Sept. 3, 1946. J. J. KAUFMANN, JR 2,407,162

LOOM SHUTTLE

Filed Jan. 13, 1944

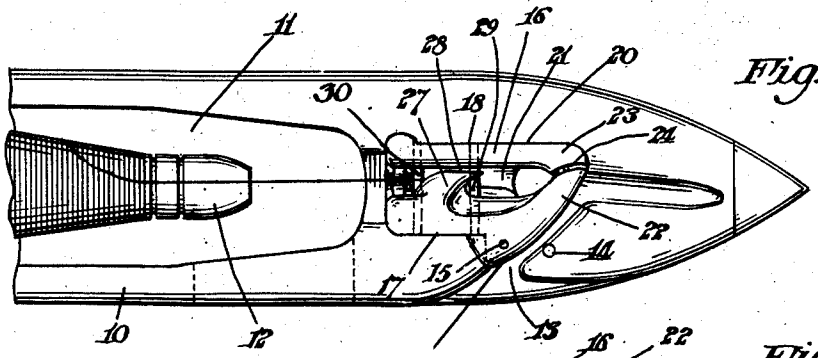


Fig. 1.

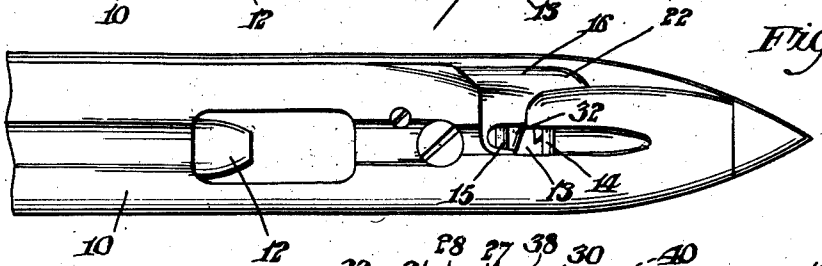


Fig. 2.

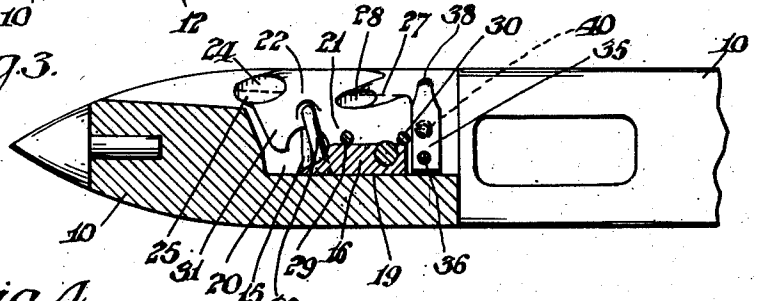


Fig. 3.

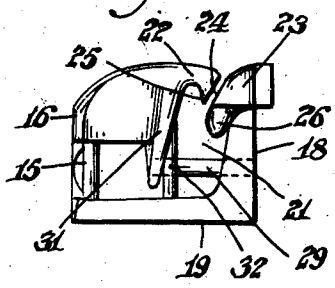


Fig. 4.

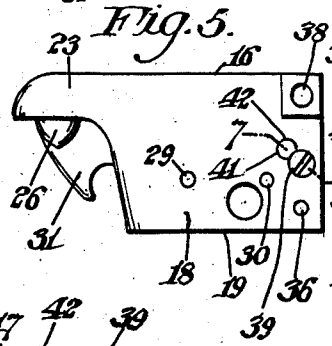


Fig. 5.

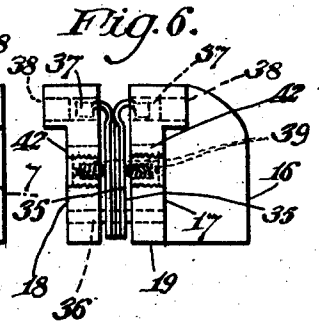


Fig. 6.

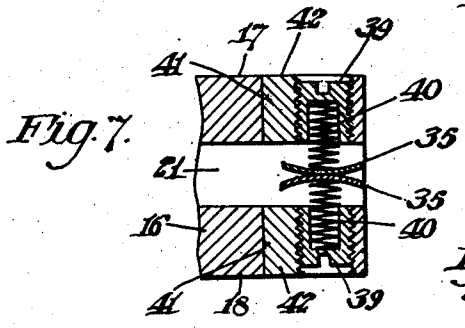


Fig. 7.

Inventor:
John J. Kaufmann, Jr
By Jas. C. Wobensmith
Attorney.

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LOOM SHUTTLE

John J. Kaufmann, Jr., Greenville, S. C., assignor to Steel Heddle Manufacturing Company, Philadelphia, Pa., a corporation of Pennsylvania

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4 Claims. (Cl. 139—223)

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My invention relates to shuttles for looms, and it relates more particularly to the provision of improved means for automatically threading the weft in shuttles of the type in which the filling bobbin is changed from time to time to replenish the supply of weft.

The threading blocks originally used in automatically threading shuttles for looms were usually made of brass or other similar ductile material. By reason of the ease with which such metal could be worked, not only were the ordinary machining operations facilitated, but also certain portions could be readily bent or formed, when desired, to the required shapes for effecting the threading operations.

It has for some time been recognized that threading blocks made of cast iron have much better wearing characteristics than those made of brass or other relatively soft ductile materials, tending to longer life, and in fact enabling the threading blocks to be reused in new shuttle bodies after the wooden parts of the original shuttles have become worn or damaged.

The principal object of the present invention is to provide improved threading means for automatically threading shuttles, comprising a threading block, the main or body portion of which may be readily cast, preferably of cast iron, and in which such finishing as required may be done by machine operations of a simple and inexpensive character.

A further object of the invention is to provide a threading block for loom shuttles in which the body portion is made of an integral casting, which may preferably be cast iron or the like, which is so shaped as to operate in an efficient and satisfactory manner.

A further object of the invention is to provide in a shuttle of the character aforesaid, a threading block which is so shaped that the filling thread will be initially guided therethrough, to the proper operating location, in a smooth and easy manner, whereby breaking of the filling on the transfer of the bobbins will be largely eliminated.

A further object of the invention is to provide a threading block with an improved form of tension device of the spring pressed plate type.

A further object of the invention is to provide, in a loom shuttle of the character aforesaid, improved means for adjusting the pressure of the plates which are used for imparting the tension to the filling thread, and for maintaining such adjustment when once made, notwithstanding the

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shocks and jars to which the shuttle parts are subjected in use.

The nature and characteristic features of the invention will be more readily understood from the following description, taken in connection with the accompanying drawing forming part hereof, in which:

Figure 1 is a top or plan view of the threading end portion of a loom shuttle embodying the main features of the present invention;

Fig. 2 is a side elevation thereof;

Fig. 3 is a longitudinal central section thereof, looking in a direction opposite to that of Fig. 2;

Fig. 4 is an outer end elevation of the threading block detached, and slightly enlarged;

Fig. 5 is a similar view in side elevation of the threading block;

Fig. 6 is a similar view comprising an inner end elevation of the threading block; and

Fig. 7 is a section taken on the line 7—7 of Fig. 5, still further enlarged.

Referring to the drawing, in the particular embodiment of the invention therein shown, the shuttle body 10 is preferably made of wood, and has the usual bobbin chamber 11 in which the bobbin 12 is held by the usual means (not shown), whereby it may be readily discharged therefrom, and a new bobbin substituted therefor, as the filling runs out from time to time.

The shuttle body 10 is also provided with the usual side delivery eye 13 for the passage of the filling yarn. The sides of said eye may be protected by hardened steel pins 14 and 15, or the like, to take the wear caused by the run of the filling. The pin 14 is mounted in the wooden portion of the shuttle outwardly of the side delivery eye 13, while the pin 15 is carried by the threading block 16, to be hereinafter described.

The threading block 16, comprising the principal novel element of the present invention, comprises primarily a single integral casting, preferably of a hard non-ductile material such as cast-iron, and has its body portion provided with outer side surfaces 17 and 18, preferably parallel with each other, and its bottom surface 19 substantially at right angles thereto. The body portion of the threading block 16 is fitted into a complementally shaped groove 20 in the outer end portion of the body 10 of the shuttle, and by reason of the shape of said body portion of the threading block 16, said groove may be easily and conveniently cut in the body portion 10 of the shuttle. The body portion of the threading block 16 is provided with a longitudinal channel 21 through which the filling thread passes

to the side delivery eye 13 during the weaving operation as said filling is laid into the cloth.

The threading block 16 is provided with a rearwardly and outwardly extending integral horn position 22, which initially, in the rough casting, is also integrally connected to a forwardly and outwardly extending lug 23 which constitutes a continuation of one of the side wall portions of the threading block 16.

In the making of the threading block 16, the connection between these two parts, to wit, the horn 22 and lug 23, is severed by a saw cut, which thereby provides an entrance slot 24, having opposed parallel faces for the filling thread, to pass therethrough during the threading operation. This slot is cut with the saw disposed at an angle to the longitudinal axis of the threading block 16, and also inclined to the vertical, so that said slot 24 extends at a pronounced inclination downwardly and forwardly.

The projecting horn portion 22 is initially so shaped, as to provide at the extreme rear thereof, a downwardly depending lip portion 25 which assists in preventing the thread from becoming disengaged from the threading block through swirling or looping.

Likewise, the forwardly and outwardly extending lug 23 is also provided with a downwardly projecting lip portion 26 for a similar purpose.

By the foregoing arrangement there is provided a novel construction of the outer end of the threading block, in which the thread entrance slot 24 is provided with opposed parallel faces of appreciable area, and the planes of said faces are inclined not only to the longitudinal axis of the shuttle, but also inclined to the vertical. This arrangement not only by itself, but particularly in conjunction with the downwardly extending lip 25 on the end of the horn portion 22, as well as the lip 26 carried by the forwardly and outwardly extending lug 23, will serve effectively to prevent unthreading of the shuttle at this point during the operation of the loom.

Intermediate the ends of the threading block there is an auxiliary horn member 27 which extends rearwardly and outwardly into the thread channel 21 being integrally formed on one side wall, and initially integrally connected to the other side wall, but being severed therefrom by a saw cut which thereby provides a thread entrance slot 28 at this point.

It should here be noted that the thread entrance slot 24 extends at a pronounced inclination downwardly and forwardly, whereas the thread entrance slot 28 extends substantially parallel to the longitudinal axis of the shuttle and vertically downward. It will therefore be seen that the thread entrance slots 24 and 28 are not only arranged with the planes of their faces at different angles but the same are also definitely out of alinement with each other and unthreading of the shuttle through overcasts or looping will be greatly minimized.

In the bottom of the thread channel 21 in the body portion of the threading block 16 there are provided transversely extending hardened steel pins 29 and 30 which serve to take the wear from the run of the filling thread in the bottom of the channel.

Disposed adjacent and beneath the rearwardly and outwardly disposed horn portion 22 is a downwardly inclined lug 31 which serves to guide the thread downwardly toward the delivery eye 13 after the same has passed through the thread entrance slot 24. The block is cut away at the lower end of the aforesaid guide portion to provide a transverse channel through which the thread passes when the shuttle has been fully threaded.

Adjacent the cutaway portion where the thread passes from the longitudinal channel 21 in the threading block 16 to the aforesaid transverse channel there is mounted a hardened steel pin 32, extending upwardly at a slight angle to the vertical, and around which the filling thread turns to pass to the delivery eye. At the outer end of the transverse channel the pin 15 is located, which pin serves to minimize wear at the point where the filling thread passes out through the side delivery eye.

The threading block 16 is preferably provided at its inner end with spring pressed tension plates 35, the lower ends of which are perforated for the passing therethrough of a guide pin 36 which is mounted in the lower inner end of the threading block 16. The upper ends of the tension plates or pads 35 are bent over in the usual manner as at 37, and are guided in transverse apertures 38 provided in the upper part of the threading block.

Hollow screws 39 are threaded in the side walls of the threading block 16, and in each of these hollow screws 39 there is mounted one end of a coil spring 40, the other end of which bears against one of the tension plates 35 at a point intermediate the ends thereof.

The foregoing arrangement of tension plates is well known in the art, but considerable difficulty has been encountered in the use of such an arrangement by reason of the adjusting screws, by means of which the springs are held and positioned, being jarred to an extent sufficient to change the adjustment thereof.

To avoid such a change of adjustment, there is provided in each side wall of the threading block, an aperture 41 adjacent the aperture in which the spring screw 39 is threaded and overlapping the threaded portions thereof. In each of these apertures 41 there is mounted a plug 42 of raw hide, vulcanized fibre, or other similar tough compact fibrous material, which plug 42 is inserted after the threads have been cut in the apertures in which the spring screws 39 are mounted, whereby the threads of the screws 39 will imbed themselves in the fibrous plugs 42, which will serve as effective brakes to prevent loss of adjustment of said screws.

I claim:

1. An automatically threading loom shuttle having a threading block the body portion of which is made of a hard metal casting and provided with a thread channel extending longitudinally therethrough, said threading block having an integral thread retaining horn portion at the outer end thereof extending from one of the side walls of the body portion toward an extension of the other side wall thereof, said horn portion being separated therefrom at its free end by a thread entrance slot extending downwardly and forwardly and having opposed parallel faces disposed in planes inclined to the longitudinal axis and to the vertical, said horn portion also having a downwardly extending lip at its free end, and the oppositely disposed portion of the side wall also having a downwardly extending lip.

2. An automatically threading loom shuttle having a threading block the body portion of which is made of a hard metal casting and provided with a thread channel extending longitudinally therethrough, said threading block having an integral thread retaining horn portion at the outer end thereof extending from one of the

side walls of the body portion toward an extension of the other side wall thereof, said horn portion being separated therefrom at its free end by a thread entrance slot extending downwardly and forwardly and having opposed parallel faces disposed in planes inclined to the longitudinal axis and to the vertical, said horn portion also having a downwardly extending lip at its free end, and the oppositely disposed portion of the side wall also having a downwardly extending lip, said threading block also having another integral horn portion disposed intermediate the ends of said threading block and extending from one side wall toward the other, and being separated at its free end from said other wall by a thread entrance slot extending vertically downward and having opposed parallel faces.

3. An automatically threading loom shuttle having a threading block the body portion of which is made of a hard metal casting and provided with a thread channel extending longitudinally therethrough, said threading block having an integral thread retaining horn portion at the outer end thereof extending from one of the side walls of the body portion toward an extension of the other side wall thereof, said horn portion being separated therefrom at its free end by a thread entrance slot extending downwardly and forwardly and having opposed parallel faces disposed in planes inclined to the longitudinal axis and to the vertical, said horn portion also having a downwardly extending lip at its free end, and the oppositely disposed portion of the side wall also having a downwardly extending lip, said threading block also having at its outer end a transverse channel extending from the longitudinal channel to the side delivery eye of the shuttle, and a downwardly inclined lug portion below

and forwardly of the horn portion serving to guide the thread into the transverse channel after the same has passed through the thread entrance slot and upon the return pick of the shuttle.

4. An automatically threading loom shuttle having a threading block the body portion of which is made of a hard metal casting and provided with a thread channel extending longitudinally therethrough, said threading block having an integral thread retaining horn portion at the outer end thereof extending from one of the side walls of the body portion toward an extension of the other side wall thereof, said horn portion being separated therefrom at its free end by a thread entrance slot extending downwardly and forwardly and having opposed parallel faces disposed in planes inclined to the longitudinal axis and to the vertical, said horn portion also having a downwardly extending lip at its free end, and the oppositely disposed portion of the side wall also having a downwardly extending lip, said threading block also having another integral horn portion disposed intermediate the ends of said threading block and extending from one side wall toward the other, and being separated at its free end from said other wall by a thread entrance slot extending vertically downward and having opposed parallel faces, said threading block also having at its outer end a transverse channel extending from the longitudinal channel to the side delivery eye of the shuttle, and a downwardly inclined lug portion below and forwardly of the horn portion serving to guide the thread into the transverse channel after the same has passed through the thread entrance slot and upon the return pick of the shuttle.

JOHN J. KAUFMANN, JR.