April 15, 1930. T. A. EAST 1,754,786

WINCH

Filed Oct. 29, 1924

Fig.1

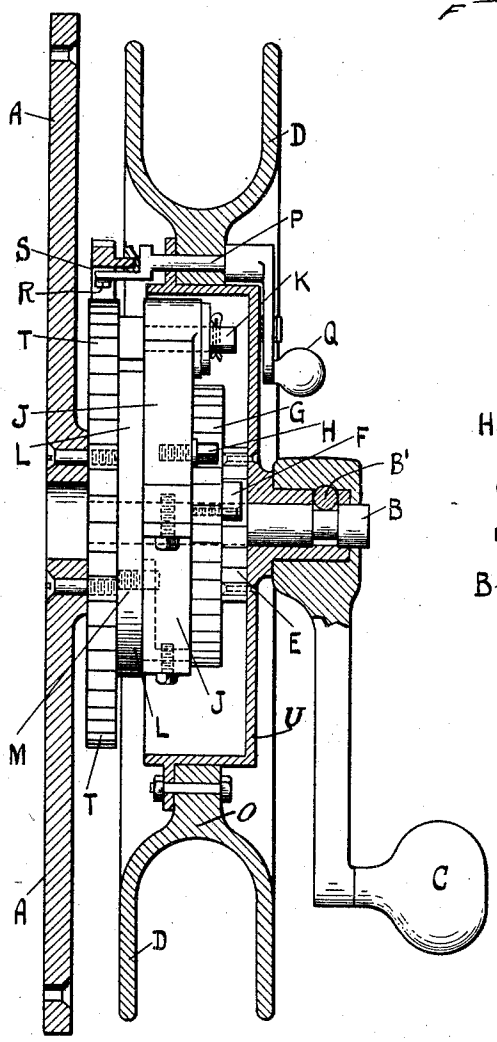


Fig.2.

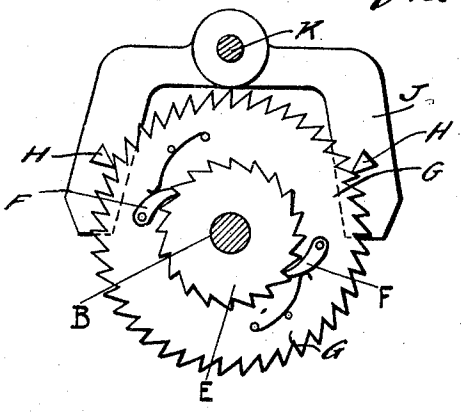


Fig.3

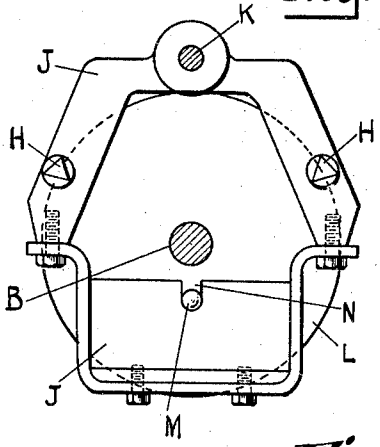
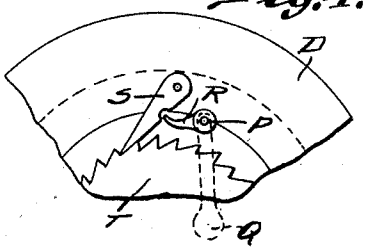


Fig.4.



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UNITED STATES PATENT OFFICE

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WINCH

Application filed October 29, 1924, Serial No. 746,465, and in Great Britain October 30, 1923.

This invention relates to winches especially those used on aircraft for winding up a wireless aerial.

It is usual to attach to the free end of such an aerial a weight which will tend to unwind the aerial from the winch drum on which it is carried, but unless some means is provided for preventing too rapid rotation of the drum there is danger of the wire snapping at the moment when it becomes fully unwound.

The primary object of this invention is to provide improved means for preventing such unduly rapid rotation of a winch used for carrying the aerial of an aircraft but it is obvious that a winch provided with these means may be used for other purposes.

Another object of this invention is to provide means for preventing rotation of the winch in the opposite direction when being wound up if the operator should accidentally lose his grip upon the winding handle.

According to this invention I provide a winch drum with an escapement mechanism consisting of a ratchet wheel fast with the drum and meshing with pawls pivoted on an escape wheel with which engage pallet pins carried on a rocker which is itself mounted on a fixed pivot and is connected to an oscillator free to oscillate through a small angle about the axis of the drum. When the winch drum is being rotated to wind up the load the ratchet wheel runs idly past the pawls and the escapement mechanism does not come into action. When, however, the load is running out the ratchet wheel engages the pawls and the speed of the drum is checked by the escapement mechanism.

Fig. 1 is a vertical section of an embodiment of my invention.

Fig. 2 shows a detail of the escapement wheel and ratchet.

Fig. 3 shows a detail of the rocker arm and oscillator.

Fig. 4 is a detail view of a portion of the drum and ratchet wheel showing the holding pawl and its releasing means. An embodiment of my invention is disclosed in the drawings.

A is a frame by which the winch can be secured to any other object as desired and which has journalled in it a spindle B provided with a handle C and carrying the drum D. A bearing B′ for the handle C is provided in a groove formed in spindle B. Fast with the drum is a ratchet wheel E meshing with pawls F pivoted on an escape wheel G with which engage pallet pins H carried by a rocker J which is itself mounted on a fixed pivot K. Rocker J is connected to an oscillator L free to oscillate through a small angle about the axis of the drum and having projecting from it a pin M which engages a slot N in the rocker J. When the winch drum is being rotated to wind up the load the ratchet wheel E runs idly past the pawls F and the escapement mechanism does not come into action; when, however, the load is running out the ratchet wheel E engages the pawls F and the speed of the drum is checked owing to the teeth on G engaging with the pallet pins H, H, alternately. The drum D is comprised of two portions as shown, the inner portion which is attached to shaft B being in the form of a hollow hub portion U, to which the outer, cable carrying portion O is attached. By so forming the drum, I am enabled to mount the escapement mechanism and oscillator L within it or, in other words, the drum serves as a housing for the escapement. By this construction a very compact unit is secured which takes up but little space in an airplane.

Journalled in the drum is a spindle P provided with a handle Q. On the end of the spindle is a finger R by which a pawl S pivoted to the drum can be lifted out of engagement with ratchet wheel T fixed to frame A. When the load is being run out the pawl S is lifted out of engagement but when the load is being wound up this pawl runs idly over the wheel T, so that should the operator let go the handle C, backward movement of the drum would be prevented owing to the pawl S engaging one of the teeth of the wheel T.

Having described my invention what I claim is:—

1. In a winch, the combination of a frame, a spindle, and a drum mounted thereon, with an escapement movement actuated by the said

drum, comprising an escapement wheel, a rocker arm and pallet pins mounted thereon, and an oscillator connected to said rocker arm, a ratchet carried by said drum and pawls carried by said escapement wheel for causing said escapement movement to become inoperative upon rotation of said drum in one direction, a second ratchet mounted upon said frame, a second pawl carried by the said drum and means for causing said latter ratchet and pawl to become inoperative at will.

2. In a winch, the combination of a drum, means for rotating the drum in one direction, an escapement wheel, means connecting said wheel and drum upon rotation of the drum in the opposite direction and a rocker arm having pallet pins cooperating with said wheel, said drum being formed to house said escapement wheel and rocker arm.

3. In a winch, the combination of a drum, an escapement wheel connected for rotation with said drum, a rocker having pallet pins cooperating with said wheel and an oscillator operatively connected to said rocker, said drum, wheel and oscillator being co-axially mounted.

4. In a winch, the combination of a drum, an escapement wheel rotated thereby, a shaft upon which said drum and escapement wheel are mounted to rotate, a rocker arm having means cooperating with said wheel to control the rotation thereof, an oscillator and a pin and slot connection between said rocker arm and oscillator.

5. In a winch, the combination of a drum, a pawl and ratchet device adapted to prevent rotation of said drum in one direction, a control handle and additional means associated therewith for rendering said pawl and ratchet device inoperative, and an escapement device actuated by said drum to control its rotation upon the application of a load rotating it in said direction.

6. In a device of the class described, a drum, a stationary ratchet wheel adjacent said drum, a pawl carried by said drum engaging said ratchet to prevent rotation of the drum in one direction, a control handle and additional means operated by said handle and adapted to disengage said pawl from said ratchet.

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