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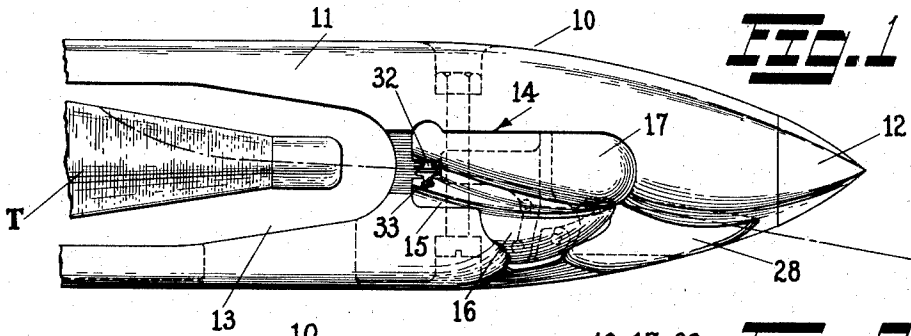
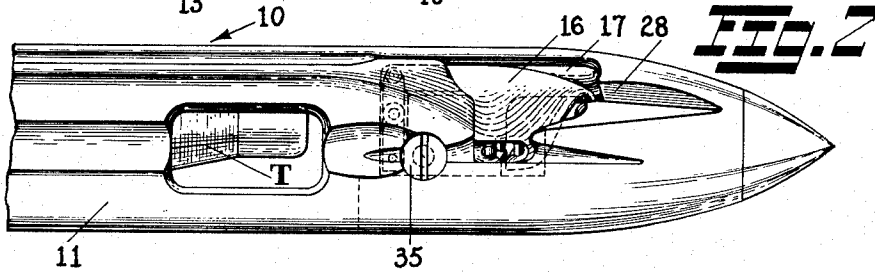
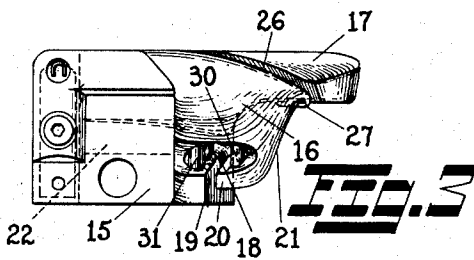
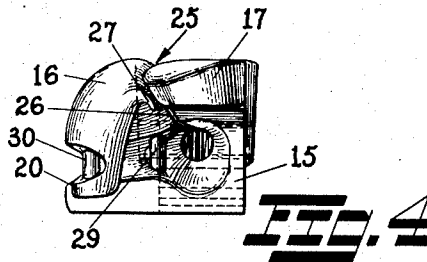
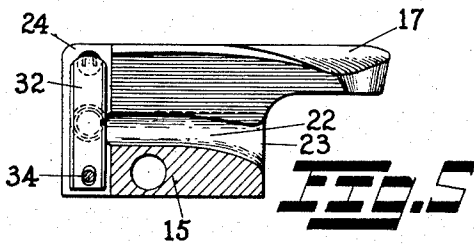
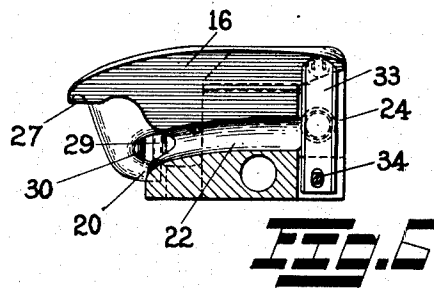
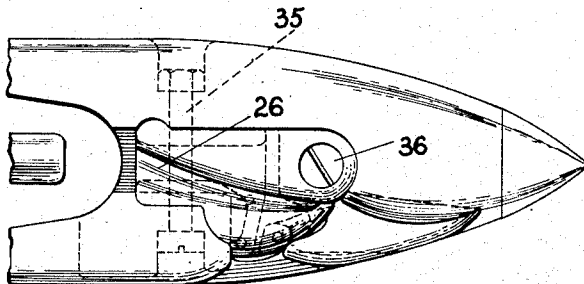
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2,835,278

SHUTTLE AND THREADING BLOCK

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2 Sheets-Sheet 1



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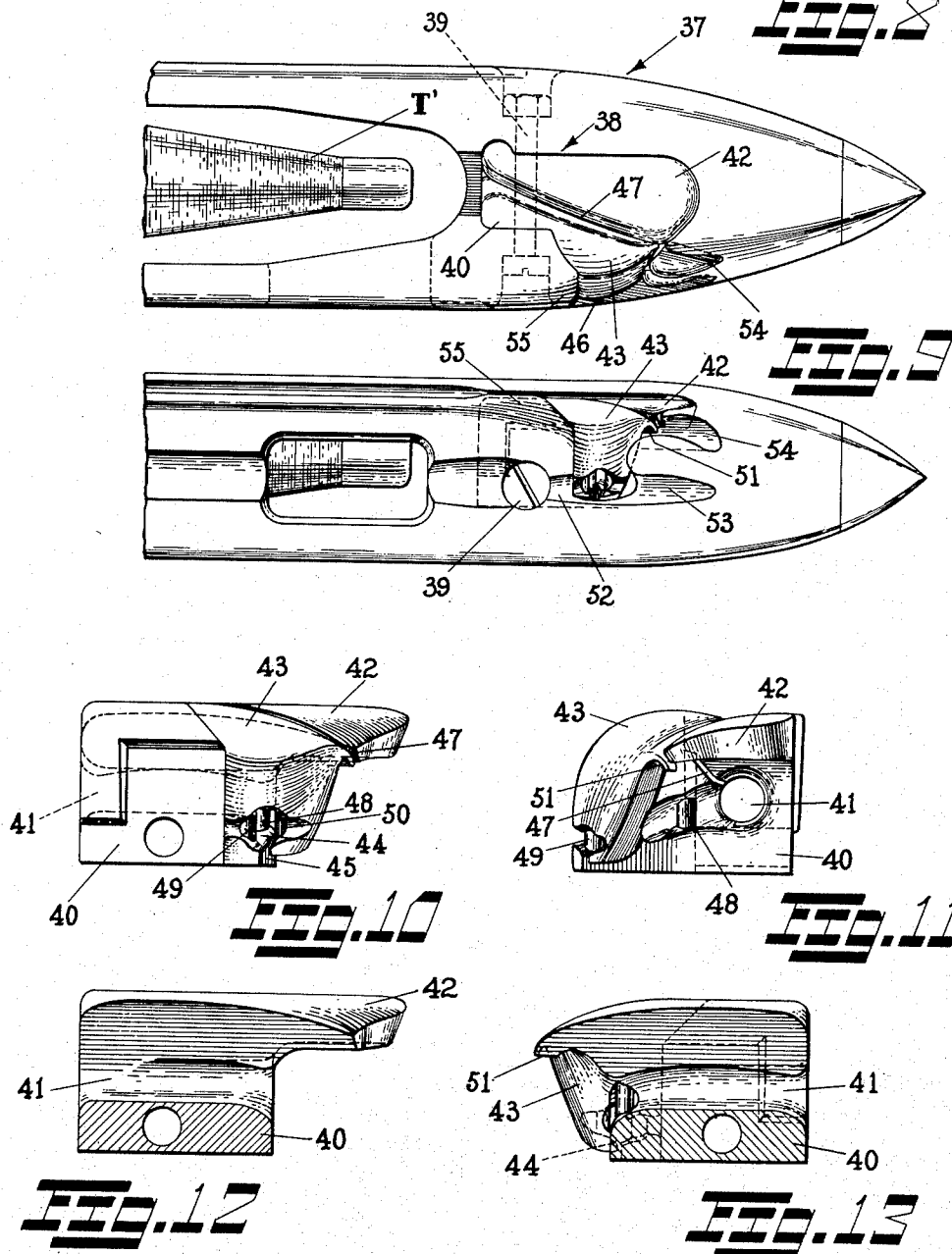
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SHUTTLE AND THREADING BLOCK

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2 Sheets-Sheet 2



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1

2,835,278

SHUTTLE AND THREADING BLOCK

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5 Claims. (Cl. 139—223)

This invention relates to a novel threading block for loom shuttles and to the combination of that block with a shuttle.

It is a general object of the invention to devise a shuttle and threading block which shall serve more effectively to thread the filling quickly and surely at transfer of filling in the loom.

A further object is that of devising a threading block and shuttle combination wherein the parts shall be simple in design, easily manufactured, and most rugged and durable in use.

Another object is that of holding the block in the shuttle very securely so that the block may not loosen up in use, nor will it have a tendency to rock about its transverse retaining bolt.

Another object is that of devising a threading block which shall be adapted for use with various materials and which may or may not be provided with tension pads for increasing the filling tension at the first pick after transfer.

It is a further object of the invention to devise a threading block which shall deliver its thread at a side eye which is a part of the block and also located so close to the side of the shuttle as to require no metal or other parts at or in the shuttle material to take the wear or cutting action of the thread.

It is a still further object to provide a shuttle and threading block combination which shall require the cutting away of a minimum amount of wood or other material of the shuttle, especially at the front or feeding side thereof.

Other objects will become apparent from the following more detailed disclosure.

In automatic bobbin changing looms the shuttle threading block plays a very important part since it must be capable of threading almost instantly as the filling is replenished, first threading partially on the first pick and then completely at the second. Failure to thread, broken filling, unthreading and other undesired results cut efficiency and cannot be tolerated, or at least, must be kept at an absolute minimum.

For weaving fine goods, it is desired that at transfer of filling to the shuttle, it shall thread as intended, but also, it should thread very quickly so that the initial pick may not be distinguishable from those following.

In overcoming these difficulties according to the invention, a shuttle and threading block have been so devised as to combine in affording better performance while inclining toward absolute simplicity of design resulting in rugged and troublefree parts superior in several respects to combinations previously in use.

It is also a characteristic of the shuttle and block combinations herein described that it makes possible a side eye in the block which without sacrificing any desired operational advantages, will deliver the filling at the shuttle face to feed through shallow grooves with no pins or plates to take cutting or wear as have often been needed.

2

Further the threading is so controlled to take place at the front of the shuttle and through a very small notch in the shuttle material, thereby to add strength and to resist more effectively the tendencies of the shuttle to crack or splinter at these points.

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

Fig. 1 is a plan view of a shuttle to which the invention is applied.

Fig. 2 is a front elevation of the shuttle of Fig. 1.

Fig. 3 is a front elevation of the shuttle threading block.

Fig. 4 is an end view of the block.

Fig. 5 is a section of the block cut along a center line of the thread channel.

Fig. 6 is a section of the opposite half of the block.

Fig. 7 is a plan view showing a modification.

Fig. 8 is a plan view of a modification of the invention.

Fig. 9 is a front elevation of the shuttle and block of Fig. 8.

Fig. 10 is a front elevation of this modified form of block.

Fig. 11 is an end view of Fig. 10.

Figs. 12 and 13 are sections of the front and rear halves of the block as seen when cut in two along the center of the thread channel.

Now referring to Figs. 1 and 2, a shuttle 10 of wood or other material has the usual body 11, tip 12, bobbin chamber 13 in which a bobbin and thread package T are held in a manner well known to those skilled in the art. A threading block 14 is retained in a recess in continuation of the bobbin chamber.

As seen in Fig. 1, the thread drawn from supply T extends angularly to a point at the end of the loom as the transfer is effected and as the shuttle with its new supply is picked across the loom. The block is particularly well adapted to thread very quickly as will be explained.

Block 14 is comprised of a body portion 15 from which there extends laterally to the front side an apron 16, and toward the end or toward the shuttle tip, a shield 17. The apron is rounded as shown and at its lower end, has a side eye 18 to which a vertical entrance slot 19 leads. The apron and side eye are set into the material of the shuttle itself with the lowest part 20 of the eye below the material of the shuttle in front of it so that on the second pick of the loom after transfer the filling may pass down edge 21, beneath point 20 and up into the side eye through slot 19. Once completely threaded it is very difficult for the filling to become unthreaded by escaping from the side eye trap.

Body 15 is drilled or otherwise formed with a longitudinal thread channel 22. This extends all the way through the body and is rounded at the end 23, preferably being flared to permit the thread to be fed from the channel and to turn laterally and through the side eye with a minimum of friction and without danger of being cut or abraded. In an eye for cotton or materials requiring no special tension means within the block itself as in Fig. 7, the channel is also flared at the entrance end. In the case where tension pads are used the identity of the channel is more or less lost as it runs into a pad slot 24, Figs. 3-6.

The threading of the filling is initially facilitated by a threading slot differently positioned and disposed at an unusual angle in relation to the other parts. The blank or casting from which the block is made is formed with a shallow recess or crevice 25 inclined as in Figs. 1 and 7. This crevice is well to the front of the vertical center plane of the shuttle and is aligned very closely with the filling as it extends just before threading. The slot is then

3

cut by a suitable cutter starting with this recess and inclining the path of the cutter from front to rear of the shuttle. The slot 26 then extends from front to rear in the longitudinal direction and also inclines from a point forwardly of the shield 17 to about the center plane of the body and of the shuttle as well, as observed at the end adjacent the bobbin chamber. This slot is referred to as making a compound angle and is most effective in rapid delivery of the filling to the channel. It also intersects the latter at an angle so that once the filling enters and runs lengthwise of the channel, it is effectively prevented from escaping.

The travel of the shuttle just after transfer and as it is picked takes advantage of this angularly disposed threading slot so that the filling moves, and in fact, snaps into the channel almost immediately.

The blank is so cast that the cutting of the slot 26 leaves a lip 27 somewhat hooked in form at the apron side of the block. This cooperates with a threading notch 28 cut in the shuttle material. This notch is much smaller than usual and occupies only about one-third of the shuttle width. It is thus far to the front of the shuttle and as can be seen in Fig. 1, the lip 27 lies under the shield 17 and forms a trap in conjunction with notch 28. Once the filling has entered below the lip it will be trapped since so long as it is taut, it cannot escape. As soon as the shuttle is picked back, the filling is threaded into the side eye. The thread might, of course, run through the smooth surfaces of the cast iron or other block since it is sand blasted and finished to present only a polished surface. However, life is increased if hardened steel pins are used and thus three pins 29, 30 and 31 are set into the block so that the wear incidental to the running thread is taken by them.

The notch 24 is suitably drilled to accommodate tension pads 32 and 33 backed by the usual springs and guided at the bottom by a pin 34. These may be of any suitable type and preferably are grooved as in United States Patent 2,046,287. Returning to Fig. 7, it is to be noted that in all forms the shield is of considerably greater width than similar members heretofore utilized, in fact, it is of substantially the same width as the body 15. The shape of the block, however, requires that only a minimum of the shuttle material be cut away for the recess. The block thus may be held in place by the usual cross bolt 35 and, in addition, a screw 36 is passed through a countersunk hole in the end of the shield and is threaded into the wood or other material of the shuttle. This prevents loosening of the block and rocking thereof, a fault sometimes experienced with blocks held only by the cross bolt.

This block is substantially flat on top except for the recess 26 and the general rounded contour of the apron along with the fact that the material of the shuttle has been cut away to a lesser extent than usual gives a smooth exterior on which the filling may not catch. Also there is less likelihood that the shuttle material will become cracked or splintered.

The form of the invention above described has marked advantages and also may be applied to the usual shuttle without modification thereof except that it becomes necessary to cut out or away less of the shuttle material than formerly.

The thread channel must naturally align fairly closely with the axis of the bobbin from which the filling is drawn. Heretofore the side eye itself, if in the block, has been located far enough inwardly from the front face of the shuttle so that pins and plates have been utilized to take the wear and cutting action of the thread. These are set in the shuttle material in a manner well known and require added work, complication and also a further cutting away of the material in order to be accommodated. By further accentuating certain of the novel aspects of the block as above described, it is practical for the first time

4

to bring the side eye of the block into a position of maximum efficacy for feeding, along with retaining all essential feeding and threading characteristics and advantages of the block above described with greater strength of shuttle at the block end.

Referring to Figs. 8 and 9, a shuttle body 37 has the usual bobbin chamber in which a bobbin and supply of filling T' are carried and in a connecting recess toward the end of the shuttle, a threading block 38. This block is held by a cross bolt 39 and may have other securing means such as the screw 36, Fig. 7.

This block shown in detail in Figs. 10-13 has a body 40 which is drilled or otherwise formed a thread channel 41 to align with the filling supply when all parts are in position. A shield 42 extends toward the shuttle end and is rounded as illustrated. It is supplemented by an apron 43 which extends to the front of the shuttle and downwardly to form a side eye 44 entered by an upwardly directed slot 45. This side eye is in cooperation with a ledge 46 at the front of the side eye recess so that once the filling has entered slot 45 it cannot very well become unthreaded. As in the form of the invention first described, the top of the block is cast with a shallow V-notch which here is inclined at a greater angle to the axis of the shuttle as compared to the first form. The threading slot 47 is then cut starting at this indentation and inclining from front to back as well as from the center, vertical plane through the channel 41 to a point forwardly of the shield. Thus, since the shield is wider and extends farther toward the front of the shuttle, the angle of the cut is greater in each direction. The shield is actually wider than the block body and the apron also extends to the side being inset only slightly from the adjacent surfaces of the shuttle body. The filling when threaded completely, extends about a hardened pin 48 laterally to the side eye and about pins 49 or 50, depending upon the direction of movement of the shuttle.

The apron terminates at its end in a lip 51 which is left after the slot 47 is cut.

The shuttle material is actually cut away very little except for the body and side eye recesses while shallow and small notches 52 and 53 at each side of the side eye merely serve to guide the thread which actually runs more on the metal of the apron or eye itself. Heretofore hardened steel pins and/or plates have been set into the shuttle material for that purpose.

The thread, of course, feeds into the notch 47, channel 41, under lip 51 and through a cut or notch 54 in the shuttle end which aligns with the direction in which the filling emerges at the first pick after transfer. This notch 54 is so positioned toward the front of the shuttle and at a slight angle to the vertical so it forms a trap in conjunction with the lip 51. Very little of the top of the shuttle has to be slabbed off at 55 to blend it into the apron.

Thus while this modification is generally similar to the form first disclosed, it carries the original concept further and presents exceptional advantages structurally in the shuttle-block combination, along with the rapid and sure threading at transfer.

While the use of the block in a wooden shuttle is perhaps its most logical end at the present time, it is well adapted to shuttles of plastic or other material. The second block is shown without tension pads, but, of course, such pads of any convenient type may be used just as in the form first described.

While the angles are capable of variation within limits the angle from front to back of the threading slot runs from about 20° to the vertical in the first form to roughly 30° in the second. The other angle may run from about 13° to 20°. These are examples only of actual constructions which have been very successfully used. Of course, they may be varied within reasonable limits without sacrificing the advantages of the invention.

5

The block may be hardened so that the three pins or at least some of them, may not be needed for cotton or materials which display less tendency to cut into the metal. It also strengthens the block against shocks or other abusive treatment.

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. The combination of a shuttle and threading block said shuttle having a bobbin chamber and adjacent one end a recess in continuation of said chamber in which said threading block is held, said block comprising a body portion, a shield extending toward the end of the shuttle and an apron inclined toward the front of the shuttle and terminating at its lower end in a side eye having an upwardly directed, entrance slot, a thread channel in said body portion aligned substantially along the center line of the shuttle, a threading notch in the shuttle positioned wholly at the front of a plane taken on the vertical center line of the shuttle, and a threading slot in the block aligned with said notch and extending for substantially the length of the thread channel and apron defined as a parallel sided cut directed at a compound angle so that it inclines from the front of the shuttle rearwardly and also from the end of the shuttle adjacent said threading notch toward the bobbin chamber to intersect the thread channel at the rear of the channel, and a filling restraining lip comprised as a part of the apron and cooperating with the threading notch in the shuttle to restrain filling once threaded.

2. The combination of a shuttle and threading block as defined in claim 1, wherein the block is retained in the

6

recess in the shuttle by a transversely disposed bolt and by a screw passed through said shield adjacent its end and threaded into the shuttle.

3. The combination of a shuttle and threading block as defined in claim 1, wherein the block is additionally slotted in a substantially vertical plane at the center of the thread channel adjacent the bobbin chamber, and spring pressed filling tensioning pads mounted in said vertical slot.

4. A threading block for use in a shuttle for an automatic, bobbin changing loom comprising in combination, a body portion, a shield extending toward one end and an apron projecting laterally toward the front side of said block, a thread channel in said body portion extending generally lengthwise of the block and a side eye communicating with said channel and having an upwardly directed entrance slot, a threading slot in the block extending for substantially the length of the thread channel and apron and from the front portion of the block at its upper face to the channel and inclined longitudinally from the shield end at the front toward the center of the block at the end opposite the shield, and laterally from front to back of the block, and a thread restraining lip in extension of said apron.

5. A threading block as defined in claim 4, further characterized by a slot at the end of said body opposite the shield and opposed, spring pressed tension pads operatively positioned therein.

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