

No. 844,060.

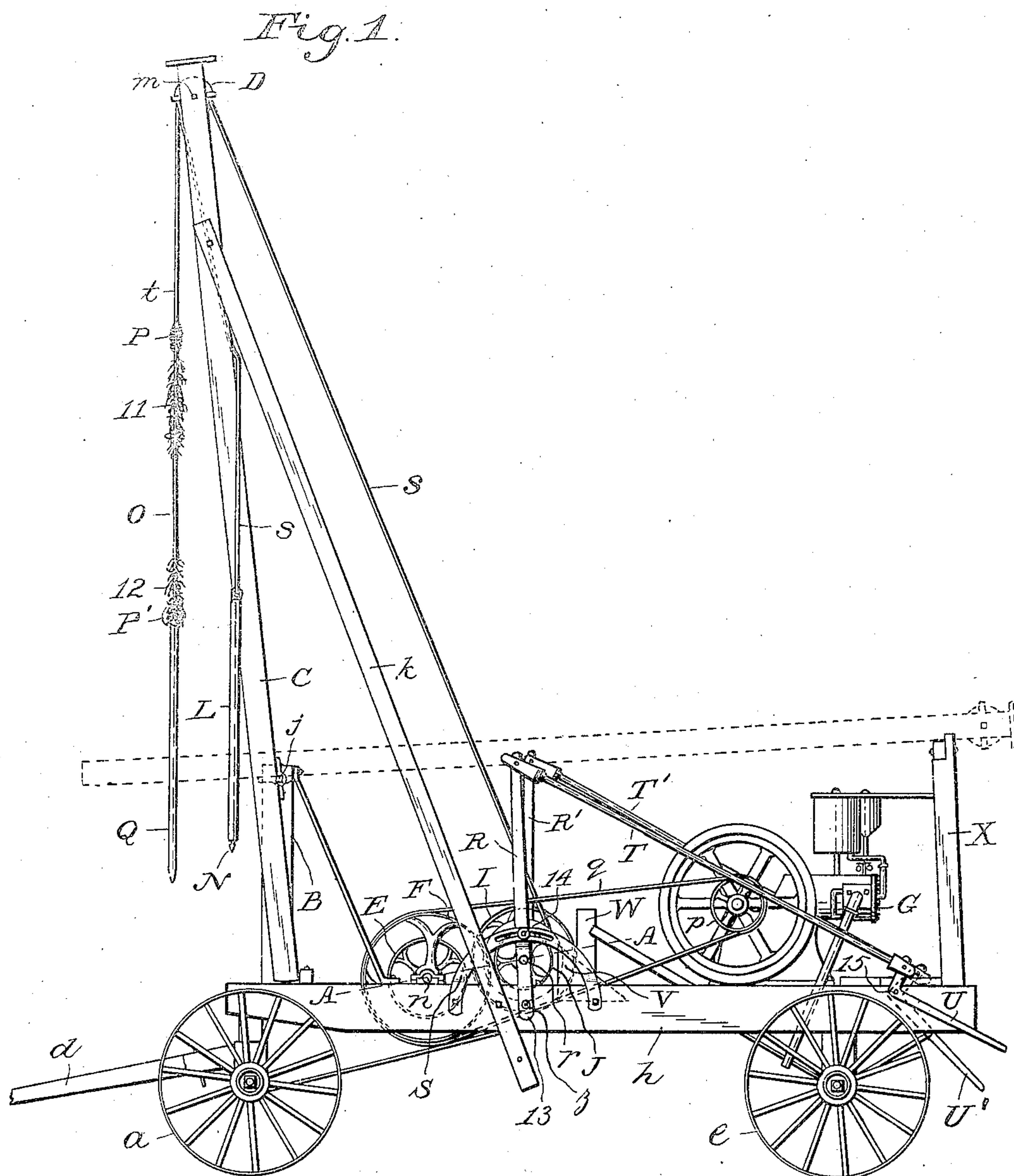
PATENTED FEB. 12, 1907.

W. D. VAN ARSDALE & D. R. SPEARMAN.

MACHINE FOR REVIVING GAS WELLS.

APPLICATION FILED APR. 28, 1906.

3 SHEETS—SHEET 1.



WITNESSES:

Louis Pitt.

Stella Snider

INVENTORS:

W. D. Van Arsdale,

D. R. Spearman,

BY

E. J. Silvers

ATTORNEY.

No. 844,060.

PATENTED FEB. 12, 1907.

W. D. VAN ARSDALE & D. R. SPEARMAN.
MACHINE FOR REVIVING GAS WELLS.

APPLICATION FILED APR. 28, 1906.

3 SHEETS—SHEET 2.

Fig. 2.

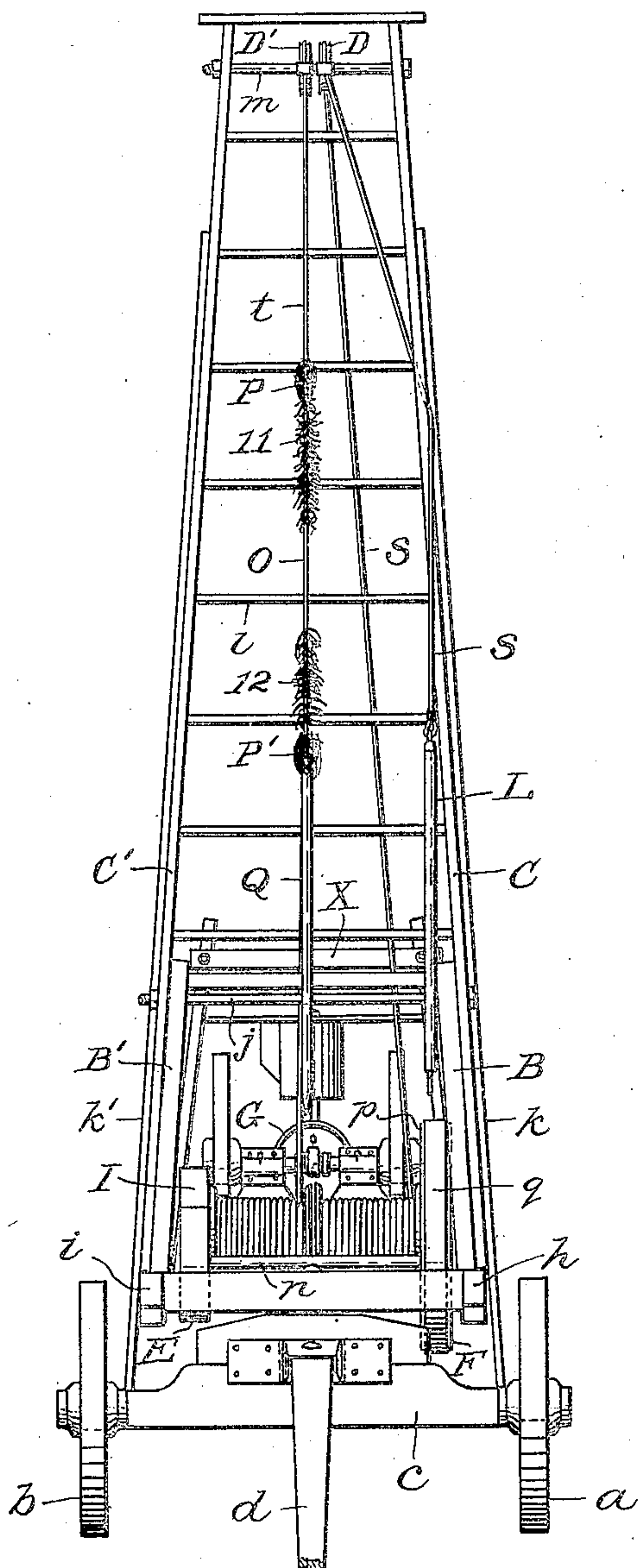
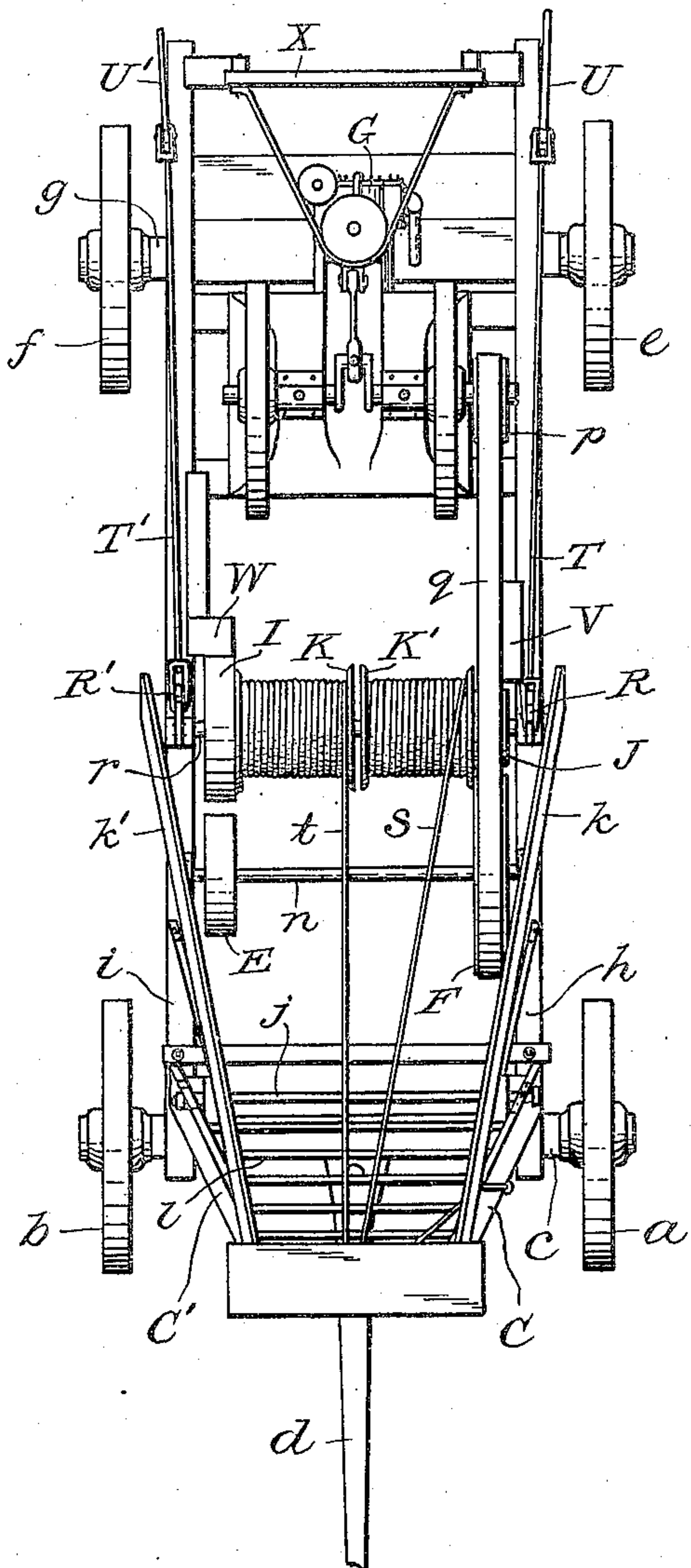


Fig. 3.



WITNESSES:

Louis Pitt.
Stella Snider.

INVENTORS:

W. D. Van Arsdale,
D. R. Spearman,
BY
E. J. Silvius,
ATTORNEY.

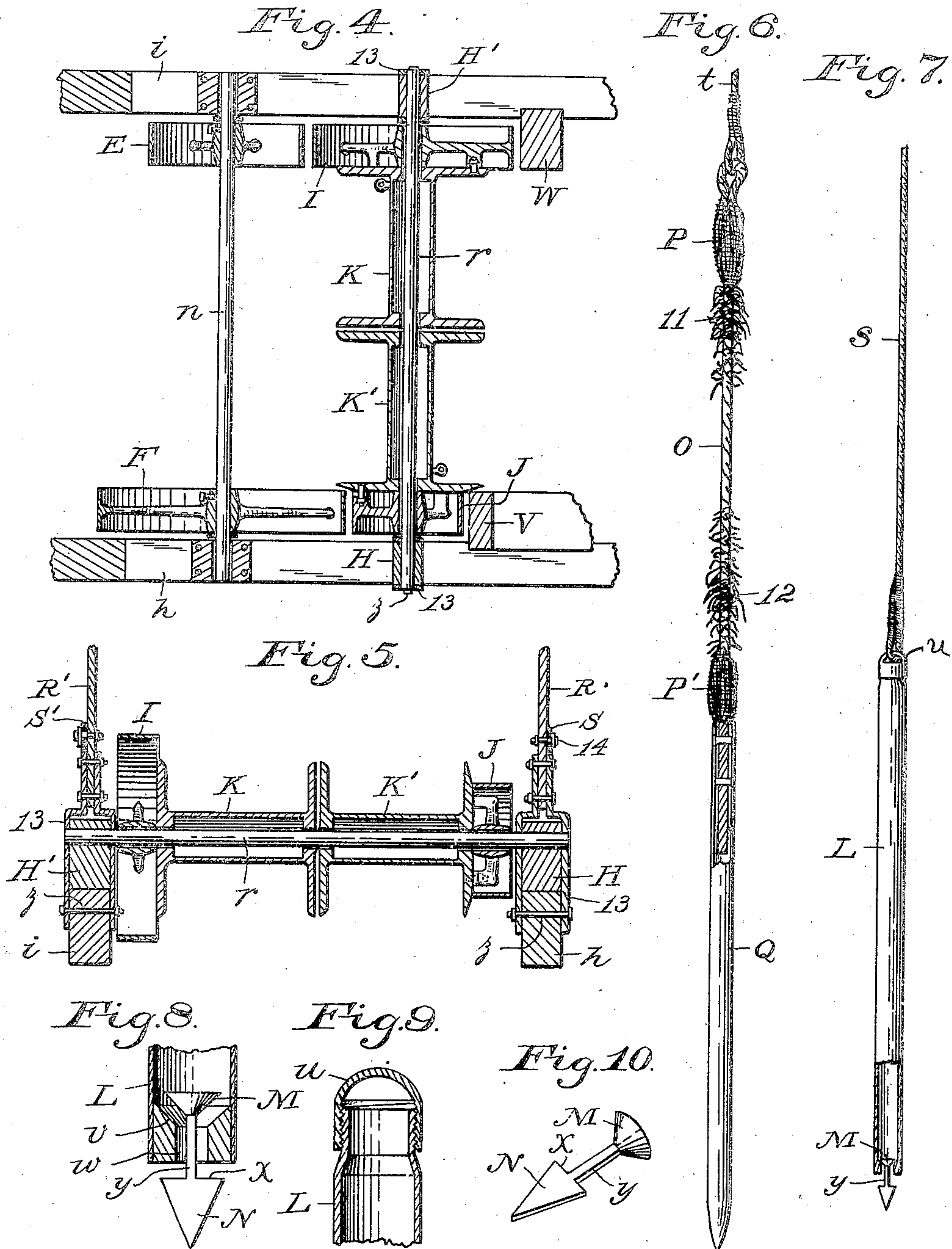
No. 844,060.

PATENTED FEB. 12, 1907.

W. D. VAN ARSDALE & D. R. SPEARMAN.
MACHINE FOR REVIVING GAS WELLS.

APPLICATION FILED APR. 28, 1906.

3 SHEETS—SHEET 3.



WITNESSES:

Louis Pitt.
Stella Snider

INVENTORS:

W. D. Van Arsdale,
D. R. Spearman,
BY E. T. Silvius,
ATTORNEY.

UNITED STATES PATENT OFFICE.

WILLIAM D. VAN ARSDALE AND DAVID R. SPEARMAN, OF PENDLETON,
INDIANA.

MACHINE FOR REVIVING GAS-WELLS.

No. 844,060.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed April 28, 1906. Serial No. 314,227.

To all whom it may concern:

Be it known that we, WILLIAM D. VAN ARSDALE and DAVID R. SPEARMAN, citizens of the United States, residing at Pendleton, in the county of Madison and State of Indiana, have invented new and useful Improvements in Machines for Reviving Gas-Wells; and we do declare the following to be a full, clear, and exact description of the invention; reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to means for reviving natural-gas wells that have become more or less exhausted and lack the pressure necessary to force the water and sandy matter out of the tubing thereof, resulting in the stoppage of the flow of gas, the invention having particular reference to portable machines and apparatus whereby the water may be drawn from the wells and whereby also the tubing may be swabbed and cleared of the coating of gummy substance which ordinarily is deposited therein by the flowing gas.

It is well known that many gas-wells have become useless on account of obstructions therein after the gas-pressure becomes low, although there may yet be considerable volumes of gas in the wells or in the sources of supply; and the object of the present invention is to provide convenient and portable means for reviving such wells at small cost and be adapted to cheaply reclean the wells at more or less frequent intervals, as occasion may require.

With the above-mentioned and minor objects in view the invention consists in a vehicle provided with a folding derrick, a winding drum and cable, an engine to operate the drum, a pump-bucket, and a swab; and the invention consists, further, in the parts and combinations and arrangements of parts, as hereinafter particularly described, and referred to in the claims.

Referring to the drawings, Figure 1 is a side elevation of the machine and apparatus; Fig. 2, a front elevation thereof; Fig. 3, a top plan thereof; Fig. 4, a fragmentary sectional view of the winding-drum gearing on the inclined plane of the line A A in Fig. 1; Fig. 5, a fragmentary transverse vertical sectional view of the main frame and drum-gearing at the drum-axis; Fig. 6, a side view, partly

broken away, of the swab; Fig. 7, a side view, partly broken away, of the pump-bucket; Fig. 8, a fragmentary sectional view showing the lower end and valve of the bucket; Fig. 9, a fragmentary sectional view showing the upper end of the bucket; and Fig. 10, a perspective view of the valve of the bucket.

Similar reference characters in the various figures of the drawings designate like elements or features of the invention.

In a practical embodiment the invention comprises a wagon-like vehicle having front wheels *a* and *b* on an axle *c*, provided with a suitable tongue *d*, rear wheels *e* and *f* on an axle *g*, and two side sills *h* and *i*, mounted on the axles and suitably braced and floored to form a main frame or body part of the vehicle. Two posts *B* and *B'*, forming base parts of a derrick, are securely fixed upon the forward end of the main frame and provided with a pivotal rod *j* at their upper ends, and two side pieces *C* and *C'*, comprising parts of a ladder-like folding part of the derrick, are supported pivotally somewhat near their lower ends on the rod *j* and provided with braces *k* and *k'*, that are bolted to their upper parts and also to the side sills of the main frame, there being rounds *l* attached to the side pieces *C* and *C'*. An axle *m*, on which two pulleys *D* and *D'* are mounted, is supported by the upper portions of the side pieces *C* and *C'*; but the pulleys may be otherwise hung to the top of the derrick, if preferred. When the side pieces *C* and *C'* are upright, their lower ends rest on the side sills *h* and *i* to partially relieve the rod *j* of strains.

A shaft *n* is mounted rotatively on the side sills *h* and *i* near the foot of the derrick and have two pulleys *E* and *F* secured there-to near the ends thereof. An explosive-engine *G*, having a drive-pulley *p*, is mounted on the rear part of the main frame or body of the vehicle, and a belt *q* connects the pulley *p* with the pulley *F* for driving the shaft *n*. A shaft *r* is supported in a pair of bearings *H* and *H'*, that are supported movably on the side sills *h* and *i*, a pulley *I* is mounted on the shaft *r* opposite to the pulley *E*, and a pulley *J* is mounted also on the shaft *r* opposite to the pulley *F*. A winding-drum *K* is mounted on the shaft *r* and is attached to the pulley *I*, and a winding-drum *K'* is mounted also on the shaft *r* and is attached to the pulley *J*. A cable *s* is connected to

the drum K' and extends over the pulley D, and a cable *t* is connected to the drum K and extends over the pulley D'.

A pump-bucket is attached to the cable *s* and comprises a hollow vessel L, composed of a long piece of pipe having a loop *u* on its upper end for connecting it to the cable, the upper end of the vessel being open and the lower end of the vessel being partially closed and provided with a valve-seat *v* therein and a central opening *w*. A valve M is arranged so as to operate on the seat and has a dart-shaped head N, with a shoulder *x* and connected to the valve by a stem *y*, extending through the opening *w*, the shoulder being adapted to engage the closure of the end of the vessel when the valve opens. The bucket is to operate in connection with the well-tubing.

A swab is attached to the cable *t* and comprises a rope O, having two swab-packings P and P' attached thereto, between which brushes 11 and 12 are formed on the rope, preferably of pieces of rope twine. A sinker Q is attached to the lower end of the rope O and forms part of the swab for drawing the other parts thereof down the well-tubing.

A lever R for moving the bearing H is mounted on the side sill *h*, and a lever R' for moving the bearing H' is mounted on the side sill *i*, the levers having forked ends 13, connected by pivots *z* to the side sills and also connected loosely to the shaft *r* and thereby to the bearings, so that either end of the shaft *r* may be moved slightly toward or away from the shaft *n* by its connected lever. A reach-rod T is connected to the lever R, and a reach-rod T' is connected to the lever R'. Quadrants S and S' are attached to the side sills and extend against the levers R and R', suitable binding-screws 14 being provided for clamping the levers to the quadrants when desired. Bell-crank levers U and U' are mounted on the rear parts of the side sills *h* and *i*, each by means of a pivot 15, and are connected, respectively, to the reach-rods. The handles of the levers U and U' extend rearwardly beyond the main frame, so that a man standing at the rear of the vehicle may reach either handle conveniently.

A brake-head V is secured fixedly on the side sill *h* opposite to the pulley J, and a brake-head W is secured fixedly to the side sill *i* opposite to the pulley I.

A prop X is supported uprightly on the rear end of the main frame for supporting the movable part of the derrick when folded down for convenience in moving the apparatus from place to place.

The construction above described affords the greatest facilities for rapid operations; but in some cases slight modifications may be made so that one lifting-cable only may be employed, in which case either the pump-

bucket or the swab would be connected to the cable and changed as occasion might require.

In practical use the machine may be drawn by animals or otherwise to a gas-well. The vehicle conveniently carrying gasoline or oil for the engine. The vehicle is to be placed with its forward end near the well. Then the derrick may be elevated and the shaft *r* set in mid-position, so that the pulleys thereon will not engage either the opposite pulleys or the brake-heads. Then the engine may be started and either the pump-bucket or the swab may be inserted in the well, as may be necessary. Usually water will be found in the well holding the gas down, so that pumping will first be necessary. If the lever U be manipulated, the pulley J may be forced against the pulley F and put in motion, the latter being driven by the belt *q*, so that the cable *s* would be partly wound on the drum K' to lift the pump-bucket to the desired height, after which the pulley J would be withdrawn from the pulley F to permit the bucket to descend of its own weight, and thus the bucket would move up and down in the tubing of the well until filled, after which the bucket should be drawn from the well and emptied. If the bucket should descend too rapidly, the pulley J should be drawn into engagement with the brake-head V to govern its speed. The swab may be operated in the well in a similar manner by manipulation of the lever U', the pulley I being forced into engagement either with the pulley E or the brake-head W, as occasion may require.

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

1. A portable machine including a wheeled vehicle having a shaft mounted rotatively thereon, a pulley secured to the shaft, an engine mounted on the vehicle and having a drive-pulley, a belt connecting the drive-pulley with the pulley of the rotative shaft, a pair of bearings mounted on the vehicle of which one of the bearings is movable and provided with a controlling-lever, a drum-shaft mounted in the bearings, a winding-drum and a pulley secured together and mounted on the drum-shaft with the pulley opposite to the pulley that is on the rotative shaft, a derrick on the vehicle having a pulley, and a cable connected to the drum and extending over the pulley of the derrick.

2. A machine including a frame having a drive-shaft mounted rotatively thereon and provided with two pulleys, one secured on either end part thereof, a pair of bearings mounted movably on the frame and provided with controlling-levers, a drum-shaft mounted in the pair of bearings, two winding-drums mounted rotatively on the drum-shaft and having each a pulley secured thereto opposite to either one of the pulleys of the drive-

shaft and means for securing the controlling-levers against movement thereof.

3. A machine including a frame having a drive-shaft mounted rotatively thereon and provided with two pulleys, one secured on either end part thereof, a pair of bearings mounted movably on the frame and provided with controlling-levers, a drum-shaft mounted in the pair of bearings, two winding-drums mounted rotatively on the drum-shaft and having each a pulley secured thereto opposite to either one of the pulleys of the drive-shaft, a derrick on the frame, two guide-pulleys mounted on the derrick, a cable connected to one of the drums and extending over one of the guide-pulleys, and a second cable connected to the other one of the drums and extending over the other one of the guide-pulleys.

4. A machine including a frame having a drive-shaft mounted rotatively thereon and provided with two pulleys, one secured on either end part thereof, a pair of bearings mounted movably on the frame and provided with controlling-levers, a drum-shaft mounted in the pair of bearings, two winding-drums mounted rotatively on the drum-shaft and having each a pulley secured thereto opposite to either one of the pulleys of the drive-shaft, a brake-head mounted fixedly on the frame opposite to one of the drum-pulleys, and a second brake-head mounted

fixedly on the frame opposite to the other one of the drum-pulleys.

5. A machine for reviving gas-wells, the same comprising a frame provided with carrying-wheels, a hinged derrick mounted on one end of the frame, an explosive-engine mounted on the opposite end of the frame and having a driving-pulley, a drive-shaft mounted rotatively on the frame in proximity to the derrick and having a pulley secured thereto, a pair of bearings mounted on the frame in a plane between the engine and the drive-shaft, one of the bearings being movable and provided with a controlling-lever, an operating-rod connected to the controlling-lever and extending approximately to the end of the frame on which the engine is mounted, a drum-shaft mounted in the pair of bearings, a drum and a pulley secured together on the drum-shaft with the pulley opposite to the pulley of the drive-shaft, and a belt extending from the driving-pulley of the engine beyond the drum-shaft to the pulley of the drive-shaft.

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

WILLIAM D. VAN ARSDALE.
DAVID R. SPEARMAN.

Witnesses:

R. F. THOMAS,
O. W. BROWN VOLT.