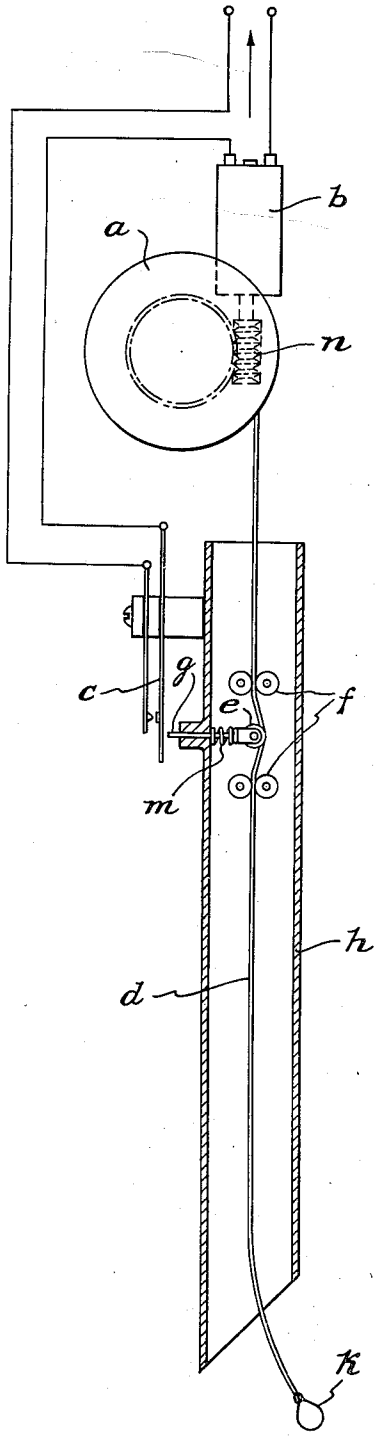
Jan. 23, 1940. H. SCHRÖDER 2,188,062

ANTENNA WINCH

Filed March 22, 1938



Inventor
Heinrich Schröder

By

Attorney

Patented Jan. 23, 1940

2,188,062

UNITED STATES PATENT OFFICE

2,188,062

ANTENNA WINCH

Heinrich Schröder, Berlin-Waidmannslust, Germany, assignor to Telefunken Gesellschaft für Drahtlose Telegraphie m. b. H., Berlin, Germany, a corporation of Germany

Application March 22, 1938, Serial No. 197,338
In Germany March 17, 1937

6 Claims. (Cl. 250—33)

The use of the so-called trailing wire antenna is known in aviation. In order that the antenna may be always kept in a taut or tensioned state, there is attached to the end thereof either a wind bag or a weight known as a "fish." It may happen that the antenna wire or strand which is paid out by the drive motor through an antenna winch gets into the drive mechanism of the motor, and this is liable to cause mechanical destruction or damage. In other words, the working safety of the trailing antennae used in the past is comparatively low.

The present invention discloses ways and means whereby the drive mechanism for the antenna winch is rendered inoperative whenever the antenna wire is subject to too little tension. In an exemplified embodiment, a switch *c* is included in the circuit of an electric motor *b* driving the antenna winch *a*, which is subject to control or operating action by a movable guide pulley or roller *e* traveling on the tensioned antenna wire *d*. The said guide pulley *e* is arranged to shift or roll on a length or piece of the antenna wire guided by two pairs of guide rollers *f*, and it is fitted with a rod *g* adapted to actuate the switch *c*. The guide pulley *e* with the rod *g* is accommodated inside the fairlead or shaft *h* which contains also the antenna wire *d*. If, then, the tension set up in the antenna wire *d*, which has attached to its lower end a wind bag or a weight or "fish" *k*, becomes slack, the result is that the portion of the antenna wire confined between the guide rollers *f* will likewise become slack; and as a consequence the spring *m* will cause the pulley *e* to be pressed down. When this happens, the circuit of the drive motor *b* which was closed by the agency of the switch *c* will be broken, with the result that the driving motor is disconnected. Re-closing of the switch *c* will be produced only after the antenna wire has been tautened again so that the pulley against the pressure exerted by the spring *m* is pressed upwardly. The reconnected motor *b*, through the worm *n*, will then drive the worm wheel and thereby the antenna winch *a* so that the antenna wire *d*, subject to the tractive effort exerted by the air bag or fish *k* will be stretched and tensioned again.

Of course, it is feasible to work the entire safety switch gear mechanically. In this case, the guide pulley *e* running on the tensioned antenna strand or wire may be in rigid mechanical connection with a slip coupling or clutch associated with the driving mechanism. Most suited for this purpose would be a friction clutch which is rendered operative only when the trailing antenna wire is tautened or tensioned. If the tension of the trailing wire is relaxed, then also the clutch for the antenna winch will be disconnected or disengaged. This operation could be combined with mechanical brake action brought upon the winch. It will be understood that also a positively acting mechanical coupling is feasible which would be engaged and disengaged as a function of the tension acting in the trailing wire of the antenna.

I claim as my invention:

1. An antenna winch for aircraft including in combination a reel for antenna wire, a fairlead for said wire, means for guiding said wire within said fairlead, means tensioning said wire against said guiding means, a motor for driving said reel, a switch for said motor, means connecting said switch and said tensioning means for controlling said motor as a function of said tensioning, and a weight for applying tension to the free end of said wire.

2. An antenna winch for aircraft including in combination a reel for antenna wire, a fairlead for said wire, pairs of rollers for guiding said wire within said fairlead, a guide pulley for tensioning said wire with respect to said rollers, an electric motor for said reel, a switch controlling said motor, means connecting said switch and guide pulley for controlling the operation of said motor as a function of the tension of said wire, and a windbag for applying tension to the free end of said wire.

3. An aircraft antenna winch including a motor driven antenna wire reel, a switch for controlling said motor, a fairlead for said wire, a pair of rollers mounted within said fairlead for guiding said wire, a guide pulley interposed between said rollers and engaging said wire, means connecting said pulley and said switch whereby the switch is acted upon by the tension applied to said wire, and means external to said fairlead connected to the free end of the wire for tensioning said wire.

4. An aircraft antenna winch including an antenna reel for antenna wire, means for controlling the operation of said reel, a pair of guides for said wire, means interposed between said pair of guides and engaging said wire so that the tension of said wire moves said interposed means inwardly and outwardly, means responsive to the movements of said interposed means connecting said responsive means and said controlling means whereby slack in the wire prevents operation of the reel and tension of the wire permits operation

of the reel, and a load for tensioning the free end of said wire.

5. An automatic antenna cable winch comprising an electric motor arranged for rotation of said winch, guide means for said cable, an electrical circuit with contact means for said motor, said contact means being located adjacent said guide means, a roller in frictional engagement with said cable, means secured to said roller to render said winch inoperative when tension on said antenna cable is lacking, and means comprising a gear and a worm gear coupled to said motor to control the rotation of said winch by said motor when tension is present on said cable.

6. An automatic antenna cable winch comprising an electric motor arranged for rotation of said winch, guide means for said cable comprising a tube, an electrical circuit having contact means for said motor located on the outside of said tube, a roller in frictional engagement with said cable, means secured to said roller to render said winch inoperative when tension on said antenna cable is lacking, and means to control the rotation of said winch by said motor when tension is present on said cable.

HEINRICH SCHRÖDER.