July 14, 1970 J. B. EVANS 3,520,514

ADJUSTABLE GANTRY

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FIG. 1.

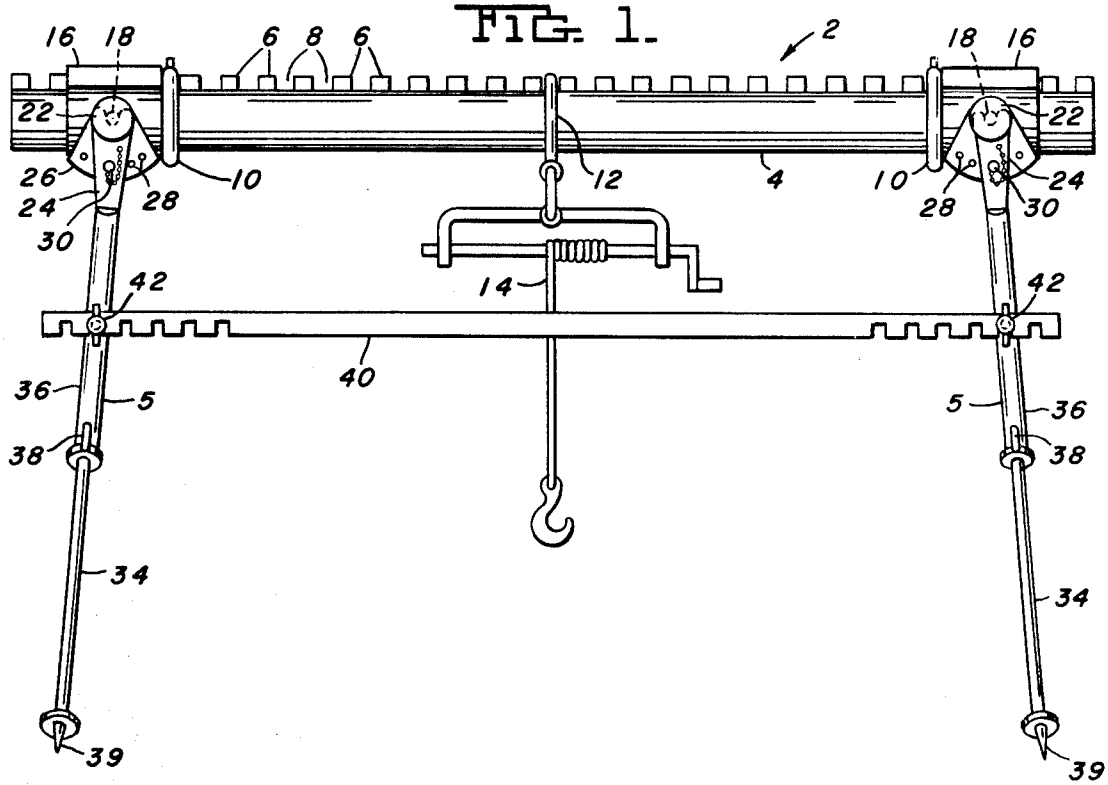


FIG. 2.

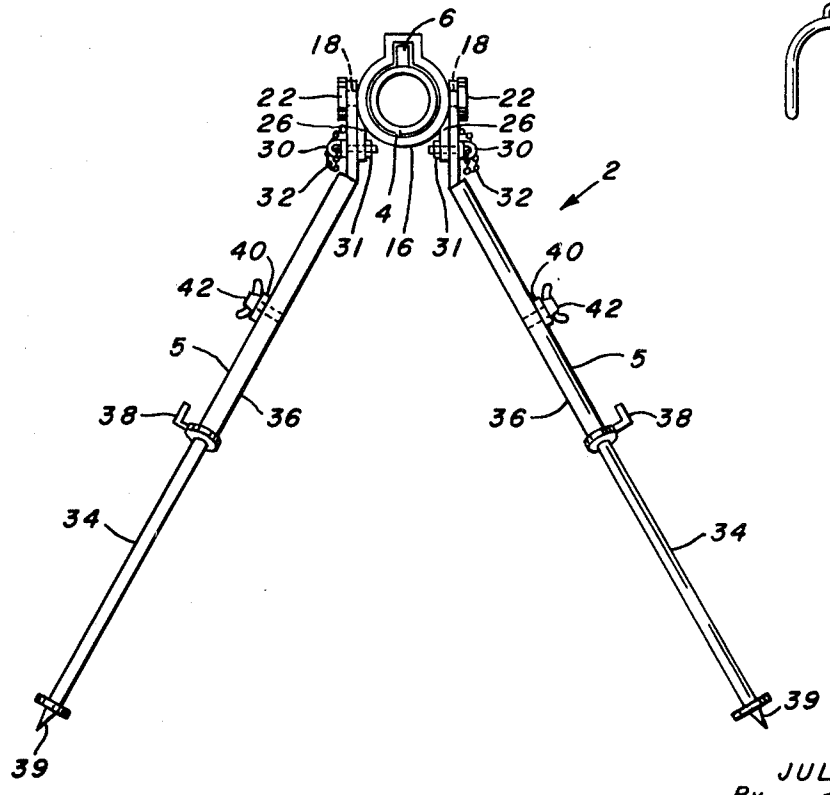
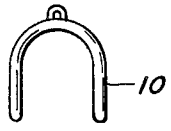


FIG. 5.



INVENTOR.
JULIUS B. EVANS
By Frank C. Manak
Attorney

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FIG. 3.

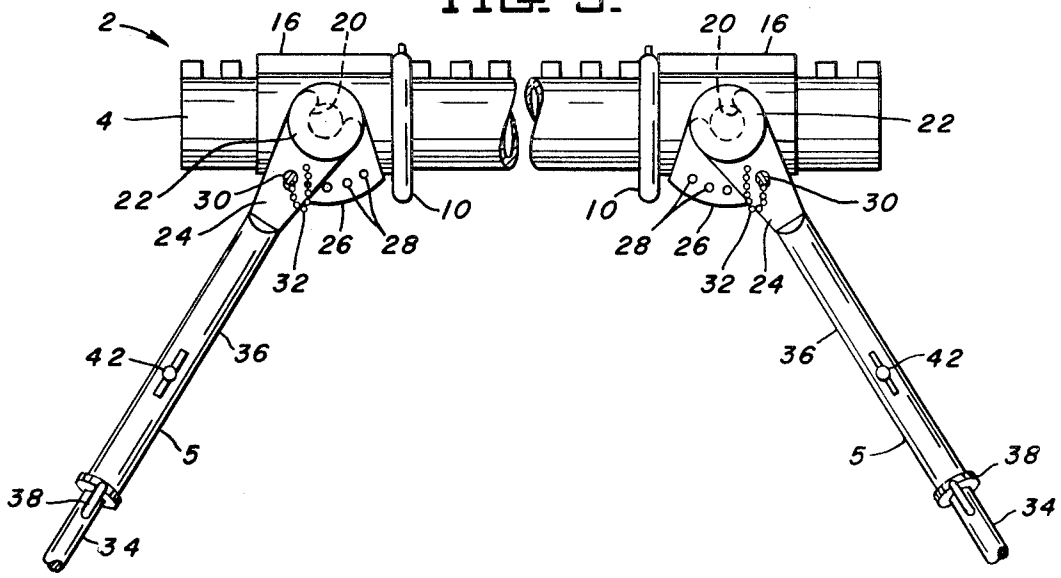
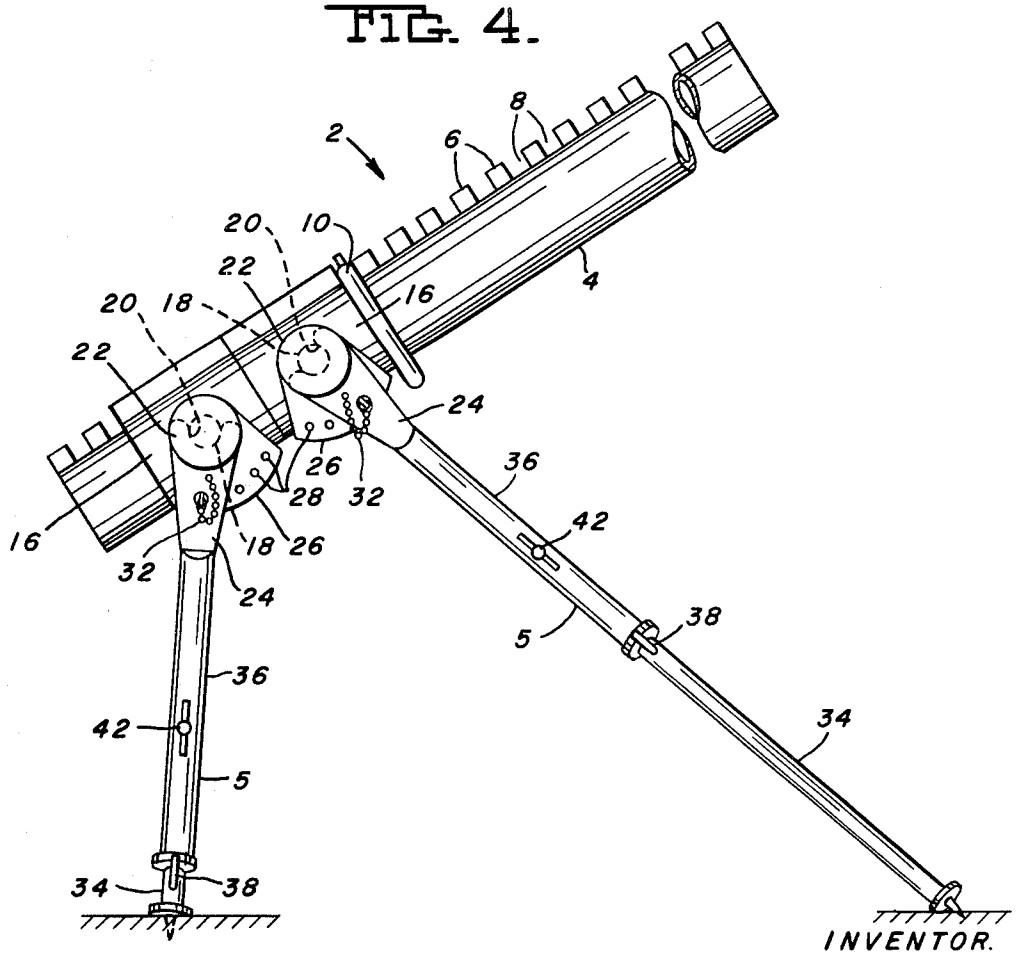


FIG. 4.



INVENTOR.
JULIUS B. EVANS
By Frank C. Mainka III
Attorney

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ADJUSTABLE GANTRY

Julius B. Evans, Chicago, Ill., assignor to United States Steel Corporation, a corporation of Delaware

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U.S. Cl. 254—139 1 Claim

ABSTRACT OF THE DISCLOSURE

An adjustable gantry designed for use on level or sloping ground. The main parts of the gantry are a cross beam and legs for supporting the cross beam that are easily adjustable in length, position along the beam, and angular relation to the beam. The gantry is of a light-weight, sturdy construction and all parts are easily assembled or disassembled, for ease in transporting the gantry from one location to another.

This invention relates to a gantry of the type often used for supporting a block and tackle in hoisting heavy objects or human beings during rescue work.

In the past most gantries for supporting and lifting heavy loads have been of extremely heavy and bulky construction. While serving well their function of supporting the loads for which they were designed, they have been difficult to move in one piece, or to take apart for movement in several pieces. They have also been difficult to adjust in height or to position on sloping ground. Some gantries have solved the problem of the heavy construction, but they have still been difficult to adjust or to take apart. Also, many attempts to reduce the weight or adjustability of the gantry have seriously reduced the maximum safe load the gantry could carry.

Therefore, an object of my invention is to provide an adjustable gantry of light-weight yet sturdy construction.

Another object of my invention is to provide a gantry that can be easily assembled and disassembled for ease in transportation from place to place.

Still another object is to provide a gantry that can be used in tight places or on uneven ground and can be easily adjusted in a variety of ways to fit the needs of the situation and the environment in which it is used.

These and other objects will be more apparent from the following description of my invention and the attached drawings, in which:

FIG. 1 is a side elevation of a gantry constructed in accordance with my invention;

FIG. 2 is an end elevation of the gantry of FIG. 1;

FIG. 3 is a detail side elevation of a portion of the gantry of FIG. 1;

FIG. 4 is a side elevation of the gantry of FIG. 1, adjusted to another position from that shown in FIG. 1; and

FIG. 5 is a detail view of one of the parts of the gantry of FIG. 1.

In FIG. 1, gantry **2** comprises an elongated beam **4** supported by legs **5**. The beam **4** is of tubular construction and has spaced-apart teeth **6** protruding from its top surface. Notches **8** between the teeth **6** receive the upper curved portions of U-bolts **10** and a ring **12**. A typical U-bolt **10** is shown in front elevation in FIG. 5. The U-bolts **10** act as a stop means for the legs **5**, as hereinafter explained. The ring **12** supports a block and tackle **14**.

The legs **5** are attached to the beam **4** by means of sleeves **16**, which fit around the beam **4** and its protruding teeth **6** (FIG. 2). The sleeves **16** are slidable lengthwise along the shaft **4**, and U-bolts **10** are positioned adjacent the inside ends of sleeves **16** to prevent the sleeves

from sliding toward the center of beam **4**. If deemed necessary, U-bolts **10** may also be provided on the outside ends of sleeves **16** to insure that there is no movement of the sleeves toward the ends of beam **4**. Legs **5** are detachably mounted on stub shafts **18** which extend from either side of each sleeve **16**. The upper ends of legs **5** have arcuate recesses **20** (FIGS. 1 and 3) which receive the stub shafts **18** to for a pivotal connection between legs **5** and sleeves **16**. Flanges **22** on the ends of shafts **18** prevent the legs **5** from slipping off the shafts.

As shown in FIG. 3, each leb **5** has a flattened portion **24** near its pivotal connection with sleeve **16**. Adjacent this flattened portion **24** and integral with the sleeve **16** is a plate **26** with a series of holes **28** in an arcuate line centered about the axis of stub shaft **18**. A pin **30** fits through a hole in the flattened portion **24** of leg **5** and into one of the holes **28** in the adjacent plate **26**. The pin **30** thus holds the leg **5** fixed in one of a number of possible positions of rotation about shaft **18**. Preferably, the pin **30** extends through each hole **28** to the inner side of plate **26**, so that a nut **31** (FIG. 2) or other securing means may be attached to keep the pin from sliding out of its holes. In order to prevent the loss of pin **30** when not in use, a chain **32** is connected between the head of pin **30** at a convenient location on leg **5**.

The legs **5** are preferably bent as shown in FIG. 2, so that the gantry **2** will have a broader, more rigid base on which to stand. Each leg **5** has two telescoping sections **34** and **36** to permit adjustment of its length. Section **34** slides within section **36** and is held at its desired position by a set screw **38**. The bottom end of section **34** of each leg **5** carries a spike **39** or other suitable means for supporting the gantry **2** on the ground.

The foregoing gantry provides a block and tackle support that is sufficiently rigid for many uses. However, if greater rigidity is desired, a support brace **40** (FIG. 1) may be attached between the legs **5** on opposite ends of cross beam **4**. When used, the brace **40** rests on wing nuts **42**, which are tightened to hold the brace **40** firmly in place.

From the attached drawings and foregoing description, it is apparent the gantry **2** may be quickly and easily assembled or taken apart. The legs **5** freely detach from the sleeves **16** simply by pulling pins **30**. Also the legs **5** together with sleeves **16** can slide off the cross beam **4**. For storage or transport of the apparatus **2**, the preferred practice is to remove only the legs **5** and brace **40** from the cross beam **4**. These parts are then placed parallel with the cross beam **4**, and are tied together with rope, so that the entire gantry forms one elongated, easily handled load.

The gantry **2** is also adaptable to many different situations and terrain requirements. For instance, FIG. 4 illustrates how the adjustability of the legs **5** can be used to make the gantry **2** into a crane for use next to an embankment. Sleeves **16** are slid toward the same end of beam **4**, and the beam **4** is held in an upwardly tilting crane position by adjusting the length and angle of the legs **5**. The legs are fixed securely in their positions shown in FIG. 4 by tightening set screws **38**, and inserting pins **30** through the desired holes **28** in plate **26**. A U-bolt **10** is placed in a notch **8** at the upwardly facing end of the top sleeve **16** and that is all that is needed to keep the beam **4** from sliding relative to te sleeves **16**. Ring **12** is inserted in a notch **8** near the extending end of beam **4** and supports a block and tackle or other hoisting equipment at a position beyond the embankement edge.

While I have described onl yone embodmient of my gantry and several ways in which the gentry may be adjusted to fit the needs of the situation, other embodiments and adjustments will be apparent.

I claim:

1. An adjustable gantry comprising

an elongated beam having a plurality of notches spaced along its length,

two leg members for supporting said beam and mounted on said beam so as to be slidable lengthwise along the beam, each of said leg members including,

a sleeve slidably mounted on said beam,

two shafts protruding from either side of said sleeve,

two legs having recesses in their top ends detachably engaging said shafts to form a pivotal mounting of said legs on said sleeves,

said sleeve having a wall adjacent each of said shafts with a plurality of recesses arranged in a circular arc centered on the axis of said shaft section,

each of said legs having a hole alignable with said recesses in said sleeve wall,

and a pin associated with each of said legs designed for insertion through said hole in said leg and one of said recesses in a wall of said sleeve, thereby fixing said leg relative to said sleeve,

stop means fixed in at least one of said notches and positioned to prevent each of said leg members from sliding in one direction along said beam,

and means for supporting a load on said beam.

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HARVEY C. HORNSBY, Primary Examiner

U.S. Cl. X.R.

104—126; 212—13; 254—143