No. 671,177.

Patented Apr. 2, 1901.

J. V. BEEKMAN.

DERRICK ENGINE.

(Application filed May 13, 1898.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 1.

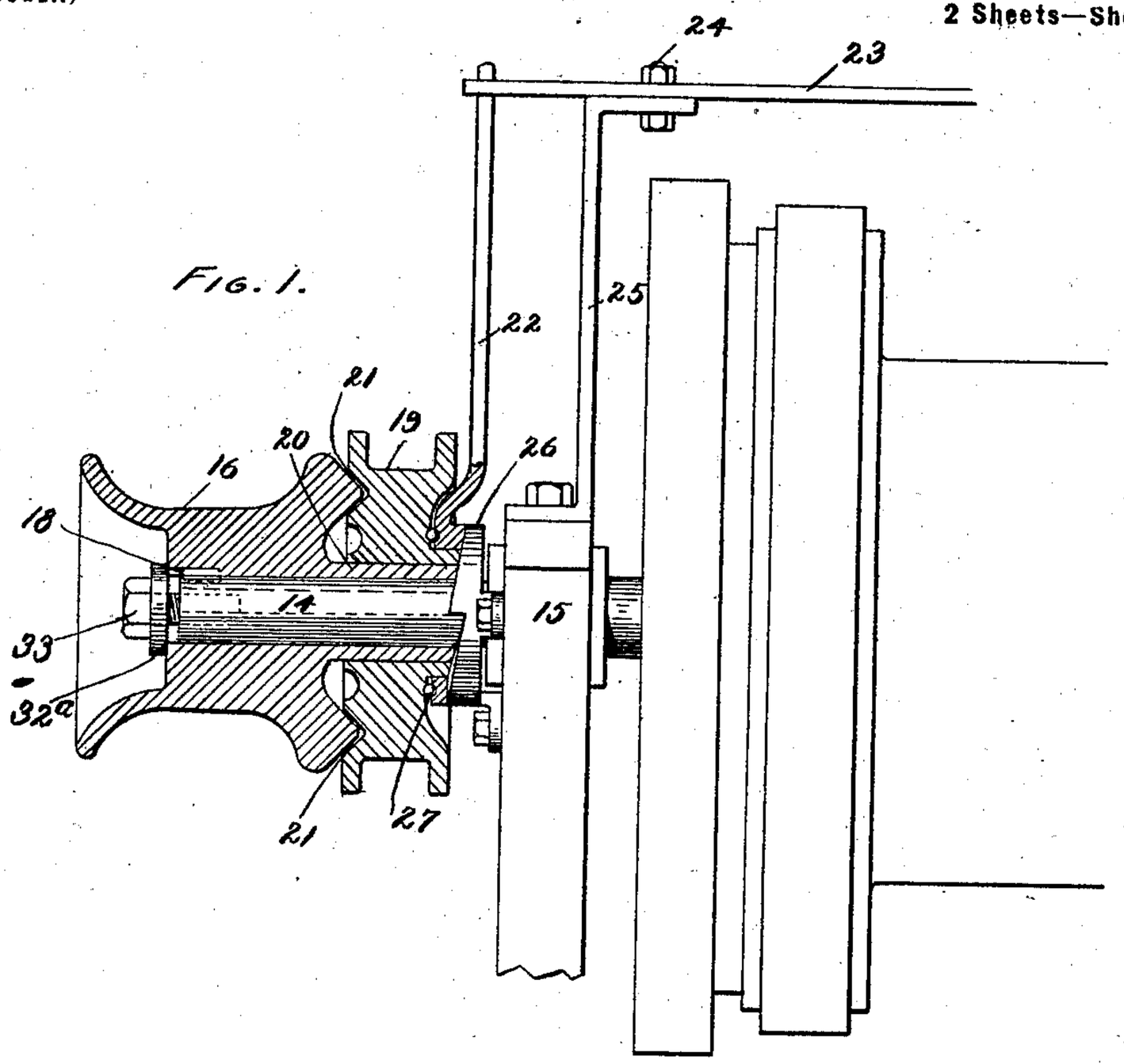
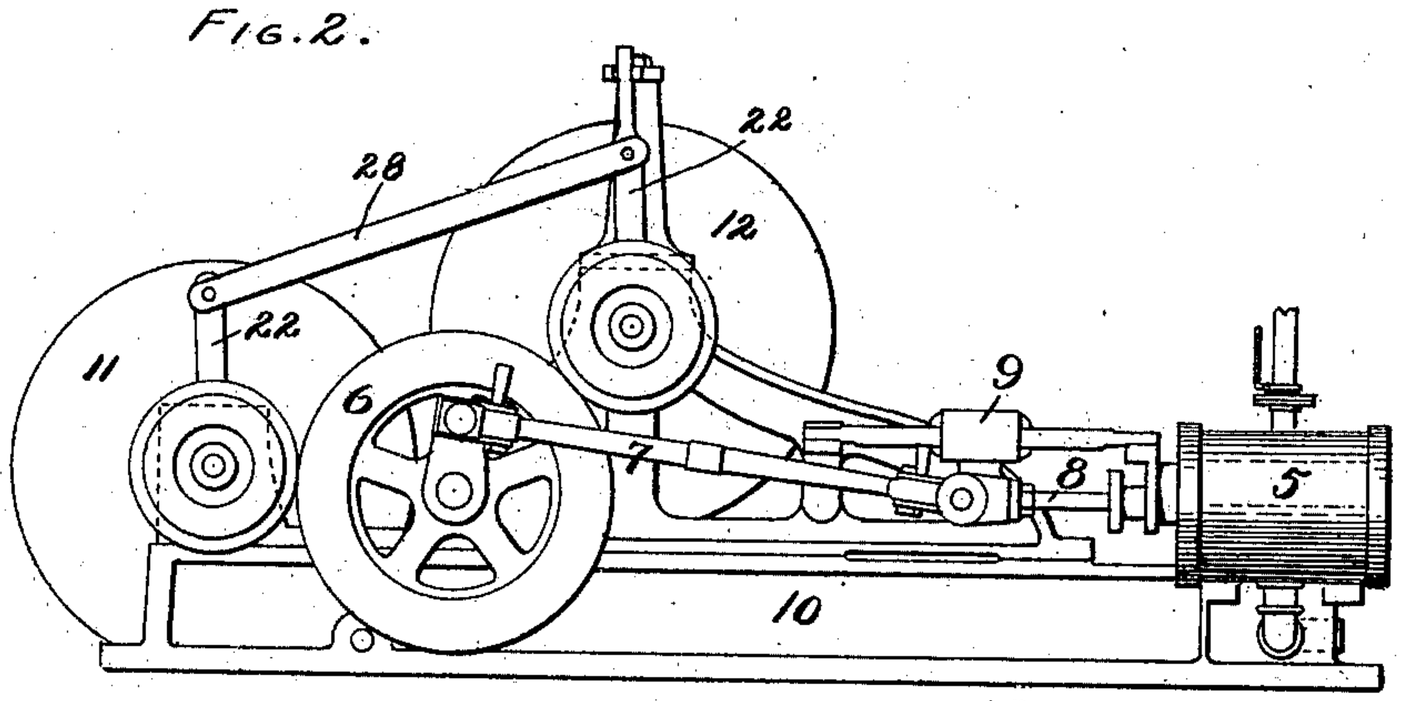


FIG. 2.



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2 Sheets—Sheet 2.

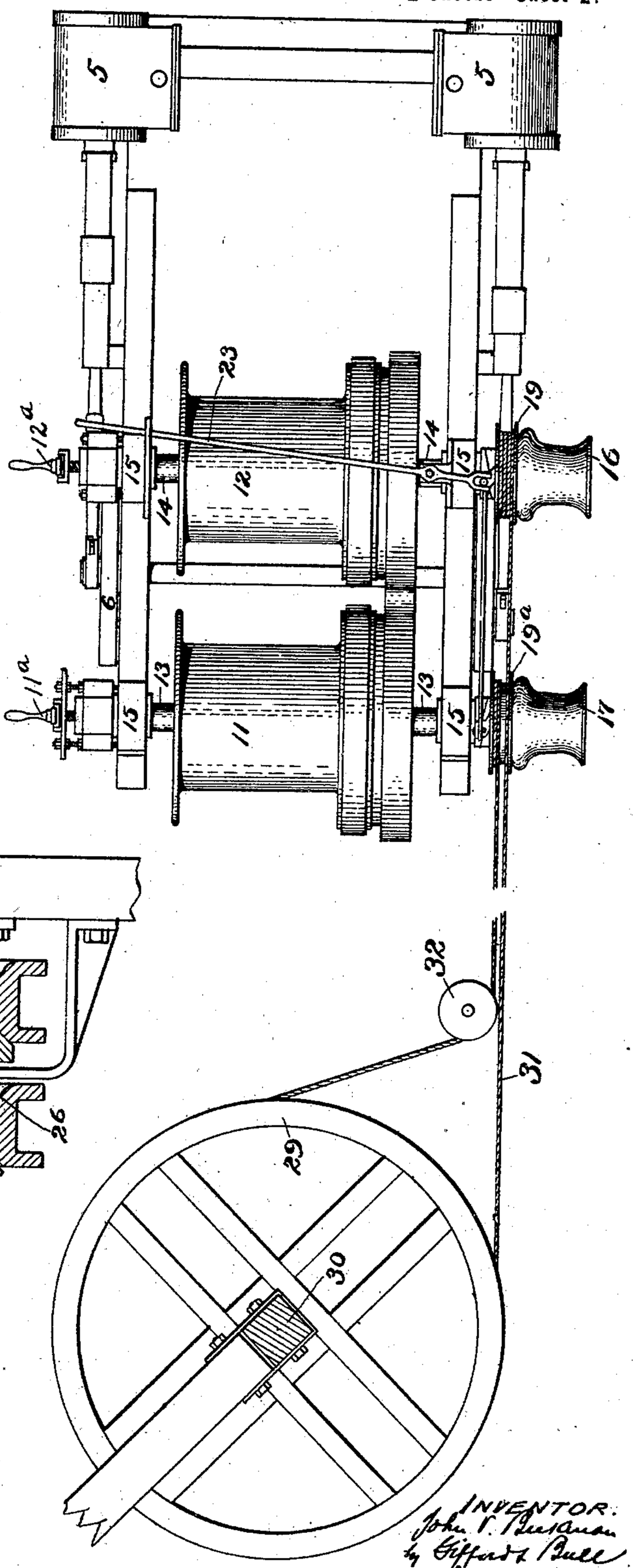

FIG. 4.

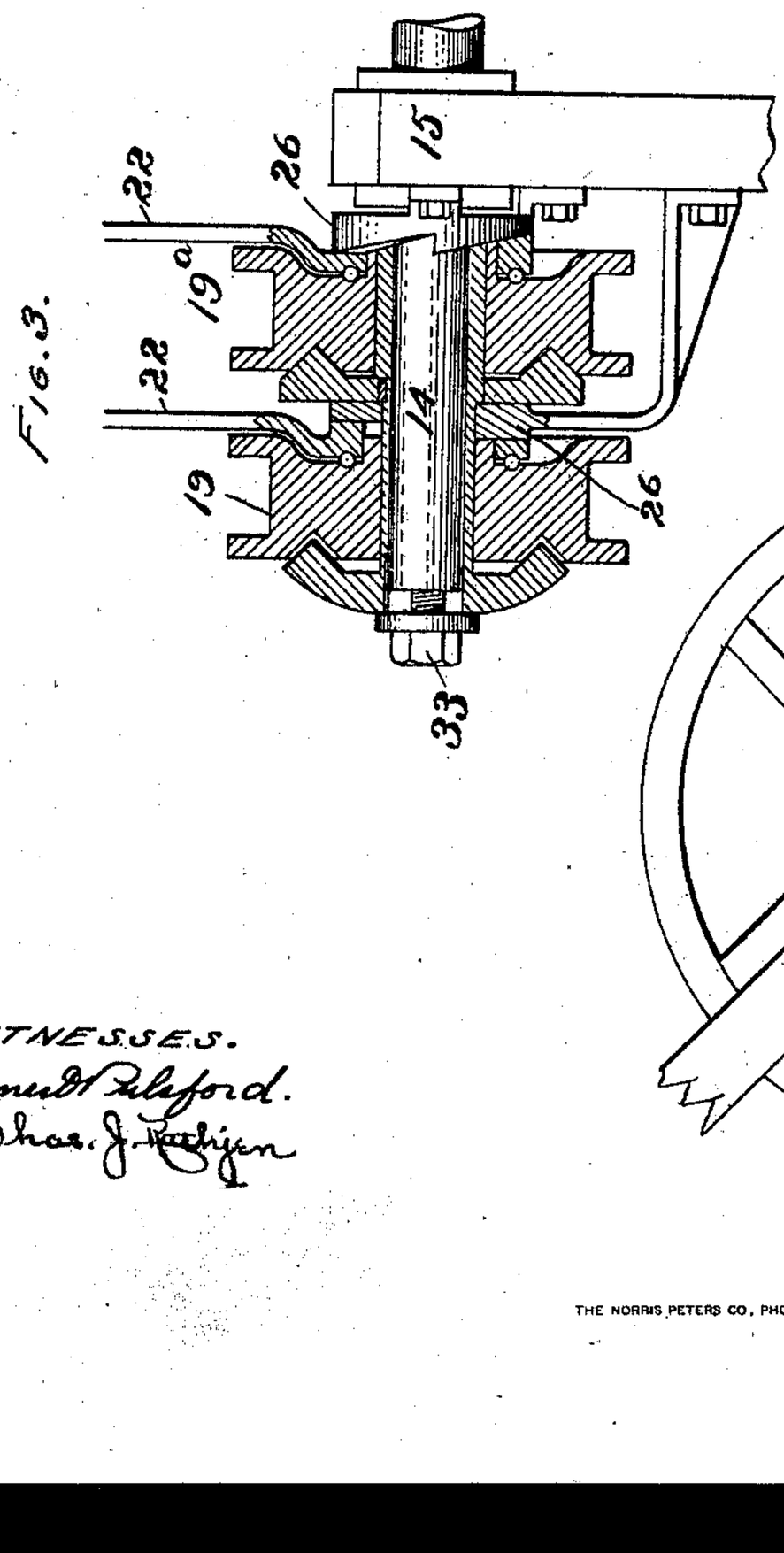

FIG. 3.

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DERRICK-ENGINE.

SPECIFICATION forming part of Letters Patent No. 671,177, dated April 2, 1901.

Application filed May 13, 1898. Serial No. 680,652. (No model.)

To all whom it may concern:

Be it known that I, JOHN V. BEEKMAN, a citizen of the United States of America, and a resident of Plainfield, Union county, New Jersey, have invented certain new and useful Improvements in Derrick-Engines, of which the following is a specification.

My invention relates to derrick-engines; and it consists of certain novel parts and combinations of parts, particularly pointed out in the claims.

In the drawings I have shown derrick-engines involving my invention in the forms at present preferred by me, but it will be understood that various modifications and changes may be made without departing from the spirit of my invention and without exceeding the scope of the claims.

In the drawings, Figure 1 is a detail, partly in section. Fig. 2 is a side view of a derrick-engine. Fig. 3 shows a modification, partly in section. Fig. 4 is an enlarged detail view of the bull-wheel at the base of a derrick and the operating mechanism.

The following is a description of the structure shown in the drawings:

Referring to Fig. 2, 5 is a steam-cylinder; 6, the crank-wheel; 7, a connecting-rod; 8, a piston-rod; 9, a slide, and 10 is the bed-plate. 11 and 12 are winding-drums, to which motion is communicated by means of friction devices, well known in the art, controlled by hand-levers 11^a and 12^a, respectively. 13 and 14 are the shafts of drums 11 and 12, respectively. These shafts are supported in bearings 15 15 15 15. On the extension of the shaft 14 beyond the bearing 15 is mounted a rope-drum 16, shown in the form of a winch-head, and on the extension of the shaft 13, beyond its bearing, is mounted another rope-drum 17, also shown in the form of a winch-head. The winding-drums 11 and 12 are loosely mounted on their shafts, while the winches 16 and 17 are keyed to said shafts by the key 18, Fig. 1. Between the winch 16 and its bearing 15 is an auxiliary drum 19, loosely mounted on a sleeve 20, forming an extension of the winch 16. 21 21 are friction-surfaces between the winch 16 and the drum 19. 22 23 represent a broken lever, pivoted at 24 to an extension 25 from the frame. 26 is a cam attached to the frame, against which the lower end of the lever 22 abuts. Between the lower end of lever 22 and the drum 19 are balls 27, forming a ball-bearing at this point. 28 is a bar connecting the levers 22 22. (See Fig. 2.)

29, Fig. 4, is the bull-wheel, attached to the lower end of the derrick-mast 30. 31 is the rope passing around the bull-wheel, by means of which the mast is turned to swing the derrick into the desired position. 32 is an idle roller. The rope 31 passes around the drums 19 and 19^a.

The operation of the device may be thus described: When it is desired to turn the bull-wheel in one or the other direction, the lever 23 is thrown one way or the other, whereby one of the auxiliary drums 19 or 19^a is by means of the devices shown in Fig. 1 brought in friction contact with its winch and caused to revolve therewith, while the other drum is free to pay out. It will be understood that the cams are fashioned so that as friction is increased on one of the drums it is simultaneously diminished on the other, the levers 22 22 moving together by reason of the presence of the connecting-rod 28. It will be readily understood from the above description that by shifting the lever 22 one drum may be entirely relieved from friction control, while the other is firmly held and caused to revolve with its shaft; also, that in the intermediate position both drums would be subjected to the same degree of friction control, and that in still a third position while one of the drums is subjected to a greater friction than the other and sufficient to turn the derrick-mast its fellow is not entirely relieved from friction control, but will operate as a brake to prevent the rope paying out too freely, and so keep the requisite tension on the rope passing around the bull-wheel. The last condition is the condition of operation.

While the friction may be varied, at no time should the winch which is paying out be entirely relieved from friction control. In order to preserve this condition, and as wear is an incident to the slipping of the friction-surfaces in contact, I provide the end of the shaft on which the winch is mounted with a collar 32^a and an adjusting-nut 33 for the purpose of taking up wear.

A modification is shown in Fig. 3, in which both of the drums are mounted upon a common shaft, in which position they are provided with independent friction-controlling devices, as already described. Without further description the modification will be readily understood in connection with Fig. 3 of the drawings.

The auxiliary drums may be employed, if desired, for purposes other than the operation and control of bull-wheels.

The handle of the lever 23 and the hand-levers 11^a and 12^a being located on the same side of the engine may be operated by a single attendant without leaving his position.

What I claim is—

1. In a derrick-engine, in combination, a shaft, its bearings, a hoisting-drum carried upon said shaft, a winch-head on the overhanging end of said shaft, an auxiliary drum loosely mounted on said shaft between said hoisting-drum and winch-head and a friction device for actuating said auxiliary drum, substantially as described.

2. In a derrick-engine, in combination, two hoisting-drums whereby the boom and load are respectively hoisted, two auxiliary drums, two friction mechanisms whereby said auxiliary drums, respectively, are actuated, mechanism whereby the friction is applied to said auxiliary drums alternately and a winch-head adjacent to each auxiliary drum, substantially as described.

3. In a derrick-engine, in combination, two hoisting-drums whereby the boom and load are respectively hoisted, the two shafts upon which said drums run, a pair of auxiliary drums upon each of said shafts, friction mechanisms actuating a member of each pair of auxiliary drums and mechanism whereby said frictions are applied alternately, substantially as described.

4. In a derrick-engine, in combination, two hoisting-drums whereby the boom and load are respectively hoisted, the two shafts upon which said drums run, a pair of auxiliary drums upon each of said shafts, friction mechanisms actuating a member of each pair of said auxiliary drums, a hand device located adjacent to the opposite ends of said shafts from said auxiliary drums and a connection between said hand device and said friction mechanisms whereby said friction may be applied alternately by the movement of said hand device, substantially as described.

5. In a derrick-engine, in combination, two hoisting-drums whereby the boom and load are respectively hoisted, the drum-shafts working in bearings at opposite ends of the drums and overhanging the bearings at one end, said bearings, two pairs of drums revolubly mounted on the overhanging ends of said shafts whereby the boom is swung in opposite directions and friction mechanism whereby said pairs of drums are caused to rotate with said shafts alternately, substantially as described.

6. In a derrick-engine, in combination two hoisting-drums whereby the boom and load are respectively hoisted, an auxiliary drum, a friction mechanism whereby said auxiliary drum is actuated, mechanism whereby the friction is applied to said auxiliary drum and a winch-head adjacent to said auxiliary drum, substantially as described.

7. In a derrick-engine, in combination two hoisting-drums whereby the boom and load are respectively hoisted, mechanism for actuating said hoisting-drums, two pairs of auxiliary drums, a positive connection between one member of each of said pairs and said hoisting-drum-actuating mechanism and a friction connection between the other member of each of said pairs and said hoisting-drum-actuating mechanism, substantially as described.

8. In a derrick-engine, the combination of two shafts, each shaft having thereon a friction-operated drum, a winch-head secured to turn with the shaft, a supplemental drum free to turn upon the shaft, and a friction device for turning said supplemental drum from the shaft, with means for operating said friction mechanisms, substantially as described, whereby a rope is wound upon one drum as it is paid out by the other.

9. In a derrick-engine, the combination of two shafts, each shaft having thereon a friction-operated drum, a winch-head secured to turn therewith, a supplemental drum, and a friction device for turning said supplemental drum from the shaft, with connected movable cam members adapted to engage the friction devices to actuate them oppositely, substantially as described.

10. A hoisting-engine having a rotating shaft, a winch-head slidingly keyed on said shaft, a drum loose on the shaft, friction-clutch connections between said winch-head and drum, means for restraining the movement of the winch-head away from the drum, and means for forcing the drum toward the winch-head, substantially as described.

JNO. V. BEEKMAN.

Witnesses:
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