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YARN GUIDING BLOCK FOR WEAVING SHUTTLES

Filed Dec. 1, 1948

Fig. 1.

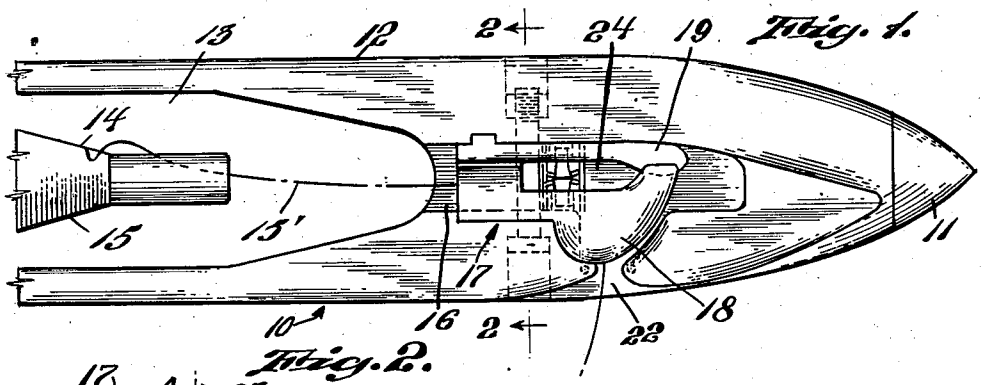


Fig. 2.

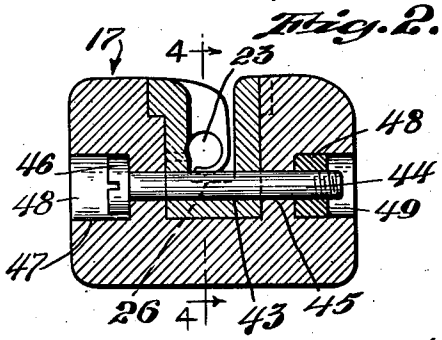


Fig. 3.

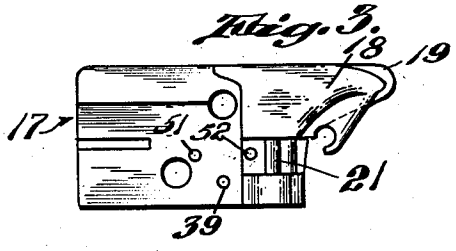


Fig. 4.

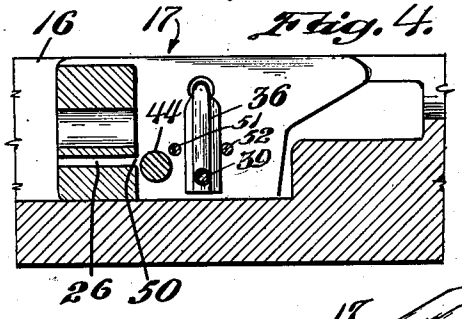


Fig. 5.

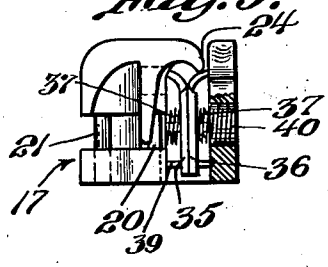


Fig. 6.

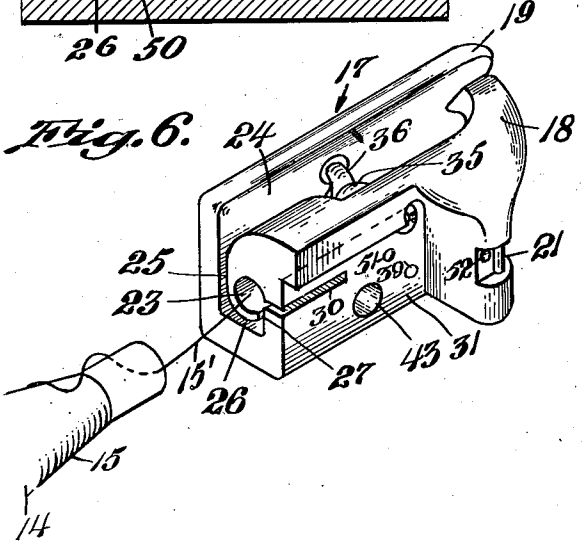
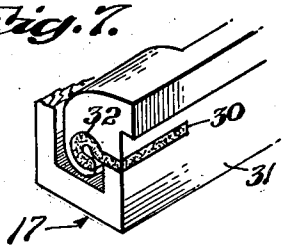


Fig. 7.



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YARN GUIDING BLOCK FOR WEAVING SHUTTLES

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Application December 1, 1948, Serial No. 62,885

9 Claims. (Cl. 139—223)

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This application is a continuation-in-part of my prior copending application, Serial No. 777,343, filed October 1, 1947.

This invention relates to a weaving shuttle of the self-threading type and more particularly to a yarn guide block disposed in the shuttle between the chamber which receives the bobbin and the tip of the shuttle which serves to thread and guide the yarn into the delivery eye of the shuttle.

In order to attain perfect weaving, it is necessary to provide a reliable and effective thread guiding means particularly when weaving wiry and hard-twisted yarns. Since such yarns exhibit a tendency to kink adjacent to the delivery eye of the shuttle and in so kinking to twist and writhe in such a way as to escape from the shuttle eye with resultant mispicks or breakage of the filling. It is also necessary to provide some means of securing a uniform yarn tension as the yarn is drawn through the delivery eye.

Likewise it is necessary to provide some effective means for automatically threading the delivery eye which will be effective upon the transfer of the filling into the shuttle. Such yarn tension has heretofore been provided by tension pads which are resiliently urged toward each other to engage the yarn from either side.

One of the objects of this invention is to provide a stationary yarn guide by reason of the shaping of the casting of the block which will effectively hold down the filling should there be a tendency for the filling to lift up as the yarn is drawn from the bobbin through the delivery eye.

Another object of this invention is to provide a yarn guide which may be easily threaded and after threaded will be of such shape, construction, and arrangement that the yarn is effectively held in place.

Another object of this invention is to prevent the yarn at the forward end of the tunnel from dropping to a level which would permit it to enter the threading passage and escape from the tunnel.

Another object of the invention is to provide a combined thread guide and means for locking the block in place.

Another object of this invention is to so shape and construct the guide through which the yarn travels that it may also receive a tension for applying some friction on the yarn as it is drawn from the bobbin and out through the delivery eye.

Another object of this invention is to provide

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an arrangement accomplishing the above results which will be relatively free from the collection of lint which occurs about the operation of a device of this character.

With these and other objects in view, the invention consists of certain novel features of construction as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a fragmental top plan view of a shuttle embodying the yarn guiding block which is constructed in accordance with the present invention;

Figure 2 is a sectional on line 2, 2 of Figure 1 with the felt omitted;

Figure 3 is a side elevation of the threading block;

Figure 4 is a sectional view through the threading block and a fragmental portion of the shuttle with the felt omitted;

Figure 5 is a front end view of the block;

Figure 6 is a perspective view of the threading block with the felt omitted.

Figure 7 is a fragmental perspective view of a block with friction felt therein.

In proceeding with this invention, I cast a block for the shuttle in such a shape as to provide a tunnel of a substantial length extending longitudinally of the block with a slot extending from the upper surface of the block so as to provide an entrance to said tunnel on the opposite side of the tunnel from said slot so that when the yarn is in the tunnel it cannot escape upwardly or downwardly, also a guide and locking pin extends across the slot above the entrance passage to the tunnel to prevent escape of the yarn.

Also in this tunnel there is provided a friction device such as felt or the like which may be inserted therein.

There is also provided a slot which enters the tunnel from the side of the block and through which the felt or other friction device of such character may be inserted thus making unnecessary further frictioning means unless desired.

With reference to the drawings, 10 designates generally a weaving shuttle of the type commonly used in automatic looms and provided at its end with the usual metal tip 11. The body 12 of this shuttle has an elongated chamber 13 for the reception of a bobbin 14 having yarn 15 packaged thereon. At the forward end of the chamber 13, the chamber communicates with a recess 16 or pocket for the reception of a yarn guiding block designated generally 17 and shown in perspective in Figure 6.

This guiding block 17 is usually of cast metal providing a horn 18 and a guard 19 at one end. Below the horn there are two hardened posts 20 and 21 about which the yarn leads as it extends through the delivery eye 22 of the shuttle. The body of the block 17 is more closed in and solid than is usually found and there extends lengthwise through this closed in solid portion a tunnel designated 23. This tunnel is generally cylindrical in shape and serves as the guide or directing conduit for the yarn 15' as it extends from the bobbin through the block and out the delivery eye 22.

In order that the yarn may enter the block and pass into this guide tunnel, there is a slot 24 formed which extends as a continuation of the space between the horn and guard downwardly as at 25, at one side of the tunnel 23 and which may be generally curved if desired the same leading to a point lower than the tunnel as when it connects with a lateral passage 26 extending laterally beneath the tunnel to the side opposite the center of the tunnel at 27.

The slot 24, 25, 26 has smooth, curved edges where the sidewalls may come in contact with the yarn so that the yarn as drawn across this block will enter the block and move downwardly into the tunnel 23. The yarn will find its way beneath the guard 19 and over the end of the horn 18 in a known manner so as to extend about the posts, 20, 21 as it leaves the shuttle.

In order that a tension on the yarn may be provided, I form a slot 30 extending a portion of the length of the tunnel, as shown in the figures from the side 31 of the block opposite the side in which slot 24 is located inwardly to join the tunnel and I have then inserted a piece of felt or flannel 32 through this slot which may curl and extend back on itself so that the yarn 15' may enter and be engaged on opposite sides by portions of the felt. The yarn thus may enter the tunnel and extend between portions of the felt so as to have friction applied to it as it is drawn through the tunnel.

In some cases, in addition to using a flannel or felt such as shown in Fig. 7, I may use the conventional pads designated generally 35 and 36 located forward of the tunnel so as to apply friction on the yarn. In the showing in Fig. 5 the friction is applied by means of springs 37 on the pads which springs are adjusted as to tension by the threaded members 40. These pads are mounted on a pin 39 in the usual manner.

In order to retain the threading block in place, there is an opening 43 extending laterally through the block which may have a pin 44 passing through holes 45 in the shuttle so as to hold the block in place. The head 46 of the pin is located in a recess 47 in one side of the shuttle and a nut 48 engages threads of the pin and is located in recess 49 in the other side of the shuttle.

This retaining pin as shown in Fig. 4 is located close to the end 50 of the passage 26 and above this passage so that yarn in the tunnel cannot drop into this passage at the forward end thereof (see Figs. 2 and 4) and yet threading can occur.

Pins 51 and 52 are located on either side of the pads 36 at a height so that the thread 15' will contact these pins and be lifted off the bottom of the tunnel in its passage through the tunnel. Thus, these additionally assist in keeping the thread in the tunnel. Further, these pins prevent the thread from dropping down benath

the pads and becoming caught and thus causing a break.

As shown in Fig. 6, the yarn is so wound on the bobbin 14 that it unwinds counterclockwise as viewed therein, and consequently the slot 24 is formed in such a manner as to receive this counterclockwise whip in a direction to effectively carry it down through the slot during the first pick of the shuttle which is toward the left as viewed in Figs. 1 and 6. It will be readily apparent that in cases where the bobbin was wound in an opposite direction that the slot in the thread block would be on the opposite side and reversely formed so that the whip from an oppositely wound bobbin would carry the thread into the guide eye as desired.

I claim:

1. A shuttle guide block to be disposed between the end of the bobbin chamber and the tip of the shuttle, said block being a solid one-piece structure having a longitudinal yarn entrance slot extending throughout the length of the block from its top surface downwardly, a substantially cylindrical yarn guiding tunnel of uniform diameter also extending longitudinally through a substantial part of the length of the block but laterally spaced from said slot and a threading passage throughout the length of the tunnel and extending from said slot beneath said tunnel and entering said tunnel on the opposite side of the center thereof from said slot to leave a distinct bottom wall between said tunnel and passage for the length of said substantially cylindrical tunnel.

2. A shuttle guide block as in claim 1 wherein said tunnel is at the bobbin chamber end of the block.

3. A shuttle guide block as in claim 1 wherein said tunnel is at the bobbin chamber end of the block, and opens into said slot which is laterally wider from the end of the tunnel toward the tip end of the shuttle.

4. A shuttle guide block as in claim 1 wherein a guide at a height greater than the height of said passage extends laterally across said block forward of but closely adjacent to the forward end of said passage.

5. A shuttle guide block as in claim 1 wherein a guide at a height greater than the height of said passage extends laterally across said block forward of but closely adjacent to the forward end of said passage said guide being cylindrical.

6. A shuttle guide block as in claim 1 wherein a guide at a height greater than the height of said passage extends laterally across said block forward of but closely adjacent to the forward end of said passage, said guide being a securing pin extending through the block for holding the block in the shuttle.

7. A shuttle guide block as in claim 1 wherein a guide at a height greater than the height of said passage extends laterally across said block forward of but closely adjacent to the forward end of said passage, and friction pads in said slot between said guide and forward end of the block extending vertically to a height greater than said tunnel.

8. A shuttle guide block as in claim 1 wherein a guide at a height greater than the height of said passage extends laterally across said block forward of but closely adjacent to the forward end of said passage, and friction pads in said slot between said guide and forward end of the block extending vertically to a height greater than said tunnel, and pins one on either side of said

pad at a height greater than the height of said guide.

9. A shuttle guide block as in claim 1 wherein a guide at a height greater than the height of said passage extends laterally across said block forward of but closely adjacent to the forward end of said passage, said guide comprising a plurality of laterally extending pins.

SETH WOOD.

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