United States Patent [19]

Beck

[11] **3,825,129**

[45] **July 23, 1974**

[54] **PIPE HANDLING APPARATUS**

[76] Inventor: **Don D. Beck**, 3203 Eastover, Box 1369, Odessa, Tex. 79760

[22] Filed: **Aug. 31, 1971**

[21] Appl. No.: **176,478**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 17,768, March 9, 1970.

[52] **U.S. Cl.** **214/2.5**, 212/72

[51] **Int. Cl.** **E21b 19/00**

[58] **Field of Search** ..... 214/2.5, 3.1, 1 P, 13, 214/14; 212/72; 104/112, 113, 114; 175/85

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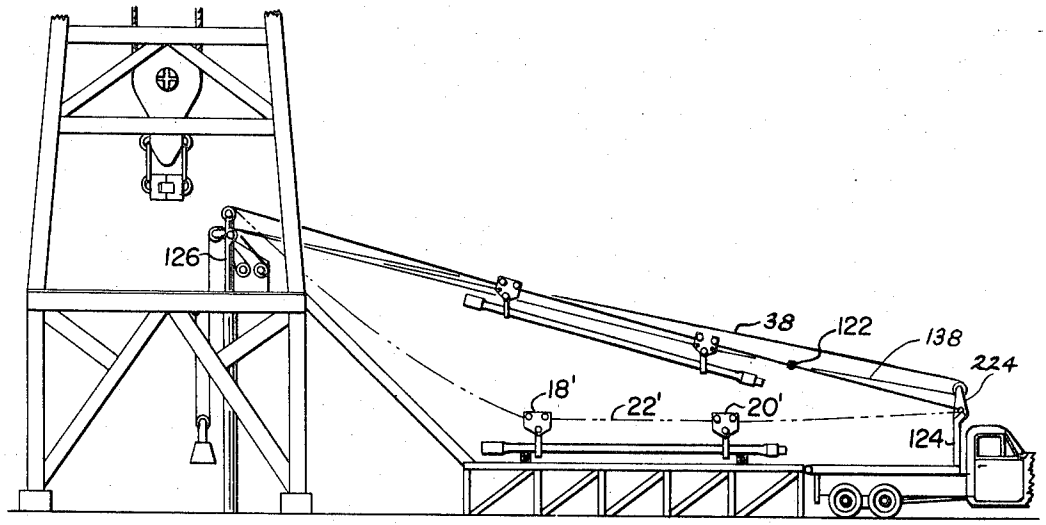
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Primary Examiner—Frank E. Werner
Attorney, Agent, or Firm—Marcus L. Bates

[57] **ABSTRACT**

Pipe handling apparatus for transporting pipe between a derrick floor and a pipe rack by a cable-way. A portion of the cable overhangs the derrick floor and the pipe rack and slidably supports pipe receiving carriages which are provided with means for being moved from a location adjacent to the derrick floor to a location which overhangs the pipe rack. One of the carriages include a swingable bulkhead which is opened upon the carriage arriving at the derrick floor. The tension of the cable is controlled to enable the pipe receiving carriages to be vertically positioned with respect to the pipe rack.

13 Claims, 18 Drawing Figures



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SHEET 1 OF 3

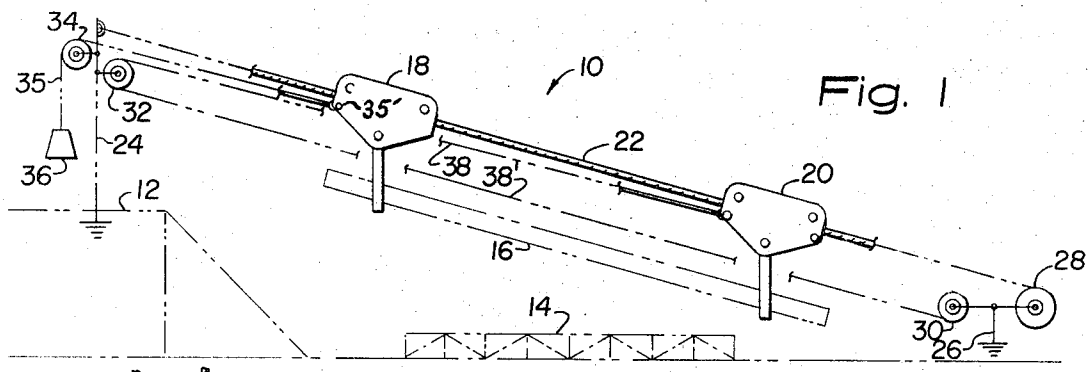


Fig. 1

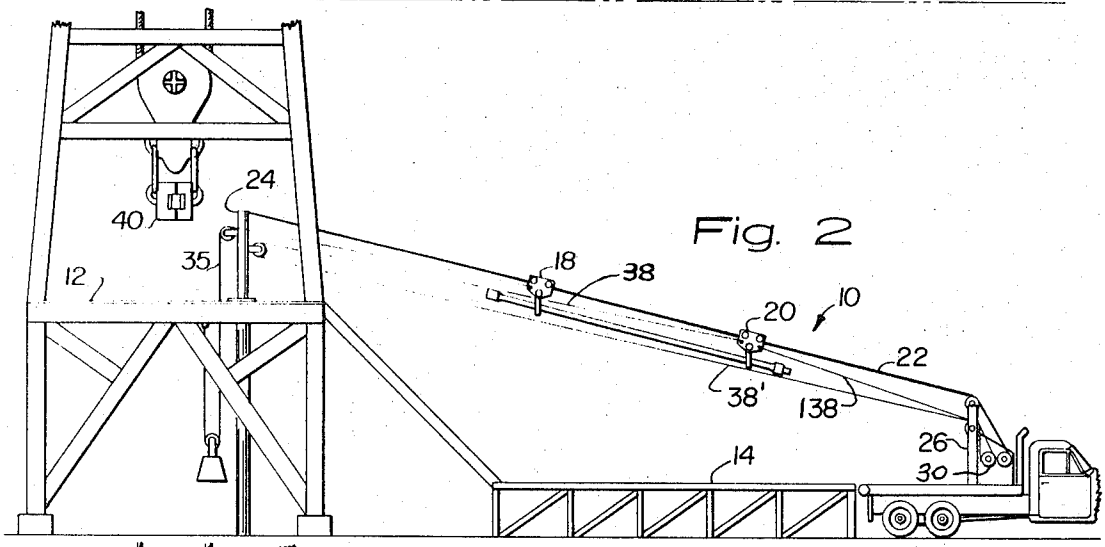


Fig. 2

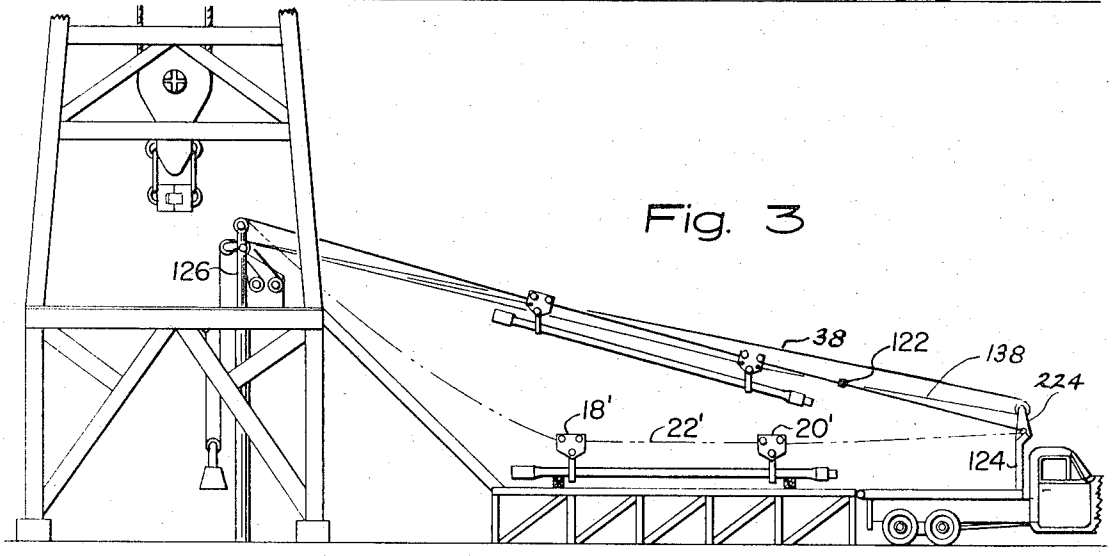


Fig. 3

INVENTOR.

Don D. Beck

BY

Marcus L. Bates

His Agent

Fig. 4

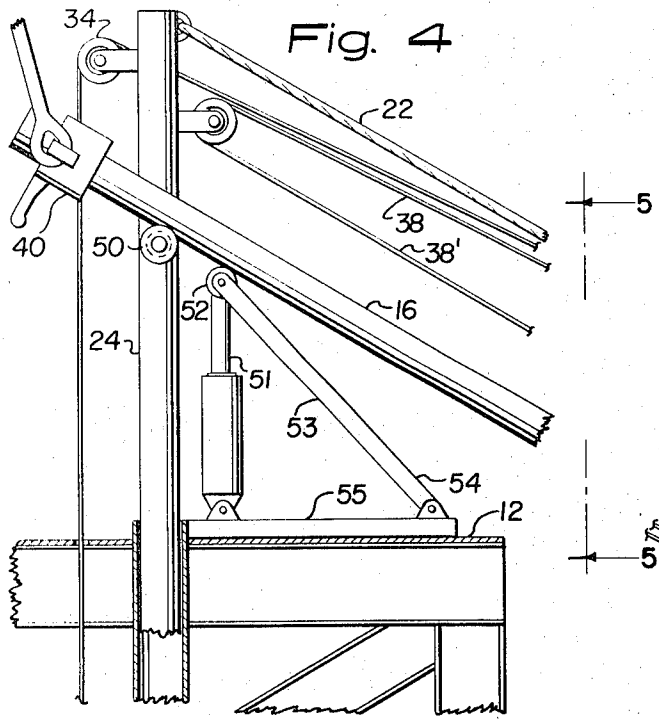


Fig. 5

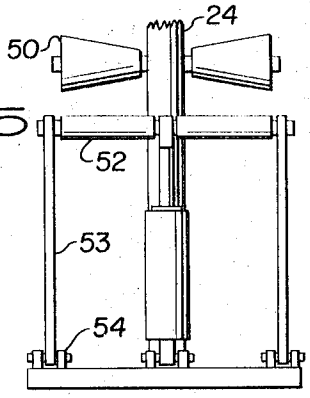


Fig. 6

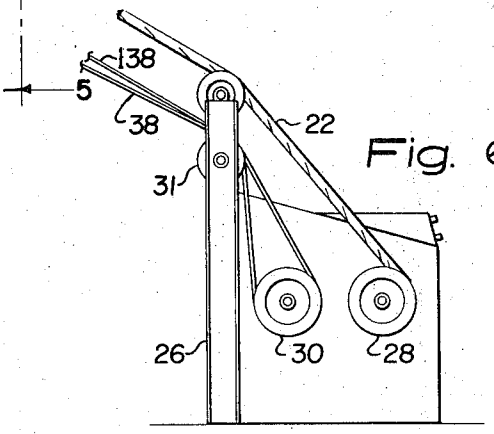


Fig. 7

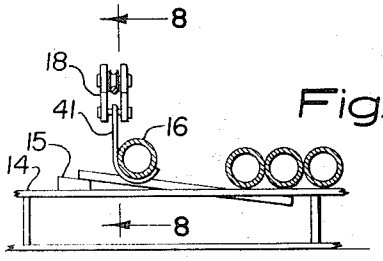


Fig. 8

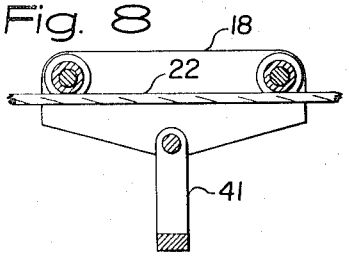


Fig. 9

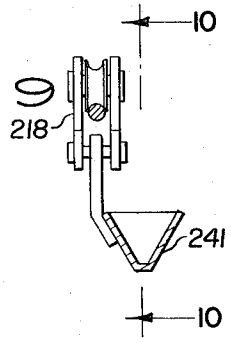


Fig. 10

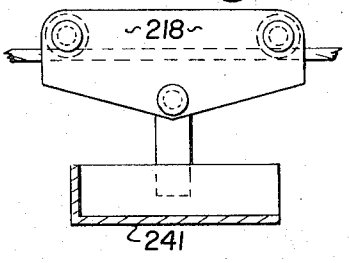
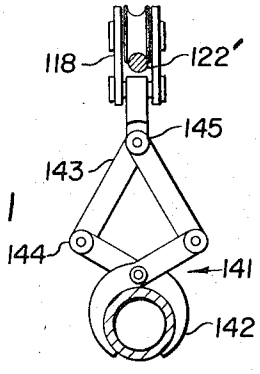


Fig. 11



INVENTOR.
Don D. Beck

BY
Marcus L. Bates
His Agent

Fig. 12

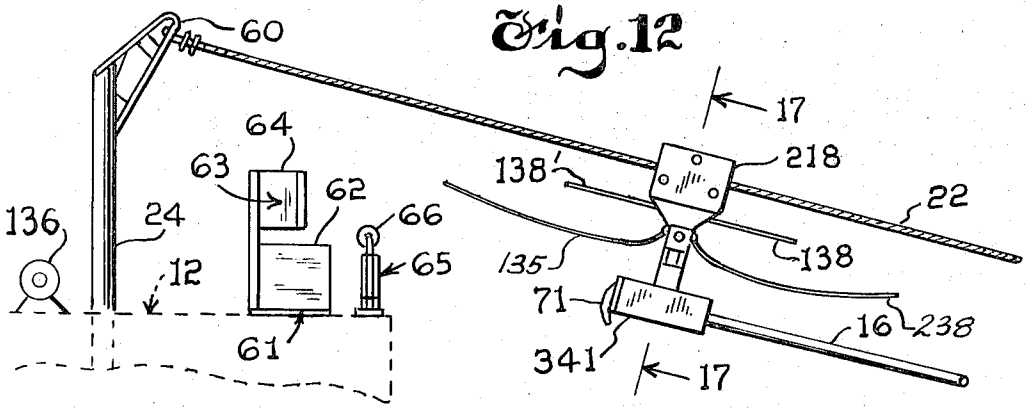


Fig. 13

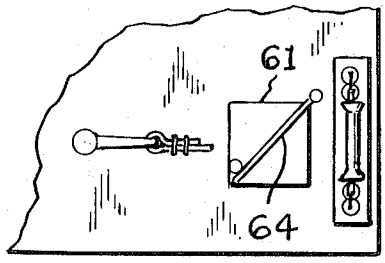


Fig. 14

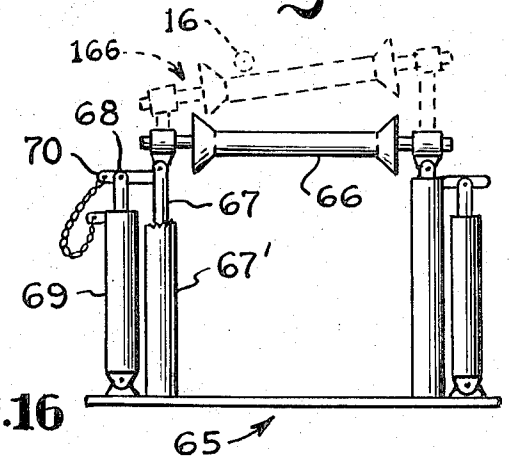


Fig. 17

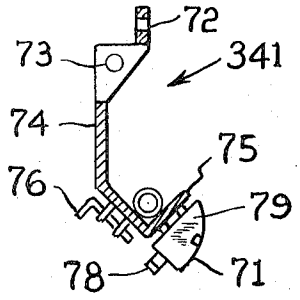


Fig. 16

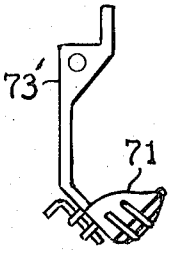


Fig. 15

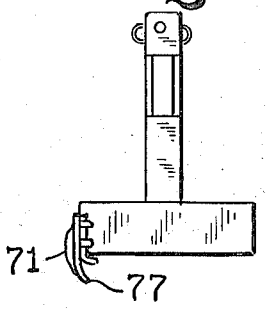
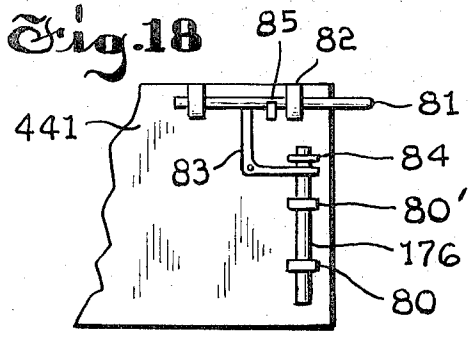


Fig. 18



INVENTOR
DON D. BECK
BY MARCUS L. BATES
HIS AGENT

PIPE HANDLING APPARATUS

CROSS REFERENCE TO RELATED PATENT APPLICATIONS

Ser. No. 17,768, filed Mar. 9, 1970 of which this application is a continuation-in-part.

BACKGROUND OF THE INVENTION

During borehole forming operations as well as subsequent work which may be carried out on boreholes, wherein a well derrick is positioned over the borehole, it is necessary to handle thousands of feet of tubular goods such as drill pipe, production tubing, casing, and the like. The sections or "joints" of pipe are extremely heavy and dangerous to handle. Transporting the tubular goods from the derrick floor to the pipe rack, and vice versa, constitutes one of the most hazardous aspects of a well boring operation. The various sections of pipe are generally "laid down" in horizontal rows in side-by-side relationship at a location spaced apart from the drilling derrick, and the pipe must be transferred to and from the derrick floor, as necessary. On the other hand, when coming out of the hole with tubular goods, each joint must be broken down from the string of pipe and returned to the pipe rack. Sometime more than 500 joints of drill pipe and drill collar pipe must be handled, and accordingly, a vast amount of labor is expended in racking the pipe.

Various pipe handling apparatus for transferring pipe from a drilling rig floor to a pipe rack are known to those skilled in the art, as evidenced by the U.S. Pat. Nos. to Hall, 2,113,270; Maydew, 2,852,147; and Freeman, 3,169,645 to which reference is made for further background of the present invention. However, these prior art devices employ apparatus having a rigid trussed framework with rails thereon, all of which must be transported to and erected at the drilling rig site. The prior art pipe handling equipment occupies a considerable amount of the work area in close proximity to the drilling rig. Accordingly, in my previously filed above referred to patent application there has been provided apparatus for transporting pipe between the derrick floor and the pipe rack wherein the apparatus can be used for transporting casing as well as drill pipe and other tubular goods, while at the same time the area immediately adjacent the drilling rig is left unencumbered by equipment. However, it has been found desirable to provide the apparatus of my previous application with improvements which include a new type carriage which is more efficient in handling pipe, as well as means for causing the pipe to be moved from its normal line of travel as the pipe arrives on the derrick floor.

SUMMARY OF THE INVENTION

The present invention sets forth improvements in apparatus for transporting pipe between a derrick floor and a pipe rack. In accordance with the invention, a cable is arranged in overhanging relationship with respect to the derrick floor and the pipe rack, and the tension of the cable is controlled so as to position spaced apart pipe receiving carriages which are slidably received upon the cable. This expedient enables pipe to be received by the carriages and to be delivered to or removed from the pipe rack, while at the same time, or in conjunction with the tensioning operation, means are provided by which the carriage may be moved longitudinally with respect to the cable so as to enable the carriages to be positioned along a predetermined portion of the cable.

This invention further comprehends the provision of a carriage having a hinged bulkhead formed therein which forms an abutment means for abuttingly receiving an end portion of the pipe so as to enable the pipe to be moved through the carriage and positioned with a marginal end portion thereof disposed in overhanging relationship relative to the derrick floor.

Accordingly, a primary object of the present invention is the provision of a method of transporting pipe along a cable and between a derrick floor and a pipe rack.

Another object of the present invention is the provision of apparatus for transporting pipe between geographically spaced apart locations by the utilization of pipe receiving spaced apart carriages which move along a cable which overhangs each said location.

A further object of the present invention is the provision of an elevated cable-way which enables the transportation of tubular goods between a derrick floor and a pipe rack.

Still another object of the present invention is to provide improvements in apparatus for racking pipe associated with a borehole forming operation.

These and other objects of the present invention will become readily apparent to those skilled in the art upon reading the following detailed description and by referring to the accompanying drawings.

The above objects are attained in accordance with the present invention by the provision of a combination of elements which are fabricated in a manner substantially as described in the above abstract and summary.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a diagrammatical presentation which sets forth the essence of the method of the present invention;

FIG. 2 is a side elevation showing one form of apparatus which has been fabricated according to the present invention;

FIG. 3 is also a side elevational view showing another form of the present invention;

FIG. 4 is an enlarged fragmentary part cross-sectional side elevational view of part of the structure seen in FIG. 2;

FIG. 5 is an end view looking generally in the direction indicated by the arrows 5—5 of FIG. 4;

FIG. 6 is an enlarged fragmentary side elevational view of part of the device seen in FIG. 2;

FIG. 7 is an end view of a portion of the apparatus seen in FIGS. 2 and 3;

FIG. 8 is a cross-sectional view taken along line 8—8 of FIG. 7;

FIG. 9 is a cross-sectional view of FIG. 10, while

FIG. 10 is a cross-sectional view taken along line 10—10 of FIG. 9;

FIG. 11 is a part cross-sectional view of another embodiment of the apparatus such as seen in FIGS. 7 and 9;

FIG. 12 is a fragmentary side elevational view of another form of the present invention;

FIG. 13 is a fragmentary top view of FIG. 12;

FIG. 14 is an enlarged end view of part of the apparatus seen in FIGS. 12 and 13;

FIG. 15 is a side view of part of the apparatus seen in FIG. 12;

FIG. 16 is an end view of the apparatus seen in FIG. 15;

FIG. 17 is an enlarged cross-sectional view taken along line 17—17 of FIG. 12; and,

FIG. 18 is an enlarged fragmentary view of part of the apparatus disclosed in FIGS. 15–17.

DETAILED DESCRIPTION OF THE DRAWINGS

Numeral **10** of FIG. **1**, in conjunction with the remaining figures, is intended to indicate in a schematical or diagrammatical manner an elevated cable-way having a portion thereof overlying a derrick floor **12** and a pipe rack **14**. Tubular goods, such as a pipe **16**, are transported between the floor and the rack. Spaced apart pipe receiving carriages **18** and **20** are slidably received for longitudinal movement along a first or main cable **22**. The cable is suspended between vertical supporting structure **24** and **26**.

Tensioning means **28**, which can be in the form of a powered cable drum, is anchored to the support **26** for controlling the vertical height of the cable as the main cable supports and guides the spaced apart carriages. A pilot or secondary cable drum **30** and a sheave **32** are positioned in spaced apart relationship and out of the path of travel of the carriages and are each affixed in journaled relationship to one each of the respective support means. Pulley **34** has cable **35** rove partially thereabout with one free end of the cable being attached to biasing means **36**, and the remaining end being attached at **35'** to the uppermost or first pipe receiving carriage. Attached to the lowermost carriage **20** is the illustrated pilot cable **38** which freely extends through the first carriage and is rove about pulley **32** and about the drum **30**.

Looking now in detail to the preferred embodiment of the invention seen in FIG. **2**, wherein like numerals, wherever possible, correspond to like elements of the other figures, an ordinary derrick elevator **40** is seen to be disposed in the usual manner above the derrick floor **12**. A truck is positioned outwardly of and adjacent to pipe rack **14**. The truck, at numeral **26**, is provided with the necessary motors and drums for controlling the action of the apparatus. A second pilot cable **138** is attached to a second pilot cable drum (not shown), such as seen at **30**, for causing the empty carriages to return to the rack.

FIG. **3** discloses an alternate embodiment wherein the power means and the drums for the apparatus can be located on the derrick floor at **126**, while the anchoring means **124** can be disposed adjacent the cab of the truck. Numeral **122** indicates a stop means for limiting the travel of the lower carriage.

Looking now in greater detail to the various parts of the apparatus, and in particular to FIG. **4**, there is seen projecting through the derrick floor the before mentioned tubular member **24** which is suitably anchored to the rig structure as, for example, being placed in the mousehole provided in the derrick floor so as to form an anchoring means for the cable-way. Spaced apart inwardly converging rollers, one of which is indicated by numeral **50**, receive pipe **16** in low friction relationship thereon, with the elevators **40** partially supporting one end of the pipe. Spaced apart from and underlying the tapered rollers there is disposed a hydraulic ram having piston **51** journaled to spaced apart rollers **52** and articulated by member **54**, the extremities of which are journaled to the roller shaft and to a suitable fixed base **55**.

As seen in FIG. **6**, each of the secondary cables **38'** and **138'** are brought over adjacent pulleys, one of which is seen at **31**, and wound about and connected to spaced apart drums, one of which is seen at **30**, and each of which are connected to separate hydraulic motors so as to enable one motor to actuate the cable against the restraining force of the idle motor. The drum **28** is attached to a conventional power unit of a suitable size for properly tensioning cable **22**.

As illustrated in FIGS. **7** and **8**, carriage **18** is comprised of spaced apart plates having rollers journaled therebetween. The rollers and plates cooperate to capture the before mentioned main cable **22** therewithin. A hook **41** has the free depending end thereof turned back into a curve so as to conform to and support the outer peripheral surface of a pipe **16**. Inclined surface **15** is supported by the pipe rack **14** and forms a portion thereof for rolling pipe away from the carriage after the pipe is laid down.

An alternate form of the pipe receiving carriage is disclosed in FIGS. **9** and **10** which show a downwardly converging, upwardly and outwardly opening bucker **241** hung to the lower extremity of the carriage by an arm member. A vertical bulkhead is provided at one end of the pipe receiving bucket against which the terminal end portion of a pipe may abut.

FIG. **11** shows still another embodiment of the pipe receiving carriage wherein tongs are journaled to an arm member at **145** to provide a pair of scissor-like linkages **141, 143**, each journaled together as illustrated at **144** to present a pipe engaging claw-like member **142**. The inside of member **142** is curved in order to receive a pipe therein in the illustrated manner.

As illustrated in the embodiment of FIG. **12**, the main cable **22** is anchored to a suitable dead-man, such as the boom **24**, while the opposite marginal end portion of the cable is rove about a drum (not shown) such as seen at **28** in FIG. **6**, for example. The dead-man preferably is removably and telescopingly received within the mouse hole of the derrick.

Pipe deflector assembly **61** includes a base **62** above which there is disposed an angle plate **63**. The angle plate includes a top edge portion **64** arranged above the normal line of travel of the pipe, while the opposed edge portion of the angle plate is arranged below the normal line of travel of the pipe.

Hydraulically actuated pipe lifter means **65** is disposed in underlying relationship with respect to the normal path of travel of the pipe and includes a roller **66** which is journaled to the depending ends of a guide **67**. Guide **67** is telescopingly and guidably received within the illustrated cylindrical housing **67'**. Piston **68** of a hydraulic cylinder assembly **69** is connected to a lateral member **70** which is rigidly affixed to both the guide **67** as well as the piston **68** so that guide **67** must move therewith.

The illustrated chain is attached to the lateral member and limits the extent of telescoping movement of guide **67** and piston **68**. The opposed end of the roller is provided with a similar guide means and hydraulic cylinder assembly, as generally indicated by the arrow at numeral **167**.

As seen in FIGS. **15–17**, in conjunction with FIG. **12**, the pipe receiving portion **341** of the carriage **218** in-

cludes an abutment means which is illustrated as being in the form of a hinged door **71.** Aperture **72** receives a bolt therethrough so as to enable member **341** to be pivotally attached to the remainder of the carriage means. Built-up side wall portion **73** vertically depends in a downward direction at **74** to form the illustrated v-shaped cradle with the cradle ending as a free end portion **75.** Aperture **73'** freely and guidably receives cable **138** therethrough.

Latch pin **76** is slidably received within the illustrated ears and includes a lower marginal end portion which is received within apertured ear **78** so as to lock the hinged door **71** into the illustrated position seen in FIGS. **15** and **16.** Lower end portion **77** preferably extends below the v-shaped pipe receiving portion of the carriage means. The door includes a face **79** which abuttingly receives the end portion of a pipe **16** when the door is closed.

As seen in the embodiment of FIG. **18,** the door **71** can be actuated to the opened position by utilizing the action of the carriage means striking the deflector plate. Pin **81** is slidably received within the spaced apart ears, one of which is seen at **82,** with bell crank **83** being journaled to one of the v-shaped walls **441** so as to engage stop means **84.** Stop means **85** engages the opposite arm of the bell crank. Spaced apart ears **80** and **80'** slidably receive latch pin **176** therein with the pin **176** engaging an ear **78** of the door.

OPERATION

In transporting pipe from the pipe rack upwardly to the derrick floor, drum **28** releaves the tension in the main cable so as to enable the carriages to vertically descend into the indicated dot-dashed position illustrated in FIG. **3,** for example. The pipe is placed or otherwise attached to the pipe receiving portion of the carriages and the cable is then tightened by energizing its associate drum, whereupon the pipe assumes an elevated position as seen in either of FIGS. **1, 2,** or **3.**

As cable **22** is tightened, it assumes an inclined position and the weight of the pipe together with the carriages tend to move the carriages on their respective low friction bearings towards the lowermost end of the cable. In order to control the longitudinal movement of the pipe with respect to the main cable, the second cable **38'** is tightened by energizing the drum arrangement generally indicated at **30.** This action causes the pipe to be moved by the carriages into the illustrated position of FIG. **4.** As the pipe approaches the vertical support member of FIG. **4,** roller **52** of the hydraulic ram moves into contact with the pipe so as to enable the end of the pipe to be lifted clear of roller **50.** The elevators are next placed upon the box end of the pipe and the pipe is then lifted by the elevator into a vertical position above the turntable of the rig where it can be lowered into the borehole. As the pipe is lifted from carriage **18,** it is necessary for carriage **20** to follow and support the remaining free end of the pipe so as to prevent damage to the pin thereof. This is accomplished by permitting the drum associated with the pilot cable to "free wheel" during this portion of the operation. Once the center of gravity of the pipe has "broke over" the tapered roller, the presence of carriage **20** is no longer required for support of the lower end of the pipe.

Accordingly, after the pipe clears both carriages, the carriages are moved back into an overhanging position relative to the pipe rack, in order to permit another joint of pipe to be received within the pipe receiving carriages. Positioning of the spaced apart carriages relative to the rack can be accomplished by the use of the illustrated stop means **122** located adjacent to the rack end of the main cable, and by adjusting the relative position of the counter-balance **36** so as to enable gravity to cause the carriages to move towards the pipe rack. In other words, the counter-balance properly positions carriage **18** while the stop means positions carriage **20** with respect to the pipe rack.

In coming out of the hole with drill pipe and the like, the before described operation must be reversed and slightly modified. Assuming the elevators have picked up a joint of pipe, a workman moves the pin end of the pipe past roller **50** towards the rack and the elevators are then lowered until the pin is received within the pipe receiving portion of carriage **20.** With the pin of the pipe supported by the lowermost carriage, the elevators are further lowered with the pipe rolling down tapered roller **50** until the pipe can be released by the elevators, whereupon the box end falls off the roller, continues past ram **52,** where the box must now fall into or be received by the pipe receiving portion of carriage **18.** With the two carriages now supporting the pipe, the second or pilot cable enables the velocity of the carriages to be controlled as they jointly move towards the pipe rack and into overhanging relationship with respect to the rack. Cable **22** is then slackened into the dot-dashed position of FIG. **3.** whereupon the pipe engaging portion of the carriage is disengaged from the pipe, enabling the pipe to roll away from the carriages in the illustrated manner of FIG. **7.** The main cable is now tightened, carriage **20** is moved by means of drum arrangement **30** back into a position where it is ready to receive the pin end of the next joint of pipe, while the counter-balance returns carriage **18** to its position near ram **52.**

Where deemed desirable, a motor and drum can be substituted for the counterweight arrangement seen in FIGS. **1-3.** An air motor driven drum can be attached to pilot cable **35** so as to maintain a constant tension on the cable, for example. The air supply to the air motor is adjusted to provide sufficient tension in the pilot cable so as to cause the upper carriage to move towards the derrick when empty, but to move towards the pipe rack when supporting a pipe.

In the embodiment of FIG. **1,** it will be noted that the cable **38** is attached to the lower carriage and continues toward the pulley **32** located on the derrick, with an intermediate portion of the cable freely extending through the carriage **18.** This arrangement is suitable for transporting pipe in either direction along the cable by following the techniques set forth in the before described operation. However, the embodiment of FIG. **2** eliminates the necessity of adjusting the counterbalance because an additional pilot cable **138** is connected to the lower carriage and to a second pilot drum. Accordingly, the lower carriage can be positioned at any desired location along the main cable, while the upper carriage is positioned by the counter-balance, or by abutting engagement with the lower carriage.

In the embodiment of FIG. **3,** the two carriages are operated in a manner similar to the embodiment of FIG. **2,** except that the pilot cable at **38, 138** is in the form of an endless cable in that the end portions thereof are rove about a common drum located on the derrick. Support **224** is movable with respect to mem-

ber **124,** and is biased in a direction away from the pipe rack. The biasing means can be an air cylinder, hydraulic actuated cylinder, or a spring, so long as the biased force is of a magnitude which will permit cable **138** to remain essentially parallel to the main cable **22.**

In the embodiment of FIG. **12,** the two carriages are tied together by still another cable **238.** Cable **135** is connected to drum **136,** while cable **138'** is connected to a drum such as seen at **30** in FIG. **1.** This expedient permits the uppermost carriage to be returned to the pipe rack by the lowermost carriage, with both carriages being disposed in a properly spaced apart position over the pipe rack, ready to receive a pipe therein.

In FIG. **12,** the pipe **16** has been picked up from the rack and the marginal end portions of the pipe are lying within the spaced apart troughs of the carriages, with the uppermost carriage being illustrated by the numeral **218.** As the pilot cable **138** pulls the lowermost or second carriage towards the derrick floor, part of the tension in the pilot cable is transmitted from the second carriage into the first or uppermost carriage by means of the pipe **16.** In order to prevent the upper end portion of the pipe **16** from sliding through the uppermost carriage, abutment **71** bears against the terminal end of the pipe.

As the first carriage arrives in proximity of the derrick floor, its uppermost end portion will strike plate **63,** forcing the pipe and carriage to move to one side so as to avoid hitting the dead-man **24.** This action places the uppermost end of the pipe into a position which enables an elevator to be latched onto the pipe end.

Alternatively, the hydraulic lifting means **65** can be energized as soon as the carriage has cleared the roller. Since piston **68** is limited in its vertical travel, rollers **66** must assume the dot-dashed position seen at **166** whereupon a pipe **16** will be moved in an upward direction, free of the carriage, and out of alignment with the dead-man, whereupon the upper end of the pipe can be latched onto by the elevator and pulled into the vertical position where it is in axial alignment with the borehole.

In the embodiment of FIGS. **15–17,** and where the hydraulic lifting means **65** is not employed, it is necessary to momentarily stop the travel of the pilot cable, and for a workman to unlatch pin **76** from ear **78,** whereupon the pilot cable can again be energized so as to enable the second carriage to push the pipe through the first carriage and into a convenient location overlying the derrick floor.

In the embodiment of FIG. **18,** it is unnecessary for a workman to unlatch the door for the reason that the protrucing shaft **81** will be moved by the striker plate so as to cause dog **85** to move linkage **83** in a counterclockwise direction, which in turn engages washer **84** of pin **176,** to thereby move the pin relative to ears **80** thereby causing door **71** to be pivoted into the open position, whereupon the pipe can then slide through its bucket and into proximity of the line of travel of the elevator.

I claim:

1. Apparatus for transporting pipe from a derrick floor to a pipe rack and vice versa, comprising:

a cable, means affixed to opposed end portions of said cable for longitudinally disposing a portion of the length of the cable in overlying relationship with respect to a pipe rack and a derrick floor wherein the derrick floor is spaced apart from and elevated above the pipe rack;

two pipe receiving carriage means supported by said cable, and slidably disposed for movement longitudinally along said cable; a first of said carriage means being movable relative to said cable and to a second of said carriage means; a second of said carriage means being movable relative to said cable and to said first carriage means;

biasing means for causing said first carriage means to travel in a direction longitudinally along said cable; and

means for moving said second carriage means in a first and a second direction along said cable;

a bucket for receiving a pipe therein; said bucket having a closure means which forms a bulkhead against which an end of the pipe can bear;

means by which said bulkhead can be moved out of alignment with respect to the pipe.

2. The apparatus of claim **1** and further including a deflector means, said deflector means adapted to move said first carriage out of its normal path of travel as the carriage arrives at the derrick floor.

3. Apparatus for transporting pipe from a derrick floor to a pipe rack and vice versa comprising:

a cable, means affixed to opposed end portions of said cable for longitudinally disposing a portion of the length of the cable in overlying relationship with respect to a pipe rack and in close proximity to the derrick floor wherein the derrick floor is spaced from and elevated above the pipe rack;

a pipe receiving carriage means supported by said cable and slidably disposed for movement longitudinally along said cable; said carriage means being movable relative to said cable and to said derrick floor and to said pipe rack;

pilot cable means for moving said carriage means in a first and a second direction along said cable so that a pipe can be placed into said pipe receiving carriage means and transported from said pipe rack to said derrick floor, and vice versa;

and a deflector means located in close proximity of said derrick floor, means positioning said deflector means in the path of travel of said carriage means so that said carriage must engage said deflector means and be moved out of its normal path of travel as the carriage arrives at the derrick floor.

4. Apparatus of claim **3** and further including a bucket for receiving a pipe therein;

said bucket having a closure means which forms a bulkhead against which an end of the pipe can bear;

means by which said bulkhead can be moved out of alignment with respect to the pipe.

5. Apparatus for transporting pipe from a derrick floor to a pipe rack and vice versa comprising:

a cable, means affixed to opposed end portions of said cable for longitudinally disposing a portion of the length of the cable in overlying relationship with respect to a pipe rack and in close proximity of a derrick floor wherein the derrick floor is spaced apart from and elevated above the pipe rack;

two pipe receiving carriage means supported by said cable and slidably disposed for movement longitudinally along said cable; one of said carriage means

being movable relative to said cable and to another of said carriage means; said another of said carriage means being movable relative to said cable and to said one of said carriage means;

biasing means for causing said one of said carriage means to travel in a direction longitudinally along said cable;

means for moving said another of said carriage means in a first and a second direction along said cable;

a bucket means affixed to one of said carriage means for receiving a pipe therein;

said bucket having a closure means which forms a bulkhead against which an end of a pipe received therein can bear;

and means by which said bulkhead can be moved out of axial alignment with respect to the pipe located within the bucket.

6. The apparatus of claim **5** and further including a deflector means for moving one of said carriage means out of its normal path of travel as the carriage means arrives in close proximity to the derrick floor.

7. The apparatus of claim **5** wherein said means for moving said second carriage means includes an endless pilot cable affixed to said second carriage means, and having a marginal portion of the length thereof substantially parallel to said portion of the length of the first recited cable which is in overlying relationship to the rack and floor.

8. The apparatus of claim **5** wherein said biasing means is a prime mover which exerts sufficient force on the first carriage to cause it to move towards the derrick floor when the pipe has been removed therefrom.

9. The apparatus of claim **8** and further including cable means connected between the first and second carriage for causing the first carriage to be moved toward the rack in response to movement of the second carriage.

10. The apparatus of claim **5** wherein said means for moving said second carriage means includes an endless pilot cable affixed to said second carriage means, and having a marginal portion of the length thereof substantially parallel to said portion of the length of the first recited cable which is in overlying relationship to the rack and floor;

said biasing means is a prime mover which exerts sufficient force on the first carriage to cause it to move towards the derrick floor when the pipe has been removed therefrom.

11. Apparatus for transporting pipe from a derrick floor to a pipe rack and vice versa, comprising: a cable, means affixed to opposed end portions of said cable for longitudinally disposing a portion of the length of the cable in overlying relationship with respect to a pipe rack and a derrick floor wherein the derrick floor is spaced apart from and elevated above the pipe rack;

two pipe receiving carriage means supported by said cable and slidably disposed for movement longitudinally along said cable; a first of said carriage means being movable relative to said cable and to a second of said carriage means; a second of said carriage means being movable relative to said cable and to said first carriage means;

biasing means for causing said first carriage means to travel in a direction longitudinally along said cable;

means for moving said second carriage means in a first and a second direction along said cable; and a cable means having the ends thereof affixed to said carriage means so that when one carriage is moved a predetermined spaced distance from the other of the carriages the one carriage forces the other of the carriages to move along therewith;

deflector means, said deflector means adapted to move said first carriage out of its normal path of travel as the carriage arrives at the derrick floor.

12. Apparatus of claim **11** and further including a bucket means affixed to one of said carriage means for receiving a pipe therein;

said bucket having a closure means which forms a bulkhead against which an end of the pipe can bear;

means by which said bulkhead can be moved out of alignment respective to the pipe.

13. Apparatus for transporting pipe from a derrick floor to a pipe rack and vice versa, comprising: a cable means affixed to opposed end portions of said cable for longitudinally disposing a portion of the length of the cable in overlying relationship with respect to a pipe rack and a derrick floor wherein the derrick floor is spaced apart from and elevated above the pipe rack;

two pipe receiving carriage means supported by said cable and slidably disposed for movement longitudinally along said cable; a first of said carriage means being movable relative to said cable and to a second of said carriage means; a second of said carriage means being movable relative to said cable and to said first carriage means;

biasing means for causing said first carriage means to travel in a direction longitudinally along said cable;

means for moving said second carriage means in a first and a second direction along said cable; and a cable means having the ends thereof affixed to said carriage means so that when one carriage is moved a predetermined spaced distance from the other of the carriages, the one carriage forces the other of the carriages to move along therewith;

a bucket for receiving pipe therein; said bucket having a closure means which forms a bulkhead against which an end of the pipe can bear;

means by which said bulkhead can be moved out of alignment with respect to the pipe.

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