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3,181,572

LOOM SHUTTLE

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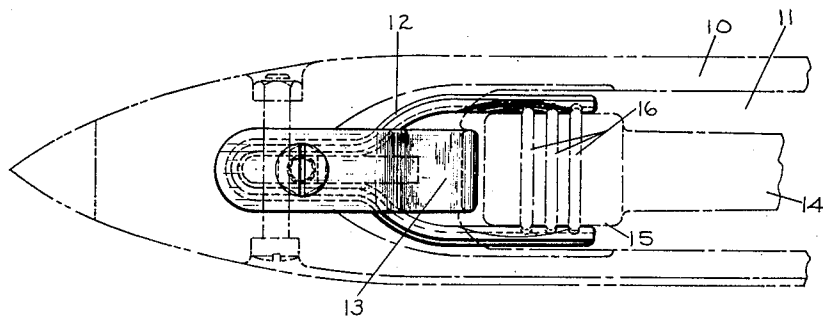


FIG. 1

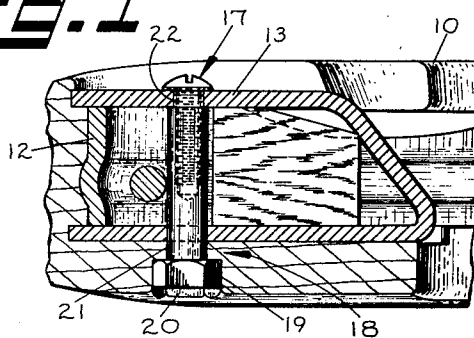


FIG. 2

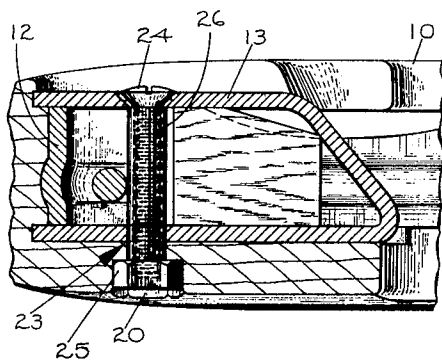


FIG. 3

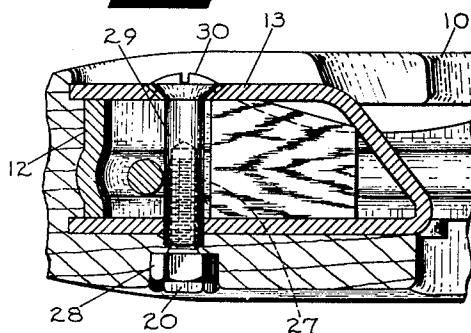


FIG. 4

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1

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LOOM SHUTTLE

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This invention relates to loom shuttles and, more particularly, to an improved and novel means of assembling a shuttle spring cover in the bobbin recess thereof.

It is a general object of the invention to provide a shuttle spring cover retaining means that will maintain its assembled position in a shuttle.

It is a further object of the invention to provide a pair of spring cover retaining members which shall serve to eliminate the old and well-known undesirable condition of conventional cover screws working loose and then failing, and also to eliminate shearing of the screw due to repetitive transfers.

It is more specific object of the invention to provide a pair of spring cover retaining members which serve more securely to support the cover member in operating position and by means of the extended threaded portions of said members, substantial contact area is had between said threaded portions providing improved holding properties for maintaining these members in their initial position.

Further objects of the invention will become apparent from the following more detailed disclosure.

Shuttles utilized in looms of the automatic bobbin-changing type are provided with a spring bobbin holder and a spring cover fixedly positioned in a recess at one end of the shuttle and the spring member is provided with internally grooved spring biased jaws which are adapted to receive and hold a filling bobbin in a manner well known to those familiar with the art. The spring cover is adapted to assemble over the looped portion of the spring member and serves as a guide during the replenishment cycle to direct the rings provided on the butt of a bobbin to their respective grooves in the jaws of said spring member.

The assembly and function of the foregoing parts being well known to those conversant in the art, it is considered satisfactory at this point to call attention to the following patents which depict and disclose the conventional means of assembling shuttle spring covers. Reference is hereby made to the information disclosed in patents numbered 2,640,507 and 2,778,381.

This method of assembling the shuttle spring cover has been utilized for many years and with the introduction of the improved models of looms and the increased speeds with which they were designed to function created an undesirable and detrimental condition of the shuttle spring cover screw working loose after a short period in operation and/or becoming sheared due to oscillations imparted in the transfer operation. These conditions are attributed to the accelerated speeds to which shuttles were subjected as well as the increased number of bobbin transfers.

A slight looseness of a cover screw sets up a slight oscillating movement of the screw at each pick and at transfer when the bobbin butt strikes the guide portion of the spring cover, which initiates fatigue failure of the screw resulting in breakage at the threaded portion thereof. Additionally, a cover screw will often loosen progressively till the head portion has worked upwardly a sufficient distance to cause a smash, or, in other words, the head of the screw will contact and tear out a series of warp threads.

Until the present invention, this condition has been

2

considered quite serious and excessive time has been required to check these screws constantly for proper tightness. According to the instant invention the above disadvantages are overcome through use of applicant's novel spring cover retaining members.

A preferred form of the invention comprises the combination of an internally threaded thrust bushing and locking screw. The thrust bushing includes a base portion which is adapted to seat in a preformed mating aperture that is provided on the underside of the body portion of the shuttle, and is shaped in such a manner as to resist turning therein. An integrally formed cylindrical barrel portion of a diameter somewhat smaller than the outer dimensions of the base portion, extends upwardly from the latter first through an aligned aperture in the lower part of the cover member, thence between the looped portion of the spring itself. This barrel portion extends upwardly a distance sufficient to place the upper end thereof in close proximity with the underside of the upper portion of the cover. The upper end of the bushing is provided with an integrally formed cylindrical extension of a smaller diameter than the barrel portion which is adapted to enter an aligned aperture provided in the top of the cover. A locking screw assembles in the cylindrical extension and barrel portion and when tightened, it draws the upper part of the cover into contact with the bushing which provides through extended area contact of the threaded members, a firm and positive means of shuttle spring cover assembly.

The invention will be described in greater detail by reference to the additional embodiments thereof as illustrated in the accompanying figures of drawing, wherein:

FIG. 1 is a plan view of portion of a shuttle according to the invention showing the top of the locking screw utilized to maintain the spring cover in its proper operating position with respect to the spring bobbin holder;

FIG. 2 is a view in side elevation and partially in section showing the preferred embodiment of the invention as heretofore described; and

FIGS. 3 and 4 are views similar to that of FIG. 2 but showing a first and second modification of the retaining members that may be utilized.

Now referring to the figures of drawing, FIG. 1 shows one end only of a shuttle 10 having a bobbin recess 11 which at that end illustrated, is provided with a spring bobbin holder 12 and a generally U-shaped spring cover 13. In a manner well known to those familiar with the art, the spring bobbin holder 12 is adapted to receive a filling bobbin such as that depicted by numeral 14 having a butt portion 15 on which a plurality of holding rings 16 of the conventional type are mounted. FIG. 2, being the preferred form of the invention, shows the same in side elevation with part of the shuttle and its components in section.

The invention comprises a pair of retaining members indicated generally by numerals 17 and 18. Numeral 18 indicates an internally threaded tubular thrust bushing and numeral 17 indicates the locking screw which is adapted to assemble therein. The thrust bushing 18 is provided with a base portion 19 which is adapted to fixedly seat in a preformed mating aperture 20 provided on the underside of the shuttle 10. An integrally formed cylindrical barrel portion 21 having a diameter somewhat smaller than the outside dimensions of the base portion, extends upwardly from the latter, first through an aligned aperture in the lower portion of the spring cover 13, thence between the looped portion of the spring bobbin holder 12. This cylindrical barrel portion extends upwardly to a point which places the upper part thereof in close proximity with the underside of the upper part of the spring cover 13. The upper part of

3

this barrel portion is provided with a stepped cylindrical and integrally formed portion 22 of a smaller diameter which is adapted to enter partially an aligned aperture provided in the top of the spring cover 13. The assembly and tightening of the locking screw 17 in the threaded portion of the thrust bushing 18 draw the upper portion of the spring cover 13 into contact with the top of the barrel portion 21 to provide a firm and positive means of maintaining the retaining members 17 and 18 in their initial position through substantial threaded area contact of these members.

A modification of the invention is shown in FIG. 3 which also includes a thrust bushing indicated generally by numeral 23 and a locking screw 24.

As with the preferred form of thrust bushing, this modification includes a base portion 25 that is adapted to seat in the preformed aperture 20 of the shuttle and is provided with an integrally formed cylindrical barrel portion 26 extending from said base portion. This barrel portion 26 passes through the lower portion of the spring cover 13 and the looped portion of the spring bobbin holder 12 but terminates at a point which places the top of said barrel portion in close proximity with the underside of the upper portion of the spring cover 13 and in alignment with a countersunk hole provided in the latter. This thrust bushing is internally threaded for its entire length, and the assembly and tightening of screw 24 therein draw the upper portion of cover 13 into contact with the top of the barrel portion 26 forming a firm and positive means of assembly as with the preferred form of the invention.

Now referring to FIG. 4, a second modification of the invention is devoted toward what is more or less a reversal of the practice disclosed with respect to FIGS. 2 and 3, in that, the locking screw 27 is provided with an integrally formed base portion 28 which is adapted to seat in the preformed opening 20. The screw portion 27 extends upwardly in the same manner as the barrel portion 21 of the preferred form and is adapted to receive thereon an internally threaded cylindrical thrust bushing 29. This thrust bushing is provided with an upper tapered and slotted head portion 30 which when assembled on screw 27 is caused to seat in an aligned countersunk hole provided in the upper part of the spring cover 13. The cylindrical part of this bushing then passes through the looped portion of the spring bobbin holder 12 and thence through an aligned aperture in the lower portion of said spring cover 13. As with the first modification and preferred form of the invention, tightening of these retaining members also provides a firm and positive means of maintaining said retaining members in their initial positions by providing extended threaded area contact between them.

These thrust bushings and locking screws under repeated tests and actual loom running conditions have demonstrated that applicant's novel means of spring cover assembly has corrected the long standing undesirable condition of shuttle cover screws loosening and shearing.

While one embodiment and modifications of the invention have been disclosed, it is to be understood that the inventive concept may be carried out in a number of ways. This invention is, therefore, not to be limited to the precise details described, but is intended to embrace all variations and modifications thereof falling within the spirit of the invention and the scope of the claims.

I claim:

1. In a loom shuttle having a body portion with a centrally located bobbin compartment and a spring bobbin holder and spring cover having interconnected top and lower portions which are adapted to extend from one end of and into said compartment, a retaining means for fixedly positioning said spring cover in said compartment and in contact with said bobbin holder which comprises the combination of a thrust bushing internally threaded for substantially its entire length and a cover

4

screw, said thrust bushing including a base portion with a cylindrical barrel portion extending therefrom, said barrel portion being provided at its free end with a stepped cylindrical and integrally formed portion of a smaller diameter which is adapted to seat in an aligned aperture provided in the top portion of said spring cover, said cover screw being adapted to assemble in said cylindrical barrel portion providing extended contact area between the threaded members assuring positive and firm assembly between the same and said spring bobbin holder and spring cover.

2. For use in a loom shuttle having a body portion with a centrally located bobbin compartment and a spring bobbin holder and spring cover having interconnected top and lower portions which are adapted to extend from one end of and into said compartment, a retaining means for fixedly positioning said spring cover in said compartment and in contact with said bobbin holder which comprises the combination of a thrust bushing internally threaded for substantially its entire length and a cover screw, said thrust bushing including a base portion with a cylindrical barrel portion extending therefrom, said barrel portion being provided at its free end with a stepped cylindrical and integrally formed portion of a smaller diameter adapted to seat in an aligned aperture provided in the top portion of said spring cover, said cover screw being adapted to assemble in said cylindrical barrel portion providing substantial contact area between the threaded members assuring positive and firm assembly between the same and said spring bobbin holder and spring cover.

3. In a loom shuttle having a body portion with a centrally located bobbin compartment and a spring bobbin holder and a generally U-shaped spring cover having interconnected top and lower portions positioned at one end of said compartment and in clamping relationship with said bobbin holder, a retaining means for fixedly positioning said spring cover in said compartment and in contact with said bobbin holder which comprises the combination of a thrust bushing internally threaded for substantially its entire length and a threaded cover screw, one of said combination of thrust bushing and cover screw extending through the upper portion of said spring cover and the other of said combination extending through the lower portion of said cover as well as through a portion of the shuttle body and being non-rotatable therewith said thrust bushing including a base portion with a cylindrical barrel portion extending therefrom, said barrel portion terminating immediately adjacent the underside of said upper portion, said cover screw having substantially the entire threaded portion thereof received into said barrel portion so that movement of said upper portion of said spring cover is restricted between a head portion of the cover screw and the terminal portion of the barrel whereby said cover screw is substantially strengthened to eliminate shearing thereof due to repetitive bobbin transfers and there is provided extended contact area between said cover screw and thrust bushing in order to assure positive and firm assembly of said bobbin holder and cover.

4. In a loom shuttle having a body portion with a centrally located bobbin compartment and a spring bobbin holder and a generally U-shaped spring cover having interconnected top and lower portions positioned at one end of said compartment, a retaining means for fixedly positioning said spring cover in said compartment and in contact with said bobbin holder which comprises the combination of a thrust bushing internally threaded for substantially its entire length and a threaded cover screw, said thrust bushing including a base portion with a cylindrical barrel portion extending therefrom, said barrel portion extending through a portion of the shuttle body through said lower portion of the spring cover and terminating against the underside of said upper portion, said cover screw extending through the upper portion of

5

the spring cover and having substantially the entire threaded portion thereof received into said barrel portion to provide extended contact area therebetween in order to assure positive and firm assembly of said bobbin holder and cover so that movement of said upper portion of said spring cover is restricted between a head portion of the cover screw and the terminal portion of the barrel.

References Cited by the Examiner

UNITED STATES PATENTS

945,737	1/10	Anderson	85—4
1,084,850	1/14	Ford	85—1

6

1,194,792	8/16	Stewart	85—1
1,872,014	8/32	Schjolin	85—4
1,962,035	6/34	Reiter	85—4
2,192,481	3/40	Reid	139—207
2,788,024	4/57	Bousquet	139—207
3,010,485	11/61	Grunke	139—207

FOREIGN PATENTS

254,386	7/27	Italy.
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10 MERVIN STEIN, *Primary Examiner.*

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