

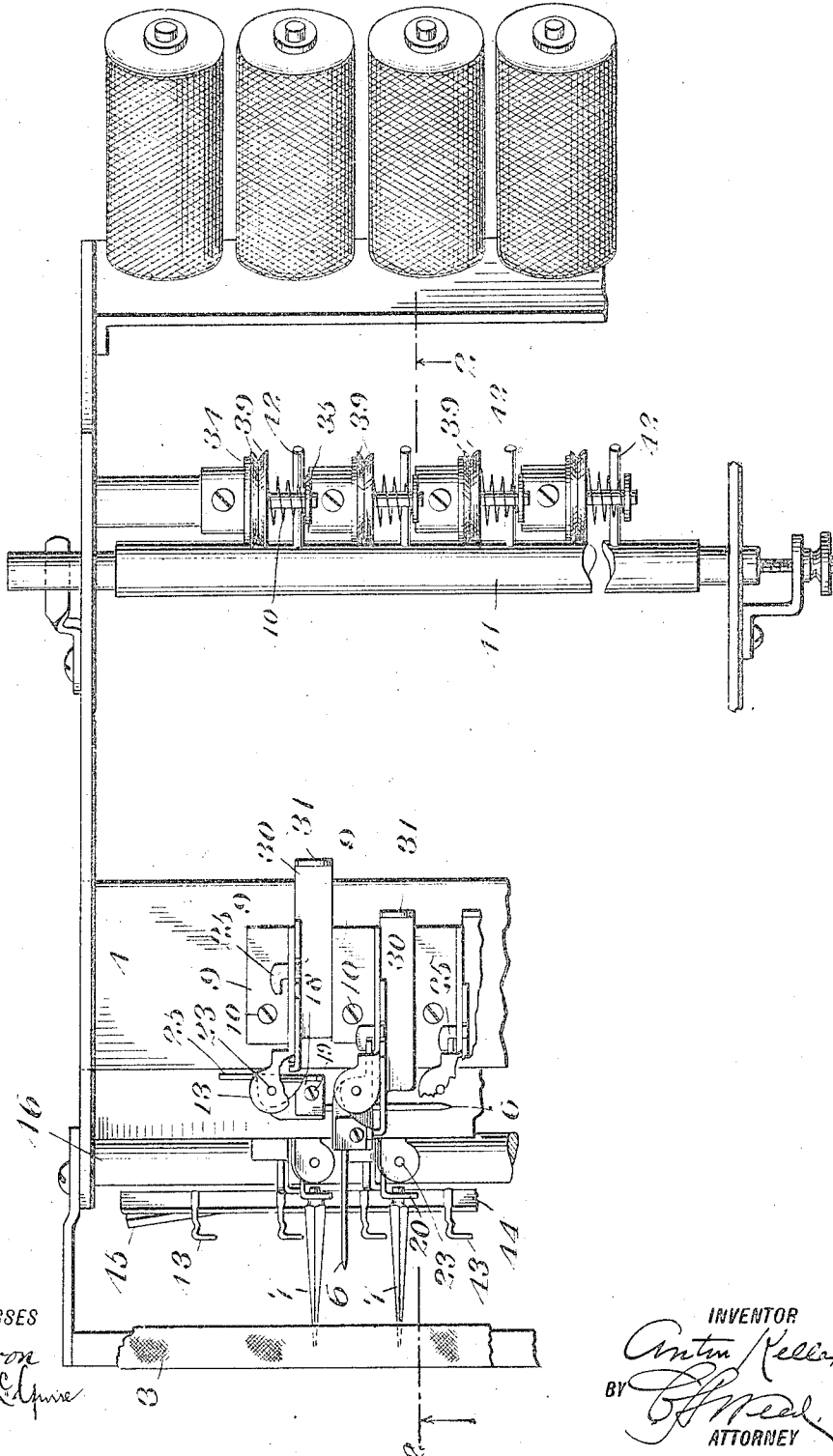
A. KELLER.
SHUTTLE EMBROIDERY MACHINE.
APPLICATION FILED FEB. 16, 1912.

1,057,558.

Patented Apr. 1, 1913.

4 SHEETS—SHEET 1.

Fig. 1.



WITNESSES
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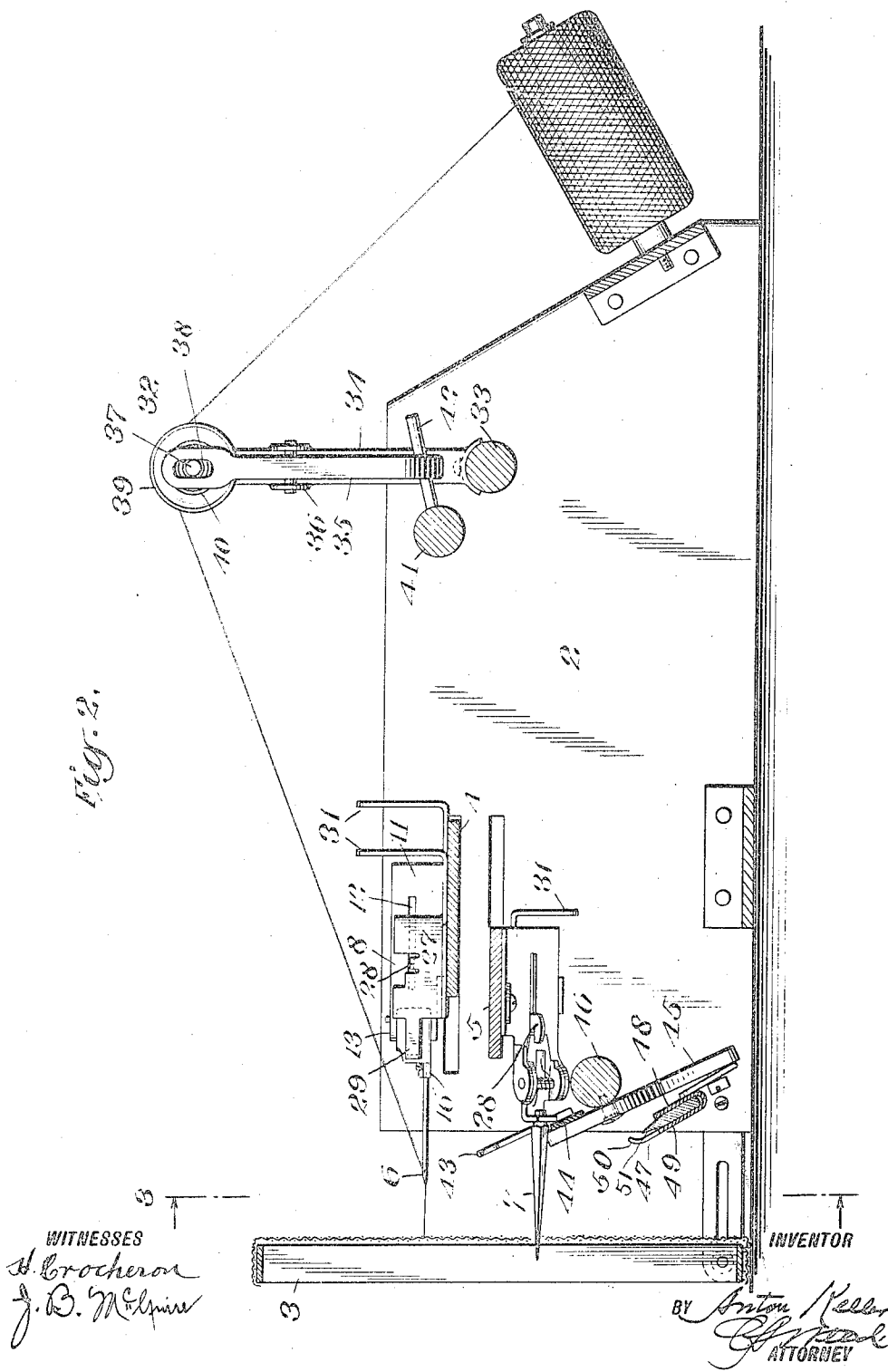
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4 SHEETS—SHEET 2.

Fig. 2.



WITNESSES
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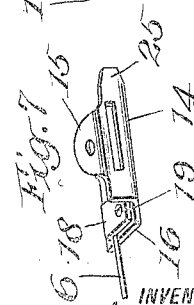
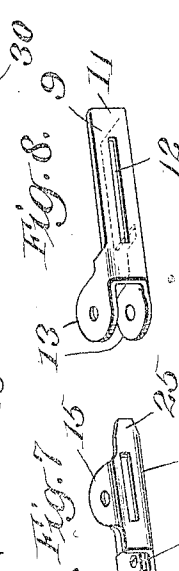
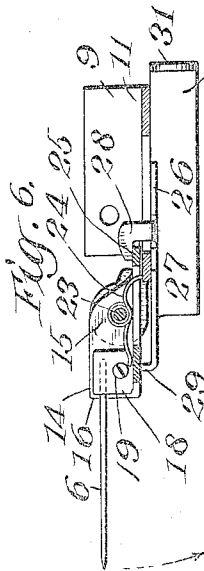
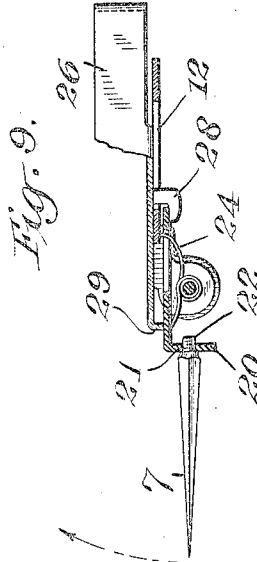
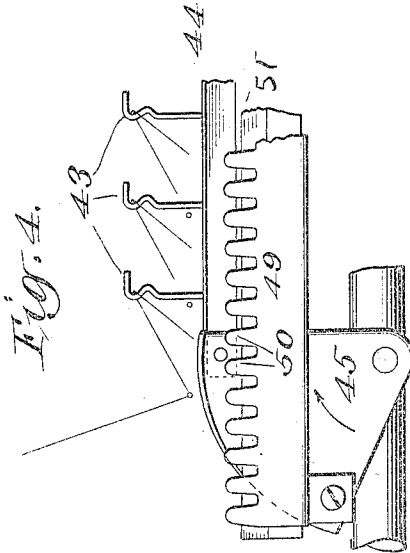
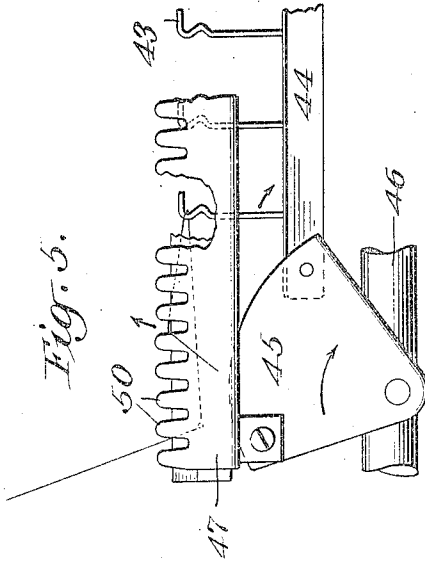
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4 SHEETS—SHEET 3.



WITNESSES
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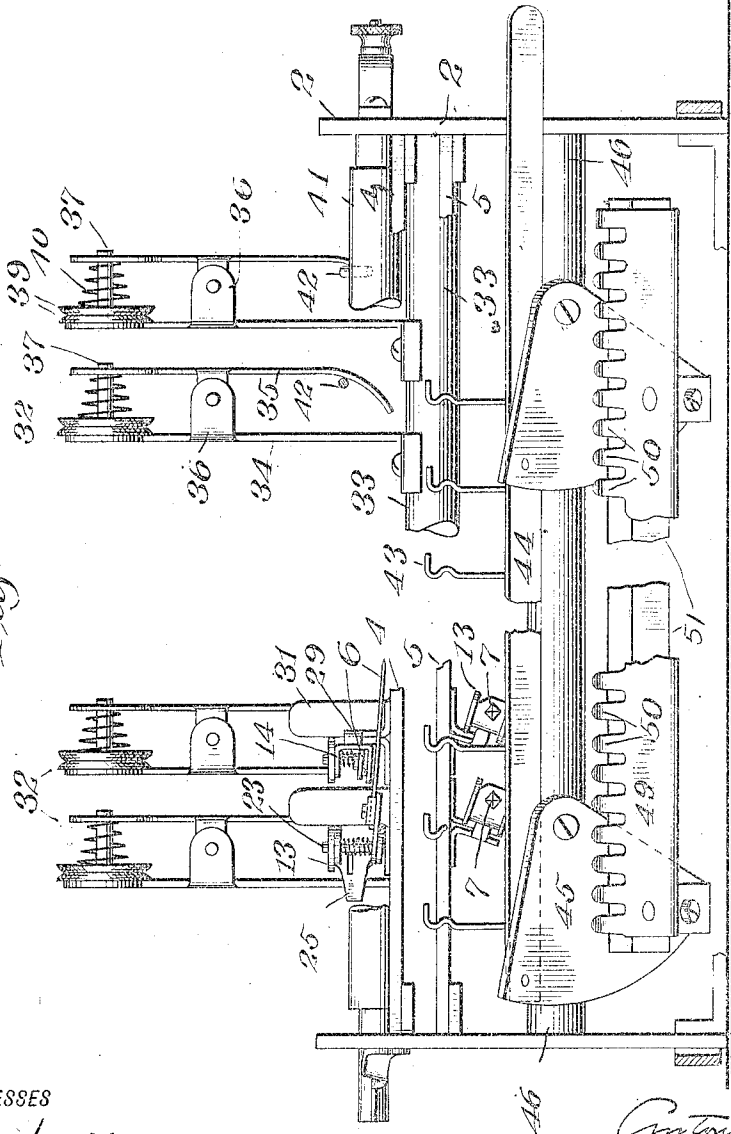
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Patented Apr. 1, 1913.
4 SHEETS—SHEET 4.

Fig. 3.



WITNESSES
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A. Keller
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UNITED STATES PATENT OFFICE:

ANTON KELLER, OF NEW YORK, N. Y., ASSIGNOR TO IMPROVED SCHIEFFELI MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

SHUTTLE EMBROIDERY-MACHINE.

1,057,553.

Specification of Letters Patent.

Patented Apr. 1, 1913.

Application filed February 16, 1912. Serial No. 677,003.

To all whom it may concern:

Be it known that I, ANTON KELLER, a subject of the Emperor of Austria-Hungary, residing at New York, borough of the Bronx, in the county of New York and State of New York, have invented certain new and useful Improvements in Shuttle Embroidery-Machines, of which the following is a specification.

This invention relates to improvements in shuttle embroidery machines, and has for its object the provision of improved mechanism for facilitating the embroidering of the work in an effective and comparatively simple manner, it more particularly relating to the means for supporting the work-penetrating devices such as the borer and needle, whereby a series of either or both of these devices may be thrown into or out of operation in a rapid and simple manner without the necessity of removing these devices as heretofore, so that in the case of the needles the rethreading thereof is avoided, while at the same time a design requiring for instance borers or needles spaced say an inch apart at one part may be made while when it is necessary to have the needles or borers spaced farther apart, as for instance two or more inches, to form a different part of the same design the intermediate needles or borers may be rapidly and quickly thrown out of operation or vice versa.

Shuttle embroidery machines are frequently about ten yards long and have a series of reciprocating borers equally spaced apart throughout the entire length of the machine and a series of reciprocating needles also equally spaced apart throughout the entire length of the machine, and the borers are located in sections carried by bars, and if the borers are spaced an inch apart and it is desired to have these borers spaced a farther distance apart it is impracticable to do this without removing all of the borers from the machine,—a laborious and time consuming operation; nor is it possible to space the needles different distances apart without entirely removing the same, which of course requires the unthreading and rethreading of the needles when replaced. Consequently in shuttle embroidery machines it has not been possible to form one part of a design with the needles and borers spaced a certain distance apart and another part of the design with the needles and bor-

ers spaced a different distance apart; but by means of the present improvement this may be readily accomplished by merely deflecting the needles without unthreading them and by deflecting the borers, so that by a simple operation the same needles and borers may be again thrown into action when required.

In embroidery machines frequently marketed the thread tension consists of a roller around which the thread is wound, which roller is located intermediate the spools and the needles, but in this construction of machine it is not possible to increase or decrease the tension on all of the threads simultaneously. It is also desirable to cut off all of the threads throughout the entire length of the machine at one and the same time when the work is finished, and to facilitate this it is necessary to provide means for catching all of the threads so that they will be carried away from the work, thereby preventing injury to the embroidery by the knife.

In the drawings accompanying and forming part of this specification, Figure 1 is a top plan view of a portion of the machine, the balance of the machine being constructed in a similar manner, it not being necessary, however, to show the means for reciprocating the needles and borers, since any well known means for accomplishing this may be used; Fig. 2 is a cross-sectional view taken in line 2—2, Fig. 1, looking to the left; Fig. 3 is what may be considered a front end view of the embroidering mechanism taken on line 3—3 of Fig. 2; Figs. 4 and 5 are front views of the thread catching and cutting mechanism, Fig. 4 illustrating the thread as it is caught between the embroidery and needle and deflected, while Fig. 5 illustrates the knife in position to sever the thread, these two figures showing the relative motions imparted to these parts of the mechanism; and Figs. 6, 7, 8 and 9 are detail views illustrating the needle and borer carriers.

Similar characters of reference indicate corresponding parts throughout the figures of the drawings.

In the present embodiment the frame-work 2 of the machine may be of any suitable construction usual to machines of this class, as may also be the means 3 for supporting the work to be embroidered. This frame-work supports a needle-carrying bar

4 and a borer-carrying bar 5, the latter shown located below the needle-carrying bar and both of which are shiftable by the usual means provided for this purpose.

5 Each of the needles 6 and borers 7 is secured in a suitable carrier 8, and as those carrying the needles and those carrying the borers are substantially similar to each other a description of one is deemed sufficient.
10 Each of these carriers comprises a suitable upstanding bracket adapted to be secured to the carrying bar 4 or 5 in any suitable manner. In the present instance it is shown provided with a laterally extending flange
15 9 adapted to be attached by a suitable fastening device, such as a screw 10, to the carrying bar. The upstanding portion 11 of the bracket is provided with a longitudinally extending slot 12 and at its ends with
20 a pair of projecting ears 13 between which is located a pivotally supported and therefore swinging member 14, which will be herein designated as a deflector for the borer or needle. This deflector is provided with
25 a similar pair of ears 15 having a projecting portion 16 which when a needle is to be attached thereto is in the form of a clamp comprising a plate 18 secured to the portion 16 by a screw 19 and when a borer
30 is to be attached thereto this projecting portion is in the form of a bent end 20 having a threaded opening 21 for the reception of the threaded end 22 of the borer. Otherwise the two devices are substantially similar.
35 lar.

On the pivot 23 securing the deflector and carrier bracket 8 together is located a spring 24 one end of which engages the carrier bracket and the other the deflector, whereby
40 the needle or borer, as the case may be, is normally deflected out of its working position, that is to say will be deflected into a path at an angle to its normal working position. Each deflector is provided with a
45 tail-piece 25.

For shifting the needle or borer into its working position and for locking it in such position, I have provided what may be herein designated as a shifter 26. In the present
50 embodiment thereof this device consists of an angularly formed plate the upstanding member 27 thereof having a catch or hook 28 projecting through and sliding in the slot 12 of the bracket 8. This upstanding
55 portion is also provided with a projecting finger 29 adapted to engage the deflector on the forward movement of the shifter, thereby to move the deflector so as to carry the needle or borer into its working position,
60 in which position the catch or hook 28 will engage the tail-piece 25 of the deflector and lock it in such position. This shifter is also provided with a laterally projecting flange 30 which in practice will be held on
65 the carrying bar for shiftable movement be-

tween the upstanding portion of its carrier bracket and the laterally extending flange 9 of a companion bracket. This shifter is also provided with an angular end 31 forming a handle for moving the shifter backward, thereby to permit the spring 24 to
70 deflect the needle or borer carried thereby, or forward to shift the needle or borer from its deflected position into its working position and lock it in the manner hereinbefore described. 75

From the foregoing it will thus be seen that if the needles or borers are located on the carrying bar a predetermined distance apart throughout the entire length of the machine, say for instance an inch, and it is desired to have certain of the needles or borers spaced two or three inches apart it is merely necessary to manipulate the shifter of each needle
80 or borer which it is desired to deflect out of its working position, and this without unthreading the needle or removing the same from the machine.

In practice, as will be seen from Fig. 3, the swinging members supporting the needles and borers are so located that when these implements are swung into their non-working positions they will not interfere with each other or the work of the operator, and for this purpose the lower ear 13 of
90 each needle swinging member is located in an inclined position and the ears 13 of each borer swinging member are located in inclined positions relatively to their respective supporting bars 4 and 5, so that when
95 an implement is thrown out of its working position the operation of the adjacent members will not be interfered with. It will also be observed that the borers are located on the underside of their bar, while the needles
100 are located on the upper side of their bar, so that these two bars 4 and 5 may be brought into relatively close relationship. 105

The tensioning means in the present instances comprises a series of tensioning devices 32, one for each needle, carried by a
110 suitable support 33 on the framework of the machine. Each of these tensioning devices comprises a rigid upstanding member 34 and a pivotally supported member 35 pivotally supported intermediate its ends on a pair of laterally extending ears 36 of the
115 rigid member. The rigid upstanding member is provided with a laterally extending pin 37 projecting into an opening 38 of the swinging member, and on this pin is located a pair of thread-engaging disks 39 between which the thread passes. On this pin and
120 between these disks and the upper end of the swinging member is a spring 40. Located in the framework of the machine and extending throughout the entire length thereof is a shiftable rod or bar 41 carrying
125 at intervals along the same a series of projecting pins 42, one for each tension device, 130

and it projects between the swinging and the rigid members of the tension device, whereby on the shifting of this bar the pins will engage the lower end of each swinging member, which is preferably bent toward the rigid member for this purpose, and so shift the upper end of the swinging member toward or from the thread-engaging disks and thus increase or decrease the tension on the thread in a manner which will be readily understood. If the tension is too tight the rod will be shifted in one direction and so release the tension a predetermined amount. If it is too loose, by shifting the rod in the opposite direction the lower end of each swinging member will be moved away from its rigid member, while its upper end will compress its spring and so increase the tension upon the disks and therefore upon the thread. Suitable means will of course be provided for locking the tension shifting rod in its adjusted positions.

From the foregoing it will be observed that the tension on all of the threads may be equally increased or decreased simultaneously throughout the entire length of the machine by one operation.

The thread cutting means includes a series of thread catchers 43, one for each needle, comprising hooks secured to a shiftable operating bar 44, which bar extends throughout the entire length of the machine and is pivotally secured at intervals to the upper ends of swinging or rocking cams or segments 45, which are pivotally secured at their apexes to a suitable supporting member 46 on the framework of the machine. Upon pulling this operating bar lengthwise the catchers will be raised and swung, as shown for instance in Fig. 4, to the right, each thereupon catching a needle thread and pulling it away from the needle, this of course taking place after the embroidery work is finished and the needles are retracted.

Pivotally secured to the sectors 45 at points below the thread catcher operating bar and therefore adjacent to the lower end of the rocking sectors is a knife holder 47 shown in the present instance as comprising a bent plate having parallel side walls 48 and 49, one of which, as the outer one 49, extends somewhat above the other and is provided with a series of projections or teeth 50 forming a guard to prevent the knife cutting the embroidery upon the goods, which, as is well known, projects beyond the face of the goods being embroidered. This knife holder extends throughout the entire length of the machine and carries the knives 51, which are preferably disposed therein in sections in order to facilitate the removal and sharpening thereof. The movement of the thread catchers and knives is clearly shown by the arrows in Figs. 4 and 5. The

rocking devices of this thread catching and cutting mechanism are so located with relation to their supporting means that the thread catchers and knives project in an inclined direction toward the work, as shown very clearly in Fig. 2, so that the thread catchers and knives in their inoperative positions will be out of the way; while at the same time when thrown into operation will be brought into position to catch the thread between the ends of the needles and the work when the needles are shifted away from the work and will sever such threads close to the work without, however, any liability to injure the same.

From the foregoing it will be seen that both the needle catchers and knives have the same movement, being first raised and then drawn lengthwise in the same direction, the catchers moving in advance of the knives and catching the loop and carrying it away from the needles and the work, whereupon the knives move upward beyond the catchers and engage the threads to sever the same. Thus, it will be seen that by the same operating bar the thread catchers are all simultaneously operated throughout the entire length of the machine and the threads are all simultaneously severed throughout the entire length of the machine by one and the same operation.

In the present embodiment the springs of the borer and needles, as hereinbefore stated, automatically deflect these parts from their operative positions when the finger of the shifter is withdrawn from the deflectors and the hook is withdrawn simultaneously therewith from the tail of such deflectors, but the various details of the several devices forming the present improvement may be more or less changed without departing from the spirit and scope of the invention.

I claim as my invention:

1. In a shuttle embroidery machine, the combination of a reciprocatory, horizontally supported bar, a series of independently movable members carried by said bar, embroidery implements carried by said movable members and extending transversely of the bar when in their working position and in the direction of the length of the bar when in their non-working position, and automatically operative means for moving each of said implements from one position to another without affecting the position of a companion implement on the release of such implement.

2. In a shuttle embroidery machine, the combination of a reciprocatory, horizontally supported bar, a series of independently movable members carried by said bar, embroidery implements carried by said movable members and extending transversely of the bar when in their working position and in the direction of the length of the bar

when in their non-working position, automatically operative means for moving each of said implements from one position to another without affecting the position of a companion implement on the release of such implement, and means for independently locking each of said movable members in one of its positions.

3. In a shuttle embroidery machine, the combination of a reciprocatory, horizontally supported bar, a series of independently movable members carried by said bar, embroidery implements carried by said movable members and extending transversely of the bar when in their working position and in the direction of the length of the bar when in their non-working position, automatically operative means for moving each of said implements from one position to another without affecting the position of a companion implement on the release of such implement, means for independently locking each of said movable members in one of its positions, and means for manually shifting each of said implements to its other position, said last named means being located at the rear of the implement.

4. In a shuttle embroidery machine, the combination of a reciprocatory, horizontally supported bar, a series of independently movable members carried by said bar, embroidery needles carried by said movable members and extending transversely of the bar when in their working position and in the direction of the length of the bar when in their non-working position, and automatically operative means for moving each of said needles from one position to another without affecting the position of a companion needle on the release of such needle.

5. In a shuttle embroidery machine, the combination of a reciprocatory, horizontally supported bar, a series of independently movable members carried by said bar, embroidery needles carried by said movable members and extending transversely of the bar when in their working position and in the direction of the length of the bar when in their non-working position, automatically operative means for moving each of said needles from one position to another without affecting the position of a companion needle on the release of such needle, means for independently locking each of said needles in one of its positions, and means for manually shifting each of said needles into its other position, said last named means being located at the rear of the needle.

6. In a shuttle embroidery machine, the combination of a supporting bar, a series of independently movable means carried thereby for carrying pointed embroidering implements whereby each of said implements may be independently moved out of its working position without affecting the

position of its companion implements or said bar, means automatically moving each of said implements in one direction on the release thereof, and means for moving each of said implements independently in another direction.

7. In a shuttle embroidery machine, the combination of supporting means, a series of independently movable means for carrying pointed embroidering implements whereby each of said implements may be independently moved out of its working position without affecting the position of its companion implements, a spring for automatically moving each of said implements in one direction, and means for independently moving each of said implements in an opposite direction.

8. In a shuttle embroidery machine, the combination of supporting means, a series of independently movable means for carrying pointed embroidering implements whereby each of said implements may be independently moved out of its working position without affecting the position of its companion implements, a spring for automatically moving each of said implements in one direction, and means for independently moving each of said implements in an opposite direction and for locking it in one of its positions.

9. In a shuttle embroidery machine, the combination of supporting means, a series of independently swinging means for carrying work-engaging implements whereby each of said implements may be independently swung out of its working position without affecting the position of its companion implements, a spring for each of said swinging means effective to deflect the implement from its working position, and shiftable means for returning each of said implements independently to its working position.

10. In a shuttle embroidery machine, the combination of supporting means, a series of independently swinging means for carrying work-engaging implements whereby each of said implements may be independently swung out of its working position without affecting the position of its companion implements, a spring for each of said swinging means effective to deflect the implement from its working position, and shiftable means for returning each of said implements independently to its working position and having means for locking the implement in its working position.

11. In a shuttle embroidery machine, the combination of supporting means, a series of independently swinging means for carrying work-engaging implements whereby each of said implements may be independently swung out of its working position without affecting the position of its com-

panion implements, a spring for shifting each of said swinging means in one direction, and manually operated means for moving each of said swinging means in another direction.

12. In a shuttle embroidery machine, the combination of supporting means, a series of independently swinging means for carrying work-engaging implements whereby each of said implements may be independently swung out of its working position without affecting the position of its companion implements, a spring for shifting each of said swinging means in one direction, manually operated means for moving each of said swinging means in another direction, and means for locking said swinging means in one of its positions.

13. In a shuttle embroidery machine, the combination of supporting means, a series of swinging means for carrying work-engaging implements whereby each of said implements may be independently swung out of its working position without affecting the position of its companion implements, a spring for deflecting each of said implements from its working position, and manually shiftable means effective to return each of said implements to its working position.

14. In a shuttle embroidery machine, the combination of supporting means, a series of swinging means for carrying work-engaging implements whereby each of said implements may be independently swung out of its working position without affecting the position of its companion implements, a spring for deflecting each of said implements from its working position, and manually shiftable means effective to return each of said implements to its working position and having locking means for holding said implement in its working position.

15. In a shuttle embroidery machine, the combination of supporting means, a series of swinging means for carrying work-engaging implements whereby each of said implements may be independently swung out of its working position without affecting the position of its companion implements, a spring for deflecting each of said implements from its working position, and manually shiftable means effective to return each of said implements to its working position and having locking means for holding said implement in its working position, said manually shiftable means comprising a finger adapted to engage a part of the swinging means and a catch adapted to engage another part of said swinging means.

16. In a shuttle embroidery machine, the combination of supporting means comprising independent carriers, a series of swinging deflectors supported by said carriers and each adapted to receive a work-engaging implement, a spring for shifting each of said

deflectors into its inoperative position, and a manually controlled shifter slidably supported in juxtaposition to said carrier and having a part in engagement with said deflector for returning its implement to its operative position and having a part adapted to engage another part of said deflector and hold it in its operative position.

17. In a shuttle embroidery machine, the combination of a reciprocatory needle bar and a reciprocatory borer bar, a series of independently movable members carried by each of said bars, borer carried by the movable members of one bar and needles carried by the movable members of the other bar, springs for moving any of said borer and any of said needles in one direction without affecting the position of any of their companion borer and needles, and manually controlled means for moving any of said borer and any of said needles in an opposite direction.

18. In a shuttle embroidery machine, the combination of a reciprocatory, horizontally supported bar, a series of independently movable members carried by said bar, embroidery implements carried by said movable members and extending transversely of the bar when in their working position and in the direction of the length of such bar and at an inclination to their working plane when in their non-working position, and automatically operative means for moving each of said implements from one position to another without affecting the position of a companion implement on the release of such implement.

19. In a shuttle embroidery machine, the combination of a reciprocatory, horizontally supported bar, a series of independently movable members carried by said bar, embroidery implements carried by said movable members and extending transversely of the bar when in their working position and in the direction of the length of such bar and at an inclination to their working plane when in their non-working position, automatically operative means for moving each of said implements from one position to another without affecting the position of a companion implement on the release of such implement, means for independently locking each of said movable members in one of its positions, and means for manually shifting each of said implements into its other position and located in the rear of said implement.

20. In an embroidery machine, the combination of a horizontal supporting bar, an embroidery implement located on one of the horizontal faces of said bar and comprising supporting means having an inclined ear, swinging means carried thereby for carrying at one end the implement, said implement extending transversely of the bar when

in its working position and in the direction of the length thereof and at an inclination to the working plane of said implement when in its non-working position, means
 5 for automatically swinging the implement in one direction, manually shiftable means effective to shift said implement in the opposite direction, and means for locking said implement in one of its positions.

10 21. A work engaging implement for shuttle embroidery machines comprising supporting means, swinging means carried thereby for carrying at one end the im-
 15 plement, means for automatically swinging the implement in one direction and manu-

ally shiftable means effective to shift said implement in the opposite direction, said manually shiftable means having a bent portion adapted to engage a part of the swinging means and a catch adapted to engage
 20 the opposite end of said swinging means to hold the implement in its working position.

Signed at 1821 Park Row Building, New York, N. Y., this 9th day of February, 1912. 25

ANTON KELLER.

Witnesses:

JOHN B. MCGUIRE,
 T. E. BORCE.