

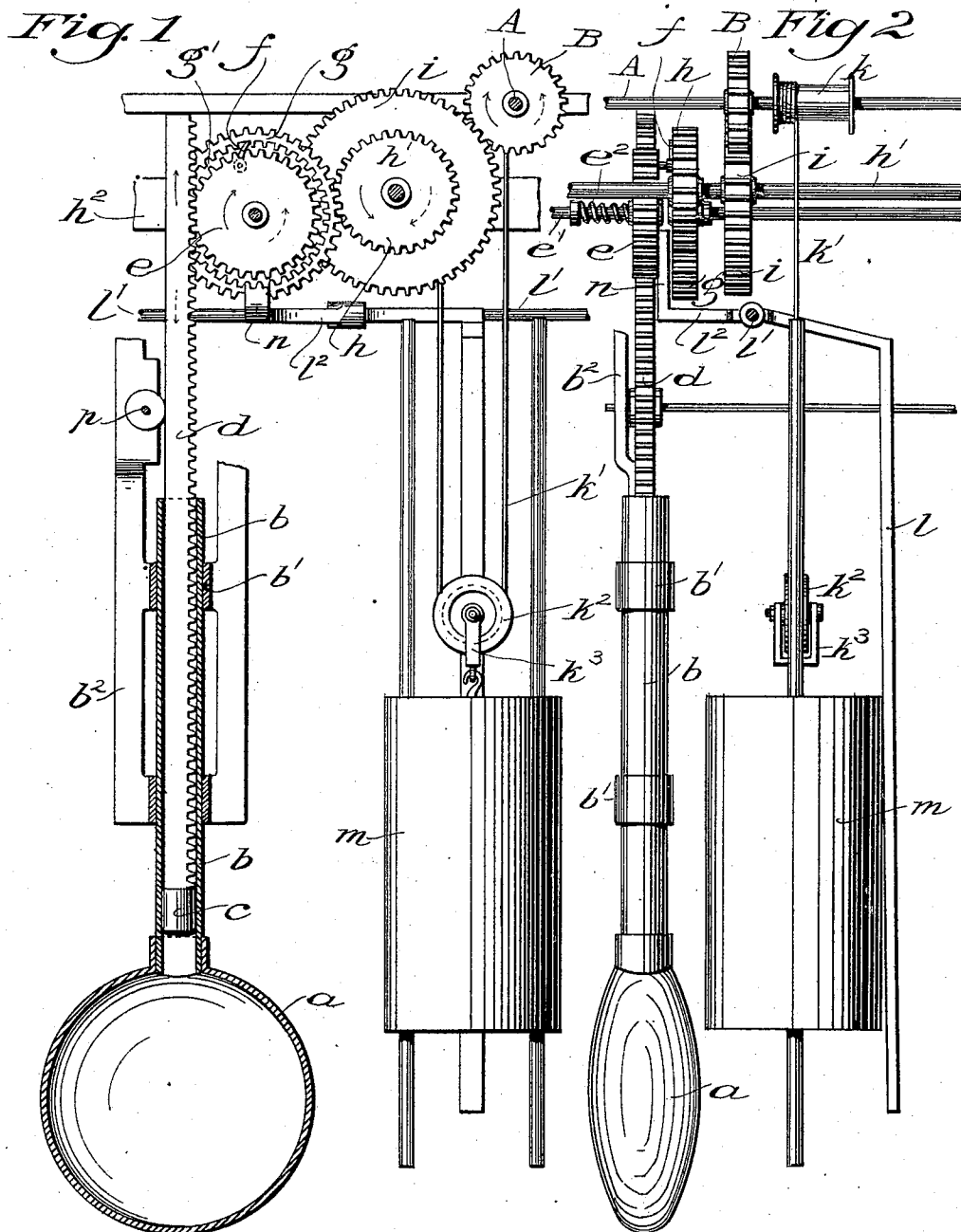
(No Model.)

A. ULLI.

THERMAL WINDING MECHANISM FOR CLOCKS.

No. 576,830.

Patented Feb. 9, 1897.



Witnesses:-

O. Kumpfer

C. H. Gabels

Inventor:-

Albrecht Ulli

By his Atty:- *A. E. Michelt*

UNITED STATES PATENT OFFICE.

ALBRECHT ULLI, OF BIEL, SWITZERLAND.

THERMAL WINDING MECHANISM FOR CLOCKS.

SPECIFICATION forming part of Letters Patent No. 576,830, dated February 9, 1897.

Application filed October 6, 1896. Serial No. 608,032. (No model.)

To all whom it may concern:

Be it known that I, ALBRECHT ULLI, clock-maker, a citizen of Switzerland, and a resident of Biel, in the canton of Bern, Switzerland, have invented certain new and useful Improvements in Automatic Devices for Winding Clocks, of which the following is a specification.

The object of my invention is to provide a clock-winding device which will be simple in its construction and which will be operated by the changes of temperature to lift the weights which give motion to the wheel-train of the clock mechanism.

The improvement consists, broadly, in a rock and plunger connected with a system of gear-wheels connected with the weight-drum and a plunger connected with the said rack and moved in a cylinder by the expansion and contraction of a column of mercury. Certain details of construction comprising mechanism thus operated also constitute a part of my invention.

In the accompanying drawings, Figure 1 is a side elevation, partly in section; and Fig. 2, an elevation shown at right angles to that of Fig. 1, illustrating my improved clock-winding mechanism.

The mechanism employed by me is secured in the clock-case and is connected to the arbor A of a winding-drum *k* by means of a gear-wheel B, keyed to the said arbor. A cord *k'*, secured at one end to the drum *k* and at the other end to a fixed part of the clock-case, supports a pulley *k*², connected by a swivel-block *k*³ with a weight *m*, and the said weight serving to unwind the cord *k'* from the drum and drive the arbor which operates the clock-train in the ordinary manner.

The gear-wheel B is driven to rotate the arbor A by means of a spur-gear *i* and reducing-gear *h* upon a shaft *h'*, also supported in bearing-plates *h*² of the clock-case, and the wheel *h* gears with and is driven by a double-rim gear *g*, the inner cogs *g'* of which engage with the pawl *f* of a spur-gear *e*, adapted to slide on a shaft *e'* to engage with or be disengaged from a rack-bar *d*, which moves vertically in guides upon the clock-case and in its upward movement drives the said gear-wheels in the direction of the arrows to wind the weight-cord upon the drum.

The rack-bar *d* is held to bear against the teeth of the wheel *e* by a roller *p*, supported in a metal frame *b*², secured to the clock-case, and the said frame *b*² is provided with bearings *b'*, which support truly in a vertical position a tube or cylinder *b*, into which freely slides the lower end of the rack-bar. A piston *c* upon the lower end of said rack-bar snugly fits the cylinder *b*, and a hollow bulb *a* upon the lower end of said cylinder is filled with mercury and communicates with the interior of said tube in such manner that a mercurial column will rise and fall therein and move the piston *c* of the rack-bar upwardly or allow it to descend therein by gravity, and thus in its upward movement rotate the wheel *e* in the direction of the full-line arrow and in its downward movement rotate said wheel in the direction of the dot-line arrow to thus cause the intermittent rotation of the train of gear-wheels hereinbefore described to wind the drum upon the arbor A and retain the clock-weight *m* in its raised position. Should the said weight *m* be lifted beyond its working or required height, it will act to disengage the gear-wheel *e* from the rack-bar *d*, and thus allow the clock-weight to descend freely without being acted upon by the train of gear-wheels by means of a gear-shifting lever *l*², pivoted at *l'* to the clock-case and provided with an upwardly-bent arm *n*, which bears against the face of the gear-wheel *e* and causes it to slide upon its shaft and become disengaged from the rack-bar *d*, as described. A coiled spring *e*² in the shaft *e'* of the wheel *e* presses against the opposite side of the gear-wheel *e* and causes it to reengage with the rack *d* when pressure of the lever-arm *n* is released by the downward movement of the clock-weight.

The rise and fall of the column of mercury within the tube will thus act continually to keep the weight in its raised position, while the latter will exert a constant pull upon the train of gears which drive the clock.

A plurality of weights and gearing may be employed to insure continuous action, if desired.

I claim as my invention and desire to secure by Letters Patent—

The combination with the weight-winding drum and gear-wheels, one of which is adapted

to slide upon its arbor, a rack-bar to engage
with and disengage from said sliding gear-
wheel, a cylinder and mercurial column to
operate said rack-bar and a shifting lever piv-
5 oted to the gear-case and operated upon by
the weight to free the gear-train from the ac-
tion of the rack-bar and mercury column,
substantially as described.

In testimony that I claim the foregoing as
my invention I have signed my name in pres- 10
ence of two subscribing witnesses.

ALBRECHT ULLI.

Witnesses:

JOH. FRID. ALCHENBERGER,
NUSLAUS TSCHANNER.