C. F. GREEN.

PORTABLE CRANE.

APPLICATION FILED APR. 6, 1921.

1,407,855. **Patented Feb. 28, 1922.**

Fig. 1

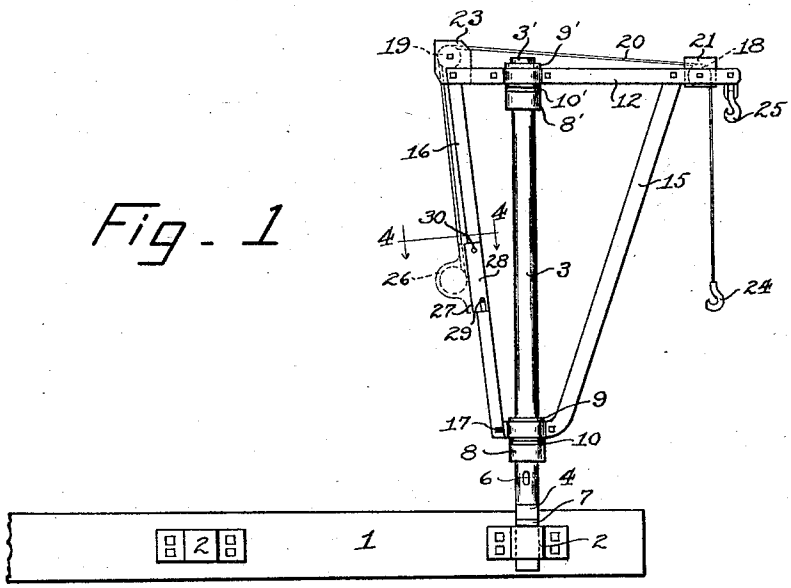


Fig. 2

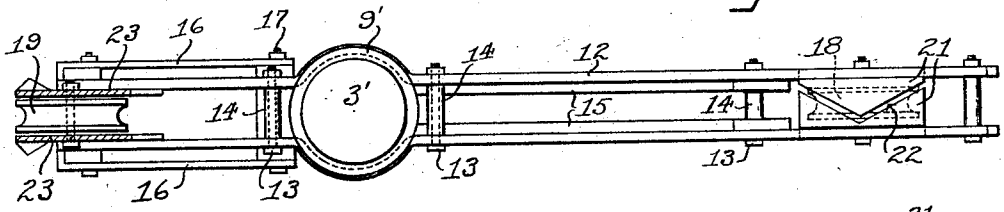


Fig. 3

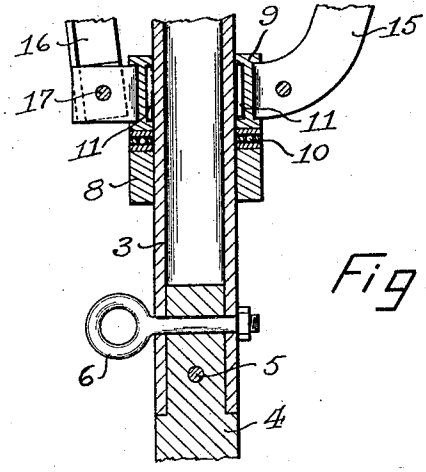
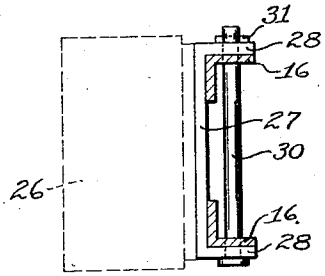


Fig. 4



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PORTABLE CRANE.

1,407,855. Specification of Letters Patent. Patented Feb. 28, 1922.

Application filed April 6, 1921. Serial No. 459,056.

To all whom it may concern:

Be it known that I, CHARLES FREDERICK GREEN, a citizen of the United States, residing at Sacramento, in the county of Sacramento and State of California, have invented certain new and useful Improvements in Portable Cranes, of which the following is a specification.

My invention relates to portable cranes adapted for lifting or lowering heavy objects.

The object of my invention is to provide a crane which may be mounted upon a railway car or other similar vehicle for loading and unloading material too heavy to be lifted by hand, and which may be moved about easily and quickly from place to place upon such car or vehicle, or removed entirely therefrom.

My crane is particularly well adapted for use upon railway work or pick-up trains, for loading and unloading such objects as rails, frogs, etc. along the right of way, or at any place where permanent cranes or other loading means are not available. For such use I provide the crane with a base adapted to fit within any one of the usual stake-pockets secured to the sides of railway flat-cars, so that the crane is supported and firmly held in position by the stake-pocket. It may be placed in any one of the several stake-pockets of the car, in order to reach objects on either side of the car or at any point in the length thereof, and may be easily and quickly moved from one stake-pocket to another.

My crane will now be fully described with reference to the accompanying drawings, wherein—

Fig. 1 is a side elevation showing my crane mounted upon a railway flat-car.

Fig. 2 is a plan view of the boom of my crane, enlarged, the cable being omitted and the rear pulley guard shown in section.

Fig. 3 is a vertical section, enlarged, of a portion of the mast and the lower bearing.

Fig. 4 is a plan view, enlarged, of the motor support, taken in the direction of the arrows on the line 4—4 of Fig. 1.

In the drawings, and referring particularly to Fig. 1 thereof, the reference numeral 1 designates the bed of a railway car, here shown as a flat-car, which has the usual stake pockets 2 attached to its sides. 3 is the mast of my portable crane, said mast being preferably formed of a section of iron pipe, closed at its upper end by a cap 3′, and whose lower end is fitted to a squared base or stake 4, preferably formed of cast iron, and adapted to fit within any one of the stake pockets 2. Said stake 4 is secured to the mast 3 by having its upper portion turned to fit within said mast, as shown in Fig. 3, and is fastened thereto, preferably, by means of a rivet 5 and an eye bolt 6. Said eye bolt is provided for convenience in moving the crane from one stake pocket to another, for by means of a bar, not shown, passed through the eye of said bolt, two men can easily lift and carry the crane, while its upper portion is steadied by a third man. A projecting lug 7, Fig. 1, formed upon the outer face of the stake 4, seats upon the upper edge of the stake pocket 2.

The mast 3 is provided with a fixed collar 8 positioned just above the eye-bolt 6, and a second fixed collar 8′ near its upper end. These collars support the bearings for the boom. Both bearings are similar in construction, the lower one being shown in detail in Fig. 3. A rotatable sleeve or box 9 is mounted upon the mast 3 above the fixed collar 8, with a ball thrust bearing 10 interposed therebetween. The rotatable sleeve 9 is flanged at its top and bottom, and a series of vertically disposed rollers 11 are interposed between the mast 3 and the inner surface of the sleeve 9, forming an anti-friction radial bearing. Said rollers are retained in position between the flanges of said sleeve. The upper bearing has a similar flanged rotatable sleeve 9′, Fig. 1, with rollers, not shown, and a ball-thrust bearing 10′ between said sleeve and the upper fixed collar 8′.

The boom of the crane is formed of a pair of spaced horizontal members 12, Figs. 1 and 2, held together by bolts 13 which pass through spacing ferrules 14. Said members 12 partially embrace the upper bearing sleeve 9′, between its flanges, and are clamped thereupon by said bolts. Near its forward end said boom is braced by a pair of spaced compression members 15, which, extend downwardly and inwardly, and embrace the lower bearing sleeve 9, as shown in Figs. 1 and 3. The rear end of the boom is braced by a pair of tension members 16, Figs. 1, 2 and 3, which extend downwardly and inwardly, and are bolted to the projecting rear ends of the compression brace members 15, as shown at 17. Said tension braces 16 are preferably formed of angle iron, as

shown. The boom 12, with its braces 15 and 16, is thus rotatable about the mast 3 upon the bearings described above.

The boom 12 carries pulleys 18 and 19 at its forward and rear ends respectively, as shown in Figs. 1 and 2, over which passes the cable 20, as shown in Fig. 1. The forward pulley 18 is carried between two spaced guard plates 21, whose upper portions are bent inwardly toward each other to prevent the cable 20 from jumping out of said pulley. An angularly disposed slot 22, Fig. 2, between the adjacent inwardly bent edges of said guard plates permits the removal of said cable when necessary. The rear pulley 19 is mounted between similar plates 23, whose portions are bent inwardly and separated by an angular slot not shown in the drawings. The end of the cable 20 is provided with a suitable hook 24, Fig. 1, and a second fixed hook 25 is secured to the end of the boom 12 to permit the use of a tackle if necessary.

A hoisting engine or motor, indicated by dotted lines at 26 in Figs. 1 and 4, is removably secured to the tension braces 16. This hoist, the construction of which forms no part of the present invention, may be of any well known type, and may be operated by compressed air, steam, electricity, or any other convenient power. When the crane is used upon railway work or pick-up trains, it is convenient to use an air hoist, of any suitable form, the air being taken from the train line in any well known manner, but the choice of power for operating the hoist is optional with the user of the crane, and depends upon convenience.

The hoist 26 is permanently secured, in any desired manner, not shown in the drawings, to a base plate 27, Figs. 1 and 4. This base plate has side flanges 28, Fig. 4, which overlie the brace members 16, and which are slotted at their lower ends to fit over pins or studs 29, Fig. 1, projecting from the sides of said braces. The upper portion of the base plate 27 is secured to said braces by a removable bolt or pin 30, Fig. 4, extending through both braces and the base plate flanges 28, and held in place by a split key 31. Thus by removing said pin 30, the base plate 27, with the hoist 26 attached thereto, may be lifted off the studs 29 and removed from the crane, thereby making the crane itself lighter and easier to move. It is understood that the hoist 26 is provided with a suitable drum upon which the cable 20 is wound.

I claim:—

1. A portable crane especially adapted for railway cars, comprising a mast with a base adapted to fit within a stake-pocket of the car; upper and lower rotatable sleeves surrounding said mast; a boom formed of a pair of laterally spaced members partially embracing and secured to the upper sleeve and extending in both directions therefrom; a compression brace formed of a pair of parallel members extending between the forward end portion of said boom and the lower sleeve, the lower end portions of the brace members being clamped about said lower sleeve and extending rearwardly therefrom; a pair of laterally spaced tension brace members extending between the rear end portion of the boom and the rear projecting ends of said compression brace members; and hoisting tackle carried by the boom and tension brace.

2. A portable crane comprising a mast; upper and lower rotatable sleeves surrounding said mast; a boom formed of a pair of laterally spaced members partially embracing and secured to the upper sleeve and extending in both directions therefrom; a pulley mounted between said boom members near each end thereof; a compression brace formed of a pair of parallel members extending between the forward end portion of said boom and the lower sleeve, the lower end portions of said brace members being clamped about said lower sleeve and extending rearwardly therefrom; a pair of laterally spaced tension brace members extending between the rear end portion of the boom and the rear projecting ends of said compression brace members; a bracket adapted for the support of a hoisting means, removably secured to said tension braces; and a cable associated with said hoisting means and passing over said pulleys.

In testimony whereof I have signed my name to this specification.

CHARLES FREDERICK GREEN.