

Feb. 27, 1951

A. J. SLODYSKO

2,543,475

ANTIBACKLASH SEWING MACHINE BOBBIN

Filed Oct. 13, 1949

Fig. 1.

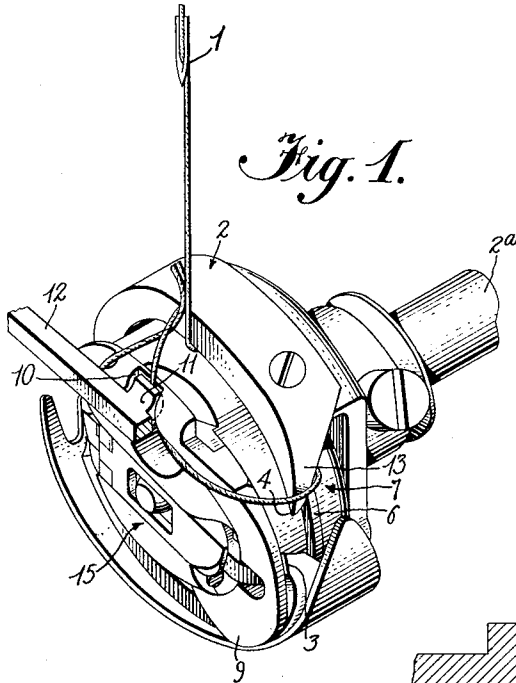


Fig. 2.

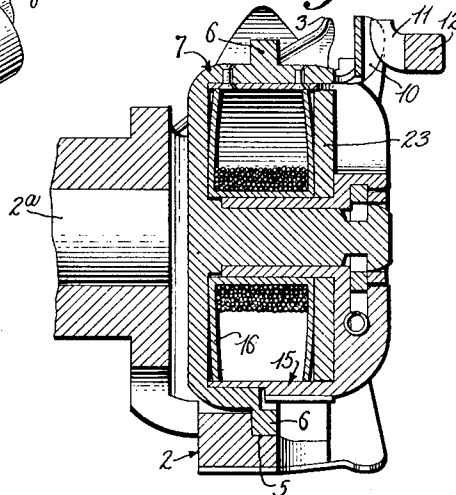
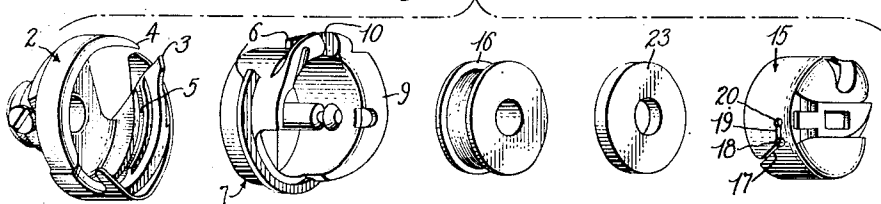


Fig. 3.



INVENTOR.
Andrew J. Slodysko
BY
Mason, Fenwick & Lawrence
ATTORNEYS

UNITED STATES PATENT OFFICE

2,543,475

ANTIBACKLASH SEWING-MACHINE BOBBIN

Andrew J. Slodysko, Shamokin, Pa.

Application October 13, 1949, Serial No. 121,092

4 Claims. (Cl. 112-229)

1

This invention relates generally to a lock stitch sewing machine, more specifically, to a bobbin case therefore, and is particularly directed to means for preventing backlash of the thread.

An outstanding disadvantage of common types of bobbins is their tendency to permit the thread to develop a loose tension which eventually results in backlash. This can be caused in many ways, principally through collection of dust in the bobbin case or by a sudden stoppage of the machine or through breakage of the thread. Also, whenever thread of a different diameter than that previously used is placed in the bobbin, it becomes necessary to adjust the tension of the bobbin star or tensioning spring to obtain the proper bobbin thread tension. However, as proved by experience, it is a difficult matter to constantly adjust the tension of the spring to the right value for varying conditions, such as different diameter threads. On occasions, such spring adds too much tension to the thread causing it to break or causing the bobbin to jam so tightly that it will stop. This disadvantage has become so serious that about nine out of ten machine operators will sometimes slip a small piece of cloth in the bobbin case in order to slow it down, but this is not an absolute remedy since it has a tendency to jam the bobbin.

An object of the present invention is to provide a novel bobbin case for lock stitch sewing machines and the like which is devoid of the above named disadvantages of conventional bobbin cases.

A more specific object of this invention is to provide, in a bobbin case for lock stitch sewing machines and the like, a means for providing constant tension of the thread irrespective of varying thread diameters used in the bobbin or other varying conditions that otherwise would normally cause variation of the tension.

A more specific object of this invention is to provide in a bobbin case for lock stitch sewing machines and the like a magnetized means to provide a constant drag on the bobbin, irrespective of variations in the bobbin case during operation, such as thread diameter, etc.

Other objects and advantages of the present invention will become apparent from a study of the following specification, taken with the accompanying drawings wherein:

Fig. 1 is a perspective view of a lock stitch sewing machine loop taker and bobbin case embodying the principles of the present invention;

Fig. 2 is a longitudinal cross-sectional view of the structure shown in Fig. 1; and

Fig. 3 is an exploded perspective view showing various parts of the assembly illustrated in Figs. 1 and 2.

2

In general, a loop taker for a lock stitch sewing machine is provided with a circular raceway in which is journaled a peripheral bearing rib of a substantially cylindrical bobbin case which carries the lower thread mass. The purpose of the loop taker is to seize a loop of thread from the sewing machine needle, draw out or expand such loop and cast it about the bobbin case, after which the needle-thread take-up device of the machine comes into action to draw the needle loop up to the work to complete the stitch.

In order to restrain the bobbin case against rotation with the loop taker, the bobbin case is commonly provided with a rotation restraining notch which is loosely entered by a rotation restraining tongue mounted on the machine frame. In operation, the frictional drag of the rotary loop taker upon the bobbin case tends to hold one side wall or shoulder of the rotation restraining notch against the rotation restraining tongue. Each needle loop cast about the bobbin case must therefore pass between these contacting walls of the rotation restraining tongue and the complemental rotation restraining notch in the thread case before such loop is free to be drawn up to the work.

Referring more particularly to Figs. 1, 2, and 3 of the drawings, numeral 1 denotes a needle of a lock stitch sewing machine through which passes a thread which goes to an under thread mechanism or loop taker and bobbin case device. The loop taker is in the form of a rotary cup-shaped body 2 having a loop seizing beak 3, a loop controlling tail 4 and a circular raceway 5 in which is journaled the peripheral bearing rib 6 of a stationary bobbin case carrier element 7. As is conventional in the art, the cup-shaped body 2 is carried by the hook shaft 2a. The peripheral bearing rib 6 has a gap in its upper portion to provide a loop detaining shoulder.

The stationary bobbin case carrier element 7 is formed at its needle-loop cast-off side with a needle loop controlling flange 9, in the upper portion of the front face of which is formed the rotation restraining notch 10 loosely entered by the tongue 11 of the rotation restraining bar 12 mounted on the underside of the bed of the sewing machine. The tail 4 of the rotary cup or hook member 2 has a needle-loop supporting surface 13 which is disposed at a distance from the axis of the hook member greater than the maximum radial direction of the peripheral bearing rib 6 of the bobbin case and overhangs such bearing rib. This surface holds the needle-loop off of the bearing rib 6 and cooperates with the needle-loop control flange 9 to control the needle-loop. The edge of the flange 9 is cut away or notched at 10 at the needle-loop cast-off-side of

the rotation-restraining notch 19 to momentarily receive a portion of the contracting needle-loop after the latter has been safely lifted onto the tail 4 by the flange 9.

Removably fitted to the stationary bobbin case carrier element 7 is the companion bobbin case element 15 in which is inserted the bobbin 16 of under thread. A threading slot 17 is preferably provided in the bobbin case element 15 as shown more clearly in Fig. 3. This slot is cut inwardly from the rim at a steep angle to the hole 18, thence through slot 19 which leads substantially peripherally of the bobbin case element 15 to the thread delivering aperture 20. In conventional bobbin cases, it is customary to provide a bobbin case tension spring on the outer periphery of bobbin case element 15 which is adjustable for providing varying tensions of the thread issuing from the thread delivery aperture 20. However, such springs are not completely satisfactory since they usually provide difficulty of adjustment resulting in breakage of thread, etc., as has been hereinbefore explained. The structure described so far is well known in the art.

The present invention is directed to the provision of means to supplant the ordinary bobbin thread tension spring and its aforementioned attendant disadvantages and difficulties in adjusting the tension of the thread. In accordance with the present invention, there is provided in the bobbin case element 15 a magnetized washer 23 which may be made of Alnico No. 5 or any other suitable magnetic material and which may be of a thickness of the order of $\frac{1}{16}$ ". The washer is slightly smaller in diameter than element 15. The bobbin case carrier element 7 and case element 15 are formed of any suitable magnetic material in accordance with standard practice. Inasmuch as the bobbin case carrier element 7 and case element 15 are stationary and there is relative movement between bobbin 16 and relatively stationary washer 23 an electromagnetic coupling is provided therebetween which would tend to provide a drag on the metallic bobbin 16 so as to provide a relatively constant tension on the bobbin thread as it issues from aperture 20. The outstanding advantage of a magnetized washer or other shaped magnetic element is that the coupling to provide a drag between adjacent rotating and stationary parts is one substantially independent of mechanical friction as present in the ordinary bobbin thread tension spring or star. Instead, the parts may be lubricated so as to be substantially frictionless in view of the fact that the magnetic coupling itself provides a drag or restraining torque in a well known manner. This drag is a constant one and its amount depends on the magnetic materials used, dimensions of parts, etc. Therefore, there is provided an outstanding improvement over the conventional bobbin thread tension spring or star inasmuch as reliance may be made on the constant magnetic drag which provides constant tension on the bobbin thread under varying operating conditions, thereby preventing the tendency of backlash, thread breakage, and the like such as occur when the tension is not maintained at a constant value.

While the washer 23 has been described as being magnetized and the other parts of magnetic material, it should be noted that, instead, other parts of the assembly may be magnetized and will also provide a magnetic drag. For example, washer 23 may be unmagnetized but magnetic

material if carrier element 7, bobbin case element 15 or bobbin 16 is magnetized. Or combinations of these may be magnetized, such as elements 7 and 15.

Thus it will be seen that I have provided an efficient and highly reliable bobbin case for loop stitch sewing machines and the like, which case includes a magnetized element for providing a magnetic coupling with the bobbin so as to provide a constant tension on the issuing bobbin thread and thereby eliminate the tendency of backlash, breakage of the thread, and the like, as commonly occurs in the operation of conventional bobbin cases.

While I have illustrated a certain specific embodiment of my invention, it will be understood that this is by way of illustration only, and that various changes and modifications may be made within the contemplation of my invention and within the scope of the following claims.

I claim:

1. A bobbin case carrier element of magnetic material for lock stitch sewing machines and the like comprising a cup-shaped member and a disc-like member spaced from the bottom of said cup-shaped member for receiving a bobbin of magnetic material therebetween, one of said members being magnetized to form an electromagnetic coupling and thereby provide relatively constant bobbin thread tension.

2. A sewing machine bobbin case having a stationary cup-shaped body of magnetic material comprising a cylindrical outer wall, a circular end face and a central spindle, a bobbin of magnetic material adapted to be enclosed in said body and fitted onto said spindle, a washer of magnetized material surrounding said spindle and substantially closing the top of said cup-shaped body to provide a substantially total enclosure for said body, whereby rotation of said bobbin is electromagnetically resisted at a substantially constant value to provide relatively constant bobbin thread tension.

3. A sewing machine bobbin case assembly comprising a stationary cup-shaped element for housing a bobbin and a rotatable element housed therein, both of said elements being of magnetic material and one of said elements being magnetized to provide a magnetic drag between said elements and thereby provide relatively constant bobbin thread tension.

4. A sewing machine bobbin case comprising a stationary cup-shaped element, a bobbin case element rigidly secured to the inner walls thereof, a bobbin element contained in said case and a washer element forming a closure element for said bobbin-containing, cup-shaped element, all of said elements being of magnetic material and one of said elements being magnetized so as to provide a magnetic coupling between relatively rotatable elements and thereby provide relatively constant bobbin thread tension under various operating conditions.

ANDREW J. SLODYSKO.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
724,652	Babb	Apr. 7, 1903
1,569,618	Corthell	Jan. 12, 1926