

Feb. 10, 1970.

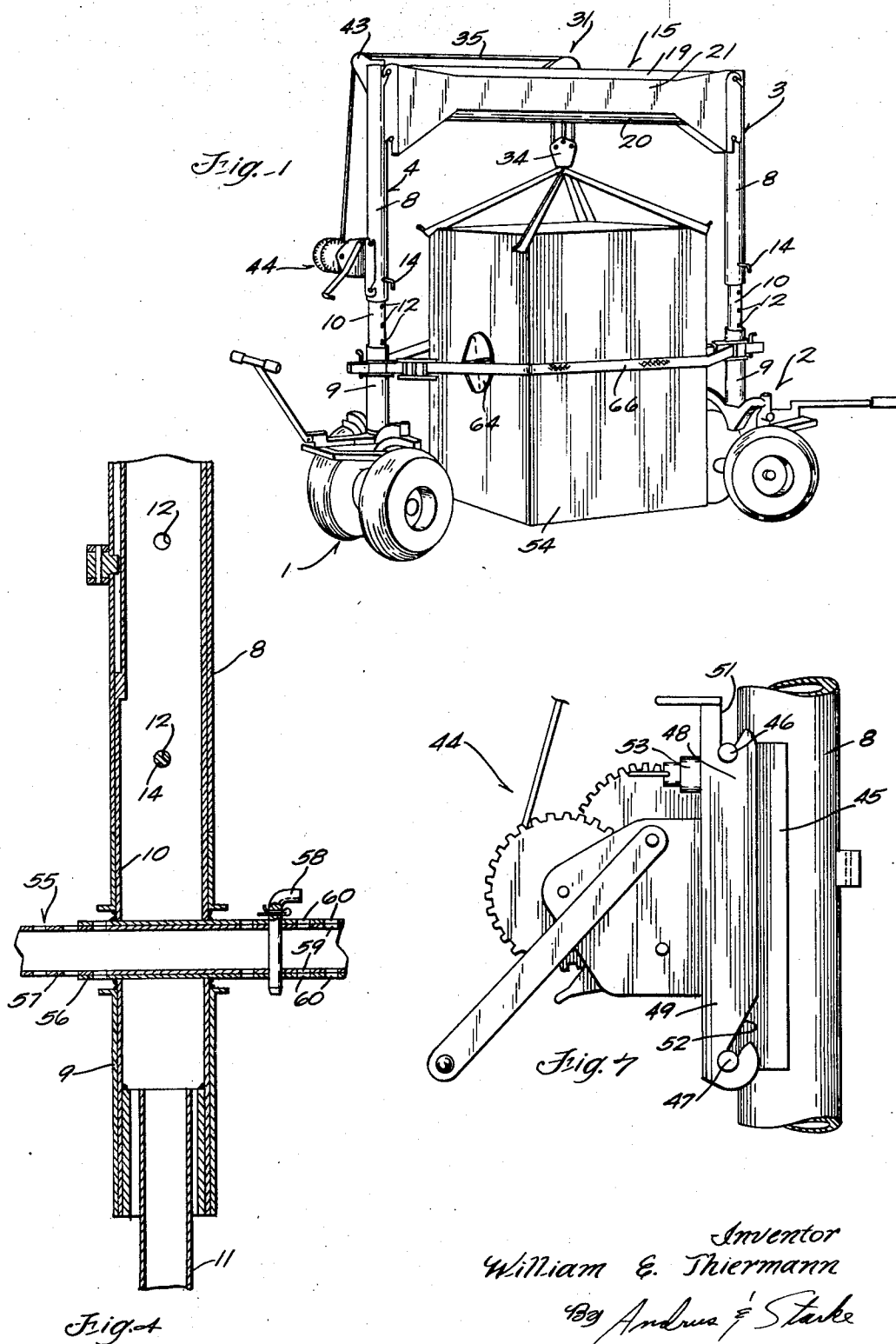
W. E. THIERMANN

3,494,492

DOLLY SUPPORTED GANTRY

Filed Sept. 25, 1967

4 Sheets-Sheet 1



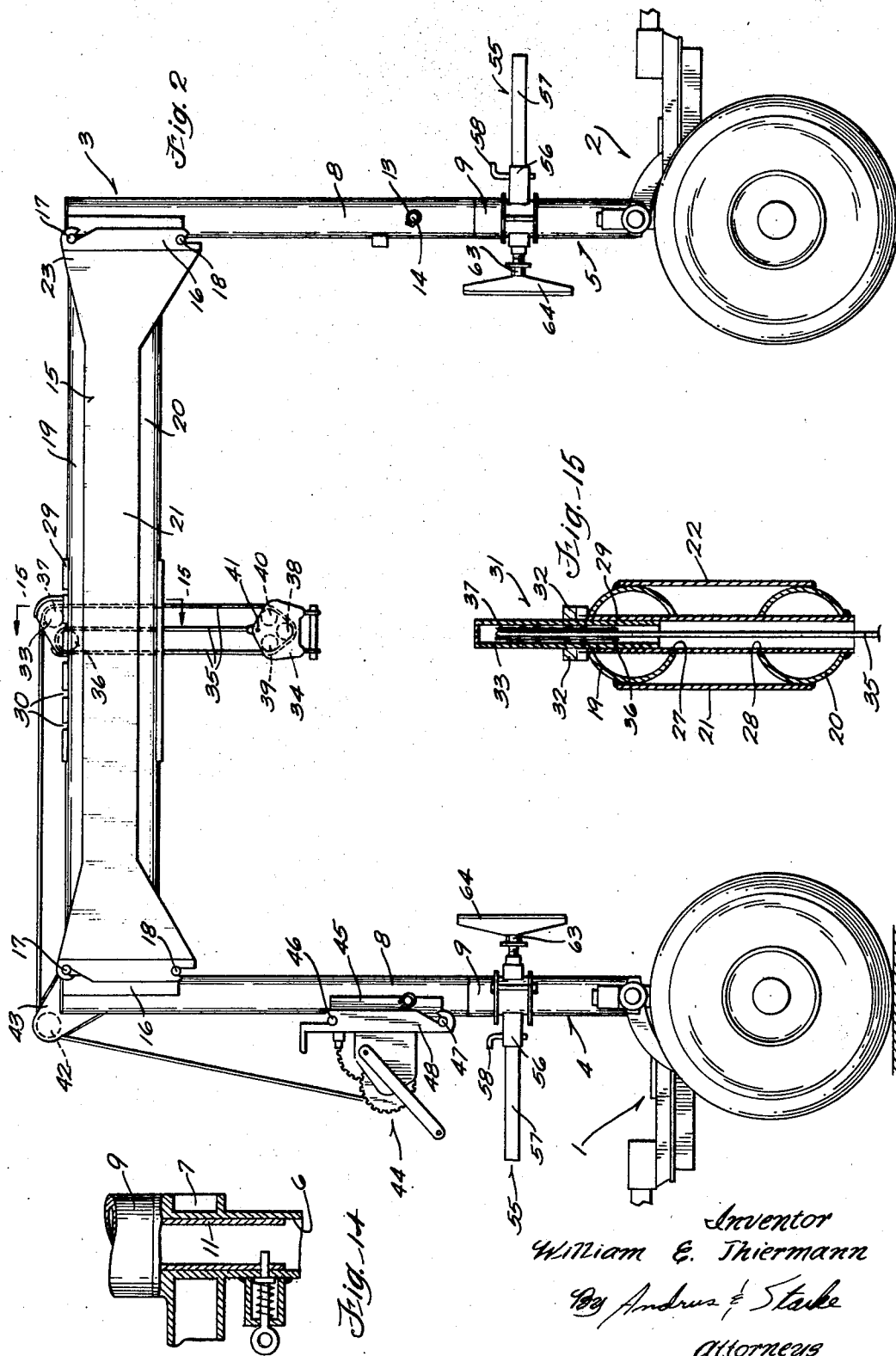
Feb. 10, 1970

W. E. THIERMANN
DOLLY SUPPORTED GANTRY

3,494,492

Filed Sept. 25, 1967

4 Sheets-Sheet 2



Feb. 10, 1970

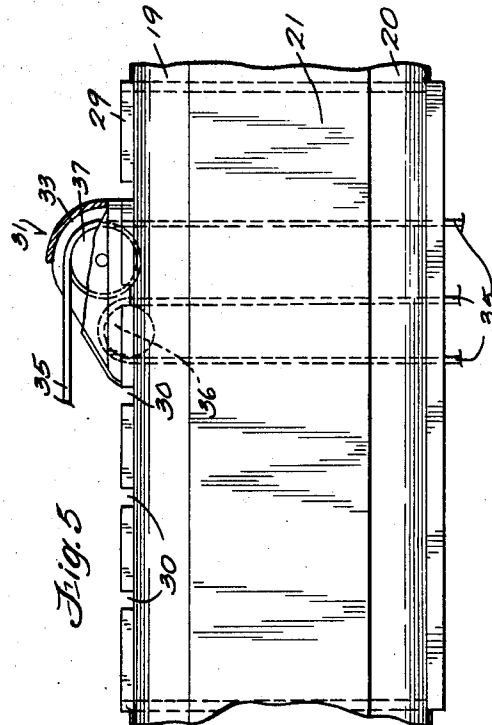
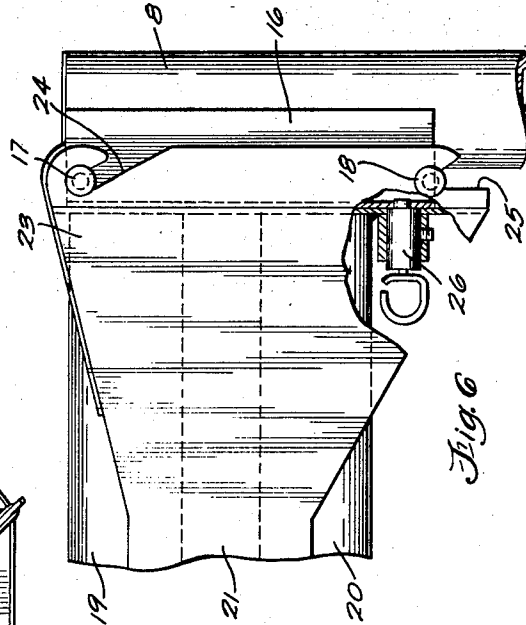
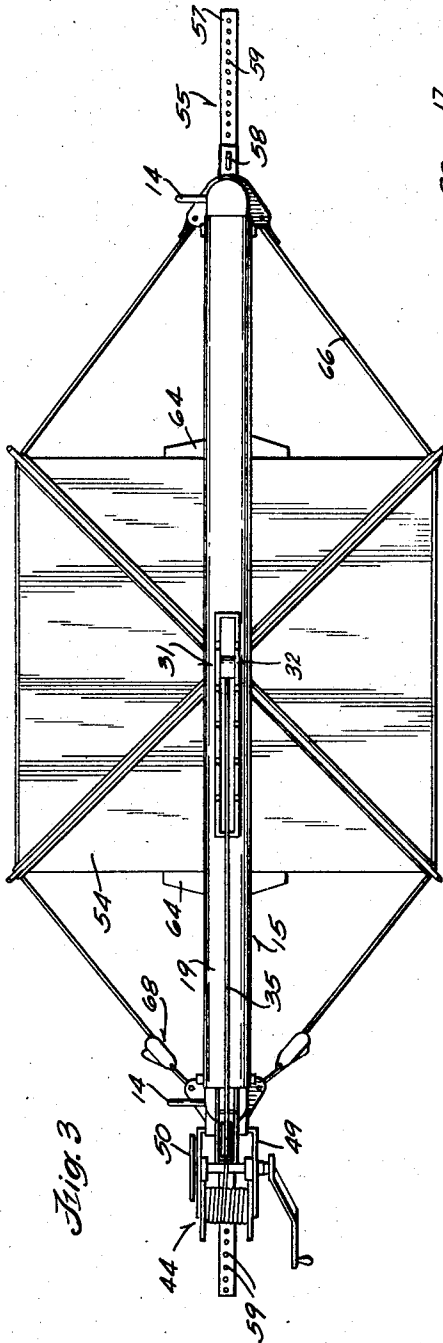
W. E. THIERMANN

3,494,492

DOLLY SUPPORTED GANTRY

Filed Sept. 25, 1967

4 Sheets-Sheet 3



Inventor
William E. Thiermann
By Andrew C. Starke
Attorneys

Feb. 10, 1970

W. E. THIERMANN
DOLLY SUPPORTED GANTRY

3,494,492

Filed Sept. 25, 1967

4 Sheets-Sheet 4

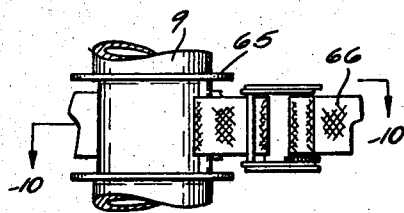


Fig. 8

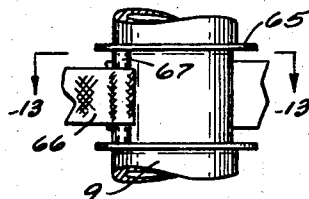


Fig. 11

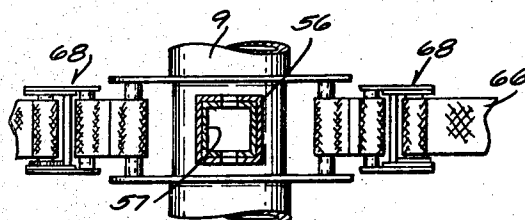


Fig. 9

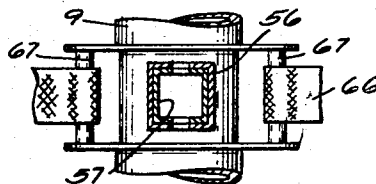


Fig. 12

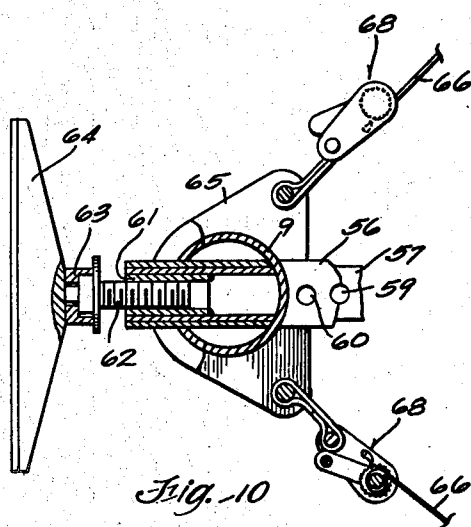


Fig. 10

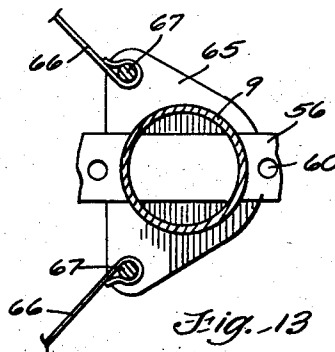


Fig. 13

Inventor
William E. Thiermann
By Andrew F. Starke
Attorneys

1

3,494,492

DOLLY SUPPORTED GANTRY

William E. Thiermann, 10726 N. Wauwatosa Road 76W,
Mequon, Wis. 53092

Filed Sept. 25, 1967, Ser. No. 670,219

Int. Cl. B60p 1/02; B66c 5/02; B66d 3/08

U.S. Cl. 214—396

8 Claims

ABSTRACT OF THE DISCLOSURE

A beam is supported at its ends by two extensible posts carried by two separate two wheel dollies of the general type disclosed in Patent No. 3,315,976. A hoist mechanism is selectively located along the beam for the suspension, raising and lowering of a heavy object between the dollies. An extensible arm is carried by each post parallel to the beam and engaging the suspended object and an adjustable strap extends between the posts on either side of the object to thereby rigidly confine the object between the ends of the arms. The object or load thus is utilized to provide an auxiliary rigidifying cross member between the posts so that the entire structure and load serves as a rigid unit for transportation on the wheels of the dollies. A removable windlass is carried by one of the posts to actuate the hoist mechanism. The structure is readily separable into parts that can be manually carried and transported in a small truck.

This invention relates to a dolly supported gantry which has found particular use by utility crews in transporting and installing pad mount transformers and the like.

Such transformers generally weigh in excess of six hundred pounds and occasionally need to be placed in the rear of residential yards in urban areas where trucks cannot be used. The problem therefore arises to provide some sort of handy transporting means that will carry the transformer from the front street, frequently through narrow gates and across a portion of a residential yard to its location in the rear.

The invention utilizes two dollies of the type illustrated in Patent No. 3,315,976 issued to the present applicant on Apr. 25, 1967. Dollies of this type are usually available to utility crews for use in transporting poles to and from installation sites.

The dollies are tied together in tandem by an inverted U-shaped gantry frame structure, the upper part of which constitutes a beam from which a hoist mechanism suspends the transformer in the space between the dollies.

Applicant is not aware of any gantry construction that can be assembled and disassembled for ready transportation in a small truck such as that normally used by utility crews, and which can be mounted on dollies for use as stated above.

One of the problems that seemed to make a light-weight gantry construction unworkable lies in the tendency for the frame to twist and collapse as the dollies moved over rough terrain. This problem is solved by the present invention by making the transformer a part of a strut extending between the two legs of the inverted U-shaped frame parallel to the upper beam and which provides an over-all rigid structure holding the dollies in alignment regardless of the terrain.

2

The accompanying drawings illustrate the best mode presently contemplated for carrying out the invention.

In the drawings:

FIG. 1 is a perspective view of the gantry with a transformer secured therein ready for transporting;

FIG. 2 is a side elevation of the assembly of FIG. 1;

FIG. 3 is a top plan view of the assembly;

FIG. 4 is a detail view showing the vertical adjustment for the posts;

FIG. 5 is a detail view showing the hoist mechanism and the longitudinal adjustment for the mounting of the hoist mechanism on the beam;

FIG. 6 is a detail view showing the manner of attaching a post to the beam;

FIG. 7 is a detail view showing the winch and its attachment to the post;

FIG. 8 is a detail side elevational view of one of the posts showing the adjustable arm and the strap attachment;

FIG. 9 is a detail end elevational view of the structure of FIG. 8;

FIG. 10 is a horizontal section taken on line 10—10 of FIG. 8;

FIG. 11 is a detail side elevational view of the other post showing the mechanism for securing the straps;

FIG. 12 is a detail and elevational view of the structure of FIG. 11;

FIG. 13 is a section taken on line 13—13 of FIG. 11;

FIG. 14 is a detail sectional view showing the attachment of a post to the dolly; and

FIG. 15 is a transverse vertical section of the upper beam taken on line 15—15 of FIG. 2.

The gantry illustrated in the drawings comprises, in general, a pair of two wheel dollies 1 and 2 secured in tandem by an inverted U-shaped gantry frame 3 having the lower ends of its opposed vertical legs 4 and 5 supported in corresponding openings 6 in the cross beams 7 of the corresponding dollies 1 and 2.

The dollies 1 and 2 are preferably of the type described in United States Patent No. 3,315,976, wherein the square opening 13 corresponds to the square opening 6 referred to above the cross frame 1 corresponds to a cross beam 7 above.

The vertical legs 4 and 5 of frame 3 are generally alike and each comprises upper and lower aligned tubular sections 8 and 9 telescoping an inner post section 10. Sections 9 and 10 have a lower end rectangular foot 11 complementary to the corresponding square opening 6 in the dolly cross beam 7.

The inner post section 10 is preferably permanently secured in section 9 and extends upwardly into section 8 to support the latter in selected positions of vertical adjustment. For this purpose one or more vertically spaced diametrical openings 12 extend through section 10 at different heights of adjustment, and a corresponding diametrical opening 13 is provided in section 8 for receiving a manually insertable cross pin 14 to secure section 8 at a selected height on post section 10.

The upper horizontal portion of frame 3 constitutes a beam 15 extending between and carried by the upper ends of sections 8 of the corresponding legs 4 and 5. For this purpose each section 8 has a bracket 16 welded to the near side thereof near the upper end, with laterally extending upper and lower cross pins 17 and 18, respectively. The beam 15 is of box section formed of two vertically spaced tubes 19 and 20 with the side plates 21 and 22 secured thereto and end caps 23 straddling bracket 16 and having an inclined slot 24 opening in its end edge

and closed at the top receiving upper cross pin 17, and a vertical slot 25 opening in its lower edge and closed at the top for receiving lower cross pin 18.

The beam 15 is thus hooked onto the pins 17 and 18 for supporting the beam on the upper ends of legs 4 and 5, and can be readily removed when disassembling the gantry for transportation. A spring loaded manually releasable pin 26 extends through the abutting faces of cap 23 and bracket 16 to secure the beam 15 against upward release from pins 17 and 18.

The upper and lower tubes 19 and 20, respectively, of the box beam 15 are provided with vertically matching corresponding longitudinal central slots 27 and 28. The slots 27 and 28 carry a box member 29 which reinforces the beam 15 and the upper edges of which are notched as at longitudinally spaced locations 30.

A hoist 31 is carried by the upper tube 19 on flanges 29 and has a projection 32 on each side extending into opposed notches at one of the selected longitudinal positions indicated by numeral 30. Thus the hoist 31 may be located either centrally between the legs 4 and 5 and the dollies 1 and 2, or it can be selectively located at a position nearer to either leg 4 or 5 as may be desired within the range of adjustment provided by the length of slots 27 and 28.

The hoist 31 comprises an upper adjustably stationary tackle block 33 upon which projections 32 are fixed, and a lower vertically movable tackle block 34 suspended from block 33 by the hoist cable 35.

The upper tackle block 33 has two hoist pulleys 36 and 37, pulley 36 being disposed generally beneath the top of the upper tube 19 inside box beam 15, and pulley 37 being disposed at least partially above the top of upper tube 19.

The lower tackle block 34 has three pulleys arranged with a central pulley 38 disposed between and at a lower level than the two other spaced pulleys 39 and 40. A pin 41 is carried by block 34 above the central pulley 38 for securement of one end of the hoist cable 35.

The hoist cable 35 extends upwardly from pin 41 over pulley 36 in upper block 33, thence downwardly along pulley 39, beneath pulley 38, and upwardly along pulley 40 over pulley 37, thence longitudinally above beam 15 and over an idler pulley 42 carried by a bracket 43 on one of the sections 8 and thence downwardly to a windlass or winch 44.

The windlass 44 is removably hooked to a bracket 45 secured on the lower end of the corresponding section 8. For this purpose the bracket 45 has two vertically spaced lateral upper and lower pins 46 and 47, respectively, and the frame 48 of windlass 44 has its side plates 49 and 50 provided with generally upwardly opening slots 51 and 52 for receiving the corresponding pins 46 and 47 and preventing upward movement of the windlass 44 under hoist loads. A suitable spring loaded manually releasable pin 53 secures the windlass 44 from dropping out of position.

The windlass 44 may be of any suitable construction providing for the winding of cable 35 upon a drum with suitable ratchet or other drive providing for holding the cable under load and for winching the load up or down as desired.

In carrying out the invention and in order to provide a stable gantry with the dollies tied rigidly together for movement in unison over any terrain, the load represented by the transformer 54 is utilized as a portion of a second beam extending parallel to beam 15 and between legs 4 and 5.

For this purpose each section 9 has an arm 55 adjustably extending fore and aft therethrough and into engagement with the adjacent side of the transformer or other load 54.

The arm 55 may have any suitable construction and is illustrated as being supported in a tubular body 56 of preferably rectangular or other non-circular cross section

extending through a complementary opening through section 9 of the corresponding leg 4 or 5. The arm 55 comprises a rectangular tubular member 57 received in and longitudinally adjustable relative to body 56, with a manual pin 58 removably extending through aligned vertical holes in the member 57 and body 56. For the purpose of the adjustment a series of longitudinally spaced holes 59 is provided in member 57 for selective alignment with the holes 60 in body 56.

The inner end of member 57 has a head 61 with an axial threaded opening receiving an externally threaded member 62 which in turn carries a shank 63 of a pressure plate 64 adapted to engage load 54. The threading of member 62 in head 61 in one direction forces pressure plate 64 tightly against load 54, and threading of the sleeve 62 in the opposite direction releases pressure plate 64 from the load 54.

After the transformer 54 has been lifted by the hoist cable 35 the arms 55 are adjusted longitudinally toward the transformer until the pressure plates 64 are near the corresponding opposite sides of the transformer. Then the members 62 are threaded in heads 61 until they press the plates 64 tightly against the corresponding opposite sides of the transformer or load 54.

Each section 9 carries a bracket 65 for the purpose of securing a strap 66, preferably a nylon strip or band, along each side of the transformer and to the legs 4 and 5 to prevent separation of the latter at the bottom and provide a rigid cross beam binding the legs together and comprising the arms 55 and the transformer 54.

For this purpose one of the brackets 65 has a vertical pin 67 on each side of the corresponding section 9.

The other bracket 65 carries a suitable strap fastener 68 on each side and which preferably may be of a ratchet type or of a type commonly used for seat belts in an automobile wherein an infinite adjustment or tightening is provided within a substantial range.

Each strap 66 has one end looped around the corresponding pin 67 of one bracket 65 and the other end secured in the fastener 68 of the other bracket 65.

The gantry described above is very versatile and has a wide range of usage. It can lift and carry extremely heavy loads without undue distortion or deformation.

Various modes of carrying out the invention are contemplated as being within the scope of the invention.

I claim:

1. A dolly supported gantry comprising an inverted U-shaped frame having spaced vertical legs joined at the top by a beam, a wheeled dolly secured to and supporting each leg of said frame, a hoist mechanism carried by said frame and adapted to suspend an object from said beam and between the legs of the frame, and means including at least one rigid support carried by said legs and confining the object therebetween to rigidly tie the legs thereto and provide in combination with the object a rigid cross beam between the legs which prevents the legs from moving relative to each other and prevents the object from moving longitudinally and transversely relative to the legs.

2. The gantry of claim 1 and means to adjustably extend said frame legs to provide selected heights for said first beam.

3. The gantry of claim 1 in which said hoist includes means to adjust the position for the suspended object longitudinally of said first beam.

4. The gantry of claim 1 in which said legs comprise telescoping parts and means to secure said parts in selective positions to provide for different beam heights.

5. The gantry of claim 1 in which said last named means comprises an arm carried by each leg and extending toward and into engagement with the object, and tie means extending along the opposite sides of the object and tying said legs rigidly against displacement.

6. The gantry of claim 5 in which said arms are adjustable in length to facilitate assembly with the object.

5

6

7. The gantry of claim 1 in which the several recited elements are separable to provide for ready handling and loading upon a truck for transporting the same.
8. The gantry of claim 1 in which said first beam removably and rigidly hangs upon brackets at the upper ends of said legs.

2,359,016	9/1944	Wood	214—390 X
2,598,570	5/1952	Lewis	212—14
2,913,132	11/1959	Cluck et al.	214—394
3,028,030	4/1962	Wylie	214—396
3,191,787	6/1965	Stearn	214—394

5

References Cited

ALBERT J. MAKAY, Primary Examiner

UNITED STATES PATENTS

U.S. Cl. X.R.

1,239,524	9/1917	Root.	
1,952,238	3/1934	Dice	212—13 10 212—14; 254—139.1, 145
2,034,920	3/1936	Palermo.	