Aug. 27, 1946. I. J. KUERT 2,406,335

MOBILE TOWER

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Fig. 1.

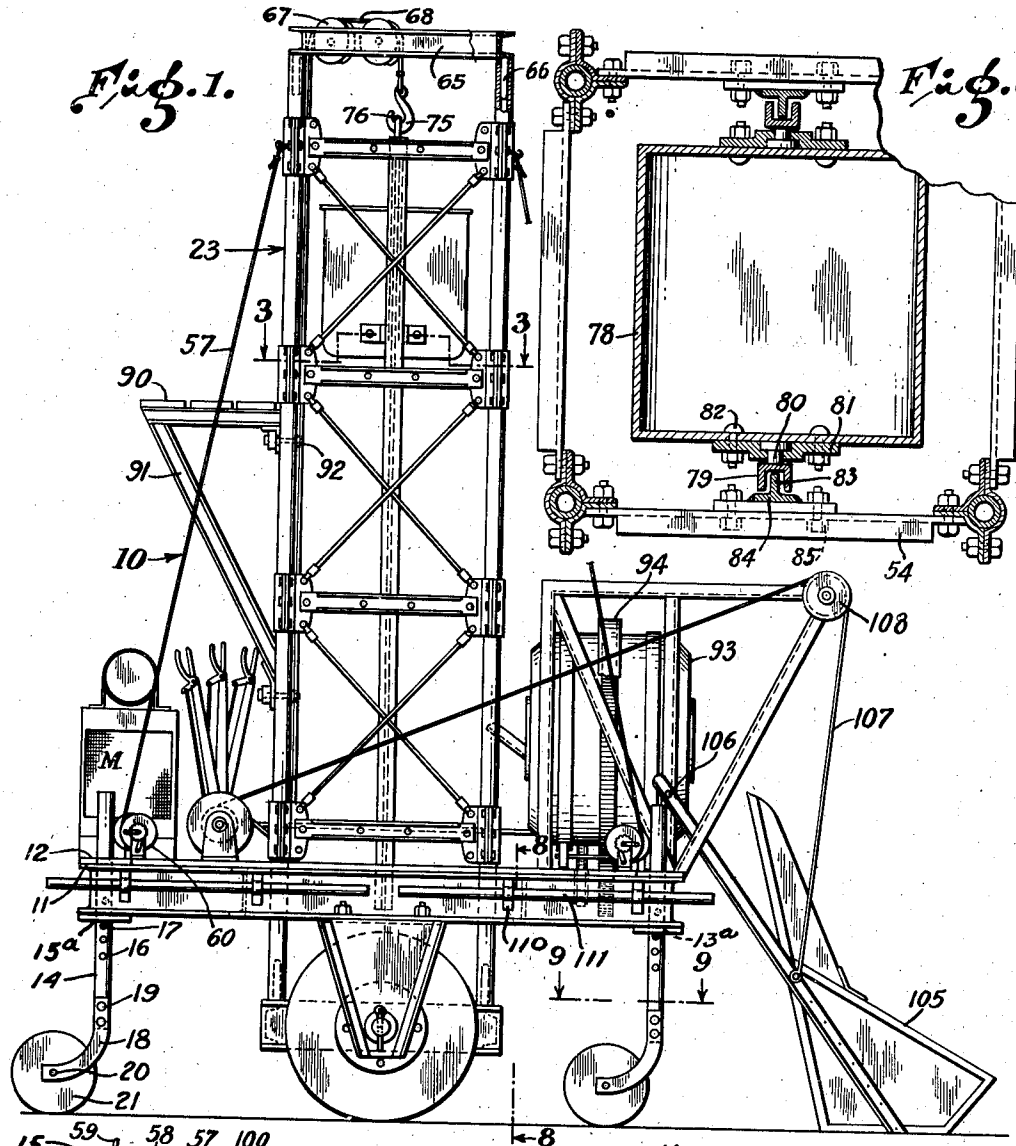


Fig. 3.

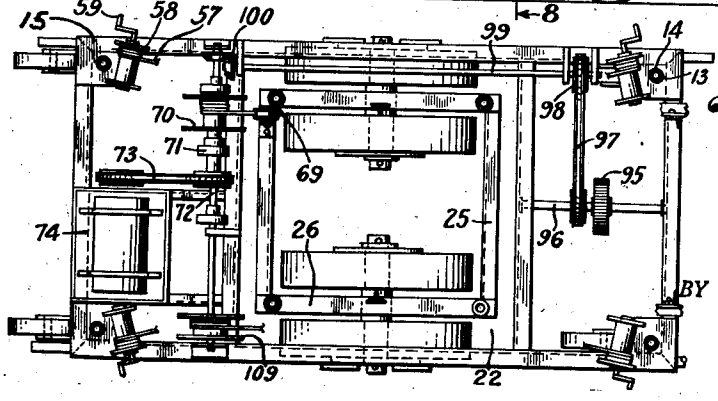


Fig. 2.

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Fig. 4.

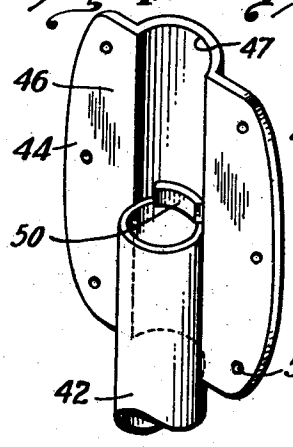


Fig. 5.

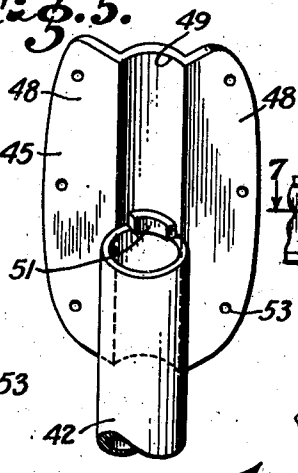


Fig. 6.

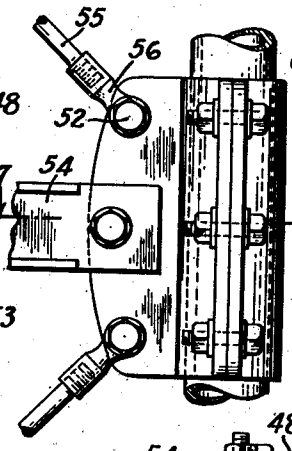


Fig. 7.

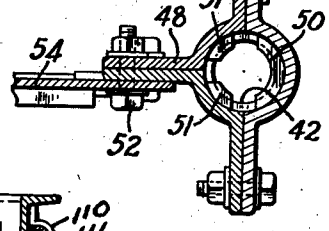


Fig. 8.

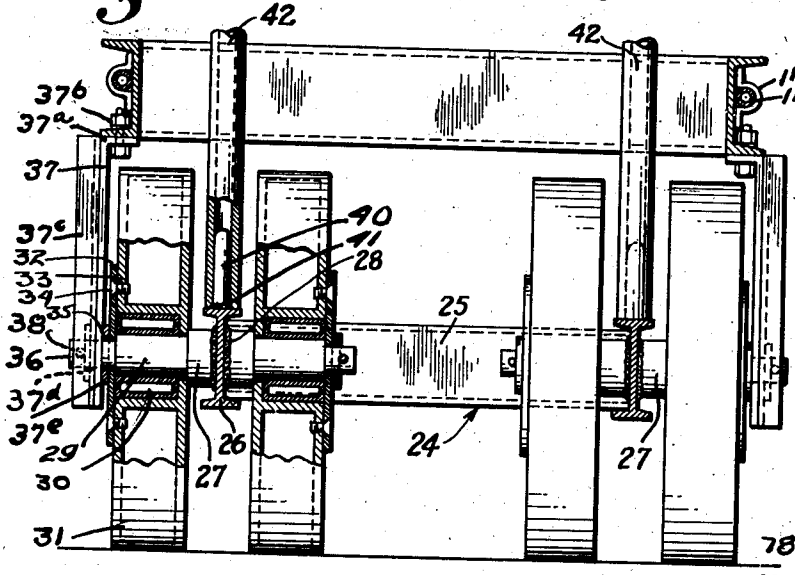


Fig. 9.

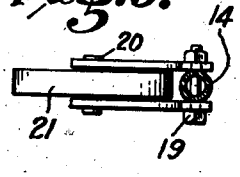
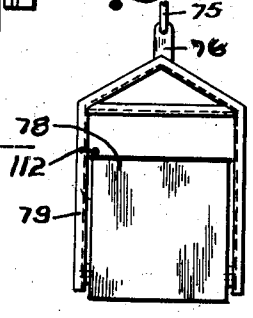


Fig. 10.



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MOBILE TOWER

Ira J. Kuert, Los Angeles, Calif.

Application July 31, 1944, Serial No. 547,491

3 Claims. (Cl. 189—11)

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This invention relates to a mobile tower.

The general object of the invention is to provide an improved mobile tower such as an elevator or hoisting apparatus which is particularly adapted for use in elevating concrete to be poured into wall forms.

A more specific object of the invention is to provide a mobile elevator including a novel tower supporting means.

A further object of the invention is to provide a novel tower construction for an elevator.

A further object of the invention is to provide a novel means for mounting a tower member.

Another object of the invention is to provide a novel joint for use in building towers and similar constructions.

An additional object of the invention is to provide a novel platform frame construction for a mobile elevator.

Other objects and advantages of my invention will be apparent from the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is a side elevation of a mobile hoisting apparatus embodying the features of my invention;

Fig. 2 is a top plan view of the platform with the upper ends of the caster wheel pipes and the tower broken away and with the concrete mixer removed;

Fig. 3 is an enlarged sectional view taken on line 3—3, Fig. 1;

Fig. 4 is a perspective view showing a column coupling member;

Fig. 5 is a view similar to Fig. 4, showing another coupling member;

Fig. 6 is a fragmentary side elevation showing a column joint and column braces;

Fig. 7 is a section taken on line 7—7, Fig. 6;

Fig. 8 is an enlarged transverse section taken on line 8—8, Fig. 1;

Fig. 9 is an enlarged section taken on line 9—9, Fig. 1, and

Fig. 10 is a reduced side elevation showing the bucket.

Referring to the drawings by reference characters, I have shown my invention as embodied in a mobile hoisting apparatus which is indicated generally as at 10. As shown, the apparatus includes a rectangular frame 11 which may be made of channel irons. Upon the frame 11 I arrange a platform 12 for the operator. The operating mechanism is mounted on the frame 11 as shown in Fig. 2.

In order to support the frame I provide a plu-

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rality of pipes 14 which extend through apertures 13 and 13a in plates 15 and 15a. The plates 15 and 15a are secured to the top and bottom of the frame 11 at each corner thereof. The pipes 14 are provided with spaced apertures 16 through which pins such as bolts 17 extend. By adjusting the position of the pins 17 the position of the pipes 14 relative to the platform 11 may be adjusted. Each pipe at its lower end has a pair of curved arms 18 secured thereto by bolts 19. Each pair of arms 18 supports a shaft 20 which in turn supports a caster or transporting wheel 21.

The rods 14 are free to turn, thus permitting the caster wheels to turn so that the platform may be shifted. If the apparatus is used on a surface that slopes, the effective length of the rods may be adjusted by proper placing of the pins 17 so that the platform may be held in a substantially horizontal position.

The platform 12 is removed at the middle portion of the frame to provide a well 22 in which I arrange my improved tower which is indicated generally at 23.

The tower is mounted upon a truck 24 which includes transverse channel members 25 and longitudinal I-beam members 26. The members 25 and 26 are secured together at their ends. The I-beam members 26 are provided with opposed apertures through which tubular axle supporting members 27 are inserted. The members 27 are held in place as by welding at 28. The tubular members 27 receive axles or shafts 29 which support roller bearings 30 which latter support wheels 31.

Each wheel 31 has a plate 32 provided with apertures 33 receiving screws 34 which enter the wheels to hold the plates in place. The plate 32 serves to hold the bearings 30 in place and each plate is provided with an aperture 35 which receives a reduced portion 36 on the axle 29.

The axles 29 are received in a pair of plates 37. Each plate has a flange 37a secured to the frame 11 by bolts 37b. The plate 37 is braced by downwardly converging angle members 37c. Each plate 37 has an aperture 37d which receives the reduced end portion 36 on the axle 29. Washers 37e are arranged on each side of the plate 37. The wheels are held in place by pins 38 which pass through the portion 36 of the shaft.

Upon each end of each of the I-beams 26 I secure pins 40 which are upwardly directed and are held in place as by welding at 41. Each of the pins slidably receives a tube 42. The tubes 42 form four corner members of the tower 23. The tubes 42 rest upon the I-beams 26 and thus their

weight is carried to the wheels 31 on the truck 24.

In order to make the tower adjustable in height I employ novel coupling members which are shown in detail in Figs. 4 to 7, inclusive. Each coupling preferably includes a member 44 and a pair of members 45. A pair of the members 44 or four of the members 45 may be employed if desired. The member 44 includes a body portion or wing 46 having a semi-cylindrical groove or recess 47 therein. Each of the members 45 includes base portions or wings 48 which are arranged at right angles to each other and are connected by grooved or recessed portions 49. The grooves or recesses 47 and 49 are of a radius corresponding to the external radius of the tubes 42.

The groove 47 includes an arcuate boss 50 intermediate its length and each of the grooves 49 includes an arcuate boss 51 intermediate its length. The lower surfaces of the bosses 40 and 51 engage the top of a tube 42 upon which they are arranged and the upper surfaces of the bosses 50 and 51 are engaged by the lower end of the upper tube which the coupling member supports. In use the coupling members are mounted upon a tube as shown in Fig. 7 and suitable fastening members 52 are inserted through apertures 53 in the members 44 and 45.

To support the tubular members 42 I provide transversely extending horizontal braces 54 which are connected to the adjacent base portions 48, as shown in Fig. 7. Above and below each horizontal brace 54 I arrange intersecting tie members or rods 55 which have eyes engaged by the fastening member 52.

In order to brace the entire tower, guy cables 57 are secured at their upper ends to one or more sets of the coupling members by the fastening means previously described. The lower ends of the guy cables pass over drums 58 mounted on the corner plates 15.

By operating cranks 59 the cables 57 may be tightened or loosened and may be held by a pawl and ratchet device 60 associated with each drum. By tightening or loosening the cables 57 the tower may be readily arranged in a vertical position regardless of the slope of the ground on which the apparatus rests.

The uppermost set of tubes 42 supports a crown block 65 which comprises a rectangular frame made of channel members and having depending pins 66 welded thereto at the corners thereof. The pins 66, like the pins 40, fit into adjacent tubes 42 to prevent slipping of the crown block. The crown block includes pulleys 67 over which a cable 68 passes.

One end portion of the cable 68 passes over a lower pulley 69 and onto a drum 70 where it is driven through a clutch 71 from a shaft 72 which is driven by a belt or chain 73 by means of a motor 74. The other end of the cable 68 has a hook 75 which engages an eye 76 on a bail secured to a bucket 78. The bail consists of a channel 79 as shown in Fig. 3 which, adjacent to the lower ends thereof, is provided with aligned shafts 80 which are pivotally supported on brackets 81 secured to the bucket by bolts 82.

The channels 79 receive the stems 83 of T-beam guide members 84 which are removably connected to the horizontal braces 54 by the bolts 85. The construction shown permits the bucket 78 to dump to the right or left in Fig. 3. By removing the bolts 85 the T-beam guide members may be moved through 90° and replaced to permit the bucket to dump from either one of the other two sides of the tower.

The tower is shown as provided with a staging 90 which is braced by a member 91 and is held on the rods 42 by bolts 92 which pass through apertures in the rods.

Upon the end of the platform remote from the motor 74 I provide a concrete mixer 93 which has a drive gear 94 driven from a gear 95 on a shaft 96 by a chain 97 which is driven from the sprocket 98 on a shaft 99. The shaft 99 is driven by bevel gears 100 from the shaft 72 previously mentioned by clutch means not shown.

The concrete mixer includes a skip 105 which is pivoted at 106 and is operated by a cable 107 which passes over a pulley 108 and extends to a drum 109 where it is driven from the shaft 72 by clutch means not shown.

In order to move the apparatus I provide the frame sides with U-shaped brackets 110 which slidably receive pipes 111. By sliding out the pipes 111 they afford ready means for shifting the apparatus.

In order to prevent premature dumping of a bucket 78, I provide a suitable catch 112 which may be released to permit the bucket to swing to discharge the contents.

In operation the tower is built up to the desired height and the bucket is arranged in the correct dumping position. The operator then starts the motor 74 and performs the various operations incident to power the concrete. As the work progresses the height of the tower may be changed if desired.

From the foregoing description it will be apparent that I have invented a novel mobile elevator, which can be economically manufactured and can be readily assembled and taken apart and which is highly efficient in use.

Having thus described my invention, I claim:

1. A tower construction including a platform having adjustable transporting wheels at each end, said platform member having a well disposed between the sides and ends of the platform, shaft means mounted beneath the platform and extending transversely of the platform and being located intermediate the sides of said well, supporting wheels mounted on the shaft means, a tower frame adjacent to and below the well, said tower frame including longitudinal and transverse members, means whereby the shaft means pivotally supports the tower frame, and a tower on said tower frame and extending upwardly through the well.

2. A tower construction including a rectangular platform having a transporting caster wheel at each corner thereof, said platform having a well, said well being disposed between the sides and ends of the platform, a pair of spaced, horizontal, coaxial shafts mounted beneath the platform and extending transversely of the platform, said shafts being located intermediate the sides of said well, spaced supporting wheels mounted on each shaft, a rectangular tower frame adjacent to and below the well, said tower frame including longitudinal and transverse members, means whereby the shafts pivotally support the tower frame, and a tower on said tower frame and extending upwardly through the well.

3. A tower construction including a rectangular platform having a vertically adjustable transporting caster wheel at each corner thereof, said platform having a rectangular well, said well being disposed between the sides and ends of the platform, a pair of spaced, horizontal, coaxial

shafts mounted beneath the platform and extending transversely of the platform, said shafts being located intermediate the sides of said well, a pair of spaced supporting wheels mounted on each shaft, a rectangular tower frame adjacent to and below the well, said tower frame including longitudinal and transverse members, one longitudinal member being arranged between one

pair of the wheels, the other longitudinal member being arranged between the other pair of wheels, means whereby the shafts pivotally support the tower frame, a tower on said tower frame and extending upwardly through the well, and adjustable guy members connecting the tower and platform.

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