J. A. GRANGER.

PORTABLE SCAFFOLD.

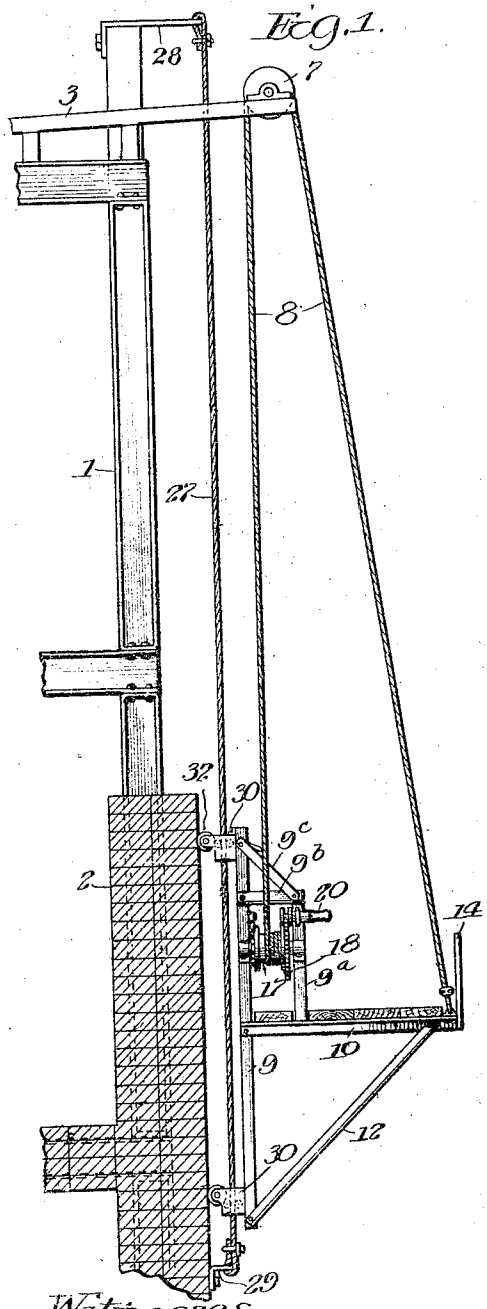
APPLICATION FILED NOV. 29, 1912.

1,136,898.

Patented Apr. 20, 1915.

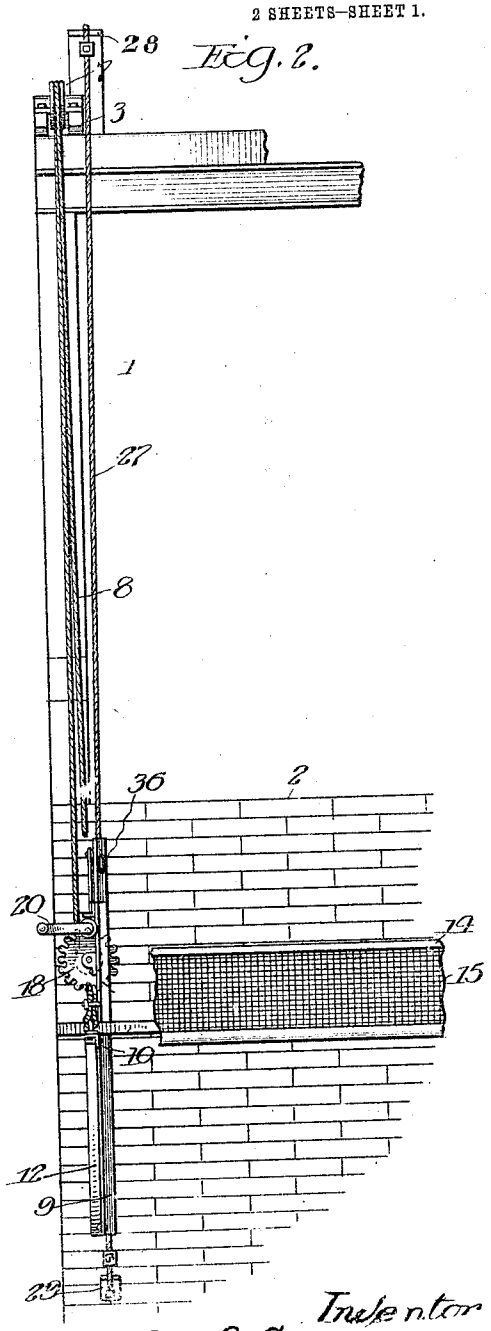
2 SHEETS—SHEET 1.

Fig. 1.



Witnesses
Geo. Wemick
E. Lundy

Fig. 2.



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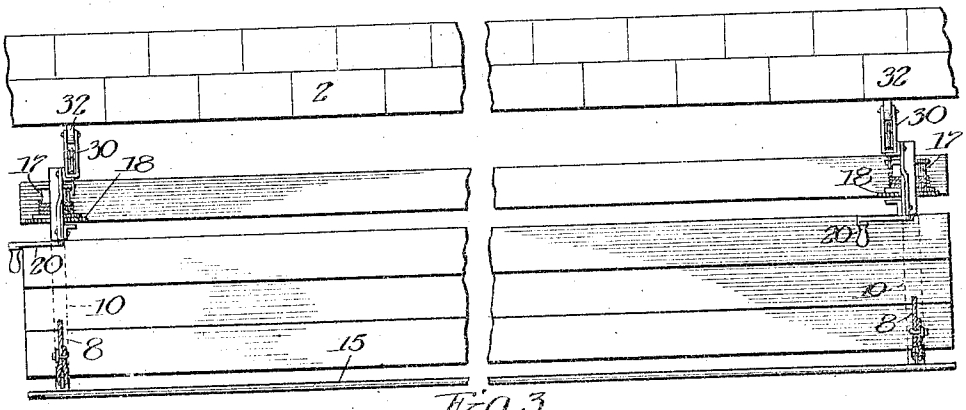


Fig. 3.

Fig. 4.

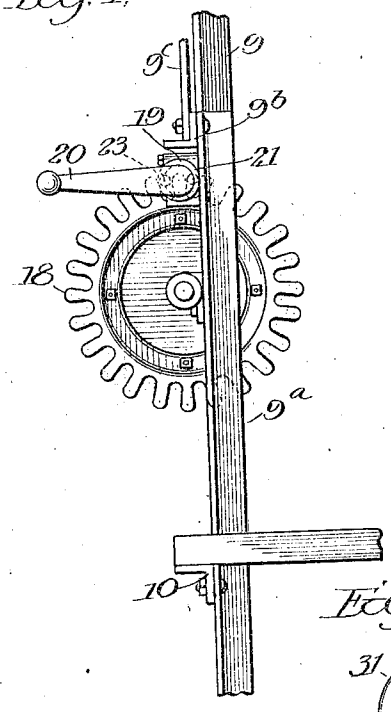


Fig. 5.

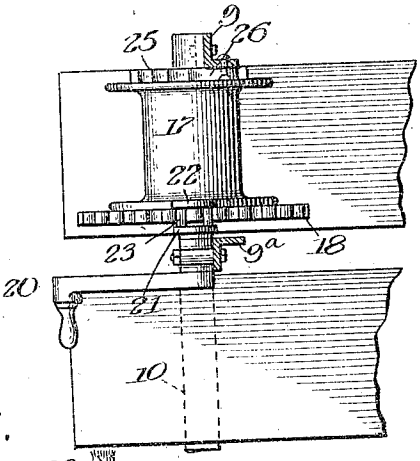
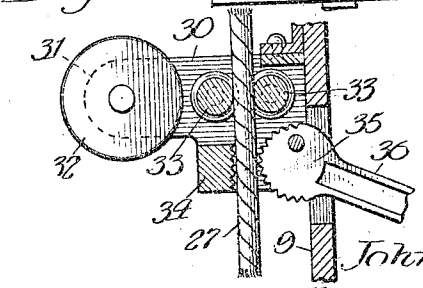


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN A. GRANGER, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO MACOMBER & WHYTE ROPE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PORTABLE SCAFFOLD.

1,136,898. Specification of Letters Patent. Patented Apr. 20, 1915.

Application filed November 29, 1912. Serial No. 733,989.

To all whom it may concern:

Be it known that I, JOHN A. GRANGER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Portable Scaffolds, of which the following is a full, clear, and exact description.

My invention relates especially to scaffolds used by builders when constructing and erecting building structures, which can be "knocked-down" when not in use, and readily transported from place to place and erected for use whenever and wherever desired.

The objects of my invention are, first, to make the scaffold safer to use, and more convenient to manipulate; second, to guide the vertical movements of the platform thereof and maintain it in its relative position to the front of the building against horizontal movements; and third, to avoid the necessity for lowering the platform to the ground each time it is desired to elevate the outriggers from which said platform is suspended as the height of the building is increased. This I accomplish mainly through the instrumentalities of guide-cables to which said platform is anchored and supported in any suitable position which it may occupy while said outriggers are being changed, and by other means substantially as hereinafter fully described and as more particularly pointed out in the claims, reference being had to the accompanying drawings forming a part hereof, in which,

Figure 1 is a sectional elevation of my portable scaffold installed in the front wall of a building under construction. Fig. 2 is a front elevation of one end of the same. Fig. 3 is a top plan view of one end of the scaffold platform. Fig. 4 is an enlarged front elevation of the hoisting drum and the related parts of said scaffold. Fig. 5 is a top plan view thereof. Fig. 6 is an enlarged central sectional view of the guiding brackets detached from the platform.

Referring to the drawings, 1 represents the metal skeleton of a modern building, and 2 is the masonry wall for one side thereof that is only partially completed. Secured preferably flat to the roof or on top of this skeleton, in such manner that one end thereof projects beyond the roof and overhangs the front of the building, are the beams 3 of a suitable outrigger device. There are preferably two or more of these outrigger beams arranged a suitable distance apart, and they have concave sheaves or pulleys 7 mounted on their ends over which suitable suspending ropes or cables 8 travel. The lower ends of the outer stretches of these cables 8, are preferably secured to the outer edge of the platform of my improved scaffold, and the lower end of the inner stretch of said cable is secured to and wound upon the drum of a suitable winch, as will hereinafter be more fully described.

The platform or floor of the scaffold comprises a sufficient number of planks or boards, whose ends rest upon and are secured to metal sills or cross-members 10, the inner ends of which latter are secured to the centers of length of metal uprights 9, and the outer ends of which are secured to and supported by angular struts or braces 12, the lower ends of which latter are secured, preferably, to the lower ends of said uprights. The outer ends of the sills 10 have suitable posts 14 secured thereto and arising therefrom a suitable distance, and a fence or guard-rail 15 consisting of suitable wire netting or other fencing or railing structure, extends between and has its ends secured to said posts. The sills 10 adjacent these posts are provided with means to which the lower ends of the outer stretches of the hoisting or suspension-cables 8 are secured, and from thence said cables extend to and around sheaves 7 and then down to the hoisting winches mounted on the platform of the scaffold adjacent uprights 9.

The winches just mentioned comprise a suitable winding drum 17 and the shafts upon which said drums are mounted are preferably arranged at right angles to the front of the building, and have their outer ends journaled in suitable bearings secured to standards 9^a, that are secured to and arise from sills 10, and have their upper ends tied to the uprights 9 both by horizontal tie-bars 9^b and by inclined struts 9^c. The outer ends of drums 17 have a gear 18 secured thereto, which is, preferably, greater in diameter than the flanged ends of the drum and is engaged by a pinion mounted on the adjacent end of a spindle 19 journaled in suitable bearings located above the bearings of the

drum-shaft, and turned by means of a crank 20 on the outer extended end thereof.

Any kind of a pinion might be used on the spindle 19 to transmit the motion thereof to the gear 18, but I prefer to construct this pinion so that it will hold said gear and drum in any position to which they may be turned. I have, therefore, constructed this pinion of two transverse plates 21, 21, the former of which is secured directly to the spindle, and the latter of which is separated therefrom by pins 23 that are cast in one piece with said plates. The pins 23 are parallel to the axis of the pinion and are located an equal distance therefrom opposite each other. The distance between these pins enables the pinion to engage the teeth of the gear 18, and the tendency of the drum and gear to reverse will cause the teeth of the gear to press against the pins of the pinion in a line practically intersecting the axis of the pinion and of the pins thereof, and when at rest said pinion pins will directly oppose the reverse movement of the gear. At the same time, this opposition will not prevent the operation of the winch, by manual efforts, when it is desired to revolve the same in either direction. The ends of the drums opposite gears 18 are each provided with a suitable ratchet 25, that is engaged by a pawl 26 pivotally connected to uprights 9 that prevent the reverse movement of the drum when the same is at rest.

In order to prevent movement of the platform to or from the building, or horizontally parallel with the adjacent wall thereof, I have provided guide-cables 27, which, although having a certain amount of flexibility, are retained very taut by having their upper ends secured to hangers 28 secured to the top of the building, preferably, above the plane of the beam 3, in such manner that the ends thereof to which said guide-cables are attached overhang the front of the building. The lower end of said cables 27 are secured to the outwardly projecting ends of brackets 29 that are secured to the structure of the building, preferably, near the foundation thereof, or, if this is inconvenient, at some point below the position of the platform of the scaffold. The uprights 9 of the scaffold at or near both their upper and lower ends are provided with guides through which cables 27 pass, and these guides comprise parallel plates 30 whose ends farthest from the wall are secured to the uprights 9, in any suitable manner, and whose opposite edges have rearwardly projecting arms 31, between which suitable wheels 32 are journaled in such manner that said wheels come in contact with and roll against the wall of the building. Cables 27 extend down between said plates 30 at suitable points near uprights 9, and are directed in their movements by concave sheaves or rollers 33. At a suitable point below these sheaves, plates 30 pass by a bit 34 consisting of a cross-bar whose inner face is provided with serrations or corrugations with which the cable 27 is normally in contact. When it is desired to lock the scaffold, the guide cables 27 are engaged by the serrated eccentric periphery of jaws 35, the trunnions of which are journaled in suitable bearings in plates 30 and have handles 36 that pass forward through openings in the web of the angle-iron uprights 9 at a suitable point, preferably, above the drum, within convenient reach of the operator without interferring with the manipulation of the winch.

It will be understood that structural changes may be made in the various parts of my improved scaffold without departing from the spirit of my invention: For example; the out-rigger used for supporting the sheaves, around which the hoisting cable of the platform passes, and the brackets or members to which the ends of the guide-cables are attached, may be materially changed in view of the fact that they are dependent to a great extent upon the facilities convenient at hand in the building and at the place where the scaffold is erected. It is also apparent that while the triangular frame-work supporting the planks of the platform of my improved scaffold is preferred, yet it may be modified, and also the railing or fencing on the outer edge of the platform may be disposed with or modified without departing from the novel principles involved in my improvements.

What I claim as new is:

1. A portable scaffold constructed for use on modern high buildings and comprising a platform, transverse-sills upon which the ends of said platform rest, uprights medially secured to the rear ends of said sills, and extending both above and below the horizontal plane of the same and forming upper and lower vertical portions which are about equal in length to the width of the platform, vertically disposed taut flexible guide-cables arranged fairly close and substantially parallel to the plane of the wall of the building, overhead outriggers attached to the building at or near the top thereof, pulleys journaled in the overhanging portions of said outriggers, hoisting cables medially encircling said pulleys and having their inner end portions depending therefrom and in proximity to and parallel with the guide-cables and the outer end portion extending diagonally downward and outward from said pulleys and secured at their lower extremities to the outer portions of the sills, and suitable winches supported by the inner portions of said sills to which the lower extremity of the inner end portions of said hoisting cables are movably secured, and supporting blocks extending laterally from

the extremities of the upper and lower end portions of the uprights and having openings through which the guide cables pass.

2. A portable scaffold constructed for use on modern high buildings and comprising a platform, transverse-sills upon which the ends of said platform rest, uprights medially secured to the rear ends of said sills, and extending both above and below the horizontal plane of the same and forming upper and lower vertical portions which are about equal in length to the width of the platform, vertically disposed taut flexible guide-cables arranged fairly close and substantially parallel to the plane of the wall of the building, overhead outriggers attached to the building at or near the top thereof, pulleys journaled in the overhanging portions of said outriggers, hoisting-cables medially encircling said pulleys and having their inner end portions depending therefrom and in proximity to and parallel with the guide-cables and the outer end portions extending diagonally downward and outward from said pulleys and secured at their lower extremities to the outer portions of the sills, and suitable winches supported by the inner portions of said sills to which the lower extremity of the inner end portions of said hoisting-cables are movably secured, and supporting blocks extending laterally from the extremities of the upper and lower end portions of the uprights and having openings through which the guide-cables pass, and rollers journaled in said blocks and adapted to contact and roll against the outer vertical surface of the building.

3. A portable scaffold constructed for use on modern high buildings and comprising a platform, transverse-sills upon which the ends of said platform rest, uprights medially secured to the rear ends of said sills, and extending both above and below the horizontal plane of the same and forming upper and lower vertical portions which are approximately equal in length to the width of the platform, vertically disposed taut flexible guide-cables arranged fairly close and substantially parallel to the plane of the wall of the building, overhead outriggers attached to the building at or near the top thereof, pulleys journaled in the overhanging portions of said outriggers hoisting-cables medially encircling said pulleys and having their inner end portions depending therefrom and in proximity to and parallel with the guide-cables and the outer end portions extending diagonally downward and outward from said pulleys and secured at their lower extremities to the outer portions of the sills, and suitable winches supported by the inner portions of said sills to which the lower extremity of the inner end portions of said hoisting-cables are movably secured, and supporting blocks extending laterally from the extremities of the upper and lower end portions of the uprights and having openings through which the guide-cables pass, and rollers journaled in said blocks and adapted to contact and roll against the outer vertical surface of the building; the blocks being separated approximately, the vertical length of the uprights and the lower extremities of the hoisting cables being separated approximately the horizontal width of the platform.

In witness whereof I have hereunto set my hand this 23rd day of November, 1912.

JOHN A. GRANGER.

Witnesses:

FRANK D. THOMASON,

E. K. LUNDY.