

No. 828,708.

PATENTED AUG. 14, 1906.

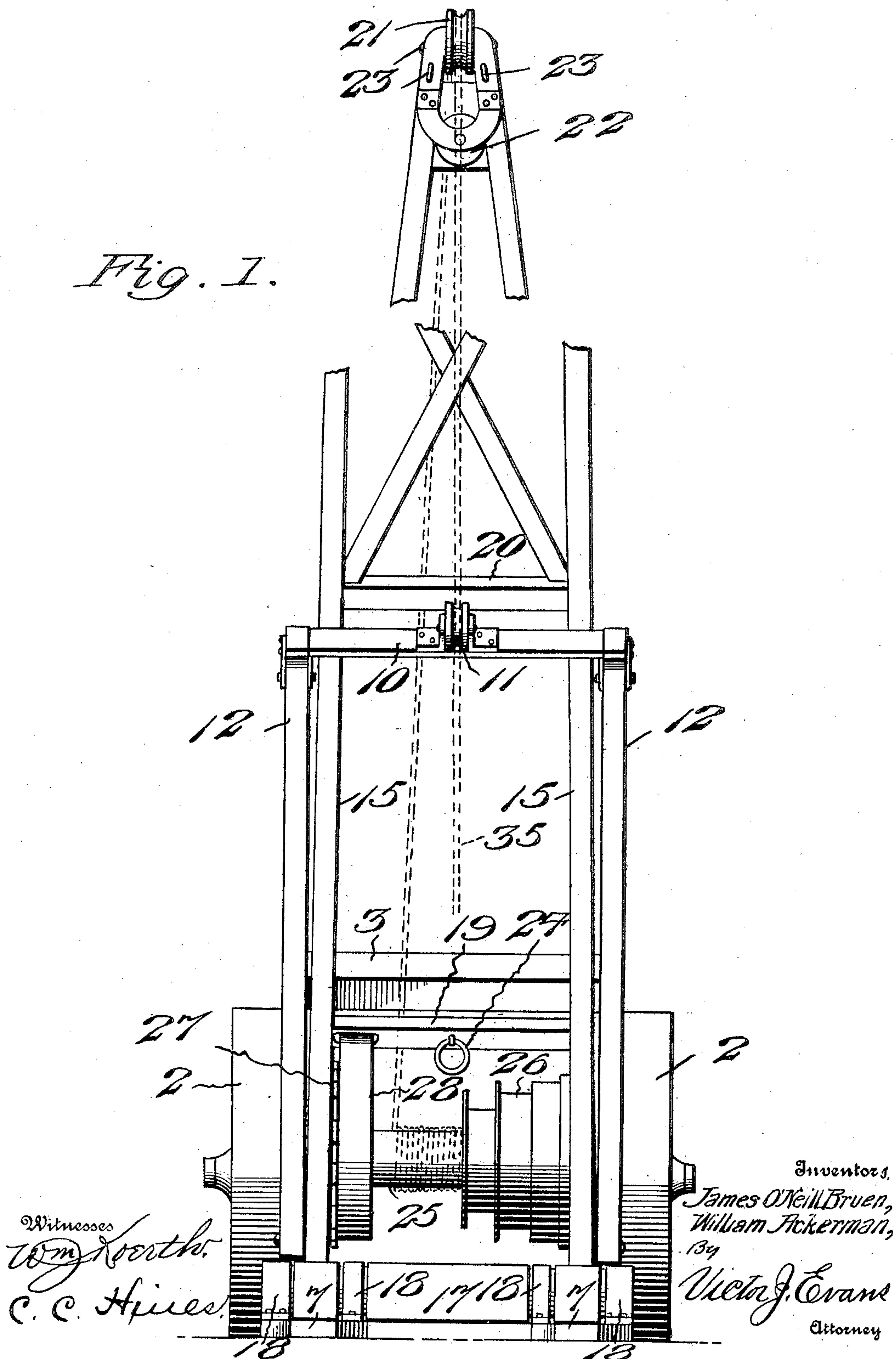
J. O'N. BRUEN & W. ACKERMAN.

APPARATUS FOR EXTRACTING AND APPLYING WELL TUBING, &c.

APPLICATION FILED JAN. 17, 1906.

2 SHEETS—SHEET 1

Fig. 1.



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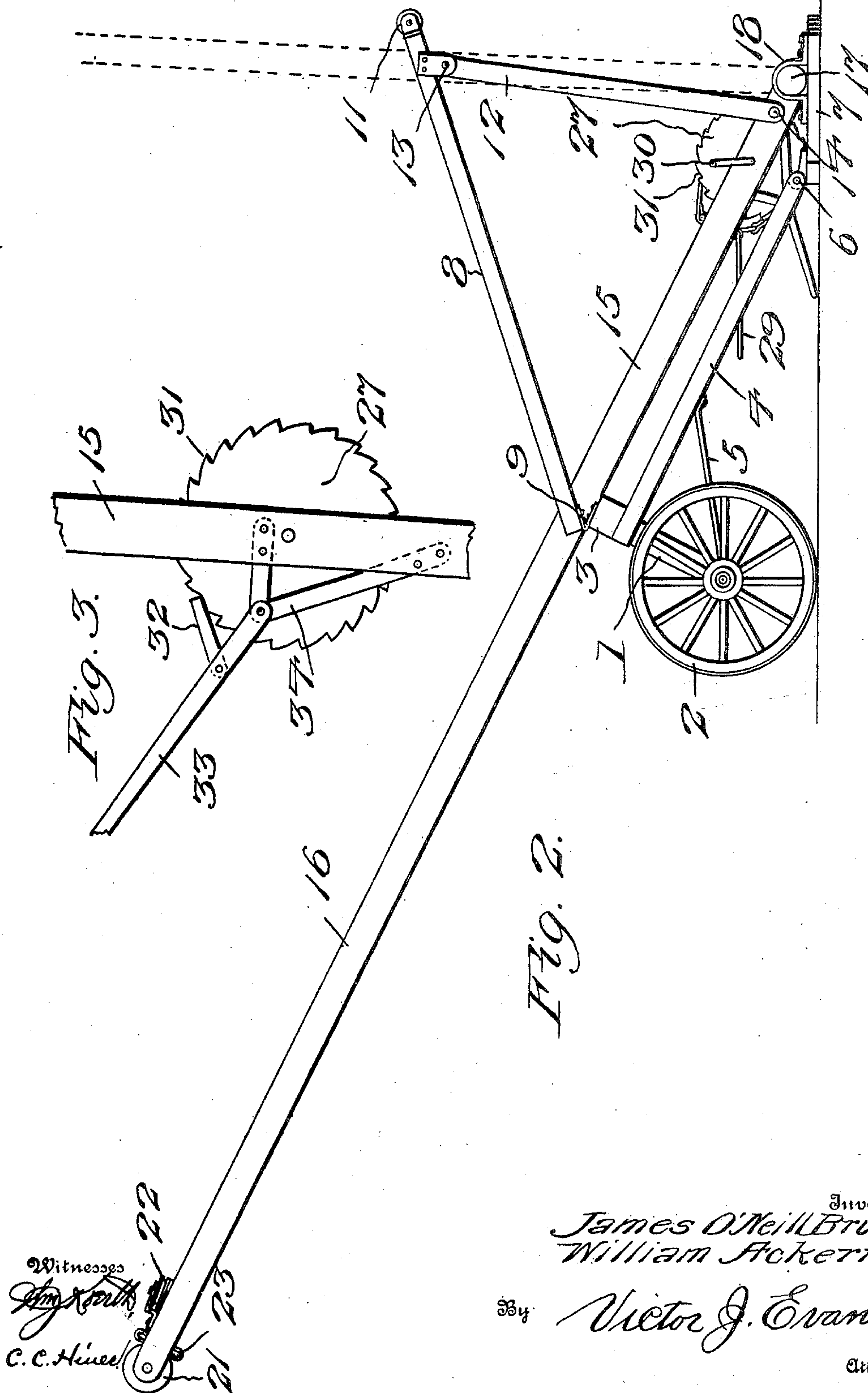
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APPARATUS FOR EXTRACTING AND APPLYING WELL-TUBING, &c.

No. 828,708.

Specification of Letters Patent.

Patented Aug. 14, 1906.

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To all whom it may concern:

Be it known that we, JAMES O'NEILL BRUEN and WILLIAM ACKERMAN, citizens of the United States of America, residing at Chanute, in the county of Neosho and State of Kansas, have invented new and useful Improvements in Apparatus for Extracting and Applying Well-Tubing, &c., of which the following is a specification.

10 This invention relates to an apparatus for extracting casings, tubing, and sucker-rods from oil and gas wells and also for lowering the same down into such wells for application therein.

15 The object of the invention is to provide an apparatus of this character which is simple of construction, powerful and efficient in operation and use, comparatively inexpensive of production, and capable of being readily transported from place to place.

20 Another object is to provide a device of this character which may be operated by manual labor or horse or other power.

25 With these and other objects in view the invention consists of the novel construction, combination, and arrangement of parts hereinafter fully described and claimed, reference being had to the accompanying drawings, in which—

30 Figure 1 is a front elevation of the device as arranged for use with the derrick elevated, a portion of the derrick being broken away on account of the confined space for illustration. Fig. 2 is a side elevation of the same, 35 showing the elevated or operative position of the derrick in dotted lines and the lowered position thereof in full lines; and Fig. 3 is a side elevation showing the ratchet mechanism for manually operating the windlass.

40 Referring now more particularly to the drawings, the numeral 1 denotes a suitably-constructed truck-frame mounted on supporting-wheels 2 and provided at the upper end thereof with a cross-bar 3. Rigidly at- 45 tached to and extending from said truck-frame are lower bracing-arms 4, reinforced from the truck-frame by bracing-irons 5 and pivotally attached, as indicated at 6, to the rear portions of foot-blocks 7. The foot- 50 blocks 7 are spaced apart, as shown in Fig. 1, to form a base-support for the frame and derrick when the latter is elevated for operation. Upper bracing-arms 8 are connected at their rear ends, as indicated at 9, to the cross-bar 3 55 of the truck-frame and extend forwardly therefrom at an upward inclination and are

connected at their forward or free ends by a transverse cross-bar 10, carrying a guide pulley or sheave 11. Standards or link-bars 12 support the forward ends of the upper 60 brace-bars 8 and are pivoted at their upper ends to said bars, as shown at 13, and at their lower ends, as shown at 14, to the lower ends of the side arms 15 of a derrick 16. The lower ends of the said arms 15 of the derrick 65 are fixed to a transverse shaft or axle 17, journaled in bearings 18 on the foot or base blocks 7, thus adapting the derrick to be swung to a substantially perpendicular position to rest against the cross-bar 10, as indicated in full lines in Fig. 1 and dotted lines in 70 Fig. 2, or to be turned down to rest upon the cross-bar 3 of the truck 1, as indicated in full lines in Fig. 2.

When the derrick is adjusted to an erect 75 position for operation, it will be limited in its forward movement by said cross-bar 10, which will permit it to assume a forward inclination slightly beyond the vertical to permit the hoisting and lowering cable hanging 80 pendent therefrom to project downward in advance of the supporting-frame and to be operated without interference therefrom.

The pivotal connection of the foot-blocks 7 85 with the lower bracing-arms 4 and the pivotal connections of the standards or link-arms 12 permit the derrick to swing freely from raised to lowered position without throwing strain upon the parts of the supporting-frame. At a suitable distance above the axle 17 the side 90 arms 15 of the derrick are connected by a cross-bar 19 and at intervals above the same by other cross-bars 20, and the upper or free end of the derrick carries pulleys 21 and 22 and also loops or eyes 23, the latter being pro- 95 vided for the attachment of guide-chains to enable the derrick to be firmly braced against movement when elevated to operative position. The cross-bar 19 carries a ring or like fixture 24 for the attachment of 100 the hoisting and lowering line when elevating and lowering the derrick, as hereinafter described.

A reel or windlass 25 is mounted on the derrick in the space bounded by the lower 105 portions of the side bars 15, axle 17, and cross-bar 19 and carries a set of drums 26 of varying diameter for the attachment of a windlass-operating rope or cable. Said cord or cable may be attached to either one of the 110 drums, according to the amount of power required to operate the windlass, and draft-ani-

mals may be attached to the cable, or the latter may be run out by any other suitable power to effect the rotation of the windlass. The windlass also carries a brake-head or disk 27, adapted to be engaged by a brake-band 28, one end of said band being fixed to the cross-bar 19, while the opposite end thereof is connected to the crank end of an operating-lever 29, pivotally mounted upon the derrick, whereby the action of the windlass may be controlled and the same locked against movement when desired. To the shaft of the windlass is connected a crank-handle 30, by which the windlass may be operated by manual power to enable the hoisting and lowering line to be slacked or drawn taut for adjusting the grapples or extracting device mounted upon the free end of the line to enable said device to be conveniently connected with or disconnected from the part to be extracted from or lowered into the well. The head 27 is provided with ratchet-teeth 31, adapted to be engaged by a dog or pawl 32, pivotally connected with an operating-lever 33, pivoted to oscillate upon a bracket 34, fastened to one of the side bars 15 of the derrick. By oscillating this lever 33 the dog or pawl 32 may be brought into engagement with the ratchet-teeth 31 to intermittently rotate the windlass for the purpose of raising the grappling or extracting device from the well and elevating the same to adjust it for more convenient application to a rod, tube, or casing-section to be elevated.

A hoisting and lowering line 35 is fixed and wound at one end around the windlass 25 and then passes therefrom upward along the upper side of the derrick and is passed around the supporting-pulley 21, and thence continues when the derrick is in operative position downward over the guide-pulley 11, whence its free end projects downward in advance of the base-blocks 7 for attachment to the grapple or extracting device. To elevate the derrick for operative position, the grapple or extracting device is detached from the free end of the line and the latter made fast to the ring or fixture 24, whereupon by turning the wheel 25 in a forward direction the line will swing the derrick forward until it comes in contact with the cross-bar 10. After the derrick has been stayed by the attachment of guide-chains to the eyes 23 the free end of the line is disconnected from the fixture 24 and the grapple or extracting device applied thereto for use. To lower the derrick to the position shown in full lines in Fig. 2, the free end of the line is also attached to the fixture 24 and sufficient slack in the line allowed to permit the derrick to be pushed by hand backward beyond the perpendicular, so that it will swing by gravity to lowered position, its movement to such position being controlled by means of the band-brake. When the derrick is lowered, the apparatus may be

tilted to a horizontal position by pulling down upon the top or free end of the derrick and a draft attachment suitably applied to said top end of the derrick to enable the device to be transported on the wheeled truck-frame 1.

The parts are so constructed and proportioned that the weight of the frame, reel, and base portion of the derrick will be slightly greater than the upper portion thereof, which projects beyond the cross-bar 3 when the derrick is in lowered position, so that while the greater weight of the frame and base portion will elevate the top end of the derrick when the latter is detached from the draft-animals the parts will be so nearly balanced as to render it easy for the draft-team to support and haul the apparatus. The pulley 22 is provided to enable more than one hoisting and lowering line to be employed when an unusually heavy part or a number of parts are to be elevated or lowered.

By the use of the crank 30 and the brake and ratchet operating mechanism the action of the windlass may be readily and conveniently controlled to slacken or tighten the line for disengaging and engaging the grapple or extracting device from or with the joint of tubing or part to be elevated or lowered, and the descent of the line with the attached extracting device into the well may be readily controlled by the action of the brake on the windlass. The ratchet mechanism further adapts the windlass to be operated manually for removing parts or a string of tubing from a well in order to permit the grapple or extracting device to be detached from the tube.

It will thus be seen that the apparatus may be conveniently controlled in use, may be operated manually or by horse or other power, and may also be conveniently transported from well to well for use. When the apparatus is set for operation, the weight of the derrick and load is supported by the base-blocks 7, and as the weight of the derrick is slightly more than counterbalanced by the weight of the truck-frame it will be understood that by the simple application of suitable guys or stays to the elevated derrick the latter will be firmly supported.

Having thus described the invention, what is claimed as new is—

1. In an apparatus of the character described, the combination of a wheeled truck, a base, connections between the truck and base and forming therewith a supporting-frame, a derrick pivotally mounted upon the base and adapted when raised to be supported by the base and frame and when lowered to rest upon the truck, and hoisting means mounted upon the derrick.

2. In an apparatus of the character described, the combination of a wheeled truck, a base, connections between the truck and base forming therewith a supporting-frame,

a derrick pivoted to the base and adapted when elevated to be supported thereby and the forward portion of said frame and when lowered to rest upon the truck, and hoisting means carried by the lower end of the derrick, the construction being such that when the derrick is lowered, said derrick and frame may be tilted to a horizontal position for transportation.

3. In an apparatus of the character described, the combination of a wheeled truck, a base, upper and lower sets of bracing-bars, said bars being fixed to the truck-frame and the forward ends of the lower sets of bars pivoted to the base, link-bars pivotally connected at their upper ends to the forward ends of the upper set of brace-bars, a derrick mounted on the base and pivotally connected to the lower ends of the link-bars, and hoisting and lowering means carried by the derrick.

4. In an apparatus of the character described, the combination of a wheeled truck-frame, a base arranged in advance thereof, lower bracing-arms fixed at their rear ends to the truck and pivoted at their forward ends to the base, an upper set of bracing-arms pivoted at their rear ends to the truck and extending forwardly at an upward inclination therefrom and connected by a cross-bar at their free ends, a derrick extending between said sets of bracing-arms and pivotally mounted at its lower end upon the base, link-bars pivotally connected at their upper ends to the upper set of bracing-arms and at their lower ends to the derrick, and hoisting mechanism carried by the derrick.

5. In an apparatus of the character described, the combination of a supporting-frame provided with supporting-wheels at one end, a supporting-base at its opposite end, a derrick pivotally mounted upon the base and adapted to be supported by the frame in raised or lowered position, a windlass carried by the derrick, a hoisting-line connected with the windlass and guided by the derrick and frame, means for connect-

ing said line with the derrick to adapt the latter to be raised and lowered, and a brake carried by the derrick to regulate the movement of the windlass and line to adapt the derrick to be lowered by gravity.

6. In an apparatus of the character described, the combination of a wheeled supporting-frame having a base adapted to rest upon the ground when the device is in operative position, a derrick pivotally mounted upon said base, a windlass carried by the derrick and provided with ratchet-teeth, an oscillating lever having a pawl to engage said ratchet-teeth, a brake-band for regulating the action of the windlass, means for operating said brake-band, and a hoisting-line supported by the brake and connected with the windlass.

7. In an apparatus of the character described, the combination of a wheeled truck, supporting means carried thereby, a derrick pivotally connected to said supporting means in advance of the truck to be raised for operation and to be lowered to rest upon the truck, and hoisting means upon the derrick.

8. In an apparatus of the character described, the combination of a wheeled truck, supporting means carried thereby, a derrick pivoted to said supporting means in advance of the truck to be raised for operation and to be lowered to rest upon the truck, the construction being such that when the derrick is lowered said derrick may be tilted on the truck to a horizontal position for transportation, hoisting means on the derrick, and means for utilizing said hoisting means to raise and lower the derrick.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES O'NEILL BRUEN.
WILLIAM ACKERMAN.

Witnesses:

EUGENE B. LAWSEN,
BEN. J. SCOVILLE.