April 2, 1935. A. M. SIKES 1,996,527

AUTOMATIC SHUTTLE BOX LOCK

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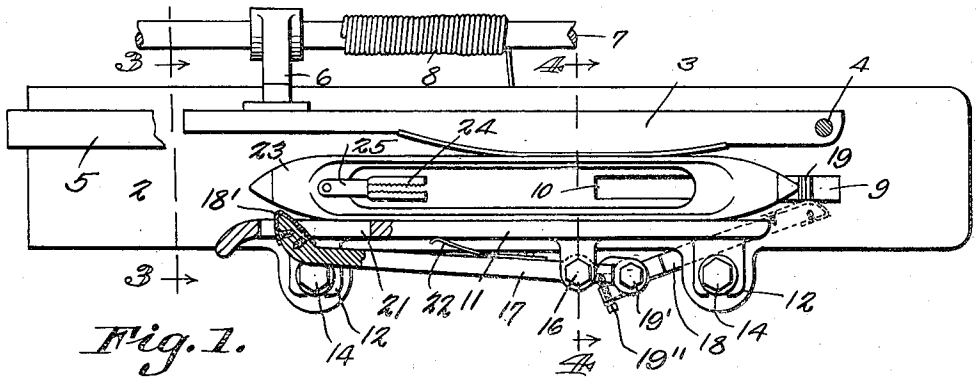


Fig. 1.

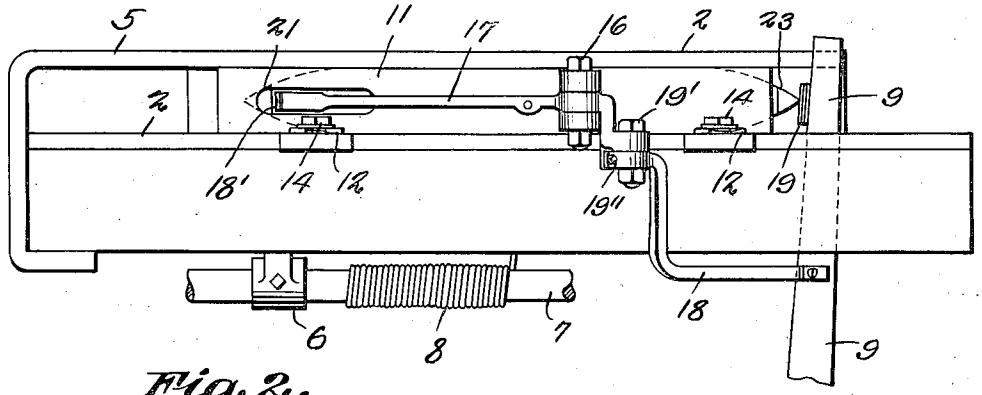


Fig. 2.

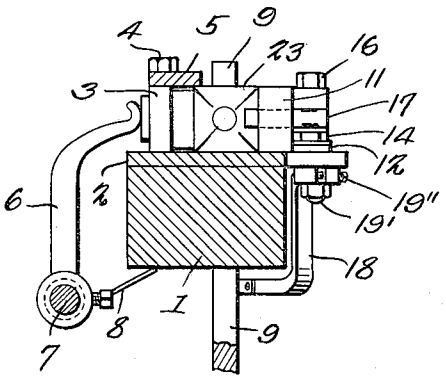


Fig. 3.

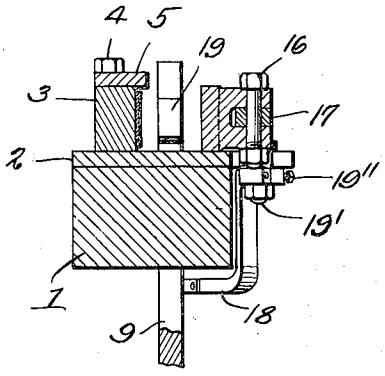


Fig. 4.

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AUTOMATIC SHUTTLE BOX LOCK

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2 Claims. (Cl. 139—186)

This invention aims to provide, in a loom, comprising a shuttle box and a picker stick, means other than the shuttle binder, and actuated by the picker stick, for holding a shuttle in the shuttle box for free but limited longitudinal movement towards and away from the picker stick, another object of the invention being to improve generally, and to enhance the utility of devices of that type to which the present invention appertains.

A further object of the invention is the provision of means for adjusting the means for limiting longitudinal movement of the shuttle towards and away from the picker stick, insuring the maximum of efficiency in operation.

The preferred form has been depicted, and will be made the subject matter of the following description, however it is to be understood that changes in the construction of the device may be made, to adapt the device for use on various models of looms, without departing from the spirit of the invention.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

Referring to the drawing:

Figure 1 is a plan view of a shuttle and shuttle box equipped with a device constructed in accordance with the invention.

Figure 2 is a side elevational view thereof.

Figure 3 is a sectional view taken on line 3—3 of Figure 1.

Figure 4 is a sectional view taken on line 4—4 of Figure 1.

Referring to the drawing in detail, on the lay beam 1 is mounted the base 2 of a shuttle box, a leather-shod binder 3 being pivoted at 4 to the base of the shuttle box and to a bracket 5, the binder being forced inwardly by a finger 6 fixed on the journaled protecting rod 7 which is actuated by a torsion spring 8 to cause the finger 6 to bear on the binder. The shuttle lock hereinafter described is not to be confused with the binder 3. Binders other than the one shown at 3 are disclosed in Holt's Patent No. 1,316,551 of 1919, in Mallory's Patent No. 163,671 of 1875, and in Macomber's Patent No. 132,164 of 1872. My shuttle lock, hereinafter described, should not be confused with what is shown in the patents specified, since the present invention discloses a shuttle lock to eliminate the pressure and friction on shuttle supplemental to, and clearly distinguishable from, a shuttle binder.

The picker stick 9 carries the usual leather pad known as pickers 19, and operates in the shuttle box through a slot 10 in the lay beam 1 and in the base 2 of the shuttle box.

The shuttle box has a removable wall 11, and mechanism is provided for mounting said wall for transverse adjustment, toward and away from the binder 3, at the will of an operator. With this end in view, the wall 11 is provided with slotted lugs 12, held by stud bolts 14 on the base 2 of the shuttle box.

The device comprises means actuated by the picker stick 9 for holding the shuttle 23 in the shuttle box for free but limited longitudinal movement towards and away from the picker stick 9.

This means preferably embodies a lever 17 carried by the fulcrum bolt 16, the end of the lever 17 adjacent to the bolt, being extended downwardly where the lever 17 has pivotal connection with the arm 18, at 19'.

The arm 18 is provided with a leather facing that is adapted to engage the picker stick 9, retarding movement of the picker stick.

A set screw indicated by the reference character 19'' is carried by the arm 18, and engages the lever 17, in such a way that movement of the set screw, will cause an adjustment of the arm 18 towards or away from the picker stick 9.

The lever 17 has a leather shod end 18' extending into the shuttle box and into the bar of the shuttle 23, through an opening 21 in the wall 11. The distance between the picker stick 9 and outer end of the lever 17, and which distance is adjusted by the set screw, is such that when parts are arranged as shown in Figure 1, the shuttle 23 may have free but limited longitudinal movement towards and away from the picker stick 9, when the end of the lever is disposed in the path of travel of the shuttle.

A spring 22 is secured to the lever 17 and bears against the wall 11 of the shuttle box. This spring constitutes yieldable means for tilting the lever 17, to swing the first-specified end 16' of the lever outwardly, and to swing the opposite end of the lever, and arm 18, supported thereby, inwardly.

The device, among other features, is characterized by the fact that the shuttle 23 can have free but limited longitudinal movement, toward and away from the picker stick 9, when the first-specified end of the lever, shown at 16', is disposed in the path of the shuttle 23, as in Figure 1. The reason for providing the aforesaid free but limited

longitudinal movement of the shuttle 23, toward and away from the picker stick 9, will now be explained.

When the battery (not shown) of the loom deposits the quill in the shuttle, the quill has to engage with certain well-known parts 24 on the shuttle. This engagement takes place properly, so long as the pad 19 on the picker stick 9 is in good condition, the shuttle then being stopped by engagement with the pad, in such position that the quill may coact with the parts 24. In practice, however, the pad 19 does not remain long intact, the shuttle 23 moves too far to the right, in Figure 1, and the shuttle has to be moved to the left, before the quill engages with the parts 24. This leftward movement of the shuttle is brought about, when the quill moves into the shuttle, by the engagement between one end of the quill, and a longitudinal incline 25 on the shuttle.

In practice, there is a very good reason for eliminating the pressure of the binder on the shuttle, by so doing reduces the cost of power required to drive or force shuttle from between the pressure of the binder, across and into a likewise pressure of binder at opposite end, this elimination of the pressure of binder on the shuttle by replacement with shuttle box lock, not only reduces the cost of power for operating the loom, but also increases the speed of the loom, thereby increasing production, and also increases the life of the shuttle by eliminating the pressure and friction on thin sides of shuttle by pressure of binder against sides of shuttle, another feature of my shuttle box lock, increases the life of the loom by elimination to a great extent, the vibration caused by the forcing of the shuttle into and between the pressure of the binder, which also eliminates a large percentage of the noise.

Suppose that the picker stick 9 has been swung to the left in Figures 1 and 2, the lever 17 having been tilted by the spring 22, so that the free end of the arm 18 is behind, and in the path of the picker stick. As the shuttle 23 moves to the right, the shuttle engages the pad 19, on the picker stick 9, and the picker stick moves to the right, the picker stick engaging the arm 18, tilting the arm and lever until the parts arrive in the position of Figure 1, with the arm 18 against the side of the picker stick, and with the lever 17 in the path of the shuttle 23, but not binding upon it.

Then, the shuttle 23 can have free but limited longitudinal movement, toward and away from the picker stick 9, as and for the purpose specified. When the picker stick 9 moves to the left in Figures 1 and 2, arm 18 is set free, and the lever 17 moves out of the path of the shuttle 23, responsive to the spring 22.

The device can be mounted quickly on standard looms, by simply substituting the wall 11 for the wall already in use. Difficulties arising out of a failure of the quill to register properly in the shuttle box 23 are avoided. The pressure of the binder 3 may be reduced, or eliminated, and the loom can be run faster than would be possible if the locking lever 17 were not provided.

I claim:

1. In a loom having a picker stick, a shuttle box, and a binder at one side of the box, cooperating members comprising a side wall for the box, disposed opposite to the binder, and a lever fulcrumed intermediate its ends on said side wall, a shuttle engaged between the binder and said walls, one end of the lever extending into the shuttle box, the opposite end of the lever being engageable directly by the picker stick to dispose the first-specified end of the lever in the path of the shuttle, the distance between the picker stick and the first-specified end of the lever being such that the shuttle can have limited longitudinal movement toward and away from the picker stick when the first specified end of the lever is disposed in the path of the shuttle, spring means carried by one of said cooperating members and engaging the other of them to dispose the first-specified end of the lever in the path of the shuttle, and to dispose the opposite end of the lever against the side of the picker stick, and means for mounting said side wall removably on the box, whereby an operator may remove the conventional side wall and substitute for it the side wall herein claimed, that side wall carrying the lever and the spring means and forming a complete pressure-reducing unit, in that the limitation of said longitudinal movement of the shuttle by the said one end of the lever, and by the picker stick, enables said mechanism to exert a pressure on the binder which is less than the pressure that would be required otherwise.

2. In a loom having a picker stick and a shuttle box, cooperating members comprising a side wall for the box, and a lever fulcrumed intermediate its ends on said side wall, one end of the lever extending into the shuttle box, the opposite end of the lever being engageable directly by the picker stick to dispose the first-specified end of the lever in the path of a shuttle in the shuttle box, the distance between the picker stick and the first-specified end of the lever being such that the shuttle can have limited longitudinal movement toward and away from the picker stick when the first-specified end of the lever is disposed in the path of the shuttle, spring means carried by one of said cooperating members and engaging the other of them to dispose the first-specified end of the lever in the path of the shuttle, and to dispose the opposite end of the lever against the side of the picker stick, and means for mounting said side wall removably on the box, to replace the conventional side wall, and to enable the side wall claimed to be placed as a unit, carrying the lever and the spring means.

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