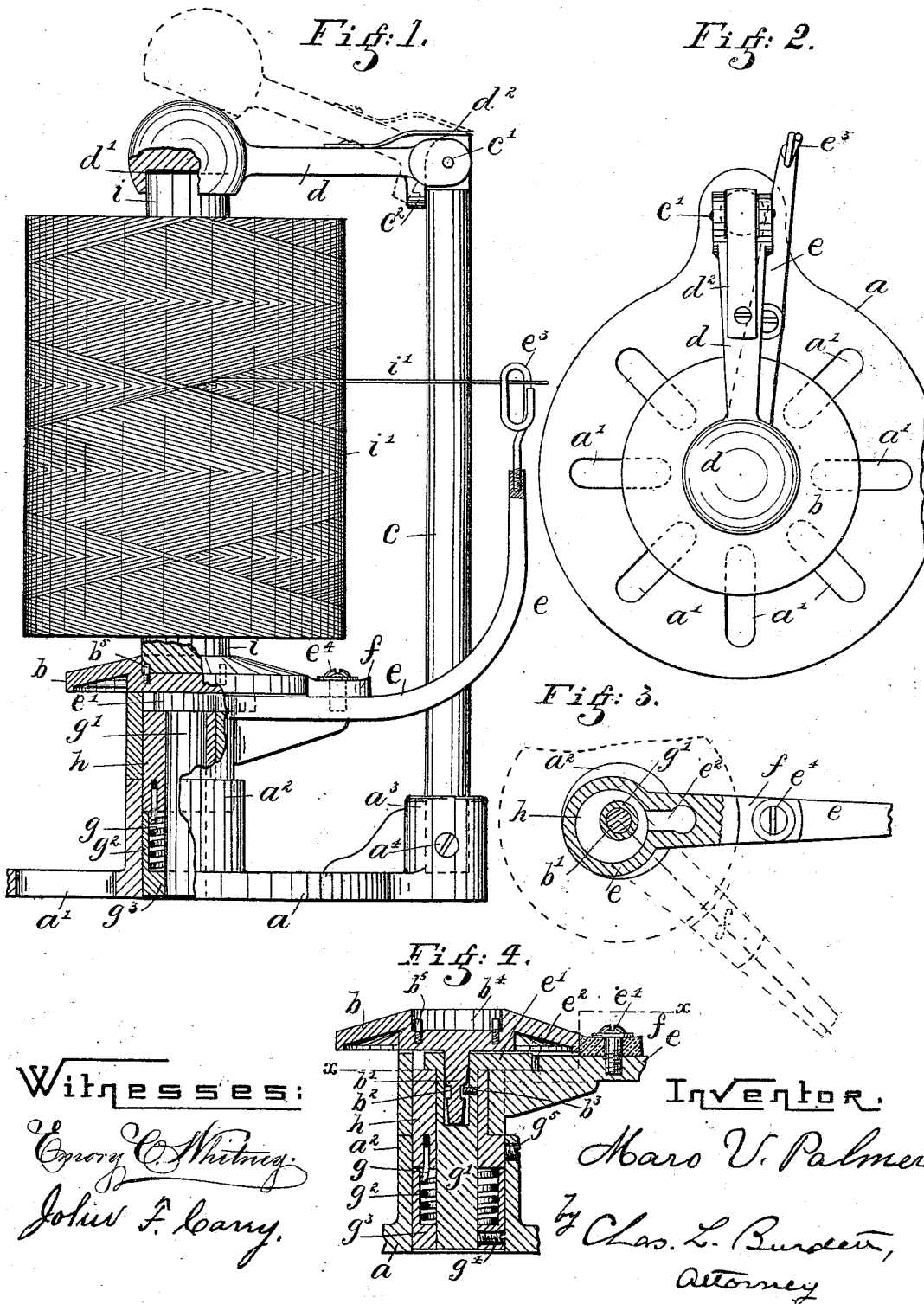


(No Model.)

M. V. PALMER.
THREAD UNWINDING APPARATUS

No. 515,160.

Patented Feb. 20, 1894.



UNITED STATES PATENT OFFICE.

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THREAD-UNWINDING APPARATUS.

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To all whom it may concern:

Be it known that I, MARO V. PALMER, of Willimantic, in the county of Windham and State of Connecticut, have invented certain new and useful Improvements in Thread-Unwinders, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

My invention relates to improvements in that class of inventions known as thread-unwinders.

The object of my invention is to provide a device that will support a mass of thread wound either upon a spool, bobbin or spindle, and to so construct the same that the tension of the thread as it is withdrawn or unwound from the bobbin or spool may be perfectly controlled; also to provide means for varying the tension, and means for automatically stopping the rotary movement of the bobbin to prevent unwinding and release of tension in case of the stopping of the machine which it supplies.

With these objects in view my invention consists in the special construction and in the combination and arrangement of the several parts of the device, substantially as hereinafter described and pointed out in the claims.

Referring to the drawings: Figure 1 represents in side elevation, partially in central section, a thread unwinder embodying my invention; Fig. 2 a plan view of the same, the bobbin being removed; Fig. 3 a cross-sectional detail of a portion of the device, taken on dotted line $x-x$, Fig. 4 to show the eccentrically mounted tension arm and its brake-shoe, and their positions relative to the bobbin support which support is shown by dotted circle; Fig. 4 a detail in central longitudinal section of a portion of the tension arm, the bobbin-support, the tension controlling device and their supports.

My improved device comprises essentially a base a having a circular revoluble table or bobbin support b , an adjustable standard c , having a swinging arm d with a socket at its end to engage the upper end of the bobbin, a spring controlled tension arm e eccentrically mounted with relation to the bobbin support and having a brake f adapted to bear against

said support when the arm is in certain positions, as will be hereinafter explained, a spring g to control the movements of the tension arm, and means to increase or decrease the stress of said spring to regulate the tension upon the thread while being withdrawn from the bobbin.

My device is preferably constructed as follows: The base a will be constructed of cast metal and of circular form with a series of radiating slots a' through which screws may be extended to secure the base to the bed of the sewing machine. This base a has a sleeve a^2 at or near the center and preferably formed integral therewith, and a socket a^3 at one side to receive the end of the vertical standard c which standard is adjustably secured in said socket by a set screw a^4 . The arm d will preferably be pivoted at one end to the upper end of the standard c , as shown at c' , it having a depending lug c^2 to bear against said standard to hold said arm d from a downward movement out of a horizontal position. At the free end of the arm d is a socket d' which forms a bearing for the upper end of the bobbin as shown; this free end of the arm d will preferably be enlarged, to increase its gravitation and to obviate accidental displacement. A spring d^2 is secured to said arm with its free end bearing upon the upper end of the standard c in a horizontal position.

Adjustably secured to a vertical rock shaft g' and loosely contained within the sleeve a^2 of the base is a supplemental sleeve g^2 having an internal flange g^3 which supports the spiral-spring g one end of which projects into an opening in said flange and above said sleeve g^2 and mounted upon the rock-shaft g' is an eccentric h in a recess in which is projected, as shown, the upper end of the spiral spring g . This eccentric is appurtenant to the bobbin support and is held normally in a fixed position and non-rotative by a set screw g^5 extended through the sleeve a^2 and bearing against the lower end of said eccentric. loosely mounted upon this eccentric is the tension arm e , movably connected with the upper end of the rock-shaft g' by a spline c' upon the rock-shaft seated in an elongated slot e^2 in the face of the arm e , as shown in details,

Figs. 3 and 4. The rock-shaft is bored out centrally for a short distance from its upper end to receive the spindle b' of the bobbin support b , which spindle has a preferably shallow annular groove b^2 , which receives the end of the pin or screw b^3 , extended through the shaft g' to prevent vertical movement. The support b , has a central socket b^4 which socket has a series of barbs or pins b^5 to extend into the lower end of the bobbin i upon which the thread i' is wound, said socket and barbs forming a chuck to prevent the bobbin from turning upon the support. The tension arm e is bent upward at its outer end and has a loop e^3 through which the thread i' is drawn, and secured to the horizontal portion of the arm e by means of a screw e^4 is a brake-shoe f , which is so located as to bear against the periphery of the bobbin support when the arm is in the position shown in Figs. 2 and 3.

It is obvious that different forms of support b might be used, as for instance it might be constructed with a pin to extend into the end of a spool, if an ordinary spool is used, therefore I do not desire to limit myself to the exact construction shown, neither do I wish to limit myself to the exact construction and arrangement of the parts for controlling the movement of the tension arm.

It will be seen by reference to the drawings that the axis of the spindle b' which rotates with the bobbin support, and the tension arm e are eccentric, and that when the bobbin is being unwound the thread which extends through the loop e^3 draws the arm around on the eccentric h into the position illustrated in dotted lines Fig. 3, which brings the brake-shoe f out of contact with the periphery of the bobbin support, which movement also turns the rock-shaft g' and the sleeve g^2 which winds the spring g , which is the normal or operative position of the parts. Should the thread break, or the machine which it supplies stop, the spring g will turn the shaft g' and throw the arm e back to the position shown in full lines Fig. 3, which brings the brake into close contact with the periphery of the bobbin support and stops its rotation. The tension of the spring g is easily adjusted by turning the sleeve g^2 around on the shaft g' which winds the spring, and setting it by the screw g^4 at the lower end, or by turning the eccentric and securing it in the desired position by the screw g^5 .

I claim as my invention—

1. In combination, a revoluble bobbin support, an eccentric appurtenant to said support, a tension arm mounted upon the eccentric and having a brake shoe normally engaging said bobbin support, and a spring to actuate the tension arm in one direction, all substantially as described.

2. In a thread unwinder, a base, a spindle having a connected revoluble bobbin support, an eccentric appurtenant to said support, a tension arm mounted upon the eccentric and having a spring to act upon said tension arm,

and the brake shoe borne on the arm and normally engaging the bobbin support, all substantially as described.

3. In combination in a thread-unwinder, comprising a base having the sleeve a^2 and the bobbin or spool supports b , d , the one b having a spindle and being revoluble, the shaft g' , the eccentric h adjustably secured to the sleeve a^2 , the tension arm loosely mounted upon said eccentric and in engagement with the shaft g' , the sleeve g^2 adjustably secured to the lower end of the shaft g' and having the spiral spring one end of which engages the eccentric and the other end of which is fixed to the said sleeve, and the brake shoe borne on the tension arm substantially as and for the purpose described.

4. A thread unwinder comprising a base, a revoluble bobbin support having a circular periphery, an eccentric appurtenant to the bobbin support, a tension arm mounted upon the eccentric and having a thread loop at one end, the brake shoe borne on the tension arm and normally engaging the bobbin support, and a spring for actuating the tension arm, all substantially as described.

5. In a thread unwinder, the base a , the revoluble bobbin support b provided with bobbin engaging means, the standard c , the arm d pivoted to the standard and provided with bobbin engaging means, and the stop borne on the arm and adapted to engage the standard to hold the arm in a horizontal position, all substantially as described.

6. In combination the base a , the revoluble bobbin support b , the upright c , the pivoted arm d weighted at its free end, as described, and having the stop c^2 to bear against the standard to retain the said arm in horizontal position, and the spring d^2 secured to the arm and bearing against the end of the standard, substantially as and for the purpose set forth.

7. In combination in a thread unwinder, a base, a revoluble bobbin support supported on the base, an eccentric adjustably secured to the base appurtenant to the bobbin support, a spring actuated tension arm mounted on the eccentric, and a brake shoe borne on the tension arm normally engaging the bobbin support, all substantially as described.

8. In combination in a thread unwinder, a base, a revoluble bobbin support supported on the base, an eccentric adjustably secured to the base appurtenant to the bobbin support, a tension arm mounted on the eccentric, a spring operatively connected with the eccentric and with the tension arm, and a brake shoe borne on the tension arm and normally engaging the bobbin support, all substantially as described.

9. In combination in a thread unwinder, a base, a revoluble bobbin support supported on the base, an eccentric secured to the base appurtenant to the bobbin support, a tension arm mounted on the eccentric, a sleeve operatively connected with the tension arm, a spring secured to the eccentric and to the

sleeve, and a brake shoe borne on the tension arm and normally engaging the bobbin support, all substantially as described.

10. In combination in a thread unwinder, a
5 base, a rock shaft borne on the base, the bobbin support borne in the rock shaft, a sleeve adjustably secured to the rock shaft, an eccentric adjustably secured to the base appurtenant to the bobbin support, a spring secured
10 to the sleeve and to the eccentric, the tension

arm mounted on the eccentric and in engagement with the rock shaft, and the brake shoe borne on the eccentric and normally engaging the bobbin support, all substantially as described.

MARO V. PALMER.

Witnesses:

GEORGE W. MELONY,
LORENZO LITCHFIELD.