

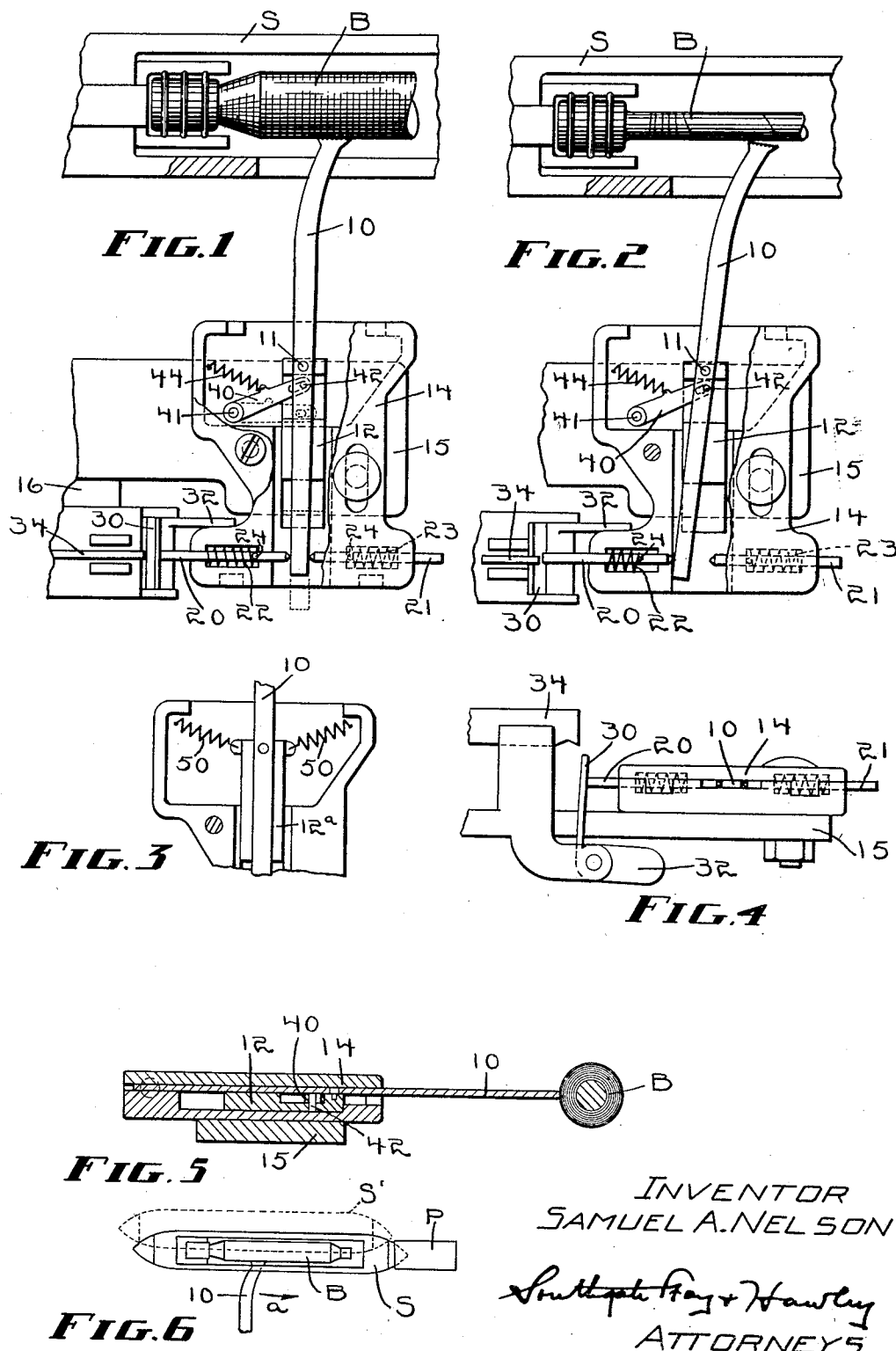
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WEFT DETECTOR FOR DROP BOX LOOMS

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## UNITED STATES PATENT OFFICE

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## WEFT DETECTOR FOR DROP BOX LOOMS

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This invention relates to devices used to determine substantial exhaustion of weft in the shuttles of a weft replenishing drop box loom.

In such looms the detecting action is sometimes designed to occur during the rising or falling movement of the drop boxes. During such movement of the boxes, the shuttle being indicated may be moved inward or toward the center of the loom by the cam action of the shuttle point against the conical wall of the recess in the picker as the shuttle is moved upward or downward.

The usual side slip feeler or weft detector is movable along the bobbin in a single direction only. When this side slipping motion is outward or toward the loom picker, the cam action of the picker on the shuttle point produces relative movement between the end of the feeler and the weft on the bobbin. As such movement occurs repeatedly, wear of the weft threads is occasioned and weft breakage is substantially increased.

It is the object of my invention to prevent such action of the feeler on the weft by providing a construction which permits the feeler to yield in the direction of the cam action or toward the center of the loom, as well as to yield in the opposite direction to indicate weft exhaustion.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a plan view of a weft detector embodying my improvements;

Fig. 2 is a similar view but showing the parts in a different position;

Fig. 3 is an enlarged plan view of a modified construction;

Fig. 4 is a front elevation of my improved mechanism;

Fig. 5 is a sectional side elevation thereof; and

Fig. 6 is a diagrammatic view, illustrating the cam action of the picker.

Referring to the drawings, I have shown a weft detector or feeler 10 pivoted at 11 to

a slide 12 mounted for forward and rearward movement in a casing or stand 14. The stand 14 is secured to a bracket 15, which in turn is mounted on the loom side 16. The rear end of the feeler 10 engages the weft on a bobbin B in a shuttle S and upon substantial exhaustion of weft the feeler 10 swings to the right or outward in the loom, as indicated in Fig. 2.

Spring plungers 20 and 21 are mounted to slide transversely in the front end portion of the stand 14 and are yieldingly pressed toward the feeler 10 by coil springs 22 and 23. Inward movement of the plungers is limited by pins 24, so that the feeler 10 may slide freely between the points of the plungers.

The plunger 20 actuates an arm 30 (Fig. 4) pivoted at 31 and having a counterweight portion 32 (Fig. 2) by which the arm is pressed yieldingly against the plunger 20. When the arm 30 is swung to the left, as shown in Fig. 2, the upper end of the arm is interposed in the path of movement of an actuator 34 which then gives an indication of weft exhaustion in the usual manner.

In Figs. 1 and 2 I have provided means for yieldingly pressing the slide 12 rearward which comprises a slotted lever 40 pivoted at 41 on the stand 14 and engaging a stud 42 (Fig. 5) in the slide 12. A spring 44 is connected at one end to the stand 14 and at the other end to the lever 40 and acts to yieldingly move the slide 12 to its rearward position.

In Fig. 3 I have indicated a modified construction in which the lever 40 and spring 44 are replaced by two springs 50 which act to draw the slide 12<sup>a</sup> yieldingly rearward. In the latter construction, it will be noted that the tension of the springs 50 is lighter when the feeler 10 is in its rearward position and that the tension gradually increases as the feeler and feeler slide are moved forward. Furthermore, it will be noted that the tension is at all times equally applied at the two sides of the slide 12<sup>a</sup>, thus preventing any tendency to cramp the slide in its guideways.

Reference to Fig. 6 will make clear the op-

eration and advantages of my improved construction. When the shuttle S is boxed, the point of the shuttle is commonly seated in the conical recess in the face of the picker P.

5 If the boxes rise or fall while the picker remains stationary, the picker exerts a cam action on the point of the shuttle, which is moved inward or toward the center of the loom to a position indicated diagrammatically in dotted lines at S'.

10 The normal side-slipping action of the feeler 10 is in the direction of the arrow  $\alpha$  in Fig. 6 or in other words is outward or toward the picker P. Such action does not  
15 accommodate itself to the inward cam-produced movement of the shuttle S and without my improvements the feeler 10 would be dragged along the bobbin in contact with the weft, which action frequently repeated would  
20 occasion objectionable wear on the weft threads.

With my improvements, however, the supplementary plunger 21 yields as the shuttle is moved from the full line to the dotted line  
25 position in Fig. 6, permitting the feeler to swing with the shuttle and the objectionable wear of the weft threads is thus avoided. Except when this yielding action occurs, the plunger 21 remains in its inward position and  
30 acts in effect as a fixed guide for the front end of the feeler 10.

The terms "inward" and "outward" as used in the claims refer to movement toward or away from the center of the lay.

35 Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:—

40 1. In a weft replenishing drop box loom, a side slipping weft feeler, and guiding means for said feeler permitting yielding movement thereof in either of two directions along the bobbin, said guiding means comprising a pair of spring-actuated plungers  
45 normally positioned closely adjacent the opposite side edges of the front end portion of said weft feeler.

2. In a weft replenishing drop box loom,  
50 a weft feeler having an indicating side-slipping movement in one direction, and a normally fixed guide for said feeler yieldable to permit an idle movement of the weft-engaging end of the feeler in the opposite  
55 direction from said indicating movement.

In testimony whereof I have hereunto affixed my signature.

SAMUEL A. NELSON.