June 28, 1949. A. C. KRUKONIS 2,474,632

BOBBIN RETAINER FOR WEFT REPLENISHING MECHANISMS

Filed July 30, 1948

2 Sheets-Sheet 1

FIG. 1

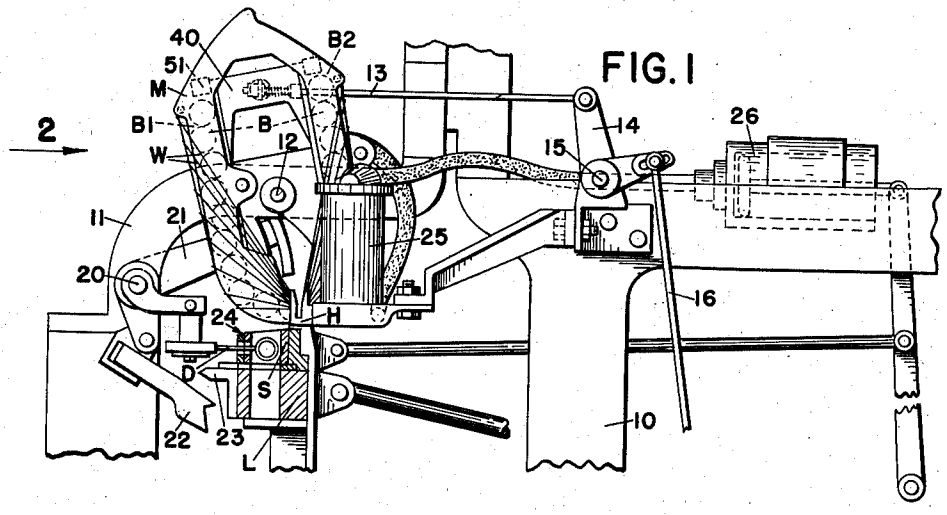


FIG. 2

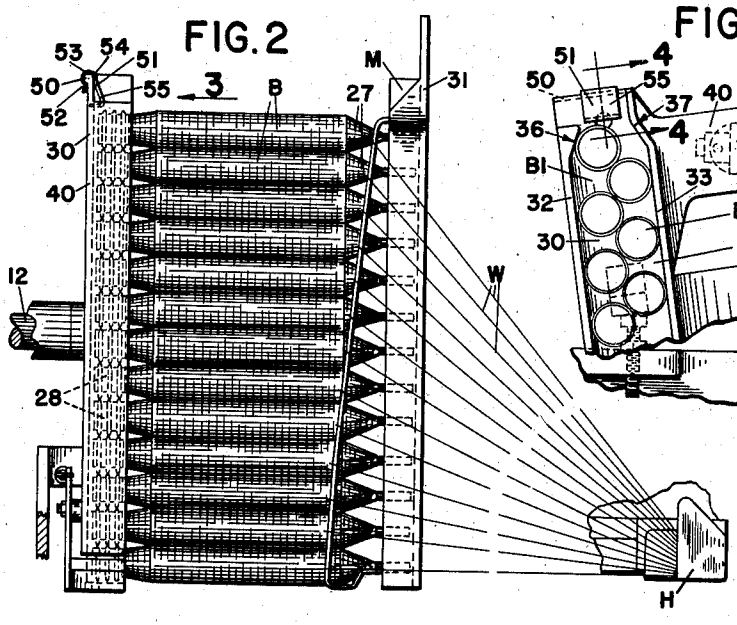


FIG. 3

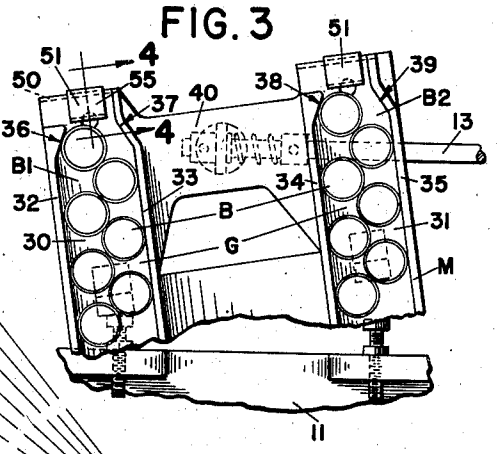


FIG. 4

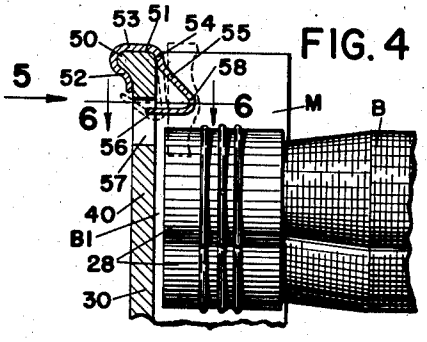
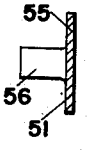


FIG. 6



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FIG. 5

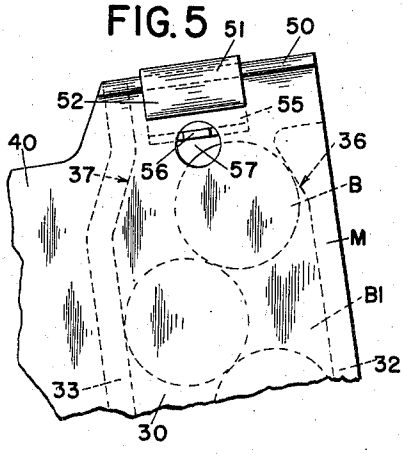


FIG. 7

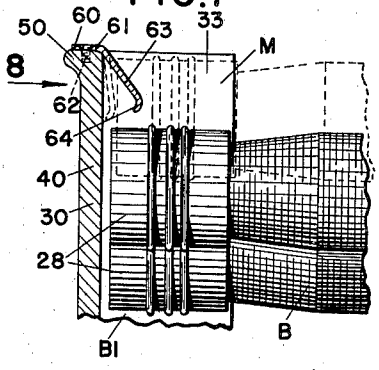


FIG. 9

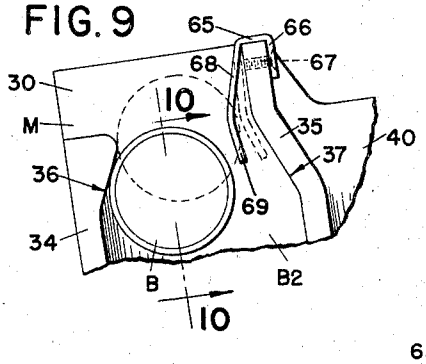


FIG. 8

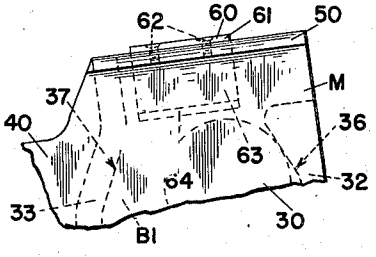
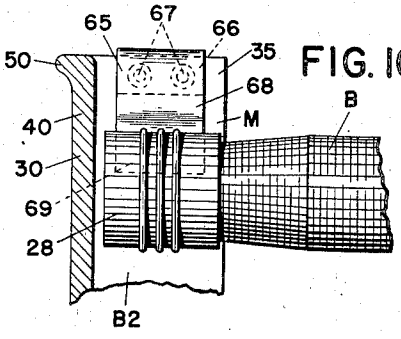


FIG. 10



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BOBBIN RETAINER FOR WEFT REPLENISHING MECHANISMS

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Application July 30, 1948, Serial No. 41,617

6 Claims. (Cl. 139—245)

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This invention relates to improvements in weft replenishing looms more particularly of the type employing a reserve bobbin magazine and it is the general object of the invention to provide simple means for retaining bobbins in the magazine.

In a type of weft replenishing loom which has gone into general use the reserve bobbins are stored in a magazine having two stacks or guideways down which the bobbins move by gravity toward transfer position. The magazine is ordinarily in position for transfer of the lowest bobbin in one of the stacks, and when the lowest bobbin in the other stack is to be transferred the magazine is rocked. Under high loom speed operation the rocking motion of the magazine is rapid and there is a tendency for the top bobbins in the stacks to be shaken out of the magazine.

It is an important object of the invention to provide the upper end of each bobbin stack with a stop or the like normally in position to arrest upward movement of the bobbin out of the magazine, but yieldable to permit fresh bobbins to be placed into the stacks from above the magazine. The stop may be made either of spring material of such form that it can snap onto a part of the magazine and be held in position by its own resilience, or be attached permanently to the magazine. In either event it will have a free end which is momentarily moved aside by the bobbins when they are placed into the stacks, and will then return automatically to stopping position.

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

In the accompanying drawings, wherein three forms of the invention are set forth,

Fig. 1 is a side elevation of a loom partly in section showing a magazine provided with the preferred form of the invention,

Fig. 2 is an enlarged front elevation looking in the direction of arrow 2, Fig. 1,

Fig. 3 is an elevation of the upper part of one end of the magazine looking in the direction of arrow 3, Fig. 2,

Fig. 4 is an enlarged detailed vertical section on line 4—4, Fig. 3,

Fig. 5 is a side elevation looking in the direction of arrow 5, Fig. 4,

Fig. 6 is a detailed horizontal section on line 6—6, Fig. 4,

Fig. 7 is a view similar to Fig. 4, but showing the first modified form of the invention,

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Fig. 8 is a side elevation looking in the direction of arrow 8, Fig. 7,

Fig. 9 is a view on an enlarged scale of the upper right hand part of the magazine shown in Fig. 3, but with the second modification of the invention applied thereto, and

Fig. 10 is a vertical section on line 10—10, Fig. 9.

Referring particularly to Fig. 1, the loom frame 10 has the forward or left hand part thereof as viewed in Fig. 1 provided with a support 11 carrying a pivot stud 12. A magazine M is rockably mounted on stud 12 and is provided with front and back stacks B1 and B2 of bobbins B. The upper part of the magazine is connected to a rearwardly extending rod 13 attached to a bell crank lever 14 pivoted at 15. A depending rod 16 is connected to the lever 14 at its upper end and at its lower end is connected to mechanism not shown herein but well understood.

The support 11 has a stationary stud 20 on which is mounted a transferrer arm 21 provided with a latch 22 for operation by a bunter 23 on the lay L. The weft detector designated generally at D is supported from the stud 20 and initiates a weft replenishing operation of the loom when a shuttle in shuttle box 24 is depleted. The loom will operate with two shuttles one of which is indicated at S. A pneumatic thread controller 25 and an air pump 26 connected thereto is provided for tensioning the weft ends W which extend from the stacks B1 and B2 toward a thread holder H.

As viewed in Fig. 2 these weft ends lead to the right from the tip ends 27 of the bobbins. The left hand ends of the bobbins have the usual butts 28. The magazine has right and left hand bobbin guiding plates 30 and 31 as viewed in Fig. 2, plate 30 as seen more particularly in Fig. 3 having front and back bobbin butt guiding flanges 32 and 33, respectively, for the front stack B1. Plate 30 has also front and back flanges 34 and 35, respectively, for the rear stack B2. The upper ends of these flanges are inclined toward the longitudinal center of their respective stacks, flanges 32 and 33 having walls 36 and 37, respectively, which are inclined upwardly and toward each other, while the rear stack has similar inclined walls 38 and 39 on flanges 34 and 35, respectively. The plate 30 is provided with a web or wall 40 which has operative connection with the forward end of rod 13.

The matter thus far described is of common construction and operates in the usual manner. The magazine M will normally be in the posi-

tion indicated in Fig. 1 with the lowest bobbin of the front stack B1 under the transferrer arm 21. If, under these conditions the detector D calls for replenishment from the front stack the magazine will remain in the position shown in Fig. 1 as the transferrer arm descends. If, on the other hand, replenishment is to involve the lowest bobbin in the rear stack B2 rod 16 will then be depressed to rock the magazine in a clockwise direction as viewed in Fig. 1. When the loom is operating at high speed the rocking of the magazine is necessarily accomplished in a very short interval of time and there is likelihood that the top bobbins in the stacks may be thrown upwardly out of their stacks or guideways. This is more likely to happen at the butt end of the bobbins, the ends at the left as viewed in Fig. 2, since the weft ends W, by their attachment with the tip ends 27, are likely to restrain upward movement of the right ends of the bobbins.

In carrying the present invention into effect provision is made for preventing the butt ends of the top bobbins in the stacks from being accidentally shaken upwardly out of the magazine when the latter rocks. In the preferred form of the invention the web or wall 40 of plate 30 of the magazine is formed with a rib 50 and a spring clip or stop 51 is provided having a left hand side 52 thereof as viewed in Fig. 4 shaped to conform to and extend under the rib. This side 52 together with the top part 53 of the stop and the down-bent portion 54 thereof holds the stop against upward movement with respect to the magazine. The stop 51 is provided with a free end 55 which is inclined downwardly and away from web 40 and terminates in a guide tongue 56 which enters a hole 57 in the web 40. Each bobbin stack is provided with one of these stops 51.

The free end 55 will normally overhang the butt of the topmost bobbin in the associated stack, as clearly shown in Fig. 4, to prevent the bobbin from moving upwardly or being shaken out of the magazine when the latter rocks. When fresh bobbins are being inserted into the magazine their butt ends will be pressed down from a position above the stop into engagement with the inclined free end or arm 55 to flex the latter to the shape shown in dotted lines in Fig. 4, the tongue 56 moving in the hole 57 and the lower part of the free end 55 being deflected sufficiently to allow the bobbin butt to enter the stack. Tongue 56 resists lateral motion of the stop along rib 50. The stop has a rounded lower end 58 to prevent injury to the hand of the bobbin boy when inserting bobbins into the magazine, and the free stop end 55 automatically springs back to the full line position shown in Fig. 4 after the associated stack has been filled with reserve bobbins.

In the first modified form of the invention shown in Fig. 7 the stop 60 is made of spring sheet metal having a base 61 extending over the top of the web or wall 40 and held to the latter by screws 62. A wall or free end 63 similar to end 55 extends downwardly and away from the web 40 in the position to overhang bobbins below it. When a bobbin is being inserted into the top of the stack it will engage the wall 63 and deflect it to the dotted line position shown in Fig. 7. As the bobbins pass below the stop the latter automatically springs back to the position shown in full lines in Fig. 7 and acts as does the first form of the invention to prevent upward escape of bobbins when the magazine rocks. The lower end of the wall 63 is preferably curved as at 64 to provide a rounded surface for the protection of the bobbin boy.

In both of the forms of the invention thus far described the stop is secured to the web or wall 40. In the second modified form of the invention, however, the stop is secured to one of the flanges defining the guideways for the bobbins. As shown more particularly in Fig. 9, a stop 65 made of resilient sheet metal has a downbent right end 66 secured to flange or wall 35 by screws 67. The stop extends over the top of flange 35 and then downwardly and inclined away from the top of flange 35, as at 68. The extreme lower end of the section 68 may be bent as at 69 to conform to flange 35 and is normally located at such a distance from the upper end of the corresponding flange 34 as to restrict the top of the bobbin guideway to a dimension less than the diameter of the bobbin butt. Because of this relationship the bobbin butts will be prevented from moving upwardly out of their stacks or guideways when the magazine rocks. When fresh bobbins are being placed into the stack the stop arm 68 will be moved from the full to the dotted line position in Fig. 9 and then will return by its own resilience to the full line stopping position.

In each form of the invention the stop is made preferably of resilient sheet metal bent to the appropriate form and held in position either by its own resilience or by screws such as shown in Figs. 7 and 9. The web 40 and flanges thereon may be considered as walls defining a guideway G for the bobbin butts. The downwardly inclined resilient arms 55, 63 and 68 of the spring clips or stops are moved out of their normal position by fresh bobbins when the latter are being placed in the magazine, and the stop then automatically returns to stopping position. By the use of the present invention the capacity of each stack can be increased one or two bobbins. It is common practice in some mills to put fewer bobbins in the magazine than it will actually hold because of the tendency of the top bobbins to move upwardly out of the magazine when the latter rocks. The clips or stops set forth herein, however, being located adjacent to the top of the guideways or stacks, permits the full capacity of the magazine to be realized without danger that the top bobbins will be shaken out of the magazine when replenishing operations require the magazine to rock.

Having thus described the invention it will be seen that changes and modifications of the foregoing specific disclosure may be made without departing from the spirit and scope of the invention.

What is claimed as new is:

1. In a reserve bobbin magazine having a wall forming part of a bobbin guideway in which reserve bobbins are stored, a bobbin stop secured to the wall at the top of the guideway and having a resilient arm normally inclined downwardly and away from the wall and overhanging part of a bobbin thereunder in the guideway, said arm being deflectable toward said wall by a bobbin being inserted into the guideway from above the latter, and said arm due to the resilience thereof returning to the normal position thereof.

2. In a reserve bobbin magazine having a wall forming part of a bobbin guideway in which reserve bobbins are stored, a rib formed along the top of said wall on the side of the latter opposite said guideway, and a resilient sheet metal bobbin stop having a part extending under said rib and having another part extending over said wall and having an integral resilient arm inclined down-

wardly and away from said wall in said guideway, said arm normally overhanging part of a bobbin thereunder in the guideway and being deflectable toward said wall by a bobbin being inserted into the guideway from above the latter and said arm due to the resilience thereof returning to the normal position thereof.

3. In a reserve bobbin magazine having a wall forming part of a bobbin guideway in which reserve bobbins are stored, said wall having a hole therein adjacent to the upper end of said guideway, and a resilient sheet metal bobbin stop held due to the resiliency thereof on the wall adjacent to the top of said guideway, said stop having a resilient arm inclined downwardly and away from said wall and terminating in a tongue extending into said hole, said arm normally overhanging part of a bobbin therebelow in the guideway to prevent upward movement of said part of the bobbin out of the guideway, said arm being deflectable toward the wall and said tongue being movable into the hole by a bobbin being inserted into the guideway from above the magazine, said arm thereafter due to the resilience thereof springing back to a position over said part of the bobbin, said tongue by engagement of parts of said wall adjacent said hole restricting movement of said stop on the wall laterally of said guideway.

4. In a reserve bobbin magazine having a wall forming part of a bobbin guideway in which reserve bobbins are stored, a stop secured to said wall adjacent to the upper part of said guideway and having a resilient arm extending into said guideway over part of the top bobbin in the guideway, said arm due to the resilience thereof being deflectable toward the wall by a bobbin being inserted downwardly into the guideway from above the magazine, and said arm due to the resilience thereof thereafter returning to a position over said part of the bobbin.

5. In a reserve bobbin magazine having an end

plate including a web and flanges extending laterally from the web and together with the web defining a guideway for reserve bobbins, a resilient arm secured to one of said flanges and having a part thereof inclined downwardly and away from said one flange toward the other flange to overhang part of a bobbin therebelow in the guideway, said arm due to the resilience thereof being deflectable toward said flange by a bobbin being inserted into the guideway from above the magazine, and said arm due to resilience thereof thereafter returning to a position over said part of the bobbin.

6. In a reserve bobbin magazine having an end plate formed with a web and bobbin guideway defining flanges extending laterally from the weft, the upper ends of said flanges being inclined upwardly and toward each other, a resilient bobbin stop secured to the upper end of one of said flanges and being inclined downwardly and away from said one flange toward the other flange and conforming to the inclined upper end of said one flange, said stop being deflectable toward said one flange by a bobbin being inserted into the guideway from above the magazine, and said stop thereafter returning to the normal position thereof in which said stop is effective to resist upward movement of part of the bobbin thereunder out of said guideway.

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