May 30, 1939. E. J. J. HENRIKSEN 2,160,734

SELF-WINDING RECORDING DEVICE

Filed Aug. 4, 1937

Fig. 1.

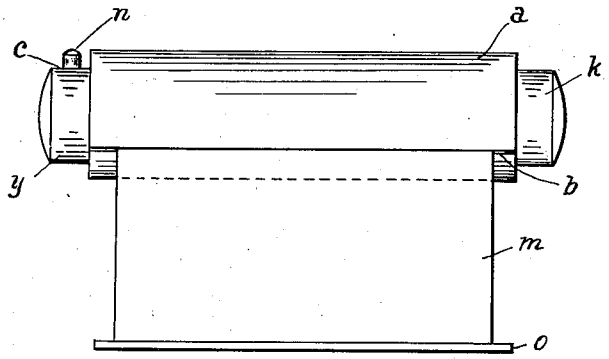


Fig. 2

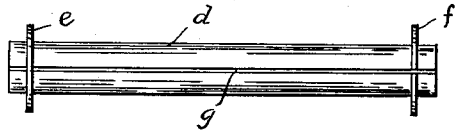


Fig. 4.

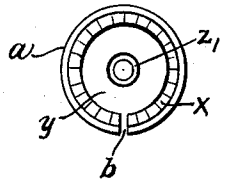
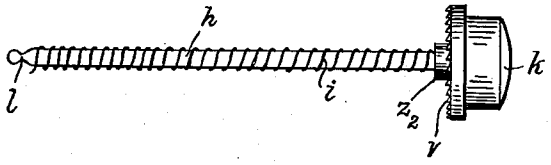


Fig. 3.



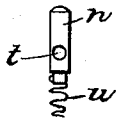


Fig. 5

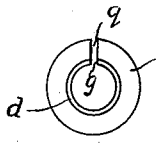


Fig. 6.

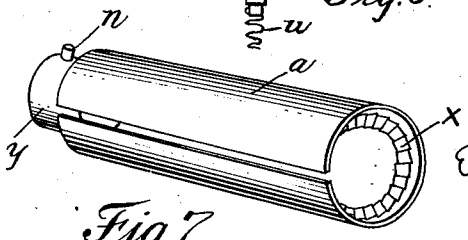


Fig. 7.

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SELF-WINDING RECORDING DEVICE

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Application August 4, 1937, Serial No. 157,451
In Denmark August 10, 1936

1 Claim. (Cl. 242—98)

The present invention relates to improvements in self-winding recording devices of the kind in which a spring-actuated rotatable spool for a recording strip is carried by a shaft disposed within a casing.

In self-winding recording devices of this kind as hitherto known the spool on which the recording strip is wound can not be removed from the casing without disassembling the latter, and accordingly the exchange of one recording strip with another requires considerable work and skill, and likewise necessitates the employment of tools.

The object of the present invention is to avoid these inconveniences, and at the same time construct a recording device in which the changing of one recording strip with another is easily and quickly carried out without the necessity of disassembling the casing or employing any tools whatever, and at the same time provide a more simple and robust apparatus in comparison to those hitherto known.

The invention is mainly characterized by the shaft carrying the spring-actuated spool being provided with a cap that closes one end of the cylindrical casing, and by means of which the spring that actuates the spool may be tightened. At the opposite end of the shaft there is formed a conical recess that registers with a radial hole in a spring-actuated push button slidably disposed in a radial hole in the casing. There are thus provided means for displacing the cap inwardly to the effect of causing ratchet teeth formed on the inner surface of the cap and on the adjacent edge of the casing to mesh, thus arresting the rotation of the shaft in relation to the spool, and accordingly preventing the tightened spring from becoming released. A further object of the invention is the provision of a slit in the casing, which slit extends to the one edge of the casing, so that upon depression of the push button for releasing the spool and its shaft, these members and the recording strip may be drawn out of the casing as a unit and in a single operation.

The spool on which the strip is wound may be formed as a tube, on which the recording strip is guided between two annular discs, and a further object of the invention is to provide one of these discs with a radial slit in alignment with the slit in the spool.

One manner of constructing the device according to the invention is illustrated in the accompanying drawing, in which

Fig. 1 is a front elevation of a recording device according to the invention with the recording strip partly extracted.

Fig. 2 a front view of the spool on which the recording strip is to be wound,

Fig. 3 a side view of the spool carrying shaft with cap and helical spring,

Fig. 4 an end view of the casing with cap removed,

Fig. 5 the spring-actuated push button that serves to hold the shaft when inserted within the casing,

Fig. 6 an end view of the spool with a slitted guiding disc, and

Fig. 7 is a perspective view of the casing.

Referring to Fig. 1 of the drawing *a* indicates a cylindrical casing open at one end provided with a longitudinal slit *b* extending to one end of the casing, and through which a recording strip *m* of paper or linen or the ilke may be extracted. At one end the casing has a radially disposed boring *c* for a push-button *n*, see Fig. 5, that is actuated upwardly by a coil spring *u*. To the front edge of the recording strip *m* there is attached a bar *o* of a thickness that exceeds the width of the slit *b*, and which serves partly as a grip for extracting the recording strip from the casing, and partly to prevent the strip from being drawn into the casing.

Within the casing *a* there is disposed a detachable rotatable spool *d* provided with a longitudinal slit *g* in which the inner end of the recording strip is to be inserted, and within each end of the spool there are guiding members in the shape of annular discs *e* and *f*, between which the strip *m* is guided.

The spool *d* is carried by a shaft *h*, Fig. 3, that has a cap *k* fixed to one of its ends. Encircling the shaft is a helical spring *i*, one end of which is connected to the shaft, the other end being connected to the spool *d*. The end of the shaft opposite that carrying the cap *k* has a conical recess *l* which enters a radially disposed hole *t* in the push-button *n* when the shaft is inserted into the casing. The inner surface of the cap *k* is provided with ratchet teeth *v* that coact with correspondingly formed ratchet teeth *x* formed on one edge of the casing *a* as shown in Fig. 4. The shaft *h* carries at the end to which the cap is affixed a bush z_2 that serves to support one end of the spool *d*; the other end of the spool fits over a tubular projection carried by the end *y* of the casing, and is supported by that projection. The end of the shaft *h* which has a conical recess *l* passes through the tubular projection.

In assembling the various parts of the device the recording strip is inserted in the slit *g* in the spool *d*, whereupon the shaft is inserted into the spool until the latter embraces the bush z_2, and the spring *i* is then hooked in the slit in the spool. The shaft is inserted until the conical recess *l* lies in the hole *t* in the push-button *n* in the opposite end *y* of the casing, the button being depressed during the insertion of the shaft. When inserted the pressure of the button *n* on the outer inclined wall of the conical recess *l* provides an axial exertion on the shaft within the casing to the effect that the ratchet teeth on the cap *k* mesh with the ratchet teeth *x* on the end of the casing, thus arresting an anti-clockwise rotation in relation to the casing, whereas a clockwise rotation of the shaft in relation to the casing is possible, as the inclined wall of the recess *l* depresses the button *n* against the action of the spring *u* when the ratchet teeth of the cap *k* slide over the ratchet teeth on the casing during rotation and thereby slightly displace the shaft to the right in relation to the casing. The cap *k* is now rotated clockwise for winding the spring sufficiently to wind the recording strip onto the spool. When hereafter the recording strip by means of the bar *o* is drawn out through the slit, the spring *i* will be further tightened, and releasing the pull on the bar the spring will again wind the recording strip on the spool.

For disassembling the device the push-button *n* is depressed sufficiently to release the engagement between the conical recess *l* on the shaft end and the hole in the button, whereupon the shaft with spool and recording strip may be extracted from the casing.

In Fig. 6 is shown one of the annular guiding discs applied to the spool *d*. This disc *f* is provided with a radial slit *q*, which is located in alignment with the slit *g* in the spool to allow the insertion edgewise of the recording strip.

I claim:

In a self-winding recording device, the combination of a cylindrical longitudinally slitted casing open at one end, a push-button radially slidable in the closed end of the casing and provided with a hole, ratchet teeth formed on the outer edge of the open end of the casing, a detachable shaft disposed axially within the casing, a cap rigidly attached to one end of the shaft, ratchet teeth formed on the inner surface of the cap for engagement with the aforesaid ratchet teeth on the casing, a conically recessed portion formed on the other end of the shaft for engagement in the hole in the push-button, a spring pressing outwardly on the push-button, a spool disposed rotatably on the shaft within the casing, a helical spring encircling the shaft for connecting it yieldingly with the said spool, a recording strip attached by one of its ends to the spool, and a bar attached to the other end of the recording strip to prevent its passing through the slit in the casing.

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