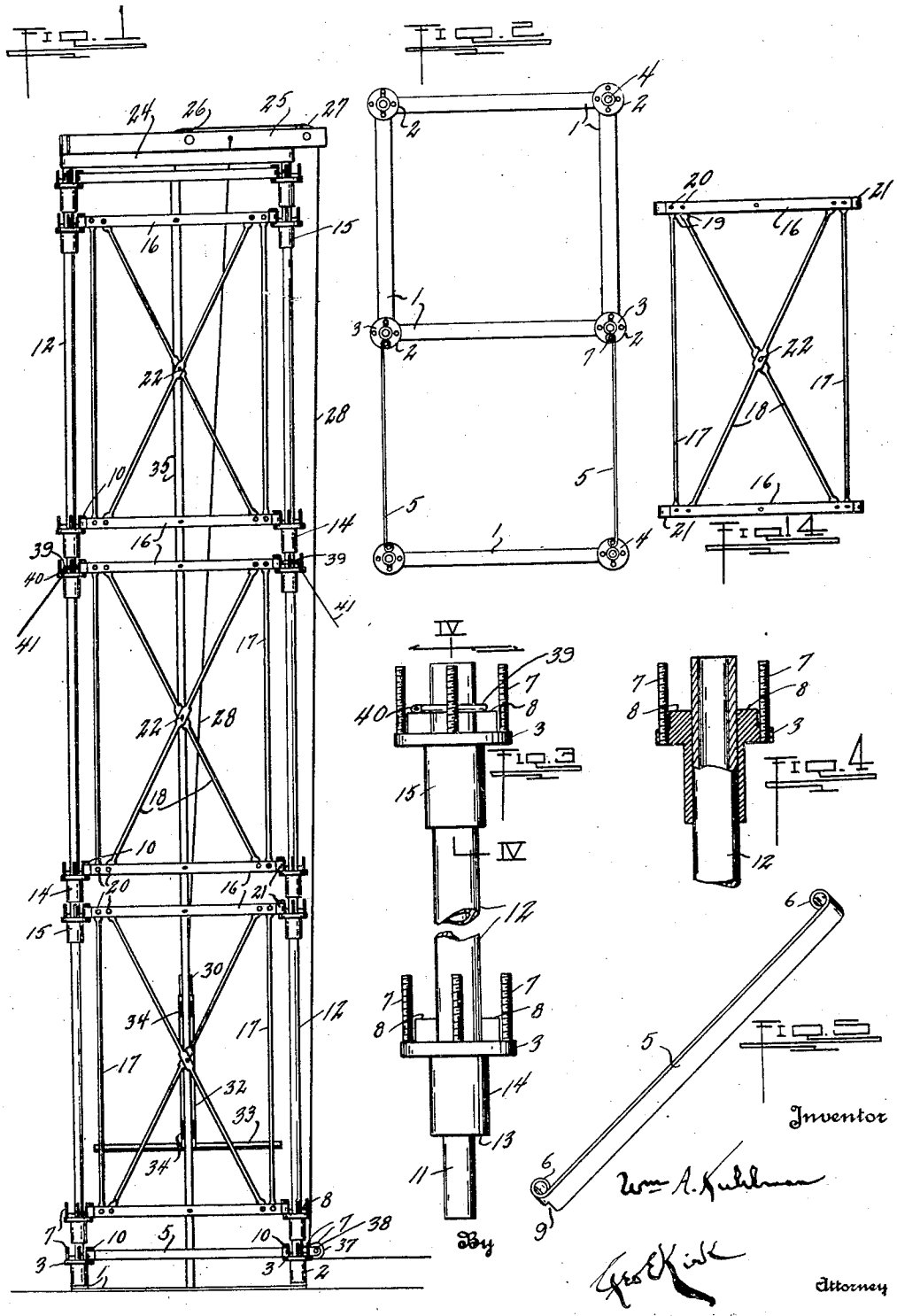
Aug. 18, 1931. W. A. KUHLMAN 1,819,031

SECTIONAL KNOCKDOWN TOWER FOR HOISTS

Filed Feb. 18, 1929 2 Sheets-Sheet 1



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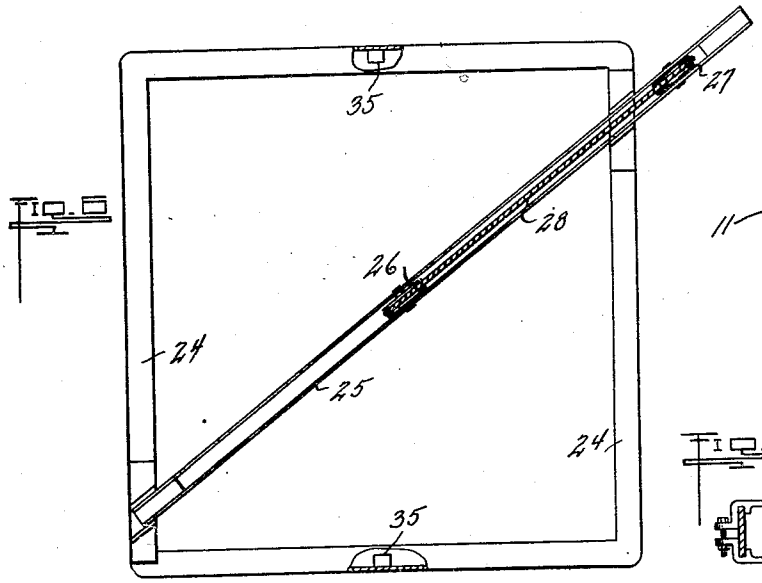

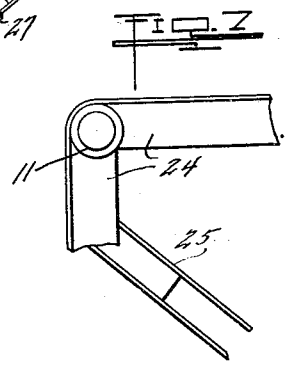

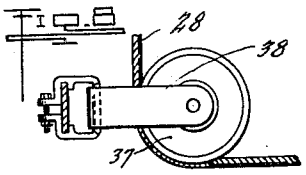

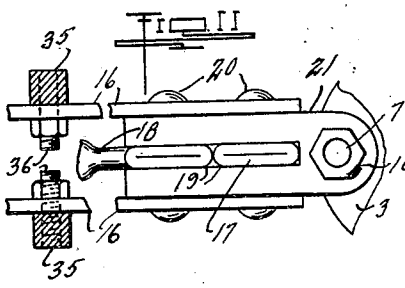

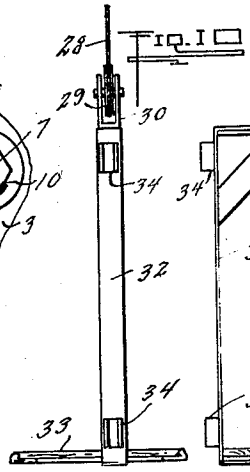

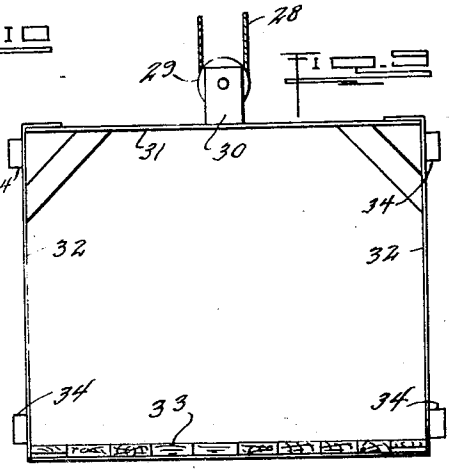

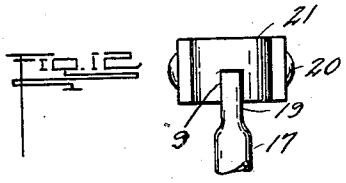

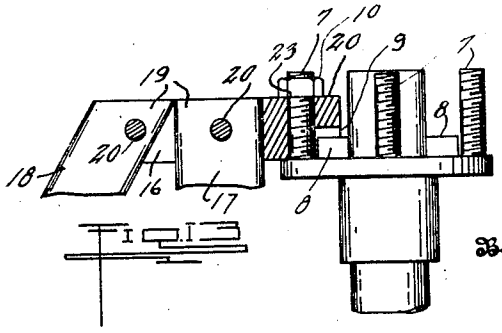

Wm. A. Kuhlman Inventor

By

Attorney

Patented Aug. 18, 1931

1,819,031

UNITED STATES PATENT OFFICE

WILLIAM A. KUHLMAN, OF TOLEDO, OHIO

SECTIONAL KNOCKDOWN TOWER FOR HOISTS

Application filed February 18, 1929. Serial No. 340,866.

This invention relates to derricks or towers for ready set-up and knock-down handling.

This invention has utility in contractor's equipment, especially in the matter of erecting derricks or towers for hoists sectionally to different altitudes or heights.

Referring to the drawings:

Fig. 1 is a side elevation of an embodiment of the invention in a sectional contractor's tower for handling a hoist;

Fig. 2 is a plan view of the base assembly for such tower of Fig. 1, which may be in duplicate;

Fig. 3 is a fragmentary view of a corner section for the tower;

Fig. 4 is a section on the line IV—IV, Fig. 3;

Fig. 5 is a perspective view of a base spacing extension;

Fig. 6 is a top plan of the tower of Fig. 1, parts being broken away;

Fig. 7 is a fragmentary bottom plan of a corner of the top section of Fig. 6;

Fig. 8 is a detail view of the bottom or ground guide for the hoist cable;

Fig. 9 is a side view of the hoist movable platform or car;

Fig. 10 is a fragmentary side view of the car of Fig. 9;

Fig. 11 is a fragmentary detail view on an enlarged scale of the strut and brace unit connection to a corner;

Fig. 12 is a view from the right of the connection of Fig. 11;

Fig. 13 is a fragmentary view of the assembly of a strut connection with a corner section; and

Fig. 14 is a view of a strut section unit.

Base plates 1 are shown as assembled in a rectangle with corner fittings 2 having ledges 3 and upstanding therefrom sockets 4. This is a rigid rectangular grouping for the tower base. In the event the tower is to have companion tower association, the ground or base plate 1 may be assembled with a pair of these units 2 having the ledges 3 at one side only of the base, which side may be spaced from this primary base by tie straps 5 having eyes 6 to slip over stems or stud bolts 7 on the ledges 3. These ledges 3 have key portions or ribs 8 extending to the region of each of the four stud bolts 7 thus forming a key rib entering notch 9 in the eye 6. This is a feature contributing to holding of the device in rectangular relation as nuts 10 clamp the straps 5 assembled with the stems or bolts 7 on the separate ledges 3.

With this base as a foundation, the tower may be erected thereon by inserting reduced diameter extensions 11 of tubular corner sections 12 into the sockets 4, with ledges 13 resting on the tops of the sockets 4. This ledge 13 is on fitting 14 having major ledge 3 with stud bolts 7 and keys 8 similar to the fittings in the base. The corner section tubular element 12 extends through and has weld anchored thereon top fitting 15 similar to the base fitting 14. This top fitting is provided with ledge 3 having stud bolts 7 and keys 8. This fitting 15 has the corner element 12 protruding to provide upwardly open socket 4 so that the corners may be sectional in running up to carry the tower to the desired height.

As the corner sections are set up, brace and strut section units may be assembled therewith. These units comprise upper and lower pairs of braces or straps 16 with vertical, round or tubular tie rods 17 in parallel therebetween adjacent the corners 12. There is thus provided a rectangular unit brace section with diagonal braces 18 completing the unit assembly. These braces 18 (Fig. 11) are also of round or pipe material, which, like the rods 17, have flattened termini 19 engaged by rivets 20 in assembling with fittings 21 and the straps 16. There is additional anchoring 22 of the diagonal braces at the intersection.

There is accordingly provided a rigid strut and brace section as a unit, which may be in the one piece assembled within the length of a corner section pair by having eye 23 (Fig. 13) of the fitting 21 drop over stud bolts 7 in the fittings 14, 15, with notches 9 of the fitting 21 registering with the key 8. As so dropped into position as a unit, nuts 10 on the protruding upper ends of the stud bolts 7 complete the anchoring of the brace section against accidental removal and further

thereby contribute to the stiffness of the structure. These brace units may be readily dropped into position as the corner sections are set.

While these are of light gage tubing and light gage straps, the assembly is such that there is material strength and these units are such that contractor's crew may with rapidity drop the corner sections into place, bringing a strut and brace unit section to land on the ledges 3. Even as thus loosely assembled, there is substantial character to the tower. However, the application of the nuts avoids any accidental displacement. This grouping of the sections may be one to follow in height the course of building construction, or it may be adapted to other work, more particularly of temporary character were it desired to have the tower set-up and knocked-down.

An important point of this tower construction is for hoisting, in which event the tower may have a top unit somewhat corresponding to the base unit, but herein shown as provided with angles 24 in rectangular assembly, such rectangular assembly having corner drop extensions 11 to set in the upper sockets 4 of the corner sections 12. This top frame 24 is shown as carrying a diagonal bracket 25 having pulleys 26, 27, for hoisting cable 28 extending to pulley 29 at bracket 30 of upper bar 31 connected by uprights 32 with car or platform 33. These uprights 32 have guide cheeks 34 coacting with tower guides 35 anchored by bolts 36 (Fig. 11) with the straps 16 of the unit sections. The cable 28, in passing over the pulley 27 may be conducted to the region of the lower portion of the tower to pass about pulley 37 as held by adjustable bracket 38 and thence to extend to hoist engine or other power device.

The car as herein disclosed is a light weight simple platform device readily brought to the job and of sufficient capacity for wheelbarrow or truck as may be used in the erection or other contracting operations. While this device is primarily designed merely to handle freight, under such circumstances safety devices may be omitted and the structure as thus simply produced be one that the contractor with a great degree of economy may set up on the job and at the completion of the work quickly knock-down for re-use elsewhere.

The omission of any thread assembly between the sections, whether corner or strut and brace, means that the dirt in the work, even when the work handled be of masonry material, may have no assembly defeating corrosive action for here said action does not mitigate against the satisfactory ready assembly and knock-down of this equipment. The stems or stud bolts 7 are threaded elements which are merely supplemental safeguards and may be replaced as they become broken or corroded. The structure is accordingly one which has a degree of stiffness and strength as well as lightness making possible a great degree of ready variation for contractor's installation.

As the height of these hoist towers is increased, necessity may arise to stiffen such, especially if the building structure be not available to tie from. To this end rings 39 may be slipped over sockets 4 to have eyes 40 engaged by guide cables 41.

What is claimed and it is desired to secure by United States Letters Patent is:

1. A tower having corner sections provided with upper and lower seat means, strut section units, each of said units being directly movable to engage a pair of upper or a pair of lower of said seat means, and assembly means for the strut section unit at said seat means with a pair of adjacent corner sections comprising eyes and vertically extending stems for protruding into said eyes.

2. A tower having corner sections provided with upper and lower ledges, strut section units, each of said units being directly movable to engage a pair of upper or a pair of lower of said ledges, and assembly means for the strut section unit at said ledges with a pair of adjacent corner sections, said assembly means embodying eyes carried by the unit and stem means at the corner sections vertically extending through said eyes.

3. A tower having corner sections provided with upper and lower upstanding stems, directly movable to engage a pair of upper and a pair of lower of said upstanding stems, and assembly means for the strut section unit at said upstanding stems with a pair of adjacent corner sections.

4. A tower having corner sections provided with upper and lower ledges with upstanding stems thereon, strut section units directly movable to engage a pair of upper and a pair of lower of said ledges with upstanding stems, and assembly means for the strut section unit at said ledges with upstanding stems with a pair of adjacent corner sections.

5. A tower having corner sections provided with upper and lower ledges provided with key means, strut section units, each one of said units being directly movable to engage a pair of upper or a pair of lower of said ledges, and assembly means for the strut section unit at said ledges with a pair of adjacent corner sections embodying eyes and stems vertically extending through the eyes and engaging said ledges.

6. A sectional tower corner attachment element having a socket at one end and a reduced diameter extension at the other end, a ledge near each end, and stems mounted on the ledges.

In witness whereof I affix my signature.

WILLIAM A. KUHLMAN.

CERTIFICATE OF CORRECTION.

Patent No. 1,819,031. Granted August 18, 1931, to

WILLIAM A. KUHLMAN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 98, claim 3, before "directly" insert the clause "strut section units"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 29th day of September, A. D. 1931.

M. J. Moore,
Acting Commissioner of Patents.

(Seal)