Oct. 7, 1930. C. P. BERGSTROM 1,777,346

WEFT DETECTOR FOR LOOMS

Filed March 21, 1928 2 Sheets-Sheet 1

Fig. 1

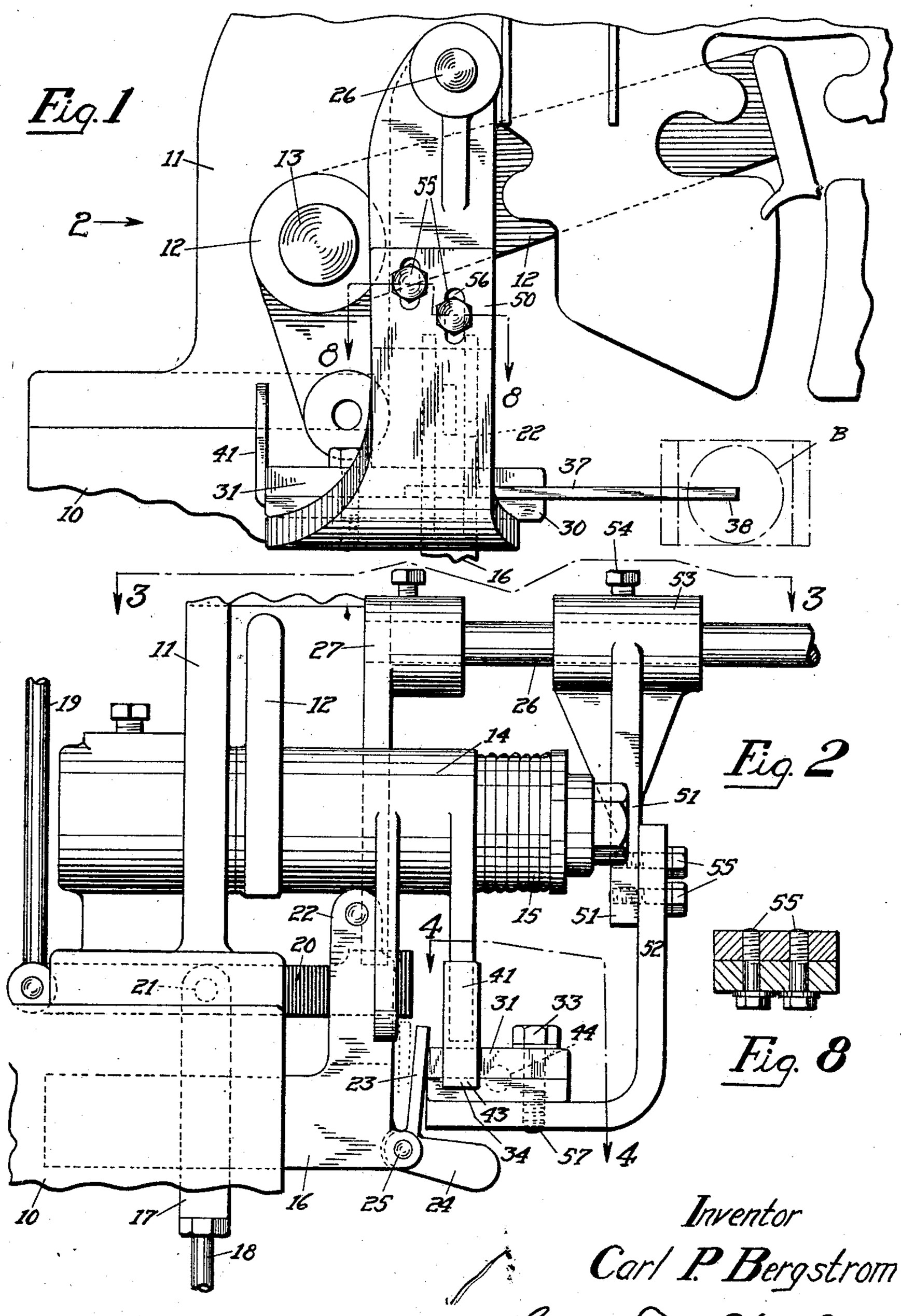

Fig. 2

Fig. 8

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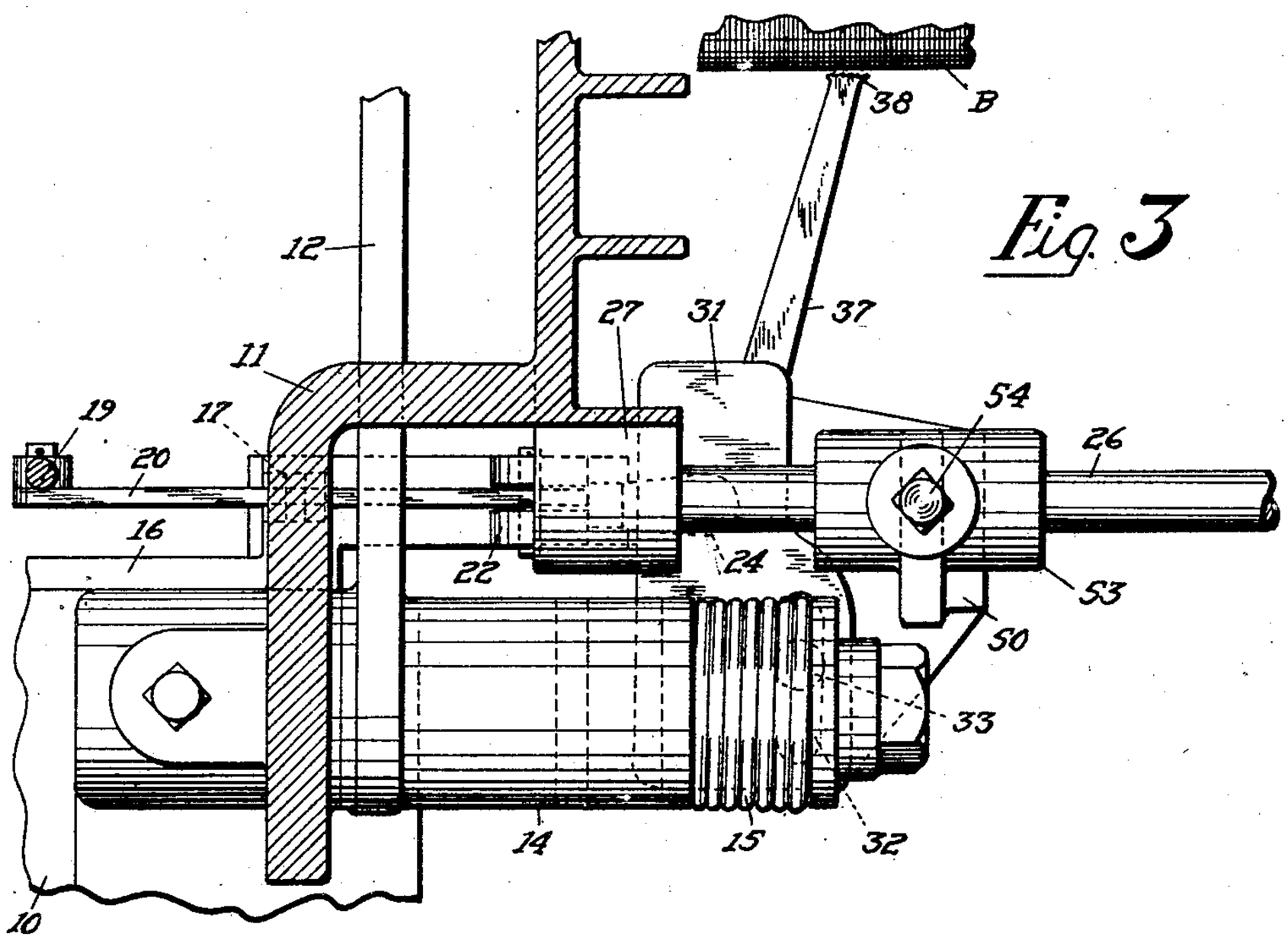

Fig. 3

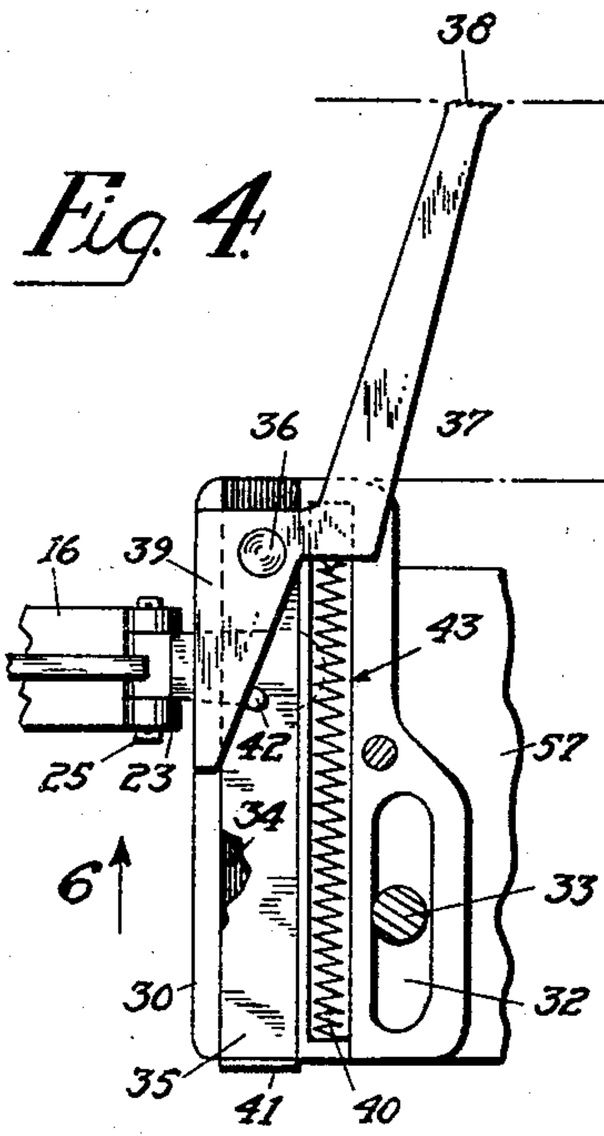

Fig. 4.

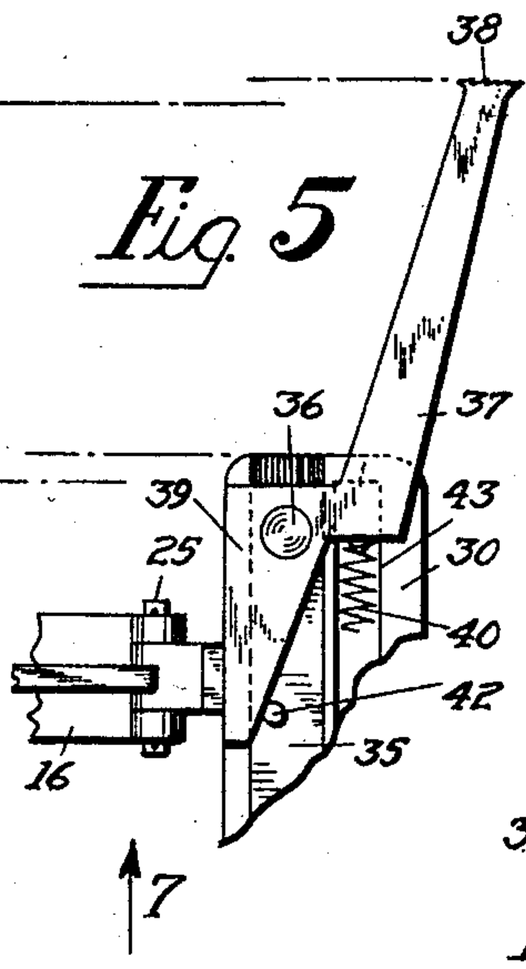

Fig. 5

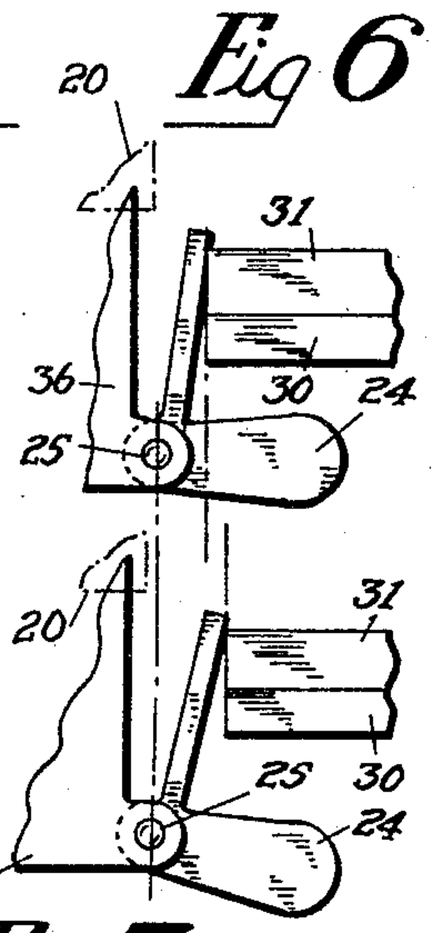

Fig 6

Fig. 7

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UNITED STATES PATENT OFFICE

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WEFT DETECTOR FOR LOOMS

Application filed March 21, 1928. Serial No. 263,469.

This invention relates to improvements in weft detectors for looms and it is the general object of the invention to provide an improved mounting for the detector whereby the latter may be moved angularly and longitudinally with respect to the subject being detected.

In multicolor weft replenishing looms the parallel stacks of reserve bobbins are held in a magazine structure which includes in its construction several parallel tie rods one of which is located at the front of the loom and near the bottom of the foremost stack of bobbins. These tie rods are substantially parallel to the shuttle and are ordinarily made of round stock. It is desirable to be able to adjust the position of the detector longitudinally of the shuttle and also toward and from the lay and it is an important object of my present invention to support the detector on a stand which is carried by one of the tie rods.

The invention is more particularly adaptable to the side slip weft detector shown in co-pending application Ser. No. 200,481 filed by Payne. Said detector includes a pivoted yarn engaging element having a forwardly extending tail which operates to rock a controller at the time of weft exhaustion. The controller swings about a fixed pivot and as the detector is moved away from said controller in a direction parallel to the bobbin the aforesaid forwardly extending tail is less effective to move the controller under a regularly moving actuator. It is a further object of my present invention to provide a mounting for the detector which will permit the pivot for the yarn engaging detecting element to be moved rearwardly as well as longitudinally of the bobbin, the rear movement increasing the leverage so that the tail will give the controller sufficient throw or movement to give a correct indication.

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

In the accompanying drawings, wherein I have shown a convenient embodiment of my invention,

Fig. 1 is an end elevation of a portion of a weft replenishing mechanism having my invention applied thereto,

Fig. 2 is a front elevation taken in the direction of arrow 2, Fig. 1,

Fig. 3 is a horizontal section taken on line 3—3 of Fig. 2,

Fig. 4 is a detail vertical section on line 4—4 of Fig. 2, and showing the parts in normal position,

Fig. 5 is a view similar to a portion of Fig. 4 but indicating the position of the detector after the same has been moved longitudinally of the shuttle away from the controller and also moved rearwardly to increase the leverage of the aforesaid tail,

Fig. 6 is a front elevation taken in the direction of arrow 6, Fig. 4 and showing the relation between the detector and the controller, parts in the position shown in Fig. 4,

Fig. 7 is a view similar to Fig. 6 but taken in the direction of arrow 7, Fig. 5 and showing the parts in the position they assume in said Fig. 5, and

Fig. 8 is a horizontal section on line 8—8 of Fig. 1.

Referring more particularly to Figs. 1, 2 and 3, I have indicated a loom 10 having a multicolor weft replenishing mechanism 11 supported thereby. A transferrer arm 12 mounted on a fixed stud 13 and having a hub 14 shown more particularly in Figs. 2 and 3 is surrounded in part by spring 15 which operates to hold the transferrer arm in the raised position shown in Fig. 1.

A fixed stand 16 has mounted therein for vertical reciprocation a block 17 secured to the upper end of a rod 18 which is caused to reciprocate by means not shown. As shown in Fig. 2 an upwardly projecting rod 19 is pivoted to the left hand end of an actuator lever 20 which is pivoted as at 21 to the block 17. The right hand end of the lever projects through a slotted upwardly projecting horn 22 on stand 16. On detecting beats of the loom the block 17 is moved downwardly when the lay is in its foremost position, and if sufficient weft be present a con-

troller 23 supported by the stand 16 will assume the full line position shown in Fig. 2 to be out of the path of the lever so that the latter may descend without interruption. When weft is substantially exhausted, however, the controller will be moved to the dotted line position shown in Fig. 2 and be located under the right hand end of the actuator lever 20 to interrupt downward movement of said lever 20 to cause a depression of rod 19 and initiate a change in the operation of the loom. The controller may have a weighted arm 24 and is free to move pivotally around a stud 25. Included in the construction of the replenishing mechanism 11 is a tie rod 26 which is held in a hub 27 forming part of the fixed structure of the replenishing mechanism. The matter thus far described is of common construction and may be as substantially set forth in patent to Ryon No. 1,030,748, while the controller may be of the particular kind shown in the aforesaid patent application.

The weft detector includes a bed 30 and a cap 31 which have aligning slots 32 through which extends securing bolt 33. A groove 34 is formed in the bed to afford a guide for the sliding carrier 35 on the rear of which is mounted a stud 36. The yarn engaging detecting element 37 is pivotally mounted on said stud 36 and has a rearwardly extending offset yarn engaging roughened surface 38 on one side of the pivot or stud 36 and as shown herein said detector is provided on the outer side of the pivot 36 with a forwardly projecting tail 39. A single compression spring 40 bears on a portion of the detector 37 to the right of the stud 36 as shown in Fig. 4 and tends to hold the detector and slide rearwardly so that the upbent withdrawing end 41 formed on the carrier 35 will engage the cap 31 to limit rearward movement of the slide 35. A stop pin 42 on the slide 35 engages the tail 39 to determine the angular position of the detector element 37 with respect to the slide 35. In this way the single spring 40 accomplishes the dual result of holding the detector rearwardly and also returning the same to normal position after an angular movement. The compression spring 40 is located in a recess the lower part of which is a groove 43 in the bed 30 and a corresponding groove 44 in cap 31. The forward end of the spring exerts its thrust against adjacent portions of the cap and bed and said spring is confined between the grooves 43 and 44. The matter thus far described in connection with the bed and parts supported thereby and moving therewith may be substantially the same as shown in the aforesaid Payne application.

My present invention relates more particularly to the means for supporting the bed and in carrying the invention into effect I provide a supporting member 50 having upper and lower parts 51 and 52, respectively. The tie rod 26 as shown in Fig. 1 extends through the hub 53 of the top part 51 and is held in adjusted position longitudinally of said rod and angularly with respect thereto by means of set screw 54. Screws 55 are threaded into the top part 51 and extend through vertically disposed slots 56 in the lower part 52. The said lower part of the supporting member has a horizontal platform 57 on which the bed 30 rests and into which the bolt 33 extends. The member 50 is located behind the hub 14 and stud 13 and because of this fact may be moved to a number of positions longitudinally with respect to the rod 26.

Assuming that the supporting member 50 is in a position to hold the detector in the position shown in Fig. 4 with respect to the controller 23 and it is desired to move the detector so that the end 38 thereof will engage a different part of the bobbin, the set screw 54 will be loosened and the hub 53 moved along the rod 26 to the right as viewed in Fig. 2 in a direction parallel to the bobbin B. Inasmuch as the controller is free to swing around its pivot 25 the upper end thereof will move to the right from the full line position shown in Fig. 2 so that the usual throw of that part of the tail 39 which engages the controller will be insufficient to move the latter to the dotted line position shown in Fig. 2 to initiate replenishment. It is necessary, therefore, to move the detector rearwardly toward the bobbin and this is accomplished by reason of the fact that the rod 26 is cylindrical and will permit the hub 53 to be moved in a counter-clockwise direction as viewed in Fig. 1. The position of the detector will then be as shown in Fig. 5 with respect to the stand 16 and that point of the tail which engages the controller is farther from the stud 36 than is the case when the parts are in the position shown in Fig. 4. An increased motion of the controller is therefore obtained although the angular movement of the detector remains the same.

The change in the position of the controller is shown in Figs. 6 and 7, the latter figure indicating that the detector has been moved away from the stand 36 and that the controller must be given an increased angular movement in order to be placed under the actuator lever. Limited angular relative movement of the parts 51 and 52 is permitted by the slots 56, so that the platform and detector may be kept horizontal when moved rearwardly. The coacting portions of the parts 51 and 52 which are held together by the screws 55 lie in a plane parallel to the direction of movement of the detector toward the surface being detected for the purpose of permitting the horizontal positioning of the detector.

From the foregoing it will be seen that I have provided a very simple means for mounting a weft detector of an automatic loom, said mounting being slidable along and angularly movable with respect to one of the tie rods customarily employed in the construction of multicolor magazines. It will also be seen that the angular adjustment permits the moving of the pivot of the yarn engaging detector member at varying distances from the controller so that the amount of motion transmitted to the latter by the detector may be varied when the feeler is adjusted lengthwise of the shuttle. It will further be seen that by making the supporting member 50 of two parts which are angularly movable relatively to each other the detector may be kept in a horizontal plane even though it is movable about a horizontal axis, that is tie rod 26.

Having thus described my invention it will be apparent 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 mechanism for a loom operating with weft carriers, a magazine having an inside plate to guide one end of the weft carriers as they move to transfer position, a tie rod held in fixed position to the inside plate of the magazine, a weft detector to detect the amount of weft on a carrier and at substantial exhaustion thereof to initiate a change in the operation of the loom, a support for the detector being normally stationary, and means to hold the support and detector to the tie rod in a plurality of positions at different distances from the inside plate of the magazine.

2. In a weft replenishing mechanism for a loom operating with weft carriers, a weft carrier magazine having an inside plate, a tie rod formed as part of the magazine and extending in a direction substantially parallel to the weft carriers, said tie rod being held to the plate in fixed position and having a cylindrical surface extending away from the plate, a weft detector, a support for the detector having a hub through which the tie rod extends, and means to hold said support to the tie rod in any one of a plurality of positions at different distances from the plate.

3. In a weft replenishing mechanism for a loom, a magazine having an inside plate to guide weft carriers to transfer position, a tie rod held in fixed position to the inside plate, a weft detector to detect the amount of weft on a carrier and at substantial exhaustion thereof to initiate a change in the operation of the loom, a lower bracket to which the detector is attached, an upper bracket on the tie rod and capable of assuming two different positions along the tie rod with respect to the lower bracket and supporting the latter, the detector remaining in the same position regardless of the position of the upper bracket.

4. In a weft replenishing mechanism having an inside plate, a tie rod secured to and extending from the plate in a direction substantially parallel to the bobbins with which the replenishing mechanism operates, a weft detector, a two-part bracket interposed between the tie rod and the detector, one of said parts being secured to the tie rod and capable of assuming at least two different positions longitudinally of the rod and a plurality of positions angularly with respect to the rod said part having a depending vertical member, the other of said parts having an upwardly extending vertical member and supporting the detector, and means to hold said parts together with the member of the first named part lying on either side of the member of the second named part.

In testimony whereof I have hereunto affixed my signature.

CARL P. BERGSTROM.