United States Patent [19]

Harris

[11] **3,837,429**

[45] **Sept. 24, 1974**

[54] **TRAVELING SCAFFOLD**

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[22] Filed: **Aug. 3, 1973**

[21] Appl. No.: **385,535**

[52] **U.S. Cl.** **182/37,** 182/37, 182/142, 182/150

[51] **Int. Cl.** **E04g 3/10,** E04g 3/12

[58] **Field of Search** 182/14, 13, 12, 36, 37, 182/150, 142

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Attorney, Agent, or Firm—Jennings, Carter & Thompson

[57] **ABSTRACT**

An elongated power driven roller unit is mounted on an elongated tubular member and is adapted to roll around an elevated structure having a round upper portion. Flexible lines are connected to opposite ends of the tubular member with the lowermost line connected to a work scaffold and the uppermost line connected to anchor means adjacent the top of the elevated structure. Other flexible support lines extend longitudinally through the tubular member with the upper ends thereof connected to the anchor means.

10 Claims, 9 Drawing Figures

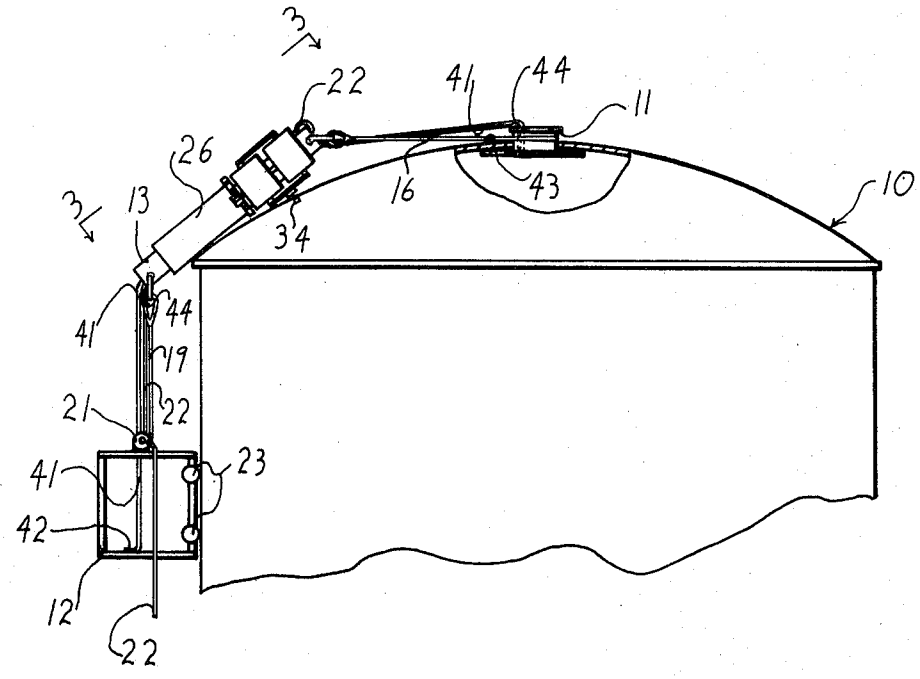
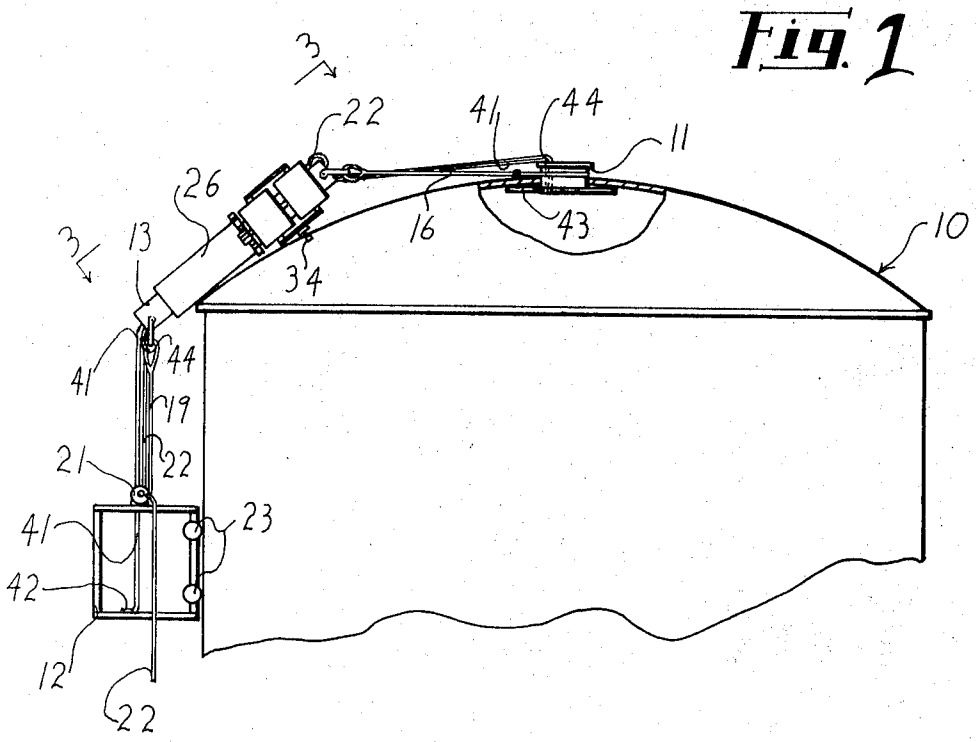


Fig. 1


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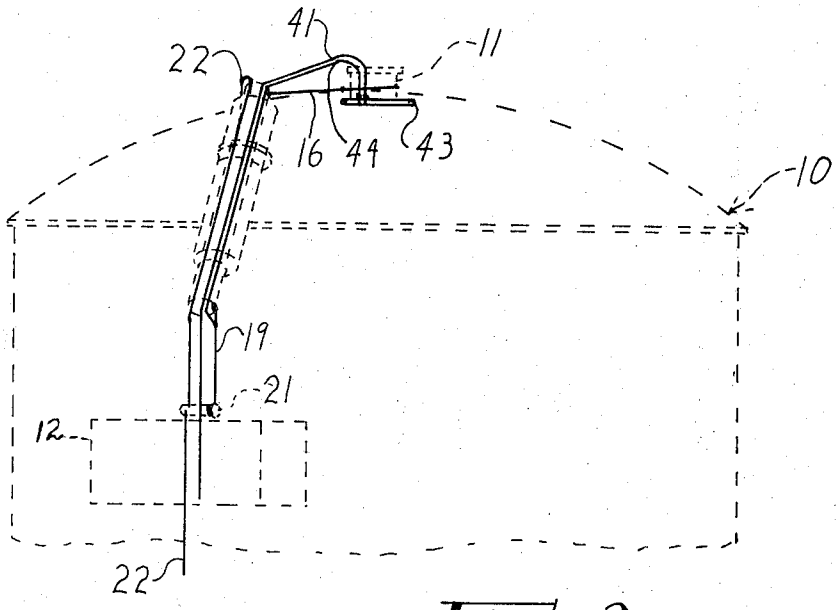
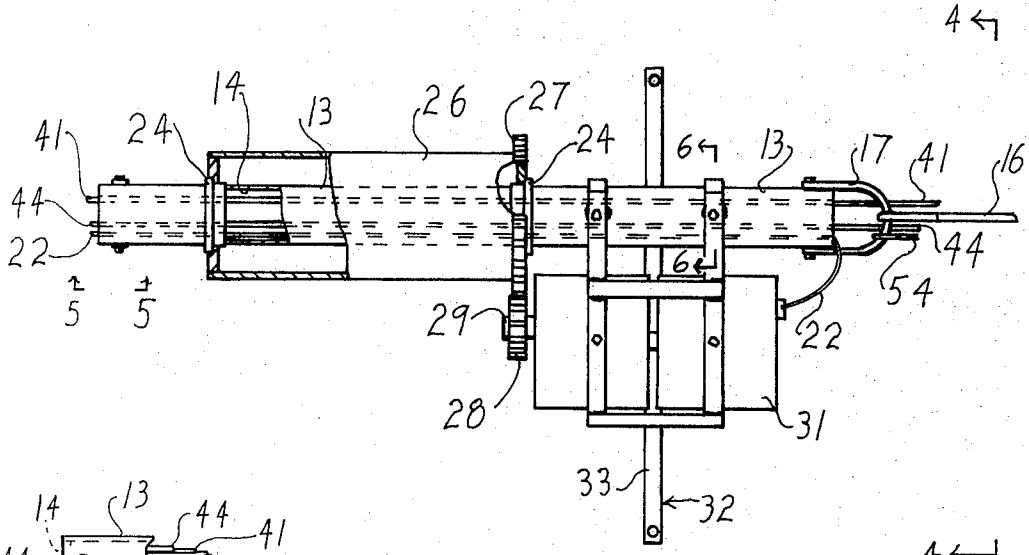

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Fig. 2

Fig. 3



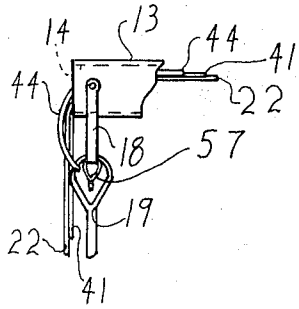
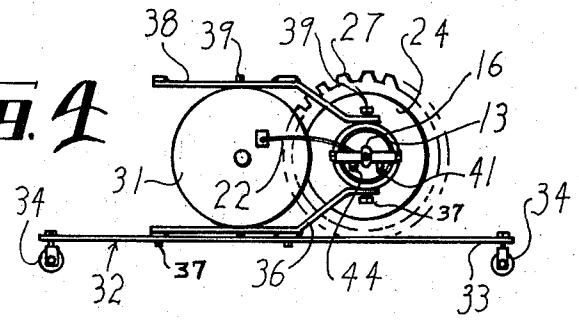


Fig. 5

Fig. 4



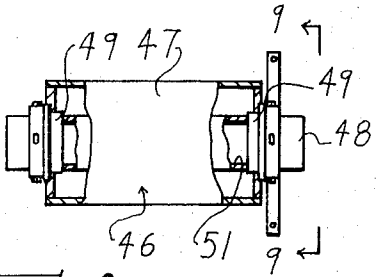


Fig. 8

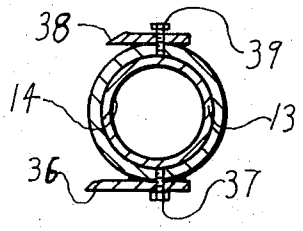


Fig. 6

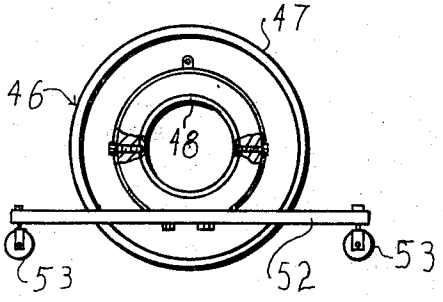


Fig. 9

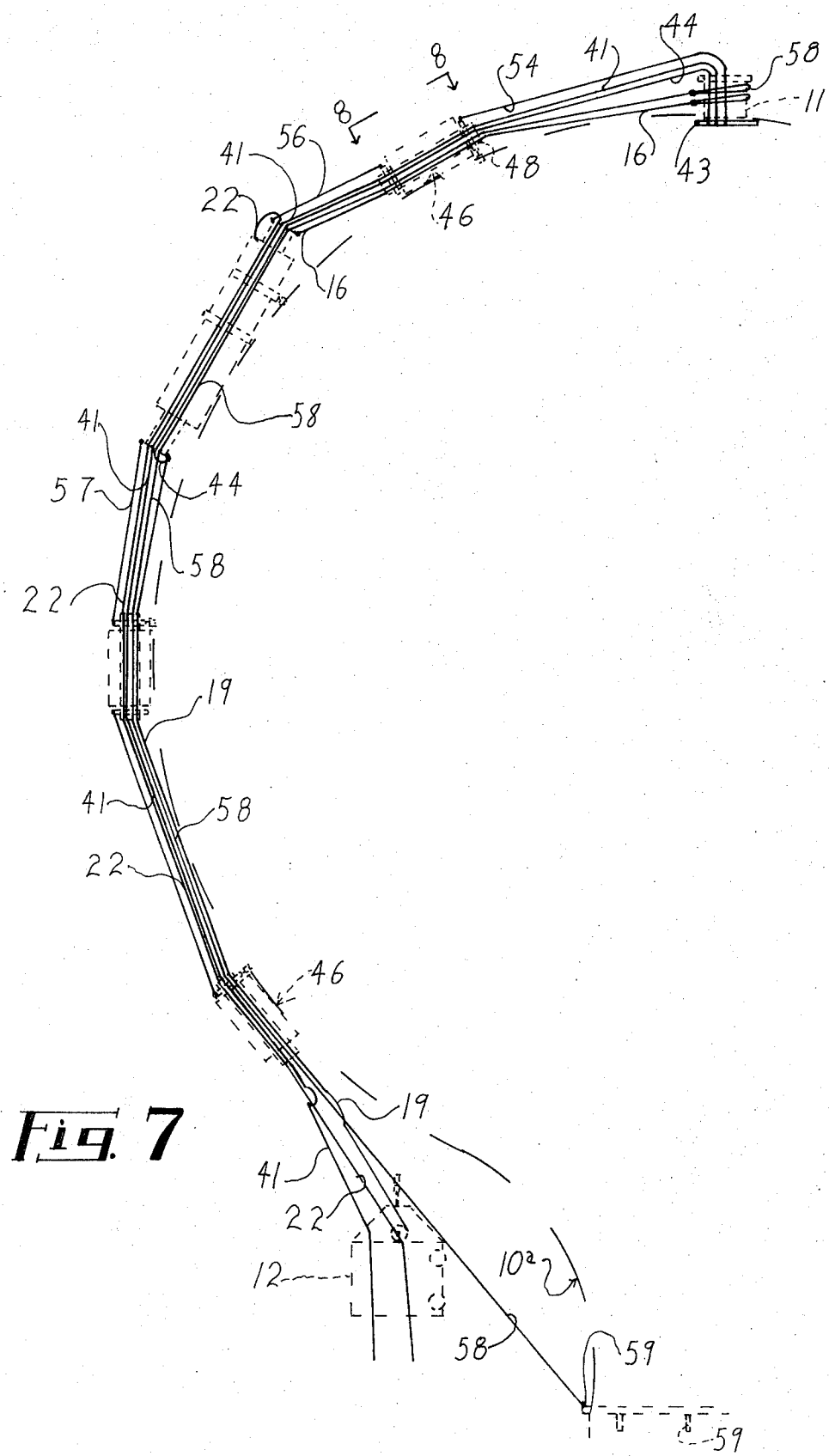

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Fig. 7

TRAVELING SCAFFOLD

BACKGROUND OF THE INVENTION

This invention relates to a traveling scaffold and more particularly to apparatus for positioning a scaffold relative to an elevated structure, such as a tank-like structure, whereby a powered work scaffold is movable vertically and around the exterior of the structure to selected positions.

As is well known in the art to which my invention relates, it is very difficult to sand blast and repaint the exterior surface of elevated structures, such as tank-like members due to the fact that each time the work scaffold is moved to a new angular position around the tank, the workman must leave the scaffold and climb to the top of the structure to move the rig to the next location to be worked. This not only requires several workmen to move the scaffold but consumes considerable time and effort in moving the scaffold around the tank. In fact, it requires more effort in positioning the scaffold at selected positions around the tank than the actual labor required in sand blasting and painting. Also, difficulties have been encountered in providing traveling scaffolds which are safe in operation both for the laborer and the machine.

BRIEF SUMMARY OF THE INVENTION

In accordance with my invention, I provide a traveling scaffold for an elevated structure which embodies an elongated tubular member having an elongated roller unit mounted for rotation thereon. Drive means carried by the tubular member is operatively connected to the roller for rotating the same whereby the scaffold is movable to selected angular positions about the structure. A flexible line connects one end of the tubular member to a work scaffold and a second flexible line connects the other end of the tubular member to anchor means on the elevated structure. Other flexible lines extend longitudinally through the tubular member with the upper end of each line being adapted for connection to anchor means on the elevated structure. The lines extending through the tubular member provide safety lines for the worker and the work scaffold and also provide a power line for supplying the power for moving the work scaffold vertically as well as around the elevated structure.

DESCRIPTION OF THE DRAWINGS

Apparatus embodying features of my invention is illustrated in the accompanying drawings, forming a part of this application, in which:

FIG. **1** is a side elevational view, partly broken away, showing my traveling scaffold attached to a tank-like structure;

FIG. **2** is a diagrammatic view showing the arrangement of the support, safety and power lines with the remainder of the apparatus and the elevated structure being in dotted lines;

FIG. **3** is an enlarged, top plan view taken generally along the line **3—3** of FIG. **1,** parts being broken away and in section;

FIG. **4** is an end elevational view taken generally along the line **4—4** of FIG. **3**;

FIG. **5** is a fragmental view taken generally along the line **5—5** of FIG. **3**;

FIG. **6** is an enlarged, fragmental, sectional view taken along the line **6—6** of FIG. **3**;

FIG. **7** is a diagrammatic view showing my traveling scaffold attached to a generally spherical tank-like structure, the load lines, safety lines and power lines being in solid lines with the remainder of the apparatus and the elevated structure being shown in dotted lines;

FIG. **8** is an enlarged view taken generally along the line **8—8** of FIG. **7,** parts being broken away and in section; and,

FIG. **9** is an enlarged, view taken generally along the line **9—9** of FIG. **8.**

DETAILED DESCRIPTION

Referring now to the drawings for a better understanding of my invention, I show in FIGS. **1** and **2** an elevated structure **10** in the form of a tank-like structure having a round, dome-shaped upper portion, as shown, which is provided with the usual vent member **11** which may be closed by the usual flanged closure member, if desired.

My improved means for supporting a work scaffold **12** alongside the elevated structure comprises an elongated tubular member **13** having a passageway **14** therethrough, as shown in FIGS. **3** through **6.** One end of a flexible load line **16** is attached to the upper end of the elongated tubular member **13** by a suitable bail-like member **17,** as shown in FIG. **3.** The other end of the load line **16** is provided with a loop which encircles the vent member **11,** as shown in FIG. **1,** whereby the load line **16** is secured to the top of the elevated structure **10.** The lower end of the elongated tubular member **13** is connected by a bail-like member **18** to the upper end of a load line **19.** The lower end of the load line **19** is wound on a conventional winch unit **21** carried by the work scaffold **12.** Accordingly, upon rotation of the winch unit **21** in opposite directions, the work scaffold **12** is raised or lowered to selected positions.

The winch **21** is driven by a suitable power unit, such as an electric motor with power being delivered thereto by a power line **22.** As shown in FIG. **1,** the work scaffold **12** may be provided with suitable rollers **23** which are adapted to engage the side of the elevated structure **10,** as shown.

Mounted for rotation on the elongated tubular member **13** by suitable bearing members **24** is an elongated roller unit **26** which is adapted to roll around the surface of the elevated structure **10,** as shown in FIGS. **1** and **2,** whereby the work scaffold **12** may be moved to selected angular positions relative to the structure **10.** One end of the elongated roller unit **26** carries a ring gear **27** which engages a gear or pinion **28** mounted on the shaft **29** of an electric motor **31,** as shown in FIG. **3.** Power is supplied to the motor **31** by the power line **22** which extends from the winch unit **21** through the passageway **14** in the elongated member **13,** as shown.

As shown in FIG. **3,** one end of the elongated tubular member **13** extends beyond the roller unit **26** and is mounted on a translatable frame **32** which comprises an elongated member **33** which extends transversely of the tubular member **13** and the supporting roller unit **26.** Supporting rollers **34** are mounted adjacent opposite ends of the elongated frame member **33** in position to engage the surface of the elevated structure **10**

whereby the gear **27** does not engage the elevated structure **10** and the elongated tubular member **13** is held against rotation as the roller unit **26** is rotated. The elongated frame member **32** is attached to the motor **31** and the elongated member **13** by suitable support bracket **36** and retaining elements **37.** Also, a support bracket **38** connects the upper surface of the elongated tubular member **13** to the top of the motor unit **31** and is secured in place by suitable retaining members **39.**

Extending through the passageway **14** in the elongated tubular member **13** is a man, safety line **41.** The lower end **42** of the safety line **41** is adapted to surround the waist of a worker and is attached to the worker by a suitable buckle or the like. The upper end of the man safety line **41** extends through the vent opening **11** and is secured to a transverse bar-like member **43** which is positioned inwardly of the tank-like structure **10,** as shown in FIGS. **1** and **2.** Accordingly, the bar-like member **43** serves as an anchor for attaching the line **41** to the structure **10.**

Extending through the passageway **14** in the elongated tubular member **13** is a machine safety line **44** which extends parallel to the man safety line **41** with the upper end thereof extending downwardly through the vent opening **13** and attached to the transverse bar **43** whereby the upper end of the machine safety line **44** is anchored to the structure **10.** The lower end of the machine safety line **44** is attached to the upper end of the load line **19,** as shown in FIG. **5,** whereby the machine safety line **44** is in turn connected to the work scaffold **12.**

Where the work scaffold is to be supported along the outer surface of a generally spherical structure, such as the tank **10***a* shown in FIG. **7,** I provide idler roller units **46.** Each idler roller unit **46** comprises an elongated roller **47** which is mounted for rotation on an elongated tubular member **48** by suitable bearing members **49,** as shown in FIG. **8.** The elongated tubular member **48** is provided with a passageway **51** therethrough for passing the load lines, power lines and safety lines whereby the lines are held out of engagement with the elevated structure **10** at the points the lines pass through the idler roller unit **46.** Accordingly, the idler roller units **46** are adapted for rotation around the outer surface of the structure **10***a* as the lines are moved to selected angular positions relative to the structure **10***a.*

As shown in FIGS. **8** and **9,** a transverse frame member **52** is carried by each idler roller unit **46** and supporting rollers **53** are provided adjacent each end of the member **52** in position to engage the outer surface of the elevated structure **10** to prevent rotation of the elongated tubular member **48** as the roller **47** rotates about the tubular member **48.**

As shown in FIG. **7,** the uppermost idler roll unit **46** is connected to the transverse bar **43** by a line **54** whereby the uppermost idler roller unit **46** is anchored to the structure **10***a.* The lower end of the uppermost idler roller unit **46** is connected by a line **56** to the upper end of the elongated tubular member **13** to provide additional safety. In like manner, the lower end of the elongated tubular member **13** is connected by a safety line **57** to the upper end of the lowermost idler roll assembly **46.**

As shown in FIG. **7,** where my improved apparatus is used on a generally spherical structure **10***a,* a bowl line **58** is attached by a suitable loop at its upper end to the vent member **11** for the elevated structure **10***a.* The bowl line **58** extends through the idler roll units and the elongated tubular member **13** with the lower end thereof being attached to conventional attaching members **59** carried by the structure **10***a* as shown. That is, the attaching members **59** may be in the form of the conventional painters ring which are mounted on such storage tanks.

From the foregoing description, the operation of my improved apparatus will be readily understood. The load line **16** is attached to the vent member **11** and the lower end of the load line **19** is attached to the winch **21** whereby upon actuation of the winch, the work scaffold **12** may be moved to any selected vertical position along the elevated structure **10.** The lower end **42** of the man safety line **41** is attached to the worker while the upper end thereof passes downwardly through the vent member **11** and is secured to the bar **43.** The upper end of the machine safety line **44** is secured to the bar **43** while the lower end thereof is attached to the upper end of the lowermost load line **19** to thus provide additional safety for the machine. The power line **22** supplies power to the winch unit and also extends upwardly through the tubular member **13** to supply power to the motor **31.** Upon rotation of the motor **31** rotary motion is imparted to the roller **26** through the gears **27** and **28** whereby the elongated member **13** and the work scaffold **12** are moved angularly around the structure **10** to selected positions. By providing a reversible motor **31,** the roller **26** may be driven in opposite directions to move the work scaffold in either direction.

From the foregoing, it will be seen that I have devised an improved driving scaffold which permits the worker to move to any desired vertical or lateral position relative to the elevated structure without having to leave the scaffold and reposition the scaffold each time the scaffold is to be moved to another lateral position. By providing the elongated tubular member **13** for supporting the roller **26** and the elongated tubular member **48** for supporting the idler rollers **47,** the rollers **26** and **47** are free to rotate about the flexible lines extending through the elongated tubular members, thus preventing damage to the lines and at the same time adding safety for both the operator and the machine. Furthermore, my improved apparatus is easily assembled and disassembled in a minimum of time, whereby substantially all of the worker's time is devoted to the work of sand blasting or painting the elevated structure.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various other changes and modifications without departing from the spirit thereof.

What I claim is:

1. In a traveling scaffold for an elevated structure having a generally round upper portion and anchor means adjacent the top thereof;

a. an elongated tubular member having a passageway therethrough,

b. an elongated roller unit mounted for rotation on said tubular member and adapted to roll around said structure,

c. drive means carried by said tubular member and operatively connected to said roller for rotating said roller,

d. a first flexible line connected at one end to one end of said tubular member with the other end thereof being adapted for connection to a work scaffold,

e. a second flexible line connected at one end to the other end of said tubular member with the other end thereof being adapted for connection to said anchor means so that said tubular member and said work scaffold are supported from said anchor means, said

f. at least one flexible line extending longitudinally through said tubular member with the upper end thereof being adapted for connection to said anchor means.

2. A traveling scaffold as defined in claim **1** in which said roller unit comprises an elongated cylindrical member with bearing members interposed between said cylindrical member and said tubular member and the means operatively connecting said drive means to said roller comprises a rotary power transmitting member carried by one end of said cylindrical member and operatively connected to a rotary power transmitting member carried by said drive means.

3. A traveling scaffold as defined in claim **1** in which an end of said tubular member extends beyond said roller unit and is mounted on a translatable frame with said drive means being supported by said translatable frame.

4. A traveling scaffold as defined in claim **3** in which said translatable frame comprises an elongated frame member extending transversely of said tubular member and supporting rollers adjacent opposite ends of said elongated frame.

5. A traveling scaffold as defined in claim **1** in which the flexible line extending through said tubular member is a man safety line with the lower portion thereof being adapted for attachment to the body of a man carried by said work scaffold.

6. A traveling scaffold as defined in claim **1** in which said flexible line extending through said tubular member is a machine safety line which is adapted for attachment adjacent its lower end to said first flexible line between said tubular member and said work scaffold.

7. A traveling scaffold as defined in claim **1** in which said flexible line extending through said tubular member is a power supply line which is connected adjacent its upper end to said drive means.

8. A traveling scaffold as defined in claim **7** in which a power operated winch is carried by said work scaffold and is operatively connected to said first flexible line for raising and lowering said work scaffold and said power supply line is connected to said power operated winch.

9. A traveling scaffold as defined in claim **1** in which at least one elongated idler roller is mounted on a hollow supporting shaft in position for said flexible lines to extend through said hollow supporting shaft so that the portions of said flexible lines which pass through said idler roller are retained out of contact with said elevated structure.

10. A traveling scaffold as defined in claim **9** in which one end of said idler roller is connected by a flexible line to said elongated tubular member with the other end of said idler roller being connected by a flexible line to said elevated structure.

* * * * *