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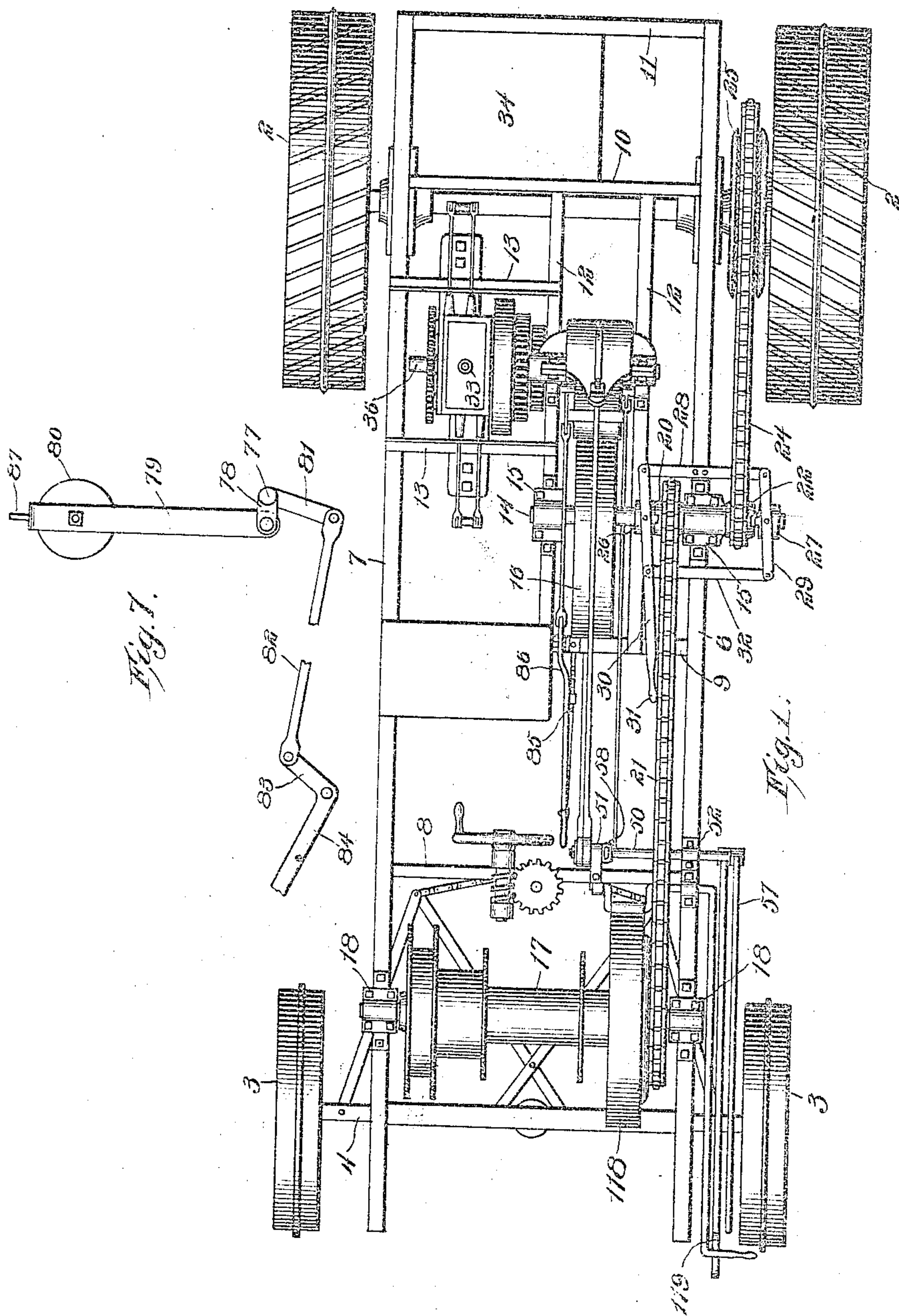
PATENTED MAY 5, 1908.

O. D. KRAFT & L. W. FETZER.

WELL PULLING MACHINE.

APPLICATION FILED AUG. 4, 1906.

2 SHEETS—SHEET 1.



Witnesses

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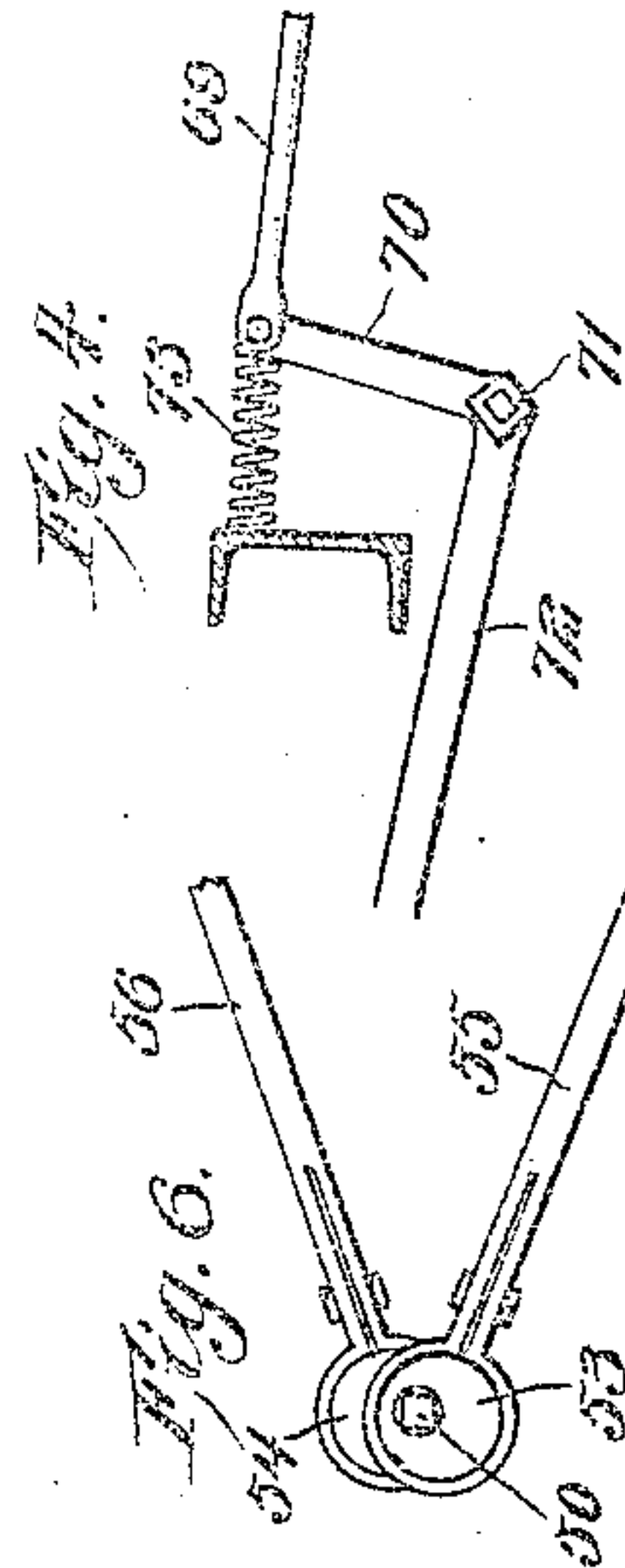
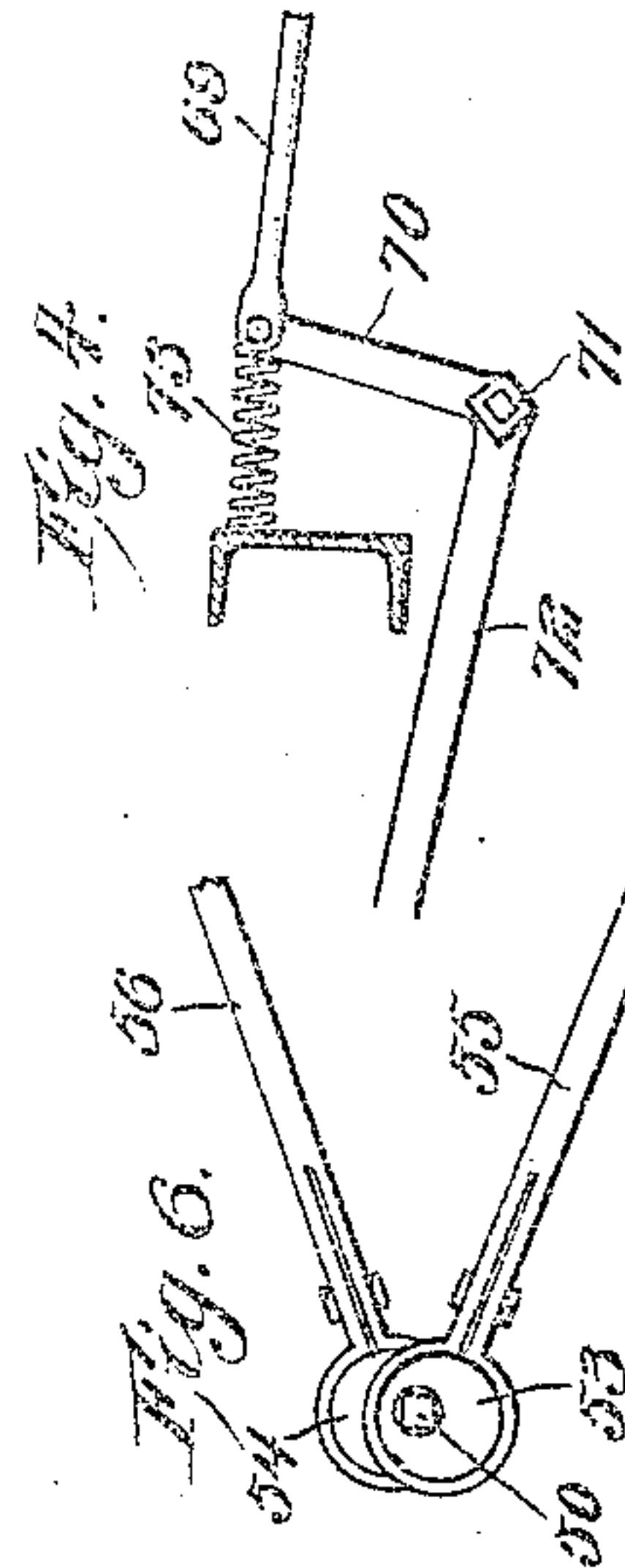
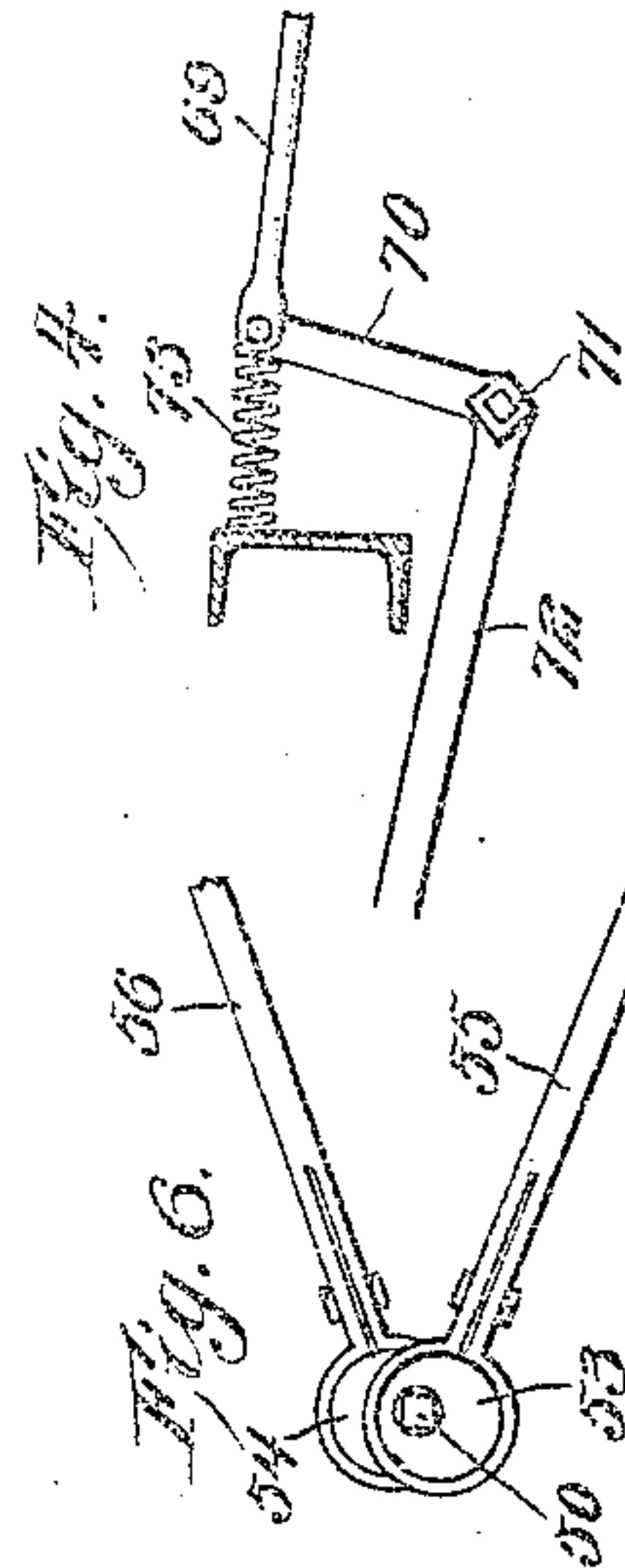
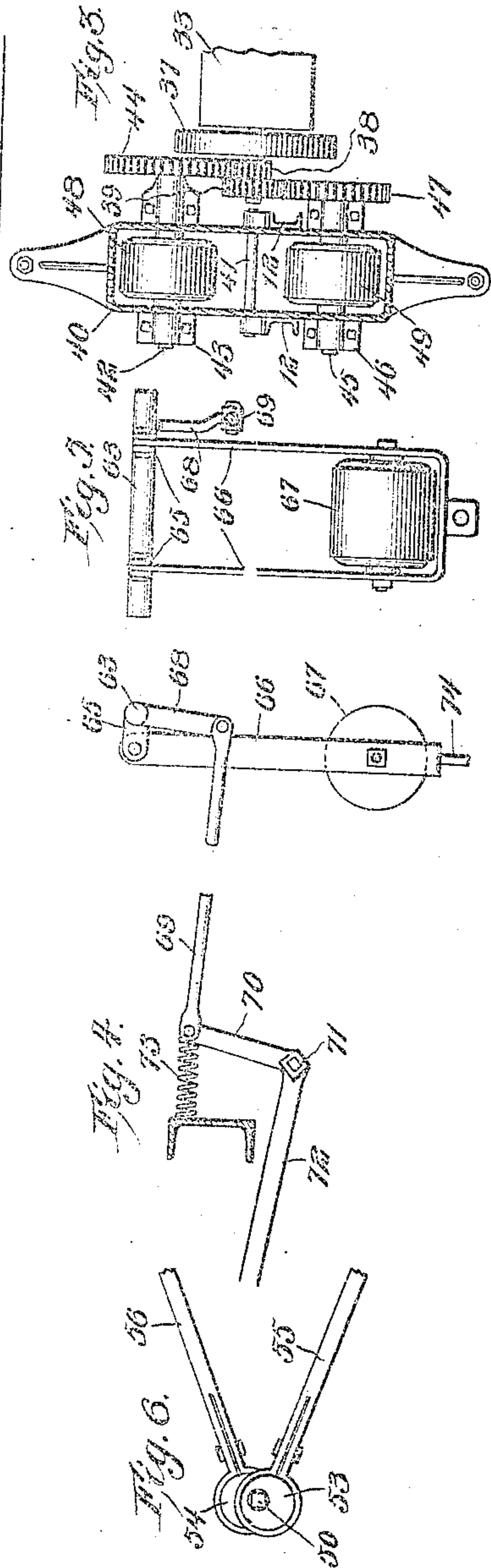
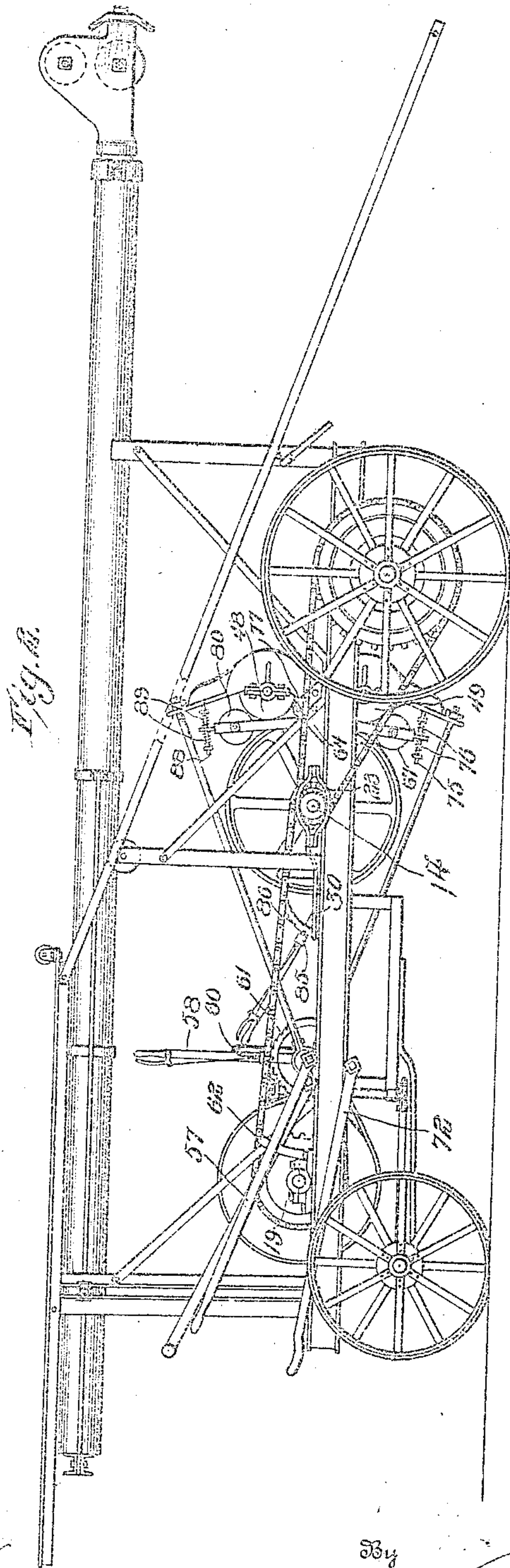
Attorney

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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

OLIVER D. KRAFT AND LOUIS W. FETZER, OF FINDLAY, OHIO.

## WELL-PULLING MACHINE.

No. 823,529.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed August 4, 1906. Serial No. 329,179.

*To all whom it may concern:*

Be it known that we, OLIVER D. KRAFT and LOUIS W. FETZER, citizens of the United States, residing at Findlay, in the county of Hancock and State of Ohio, have invented new and useful Improvements in Well-Pulling Machines, of which the following is a specification.

Our invention relates to well pulling machines, and is especially adapted for applying and removing tubes, sucker rods, or casings, to or from oil wells and for bailing and cleaning wells.

Broadly and generally speaking our invention consists of a frame supported upon propelling and steering wheels, a winding drum, a main driving shaft adapted to impart motion to the drum and propelling wheels, an engine, and gearing adapted to transmit motion from the engine to the main driving shaft.

One object of our invention is to provide means adapted to be operated to connect the drum to the main driving shaft and disconnect the propelling wheels therefrom, or to connect the propelling wheels to the main driving shaft and disconnect the drum therefrom.

Another object of our invention is to provide a gearing adapted to be operated to cause the drum to rotate in a winding direction at a minimum or maximum speed, or to rotate in a winding direction at a maximum speed.

Another object of our invention is to provide a gearing adapted to be operated to cause the propelling wheels to rotate in a forward direction at a minimum or maximum speed, or to rotate in a rearward direction at a minimum speed.

With the above and other objects in view, the invention consists in the construction, combination and arrangement of parts hereinafter fully described, claimed and illustrated in the accompanying drawings, wherein:

Figure 1 is a top plan view of a well pulling machine constructed in accordance with our invention, the derrick and derrick supporting bars being omitted. Fig. 2 is a view in side elevation thereof. Fig. 3 is a detail view of the gearing, the gear casing being in section. Fig. 4 is a view in side elevation of one of the gearings and the means for operating the same. Fig. 5 is a view in front elevation thereof. Fig. 6 is a detail view of the means

for operating the gearing disclosed in Fig. 5, and Fig. 7 is a side elevation of another gearing and the means for operating the same.

Referring to the drawings by reference numerals, 2 designates the propelling wheels and 3 the steering wheels, upon the axles 4—5 of which is mounted the main frame of the machine. The main frame consists of longitudinal beams or girders 6—7 and cross beams or girders 8—9—10—11. Supporting bars 12 are secured in spaced relation to the cross beams or girders 9—10 and extend longitudinally of the main frame, while supporting bars 13 are secured in spaced relation to the longitudinal beam or girder 7 and the supporting bar 12 and extend transversely of the main frame.

A main driving shaft 14 is journaled in bearings 15 secured to one of the supporting bars 12 and to the longitudinal beam or girder 6, and has keyed thereto a fixed drive-wheel 16. A drum 17 provided with a plurality of winding surfaces of varying diameters, is journaled near the forward end of the main frame in bearings 18 secured to the longitudinal beams or girders 6—7, and is provided with a sprocket-wheel 19. The free member 20 of the clutch is mounted upon the main driving shaft 14 and is provided with a sprocket-wheel to permit the application of a chain 21 thereto and to the sprocket-wheel 19, whereby the drum may be rotated from the main driving shaft 14. The free member 22 of another clutch is also mounted upon the main driving shaft 14, and is provided with a sprocket-wheel 23 to permit the application of a chain 24 thereto and to a compensating gear 25 fixed to the axle 5 of the propelling wheels 2, whereby the propelling wheel may be rotated from the main driving shaft. The fixed and slidable members 26—27 of the clutches are mounted upon the main driving shaft 14 and are respectively adapted to be moved into engagement with the clutch members 20—22 when it is desired to either rotate the drum or the propelling wheels 2.

A bracket arm 28 is secured to the longitudinal beam or girder 6 and has pivotally secured to one of its ends a lever 29, said lever having a pivotal connection with the clutch member 27. A lever 30 is pivotally secured to the other end of the bracket arm 28 and has pivotal connection with the clutch member 26, said lever having its power end formed to provide a handle 31. The levers 29—30



are connected for simultaneous movement by a link 32, whereby when the lever 30 is operated in one direction the clutch member 26 is moved into engagement with the clutch member 20, and the clutch member 27 moved out of engagement with the clutch member 22, whereby the drum 17 is connected for rotation with the main driving shaft 14 and the propelling wheels disconnected therefrom. When the lever 30 is moved in the reverse direction the clutch member 27 is moved into engagement with the clutch member 22 and the clutch member 26 moved out of engagement with the clutch member 20, whereby the propelling wheels 2 are connected for rotation with the main driving shaft 14 and the drum 17 disconnected therefrom.

An engine 33 of the explosive tank is secured to the supporting bars 13, the explosive cylinder thereof being provided with gasoline from a tank 34, while the cooling jacket thereof is provided with water from the tank 35, said tanks being secured to the cross beams or girders 10—11.

The shaft 36 of the engine 33 is provided with a fly-wheel 37 and gear wheels 38—39 having, respectively, different diameters.

A gear casing 40 is journaled for oscillation upon a shaft 41 secured to the supporting bars 12. A shaft 42 is journaled in bearings 43 carried by the casing 40 and is provided with a gear wheel 44 adapted to mesh with the smaller gear wheel 38. Another shaft 45 is journaled in bearings 46 carried by the casing 40 and is provided with a gear wheel 47 which is adapted to mesh with the larger gear wheel 39. It should be thus apparent that the shafts 42—45 are rotated in the same direction at different speeds, the shaft 42 being rotated at a lesser speed than is rotated the shaft 45. A friction gear 48 is keyed upon the shaft 42, while a friction gear 49 is keyed upon the shaft 45.

When it is desired to have the drum 17 rotate in a winding direction or the propelling wheels 2 in a forward direction at a minimum speed, the gear casing 40 is oscillated to bring the gear 48 in engagement with the drive wheel 16, while when it is desired to have the drum 17 or the propelling wheels 2 rotate in said directions at a maximum speed, the gear casing 40 is oscillated to bring the gear 48 into engagement with the drive wheel 16.

The means by which the casing 40 is oscillated consists of a shaft 50 journaled in bearings 51—52, respectively, carried by the cross beam or girder 8 and the longitudinal beam or girder 6; eccentrics 53—54 secured to the shaft 50; links 55—56, respectively secured at their opposite ends to the eccentrics and the upper and lower ends of the casing 40, and a lever 57 removably secured to one end of the shaft 50. When the lever 57 is moved in one direction, the gear 48 is brought into engagement with the drive

wheel 16, while when the lever is moved in the reverse direction, the gear 49 is brought into engagement with the drive wheel. The lever 57 is intended to be used only when a well is being pulled or cleaned, and when the machine is being transported, the gears 48—49 are operated by means of a lever 58 which has its lower end positioned in a socket 59 carried by the shaft 50. A dog 60 is carried by the lever 58 and adapted for engagement with a rack 61 to hold either of the gears 48 or 49 in engagement with the drive wheel 16. When it is desired to retain the gears 48—49 out of contact with the drive wheel 16, the lever 57 is moved into engagement with a stop carried by a spring 62. A shaft 63 is journaled in a bearing bracket 64 carried by the supporting bars 12 and is provided with laterally projecting arms 65 to which is pivotally secured a bracket 66. A friction gear 67 is journaled in the bracket 66 and is adapted to be brought into engagement with the gear 49 and drive wheel 16 when it is desired to have the drum 17 rotated in an unwinding direction at an increased speed. An arm 68 is secured to the shaft 63 at an angle with relation to the arm 65 and has pivotally secured to the free end thereof a link 69, the other end of said link being secured to an arm 70 carried by a shaft 71, which is journaled in bearings carried by the longitudinal beam or girder 6 and the cross beam or girder 8. A lever 72 is removably secured to the shaft 71 and provides means by which said shaft may be operated to swing the gear 67 into engagement with the gear 49 and drive wheel 16. A spring 73 is interposed between the arm 70 and the cross beam or girder 8, and is adapted to normally retain the gear 67 out of engagement with the gear 49 and the drive wheel 16. The lower end of the bracket 66 is provided with a perforated extension 74, through the perforation of which extends a bolt 75 carried by the lower end of the casing 40. A spring 76 is mounted upon the bolt 75 on each side of said extension 74, and serve to yieldingly retain the gear 67 out of engagement with the gear 49 and drive wheel 16. The gear 67 is only used when a well is being pulled or cleaned. A shaft 77 is journaled upon the bearing bracket 64 and is provided with laterally projecting arms 78, to which is pivotally secured a bracket 79. A friction gear 80 is journaled in the bracket 79 and is adapted to be brought into engagement with the gear 48 and drive wheel 16 when it is desired to rotate the propelling wheels 2 in a rearward direction at slow speed. An arm 81 is secured to the shaft 77 at an angle with relation to the arms 78 and has secured to the free end thereof a link 82, the other end of which is secured to the member 83 of an angle lever 84, said lever being pivotally secured to the cross beam or bar 9 and provided with a dog 85 which is adapted



for engagement with a segmental rack 86 to retain the gear 80 in engagement with the gear 48 and the drive wheel 16. The upper end of the bracket 79 is provided with a perforated extension 87, through the perforation of which passes a bolt 88 carried by the upper end of the casing 40. A spring 89 is mounted upon the bolt 87 on each side of the extension 85 and serve to yieldingly retain the gear 80 out of engagement with the gear 48 and the drive wheel 16. The gear 80 is only used when the machine is being propelled from place to place.

When it is desired to wind the cable upon the drum 17 at a minimum speed, the lever 57 is operated to swing the gear 43 into engagement with the drive wheel 16, and when it is desired to wind the cable upon the drum at a maximum speed, the lever 57 is operated to move the gear 48 out of engagement with the drive wheel 16 and the gear 49 into engagement therewith. When it is desired to unwind the cable from the drum 17, the lever 72 is operated to move the gear 67 into engagement with the gear 49 and the drive wheel 16. In order to hold the drum against rotation, a brake band 118 and a lever 119 are used.

When it is desired to propel the machine to another place, the lever 30 is swung to move the clutch member 26 out of engagement with the clutch member 20 and the clutch member 27 into engagement with the clutch member 22, after which either one of the gears 48 or 49 is swung into engagement with the drive wheel 16, depending upon whether or not it is desired to propel the machine with a minimum or maximum speed. Should it be desired to back the machine, the lever 86 is operated to move the gear 80 into engagement with the gear 48 and drive wheel 16.

From the foregoing description taken in connection with the accompanying drawings, the construction and mode of operation of the invention should be understood without a further extended description.

Changes in the form, proportions and minor details of construction may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

Having fully described and illustrated our invention, what we claim is:

1. In a machine of the character set forth, the combination with an engine and a drum, of a drive wheel, connection between the drive wheel and drum, a pair of gears driven by the engine in the same direction at different speeds, means by which one or the other of said gears may be brought into engagement with the drive wheel to rotate the drum in winding direction at varying speeds, and another gear adapted to be brought into engagement with one of said first named

gears and the drive wheel to rotate the drum in unwinding direction.

2. In a machine of the character set forth, the combination with an engine and a drum, of a drive wheel, connection between the drive wheel and drum, a pair of gears driven by the engine in the same direction at different speeds, means by which one or the other of said gears may be brought into engagement with the drive wheel to rotate the drum in winding direction at varying speeds, and another gear adapted to be brought into engagement with one of said gears and the drive wheel to rotate the drum in unwinding direction at an increased speed.

3. In a machine of the character set forth, the combination with an engine and a drum, of a drive wheel, connection between the drive wheel and drum, a gear casing, gears carried by said casing and adapted to be rotated by the engine in the same direction at different speeds, means by which said casing may be operated to bring one or the other of said gears into engagement with the drive wheel, another gear adapted to be moved into engagement with said first named gears and drive wheel, means by which said gear may be operated, and means for normally retaining the gear out of engagement with said first named gears and the drive wheel.

4. In a machine of the character set forth, a wheeled frame, a drum, a drive wheel operatively connected with the drum and with the propelling wheels of the frame, means by which either the drum or propelling wheels may be connected with or disconnected from the drive wheel, an engine, a pair of gears driven by the engine in the same direction at different speeds, means by which one or the other of said gears may be brought into engagement with the drive wheel, and another gear adapted to be brought into engagement with one of said first named gears and with the drive wheel.

5. In a machine of the character set forth, the combination with a frame, a drum journaled thereon and an engine supported thereby, of a drive wheel, connection between the drive wheel and the drum, a casing movably mounted upon the frame, gears journaled in said casing and driven by the engine, means by which the casing can be moved to bring one or the other of said gears in engagement with the drive wheel, a bracket movably mounted upon the frame, a gear journaled in the bracket, and means by which the bracket can be moved to bring the gear carried thereby in engagement with one of said first named gears and the drive wheel.

6. In a machine of the character set forth, the combination with a frame, a drum journaled thereon and an engine supported thereby, of a drive wheel, connection between the drive wheel and the drum, a casing movably



mounted upon the frame, gears journaled in the casing and driven by the engine, means by which the casing can be moved to bring one or the other of said gears in engagement with the drive wheel, a bracket movably mounted upon the frame, a gear journaled in the bracket, means by which the bracket can be moved to bring the gear carried thereby in engagement with one of said first named gears and the drive wheel, and a flexible connection between the casing and the bracket.

7. In a machine of the character set forth, the combination with a frame, a drum journaled thereon and an engine supported thereby, of a drive wheel, connection between the drive wheel and the drum, a casing movably mounted upon the frame, a pair of gears journaled in the casing and driven by the engine in the same direction at different speeds, means by which the casing can be moved to bring one or the other of the gears in engagement with the drive wheel, brackets movably mounted upon the frame, gears journaled in the brackets, and means by which one or the other of said brackets can be moved to bring

the gear carried thereby in engagement with one of said first named gears and the drive wheel.

8. A machine of the character set forth, a wheeled frame, a drum, a shaft, a drive wheel secured to the shaft, a pair of gears driven by the engine, means by which one or the other of said gears may be brought into engagement with the drive wheel, clutches mounted upon the shaft, a connection between one of the clutches and the drum, a connection between the other clutch and the propelling wheels of the frame, and means connected with the movable members of the clutches, said means being adapted to be operated to shift the movable members of the clutches into and out of operative positions.

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

OLIVER D. KRAFT.  
LOUIS W. FETZER.

Witnesses:

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