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BOBBIN CHECK FOR WEFT REPLENISHING LOOMS

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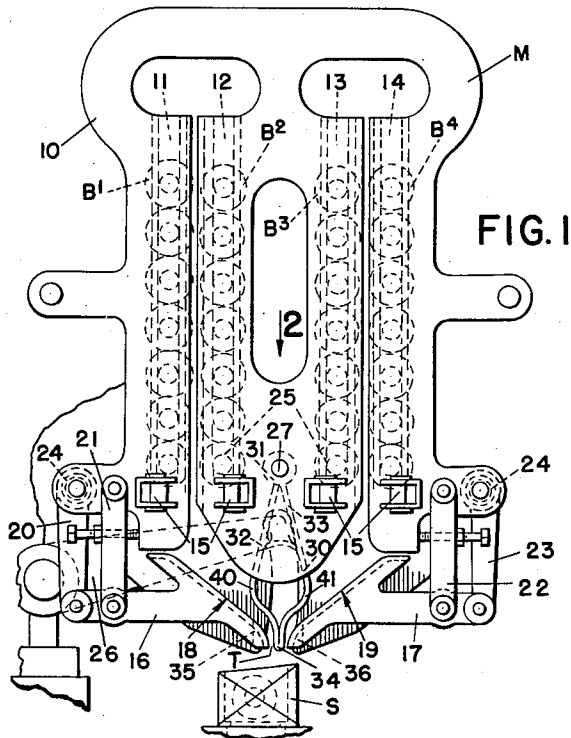


FIG. 1

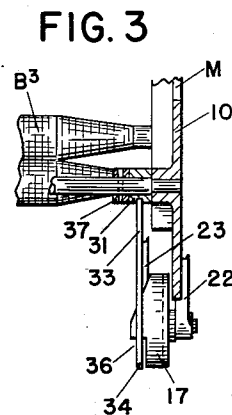


FIG. 3

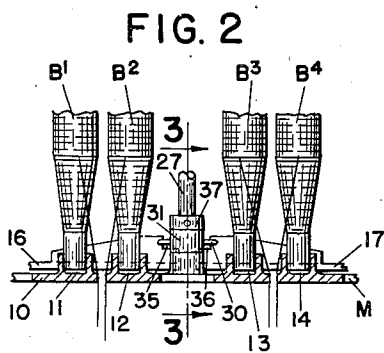


FIG. 2

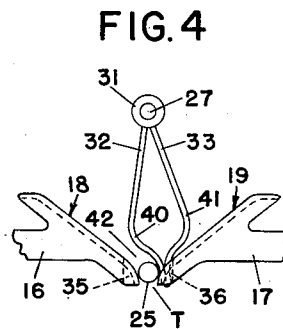


FIG. 4

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BOBBIN CHECK FOR WEFT REPLENISHING
LOOMS

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This invention relates to weft replenishing looms and it is the general object of the invention to provide a simple form of positioning check for a reserve bobbin moving toward transfer position.

Multicolor weft replenishing mechanisms generally employ a plurality of stacks of reserve bobbins which rest on cradles. When a replenishing operation is called one or the other of the cradles releases a bobbin so that it may move down inclined supports or guideways to a common transfer position under the transferrer arm or hammer. It occasionally happens that a bobbin moving down one set of guideways will due to its momentum move up the other guideway and not return to correct transfer position before the transfer hammer starts down, in which event the bobbin is likely to be broken or not be correctly transferred into the shuttle.

It is an important object of the present invention to provide a check which will engage the bobbin and arrest its motion as it reaches transfer position, thereby correctly placing it for transfer prior to descent of the transfer hammer.

The reserve stacks of bobbins are so located that reserve bobbins can approach the transfer position from either side thereof. It is a further object of the invention to provide a check which will be effective to place a bobbin in transfer position when released from any of the stacks, and when moving toward transfer position from either side.

The released bobbin sometimes rebounds upwardly when striking one support after rolling down the opposite support. It is the further object of the invention to provide a simple form of bobbin check having a part which overhangs the bobbin so that it cannot rebound upwardly to an objectionable extent. The check will have a bobbin overhanging part on each side thereof to be effective for bobbins approaching transfer position from either side thereof.

The supports for the tip end of the bobbin are ordinarily made with broadened surfaces on which the bobbin tip rests. It is a more specific object of the invention to provide these supports with stop means which limit lateral movement of the check by a bobbin. The supports may if desired be formed with notches into which a part of the check can move so that it may be at one side of the bobbin during the transfer operation.

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 con-

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venient embodiment of my invention is set forth,

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

Fig. 2 is a detailed plan view looking in the direction of arrow 2, Fig. 1,

Fig. 3 is a detailed vertical section on line 3—3 of Fig. 2, and

Fig. 4 is a diagrammatic view illustrating the operation of the invention.

Referring particularly to Fig. 1, the magazine M is formed with an outside bobbin tip guiding and holding plate 10 provided with several vertical guideways which are indicated at dotted lines at 11, 12, 13 and 14. These guideways assist in holding reserve bobbins B', B2, B3 and B4 in stacks down which the bobbins move by gravity. At the lower end of each stack is a delivery mechanism, such as a cradle 15, which normally supports the bobbins above it but is operated at the time of a weft replenishing operation to release the lowermost bobbin of the corresponding stack.

The magazine has front and back bobbin tip supports 16 and 17 the former of which has a downwardly and rearwardly inclined surface 18 and the latter of which has a similar but forwardly inclined surface 19. Support 16 is hung on front and back links 20 and 21 pivoted to the plate 10, while support 17 is suspended on front and back links 22 and 23 also pivoted on plate 10. The supports 16 and 17 are normally held in the position shown in Fig. 1 by means of springs indicated at 24 and are yieldable so that they may spread apart slightly to permit the tip 25 of the bobbin to pass between them into the shuttle S.

A bobbin drawn from either of the front stacks 11—12 will move down guideway surface 18 toward a common transfer position T between the lower adjacent ends of the supports 16 and 17, while bobbins from the rear stacks 13 and 14 will move down surface 19 toward the transfer position. A bobbin in transfer position will be depressed into the shuttle S by the transfer hammer 26 by means not shown but well understood. The plate 10 is held to the remainder of the magazine M by means of tie rods one of which is located over the transfer position T and indicated at 27.

The matter thus far described is of usual construction and operates in well-known manner. The tip supports 16 and 17 are normally held by their corresponding springs 24 in position to support the bobbin tip after the bobbin has rolled down one or the other of the supports to transfer

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position. As already stated it occasionally happens that a bobbin will not immediately come to rest in transfer position but will move beyond that position due to its momentum. Thus, a bobbin tip rolling down support 16 may continue its rearward movement up along support 17 and not return to transfer position before the transfer hammer 26 descends. Furthermore, upon striking support 17 the bobbin tip may rebound upwardly.

In carrying my present invention into effect I provide a simple form of bobbin check 30 which acts to prevent the bobbin from moving beyond transfer position. The check comprises a hub 31 loosely mounted on the tie rod 27 and has front and back depending members 32 and 33 which are joined together at their lower ends to form a stop pin or finger 34. The front support 16 is provided with a notch 35 which receives the stop finger 34, and in similar manner the rear support 17 is provided with another notch 36. A collar 37 on tie rod 27 positions the check 30.

Each of the members 32 and 33 is formed with a curved surface to overhang a bobbin in transfer position. Thus, member 32 is provided with a curved surface 40 which extends upwardly and forwardly and is concave toward support 16. Similarly, the rear member 33 is formed with a curved surface 41 concave toward support 17. Under normal conditions the check 30 hangs freely as indicated in Fig. 1 with the stop finger 34 in a central position with respect to the notches 35 and 36.

In operation, it may be assumed that check 30 is hanging freely in an intermediate position and a bobbin tip in moving down the front support 16 engages the check and swings it laterally in a rearward direction toward the rear support 17. The bobbin moves the stop finger 34 into notch 36 and against the rear support 17. The rear support thereupon arrests further rearward movement of the check and the bobbin tip comes to rest in transfer position in which it is supported by the adjacent ends of the supports 16 and 17. When moving rearwardly the concave surface 40 swings over the bobbin tip and with support 16 forms a pocket 42 into which the tip moves. The bobbin tip is thus prevented from rebounding upwardly and is thus brought to rest in correct position for transfer.

If a bobbin should move down the rear support 17 its tip will engage the finger 34 and move it forwardly into notch 35 and against support 16 which serves as a stop to prevent further forward movement of the check 30. Under these conditions concave surface 41 will overhang the bobbin and form another pocket to prevent upward rebounding. The pocket receiving the bobbin tip will be substantially over the transfer position regardless of the direction in which the check swings.

Fig. 4 shows diagrammatically the position of the check 30 when a bobbin has approached it while moving along support 16, but it will be understood that a similar condition will exist, but with the check moved in the opposite direction, when a bobbin moves down the rear support 17. After the bobbin is transferred the check swings back to its normal central position shown in Fig. 1.

From the foregoing it will be seen that I have provided a simple check means for the tip of a bobbin effective to bring the latter to rest in transfer position. It will also be seen that the check is equally effective to position the bobbin

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whether the latter approaches the check from the front along support 16 or from the rear along support 17. The check may conveniently be pivotally mounted on tie rod 27 above the transfer position T. Also, the bobbin supports serve as stops for the finger 34. Furthermore, the concave surfaces 40 and 41 cooperate with their corresponding bobbin supports 16 and 17 to form bobbin tip receiving pockets which prevent upward movement of the tip end of a bobbin moving toward transfer position. While I have shown one form of stop for the check 30, that is, the bobbin support 16 and 17, I do not wish necessarily to be limited to this particular means of restricting back and forth movement of the check.

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 in which reserve bobbins approach transfer position from either side thereof, a bobbin check movable by a bobbin approaching transfer position from either side thereof, and means limiting movement of said check enabling the latter to stop the bobbin in transfer position.

2. In a weft replenishing mechanism having bobbin supports inclined downwardly toward a bobbin transfer position, a bobbin check moved by a bobbin moving toward transfer position along either support toward the other support, and means limiting movement of said check enabling the latter to stop the bobbin in transfer position.

3. In a weft replenishing mechanism having bobbin supports inclined downwardly toward a bobbin transfer position, a bobbin check pivotally mounted on the mechanism and normally in position to be engaged by a bobbin moving down either support and be moved by said bobbin toward the other support, and stop means limiting movement of said check enabling the latter to stop said bobbin in transfer position.

4. In a weft replenishing mechanism having bobbin supports inclined downwardly toward a bobbin transfer position, a bobbin check pivotally supported on the mechanism at a point above the transfer position and hanging in position to be engaged by a bobbin moving down either support and be moved by the bobbin toward the other support, and stop means limiting movement of the check enabling the latter to stop the bobbin in transfer position.

5. In a weft replenishing mechanism having bobbin supports inclined downwardly toward a bobbin transfer position, a bobbin check pivotally supported on the mechanism at a point above the transfer position and normally in position to be engaged by a bobbin moving down either support and be moved by said bobbin toward the other support, said check having two surfaces extending over said supports, one surface for each support, each surface cooperating with the corresponding support when the check is moved toward the other support by the bobbin to define a pocket to receive part of the bobbin and restrict upward motion thereof.

6. In a weft replenishing mechanism having bobbin supports inclined downwardly toward a bobbin transfer position, a movable bobbin check in position to be engaged by a bobbin moving down either support and be moved by the bobbin

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toward the other support, said check having a surface for each support concave toward the latter, and means stopping movement of the check by the bobbin toward said other support when the concave surface on the check corresponding to the support down which the bobbin is moving is substantially over the transfer position.

7. In a weft replenishing mechanism having means defining a bobbin transfer position toward which reserve bobbins approach from either side of said position, a bobbin check on the mechanism mounted for lateral movement to either side of said transfer position when engaged by a bobbin moving toward transfer position from the other side of the transfer position, and stop means limiting lateral movement of said check.

8. In a weft replenishing mechanism having means defining a bobbin transfer position toward which reserve bobbins approach from either side of said position, a bobbin check on the mechanism mounted for lateral movement to either side of said transfer position when engaged by a bobbin

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moving toward transfer position from the other side of the transfer position, said check having a downwardly facing concave surface on each side thereof, and means stopping lateral movement of said check when either concave surface is over said transfer position.

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