

No. 611,085.

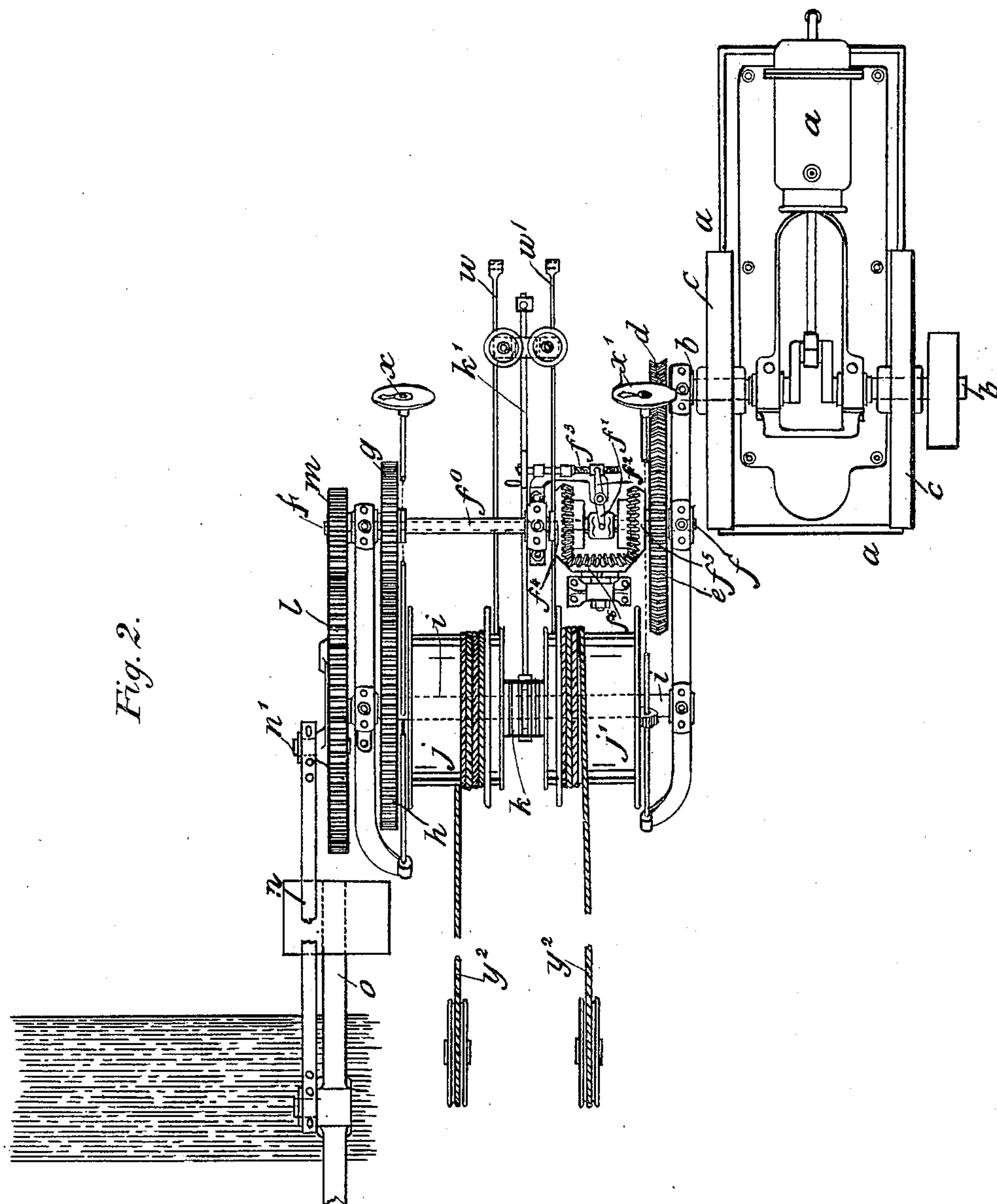
Patented Sept. 20, 1898.

J. SYMINGTON.
COMBINED PUMPING AND WINDING MACHINERY.

(Application filed Dec. 28, 1897.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN SYMINGTON, OF GLASGOW, SCOTLAND.

COMBINED PUMPING AND WINDING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 611,085, dated September 20, 1898.

Application filed December 28, 1897. Serial No. 663,908. (No model.) Patented in England February 27, 1897, No. 5,287.

To all whom it may concern:

Be it known that I, JOHN SYMINGTON, engineer, a subject of the Queen of Great Britain, residing at Glasgow, in the county of Lanark, Scotland, have invented certain new and useful Improvements in Combined Pumping and Winding Machinery, (for which Letters Patent have been obtained in Great Britain, No. 5,287, dated February 27, 1897,) of which the following is a specification.

This invention relates to machinery which combines together in a novel manner and as one apparatus special pumping-gear, winding-gear, and motive mechanism for driving the gears.

The combined apparatus is very suitable for use in gold and other mines where an economical winding and pumping plant is required.

In order that my said invention may be properly understood, I have hereunto appended explanatory drawings, whereon—

Figure 1 is a front elevation, and Fig. 2 a plan view, of one form of my combined apparatus.

In carrying out my invention I arrange, preferably at one side of the apparatus, an engine *a* of any well-known and suitable construction, which may be driven by steam, compressed air, gas, or other suitable and available pressure fluid. The engine *a* drives a primary shaft *b*, carrying, by preference, one or more fly-wheels *c* and also a helical pinion *d*, which drives a helical wheel *e*, fixed on an intermediate shaft *f*, having a common form of clutch reversing motion thereon consisting of the clutch *f'*, sliding on the shaft, the lever *f''* for operating the clutch, and the screwed spindle *f'''*, with hand-wheel for operating the lever, also the bevel gear-wheels *f⁴* *f⁵* and intermediate wheel *f⁶*. The reversing-clutch controls the direction of movement of the sleeve *f⁰*. The sleeve *f⁰* has a spur-pinion *g* on it, which drives a spur-wheel *h* on the winding-drum shaft *i*. The shaft *i* has, by preference, two drums *j j'* on it, and also a toothed or other clutch *k*, located between the drums and operated by the lever *k'* for throwing the drums into and out of gear.

w w' are the usual brake-levers for the winding-drums. A loose spur-wheel *l* on the winding-drum shaft *i* is driven by a spur-pinion *m* on the second motion shaft *f*. The spur-

wheel *l*, which acts as a crank, operates by means of the crank-pin *n'* the connecting-rod *n* and bell-crank *o* of the pumping machinery.

x x' are the drum-indicators.

The top section of the hollow pump-rods is connected to a chamber *u'*, into which is fitted a swiveling delivery-pipe *u²*, resting upon a roller *u³*. The chamber *u'* is jointed to the bell-crank *o*. The movements of the bell-crank *o* raise and lower the hollow pump-rods *u*. The cage (not shown) is suspended by the rope *y²*.

The mechanism is so arranged and proportioned that shafts *i*, *b*, and *f* are driven at the desired speeds. By disconnecting the rod *n* from the crank-pin the rest of the apparatus may be used for winding only.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a combined pumping and winding mechanism, the combination of an engine or motor, a shaft driven thereby, means operated by the shaft to work a pump, winding-drums driven from said shaft, and means for reversing rotation of the drums without reversing the pump.

2. The combination of an engine, a shaft *f* driven thereby in one direction, a crank-wheel *l*, pinion *m*, a pump, a pump-operating rod *n*, connected to the crank-wheel, a shaft *i*, a drum *j*, gear *h* thereon, a sleeve on shaft *f*, a pinion thereon in mesh with gear *h*, and means for reversing the sleeve and said drum without reversing the crank-wheel.

3. The combination of an engine, a shaft *f* driven thereby in one direction, a crank-wheel *l* and pinion *m*, a pump, a pump-operating rod connected to the crank-wheel, a shaft *i*, a gear *h* fixed to shaft *i*, two drums *j j'* on shaft *i*, means for connecting the drums to and disconnecting them from said shaft, a sleeve on shaft *f*, a pinion thereon in mesh with gear *h*, and means for reversing the sleeve and said drum without reversing shaft *f* and the crank-wheel.

Signed at Glasgow, Scotland, this 17th day of December, A. D. 1897.

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Witnesses:

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