Oct. 23, 1945. W. J. GOSSELIN 2,387,438

SHUTTLE

Filed March 16, 1944 4 Sheets-Sheet 1

FIG. 1

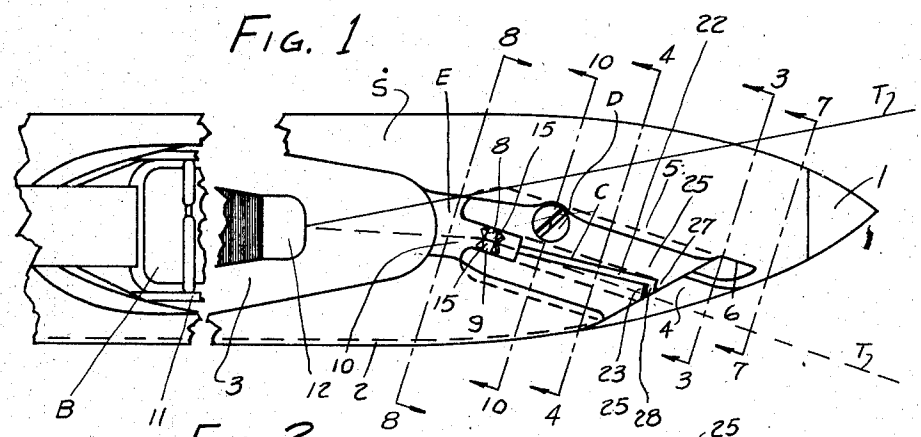


FIG. 2

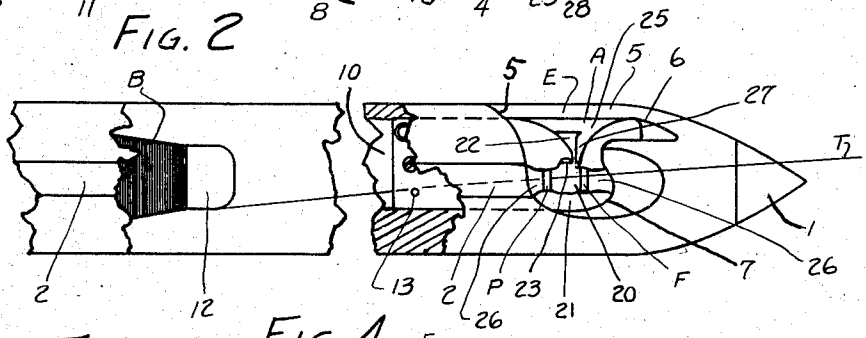


FIG. 3

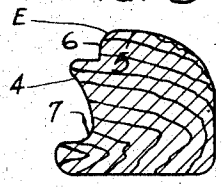


FIG. 4

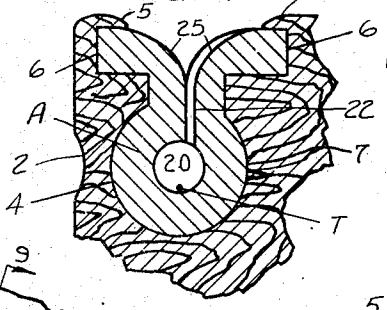


FIG. 4A

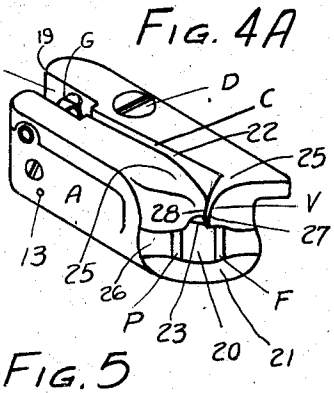
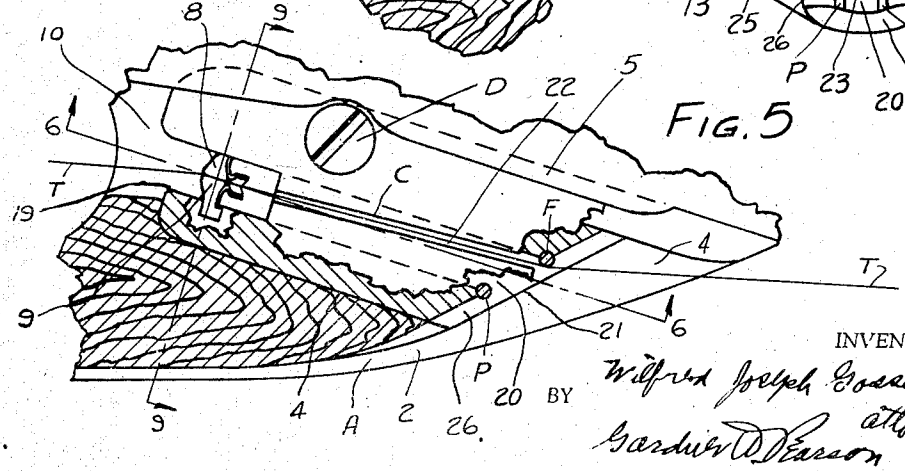


FIG. 5



INVENTOR.
Wilfred Joseph Gosselin
BY
Gardiner D. Pearson
Attorney

Oct. 23, 1945. W. J. GOSSELIN 2,387,438

SHUTTLE

Filed March 16, 1944 4 Sheets-Sheet 2

FIG. 6

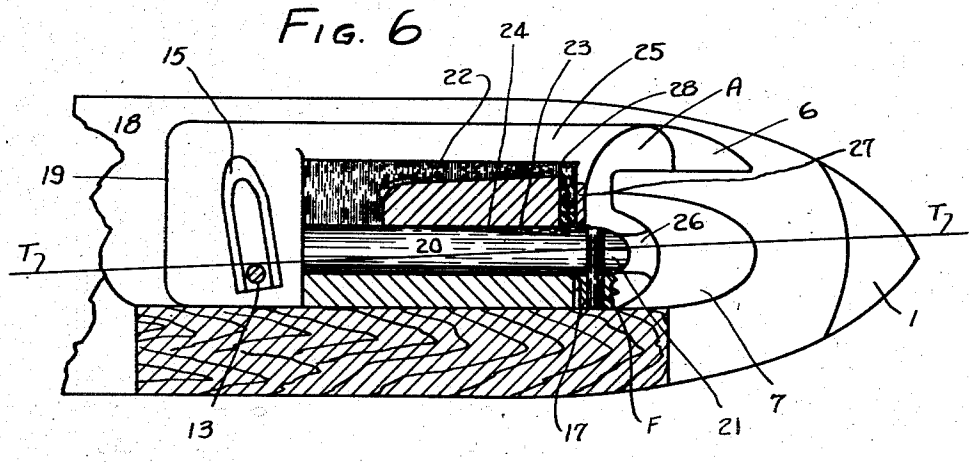


FIG. 7

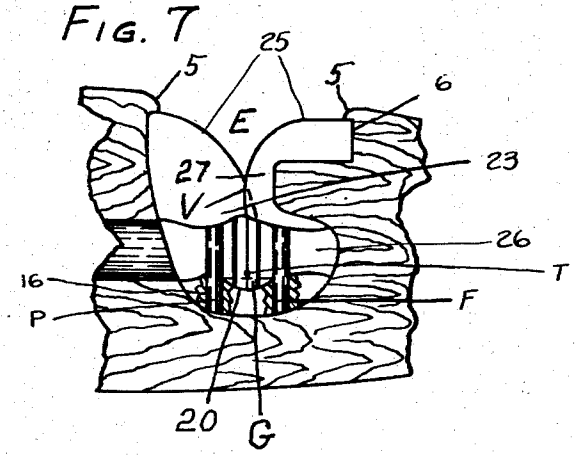


FIG. 8

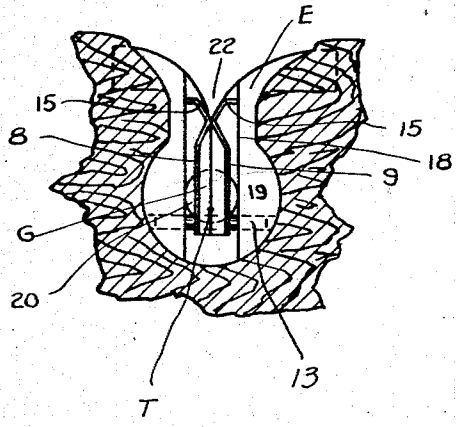
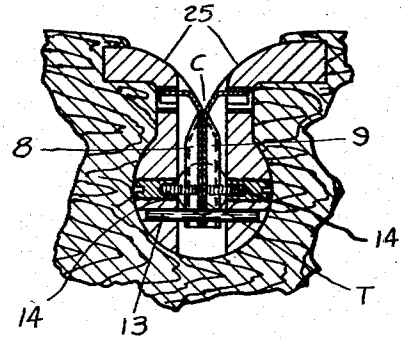


FIG. 9



INVENTOR.

Wilfred Joseph Gosselin

BY

Gardner D. Person, Attorney

Oct. 23, 1945. W. J. GOSSELIN 2,387,438

SHUTTLE

Filed March 16, 1944 4 Sheets-Sheet 3

FIG. 10

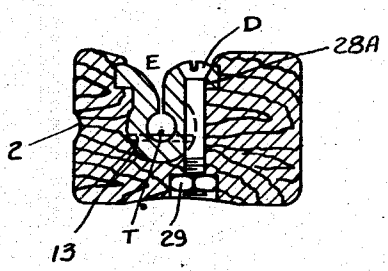


FIG. 11

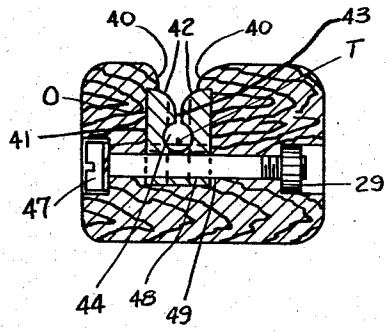


FIG. 12

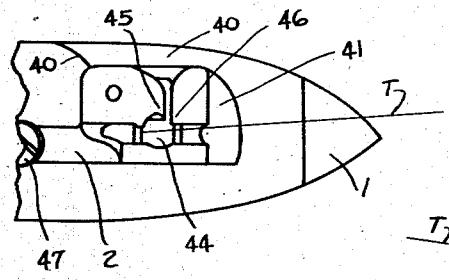


FIG. 13

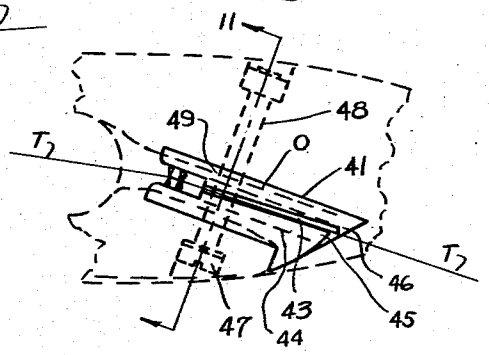


FIG. 14

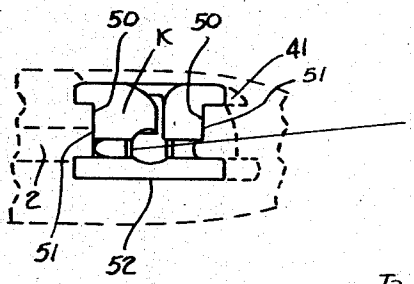


FIG. 15

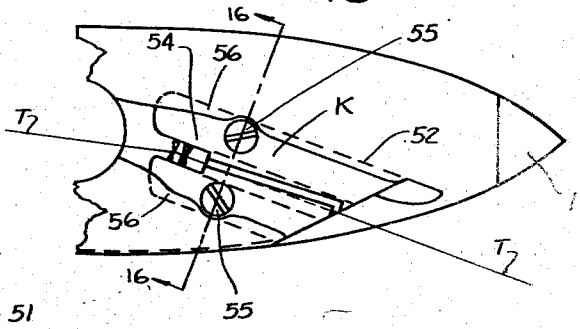
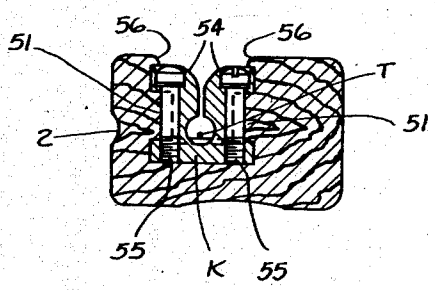


FIG. 16



INVENTOR.
Wilfred Joseph Gosselin
BY
Gardner D. Parson Attorney

Oct. 23, 1945. W. J. GOSSELIN 2,387,438

SHUTTLE

Filed March 16, 1944 4 Sheets-Sheet 4

FIG. 17

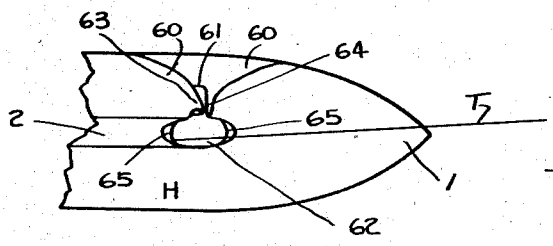


FIG. 18

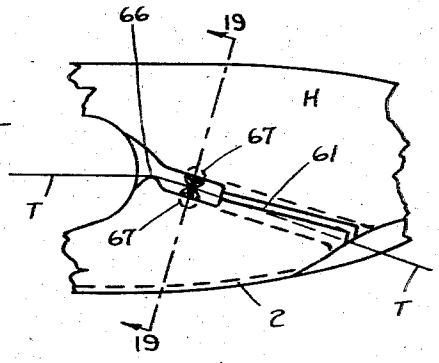


FIG. 19

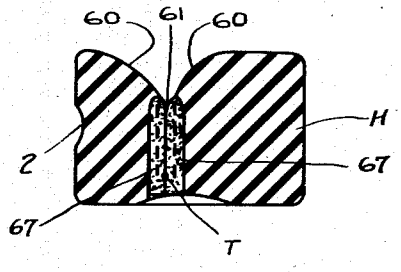


FIG. 20

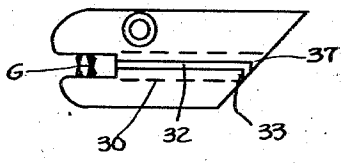


FIG. 21

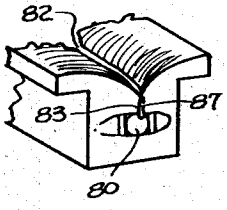


FIG. 22

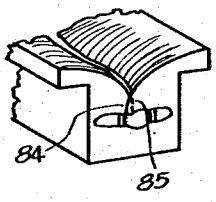


FIG. 23

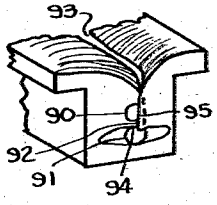


FIG. 24

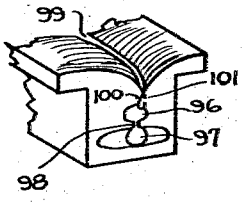


FIG. 25

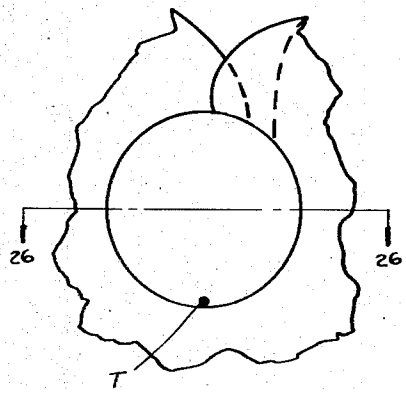
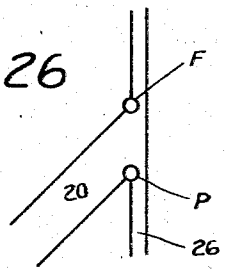


FIG. 26



INVENTOR

Wilfred Joseph Gosselin

BY

Gardner D. Pearson, Attorney

Patented Oct. 23, 1945

2,387,438

UNITED STATES PATENT OFFICE

2,387,438

SHUTTLE

Wilfred Joseph Gosselin, Methuen, Mass., assignor to U. S. Bobbin & Shuttle Co., Providence, R. I., a corporation of Rhode Island

Application March 16, 1944, Serial No. 526,668

14 Claims. (Cl. 139—223)

This invention relates to shuttles for weaving and especially to what are called automatic shuttles such as are used in automatic bobbin changing looms. In this type of loom there is a battery, chute or magazine which holds a number of full bobbins, one of which replaces an empty or almost empty bobbin in a shuttle after a feeler located somewhere in the loom indicates that the thread on such bobbin is almost exhausted.

Generally the full bobbin is forced down by a transfer hammer into the shuttle, taking the place of an empty bobbin, the end of its thread being attached to some part of the battery, magazine or to some other part of the loom.

On the first pick, the shuttle carrying the new, full bobbin is driven across the loom and on the next pick it is driven back. In shuttles where there is a shuttle eye outlet in the side, the thread cannot get permanently into the eye outlet so that it is permanently trapped, until the second pick after transfer, because it must get around a nose and change direction almost ninety degrees.

Most such shuttles have a nose extending forward at or near the top of the shuttle with a hook of some sort extending down near its top so that on the first pick the thread drops down under this nose and is caught by the hook. There is also what is known as a horn which extends down and back from at or near the nose, this horn having a hook at the bottom, the purpose being to cause the thread on the second pick to slip down along the front of the horn behind this hook into a thread delivery passage to an eye outlet where it will be kept by the hook, as a trap, while the thread on the new bobbin is running out.

There is also a central vertical inside thread post around which the thread bends at an angle of about ninety degrees.

Ordinarily there is an axially extending threading slot and a top thread groove in front of it. There is also an eye threading slot extending down and back at an angle from in front of the nose to a shuttle eye outlet.

With my device, there is no axial, forwardly extending threading slot, no top groove, no vertical, central inside post, no nose, no horn, and no angularly backwardly extending eye threading slot.

The main feature of my device is a single threading slot and thread passage which extend from the front of the bobbin chamber straight and diagonally forward and out the side of the shuttle into a thread groove as a shuttle or thread eye outlet.

The thread delivery eye passage forms part of this threading slot or connects with that slot at its bottom, both the slot and the thread delivery eye passage being substantially straight.

Another novel feature of my device is the trap at the thread or shuttle eye outlet, which outlet is at the front end of the threading slot and of the thread delivery eye passage. The purpose of this construction is to cause the thread to slip down into and through the threading slot right into the trap and into the thread delivery eye passage and shuttle eye outlet on the first pick or at almost the instant the shuttle starts to move along the shuttle race on the lay on the first pick after transfer.

This shuttle eye outlet is so made, preferably with two vertical outlet pins, that as soon as the thread is in the trap it remains there and runs between these outlet pins until another bobbin is transferred. In other words, it is fully and finally threaded.

I also prefer to provide the thread passage at its inlet with friction plates which also serve as thread guides or with a thread pin so placed that the thread makes no bend and touches nothing after leaving the plates or pin until it runs around one of the outlet pins into the thread groove.

Where, as is usually the case, a metal threading block is used in a shuttle body made of wood or other material, with my device many parts are eliminated and many processes are avoided because I can use a threading block with substantially parallel sides, bottom and top, which block can be slipped in at an angle from the eye side to a similarly bored and cut block recess, or hole.

Moreover, the thread delivery passage in the block can be drilled as a straight, cylindrical hole and the threading slot can be cut as straight passages with a straight saw.

The threading block can be held in place by suitable wings, ribs and grooves of different kinds and by a block screw in such a way that they do not weaken the shuttle.

By omitting the usual threading slot which runs axially and beyond which is a top groove, there is more stock at the front of the shuttle and the tendency to split at that point is greatly reduced.

The wear pins at front and back at the eye outlet can be made of very hard metal, porcelain or other wear resisting material and can

be held entirely in the metal threading block instead of in the wood thereby rendering the construction stronger and allowing them to be easily replaced.

The entire construction of the threading block is much simpler than where an axial threading block with wings sunk in the wood, a forward nose, a horn and irregular passages is used as in the usual construction.

By making the sides and bottom of the threading block cylindrical, it can be slipped into a drilled hole in the side of the shuttle body and as in this construction the block is held on the sides, part of the top and at the bottom, it does not rock on the attaching screw and cause trouble as sometimes happens in the usual construction.

However, a square or rectangular shuttle block with straight parallel sides can be used if desired.

While a relatively heavy threading block is desirable to help balance the shuttle, my device can be used as part of a shuttle made of plastic or other material with no block of any kind.

A shuttle of my construction can of course be threaded by hand.

In the drawings, Figs. 1 to 10 show a shuttle with a preferred form of removable threading block.

Fig. 1 is a plan view of the front end of such a shuttle; Fig. 2, a side elevation; Fig. 3 a section on the line 3—3; Fig. 4 on the line 4—4; Fig. 7, on the line 7—7; Fig. 8, on the line 8—8; and Fig. 10 on the line 10—10, all of Fig. 1.

Fig. 4A is an isometric view of the threading block.

Fig. 5 is a plan view enlarged and partly broken away, showing details of construction.

Fig. 6 is a section on line 6—6 of Fig. 5.

Fig. 9 is a section on line 9—9 of Fig. 2.

Figs. 11, 12, and 13 are views of a shuttle with a shuttle block of somewhat different cross sectional contour.

Fig. 11 is a section similar to Fig. 10; Fig. 12, similar to Fig. 2; and Fig. 13 is a plan view of this type of shuttle block with its relation to the shuttle shown in dotted lines.

Figs. 14, 15, and 16 show a shuttle block of a third cross sectional contour; Fig. 14 being similar to Figs. 2 and 12; Fig. 15 being similar to Fig. 1 and Fig. 16 being a sectional view similar to Figs. 10 and 11, as on the line 16—16 of Fig. 15.

Figs. 17, 18, and 19 are views of a shuttle made of one material with no removable shuttle block, Fig. 17 being a side elevation; Fig. 18 a plan view and Fig. 19, a sectional view on line 19—19 of Fig. 18.

Fig. 20 is a plan view of a shuttle block in which the threading slot lies in a plane parallel with the axis of the thread eye passage.

Figs. 21, 22, 23 and 24 are isometric views of modifications of the thread trap.

Fig. 25 is an enlarged diagrammatic view of a typical outlet thread trap with its trap hook and trap guide.

Fig. 26 is a diagrammatic, horizontal sectional view through a typical outlet for a thread delivery eye passage such as shown in Fig. 25 as on line 26—26.

In the drawings, S represents a shuttle of the automatic type having a tip 1 which I will call the front tip, a thread groove 2 along the side of the delivery eye passage outlet 21 and a bobbin recess 3 in which a bobbin B is shown as held by the usual holder 11, 12 representing the tip of the bobbin.

The above parts are substantially the same as in most automatic shuttles, the thread groove 2 which runs along the eye outlet side of the shuttle being to receive the thread T after it has come from the bobbin B and out through the eye, all in a well known manner.

4 represents a threading block recess which extends from the middle front 10 of the bobbin recess 3 diagonally forward to a position at the eye side and at the thread groove 2 between the front tip 1 and the front 10 of the bobbin recess 3.

As shown in Figs. 1 to 7, there is a mouth E, to receive the thread T, at the top of this block recess, formed by the wooden lips at 5, 5, which converge and extend downwardly while the sides 6, 6, are parallel and the bottom at 7 is substantially cylindrical in cross section.

A represents a threading block which in cross section substantially conforms to the shape of the block recess 4 whereby it can be slipped in from the outside or slipped out if it becomes necessary to remove it.

The front part 10 of bobbin recess 3 enters block recess 4 and 18 is a recess for friction plates 8, 9, if they are used, and may be considered an extension of or part of eye passage 20.

The eye passage 20 extends lengthwise through the thread block A, parallel with its side and bottom walls, from the back or inside end 19 and the recess 18 for the friction device G, including the plates 8 and 9, to its outside end 21 which I will call the eye passage outlet. At this end just inside the outlet 21 is the thread trap V which includes a hook 23, thread passage 28 and trap thread guide 27.

Where a block such as A is used E indicates the mouth which includes the converging lips 5, 5, in the shuttle body and the lips 25, 25, in the block A. This mouth and these lips are so made that they so converge as to direct the thread T into the threading slot C and trap V. This threading slot C includes the part 22 which extends from the middle of the top near the back of eye passage 20 forward and preferably at a slight angle away from the eye passage outlet and down at a tangent or near tangent to the front of that passage just behind the trap V as shown in Figs. 1 and 2 and 4 to 7.

This part 22 of the slot C stops just before it reaches the trap thread guide 27 and turns at 28 at about a right angle between the trap hook 23 which is formed when it is being cut and the trap thread guide 27, Figs. 1, 4A, 6 and 7.

It will be observed that this trap thread guide 27 blocks the front end of the part 22 of the threading slot C and that at the front or outlet end of the block A, the lips 25, 25, merge with the top faces or edges of the trap hook 23 and of trap thread guide 27 which faces are preferably formed on curves which slope in and down in opposite directions towards each other and which intersect at a point slightly above the thread passage 20.

The bottom faces of trap hook 23 and guide 27 should lie in substantially the same curved surface which coincides with the curve at the top of the eye passage 20. See Fig. 25.

When the full bobbin is forced down at front center by the transfer the thread T is directed by the mouth, such as E, into the back end of the threading slot C and when once started in that slot, the tension on the thread as it partly un-

winds from its bobbin to the point where it is attached to the magazine, causes it to slip along the part 22 under the inside part 24 of hook 23 along the top of guide 27 and then down over and under hook 23 and guide 27 through part 28 of slot C.

If the thread is not trapped then, when the lay moves from front to top center, the up and down movement of the thread as it unwinds, being confined between plates such as 8 and 9, and the snap of the picker action combined with the backward movement of the lay, carries it down around and under both parts of the trap V namely the hook 23 and the guide 27 and through the slot part 28 into the eye passage 20 although usually the hammer action of the transfer itself causes the thread to get into the eye passage before top center.

Where a threading block is used, I find it convenient to cast it with the sides of the threading mouth converging and extending down to where the threading slot will be cut. The front part where the thread trap will be is also suitably formed.

The eye passage 20 is bored or drilled, preferably parallel with the sides of the block, the parts 22 and 28 of slot C are cut down into the eye passage, with 28 at a right angle as in Fig. 1 or at a different angle as in Fig. 13. The cut part 28 forms the trap hook 23 and separates it from the trap thread guide 27. The thread groove 26 is cut and holes 16 and 17 for pins P and F are drilled up from the bottom across groove 26 where it intersects passage 20 and all sharp and rough edges are removed.

Extending down from under the thread guide 27 is a vertical front outlet pin F which extends across part of the thread groove 26 and across the front part of the eye passage outlet 21.

P is a vertical back outlet pin which extends across part of the thread groove 26 and across the back of the eye passage outlet 21 and 8 and 9 represent friction plates of a well known kind which slope forward and down and at the top have diverging lips 15, 15, in a position to receive the thread as soon as it starts unwinding from the tip 12 of the bobbin B on the first pick. These plates and particularly the one 9 on the eye side keep the thread T in the middle of the eye passage 20 until it engages either one of the pins F or P. After it leaves either one of these pins, it continues in the thread grooves 2 and 26 at no place coming in contact with any rough surfaces which might injure it.

D is a fastening screw which as shown in Figs. 1 to 10 passes down through a hole 28A in threading block A and into a nut 29 sunk in the wood of the shuttle S.

Plates 8 and 9 of friction member G are movable on a pin 13 and are pressed together by springs 14, 14. Pin 13 holds up thread T clear of the bottom of eye passage 20.

As the lay moves from front to top center and then to back center, thread T slips into mouth E down between plates 8 and 9 and then into the back part of slot 22 and down around hook 23 and guide 27. If it slips one way, hook 23 controls it and if the other way, guide 27 controls it.

It will be noted that pins F and P extend upward in holes 16 and 17 and are supported entirely by block A.

In Figs. 11, 12, 13 is shown a modification of the threading block construction in which the block is indicated by O. Its cross section, as shown in Fig. 11, is relatively rectangular instead of cylindrical as is also the recess 41 into which it fits. The body of the shuttle is cut away at 40, 40, and the opening and lips 42, 42, of the threading slot 43 all converge to direct the thread through the threading slot 43 and into the thread delivery eye passage 44.

The trap hook 45 and thread guide 46 are substantially the same as in the other construction but the attaching screw 47 passes through the horizontal hole 49 in the body and 48 in the block instead of extending down vertically.

In Figs. 14, 15, 16, the threading block K is shaped in cross section very much like A but on each side has the longitudinal grooves 50, 50, which engage the ribs or projections 51, 51, extending into the block recess 52 whereby the block is locked in place. The converging lips 56, 56 in the wood may be small in this case. The converging lips 54, 54 are all that is necessary and the fastening means is shown as two vertical screws or pins 55, 55, which extend down from the top of the block through the projections 51, 51, thereby locking the device entirely and firmly in place.

As shown in Figs. 17, 18, 19 the threading block may be entirely omitted as well as the friction plates and the outlet pins. In such a shuttle H, the lips 60, 60, connect with the threading slot 61 which enters or forms part of the thread delivery eye passage 62 with a trap hook 63 and thread guide 64, the outlet pins being replaced by rounded surfaces 65, 65, and the friction plates being replaced by felt pads 67, 67. Preferably there is one rounded guide rib 66 at the inner end of passage 62 on the eye outlet side.

The characteristics of my device are that my threading slot starts at the middle top of the front of the bobbin chamber so that thread, wound either way, will slip into it as soon as the lay starts to move back, or even before that if I use a friction device of the friction plate type with the friction plates sloping down and forward, as the thread is instantly caught and is held in line with and starts through the back of the threading slot.

The slope of the mouth such as E, at the back or near the bobbin tip, down to the back entrance of the threading slot should be at a steep angle, the front or eye side being preferably steeper than the other side, as shown in Figs. 8, 9, and 10.

While preferably my threading slot extends from the back, forward and down at a small angle with the axis of the thread passage away from the outlet side so that the thread after it starts in the slot is being constantly pulled down until it engages the thread guide which extends from in front of the end of the threading slot out and down beyond the front and bottom part of the trap hook formed by the cutting of the threading slot, this threading slot may run parallel with the axis of the thread passage, provided the thread guide extends in front of it over and down below the trap hook so formed whether it is down at the side near the bottom or at the top.

As my threading slot starts at the middle top, the whirling or unwinding of the thread from the bobbin is of no help nor hindrance except that as the thread unwinds, it moves up and down between the friction plates and the downward motion, when combined with the diagonal pull along the axis of the thread passage as the lay moves back and the shuttle starts its pick, carries the thread down through the threading slot, around the trap hook and down over the

thread guide until it is safely locked in position.

On account of the shape of the trap hook and its association with the thread guide it makes no difference which way the thread slips around the eye outlet, as it will be stopped by the thread trap and cannot unthread.

In all cases it will be noted that the bottom of the thread guide is of slightly hooked form so that the thread in slipping around after it is threaded, will slip down below and between it and the bottom of the cooperating trap hook or will slip down off the trap hook, around the tip or nose of the thread guide but cannot escape.

The top faces of the trap hook and of the trap guide curve or slope so that they intersect and the bottom face of the guide comes below the tip of the hook as shown enlarged and exaggerated in Fig. 25.

In Figs. 20 to 24, I show various combinations and modifications of the threading slot, thread passage, trap hook and thread guide.

In Figs. 1 to 10, slot **22** is at an angle with the axis of passage **20**, and hook **23** is at the right as is guide **27**.

In Figs. 20 and 21 the threading slot **32** or **82** is at the top and parallel with the axis of thread passage **30** or **80**, so that hook **33** or **83** and guide **37** or **87** are near the center of the eye passage and in Fig. 22 the hook **84** and thread guide **85** are over at the left.

In Fig. 23 I show the adaptation of a trap hook and thread guide to a threading block with a double thread delivery passage formed by holes **90** and **91** connected by a secondary threading slot **92**, the primary threading slot being shown at **93** and forming the trap hook **94**, while the thread guide **95** extends well down beyond and in front of it.

In Fig. 24 is shown a double thread passage formed by holes **96** and **97** connected by a slot **98**, while **99** is the threading slot connecting with and forming trap hook **100** in front of which extends the thread guide **101**.

In my preferred construction, where I use a metal threading block extending diagonally such as A, O, or K, to keep the shuttle well balanced, leaving the front part of the shuttle near the tip with more wood or other material than in the usual construction, I bind the shuttle body and block together by a bolt or screw. I thus secure a stronger construction and one which will resist the constant pounding of the loom.

If the block such as A, O, or K is inserted through a hole in which the material of the shuttle body overlaps part of the block or if one or the other has ribs or channels, any tendency of the block to loosen and pivot on the fastening device is stopped.

Fig. 25 is an elevational view and Fig. 26 is a horizontal sectional view, both diagrammatic and enlarged, of a typical outlet of a thread eye passage showing the preferred shapes and positions of the trap hook and guide and of the outlet pins such as P and F with reference to a thread eye passage such as **20** and a thread groove such as **26**, which forms part of the thread eye groove such as **2** in the body of the shuttle.

Fig. 26 clearly shows that, preferably, pins P and F or their substitutes **65, 65**, are so positioned that they intersect the walls of **20** and **26** so that each projects a little distance into both the eye passage and into the thread groove.

Preferably the bottom edges of the thread trap hook and guide are in the same curve, and the bottom edge of the guide should not be above the bottom edge of the hook but it may extend below that edge and down in front of the top part of the eye passage, and of course it should be outside and spaced from the trap hook.

I claim:

1. In an automatic weaving shuttle having a front tip, a bobbin recess and a thread delivery eye passage extending diagonally forward in a substantially straight line from the front of the bobbin recess to a thread delivery eye passage outlet in the side of the shuttle between the front tip and the bobbin recess, a threading slot including a mouth having downwardly converging lips at its top and extending down and diagonally forward from the top near the front of the bobbin recess and entering the thread delivery eye passage along its front on the side away from the eye outlet so as to form a trap hook extending down from the top front of the eye outlet, an eye outlet thread guide extending from in front of the end of the threading slot out and down beyond the front and bottom part of the trap hook, and vertical outlet pins which extend across the front and back of the eye outlet.

2. In a weaving shuttle having a front tip, a bobbin recess and a thread delivery eye passage extending diagonally forward in a substantially straight line from the front of the bobbin recess to a thread delivery eye passage outlet in the side of the shuttle between the front tip and the bobbin recess, a threading slot including a mouth with converging lips and extending down and diagonally forward from the top near the front of the bobbin recess and entering the thread delivery eye passage, a trap hook extending down from the top front of the eye passage outlet, and an eye outlet thread guide extending from in front of the outside end of the threading slot out and down beyond the front and bottom part of the trap hook.

3. In an automatic weaving shuttle having a front tip, a bobbin recess and a block recess extending diagonally forward in a substantially straight line from the front of the bobbin recess to an outlet in the side of the shuttle between the front tip and the bobbin recess, all transverse parallel cross sections of the block recess being of substantially the same contour and including one or more holding ribs, and the bottom being substantially cylindrical and there being a mouth to catch the thread with lips which converge to the top of the block recess; the combination of a threading block positioned in and fitting the block recess and having a cylindrical thread delivery eye passage extending through the block parallel with its walls from the bobbin recess to an eye outlet in the side of the shuttle and having a threading slot including a mouth having downwardly converging lips at its top, the threading slot extending down and diagonally forward from the top near the front of the bobbin recess into the thread delivery eye passage to near its front on the side away from the eye outlet and then turning and extending out at the side so as to form a trap hook extending down from near the top front of the side outlet and then diagonally up and back, an eye outlet thread guide extending from in front of the end of the threading slot out and down beyond the front and bottom part of the trap hook, and vertical outlet pins carried by the threading block which extend across the front and back of the eye outlet in the threading block; and means to hold the block in its recess.

4. In an automatic weaving shuttle having a front tip, a bobbin recess and a block recess extending diagonally forward in a substantially straight line from the front of the bobbin recess to an outlet in the side of the shuttle between the front tip and the bobbin recess, all transverse parallel cross sections of the block recess being of substantially the same contour and including one or more holding ribs, the bottom being substantially cylindrical and there being a mouth to catch the thread with lips which converge to the top of the block recess; the combination of a threading block positioned in and fitting the block recess and having a cylindrical thread delivery eye passage extending through the block parallel with its walls from the bobbin recess to an eye outlet in the side of the shuttle and having a threading slot including a mouth having downwardly converging lips at its top, the threading slot extending down and diagonally forward from the top near the front of the bobbin recess into the thread delivery eye passage to near its front on the side away from the eye outlet so as to form a trap hook extending down from the top front of the eye outlet, an eye outlet thread guide extending from in front of the end of the threading slot out and down beyond the front and bottom part of the trap hook, and vertical outlet pins carried by the threading block which extend across the front and back of the eye outlet in the threading block; and means to hold the block in its recess which means passes through the ribs.

5. In an automatic weaving shuttle having a front tip, a bobbin recess an a block recess extending diagonally forward in a substantially straight line from the front of the bobbin recess to an outlet in the side of the shuttle between the front tip and the bobbin recess, all transverse parallel cross sections of the block recess being of substantially the same contour, and a mouth to catch the thread with lips which converge to the top of the block recess; the combination of a threading block positioned in and fitting the block recess and having a thread delivery eye passage extending through the block in a substantially straight line from the bobbin recess to an eye outlet in the side of the shuttle and having a threading slot including a mouth having downwardly converging lips at its top, the threading slot extending down and diagonally forward from near the midddle of the top near the front of the bobbin recess into the thread delivery eye passage to near its front on the side away from the eye outlet and then out the side so as to form a trap including a trap hook extending down from the top front of the eye passage outlet, an eye outlet thread guide extending from in front of the end of the threading slot out and down beyond the front of the trap hook, a thread inlet guide comprising spring pressed friction plates sloping from the top down and forward in the thread delivery eye passage between the bobbin recess and the threading slot; and means to hold the block in its recess.

6. In an automatic weaving shuttle having a front tip, a bobbin recess and a block recess extending diagonally forward in a substantially straight line from the front of the bobbin recess to an outlet in the side of the shuttle between the front tip and the bobbin recess, all transverse parallel cross sections of the block recess being of substantially the same contour, and a mouth to catch the thread with lips which converge to the top of the block recess; the combination of a threading block positioned in and fitting the block recess and having a thread delivery eye passage extending through the block in a substantially straight line from the bobbin recess to an eye outlet in the side of the shuttle and having a threading slot including a mouth having downwardly converging lips at its top, the threading slot extending down and diagonally forward from the middle of the top near the front of the bobbin recess into the thread delivery eye passage to near its front on the side away from the eye outlet and then out the side so as to form a trap including a trap hook extending down from the top front of the eye passage outlet and an eye outlet thread guide extending from in front of the end of the threading slot out and down beyond the front of the trap hook, the top faces of the trap hook and of the thread guide sloping down and towards each other and intersecting and their bottom faces being in substantially the same curved surface.

7. For use in an automatic weaving shuttle having a front tip and a bobbin recess; a threading block having one or more holding ribs, all transverse parallel cross sections of the block being of substantially the same contour, the bottom being substantially cylindrical, a thread delivery eye passage extending through the block substantially parallel with its walls, there being at the top a mouth to catch the thread having lips which converge to a threading slot which extends from the middle of the top of the thread delivery eye passage near one end diagonally forward and down into one side of said eye passage near its other end and then makes a turn and extends out the side so as to form a trap including a trap hook back of the turn and an eye outlet thread guide extending from in front of the turn out and down beyond the front and bottom part of the trap hook, the top faces of the trap hook and of the thread guide sloping down and towards each other and intersecting and their bottom faces being in substantially the same curved surface, a thread inlet guide comprising spring pressed friction plates sloping from the top down and forward positioned at the first named end of the eye passage and vertical thread guide pins outside the trap hook positioned at the other end.

8. For use in an automatic weaving shuttle having a front tip and a bobbin recess; a threading block, having one or more holding ribs, all transverse parallel cross sections of the block being of substantially the same contour, the bottom being substantially cylindrical, a thread delivery eye passage extending through the block substantially parallel with its walls, there being at the top a mouth to catch the thread having lips which converge to a threading slot which extends from the middle of the top of the thread delivery eye passage near one end diagonally forward and down in to one side of said eye passage near its other end and then makes a turn and extends out the side so as to form a trap including a trap hook back of the turn and an eye outlet thread guide extending from in front of the turn out and down beyond the front and bottom part of the trap hook, the top faces of the trap hook and of the thread guide sloping down and towards each other and intersecting and their bottom faces being in substantially the same curved surface, a thread inlet guide at the first named end of the eye passage and vertical thread guide pins outside the trap hook at the other end.

9. For use in an automatic weaving shuttle having a front tip and a bobbin recess; a threading block all transverse parallel cross sections of which are of substantially the same contour, a thread delivery eye passage extending through the block in a substantially straight line, there being at the top a mouth to catch the thread having lips which converge to a threading slot which extends from the middle of the top of the thread delivery eye passage near one end forward and down at an angle to one side of said eye passage near its other end and then makes a turn and extends out the side so as to form a trap including a trap hook back of the turn and an eye outlet thread guide extending from in front of the turn out and down beyond the front and bottom part of the trap hook, the top faces of the trap hook and of the thread guide sloping down and towards each other and intersecting and their bottom faces being in substantially the same curved surface, and a thread inlet guide comprising spring pressed friction plates sloping from the top down and forward positioned at the first named end of the eye passage.

10. For use in an automatic weaving shuttle having a front tip and a bobbin recess; a threading block all transverse parallel cross sections of which are of substantially the same contour, a thread delivery eye passage extending through the block in a substantially straight line, there being at the top a mouth to catch the thread having lips which converge to a threading slot which extends from the middle of the top of the thread delivery eye passage near one end forward and down into one side of said passage near its other end and then makes a turn and extends out the side so as to form a trap including a trap hook back of the turn and an eye outlet thread guide extending from in front of the turn out and down beyond the front and bottom part of the trap hook, the top faces of the trap hook and of the thread guide sloping down and towards each other and intersecting and their bottom faces being in substantially the same curved surface.

11. In a weaving shuttle having a front tip, a bobbin recess and a thread delivery eye passage extending diagonally forward in a substantially straight line from the front of the bobbin recess to a thread delivery eye passage outlet in the side of the shuttle between the front tip and the bobbin recess, a threading slot including a mouth with converging lips which extends from the middle of the top near the front of the bobbin recess forward and down into the thread delivery eye passage to near its other end to a trap which includes a trap hook extending from near the top front of the eye passage outlet and an eye outlet thread guide extending from in front of the outside end of the threading slot out and down beyond the front and bottom part of the trap hook, the top faces of the trap hook and of the thread guide sloping down and towards each other and intersecting and their bottom faces being in substantially the same curved surface.

12. For use in a weaving shuttle having a body with a front tip and a bobbin recess; a threading block with a thread delivery eye passage extending through it in a substantially straight line, there being at the top a mouth to catch the thread, said mouth having lips which converge to a threading slot which extends from proximate the middle top of one end of the thread delivery eye passage forward and down into said eye passage to near its other end to a trap at said other end which includes a trap hook and an eye outlet thread guide extending from in front of said other end of the threading slot out and down beyond the front and bottom part of the trap hook.

13. The combination with a weaving shuttle having a front tip, a bobbin recess and a block recess extending diagonally forward in a substantially straight line from the front of the bobbin recess to an outlet in the side of the shuttle between the front tip and the bobbin recess; of a threading block in the block recess with a thread delivery eye passage extending through it in a substantially straight line, there being at the top a mouth to catch the thread, said mouth having lips which converge to a threading slot which extends down from the middle of the top near the front of the bobbin recess into the thread delivery eye passage and forward to near the front of the eye passage; and a member extending through the shuttle body and through the threading block to bind them together.

14. The combination with a weaving shuttle having a front tip, a bobbin recess and a block recess extending diagonally forward in a substantially straight line from the front of the bobbin recess to an outlet in the side of the shuttle between the front tip and the bobbin recess; of a threading block in the block recess with a thread delivery eye passage extending through it, there being at the top a mouth to catch the thread, said mouth having lips which converge to a threading slot which extends down into the thread delivery eye passage and forward to near its front; and a member extending through the shuttle body and through the threading block to bind them together.

WILFRED JOSEPH GOSSELIN.