This invention relates to improvements in shuttle binder boxes, and has to do primarily with a holding spring or auxiliary spring for the pivoted side bar of the binder box, which holding spring becomes effective only after the conventional spring has been stressed by the entrance of the shuttle into the binder box. The holding spring then functions to reinforce the action of the conventional spring and to limit the further movement of the pivoted side bar.

One of the objects of the invention is the provision of means for improving the action of the binder box of a loom by the provision of an auxiliary holding spring or yieldable stop for the swinging side bar of the box.

Another object is the provision of means for adjustable mounting the holding spring so that it will become effective at the desired angle of swing of the side bar.

Still another object is the provision of clamping means for maintaining the mounting means of the holding spring rigid in its adjusted position.

Other objects and features of novelty will appear as I proceed with the description of that embodiment of the invention which, for the purposes of the present application, I have illustrated in the accompanying drawing, in which

Fig. 1 is a fragmental plan view of one end of a loom embodying the invention.

Fig. 2 is a fragmental side elevational view of the same.

Fig. 3 is a cross-sectional view taken substantially on the line 3-3 of Fig. 2, showing the parts on a somewhat enlarged scale, and

Fig. 4 is an elevational view looking in the direction of arrow 4, Fig. 3.

In the drawing, the lay for a Draper loom is illustrated at 10. One end only is shown, it being understood that the illustrated parts will be substantially duplicated at the other end of the lay. A slot 11 is formed in the lay to accommodate the picker stick 12 in its swing back and forth.

The binder box comprises a fixed side bar 13 secured to the lay by means of screws 14 or the like. It may be faced with leather or other friction material 15. At both ends of the lay on the side opposite the fixed side bar 13 end blocks 16, one of which is shown in the drawing, are suitably attached to the lay. These blocks serve as supports for the fixed bar 17 which may be attached to the blocks by screws 18 or the like.

At each end of the lay a pivoted side bar 19 is oscillatably mounted on a pin 20 which extends downwardly through the bar 17, through a hole in the pivoted side bar 19 and into an aligned hole in the lay. Washers 21 may be interposed between the bar 19 and the fixed bar 17 on the one hand and between the bar 19 and the lay 10 on the other hand. Bar 19, like bar 13, is faced with leather or other friction material 22.

In accordance with conventional practice spring means is provided for urging the pivoted side bar 19 inwardly. This means may conveniently take the form of a leaf spring 23 attached to block 16 by screws 24 or the like. The function of the spring 23 of course is to resist outward swinging movement of the pivoted side bar 19 and thereby set up friction between the faced inner surface of the bar and the shuttle, which is illustrated in the drawing at 8.

Supported on the fixed bar 17 opposite a selected point along the length of the pivoted bar 19 I mount an auxiliary spring 25 which I term a holding spring. This spring is integral with a body member that comprises an open sided rectangular casing 26, preferably filled with cast metal 27. The body member 26, 27 is mounted to slide transversely in a bracket supported upon the fixed bar 17. This bracket comprises a block 28 and a sheet metal housing having a top 29, a rear wall 30 and two side walls 31. The side walls 31 have bottom flanges 32. A screw 33 extends through a smooth bore in block 28 downwardly between the flanges 32 and into a threaded opening in bar 17, the head of the screw being set down in a counterbore flush with the top of block 28.

The top 29 of the housing is provided with a round opening 34, through which the screw 33 may be inserted and through which a screwdriver blade may be inserted for tightening down the screw. In the back wall 30 of the housing I form a round hole 35 which merges with a smaller semicylindrical hole 36. 37 is an adjusting screw having a head 38 and a collar 39 spaced from the head a distance slightly greater than the thickness of wall 30. In assembly the screw 37 may be inserted through the hole 35, the collar 39 being of less diameter than hole 35. The shank of the screw between head 38 and collar 39 is then permitted to rest in the semicircular hole 36 in which it has a rotatable bearing. Body member 26, 27 is drilled and tapped to provide a threaded opening 40 which cooperates with the threads on the screw 37. Turning the screw 37 one way or the other causes the body member 26, 27 to slide in the bracket transversely of the fixed bar 17. A bolt 42 extends through registering holes in the housing side walls 31 and block 28.
This bolt and the side walls together constitute a clamp by means of which the body member 26, 27 may be gripped securely in any desired position. Block 28 is somewhat narrower than the body member 26, 27 and consequently compressive force exerted by the bolt 42 is free to act upon the body member 26, 27.

In the operation of a loom embodying the invention the spring 23 functions in the conventional manner during the greater part of the checking action exerted upon the shuttle, that is to say it causes the pivoted side bar 19 to press against the shuttle frictionally. As the line of contact between the shuttle and the bar 19 approaches the pivot 20, swinging the bar 19 outwards, the spring 23 is flexed more and more and its effect becomes stronger and stronger. A retarding effect is also exerted by the head 45 of the picker stick, the outboard movement of the latter being checked by any suitable picker stick checking means. If the inertia of the outwards moving shuttle is not checked in such a way as to cause it to diminish gradually to zero at the farthest outboard point of the shuttle travel, it may bounce away from the picker stick head 45, which would interfere with the desired application of power to the shuttle on the return stroke.

The holding spring 25 of the present invention reinforces the action of spring 23 after the pivoted side bar 19 has swung outwards to a predetermined extent, and brings the shuttle to a smooth stop. Since the transverse position of spring 25 is adjustable by very small increments through the operation of screw 37 the point in the cycle at which the spring takes effect can be controlled to a nicety. Of course when adjustments are to be made the bolt 42 is first loosened to relieve the clamping effect upon the body member 26, 27, the adjustment is made, and as soon as it is determined by trial to be correct the nut on the bolt 42 is tightened, thereby causing the side walls 34 of the housing to grip the body member 26, 27 firmly and provide a rigid mounting for the spring 25.

Having thus described my invention, I claim:

1. In a loom, a fixed bar running the length of the ground space above one side thereof, a hinder box having a side bar mounted at its outer end on a pivot extending between said fixed bar and said box, a spring arranged to exert inward pressure on said side bar for checking the outboard travel of the shuttle, a bracket mounted on said fixed bar near the free end of said pivoted side bar, and a holding spring extending downwardly from said bracket spaced outwardly from said pivoted bar in the inactive position of the latter and adapted to check the final outward movement thereof.

2. A loom as defined in claim 1, wherein said bracket comprises adjustable means for holding said holding spring spaced at variable distances outwardly of said pivoted bar.

3. A loom as defined in claim 2, wherein said holding spring is formed rigidly with a body member which is slidable transversely of said bracket, and wherein said bracket comprises a clamp for gripping the sides of said body member in any of its adjusted positions.

WILLIAM R. TAYLOR, Jr.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,685,539</td>
<td>Demers</td>
<td>May 18, 1926</td>
</tr>
</tbody>
</table>

FOREIGN PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Country</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>583,528</td>
<td>Germany</td>
<td>Sept. 5, 1933</td>
</tr>
<tr>
<td>616,318</td>
<td>Germany</td>
<td>Jan. 25, 1936</td>
</tr>
<tr>
<td>739,997</td>
<td>France</td>
<td>Apr. 26, 1932</td>
</tr>
</tbody>
</table>