in the steps **16** when made as above described from lightweight, yet strong rod stock material.

While it is contemplated that the steps **16** may be removed successively after the work is completed, and while the workman descends the pole **10** for subsequent use on additional poles, it is within the scope of my present invention that steps **16** may be left in place if such is desired.

Having thus described my invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In combination with an elongated upright having an outer wall, a climbing assembly for the upright capable of use as a work platform, comprising:

a step configured to be mounted to said outer wall of the upright and including an open, continuous, polygonal frame presenting:

a pair of sides,

a lateral rung interconnecting said sides and being of a width at least twice the width of a man's foot to present a work platform,

downturned arms at the outer ends of said sides for connecting the sides with said rung to locate the latter in offset relationship below the level of the sides whereby said arms deter lateral skidding of a man's foot off said rung,

a crosspiece interconnecting said sides rearwardly of the rung, and

a member depending from said crosspiece intermediate the ends of the latter; and

a bracket secured to the upright and configured to releasably receive said member to place the latter and said crosspiece in engagement with said outer wall of the upright, said crosspiece being complementally configured to said outer wall whereby said engagement of the member and the crosspiece with the outer wall holds the step in rigid, stabilized relationship to said upright.

2. An assembly as set forth in claim **1**, wherein said sides of the step are parallel and extend transversely outwardly from said outer wall of the upright.

3. An assembly as set forth in claim **1**, wherein said crosspiece includes a pair of sections each terminating in a downwardly extending leg, said legs being interconnected in side-by-side relationship presenting said member.

4. An assembly as set forth in claim **1**, wherein said bracket comprises an open, transversely U-shaped tube presenting a bight and a pair of spaced, longitudinal flanges integral with the bight and fixed to said upright, said member being longer than said flanges and extending through said tube with said crosspiece resting on the upper end of the tube.

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