No. 834,316. PATENTED OCT. 30, 1906.

W. J. McCLAIN, Jr.

DERRICK TURNING APPARATUS.

APPLICATION FILED JULY 11, 1906.

3 SHEETS—SHEET 1.

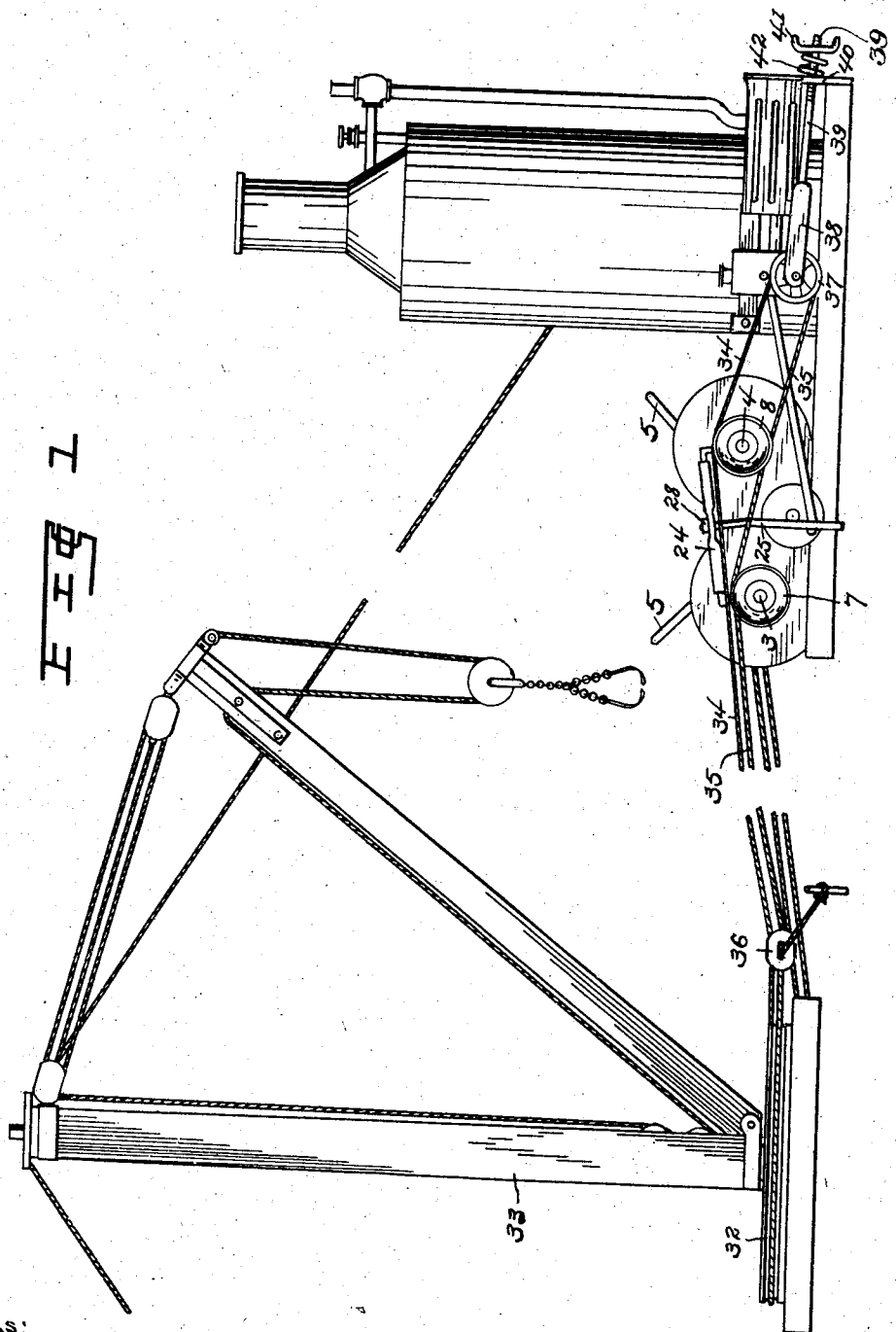

FIG 1

Witnesses:
Robt. J. Dilworth
E. N. Lenhardt

Inventor:
William J. McClain, Jr.
By H. E. Dunlap
Attorney.

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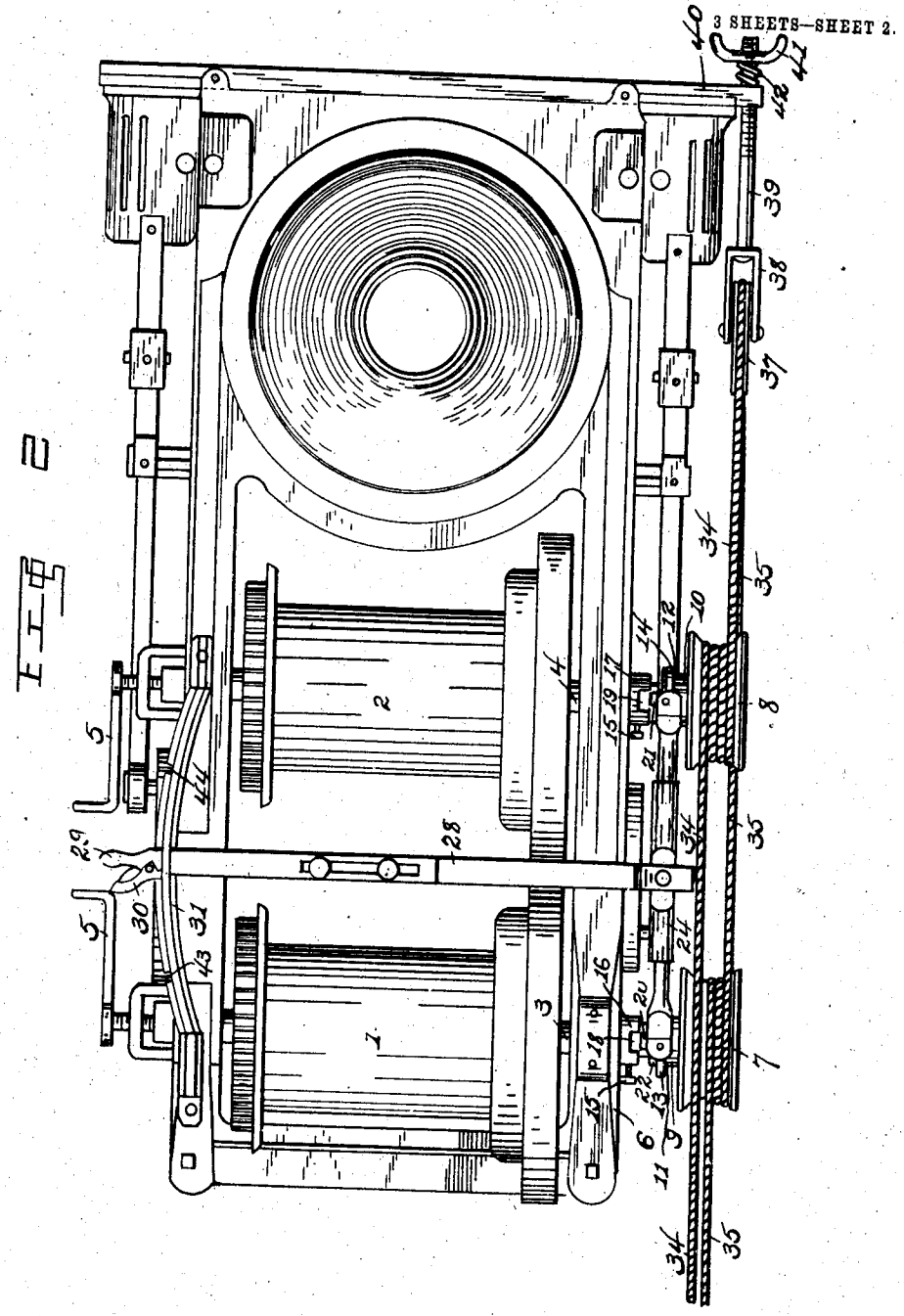
3 SHEETS—SHEET 2.

FIG 2



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3 SHEETS—SHEET 3.

Fig 3

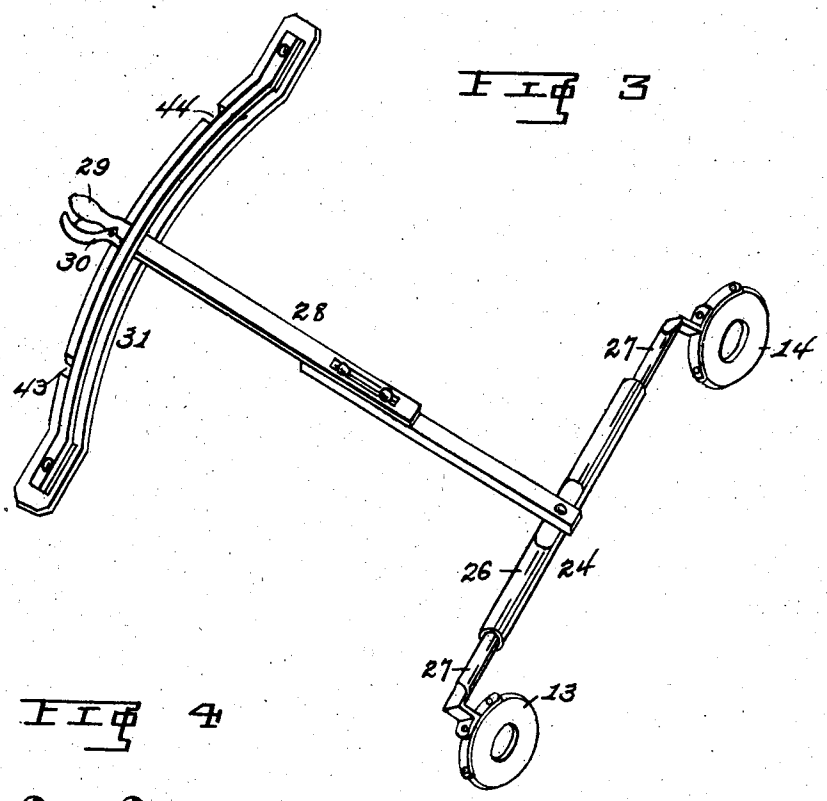
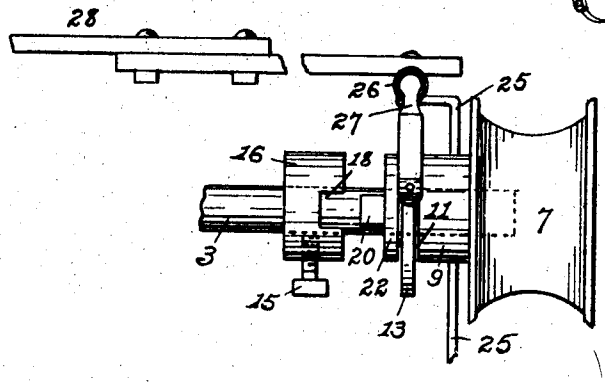


Fig 4



Witnesses:

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E. A. Lenkard

Inventor

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By H. C. Dunlap

Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM J. McCLAIN, JR., OF STEEL, OHIO.

DERRICK-TURNING APPARATUS.

No. 834,316. Specification of Letters Patent. Patented Oct. 30, 1906.

Application filed July 11, 1906. Serial No. 325,662.

To all whom it may concern:

Be it known that I, WILLIAM J. McCLAIN, Jr., a citizen of the United States of America, and a resident of Steel, county of Belmont, and State of Ohio, have invented certain new and useful Improvements in Derrick-Turning Apparatus, of which the following is a specification.

My invention relates to new and useful improvements in hoisting-engines, and more particularly to a derrick-turning apparatus for double-drum hoisting-engines; and it consists in the particular construction, arrangement, and combination of parts, which will hereinafter be fully described.

The object of my invention is to provide a mechanical derrick-turning apparatus whereby boom derricks and cranes may be readily turned to any position.

A further object is to provide a simple and comparatively inexpensive derrick-turning apparatus for hoisting-engines by means of which the engineman may readily retain full control of the derrick at all times.

A still further object of the invention is to provide a device of the character mentioned which is readily applicable to different types and sizes of engines; and a still further object is to provide a tension device by means of which the tension of the derrick-turning cables may be adjusted to regulate the frictional hold of said cables upon the winches or crabs, and thus to render it possible to guard against the breaking of said cables, crabs, engine, or derrick through the fouling of the derrick or crane with its guy-lines or through the load carried by said derrick coming into engagement with an obstruction.

In describing the invention in detail reference is herein had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of a hoisting-engine and a derrick equipped with my invention. Fig. 2 is a top plan view of a hoisting-engine, illustrating my invention. Fig. 3 is a perspective view of the operating-lever and its connections; and Fig. 4 is a front elevation of a winch or crab, illustrating the clutches.

Referring to said drawings, in which like reference-numerals designate like parts throughout the several views, 1 and 2 indicate the drums of a double-drum hoisting-engine, said drums being respectively mounted upon suitably-journaled parallel shafts 3 and 4. On the side of the engine opposite the drum-operating levers 5 the shafts 3 and 4 are made to project beyond the frame 6 and have loosely mounted upon their respective ends winches or crabs 7 and 8, having integral sleeve-like hubs 9 and 10. About the respective hubs are annular channels or grooves 11 and 12, in which are mounted collars 13 and 14, said collars being loose to admit of the hubs turning while the collars remain stationary.

Secured upon the respective shafts 3 and 4 at suitable points outside the frame 6 by means of set-screws 15 or keys are female clutches 16 and 17, consisting of collars having therein in their outer ends or faces recesses 18 and 19, adapted to be respectively engaged by projections 20 and 21, carried by male clutches 22 and 23, which are formed by the inner ends of the hubs 9 and 10.

Extending across from the collar 13 to the collar 14 and pivotally mounted on said collars in a suitable manner is a telescopic rod or bar 24, which is pivoted substantially midway between its ends upon a suitable standard or stanchion 25. Said rod or bar 24 consists of a portion 26, having tubular ends, and of arms 27, the ends of which are movable in said tubular ends. Rigidly secured to said portion 26 of the rod or bar 24 is one end of an extension-lever 28, which is adjustable in length to render it applicable to engines of varying sizes or widths. The opposite end of said lever is provided with a handle 29 within easy reach of the engineman and with a spring-controlled dog 30, the latter being adapted to engage one of a series of recesses provided at suitable points in one of the bars of a lever-guide 31. Said lever-guide is suitably mounted, preferably upon the engine-frame, to hold the lever 28 clear of the drums 1 and 2 and the cables which work thereon.

An endless cable connects said crabs 7 and 8 with a bull-wheel 32, which is secured in the usual manner to the base of the mast 33 of the derrick. Said cable is passed one or more times about said bull-wheel, and thence the two lines 34 and 35 thereof pass through a guiding double sheave-block 36, suitably anchored, to said crabs, the line 34 passing to, over, and around the crab 8 a number of times, preferably three or four, while the line 35 passes to, over, and around the crab 7 a number of times, preferably three or four.

The line 35 thence passes beneath the crab 8 to a sheave 37, meeting the line 34, which extends to said sheave from said crab 8. Said sheave 37 is mounted in a clevis-shaped yoke 38, in which is swiveled the end of a rod 39. Said rod 39 has its opposite end threaded and projected through a bar 40 or other suitably-braced body at the rear end of the engine. Upon said threaded end is a suitable nut 41, by the manipulation of which any desired tension may be applied to the endless cable, and consequently the grip of the lines 34 and 35 thereof upon the crabs 7 and 8 regulated. A spring 42 is preferably provided between said nut 41 and the bar 40, as shown, the object of the spring being to relieve any undue strain to which the bar 40 may be subjected.

As is apparent, when the operating-lever 28 occupies a position at the center of the guide 31, as illustrated in Fig. 2, the clutches on the shafts 3 and 4 are withdrawn, and both the crabs 7 and 8 are out of gear, and since said crabs are loosely mounted upon said shafts the ordinary working of the engine is not thereby interfered with; but when the lever is moved forward to the position where the dog 30 engages the recess 43 the male and female clutches upon the shaft 4 are thrown into engagement, placing the crab 8 in gear, when it turns with said shaft 4 and through the line 34, which frictionally binds thereon, turns the derrick in one direction. When the lever 28 is moved rearwardly to the position where the dog 30 engages the recess 44, the male and female clutches upon the shaft 3 engage and actuate the crab 7 to turn the derrick in the opposite direction. But one of the crabs can be in gear at a time, and as the endless cable is being moved by one of said crabs the other of said crabs being loose upon its shaft turns freely therewith, offering no resistance.

The cable is adjusted, as hereinbefore described, to a tension which is little more than sufficient to prevent the cable from slipping on the crabs when moving or turning the derrick. Consequently when said derrick or the load carried thereby becomes foul of a guy-line or meets with other obstruction, as is frequently the case, the additional strain produced will cause said cable to slip on the crabs, thus preventing the breaking of the machinery, cables, or derrick, which would otherwise occur.

I have described my invention in what I consider to be its simplest form; but it is obvious that various slight or minor changes and alterations may be made in the construction and arrangement of some of the parts without departing from the general spirit or scope of the invention. Hence I do not desire to limit myself to the precise construction and arrangement of parts herein shown and described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a derrick-turning apparatus, the combination of a derrick, a bull-wheel secured to the mast of said derrick, a double-drum hoisting-engine, drum-shafts projecting beyond the engine-frame at the side opposite the drum-operating levers, a crab loosely mounted upon the projecting end of each shaft, a hub carried by each crab, a projection carried by the inner end of each hub, a fixed collar upon each shaft between said hub and said frame, said collar having a recess in its outer end adapted to be engaged by the projection on the hub to place the crab in gear with the shaft, and means for throwing said crab inward to cause the projection to engage the recess, said means being capable of throwing but one crab into gear at a time, an endless cable connecting said bull-wheel and said crabs, said cable being passed around said bull-wheel and one line thereof extending thence to and wound around one of said crabs to be frictionally held thereby, and the other line extending to and wound around the other crab to be frictionally held thereby, each of said crabs being adapted to loosely turn upon its shaft when the other thereof is in gear, and means for adjusting the tension of said endless cable, substantially as described.

2. In a derrick-turning apparatus, the combination of a derrick, a bull-wheel secured to the mast of said derrick, a hoisting-engine, drum-shafts projected at one end beyond the engine-frame, a crab loosely mounted upon the end of each shaft, an endless cable connecting said crabs with said bull-wheel and with each other, said cable being wound around said bull-wheel and each of said crabs, means for throwing each crab into gear with the shaft on which it is mounted while the other crab remains loose upon its shaft, and means for adjusting the tension of said cable to regulate the frictional hold thereof upon said crabs, substantially as described.

3. In a derrick-turning apparatus, the combination of a derrick, a bull-wheel secured to the mast of said derrick, a hoisting-engine, drum-shafts projected at one end beyond the engine-frame, a crab loosely mounted upon the end of each shaft, an endless cable connecting said crabs with said bull-wheel and with each other, said cable being wound around said bull-wheel and each of said crabs, a hub carried by each crab, an annular channel in said hub, a collar loosely mounted in said channel, a telescopic rod pivotally mounted at its ends upon said collars, a stanchion substantially midway between said shafts, said telescopic rod being pivotally mounted upon said stanchion, a lever rigidly secured to said rod, a lever-guide having a series of recesses therein, and a spring-

controlled dog carried by said lever, said dog being adapted for engagement with said recesses, substantially as described.

4. In a device of the character described, the combination with a derrick-turning apparatus, of a cable-tension-adjusting device, comprising a yoke, a sheave in said yoke, said sheave being adapted for having the cable passed therearound, a rod swiveled at one end in said yoke and projected at its other end through a suitable brace-rod, the outer end of said rod being threaded, and a nut upon said threaded end, substantially as described.

Signed by me in the presence of two subscribing witnesses.

WILLIAM J. McCLAIN, JR.

Witnesses:

H. E. DUNLAP,

ROBT. F. DILWORTH.