

- ## [54] SAFETY SCAFFOLD WITH ELECTROMAGNETS

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FOREIGN PATENTS OR APPLICATIONS

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- [52] **U.S. Cl.**..... **182/129, 182/142**

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- [58] **Field of Search** 182/142, 129, 143, 144,
182/107

- [57]
- ABSTRACT**

A safety scaffold with electromagnets for holding the scaffold securely to the building under construction.

[56] **References Cited**

UNITED STATES PATENTS

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4 Claims, 4 Drawing Figures

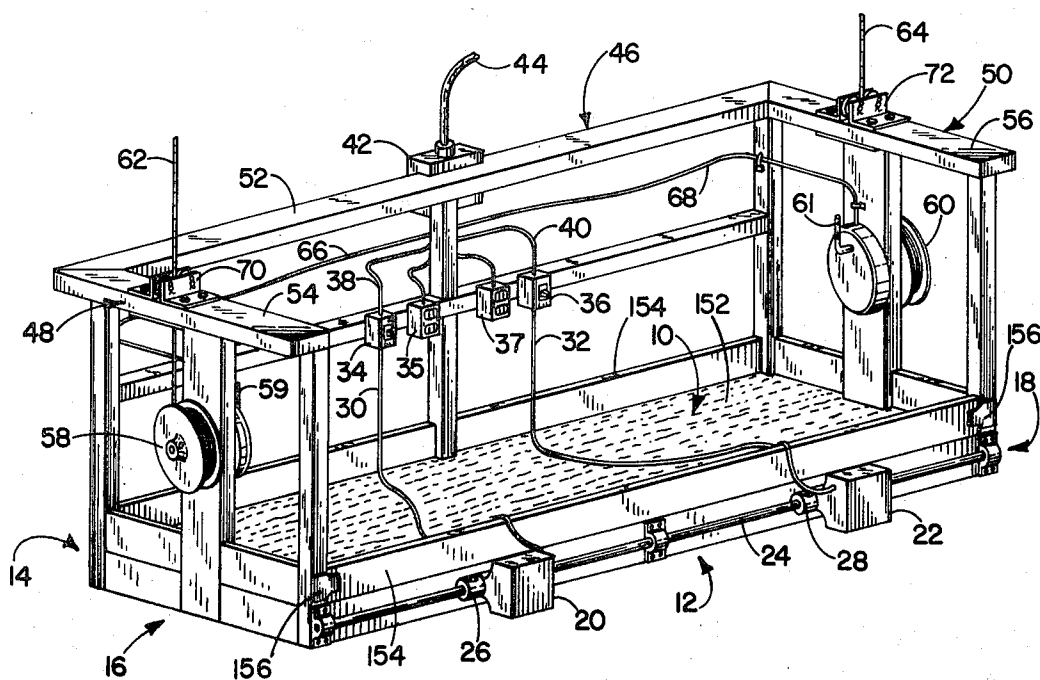
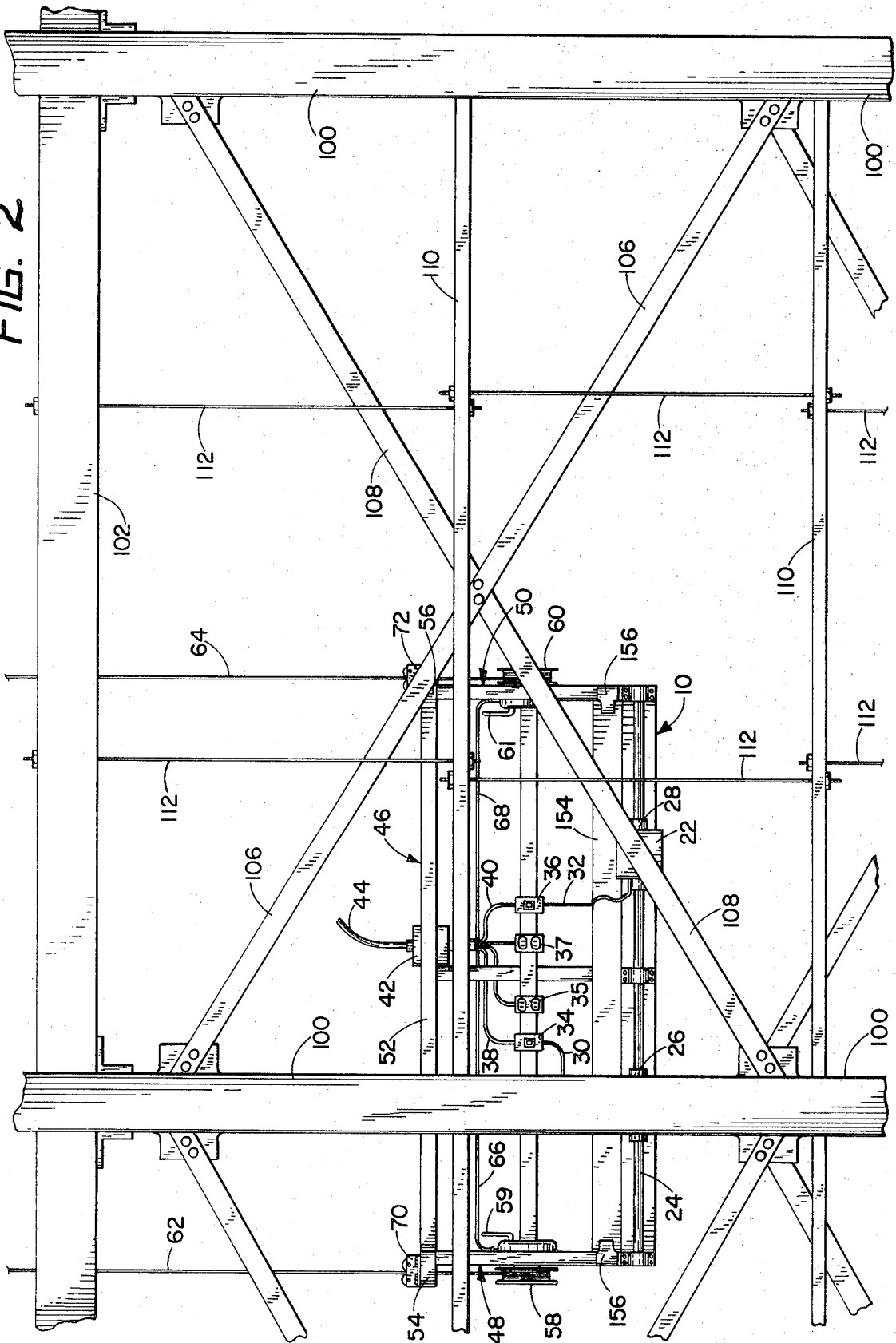


FIG. 2



SAFETY SCAFFOLD WITH ELECTROMAGNETS

BACKGROUND OF THE INVENTION

The invention is a scaffold, sometimes called a skif, used in constructing buildings having a metal or iron structure. The scaffold is of the type having a suspended platform.

In the prior art scaffolds of this type are prevented from swinging in a horizontal plane by merely tying the platform to the building structure. Sometimes this is overlooked, creating a dangerous situation. For example, if the scaffold is not secured to the side of the building it can swing out under the influence of the reactive forces that are present when a person steps from the scaffold to the building. In this invention the scaffold incorporates electromagnets for holding the scaffold to the building, which are very convenient to energize.

SUMMARY

The invention is a scaffold for use on the sides of buildings formed of metal structural members. The scaffold includes a platform which incorporates electromagnets for holding the platform to the structural members. The electromagnets are mounted on an axis and can move sideways along the axis and can rotate about the axis so that the electromagnets can be positioned to accommodate various structural configurations. The scaffold is elevated and lowered by means of two electric winches. The winch cables run through guides mounted in the guard rails in the barriers at the ends of the platform. A barrier is also mounted on the back of the platform. The front of the platform is open to allow work on the building under construction. The toe-board on the front edge of the platform is removable for unobstructed access to the platform.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a pictorial drawing of the scaffold;

FIG. 2 shows the scaffold in use against the side of a building under construction; and

FIG. 3 is a pictorial drawing showing the construction of the floor of the scaffold platform.

FIG. 4 is a pictorial drawing showing the construction of the cable guide 70.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, the scaffold includes a platform 10 having a front side 12, a back side 14, and two end sides 16 and 18. Electromagnets 20 and 22 are mounted on a bar 24 which is welded or otherwise securely fastened to the front side of platform 10. Magnets 20 and 22 can move to the left and right along bar 24 and can be rotated about the axis of the bar. Locking mechanisms 26 and 28 associated with magnets 20 and 22 permit locking the magnets into the positions selected. Electrical power for magnet 20 is supplied through a circuit including cable 30, on-off switch 34, cable 38, fuse box 42, and power cable 44. Electrical power for magnet 22 is supplied through a circuit including cable 32, on-off switch 36, cable 40, fuse box 42, and power cable 44. On-off switches 34 and 36 control the electrical power to magnets 20 and 22. Also included in these two circuits are two-way plugs 35 and 37 which may be used for power tools. A barrier 46 is

attached to the back side of platform 10 and barriers 48 and 50 are attached to the end sides. The barriers include hand rails 52, 54, and 56 and include various supporting and bracing members. Electric power winches 58 and 60 are mounted in barriers 48 and 50 at the ends of the platform. The winches include cables 62 and 64 the tops of which are fastened to the building. Electrical power to winch 58 is supplied by a circuit including cable 66, fuse box 42 and power cable 44. The electrical power to winch 60 is supplied by a circuit including cable 68, fuse box 42, and power cable 44. Winches 58 and 60 are operated by means of levers 59 and 61. The winch cables 62 and 64 run through cable guides 70 and 72 located in guard rails 54 and 56.

The scaffold is shown in place on the side of a building in FIG. 2. The building includes structural steel columns 100 and girders 102. The columns 100 are given lateral support by sway braces 106 and 108 connected therebetween. A horizontal sheeting girt 110 is connected between columns 100. Tie rods 112 connected between the girders and adjacent sheeting girts provide support for the sheeting girts. The scaffold is positioned such that electromagnet 22 is holding on to sway brace 108 at the right side and column 100 at the left side. Magnets 20 and 22 can be adjusted to accommodate various structural configurations. For example, as the platform is moved up and down, magnet 22 can be adjusted along bar 24 so that it will be adjacent brace 108 or some other member. Thus, it is very easy to secure the platform as it is moved up and down the side of the building.

FIG. 3 shows the construction of the frame of the platform and the floor thereof. The frame is constructed of aluminum I-beams 150. The floor 152 is welded or otherwise securely fastened to the frame. Floor 152 has a rough frictional surface and may be made of 20 gauge aluminum. Toe-boards 154 are mounted around the edges of the platform. The toe-board located at the front edge of the platform is held by support members 156 welded to the frame and is removable. The removable toe-board allows easy access onto and off the scaffold. The cable guide used is shown in FIG. 4. Each guide includes two right angle clips 200 and 202 mounted on the top sides of the guard rails associated with the barriers at the end sides of the platform. The mounting means includes a set of bolts 204 and a steel strap 206 on the underside of the guard rail. Rollers 208 and 210 are mounted between the upward projections on clips 200 and 204 by means of two pins 212 and 214. The winch cable passes between rollers 212 and 214, through an opening in the guard rail and through a hole in strap 206. Mounting the cable guide in the guard rails saves space on the platform. Rollers 208 and 210 are shown mounted transversely on hand rail 54, obviously they can also be mounted longitudinally.

In summary, a safe, convenient scaffold has been described. The scaffold can be readily secured to the metal structure of a building, especially a building under construction. The cable guides are positioned to be out of the way.

A preferred embodiment of the invention has been described. Modifications of this embodiment and equivalent embodiments within the spirit and scope of this invention will occur to those skilled in the art. The invention is to be limited only by the claims.

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What is claimed is:

1. A scaffold movable vertically along the sides of buildings formed of discrete metal structural members, comprising:

- a. a platform having a front, a back, and two sides;
- b. at least one electromagnet for holding said platform in a selected position adjacent the structural members;
- c. means for movably mounting the electromagnet to the front of the platform so as to be movable laterally along and rotatable about axes which are generally parallel to the platform front side, thereby allowing said electromagnet to be positioned against any discrete structural member located near the front side of said platform;
- d. means for electrically connecting the electromagnet to a source of electrical energy;
- e. barriers attached to the platform at the back and sides, the barriers including hand rails and supporting and bracing structure;

- f. winches, including cables, mounted on the barriers for elevating and lowering the platform;
- g. means for connecting the winches to a source of electrical energy; and
- h. means for locking said electromagnet in place in the position selected on said mounting means.

2. The apparatus as recited in claim 1 in which there are two electromagnets.

3. The apparatus as recited in claim 2 in which the winches are mounted on the side barriers, and further including guides for the winch cables, the guides mounted in the hand rails of the side barriers.

4. The apparatus as recited in claim 1 in which the electromagnet mounting means includes a bar mounted on the front side of the scaffold platform, and generally parallel thereto, the electromagnet mounted on the bar for longitudinal movement along the bar and rotational movement about the bar.

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