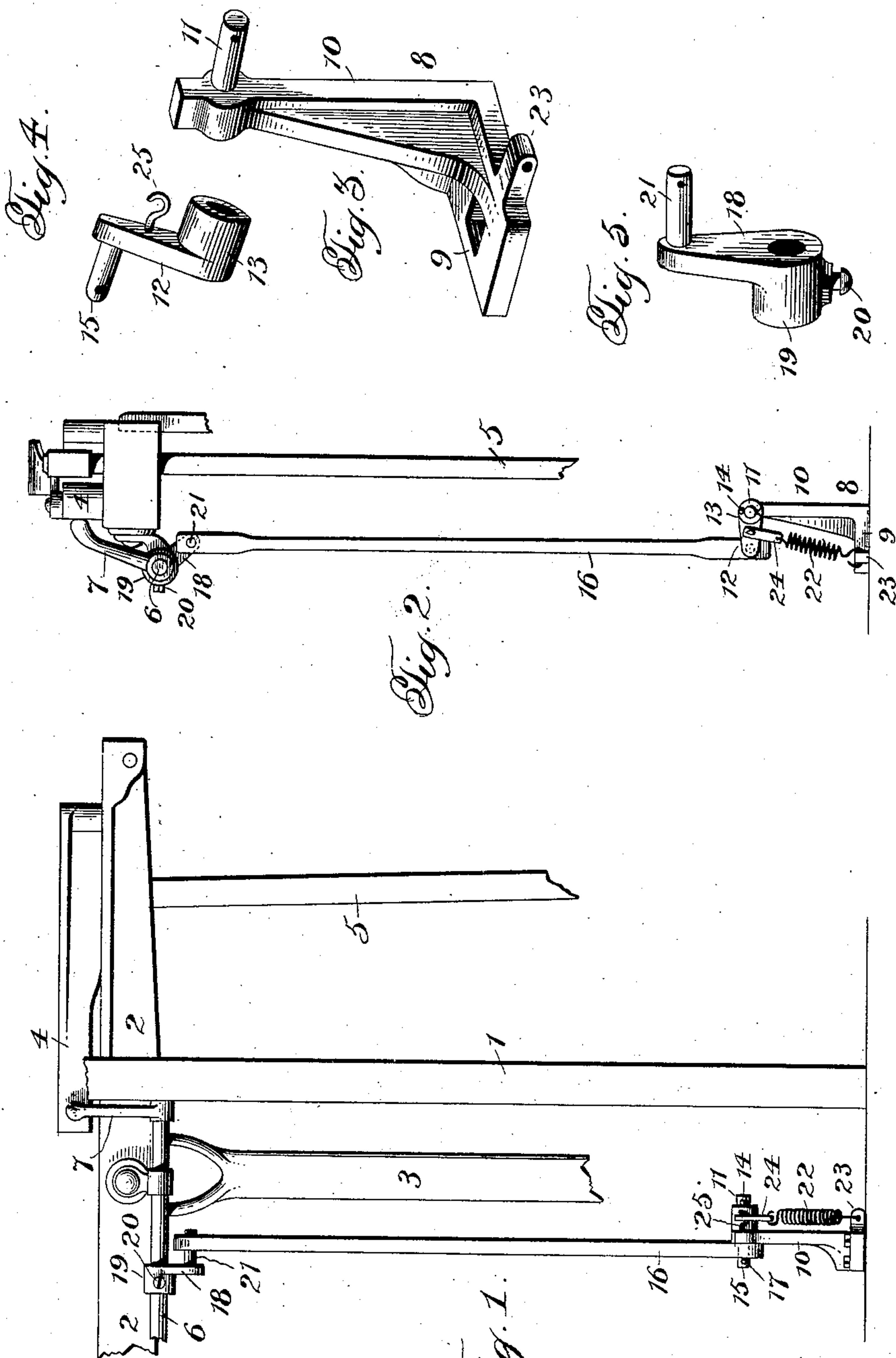


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PATENTED FEB. 19, 1907.

J. W. KILLPATRICK.  
SHUTTLE RELEASE MOTION.  
APPLICATION FILED SEPT. 29, 1905.



Witnesses

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# UNITED STATES PATENT OFFICE.

JOHN W. KILLPARTRICK, OF LOWELL, MASSACHUSETTS.

## SHUTTLE-RELEASE MOTION.

No. 844,874.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed September 29, 1905. Serial No. 280,716.

*To all whom it may concern:*

Be it known that I, JOHN W. KILLPARTRICK, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Shuttle-Release Motions; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in shuttle-release motions for looms.

Heretofore nearly all shuttle-release motions have been applied to the lay, and in looms for weaving cotton fabric the motion of the lay is so rapid that the life of the devices commonly employed is but short, the rapid motion of the lay acting to jar the release-motions apart, thereby necessitating frequent repairs. Furthermore, the constructions now commonly employed use a binder-spring, which acts upon the swell for controlling movement of the latter, and these springs are quickly destroyed, causing considerable expense as well as annoyance in replacing the same.

It is therefore the object of the present invention to provide a shuttle-release motion the construction of which is exceedingly simple and inexpensive, one which will overcome the many disadvantages of the constructions now commonly employed, and one which is practically independent of the lay for its support, thus relieving the lay of the weight of the release-motion and reducing proportionately the power necessary for the operation of the lay.

The invention further contemplates the provision of a release-motion by which perfect freedom of the protector-rod and swell is assured and through the medium of which the usual binder-springs are entirely eliminated.

With these general objects in view and others, which will appear as the nature of the improvements is better understood, the invention consists, substantially, in the novel construction, combination, and arrangement of parts, as will be hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the appended claims.

In the drawings, Figure 1 is a side elevation of one end of a lay equipped with the present invention. Fig. 2 is an end view thereof, the

frame of the loom being omitted for clearness.

Fig. 3 is a detail perspective view of the governor-stand. Fig. 4 is a similar view of the connecting-crank carried by the protector-rod. Fig. 5 is also a detail perspective view of the operating-crank.

Referring in detail to the drawings, the numeral 1 designates the frame of a loom, 2 the lay, 3 the lay-sword, 4 the swell of the shuttle-box, 5 the picker-stick, 6 the protector-rod, and 7 the protector-finger, all of which may be of the usual construction now commonly employed in looms. It will be noted, however, that the usual binder-spring for controlling the movement of the swell 4 is entirely omitted, the present invention serving to control such movement, and thus dispensing entirely with the use of such spring, and to the accomplishment of this end a governing device, which acts upon the swell through the medium of the protector-rod 6 and the protector-finger 7, is employed. This governing device comprises a stand 8, which includes a base 9, from which rises a support 10 at substantially right angles to the base, and mounted at the upper end of the support 10 is an outwardly-projecting stud 11. An operating-crank 12 is carried by the support 10, said crank having a sleeve 13, which receives the stud 11 and is secured on the latter through the medium of a cotter-pin 14 or other equivalent fastening, and it will thus be seen that the operating-crank 12 is free to oscillate upon the stud 11, as will more fully appear hereinafter. The crank 12 is also provided with an outwardly-extending stud 15, to which is connected the lower end of a link 16, and said link is secured to the stud 15 through the medium of a cotter-pin 17 or its equivalent.

Removably mounted upon the protector-rod 6 is a connecting-crank 18, said crank being provided with a sleeve 19, which loosely receives the protector-rod, and said sleeve is provided with a set-screw 20, whereby the sleeve 18 may be fixedly held upon the rod at any desired position of adjustment. The crank 18 is also provided with an outwardly-projecting stud 21, to which the upper end of the link 16 is connected, and it will thus be seen that motion is imparted to the protector-rod 6 through the medium of the operating-crank 12 and the connecting-crank 18.

A spring 22, preferably a coiled spring, forms a part of the governing device, one



end of said spring being connected to a hook 23, carried by the base 9 of the stand 8, and the other end of said spring is attached, through the medium of a flexible connection 5 24, preferably a strip of leather, to a hook 25, carried by the operating-crank 12. It will thus be seen that the spring 22 normally exerts its tension to draw the operating-crank 12 toward the base of the stand, 10 and the tension of said spring is transmitted, through the link 16, the protector-rod 6, and the protector-finger 7, to the swell 4, so that the latter will be controlled in its movements by said spring.

15 In the operation of the invention it will be seen that the shuttle will be alternately passed from one end to the other of the lay, as is usual, and in entering the shuttle-box the same will contact with the swell 4, where- 20 by the latter will be thrown outwardly. This outward movement will, however, be checked through the medium of the protector-finger 7, and in the swinging movement of the lay it is obvious that the connecting- 25 crank 18 will be slightly oscillated by reason of its fixed connection with the protector-rod 6. This oscillation is transmitted to the operating-crank 12, the movement of which is controlled by the spring 22, and conse- 30 quently as said crank 12 is raised the tension of the spring 22 will be increased, which increase of tension will be transmitted to the swell 4, and thus while the latter will yield under the movement of the shuttle such 35 yielding of the swell will only be sufficient to permit the shuttle easily passing into the box and remaining there without liability to displacement incident to the tendency of the shuttle to rebound from contact with the 40 picker. The stand 8 is bolted to the floor or base upon which the loom is mounted, and by reason thereof it is obvious that said stand is held in a fixed position. Therefore there is absolutely no movement of the 45 stand, and the spring 22 is accordingly tensioned by the swinging movement of the lay, and the degree of such tension is proportionate to the degree of swinging movement imparted to the lay. It will thus be seen 50 that the lay is relieved entirely of the weight of the governing device, and consequently the power necessary for the operation of the lay is proportionately decreased. Furthermore, the movement of the governing device 55 is exceedingly slight, it having been found in actual practice that the operating-crank 12 moves approximately only three-eighths of an inch, while the movement of the swell and the protector-finger is approximately one 60 inch, thus affording ample space for the entrance of the shuttle to the shuttle-box. The fact that the lay is relieved of the actuating mechanism also frees the latter from the jarring movement of the lay, and conse- 65 quently the life of the actuating mechanism

is much longer than in the ordinary constructions commonly employed.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a shuttle-release motion, the combination with the swell of a shuttle-box, of means independent of the loom for yieldingly controlling the pressure of the swell, and connections between said controlling 75 means and the swell.

2. In a shuttle-release motion, the combination with the swell of a shuttle-box, of means independent of the loom for yieldingly controlling the pressure of the swell, 80 and for varying the effect of the pressure upon the swell during the movement of the lay.

3. In a shuttle-release motion, the combination with the swell of a shuttle-box, and 85 the protector-rod of the lay, of a support arranged in proximity to the loom but independent of the latter, an operating-crank pivotally connected to said support, means for controlling the movement of said operat- 90 ing-crank, and connections between the operating-crank and the protector-rod, whereby the pressure of the swell is controlled by said crank.

4. In a shuttle-release motion, the combination with the swell of a shuttle-box, and 95 the protector-rod of the lay, of a support arranged in proximity to the loom but independent of the latter, an operating-crank pivotally connected to said support, means 100 for controlling the movement of said operating-crank, and a link connected to the operating-crank and the protector-rod, whereby the pressure of the swell is controlled by said crank. 105

5. In a shuttle-release motion, the combination with the swell of a shuttle-box, and the protector-rod of the lay, of a support arranged in proximity to the loom but inde- 110 pendent of the latter, an operating-crank pivotally connected to said support, connections between said operating-crank and the protector-rod, and a spring connected to said operating-crank for controlling move- 115 ments of the latter, whereby said crank is adapted to control the pressure of the swell.

6. In a shuttle-release motion, the combination with the swell of a shuttle-box, and the protector-rod of the lay, of a connecting- 120 crank carried by said rod, a support arranged in proximity to the loom but independent of the latter, an operating-crank pivotally connected to said support, connections between the operating-crank and the connecting- 125 crank, and means associated with said support and connected to the operating-crank for controlling movements of the latter, whereby the operating-crank is adapted to control the pressure of the swell.

7. In a shuttle-release motion, the combi- 130



nation with the swell of a shuttle-box, and the protector-rod of the lay, of a connecting-crank carried by said rod, a support arranged in proximity to the loom but independent of the latter, an operating-crank pivotally connected to said support, connections between the operating-crank and the connecting-crank, and a spring associated with said support and connected to the operating-crank for controlling movements of the latter, whereby the operating-crank is adapted to control the pressure of the swell.

8. In a shuttle-release motion, the combination with the swell of a shuttle-box, and the protector-rod of the lay, of a support arranged in proximity to the loom but independent of the latter, said support having an outwardly-projecting stud, an operating-crank pivotally mounted on said stud, a connecting-crank carried by the protector-rod, a link connected to the operating-crank and the connecting-crank, and a spring associated with said support and connected to the operating-crank for controlling movements of the latter, whereby the operating-

crank is adapted to control the pressure of the swell.

9. In a shuttle-release motion, the combination with the swell of a shuttle-box, and the protector-rod of the lay, of a connecting-crank mounted upon said rod and adjustable thereon, a support arranged in proximity to the loom but independent of the latter, an operating-crank pivotally connected to said support, a link connected to the operating-crank and the connecting-crank, and a spring connected to said support and said operating-crank for controlling movements of the latter, whereby the pressure of the swell is controlled by the operating-crank, the tension of said spring being regulated by the position to which the connecting-crank is adjusted on the protector-rod.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN W. KILLPARTRICK.

Witnesses:

CHARLES F. TAPLIN,  
EDWARD A. WELCH.