F. S. HOAG.

SAFETY UNWINDER AND AUTOMATIC CUTTING DEVICE.

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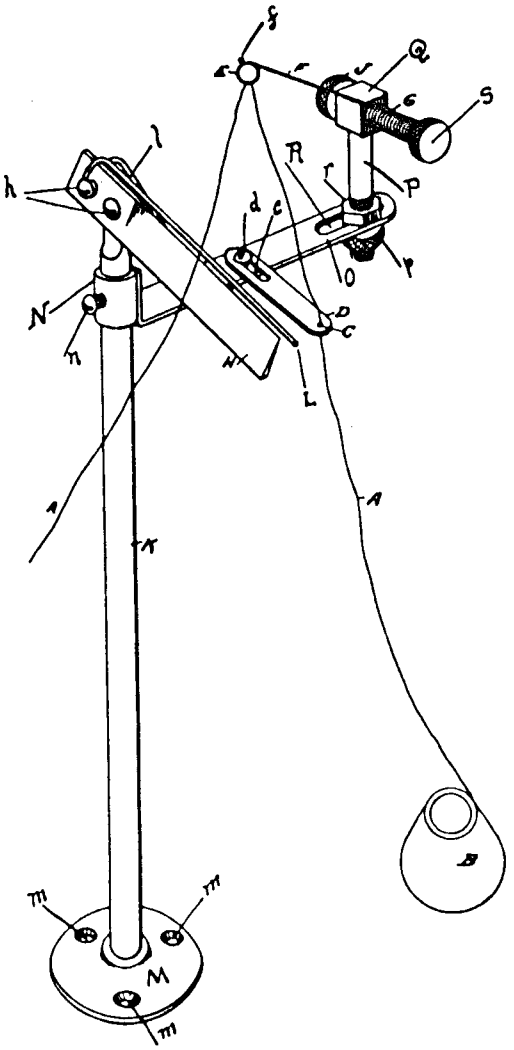
1,031,182. Patented July 2, 1912.



WITNESSES:

Lottie Prior.

INVENTOR

Frank S. Hoag,

BY

Frederick W. Cameron, ATTY.

UNITED STATES PATENT OFFICE.

FRANK S. HOAG, OF KINDERHOOK, NEW YORK.

SAFETY-UNWINDER AND AUTOMATIC CUTTING DEVICE.

1,031,182. Specification of Letters Patent. Patented July 2, 1912.

Application filed July 24, 1909. Serial No. 509,284.

To all whom it may concern:

Be it known that I, FRANK S. HOAG, a citizen of the United States, residing at Kinderhook, in the county of Columbia and State of New York, have invented certain new and useful Improvements in Safety-Unwinders and Automatic Cutting Devices, of which the following is a specification.

My invention relates to safety unwinders and automatic cutting devices for bordering, crocheting, binding, finishing and sewing machines, and the object of my invention is to provide an unwinder and means for automatically cutting the thread when a knot gathering or other enlargement is formed therein, without straining the needle or unduly delaying the operation of the machine, which may be operated safely and when the thread is unwinding from a bobbin, or other spool. I attain these objects by means of the mechanism illustrated in the drawing, which is a perspective view of my invention.

The thread, A, extends from the bobbin or other spool, B, upon which it is coiled, through the eye, C, in the thread plate, D, passing through the loop E in the spring arm, F, and over the blade H, under the guard L to the needle, not shown.

The post or standard, K, is mounted on the plate, M, which may be secured in any suitable manner to a table, by means of screws or bolts passing through the bolt holes, *m*, or in any suitable manner. By means of the collar, N, and screw, *n*, I mount the arm, O, at such position above the table as is desired. The post, P, is mounted in connection with the arm, O, by means of thumb screw, *p*, and nut, *r*, engaging the upper and under side of the arm, O, adjacent to the elongated slot, R, in the arm, O, through which the post P projects. The elongated slot, R, permits of the adjustment of the post P to and from the post or standard K.

Through the head, Q, of the post P, I pass the bolt, S, upon which is placed a barrel spring G, one end of which is extended at an angle to the bolt, S, forming spring arm F, which has loop E at its end, made by bending the end of the spring arm F in the form of a loop, the extreme end, *f*, extending, when in its looped position slightly away from but contiguous to the portion of the spring arm, F, forming the loop E, allowing space for the insertion of the thread, A, over said end, *f*, into the loop E. A thumb screw, J, on the end of the bolt, S, will tend to exert such tension on the barrel spring, G, placed on said bolt as may be desired. It being understood that the barrel spring, G, has one end resting against the head, Q, of the post P or secured to the bolt S.

To the arm O I mount the thread plate, D, by means of the bolt or screw, *d*, passing through an elongated slot, *e*, in the thread plate D, and also through the arm O. The position of the thread plate on the arm may be adjusted by means of the bolt, *d*, and the slot *e*.

The location of the spring arm, F, in reference to the thread plate, D, is such that the loop, E, preferably shall not be directly over the eye, C, in the thread plate D.

To the end of the post or standard, K, I attach the blade, H, which is placed at an acute angle to the post K, sloping downward therefrom and secured by means of suitable bolts, *h*, or in any suitable manner. Over the blade, H, I preferably place a guard, L, which may be a piece of wire secured at one end to one of the bolts, *h*, and bent to extend substantially parallel to the blade, slightly above the cutting edge thereof. This guard is to prevent the hand of the operator from unintentionally engaging the knife blade, H. I may place a guide, *l*, secured in any suitable manner, preferably by winding one end around one of the bolts, *h*, and bending the same to extend from the guard L downward parallel to the blade, H, for the purpose of preventing the thread, A, from getting caught above the cutting edge of the blade H. The object of placing the blade at an angle is to cause a sawing motion of the thread on the blade providing a knot in the thread engages the thread plate D.

It will be noticed that the parts of my invention are adjustable in substantially every direction.

When a knot gathering or other enlargement occurs in the thread, A, it will cause an obstruction to the passage of the thread through the eye, C, of the thread plate D, which will prevent the thread being fed to the needle and therefore a slight strain will be exerted on the spring arm, F, and cause the thread to be drawn along the edge of the blade, H, where it will be immediately cut. The spring arm, F, will take up the jar or strain caused by the engagement of the knot

in the thread with the thread plate and relieve the needle from the sudden strain, and thus prevent breaking the needle. The operator then can sever the thread between the knot or other imperfection and the bobbin and pass it through the eye, C, and loop E, over the knife blade, H, to the eye of the needle.

I do not intend to limit myself to the particular tension device shown and described herein.

What I claim as my invention and desire to secure by Letters Patent is:

1. A safety unwinder and automatic cutting device, comprising a thread plate provided with an eye for the passage of the thread, so contracted that an enlargement of the thread will be prevented from passing through; a means for mounting said thread plate; a knife blade; a resilient thread supporting means movable toward and from the knife blade, whereby the lead of the thread from the thread supporting means is over or intersected by the knife blade.

2. A safety unwinder and automatic cutting device, comprising a standard; an arm adjustably secured thereto; a thread plate adjustably mounted on said arm containing a contracted opening to prevent the passage of an enlargement in the thread; a post adjustably mounted on said arm; a tension device carried by said post, a thread cutter, substantially as described.

3. A safety unwinder and automatic cutting device, comprising a standard; an arm adustably mounted thereon; a thread plate adustably mounted on said arm and containing a contracted opening through which the thread may pass except when a knot or other enlargement is contained therein; a tension device adjustably connected with said arm; a knife blade connected with said standard.

4. In a safety unwinder and automatic cutting device, a knife blade suitably mounted; a thread plate provided with a contracted opening therethrough whereby the passage of the thread will be prevented when a knot or other imperfection contained therein is brought in contact therewith; a tension device comprising a bolt, a support therefor, a spring on said bolt, a portion of the spring projecting from said bolt and provided with a loop through which the thread passes; a thumb screw on said bolt to regulate the tension of said spring.

5. A safety unwinder and automatic cutting device, comprising a thread plate containing an opening for the passage of the thread so contracted that an enlargement of the thread will be prevented from passing therethrough; a means for mounting said thread plate; a tension device comprising a spring lever provided with a loop at one end, and a spiral spring with which said spring lever terminates; a means for mounting said spiral spring; a knife blade; a means for mounting the same; a means mounted adjacent to said knife blade to protect the operator from being cut by the knife.

6. In a safety unwinder and automatic cutting device, a thread plate containing an opening through which the thread passes freely in its normal condition, but when a knot or other imperfection of the thread reaches this opening it is held there; a spring lever provided with a loop through which loop the thread passes after leaving said thread plate; a knife blade over which the thread passes after leaving said spring lever; a knife guard mounted in position to protect the hand of the operator from the edge of the knife blade.

7. In a safety unwinder and automatic cutting device, a thread plate provided with an opening for the passage of the thread through which the thread may pass freely when in its normal condition, but will be prevented from passing by a knot or imperfection in the thread; a means for mounting said thread plate; a tension device; a knife blade mounted at an angle to the horizontal over which the thread passes and by which it is severed when its passage through the thread plate is prevented, the pull on the thread causing the thread to pass along the edge of the knife blade with a sawing motion; a knife guard mounted adjacent to the edge of the knife blade.

In testimony whereof I have affixed my signature in presence of two witnesses.

FRANK S. HOAG.

Witnesses:
FREDERICK W. CAMERON,
LOTTIE PRIOR.