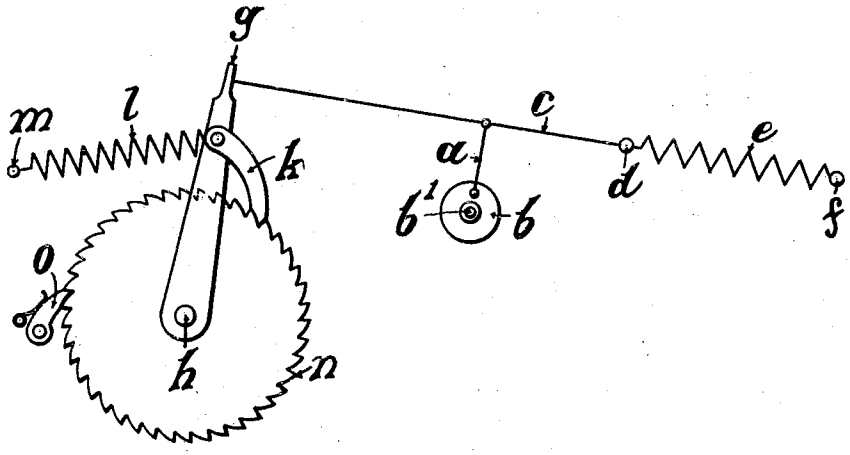
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CONTINUOUS CLOCK WINDER AND OVERWIND PREVENTER

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Inventor:-
Karl Heinrich Meier
By His Attorney:-
J. O'Connell

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UNITED STATES PATENT OFFICE

KARL HEINRICH MEIER, OF ZURICH, SWITZERLAND, ASSIGNOR OF ONE-HALF TO WALTER HUSSEY, OF AARBURG, SWITZERLAND

CONTINUOUS CLOCK WINDER AND OVERWIND PREVENTER

Application filed February 16, 1928, Serial No. 254,862, and in Switzerland February 22, 1927.

This invention relates to clocks, watches and analogous mechanisms which are actuated by a mainspring which normally requires winding up from time to time, and which mechanisms will be hereinafter referred to for convenience as clocks. The object of the invention is a means for maintaining the clock spring in the wound up condition without personal attention in places where mechanical power may be applied for the winding up of the spring, and my invention contemplates further the provision of an overwind preventer which will not necessitate the declutching of the power applied for winding up the clock spring when the latter is wound up to the desired extent.

With these objects in view there are provided in combination a member for winding up the spring, a continuously moving mechanism to operate such member and a spring which presents a greater resistance to tension than that presented by the clock spring to winding up and which will thus consume the power of the continuously moving mechanism when the spring winding member can no longer receive it, owing to the full winding up to the desired extent of the clock spring having taken place. The continuously moving member operates upon a rod connecting the clock spring winding up member and the strong spring referred to, for the purpose of vibrating the said rod.

Such a combination for the purposes stated may take various mechanical forms and a suitable arrangement will now be described, reference being had to the accompanying drawing which shows, diagrammatically, the arrangement of the parts.

In the drawing, a is a reciprocating member which is reciprocated by the disc b fitted on the spindle $b1$. At its upper end the member a is secured to a rod, wire, or the like c which has secured to it at d the spring e anchored at a fixed point f. The other end of member c is secured by any convenient means in the extremity of a lever g fulcrumed on a shaft h which is central of a clock spring housing which may be of the usual and well known form and is therefore not shown. Pivoted to the lever g is the pawl k, and a spring l anchored at a fixed point m serves to return the lever g in its back position. The pawl k engages in the teeth of a ratchet wheel n which is borne on the shaft h, movement of the lever g serving, through the engagement of pawl k and the ratchet teeth of n, to wind up the clock spring. A detent pawl o is provided to prevent back rotation of the ratchet wheel n after it has been advanced by the movement of lever g through pawl k.

The shaft $b1$ and its disc b are continuously rotated in any convenient manner. In an automobile for instance, means equivalent to those employed in operating a speedometer may be adopted to ensure this rotation at a desired speed and with desired power, to operate a clock placed upon the dash board or elsewhere on the vehicle. Such means form no part of my invention. Rotation of the disc b causes reciprocating movement of a and as a result a pull and push are exerted upon the member c to vibrate the latter. The strength of the spring e, that is to say its resistance to extension, is such that when the clock spring is not fully wound up to the desired extent, d acts as a fixed point, and any power applied by a to c therefore acts upon the lever g to draw it forward and thus move the ratchet wheel n to wind up the clock spring, the spring l serving to return the lever g as the pull on the latter is released, in readiness for the next winding up reciprocation of the lever. On the clock spring being wound up to the desired extent, thus offering a resistance, which is greater than the resistance of the spring e to extension, the power exerted by the reciprocating member a serves merely to extend and allow to relax the said spring e.

By this provision of the lever g and its pawl k and the ratchet wheel n as winding up mechanism for the clock spring, with the member a as continuously moving driving mechanism, and the provision of e as a yieldable element incorporated with the lever g, continued rotation of the disc b after the clock spring is wound up to the desired extent has no effect on the clock spring, the

power applied being consumed by the yieldable element, otherwise the spring *e*.

I claim:—

In a clock spring winder and overwind preventer, a fulcrumed lever, a pawl borne by the lever, a ratchet wheel engaged by such pawl and connected with the clock spring for the winding thereof, a tension spring having greater resistance to extension than the resistance presented by the clock spring to winding up, a vibratory rod connecting the lever and tension spring, and a reciprocating member connected to the said rod to impart continuous vibratory motion thereto.

In testimony whereof I have hereunto set my hand.

KARL HEINRICH MEIER.