H. H. KELLEY.

PICK MOTION FOR LOOMS.

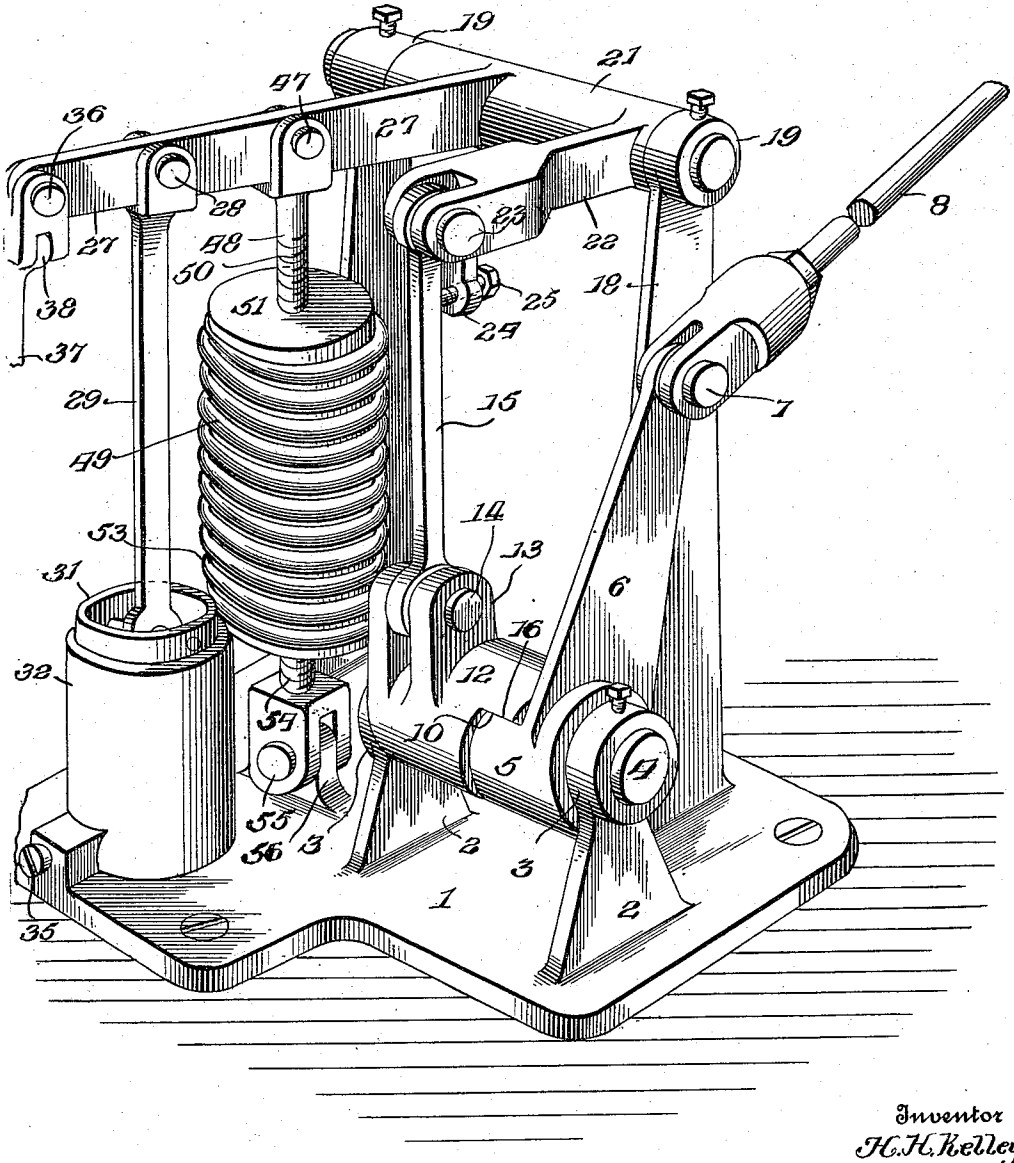
APPLICATION FILED OCT. 19, 1914.

1,175,772.

Patented Mar. 14, 1916.

3 SHEETS—SHEET 1.

Fig. 1.



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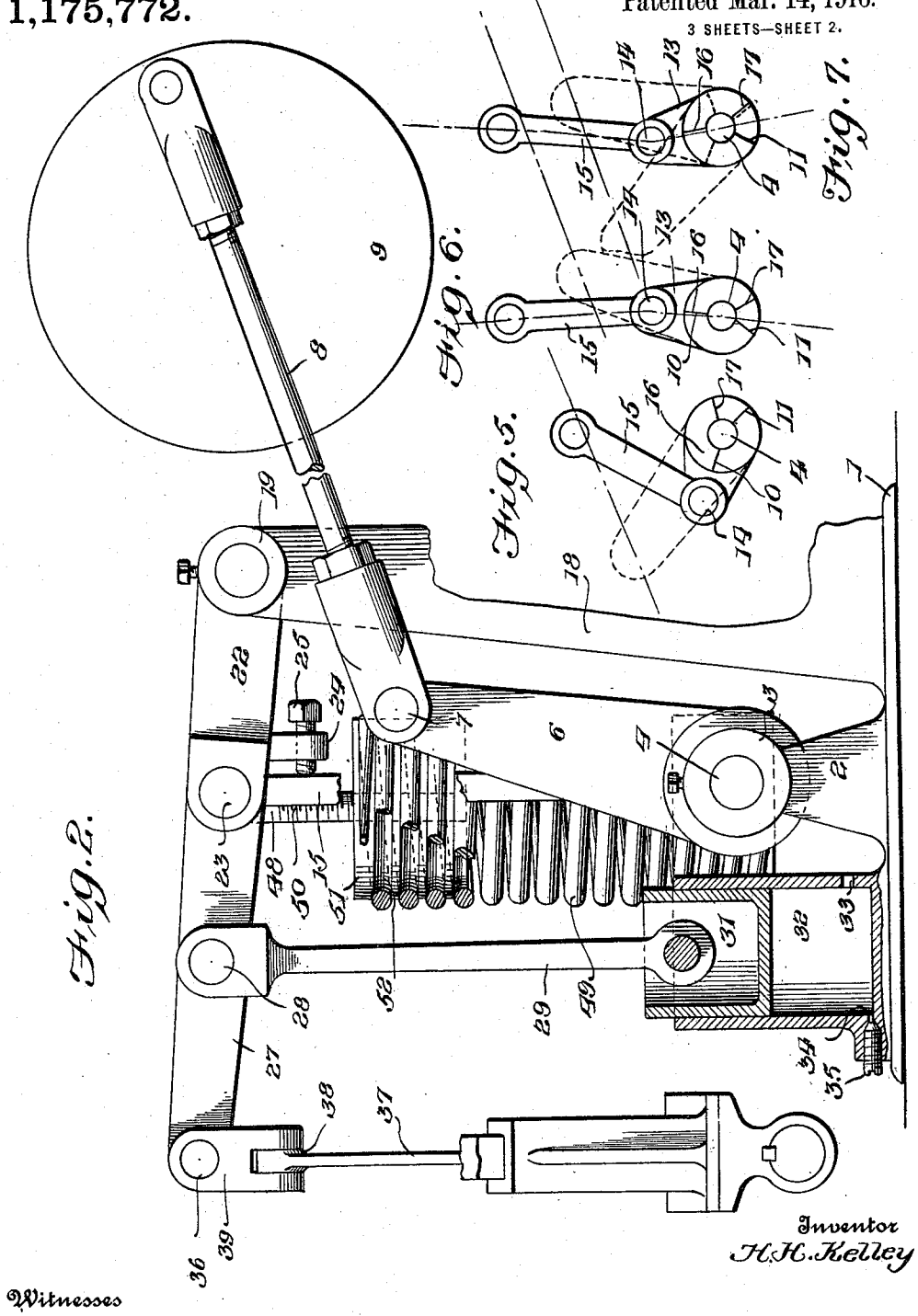


Fig. 2.

Fig. 5.

Fig. 6.

Fig. 7.

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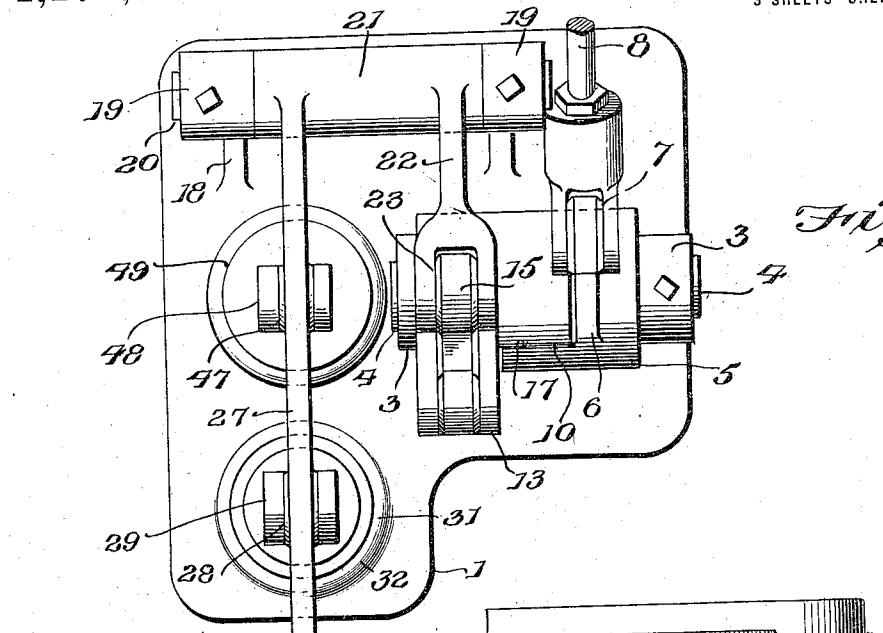


Fig. 3.

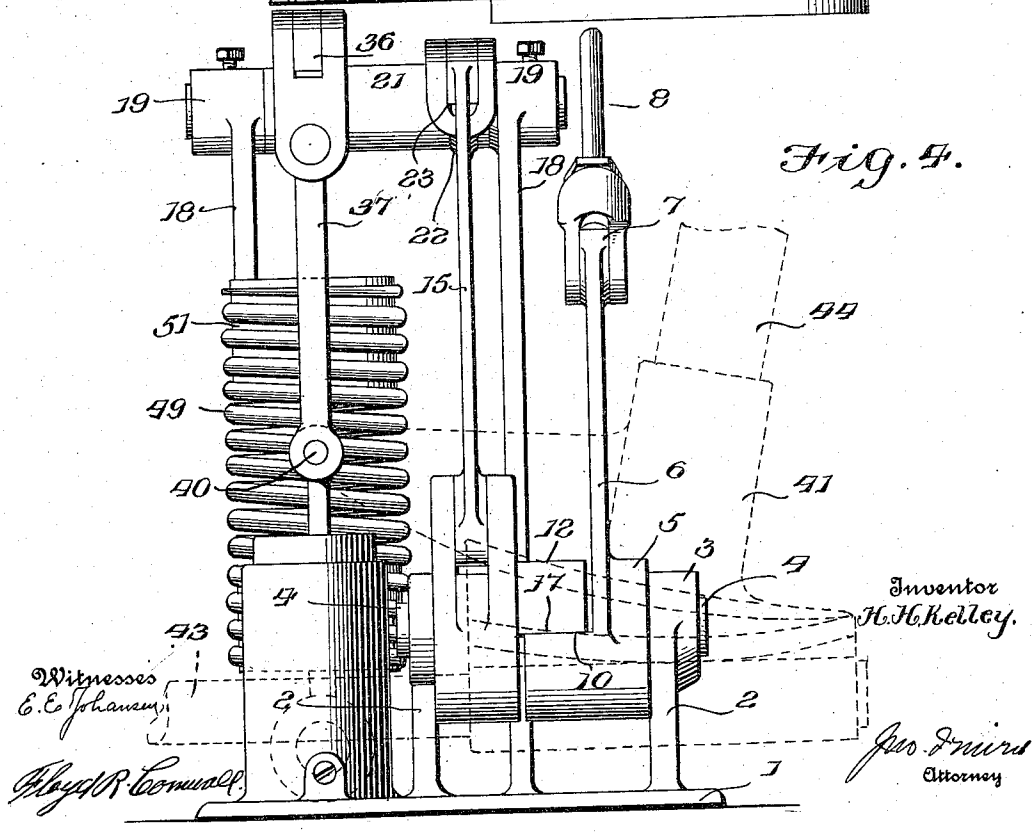


Fig. 4.

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HARRY H. KELLEY, OF ATLANTA, GEORGIA.

PICK-MOTION FOR LOOMS.

1,175,772. Specification of Letters Patent. Patented Mar. 14, 1916.

Application filed October 19, 1914. Serial No. 867,472.

To all whom it may concern:

Be it known that I, HARRY H. KELLEY, citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Pick-Motions for Looms; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in pick motions for looms.

The object of the invention is to provide a pick motion which may be applied to looms now in use, without materially changing the parts of the latter.

A further object of the invention is to provide a simple and effective means for obtaining a quick action to throw the picker across the lay, with as little jar as possible.

The invention also comprehends improvements in the means for effecting the movement of the pick, toggle levers being employed to set the parts, the joint between said levers being subsequently broken, so that the mechanism may quickly respond to the action of a spring, whereby the picker will be quickly shot across the lay.

The invention also relates to the details of construction and arrangement of parts, which will be hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1 is a perspective view of my improved pick motion. Fig. 2 is a side elevation of same, parts being shown in section. Fig. 3 is a plan view. Fig. 4 is a top plan view. Fig. 5 is a diagrammatic view of the toggle levers when the parts are in normal position. Fig. 6 is a similar view, illustrating the position of the toggle levers, when the parts are locked, preparatory to throwing the picker stick. Fig. 7 is a view similar to Fig. 6, but illustrating the toggle levers in position to commence the throwing of the picker stick.

The same reference characters refer to like parts in all the figures.

1 indicates a base provided with standards 2—2, having bearings 3, at their upper ends to receive a horizontal shaft 4. Mounted on the shaft 4 is a hub 5, of a lever 6, connected at 7, with a pitman rod or connection 8, the latter being connected to a crank wheel 9, suitably operated from the loom.

The inner portion of the hub 5, is cut away to provide two angularly disposed abutments 10—11. Also mounted on the shaft 4 is a hub 12, of a short toggle lever 13, the latter pivotally connected at 14 to a link or second toggle lever 15. The inner face of the hub 12, is cut away to form two abutments 16—17, which lie in the path of the abutments 10—11, on the hub 5, a sufficient space being left between the meeting face of the opposing abutments, as clearly shown in Figs. 5, 6, and 7, whereby to effect the necessary movement of the parts, as will be explained later on.

Extending upwardly from the base 1, are two standards 18, and at the upper ends thereof are bearings 19, in which is mounted a shaft 20. Mounted to rock on the shaft 20 is a hub 21, and extending from one end of said hub is a lever 22, bifurcated at its outer end and pivoted at 23, to the second toggle lever 15. Depending from the lever 22, and in rear of the second toggle lever 15, is a lug 24, provided with a threaded opening to receive an adjusting bolt 25, which limits the movement in one direction of the second toggle lever 15. Extending from the opposite end of the hub 6, is a long lever 27, and intermediate the ends of said lever and pivoted at 28, is a link 29, pivotally connected at its lower end at 30, to a hollow piston 31, which operates in a cylinder 32, extending from the base plate. Near the bottom of the cylinder 32, is an opening 33, and below the plane of this opening is a second opening 34, which receives a regulating valve 35, to regulate the escape of air when the parts are in operation. This construction forms a dash pot and is designed to act as a cushion to the parts when the mechanism is operated to throw the picker stick. Pivotally connected to the outer end of lever 27, at 36 is a lever 37, the outer end of which is bifurcated to receive the end of lever 27, while the lower end is bifurcated at right angles to the upper bifurcation, as shown at 38, and receives a link 39. The lower end of the link 39 is pivoted at 40 to the free end of a picker stick shoe 41, the latter being mounted to rock in a cradle on the projecting end of the usual lay shaft 43. Mounted in the shoe 41 is a picker stick

44, the upper end of which operates the picker in the usual manner. Between the pivotal point 28, and the hub 21, the lever 27 is pivotally connected at 47, by a link 48, with a plug fitted in a spring 49, the lower end of the latter having a plug and from same extends a stem 54, pivoted at 55, to a lug 56 on the base 1. The spring 49 is tensioned by means of the following mechanism. The link 48 is screw threaded at 50 to receive a plug 51, externally grooved at 52, to enable the plug 51 to be screwed into the end of the spring 49. A second grooved plug 53 is screwed into the lower end of the spring 49 and is carried by a screw threaded link 54, oppositely threaded to the link 48 and supported by a pin 55, engaging a lug 56, the threaded links 48 and 54 permitting of the tension of the spring being regulated.

In operation, let it be assumed that the parts are in the position as shown in Fig. 5. As the crank wheel 9 rotates, it rocks the lever 6, and the abutment 10 on the hub 5, contacts with the abutment 16 on the hub 12 of the lever 13, and consequently rocks toggle lever 13, and in so doing, through the instrumentality of the second toggle lever 15, elevates the levers 22—27.

The crank wheel and its pivotal connection are so proportioned and timed, that immediately after the center of the pivot 14 passes a vertical line, the second toggle lever 15 will contact with the adjusting screw 25, and thereby lock the parts in the position shown in Fig. 6. When the parts are in this position, the spring 49 is placed under tension, the piston 31 is elevated in the cylinder 32, and the link 39 rocks shoe 41, so as to throw the picker stick outwardly, preparatory to striking the picker to throw the same across the lay.

As the crank wheel continues to rotate, and during a half revolution, it rocks the lever 6 back to normal position, as shown in Fig. 7, and just prior to the completion of this movement (as shown in dotted lines) the abutment 11 of the hub 5, contacts with the abutment 17 on the hub 12 of lever 13, which throws the pivot 14 past the vertical line, as shown in full lines in Fig. 7, whereupon the spring 49 pulls downwardly on the lever 27, and causes the toggle levers 15 and 13 to assume their normal position, the piston being forced into the cylinder 32, and the picker stick 44 is operated quickly to throw the picker across the lay of the loom. The air introduced in the cylinder when the piston was elevated, is forced out through the opening 33, and acts as a cushion, but in the early movement of the piston, the spring is under sufficient tension to make the action quick, to impart a sufficient blow to the picker. As the piston approaches the bottom of the cylinder and passes the opening 33, the air remaining in the cylinder is under great compression, and acts as a cushion, the air so entrapped being gradually forced out through the opening 34.

From the foregoing description it is evident that upon substantially one-half revolution of the crank wheel 9, no motion is imparted to the lever 6, until just prior to the completion of the half stroke. Furthermore, it will be noted that by the mechanism described, a gradual and uniform movement is imparted to the various parts, to pull the toggle levers past the vertical line, in order to set the mechanism, to impart the necessary blow to drive the picker. It is also to be noted that at the time the abutment 11 contacts with the abutment 17, the parts are so arranged that under the influence of the spring 49, and the parts actuated thereby, a quick and decisive blow is imparted to the picker, which will effectually throw said picker across the lay, and that during the time of the effective blow of the picker stick, there is little resistance offered to the mechanism, which enables me to obtain all the force required to produce the desired results.

What I claim is:—

1. In a pick motion for looms, the combination of a picker stick, a shaft, a rocking lever mounted on the shaft, said rocking lever having two abutments, means for operating the rocking lever, a toggle lever having one member mounted on the shaft and provided with two abutments which coöperate with the abutments on the rocking lever, the abutments on the respective levers being spaced to permit a slight movement of the rocking lever independently of the toggle lever members, means including an actuating lever pivoted to the other member of the toggle lever to operate the picker stick in one direction by movement of the rocking lever, and a spring for operating the picker stick in the opposite direction.

2. In a pick motion for looms, the combination of a picker stick, an actuating lever, means connecting the actuating lever to the picker stick, a shaft, a toggle lever having one member mounted on the shaft and provided with two abutments, the other member of the toggle lever being pivoted to the actuating lever and to the first mentioned member, means for limiting the movement of the toggle lever in one direction, a rocking element coöperating with the two abutments to operate the toggle lever in one direction to bring same up against the stop and to operate said toggle lever in the opposite direction sufficiently to remove same from the stop, a spring for completing the movement of the toggle lever to operate the picker stick after removal of said lever from said stop, and a dash pot for arresting the motion of the parts when operated by the spring.

3. In a pick motion for looms, the combi-

nation of a picker stick, a shaft, an actuating lever, a toggle lever having one member pivoted to a rocking lever, connections between the rocking lever and the picker stick, the other member of the toggle lever being mounted at its opposite end on the shaft, a spring, means acting directly on the second mentioned toggle lever member to set the rocking lever in operative position, said means also acting on said second mentioned toggle lever member to allow the spring to operate the rocking lever to throw the picker stick, and means for cushioning the parts when operated by the springs.

4. In a pick motion for looms, the combination of a picker stick, an actuating lever, means connecting the actuating lever and the picker stick, a toggle lever for operating said lever in one direction, one member of said actuating toggle lever having two abutments, a spring for operating said actuating lever in the opposite direction, and means having two abutments which coöperate with the abutments on the toggle lever member to alternately operate to set the actuating lever and to subsequently operate the toggle lever to allow the spring to operate the actuating lever in the opposite direction.

5. In a pick motion for looms, the combination of a picker stick, a rocking lever, means for connecting the rocking lever and the picker stick, a spring for operating the rocking lever in one direction, a toggle lever for operating the rocking lever in the opposite direction, rocking means for setting said toggle lever, said rocking means subsequently releasing said toggle lever to cause the spring to operate the rocking lever, and means for cushioning said rocking lever.

6. In a pick motion for looms, the combination of a rocking lever having two abutments, means for rocking said lever, a toggle lever one member of which has two abutments which coöperate with the first mentioned abutments, an actuating lever, the other member of the toggle lever being pivoted to the first mentioned member of the toggle lever and the actuating lever, means for limiting the movement of the toggle lever in one direction, a spring for actuating the toggle levers and the actuating lever in one direction, and a connection between the actuating lever and the picker stick.

7. In a pick motion for looms, the combination of an actuating lever, a picker stick operated thereby, a spring for operating the actuating lever in one direction, a toggle lever, one member of the latter being pivoted to the actuating lever, a crank, a rocking lever operated by the crank, and means between the operating lever and the toggle lever for setting the toggle lever and the actuating lever, and subsequently tripping said toggle lever to permit the spring to operate the actuating lever to throw the picker stick.

8. In a pick motion for looms, the combination of an actuating lever, a picker stick operated thereby, a spring for operating the actuating lever in one direction, a toggle lever, one of the latter pivoted to the actuating lever, a crank, a rocking lever operated by the crank, and abutments formed between the operating lever and the toggle lever for setting the toggle lever and the actuating lever, and subsequently tripping said toggle lever to permit the spring to operate the actuating lever to throw the picker stick.

9. In a pick motion for looms, the combination of a picker stick, an actuating lever connected to the picker stick, a spring, two adjacent rocking levers formed with spaced coöperating abutments, the abutments engaging when rocked in one direction to set the actuating lever in position to operate the picker stick, said abutments coöperating when rocked in the opposite direction to position the levers to allow the spring to operate the actuating lever to throw the picker stick.

10. In a pick motion for looms, the combination of a picker stick, an actuating lever, a spring, means for setting the actuating lever and the picker stick including two levers, each of which is formed with a like abutment, means for rocking one of the two aforesaid levers to cause said abutments to coöperate when rocked in one direction to set the actuating lever and when said abutments are rocked in the opposite direction to position one of said levers having the abutments to allow the spring to restore the actuating lever to normal position and throw the picker stick.

11. In a pick motion for looms, the combination of a picker stick, a toggle lever for setting the picker stick in operative position, one member of said toggle lever having two abutments, a rocking lever having two abutments which coöperate with the abutments on the toggle lever member, rotary means for operating the rocking lever, thereby to cause two abutments on the adjacent lever to set and lock the toggle lever in position when said rocking lever is moved in one direction, and whereby when said rocking lever is moved in the opposite direction said toggle lever will move in the opposite direction to unlock the members, and a spring for operating the actuating lever when the toggle members are unlocked.

12. In a pick motion for looms, the combination of a picker stick, a spring for operating the picker stick in one direction, a toggle lever, means for limiting the movement of the toggle lever in one direction, one member of said toggle lever having two abutments, a rocking lever having two abut-

ments which coöperate with the abutments on the toggle lever member, means for rocking said lever to cause the abutments to position the toggle lever in position against the limiting means and to subsequently remove the toggle lever from the limiting means to allow the spring to operate the picker stick.

13. In a pick motion for looms, the combination of a picker stick, means for quickly operating the picker stick in one direction, a toggle lever, a stop to limit the movement of the toggle lever in one direction, one member of said toggle lever having two abutments, a rocking lever having two abutments which coöperate with the two abutments on the toggle lever member, and a rotating element and connections for rocking said lever to cause the abutments to position the toggle lever against the stop and to subsequently remove the toggle lever from the stop to allow the spring to operate the picker stick.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HARRY H. KELLEY.

Witnesses:
F. C. MYERS,
O. A. SHARPLESS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."