

Nov. 28, 1944.

V. H. JENNINGS

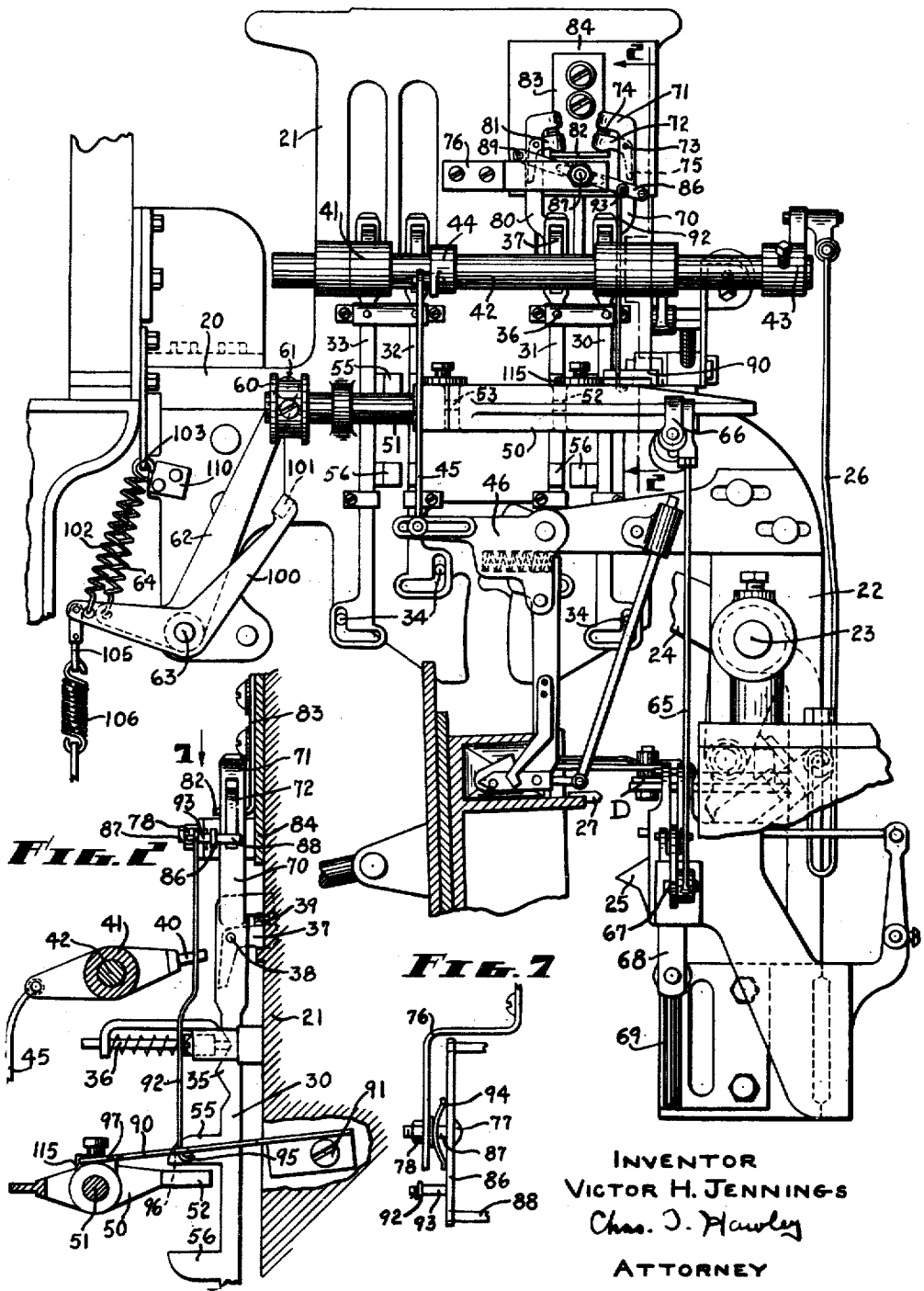
2,363,593

BOBBIN SELECTOR FOR WEFT REPLENISHING LOOMS

Filed June 9, 1943

2 Sheets-Sheet 1

**FIG. 1**



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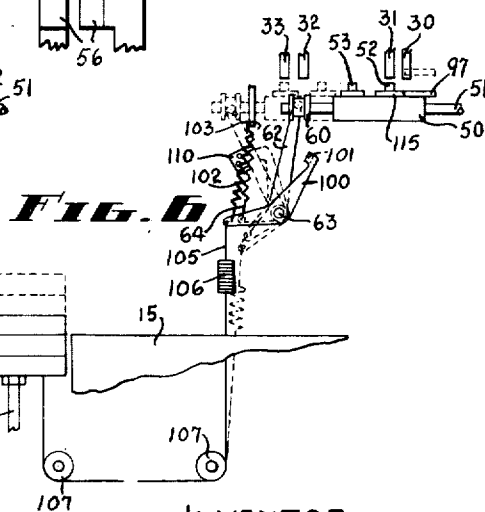
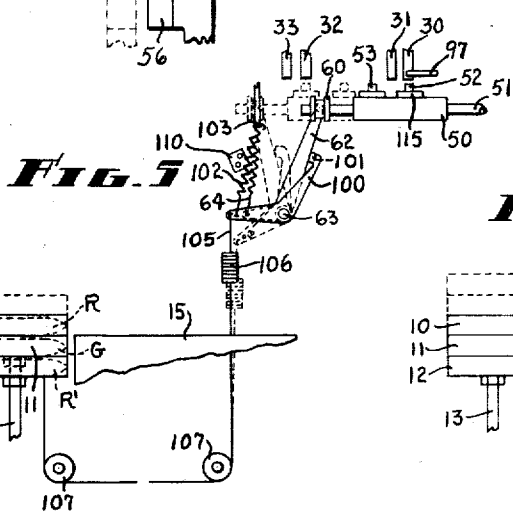
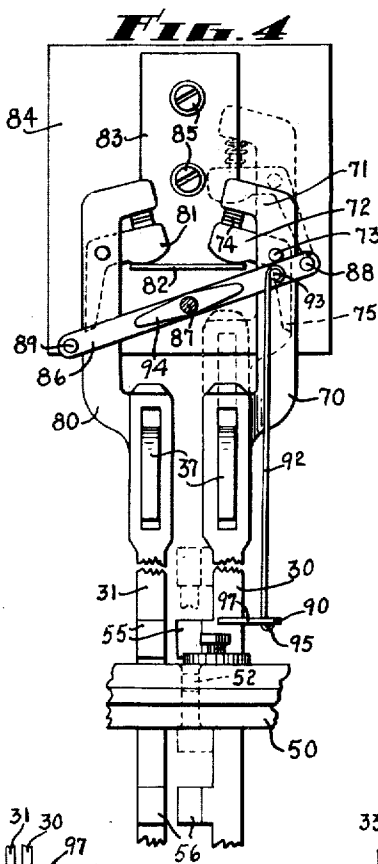
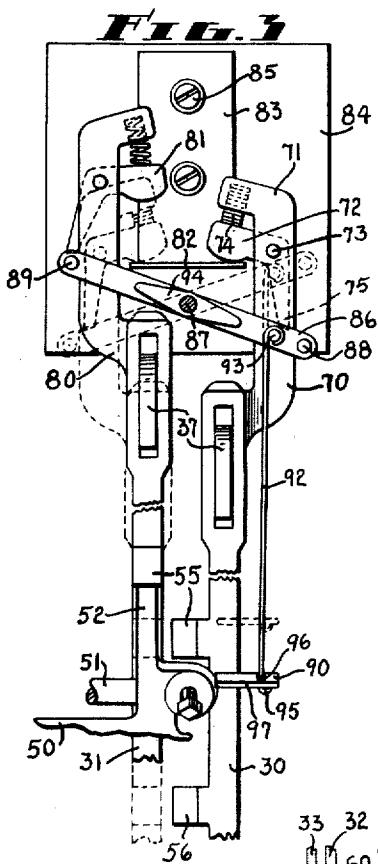
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BOBBIN SELECTOR FOR WEFT REPLENISHING LOOMS

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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,363,593

BOBBIN SELECTOR FOR WEFT  
REPLENISHING LOOMSVictor H. Jennings, Worcester, Mass., assignor  
to Crompton & Knowles Loom Works, Worces-  
ter, Mass., a corporation of Massachusetts

Application June 9, 1943, Serial No. 490,155

15 Claims. (Cl. 139—232)

This invention relates to improvements in bobbin selectors for weft replenishing looms and it is the general object of the invention to permit a plurality of stacks of bobbins to supply weft for the replenishment of a single shuttle.

The usual multicolor weft replenishing loom employs a magazine having several vertical stacks of reserve bobbins each assigned to one of the shuttles of the loom. The selecting is accomplished by means of a rocking and sliding member or selector under control of the box motion or some part moving therewith for the purpose of registering the selector with the stack corresponding to the active shuttle. When coarse weft is being woven, such as the roving in curtains, the stack supplied with the roving becomes rapidly exhausted and requires frequent renewal on the part of the attendant.

To meet this condition it has been proposed heretofore to assign two or more stacks to the same type of weft, but under these conditions it is necessary to alter the control which would otherwise be exercised over the selector by the box motion and also provide for uniform depletion of the stacks. It is an important object of my present invention to provide means by which bobbins are drawn alternately from a pair of stacks for successive replenishments of the coarse weft shuttle when the latter is placed in action by the box motion. In order to draw bobbins alternately from said pair of stacks I use a stop mechanism movable into and out of stopping position relatively to the aforesaid selector.

The usual multicolor weft replenishing loom employs four stacks of reserve bobbins one of which will be provided with fine weft and the others of which will have coarse weft when certain types of curtains are being woven. The fine weft provides the open mesh ground weave while the coarse weft or roving is called at intervals to lay periodic stripes. In certain types of curtains it is desirable to use two different colors of stripes and it is a further object of my invention to provide control means for the selector which will permit the use of two stacks of predominant roving, one stack for the fine ground weft, and the last stack for a less frequently used roving.

In order to locate the selector correctly with respect to the several stacks of the magazine it is necessary to modify the usual connections between it and the box motion and it is a further object of the invention to construct these connections in such a way that the selector will

be moved to three different positions by a box motion operating with three different shuttles, but wherein the selector can occupy a fourth position without requiring an additional indication from the shuttle box. In this feature of my invention the connections operate upon a single shift of the shuttle boxes to move the selector from the first of the aforesaid positions where it registers with the first stack into registry with the third stack for the second of the aforesaid positions, a two-box shift moves the selector into registry with the rear stack in the third of its positions, and a lost motion connection absorbs the excess motion of the shuttle box indication, while the fourth of the aforesaid positions is obtained by the previously mentioned stop mechanism.

With these and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth.

In the accompanying drawings, wherein a convenient embodiment of my invention is set forth,

Fig. 1 is a side elevation of a multicolor weft replenishing mechanism having my invention applied thereto,

Fig. 2 is a vertical section on line 2—2 of Fig. 1, Figs. 3 and 4 are enlarged side elevations of the front pair of vertical bobbin releasers made according to my present invention and shown in different positions,

Fig. 5 is a diagrammatic view showing the connections between the shuttle boxes and the selector with the latter in position to effect delivery from the front stack and corresponding to Fig. 4,

Fig. 6 is a view similar to Fig. 5 but showing the color slide in position to deliver from the second stack and corresponding to Fig. 3, and

Fig. 7 is a fragmentary top plan view taken in the direction of arrow 7, Fig. 2.

The invention is used in connection with a loom having shifting shuttle boxes at one side and a single shuttle box and multicolor weft replenishing mechanism at the opposite side. In the present instance I show three shuttle boxes 10, 11 and 12 mounted on the usual box lifter rod 13 which is under control of the pattern and shuttle box operating mechanisms not shown.

Any one of these shuttle boxes can be moved to active position with respect to the lay 15 and picking mechanism not shown of a usual type will pick the shuttle in the active box from the left to the right hand side of the loom on one pick and then pick the shuttle back to the shut-

the boxes on the next pick. The boxes can then either shift to render another shuttle active or they can remain stationary to permit the weaving of two more picks by the first shuttle. In Fig. 5 I have shown the top and bottom shuttles at R and R' for carrying two different kinds of roving, while the middle shuttle G is for the fine ground weft.

The magazine at the right hand side of the loom comprises a frame 20 having an inside plate 21 with a supporting foot 22 on which is mounted a transferrer stud 23. The transferrer arm 24 is provided with the usual transferrer latch 25 liftable by rod 26 into position for engagement with the lay carried transfer bunter 27. Ordinarily the latch is in the down position shown in Fig. 1 and the transferrer arm will be in its idle raised position as the lay 15 moves toward front center position. When a transfer is to occur the rod 26 is depressed while the lay is in a rearward position so that the subsequent advance movement of the lay will cause descent of the transferrer arm by engagement of the latch by the bunter.

Mounted for vertical movement on the plate 21 are slides 30, 31, 32 and 33 each cooperating at the lower end thereof with a cradle 34 which controls the discharge of the lowest bobbin in the associated stack of bobbins. It is to be understood that there will be a stack for each of the vertical slides 30 to 33 and that rocking of any cradle advances a bobbin from the corresponding stack to transfer position under the transferrer arm. Each vertical slide has a wedge 35 cooperating with a spring plunger 36 to complete the movement of the slide to either of its extreme positions. A dog 37 is pivoted at 38 to each slide and is acted upon by a small compression spring 39 to move to the left from the position shown in Fig. 2 when the slide is raised. Ordinarily when the slide is down the dog engages a part of the magazine plate 21 and is held in the retracted position of Fig. 2 out of the path of a shelf 40 formed as part of a casting 41 secured to a horizontal rock shaft 42 journaled on the plate 21. This shaft carries a forward arm 43 connected to the previously described rod 26 and also has a rear arm 44 connected to a depending rod 45 attached to a thread cutter and shuttle feeler 45. The dogs 37 have their lower ends below the shelf 40 when the latter is in its normal raised position and the slides are down, but as the slides rise the dogs swing outwardly and over the shelf in position to lower the latter when the slides are depressed.

The selector and slide actuator 50 is mounted on a horizontal rod 51 slidably mounted on the plate 21 and has front and rear operating fingers 52 and 53, respectively. Each vertical slide has an upper lug 55 by means of which the slide can be raised by one or another of the selector fingers preparatory to a replenishing operation, and each slide also has a bottom lug 56 by means of which the selector can depress a previously raised slide to discharge a bobbin from the corresponding stack and engage the shelf 40 to rock the shaft 42 in a clockwise direction as viewed in Fig. 2 for the purpose of depressing rod 26 and raising rod 45.

The rear end of rod 51 has secured thereto a collar 60 provided with a groove 61 to receive the upper end of a positioning lever 62 pivoted at 63 on a fixed part of the magazine frame. A light tension spring 64 acts to move the lever 60 in a clockwise direction as seen in Fig. 1 for the pur-

pose of urging the selector toward its foremost position.

As shown in Fig. 1 the loom is provided with weft detecting mechanism D for the purpose of lifting the fingers 52 and 53 from their normal position when exhaustion of weft is indicated. The detector mechanism includes a rod 65 connected to an arm 66 operatively related to the selector and attached at its lower end to a vertically moving lever 67 floating on a rod head 68 which is caused normally by rod 69 to rise and fall in a two pick cycle during loom operation. The rising motion of rod 69 causes rod 65 to transmit a force to the selector to give the downward movement of fingers 52 and 53 to lower any previously raised slide registering with one of the fingers while the shuttle is on the drop box end of the loom. On non-indicating beats of the loom when the shuttle is at the magazine end the lever 67 is moved downwardly without interruption, but when the detector indicates weft exhaustion the lever is prevented from having its normal downward movement and acts to depress rod 65 and thereby rock the selector 50 in such direction as to raise its fingers 52 and 53 and lift whichever vertical slide registers with the fingers.

The matter thus far described is of usual construction and operates in an ordinary manner and is set forth more particularly in the following patents: 1,030,748; 1,510,765 and 1,912,523.

In carrying my present invention into effect I modify the vertical slides 30 and 31 by adding thereto additional dogs for cooperation with an oscillating lever which controls a stop or positioner for the selector, and I also modify the usual connection between the drop boxes and the lever 62.

Projecting upwardly from slide 30 is an arm 70 having a head 71 and a dog 72 pivoted thereto as at 73. A spring 74 similar to spring 39 is interposed between the head 71 and the dog and tends normally to move the lower end 75 of the dog to the right as viewed in Fig. 1. In similar manner the slide 31 is provided with an arm 80 having a dog 81 similar to dog 72 and tending to move to the left as viewed in Fig. 1. When both of these slides are down the dogs 72 and 81 engage the shelf 82 of a plate 83 secured in vertically adjusted position on a second plate 84 by screws 85, the springs 74 being compressed under these conditions. When either of the slides 30 or 31 rises its spring 74 rocks the corresponding dog from normal idle to projected working position.

Setting lever 86 swings about a stud 87 mounted on the plate 76 secured to the magazine plate 21 and located preferably midway between the slides 30 and 31. The front and rear ends of lever 86 are provided with studs 88 and 89, respectively, which project toward the plate 21 sufficiently to be in the path of their respective dogs 72 or 81 when the latter are projected to their working position.

A stop 90 which may be in the form of a sheet metal plate is pivoted as at 91 to magazine plate 21 and extends outwardly from the latter to overhang the selector 50. The upper end of a link 92 is pivoted as at 93 to lever 86 while the lower end of the link is hooked as at 95 and passes through a hole 96 in the stop 90. The latter pivots freely about its axis 91 and has an outer end 97 which can be held above the selector 50 or fall in front of it to stop forward movement thereof under action of spring 64.

The connections between the shifting shuttle

boxes and the lever 62 are shown in Figs. 5 and 6 and include a lever 100 mounted on the stud 63 in front of lever 62 as viewed, for instance, in Fig. 6. The upper end of lever 100 has a lug 101 extending laterally therefrom into the plane of movement of lever 62 so that it lies in front of the latter lever when the parts are viewed from the right or the front of the loom. A light spring 102 has the lower end thereof connected to lever 100 and has its end fixed at 103 with respect to the magazine frame. Lever 100 is attached to the drop boxes by a connector designated generally at 105 which includes a relatively strong spring tension 106 which is stronger than the combined strengths of springs 64 and 102. From the lower end of spring 106 the connector 105 extends downwardly around sheaves 107 to the opposite side of the loom and then upwardly to be attached to the drop boxes. The magazine plate 21 carries a stop 110 for engagement with the lever 62 as will be described hereinafter. In Figs. 5 and 6 I have shown connector 105 attached directly to the drop boxes, but it is to be understood that I am not limited to this means of causing the connector 105 to move in unison with the shifting of the boxes.

In operation, the shuttle boxes R, G, R' shift according to any predetermined sequence, and in their shiftings operate through the mechanism shown in Fig. 5 to slide the selector back and forth. When the boxes are down so that shuttle R is active, spring 102 rocks lever 100 to its right hand full line position shown in Fig. 5, and spring 64 tends to move lever 62 to the right or full line position shown in Fig. 5 into engagement with lug 101, with finger 52 in register with slide 30.

When the boxes rise to place shuttle G in active position the downward pull of connector 105 exerted through spring 106 moves the lever 100 to the left or rearwardly to the dotted line position shown in Fig. 5, and the lug 101 at the same time causes lever 62 to move rearwardly to place finger 53 in register with slide 32. The proportions of the levers with respect to the amount of movement of the shuttle boxes is such that a one-space box shift will cause movement of the selector from registry with slide member 30 to register with slide member 32. When in the dotted position shown in Fig. 5 lever 62 is spaced forwardly from the stop 110.

When the boxes rise to their highest position to place shuttle R' in active position the connector 105 has a further downward movement to rock lever 100 in a left hand direction and cause lug 101 to move lever 62 against stop 110. This last operation occurs during an intermediate stage in the shifting of the shuttle boxes which places shuttle R' in active position, and when finger 53 is in register with slide 33. Continued rising movement of the shuttle boxes causes the heavy spring 106 to expand because of the engagement of lever 62 with stop 110, hence finger 53 remains in register with slide 33. Since a one-space shift of the shuttle boxes produces a movement corresponding to a two-space shift of the selector with respect to the vertical slides, it is necessary to provide some means for absorbing the excess movement of the shuttle boxes when the latter are moving to place shuttle R' in active position after finger 53 has moved into registry with the rearmost vertical slide.

In the previous description of operation it is assumed that the stop 90 is raised with the lever 86 in the full line position shown in Fig. 4,

hence the stop does not interfere with the selector and the latter can assume its front position in register with slide 30. When a transfer is initiated the selector 50 will have a rocking movement to lift whichever of the vertical slides 30 to 33 registers with it. Assuming that lever 86 and stop 90 are in the position of Fig. 4 and that shuttle R is active and exhausted and finger 52 registers with slide 30, the latter will be raised when the shuttle R is at the magazine end of the loom and the dog 72 will move from the full to the dotted line position of Fig. 4, the depending end 75 of the dog overhanging stud 88.

When slide 30 is subsequently depressed to effect release of a bobbin from the front stack, the descending dog 72 will engage the stud 88, and rock lever 86 to the full line position shown in Fig. 3, and as slide 30 assumes its lowest position the dog 72 will be reset by the shelf 82 of plate 83. This resetting of the slide 30 to its normal low position occurs while shuttle R is at the magazine end of the loom and box 10 is in active position, and the shifting of lever 86 permits the end 97 of stop 90 to fall on the hub 115 of the selector 50.

Since the shuttle R carries roving or decorative coarse weft it is called only occasionally, and upon arrival at the left hand side of the loom the boxes will shift upwardly one space to place shuttle G in active position for the weaving of ground mesh and there will be an accompanying shifting of the selector 50 rearwardly to the dotted line position shown in Fig. 5 with finger 53 registering with slide 32 which corresponds to the third stack of bobbins carrying the fine ground weft. If this shuttle is depleted it will be replenished in the usual manner.

During rearward movement of selector 50, the end 97 of stop 90 will fall from the dotted to the full line position shown in Fig. 6 and in alignment with the hub 115 of the selector. If after the required amount of ground mesh fabric is woven, shuttle R should again become active, the boxes will descend and spring 102 will move the lever 100 to the full line position in Fig. 5, and spring 64 will attempt to turn the selector to its forward position, but stop end 97 will prevent full forward movement of selector 50 and will hold finger 52 in register with vertical slide 31. Lug 101 at this time is spaced forwardly from lever 62.

Shifting of the selector due to alternate activity of shuttles R and G will go on until shuttle R is again depleted, whereupon slide 31 will be raised by finger 52 due to the fact that the stop 90 is holding the selector in the position shown in full lines in Fig. 6 and dog 81 will spring out to working position as shown in Fig. 3. Subsequent descent of slide 31 will cause dog 81 to engage the stud 89 and rock the lever 86 to the dotted line position shown in Fig. 3, which corresponds to its position shown in Fig. 4. The link 92 will be raised at this time to lift the stop 90 out of the path of the selector hub 115. This upward movement of the link 92 occurs toward the end of the rocking of finger 52 which depresses slide 31 and any endwise movement forwardly of the selector 52 under the action of spring 64 will occur after the slide 31 has been moved downwardly far enough to permit the spring plunger 36 and wedge 35 to complete resetting. The front slides 30 and 31 are now back in their starting position, one bobbin having been drawn from each of the front pair of stacks for the replenishment of shuttle R, and subsequent replenish-

ments of this same shuttle will draw bobbins alternately from these stacks.

While I have shown shuttle R' my invention is not necessarily limited to its use, but when employed its replenishment will occur in the usual manner, the connections shown in Figs. 5 and 6, particularly the spring 106 and the stop 110, cooperating to align the finger 53 with the rear slide 33 as already described.

It is to be understood that the present invention is useful more particularly in those types of looms which weave a fabric having coarse and fine weft and in which the coarse weft is consumed much more rapidly than the fine weft, and also in which the characters of weft alternate in such a way that either shuttle G or R' will always be active after a short period of activity of a shuttle R. The selector 50 will therefore be moved rearwardly from its foremost position at frequent intervals to permit the stop 90 to fall to its operative position with respect to the hub 115 between successive calls for replenishment of shuttle R.

It will be apparent that when stop 90 is raised its weight tends to turn lever 86 in a clockwise direction as viewed in Figs. 2 and 4. In order to hold the lever and stop with the latter raised, there is provided a small friction spring 94 on stud 87 held against lever 86 by head 77 of the stud and forcing the lever into frictional engagement with the plate 76. Nut 78 affords adjustment for spring pressure. This spring acts to hold the lever in either position to which it is moved and yields to permit rocking of the lever by dogs 72 and 81.

From the foregoing it will be seen that I have provided simple means by which a shuttle carrying coarse weft can be replenished with bobbins drawn alternately from two stacks of a magazine. It will also be seen that when the selector controls permit it to be moved forwardly from registry with slide 32 it can assume either of two positions depending upon the location of the stop 90. The lever 86 is mounted on a plate which can be constructed as a small unit or sub-assembly to be applied to the usual type of magazine. It will also be noted that the forward pair of slides are modified by upper extensions which carry the additional dogs 72 and 81 for operation of the lever 86.

Having thus described my invention it will be seen that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention and I do not wish to be limited to the details herein disclosed, but what I claim is:

1. In a weft replenishing loom having a pair of bobbin releasers and a selector movable into register with either of said releasers, one at a time, means tending to move said selector into register with one of said releasers, a stop for said selector which when in stopping position causes said means to register said selector with the other releaser, and means operated by one of the releasers to move said stop from stopping to non-stopping position, whereupon said means moves the selector from register when said other to said one releaser.

2. In a weft replenishing loom having a pair of bobbin releasers and a selector tending to register with whichever of said releasers it is permitted to register and moving out of register with either releaser subsequent to a replenishing operation involving either releaser, a stop for said selector determining with which releaser

said selector shall register, and a controller for said stop operated by said releasers to effect movement of the stop to non-stopping position or to stopping position if said selector is out of register with either releaser, depending upon which releaser operates the controller, said selector registering with one of said releasers when the stop is in non-stopping position and registering with the other releaser if the stop is in stopping position.

3. In a weft replenishing loom having a pair of bobbin releasers and a selector for said releasers movable in a selecting range within which said selector is registerable with and capable of actuating said releasers, one at a time, removing means to move said selector away from said range between successive replenishing operations involving said releasers, return means tending subsequent to operation of said removing means to move said selector into register with one of said releasers but arrestable to register said selector with the other releaser, stop means movable into and out of stopping position and when in stopping position causing said return means to register said selector with said other releaser and when out of stopping position permitting said return means to register said selector with said one releaser, and mechanism operated by one of said releasers to effect movement of the stop means out of stopping position and operated by the other releaser to effect movement of the stop means into stopping position if said removing means has moved the selector away from said range.

4. In a weft replenishing loom having a selector moved by an actuator into register with either of two reciprocable bobbin releasers, one at a time, and moved out of register with both of said releasers between successive reciprocations of said releasers, a stop movable into and out of stopping position with respect to the selector and when in stopping position causing said actuator to register the selector with one of said releasers and when out of stopping position enabling said actuator to register said selector with the other releaser, and control means for said stop operated by one of said releasers when reciprocating to effect movement of the stop out of stopping position and enabling said actuator to register said selector with the other releaser, and said control means operated by said other releaser when reciprocating to effect movement of the stop into stopping position, provided said selector is out of register with both of said releasers.

5. In a weft replenishing mechanism having a selector moved by an actuator into register with either of two bobbin releasers reciprocable by said selector, one at a time, and moved out of register with both releasers between successive reciprocations of said releasers, a lever pivoted with respect to the replenishing mechanism, means on said releasers to rock the lever in one direction incident to a reciprocation of one of the releasers and rock the lever in the opposite direction incident to a reciprocation of the other releaser, and a stop for said selector connected to the lever and moved by the latter out of stopping position with respect to the selector when the lever rocks in one direction to permit said actuator to register the selector with one of the releasers, movement of the lever in the opposite direction effecting movement of the stop to stopping position with respect to the selector provided the latter is out of register with both releas-

ers and causing said actuator to register the selector with the other of said releasers.

6. In a weft replenishing mechanism having a selector moved by an actuator into register with either of two bobbin releasers reciprocable by said selector, one at a time, and moved out of register with both releasers between successive reciprocations of said releasers, a stop for the selector to determine with which of the releasers said selector shall register, a lever pivoted on the replenishing mechanism and connected to the stop, an actuator on each of said releasers for moving the lever, said lever being rocked in one direction by one of the actuators when the corresponding releaser is reciprocated and said lever being rocked in the opposite direction by the other actuator when the corresponding releaser is reciprocated, said lever when rocking in one direction effecting movement of the stop to non-stopping position and enabling the actuator to register the selector with one of the releasers and said lever when rocking in the opposite direction effecting movement of the stop to stopping position, provided the selector is out of register when both of said releasers, to cause said actuator to register the selector with the other releaser.

7. In a stopping unit for the selector of a weft replenishing loom having a pair of bobbin releasers with either of which the selector may register, one at a time, said stopping mechanism comprising a lever operated by said releasers, and a stop controlled by said lever and movable to stopping and non-stopping position relatively to said selector to cause the latter to register with one or the other of said releasers.

8. In a stopping unit for the selector of a weft replenishing loom having a pair of bobbin releasers with either of which the selector may register, one at a time, said stop mechanism including a lever rocked in opposite directions by said releasers, and a stop member for the selector connected to the lever, said lever when rocked in one direction permitting the stop to fall by gravity toward stopping position relatively to said selector, and said lever when rocked in the opposite direction effective to move the stop in non-stopping position relatively to said selector.

9. In a stopping unit for the selector of a weft replenishing mechanism having a pair of bobbin releasers each having an actuator and with either of which releasers the selector may register, one at a time, a lever having parts thereof projecting into the path of movement of the actuators of said releasers, and a stop operatively connected to the lever and movable to stopping and non-stopping positions relatively to the selector, said lever being moved by one of said actuators to a position corresponding to the stopping position of the stop with respect to said selector, and said lever being moved by the other actuator to a position corresponding to the non-stopping position of the stop with respect to said selector.

10. In a weft replenishing loom having top, intermediate and bottom shuttle boxes connected to shifting mechanism capable of moving any shuttle to active position and operating with a magazine having first and second stocks provided with similar bobbins and third and fourth stacks each provided with distinctive bobbins, each stack having a bobbin releaser and the magazine having a releaser selector movable into registry with the releasers, one at a time, and moving out of registry with the releasers of the first and second stacks subsequent to a replenishing operation involving said similar bobbins, control means

for the selector operated by and in timed relation with the box shifting mechanism and having three positions, one for each shuttle box, connections between said control means and said selector to register the latter with the releaser of the fourth stack when the bottom shuttle box is active and register the selector with the releaser of the third stack when the intermediate shuttle is active, and permit registry of the selector with the releasers of either the first or the second stacks when the top shuttle is active, and positioning means cooperating with said selector and effecting registry of the latter alternately with the releasers of the first and second stacks for successive replenishing operations involving said similar bobbins, said connections including a yieldable element and a stop for said selector effective to register said selector with the releaser of the fourth stack when said control means moves from the position thereof corresponding to activity of the second shuttle to the position thereof corresponding to activity of the third shuttle.

11. In a weft replenishing loom having a gang of three shuttle boxes shifting through substantially the same distance to move any shuttle box adjacent to active position into active position, the loom having four stacks of shuttle bobbins the first and second of which have similar bobbins and correspond to one of the shuttle boxes, the third stack of which has distinctive weft and corresponds to the second shuttle box, and the fourth stack of which has bobbins distinctive from the bobbins of the other three stacks and corresponds to the third shuttle box, a selector registerable with said stacks, one at a time, and moving through substantially the same distance when shifting from registry with any stack to registry with the stack next thereto, a controller for the selector coordinated with said shuttle boxes and moving to any one of three positions each corresponding to one of the shuttles, the intermediate position being equally spaced from the other two positions, said controller effective to permit said selector to register with either the first or the second stack when said first shuttle box is active, register said selector with the third stack when said second shuttle box is active, a stop cooperating with said controller to register said selector with the fourth stack when said third shuttle box is active, said controller including a compensator to permit said controller to move to the position thereof corresponding to said third shuttle box after cooperation of said stop and controller, and means causing said selector to register alternately with said first and second stacks for successive replenishments involving said similar bobbins when said first shuttle box is in active position.

12. In a weft replenishing loom having a pair of stacks of reserve bobbins and a bobbin releaser for each stack, a selector movable to register with said releasers, one at a time, and having a movement in one direction to give the releaser registered therewith a movement in one direction to initiate a replenishing operation of the loom and having a subsequent movement to give the releaser a movement in the opposite direction to set the loom for transfer, and a controller for said selector operated by each releaser when the latter has a movement in said opposite direction to effect registry of the selector with the other releaser.

13. In a weft replenishing loom having a pair of stacks of reserve bobbins and a bobbin releas-

er for each stack having a movement away from normal position and a subsequent return movement to normal position, a selector movable to register with said releasers, one at a time, a controller for said selector the position of which determines with which releaser the selector shall register, and a pair of cooperating parts for each releaser, one part of each pair of parts being on the controller and the other part of each pair of parts being on the corresponding releaser, movement of a releaser away from normal position effecting a relationship for cooperation between the part thereon and the corresponding part of the controller, and return movement of the releaser causing cooperation of the last-named parts to change the position of said controller.

14. In a weft replenishing loom having a pair of stacks of reserve bobbins and a bobbin releaser for each stack, a selector registerable with said releasers, one at a time, and having a movement upon initiation of a replenishing operation to move the releaser registered therewith in one direction and having a subsequent movement to move said releaser in the opposite direction, a

controller for said selector movable to determine with which releaser said selector shall register, and an actuator on each releaser moving to position for cooperation with the controller when the corresponding releaser has said movement in one direction and cooperating with said controller to change the position of the latter when the releaser moves in said opposite direction.

15. In a weft replenishing loom having a pair of stacks of reserve bobbins and a bobbin releaser for each stack and wherein a selector registerable with either releaser gives the releaser registered therewith a movement in one direction when the active shuttle indicates exhaustion and is at the magazine end of the loom and gives the releaser a return movement in the opposite direction incident to return of the depleted shuttle to the magazine end of the loom on a later pick, a controller for the selector movable to determine with which releaser the selector shall register, and means operated by the return movement of either releaser to change the position of the controller and cause the latter to effect registry of the selector with the other releaser.

VICTOR H. JENNINGS.

CERTIFICATE OF CORRECTION.

Patent No. 2,363,593.

November 28, 1944.

VICTOR H. JENNINGS.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 4, first column, line 67, claim 1, for the word "when" read --with--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 20th day of February, A. D. 1945.

Leslie Frazer

Acting Commissioner of Patents.

(Seal)

er for each stack having a movement away from normal position and a subsequent return movement to normal position, a selector movable to register with said releasers, one at a time, a controller for said selector the position of which determines with which releaser the selector shall register, and a pair of cooperating parts for each releaser, one part of each pair of parts being on the controller and the other part of each pair of parts being on the corresponding releaser, movement of a releaser away from normal position effecting a relationship for cooperation between the part thereon and the corresponding part of the controller, and return movement of the releaser causing cooperation of the last-named parts to change the position of said controller.

14. In a weft replenishing loom having a pair of stacks of reserve bobbins and a bobbin releaser for each stack, a selector registerable with said releasers, one at a time, and having a movement upon initiation of a replenishing operation to move the releaser registered therewith in one direction and having a subsequent movement to move said releaser in the opposite direction, a

controller for said selector movable to determine with which releaser said selector shall register, and an actuator on each releaser moving to position for cooperation with the controller when the corresponding releaser has said movement in one direction and cooperating with said controller to change the position of the latter when the releaser moves in said opposite direction.

15. In a weft replenishing loom having a pair of stacks of reserve bobbins and a bobbin releaser for each stack and wherein a selector registerable with either releaser gives the releaser registered therewith a movement in one direction when the active shuttle indicates exhaustion and is at the magazine end of the loom and gives the releaser a return movement in the opposite direction incident to return of the depleted shuttle to the magazine end of the loom on a later pick, a controller for the selector movable to determine with which releaser the selector shall register, and means operated by the return movement of either releaser to change the position of the controller and cause the latter to effect registry of the selector with the other releaser.

VICTOR H. JENNINGS.

CERTIFICATE OF CORRECTION.

Patent No. 2,363,593.

November 28, 1944.

VICTOR H. JENNINGS.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 4, first column, line 67, claim 1, for the word "when" read --with--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 20th day of February, A. D. 1945.

Leslie Frazer

Acting Commissioner of Patents.

(Seal)