Dec. 29, 1936. R. V. PAYNE 2,066,221

HOISTING TOWER

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Fig. 1.

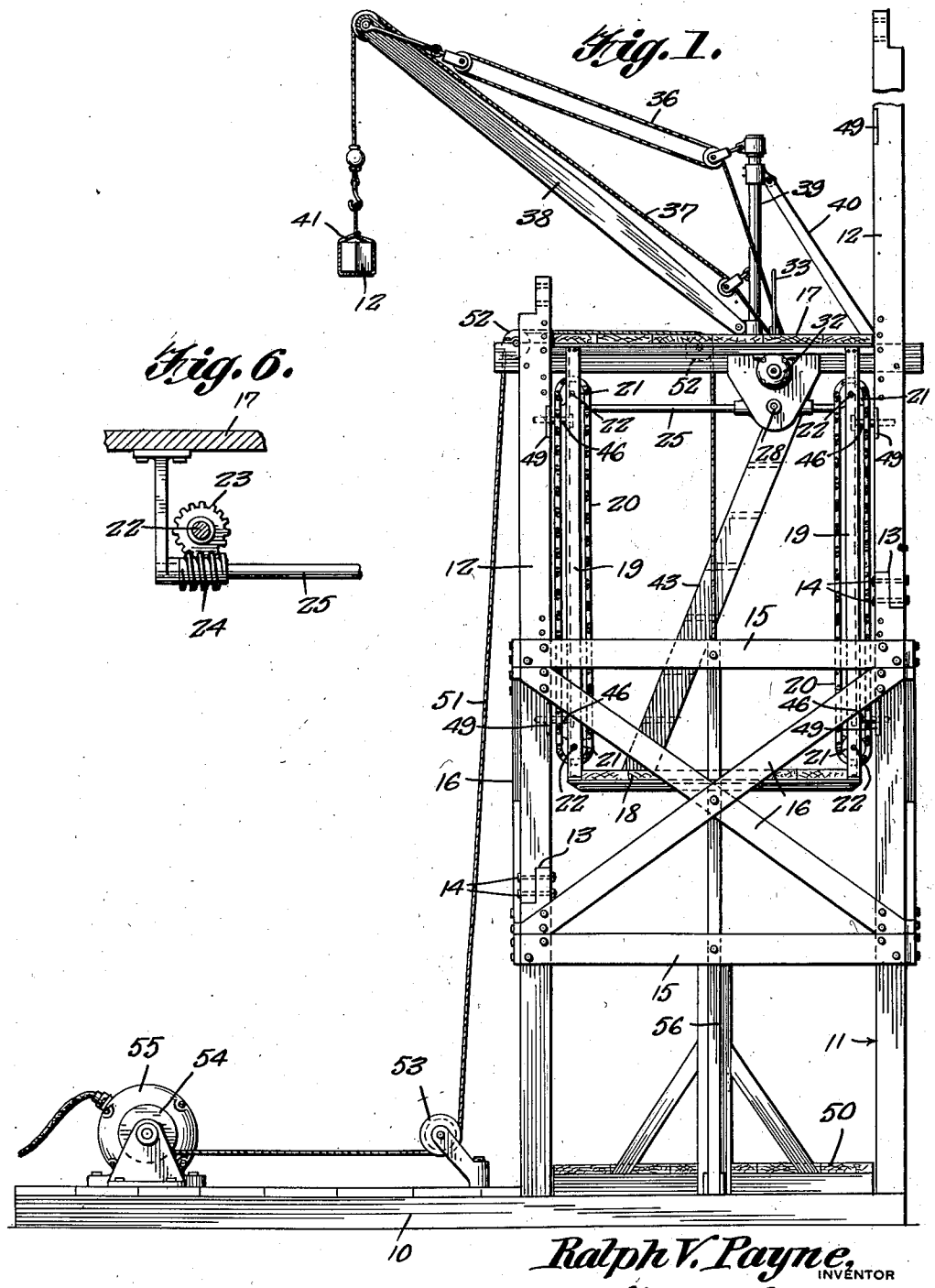


Fig. 6.

Ralph V. Payne, INVENTOR

BY Victor J. Evans & Co.

ATTORNEY

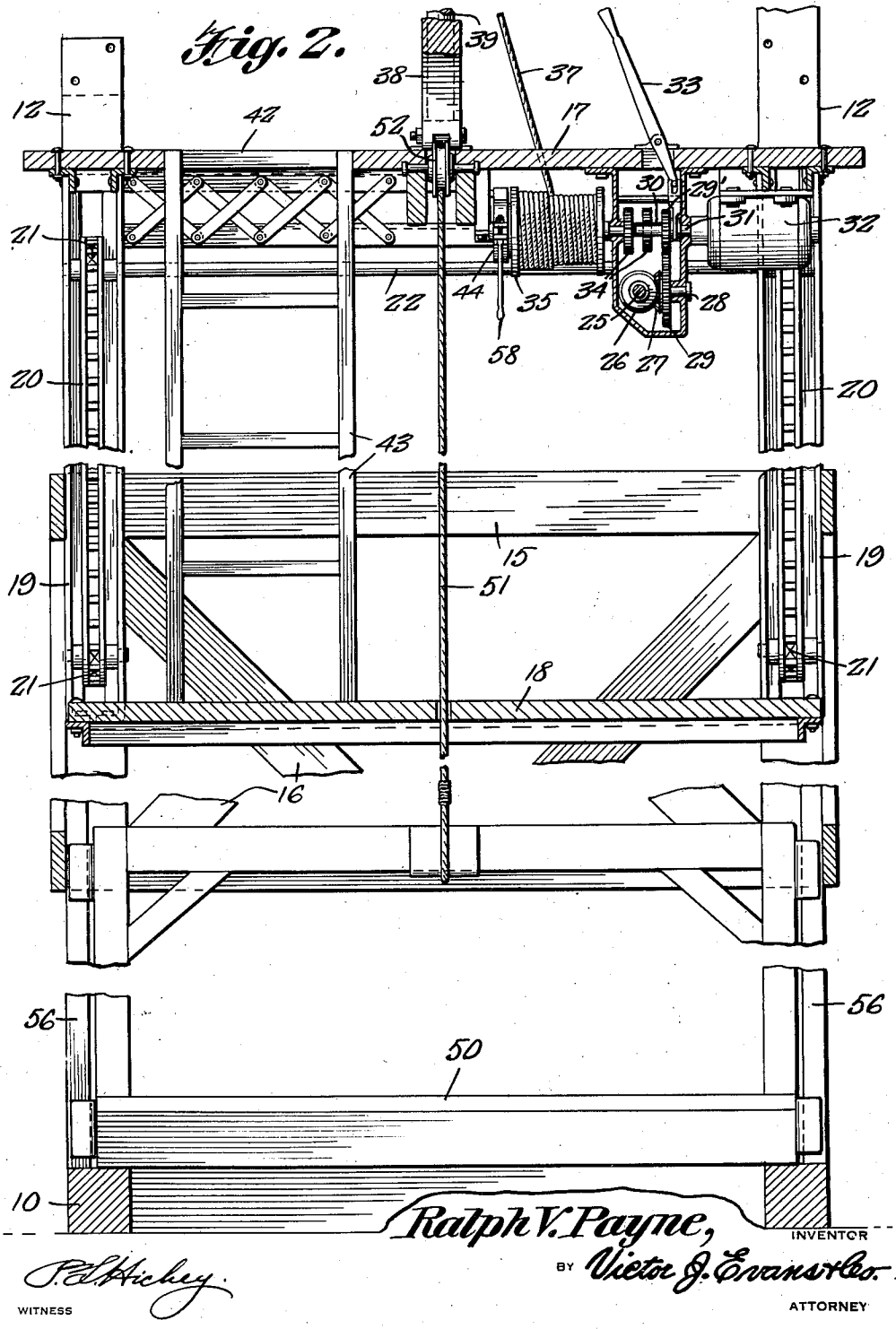
WITNESS

Dec. 29, 1936. R. V. PAYNE 2,066,221

HOISTING TOWER

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Fig. 2.



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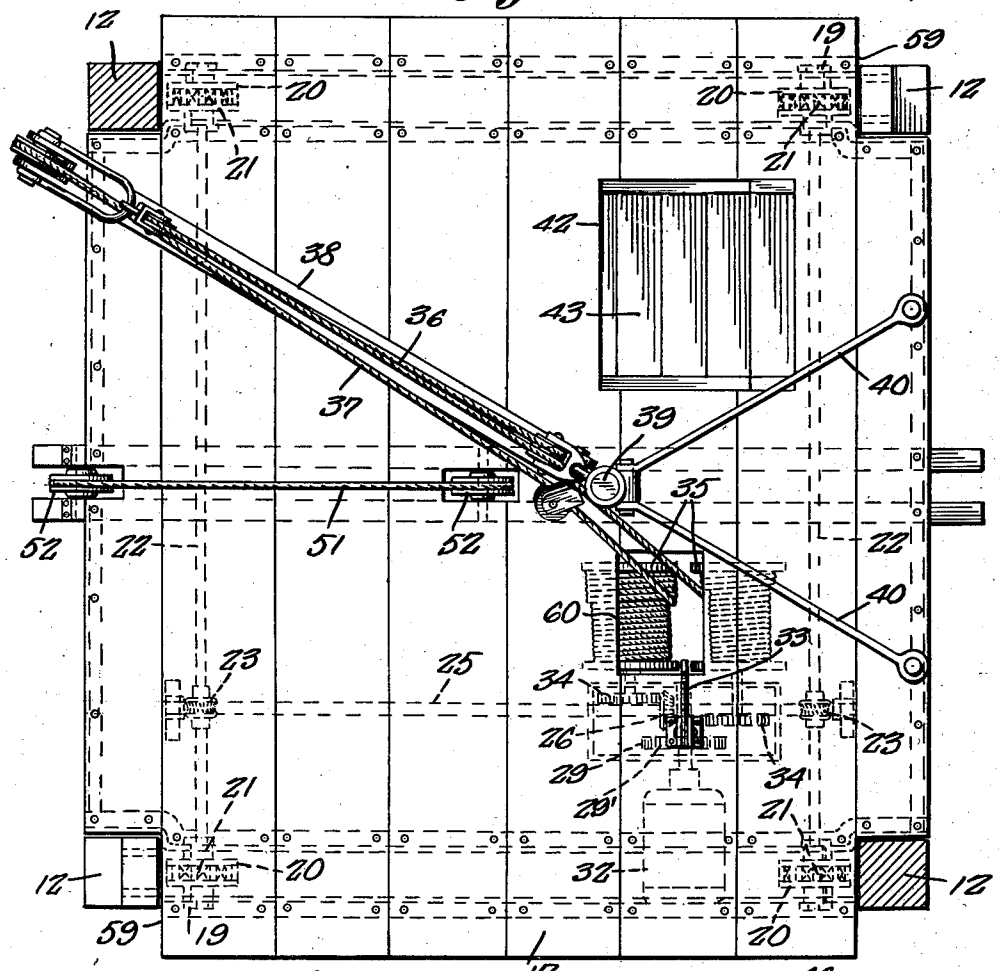
WITNESS

Dec. 29, 1936. R. V. PAYNE 2,066,221

HOISTING TOWER

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Fig. 3.



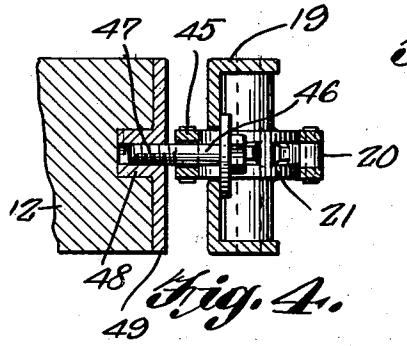


Fig. 4.

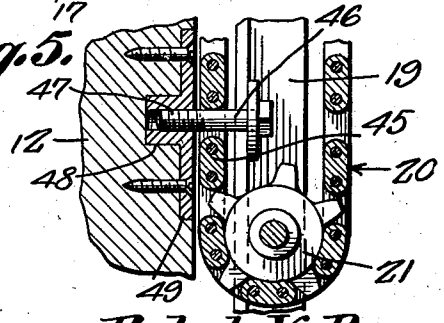


Fig. 5.

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Patented Dec. 29, 1936

2,066,221

UNITED STATES PATENT OFFICE

2,066,221

HOISTING TOWER

Ralph V. Payne, Washington, D. C.

Application December 3, 1935, Serial No. 52,716

5 Claims. (Cl. 304—29)

The invention relates to a hoisting tower set-up and more especially to a quick erecting and knock-down tower or scaffold.

The primary object of the invention is the provision of a tower or scaffold of this character, wherein a vertically movable workmen's platform or deck cage is arranged so that the same is susceptible through a motor drive of being raised or lowered and in this manner in the erection or taking down of a tower or scaffold for hoisting purposes eliminates the necessity of workmen subjecting themselves to hazardous climbs as is ordinarily required with the temporary scaffolding or hoisting tower now employed in edifices under construction, the set-up or knock-down of the scaffold or tower being had with rapidity and without requiring the workmen to assume dangers as would be required in the ordinary scaffold or tower erection.

A further object of the invention is the provision of a scaffold or tower, wherein the construction thereof is novel in form so that when in the knock-down condition it can be conveniently and easily transported to the location required for its service and also is susceptible of being erected with dispatch and without requiring the workmen to assume dangers or hazardous positions in the erection or knocking down of the scaffold or tower.

A still further object of the invention is the provision of a scaffold or tower of this character, which is comparatively simple in construction, readily and easily assembled and disassembled, strong, durable, susceptible of raising to the required height for service in the erection of buildings or the like and inexpensive to manufacture and install.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings, which disclose the preferred embodiment of the invention and pointed out in the claims hereunto appended.

In the accompanying drawings:

Figure 1 is a side elevation of a scaffold or tower constructed in accordance with the invention and at the initial stage of erection.

Figure 2 is a fragmentary enlarged vertical transverse sectional view through the scaffold or tower.

Figure 3 is a top plan view of the workmen's platform or cage.

Figure 4 is a fragmentary horizontal sectional view showing in detail the manner of securing the traveling cage or platform as included in the scaffold or tower.

Figure 5 is a vertical sectional view taken centrally through Figure 4.

Figure 6 is a fragmentary sectional view showing in detail the driving connections of the cage or platform.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings in detail, the scaffold or tower of the character constituting the present invention comprises a base 10 which is of the required size and length and at one end thereof has fixed therein the vertical corner posts 11 of the lowermost portions of a tower or scaffold, these posts being made up of a series of separable sections 12 having the overlapped joints 13 which are separably held together by removable fasteners 14, the joints 13 of the respective posts 11 being located in staggered relation to each other throughout the height of the scaffold or tower. The posts in their vertical position are spaced the required distance from each other and lie perpendicular one to the other. By employing the required number of sections 12, these posts can rise to any desired height above the base 10 by the fastening of such sections together at the joints 13.

It is preferable to have secured externally to the posts 11 the horizontal cross braces 15 and diagonal crossed braces 16 to give rigidity and strength to the tower or scaffold on erection thereof.

Arranged for vertical travel within the scaffold or tower between the posts 11 is a workmen's cage or double platform 17 and 18, respectively. In these platforms in the arrangement thereof, one superposed with respect to the other, there are corner spacer pieces 19 which are united with the said platforms 17 and 18 so that the platform 18 is suspended beneath the platform 17.

Arranged between the platforms 17 and 18 next to the corner pieces 19 thereof are vertical runs of endless sprocket chains 20, these being trained over sprocket gears 21, the uppermost of the said gears 21 being common to and fixed on driven shafts 22, these being fitted with worm pinions or gears 23 which mesh with worm screws 24 on a driving shaft 25 carrying a beveled gear 26 meshing with a companion gear 27 upon a stud journal 28 this carrying a gear 29 for meshing engagement with a driving gear 29 slidably splined or keyed at 30 upon the power shaft 31

of an electric motor 32 fixed to and suspended from the under side of the uppermost platform 17. The gear 29 is shifted by a throw lever 33 accessible above the platform 17 for alternate engagement with gears 34 operating independent windlasses 35, these being suitably journaled beneath the platform 17 and supported in any suitable manner. It is, of course, understood that but a single windlass operates at a time and adapted to be trained on and untrained from these windlasses 35 are the cables 36 and 37, respectively, associated with a swinging crane 38 carried upon a crane post 39 which is connected to braces 40 therefor. The post 39 and braces 40 are secured to and rise from the platform 17. The hoisting cable 37 functions as a hoisting cable while the cable 36 functions as a raising and lowering cable for the crane 38. The throw lever 37 rises above the platform 17 and is manually operated for the shifting of the gear 29 to bring the same into position for driving the windlasses 35 independently of each other. The hoisting cable 37 carries at its free end a suitable work harness 41 for the hoisting of material and this harness is also susceptible of raising the sections 12 of the posts 11 to bring the same into position for the erection or heightening of the tower or scaffold, one section 12 being held within the harness 41 as carried by the hoisting cable 37.

A doorway 42 is provided in the platform 17 and to which leads a vertical ladder 43 from the lowermost platform 18 so that workmen upon this lowermost platform can ascend the ladder 43 to occupy the platform 17 as may be required or vice versa. Each windlass 35 has as a part of its equipment a braking device 44.

Engageable through selected links 45 of the endless chains 20 are holding pins 46, each threaded at 47 to separably engage in an internally threaded keeper socket 48 built in the facing 49 of each section 12 of the post 11 of the scaffold or tower so that the united upper and lower platforms 17 and 18 constituting a travel cage can be held stationary at determined heights within the scaffold or tower. When it is required that these platforms 17 and 18 are to move in unison as a cage upwardly within the scaffold or tower, it is necessary to remove the lowermost pins 46 from the sockets 48 as engaged through the links 45 of the chains 20, leaving the uppermost pins 46 engaged and on the shifting of the gear 29 with the gear 28 the motor 32 will drive the said chains 20 in a direction that the platforms 17 and 18 shall move upwardly approximately the distance between the sprocket wheels 21 over which the said chains 20 are trained whereupon those pins 46 being located lowermost, will be inserted through the links 45 of the chains to engage the sockets 48 at the uppermost portions of said chains so that both the upper and lowermost pins now engaged with the sockets 46 will hold fast the platforms 17 and 18 in their raised or elevated position. Thus it will be seen that the platforms 17 and 18 will have step travel in the scaffold or tower and for the lowering of these platforms the said pins are inversely manipulated.

Operating within the tower or scaffold between its posts 11 is a lift 50, it being raised and lowered by a cable 51 trained over guide pulleys 52 as carried by the upper platform 17 and a pulley 53 on the base 10, the cable 51 being adapted for winding on and unwinding from a windlass 54 driven from an electric motor 55 upon said base 10. This lift 50 is for the bringing of materials, tools or other supplies to workmen or artificers performing on the platforms 17 and 18. The lift 50 travels upon tracks 56 vertically built within the scaffold or tower, these tracks being in sections so that the same can be laid on the vertical setting up of the scaffold or tower to any desired height corresponding thereto as the same is built to the required height in conformity with a building under construction.

The tower or scaffold is knocked down by removing the sections 12 of the posts 11 and likewise the trackage for the lift 50 until such tower or scaffold is low in height to approximate that as shown in Figure 1 of the drawings and in this condition the same with the base 10 can be placed upon a truck or other vehicle for the convenient transportation thereof to the place for employment of the same.

The location of the outer stretches of the endless sprocket chains 20 places the same parallel with and next to the posts 11 so that the pins 46 can be engaged with the sockets 48 for making fast the cage including the platforms 17 and 18 at any level within the tower or scaffold. The lift 50 operates independently of the cage including the platforms 17 and 18.

The crane 38 with its hoisting cable 37 can be utilized for the lifting of materials or other supplies as required by the workmen when riding the cage having said platforms 17 and 18. At the beginning of the operation the cage having the platforms 17 and 18 when in lowermost position will be close to the base 10 so that workmen can readily and easily climb into the cage onto its lowermost platform 18 and from there ascend to the uppermost platform 17 as the occasion may require. The cage with the platforms 17 and 18 will be automatically moved under the power of the motor 32 to rise or lower within the scaffold or tower to assume the required level demanded by the workmen riding said cage.

The cable 36 is trained over guide pulleys 57 as properly arranged to permit the raising and lowering of the crane 38, both cables 36 and 37 being driven from the motor 32. The construction of the scaffold or hoist with the movable cage therein enables the erecting and the knocking down of such scaffold or hoist with rapidity and without requiring the workmen to be subjected to hazarduous positions for the erection or knocking down operations or for ascending or descending such scaffold or tower in carrying forth work on an edifice or building under construction.

It is, of course, understood that the bracing, reinforcing or strengthening of the scaffold or tower can be effected in any desirable manner without hindrance to the setting up or knocking down thereof with dispatch and without excessive labor on the part of operatives or workmen.

The pieces 19 adjoining the platforms 17 and 18 are rigidly secured in place and are components of the cage movably fitting the scaffold or tower.

The braking device 44 is of the hand controlled type and the control lever thereof is indicated at 58.

It is preferable to have the platforms 17 and 18 at opposite edges extend between the posts 11 so that there will be provided corner notches 59 for these posts and in this manner the cage will be steadied in the movement thereof within the scaffold or tower.

In the platform 17 there is provided an opening 60 to afford a clearance for the cables 36 and 37 to and from the windlasses 35 in the working of the same.

What is claimed is:

1. A tower of the character described comprising a base, corner posts rising from said base and composed of separably joined sections, a cage arranged between the posts and including superposed platforms, shiftable means carried by the cage and detachably engageable with the posts, means on one of the platforms for operating the said shiftable means, and means removably fitting the first-named means and selectively engageable with the posts for rendering the said first-named means active or inactive.

2. A tower of the character described comprising a base, corner posts rising from said base and composed of separably joined sections, a cage arranged between the posts and including superposed platforms, shiftable means carried by the cage and detachably engageable with the posts, means on one of the platforms for operating the said shiftable means, means removably fitting the first-named means and selectively engageable with the posts for rendering the said first-named means active or inactive, and means carried by the cage for affording access from between said platforms thereof.

3. A tower of the character described comprising a base, corner posts rising from said base and composed of separably joined sections, a cage arranged between the posts and including superposed platforms, shiftable means carried by the cage and detachably engageable with the posts, means on one of the platforms for operating the said shiftable means, means removably fitting the first-named means and selectively engageable with the posts for rendering the said first-named means active or inactive, means carried by the cage for affording access from between said platforms thereof, and breaking means for the second-named means.

4. A tower of the character described comprising a base, corner posts rising from said base and composed of separably joined sections, a cage arranged between the posts and including superposed platforms, shiftable means carried by the cage and detachably engageable with the posts, means on one of the platforms for operating the said shiftable means, means removably fitting the first-named means and selectively engageable with the posts for rendering the said first-named means active or inactive, means carried by the cage for affording access from between said platforms thereof, braking means for the second-named means, and a control for the said second-named means.

5. A tower of the character described comprising a base, corner posts rising from said base and composed of separably joined sections, a cage arranged between the posts and including superposed platforms, shiftable means carried by the cage and detachably engageable with the posts, means on one of the platforms for operating the said shiftable means, means removably fitting the first-named means and selectively engageable with the posts for rendering the said first-named means active or inactive, means carried by the cage for affording access from between said platforms thereof, braking means for the second-named means, a control for the said second-named means, and horizontal and crossed diagonal brace means for said posts and removably engaged therewith.

RALPH V. PAYNE.