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MOUNTING FOR LOOM SHUTTLE BINDERS

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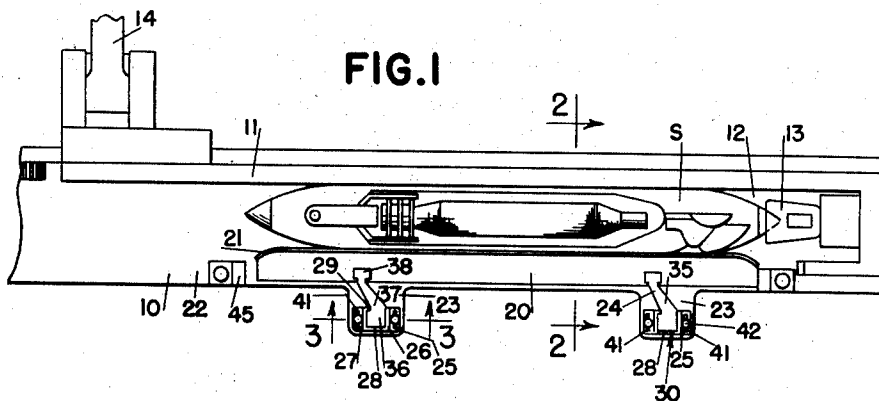


FIG. 1

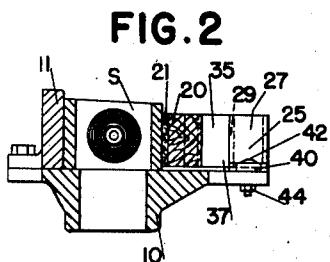


FIG. 2

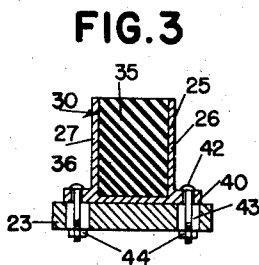


FIG. 3

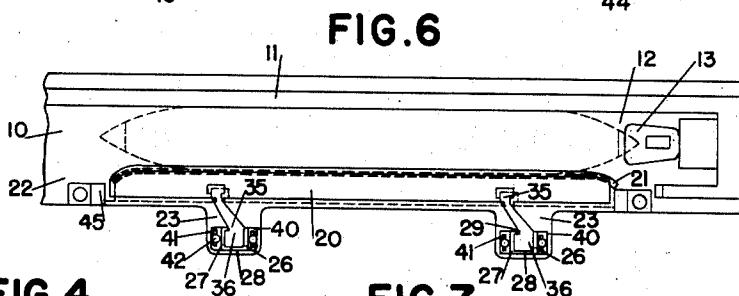


FIG. 4

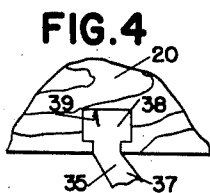


FIG. 5

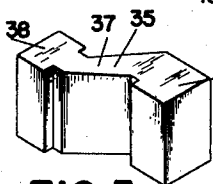


FIG. 6

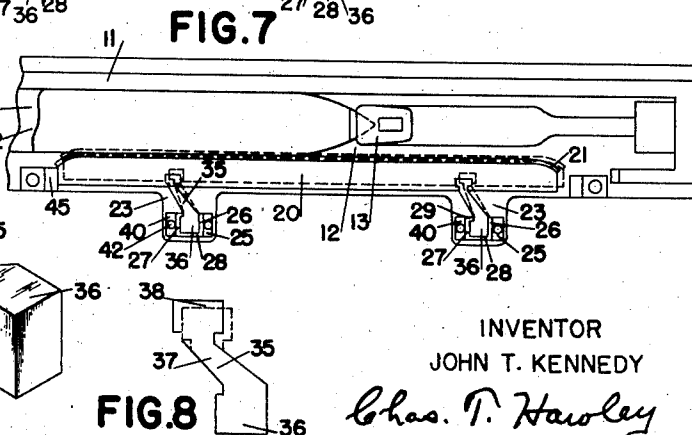


FIG. 7

FIG. 8

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MOUNTING FOR LOOM SHUTTLE BINDERS

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This invention relates to improvements in shuttle binders for looms and it is the general object of the invention to provide simple mounting means for the binder which will enable it effectively to check shuttles.

The shuttle boxes of looms are ordinarily provided with a binder which acts as a check to arrest motion of the shuttle as it enters the shuttle box. Many of these binders are pivoted on the lay and swing outwardly from the shuttle box when engaged by the shuttle. This swinging of the shuttle causes it to vibrate and also produce oscillations in the shuttle as the latter enters the shuttle box.

It is an important object of the present invention to provide a shuttle binder mounted in such manner that it can yield as the shuttle enters the box but without the aforesaid pivoted motion, thereby enabling the surface of the binder to remain in contact with the shuttle throughout the motion of the latter in the shuttle box. The shuttle binder has a surface which is substantially parallel to the back wall of the shuttle box fixed to the lay and this surface moves forwardly throughout its entire length because of the manner in which the binder is mounted.

It is another object of the invention to mount the binder on elastic links which may be made of rubber so disposed as to permit a limited end-wise motion of the binder in the same direction in which the shuttle is moving. These elastic mountings are also compressible and enable the binder to move bodily transversely of the shuttle box as it checks the shuttle. The elastic feature of the mounting links enables the binder to cooperate effectively with any one of several shuttles which may be of slightly varying widths.

It is a more specific object of the invention to provide soft elastic mounting links the ends of which are preferably non-circular so that they can fit into holders on the lay and also into recesses in the binder. The non-circular ends of the mountings can also be cemented to their holders and to the binder if desired to avoid wear, the yielding feature being confined largely to that part of the mounting between its ends.

The mounting links for the binder to be described in more detail hereinafter, due to their elasticity, return the binder to its normal position after a shuttle is picked out of the box and also serve as the sole support for the binder so that the usual binder pivot pin and binder spring are eliminated.

With these and other objects in view which will appear as the description proceeds, the invention

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resides in the combination and arrangement of parts hereinafter described and set forth.

In the accompanying drawings, wherein a convenient embodiment of the invention is set forth,

Fig. 1 is a plan view of a shuttle box and adjacent parts of the lay having the improved binder and mounting therefor shown in the position corresponding to a boxed shuttle,

Figs. 2 and 3 are enlarged vertical sections on lines 2—2 and 3—3, respectively, Fig. 1,

Fig. 4 is an enlarged fragmentary view of the rear end of one of the elastic mountings and of the adjacent part of the binder,

Fig. 5 is a perspective view of one of the elastic mountings,

Fig. 6 is a diagrammatic view illustrating the manner of operation of the invention when a shuttle is being boxed,

Fig. 7 is a view similar to Fig. 6 but showing the manner in which the shuttle binder operates when a shuttle is being picked out of the shuttle box, and

Figure 8 is a diagrammatic view of one of the links shown in Fig. 6 on an enlarged scale.

Referring to Fig. 1, the loom lay 10 is provided with a shuttle box wall 11 held in fixed position with respect to the lay and defining in the present instance the back part of a shuttle box designated generally at 12. A picker 13 of usual construction is provided to pick or actuate the shuttle S. The latter may be the only shuttle in the loom or it may be one of several shuttles which are called into action one at a time. If several shuttles are used there is likelihood that there will be a slight variation in their width. The lay will be actuated in the usual manner, a part of one of the lay connectors for that purpose being shown at 14.

The matter thus far described may be of common construction and except as noted hereinafter forms no part of the present invention.

In carrying the present invention into effect a binder 20 is provided for the front of the shuttle. This binder may be made of wood or any other suitable material and has its rear surface lined with a friction facing 21, such as leather, which has direct engagement with the shuttle. The box plate 22 of the loom may have a pair of forward extensions 23 each of which supports a housing designated generally at 25. Each housing has right and left walls 26 and 27 joined by a front wall 28. A short rear wall 29 may extend from the left wall 27 toward the right wall 26 and with the latter define an opening 30.

The binder mountings 35, see Fig. 5, are made in the form of inherently elastic links each having

a front head 36 which fits into one of the housings 25. Extending diagonally rearwardly and toward the center of the loom from the head is a shank 37 which leads to a second head 38 which may be substantially of rectangular form as indicated in Fig. 4. This head 38 fits into a complementarily formed recess or pocket 39 in the binder 20. If desired the heads 36 and 38 can be cemented to the corresponding enclosing structure, but such cementing will not be necessary in all forms of the invention.

Each housing has a base 40 formed at either side thereof with back and forth extending slots 41 through which extend holding bolts 42. The latter extend downwardly through slots 43 which extend through the box plate generally in the direction of the length of the lay. Nuts 44 on the lower ends of the bolts serve to hold each housing in firmly fixed position with respect to the box plate 22, but because of the slots 41 and 43 it is possible to adjust the housings angularly with respect to the box plate 22.

Both of the mounting links 35 are made of a resilient material, such as a soft elastic rubber, and tend normally to hold the binder in the position shown in full lines in Fig. 6, i. e., with the binder in shuttle engaging position and toward the center of the lay. As the shuttle enters the shuttle box it has frictional contact with the binder and moves it toward the outer end of the lay, or in the same direction in which the shuttle is moving, to the dotted line position shown in Fig. 6. During this movement of the binder the mounting links 35 will be subjected to some compression due to the fact that the normal distance between the leather facing 21 and the box wall 11 is slightly less than the width of the shuttle. As the binder moves endwise the two links 35 will move from the full line position shown in Figs. 6 and 8 to the dotted line position, the effect of this motion being to lessen the distance between the heads 36 and 38 to produce the aforesaid compression in the links. Also, the heads 38 move to the right relatively to the heads 36 and the links bend on themselves, see Fig. 8.

It is obvious that if there is slight variation in the width of the shuttles used in the loom the shanks 37 will be compressed by varying amounts depending upon the variation in shuttle width, the wider shuttles causing the greater compression.

When the shuttle is picked out of the box as suggested in Fig. 7 its frictional engagement with the binder will move the latter inwardly or to the left as shown in full lines against a stop 45 secured to the lay. During this operation the elastic links will move from the dotted to the full line position, Fig. 7, but as soon as the shuttle has left the box the links 35 due to their elasticity will move the binder to the right, returning it to the dotted line or normal position of Fig. 7.

The leather facing 21 will ordinarily be substantially parallel to the box wall 11, but the adjustments provided for the housings will permit a change in the position of the binder so that if desired its outer or right end as viewed for instance in Fig. 1 can be slightly closer to the box wall 11 than its inner or left end.

From the foregoing it will be seen that the invention provides a binder which is mounted on inherently elastic links the forward ends of which are held in fixed position with respect to the lay and the rear ends of which are fastened to the binder. These links by their tendency to

return to a position of repose locate the binder normally in a correct position for the start of a shuttle checking operation, and as the shuttle moves into the shuttle box 12 it will by its frictional contact with the facing 21 cause some endwise outward motion of the binder which will place the shanks 37 under compression, thereby causing the binder to exert a frictional force against the shuttle to bring the latter to rest. If there is any variation in width in the shuttles used in the loom the shanks 37 will compress an amount to accommodate such variation. The housings for the mounting links are secured to the box plate 22 for adjustment relatively thereto either angularly, longitudinally, or transversely with respect to the shuttle box. The links 35 are the sole support for the binder and the latter can be mounted and held in normal checking position without the customary pivot pin or binder spring.

Having thus described the invention it will be seen that changes and modifications of the foregoing specific disclosure may be made without departing from the spirit and scope of the invention.

What is claimed as new is:

1. In a loom lay having a shuttle box one side of which is provided with a wall fixed to the lay, a binder for the other side of the shuttle box to check a shuttle entering the shuttle box, and a pair of binder supporting links made of a soft elastic material each having one end thereof secured to the binder and having the other end thereof fixed with respect to the lay, said links mounting the binder for endwise movement relative to the lay and being oblique with respect to the lay and inclined relatively thereto in the direction in which the shuttle enters the shuttle box.
2. In a shuttle box having a box plate and a fixed wall, a shuttle binder spaced from said wall extending along the shuttle box to engage a shuttle entering the shuttle box and be moved lengthwise of the shuttle box by the shuttle in the direction of travel of the shuttle and also transversely of the shuttle box, and mounting means for the binder comprising a pair of soft elastic rubber links each having one end thereof secured to the binder and having the other end thereof fixed with respect to the box plate, said links being oblique with respect to the binder and so disposed as to be compressed when the shuttle moves the binder transversely of the shuttle box and be bent on themselves when the shuttle moves the binder lengthwise of the shuttle box.
3. In a loom having a lay and a shuttle box thereon, a shuttle binder for the shuttle box having movements lengthwise and transverse of the shuttle box caused by a shuttle entering the shuttle box, and mounting means for the binder comprising a pair of soft elastic rubber links each attached at one end thereof to the binder and attached at the other end thereof to the lay, said links being disposed obliquely relatively to the lay to be compressed by said transverse movement of the binder and bent on themselves by said lengthwise movement of the binder.
4. In a loom having a lay and a shuttle box thereon, a shuttle binder for the shuttle box having movements lengthwise and transverse of the shuttle box caused by a shuttle entering the shuttle box, and mounting means for the binder comprising a pair of parallel soft elastic rubber links oblique with respect to the said lengthwise and transverse movements and each connected at

one end thereof to the binder and having the other end thereof fixed with respect to the lay, said links resisting said transverse movement by compression and resisting said lengthwise movement by opposing change of the obliquity thereof.

5. In a loom having a lay and a shuttle box thereon, a shuttle binder for the shuttle box having movements lengthwise and transverse of the shuttle box caused by a shuttle entering the shuttle box, and mounting means for the binder comprising a pair of soft elastic rubber links each connected at one end thereof to the binder and each attached at the other end thereof to part of the shuttle box, each link being deformable independently of the other link, said links being oblique to the binder in such a direction as to be compressed by said lengthwise and transverse movements of said binder.

6. In a loom having a lay and a shuttle box thereon, a shuttle binder for the shuttle box having movements lengthwise and transverse of the shuttle box caused by a shuttle entering the shuttle box, and mounting means for the binder comprising a pair of soft elastic rubber links each having a head at one end thereof held against turning relatively to the binder and having a head at the other end thereof held against turning relatively to the lay, each link having the heads thereof joined by a shank which is oblique with respect to the length of the shuttle box, said shanks being compressed by said transverse movement of the binder and being bent upon themselves by said lengthwise movement of the binder.

7. In a loom having a lay and a shuttle box thereon, a shuttle binder for the shuttle box having movements lengthwise and transverse of the shuttle box caused by a shuttle entering the shuttle box, a pair of soft elastic rubber links comprising the sole support of the binder, each link having a head at the binder end thereof secured to the latter and having a head at the other end thereof fixed with respect to the lay and each link having a shank integral with and connecting the heads thereof, said shanks being oblique with respect to the length of the shuttle box and being inclined in a direction opposite of the direction in which a shuttle travels when entering the shuttle box, said shanks by a combined compression and resistance to change of shape thereof incident to said transverse and lengthwise movements of the binder causing the latter to resist movement of the shuttle in the box.

8. In a loom having a lay and a shuttle box thereon, a shuttle binder for the shuttle box having movements lengthwise and transverse of the shuttle box caused by a shuttle entering the shuttle box, a binder having non-circular openings therein spaced along the length thereof, non-circular housings secured to and spaced along the shuttle box, and links formed of a soft elastic material each having a head at one end to fit one of said openings in the binder and having a head at the other end to fit one of said non-circular housings, the heads of each link

being joined by a shank disposed obliquely to the length of the shuttle box, said shank being compressed by said transverse movement of the binder and being bent on itself by said lengthwise movement of the binder.

9. In a loom shuttle box one side of which is provided with a wall, a shuttle binder for the other side of the shuttle box to check a shuttle entering the shuttle box, and a pair of links supporting the shuttle binder made of soft elastic material, each link having one end thereof connected to the shuttle binder and having the other end thereof connected to the shuttle box, said links being compressible and mounting the shuttle binder for movement by the shuttle in a direction away from said wall.

10. In a loom shuttle box one side of which is provided with a wall, a shuttle binder for the other side of the shuttle box to check a shuttle entering the shuttle box, and a pair of links supporting the shuttle binder made of soft elastic material, each link having one end thereof connected to the shuttle binder and having the other end thereof connected to the shuttle box, said links mounting the binder for endwise movement relative to the shuttle box and being compressible to permit movement of the shuttle binder by the shuttle in a direction away from said wall.

11. In a loom shuttle box one side of which is provided with a wall, a shuttle binder for the other side of the shuttle box to check a shuttle entering the shuttle box, and a pair of links made of soft elastic material supporting the shuttle binder in a position parallel to said wall, each link having one end thereof attached to the shuttle binder and having the other end thereof attached to the shuttle box, said links being compressible and mounting the shuttle binder for movement by the shuttle in a direction away from said wall.

12. In a loom shuttle box one side of which is provided with a wall, a shuttle binder for the other side of the shuttle box to check a shuttle entering the shuttle box, and a pair of links supporting the shuttle binder made of soft elastic material, each link having one end thereof secured to the shuttle binder and having the other end thereof supported with respect to the shuttle box, said links mounting the binder for bodily movement relative to the shuttle box and being compressible to permit movement of the shuttle binder by the shuttle in a direction away from said wall.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
2,207,107	Payne	July 9, 1940
2,341,843	Hamilton	Feb. 15, 1944
2,399,851	Brown	May 7, 1946