(No Model.)

R. THACKERAY.

PICKER CHECK FOR LOOMS.

No. 597,192. Patented Jan. 11, 1898.

Fig. 1.

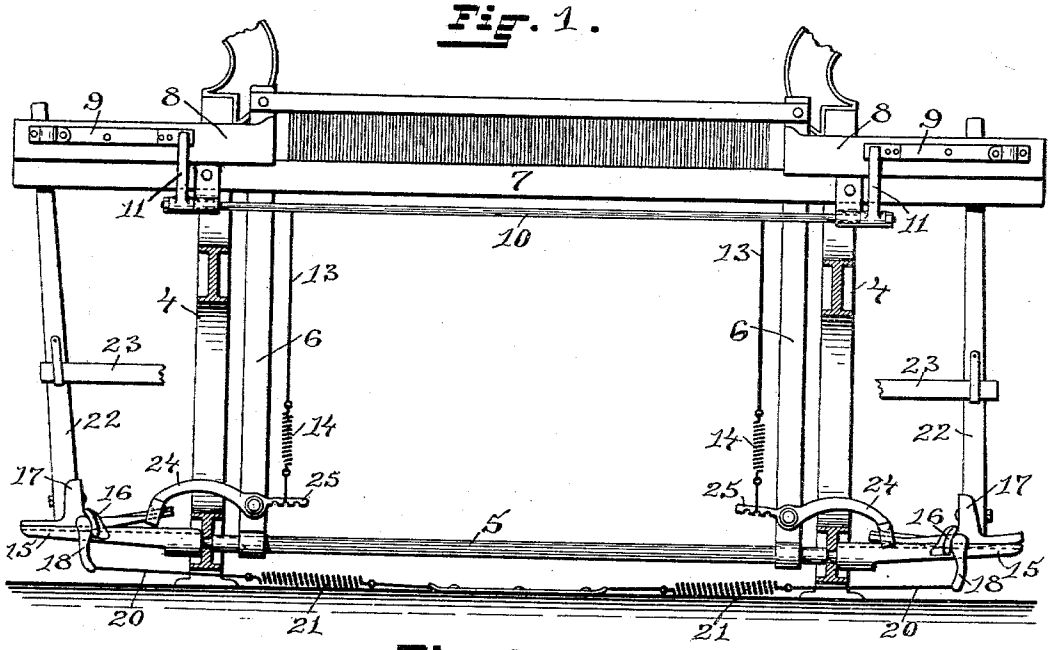


Fig. 2.

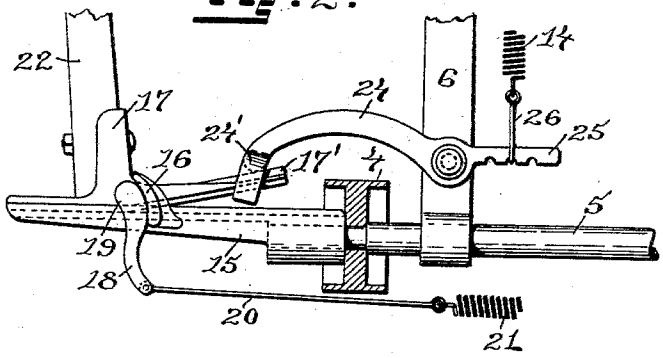
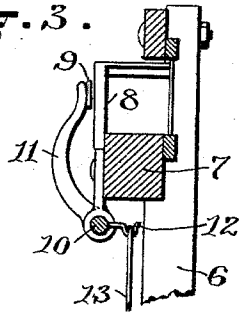


Fig. 3.



WITNESSES:

M. F. Bligh.

Chas. H. Luttrell Jr.

INVENTOR:

Richard Thackeray,

by Joseph A. Miller & Co.,

Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

RICHARD THACKERAY, OF FALL RIVER, MASSACHUSETTS.

PICKER-CHECK FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 597,192, dated January 11, 1898.

Application filed February 9, 1897. Serial No. 622,600. (No model.)

To all whom it may concern:

Be it known that I, RICHARD THACKERAY, of Fall River, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Looms; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to an improvement in the shuttle-throwing mechanism of a loom.

The object of the invention is to control the throwing and the arresting of the shuttle more perfectly and increase the speed of the loom.

Another object of the invention is to replace the leather straps used to cushion the picker-stick by more durable mechanical devices acting on the rocker of the picker-stick.

In power-looms as heretofore constructed the shuttle-boxes are provided with swells. Arms extend from the protector-rod and bear against the swells. Springs acting on the protector-rod exert uniform yielding pressure on the swells. When a shuttle enters the shuttle-box, the swell is moved outward and moves the arm in contact with the swell, so as to partially rotate the protector-rod. The friction of the shuttle on the swell retards the velocity of the shuttle which strikes the picker-stick and carries the same to the outer limit, where the stick is usually arrested by means of leather straps or cushions.

In the looms above described the spring-pressure on the swells is uniform. It is maintained uniform on the ingoing and outgoing of the shuttle and must be such pressure that while the swell retards the velocity of the shuttle it does not arrest the same, but allows the shuttle to pass by the swell and carry the picker-stick to its outer limit, where the stick is arrested by leather cushions or buffer-straps. In such looms the shuttle is liable to rebound and is not held in contact with the picker-stick. When now the shuttle is to be thrown, the picker-stick first strikes it with a blow instead of moving it forward to send it through the shed into the opposite shuttle-box, while the swell, bearing against the shuttle with uniform pressure, retards the exit of the shuttle.

I have illustrated in the drawings and will describe hereinafter mechanism acting on the rocker of the picker-stick and the protector-rod by which the shuttle as it enters the shuttle-box is retarded by the swell, and as the shuttle moves with the picker-stick the pressure on the swell is gradually increased to retard the shuttle, while the resistance of the picker-stick is also gradually increased until the momentum of the shuttle is balanced by the resistance and the shuttle is firmly locked or held in the desired position.

When the shuttle is thrown, the picker-stick moves the shuttle against the gradually-diminishing pressure on the swell and sends it through the shed into the opposite shuttle-box.

As far as I know, I am the first to so construct a loom that the shuttle is received in the shuttle-box and the momentum arrested by a gradually-increasing frictional resistance and a gradually-increasing resistance of the picker-stick. I do not, therefore, wish to confine myself to the specific construction herein shown and described.

Figure 1 is a transverse sectional view of so much of a loom as is required to illustrate the invention. Fig. 2 is an enlarged side view of the foot-support of the picker-stick and the lever coöperating with the rocker of the picker-stick. Fig. 3 is a sectional view, on an enlarged scale, of the lay, showing the arm connected with the protector-rod and bearing on the swell.

Similar numerals of reference indicate corresponding parts in all the figures.

In the drawings, 4 4 indicate the end frames of the loom; 5, the rock-shaft, from which the arms 6 6 extend which support the lay 7; 8 8, the shuttle-boxes; 9 9, the swells; 10, the protector-rod; 11 11, the arms secured to the protector-rod and bearing on the swells 9; 12 12, two hooked-levers projecting from the rear of the protector-rod, to which the wires or straps 13 are secured. The lower ends of these wires or straps are secured to the upper ends of the coiled springs 14.

To the ends of the rock-shaft 5 the picker-stick shoes 15 15, provided with the horns 16, are secured. The picker-stick rocker 17, which is of the usual construction, rests on and rocks on the shoe 15. The picker-stick rocker is provided with the loop 18, the

shanks 19 of which bear against the horns 16. The loop 18 is connected by the wire strap 20 with the floor-spring 21. The picker-stick 22 is secured to the picker-stick rocker in the ordinary manner and is operated by the picker mechanism (not shown) through the picker-strap 23.

On the arms 6 of the lay are pivotally supported the levers, the short arms 25 of which are provided with notches, and a wire loop 26 connects this arm with the coiled spring 14. The bifurcated end 24′ of the lever 24 straddles the end 17′ of the picker-stick rocker 17.

Fig. 1 illustrates the parts in the position they occupy when the shuttle is in the left-hand shuttle-box 8, when the greatest strain is exerted on the coiled spring 14 and the least strain on the floor-spring 21 on the left-hand side of the loom. The strain thus exerted on the coiled spring 14 acts through the protector-rod on the swell to bind the shuttle and through the lever 24 on the end of the picker-stick rocker.

On the right-hand side of Fig. 1 the strains on the coiled spring 14 and the floor-spring 21 are practically balanced. The pressure on the swell 9 of that side is the minimum pressure.

When the shuttle in the left-hand shuttle-box is moved by the picker-stick, the toe end 17′ of the rocker descends, the bifurcated end of the lever 24 follows the toe, and the short end 25 of the lever rises and diminishes the tension on the spring 14, thereby diminishing the strain on the protector-rod and the pressure on the swell 9. As the shuttle proceeds the frictional resistance decreases until the final blow is given to send the shuttle across the shed. As the shuttle enters the shuttle-box on the right-hand side of the loom the pressure on the swell is sufficient to retard the shuttle by the friction on the swell. When the shuttle strikes the picker-stick and moves the upper end outward, the bifurcated end of the lever 24 is moved upward by the toe of the rocker 17, the tension on the spring 14 increases rapidly, and with it the pressure on the swell, while the momentum of the shuttle decreases until it is arrested. The shuttle at this point is firmly held by the swell. It is in contact with the picker-stick and ready for the next throw. By thus controlling the picker-stick and shuttle and maintaining the contact between the same I find I can materially increase the speed of the loom and run the loom at higher speed with less jar and wear than when the loom is provided with the usual leather straps and cushions and run at lower speed.

The only parts added to the loom are the levers 24, and these can be applied to any form of loom at small cost. The constant renewal of the leather straps is saved and the picker-stick is not liable to be twisted and broken by the blow of the shuttle, as it now moves straight and fair, while the straps which yielded on one side while the other side was fixed supported the stick more on one side than the other and caused it to twist.

I have chosen to show a construction in which the swells are operated upon by the arms on the protector-rod, but it is evident that the central portion of the protector-rod, between the hooked levers 12 12, may be cut out and each shuttle-box swell operated independent of the other and independent of the protector-rod without materially changing the operation of the loom.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a loom, the combination of the following instrumentalities, viz: a lay, the shuttle-boxes at the opposite ends of the lay, swells in the shuttle-boxes, a protector-rod, provided with arms, bearing on the swells, the picker-sticks, the rocker-supports for the picker-sticks, the springs connected with the same, and mechanism, substantially as described, comprising a coiled spring connecting each picker-stick with the protector-rod, whereby the pressure on the swells is varied with the movement of the picker-stick, as described.

2. In a loom, the combination with the lay, a shuttle-box on the lay, a swell on the shuttle-box, a picker-stick and the rocking support for the foot of the same, of a shaft supported on the lay, an arm secured to said shaft at one end, the other end of the arm bearing on the swell, a lever pivotally supported on the supporting-arm of the lay, and connections between the said lever and the picker-stick and between said lever and the arm bearing on the swell, having a coiled spring interposed in such connection, whereby the pressure on the swell is increased as the picker-stick is moved outward to hold the shuttle against rebound and is diminished as the picker-stick and shuttle move inward to throw the shuttle, as described.

3. In a loom, the combination with the lay with its supporting-arms, the shuttle-boxes, on the lay, the swells connected with the shuttle-boxes, and the picker-sticks with their usual connections and supports, of two arms pivotally supported on the lay and bearing on the swells, two levers pivotally supported on the arms of the lay, connections between the levers and the arms bearing on the swells, comprising a coiled spring in each connection, and connections between the said levers and the picker-sticks; whereby the velocity of the shuttle is retarded by the swell of the shuttle-box and arrested by the increasing pressure on the swell and increasing resistance of the picker-stick, and its outward movement is facilitated by the gradually-decreasing pressure on the swell, as described.

4. In a loom, the combination with the lay 7, the supporting-arms 6, 6, the shuttle-boxes 8, 8, the swells 9, 9, the protector-rod 10 provided with the arms 11, 11, bearing on the swells, the hooked levers 12, 12, projecting

from the protector-rod, the floor-springs 21, 21, the picker-sticks 22, 22, the operating-straps 23 and the rocking supports 17 of the picker-sticks connected with the floor-springs, of the levers 24 pivotally supported on the arms 6, 6, the bifurcated ends 24′ bearing on the toe 17′, the notched arms 25 25 of the levers 24, 24, the coiled springs 14, 14, and the straps 13, 13, and 26, 26, connecting the springs with the levers 24 and the levers 12 on the protector-rod; whereby the shuttle is arrested by the increasing pressure on the swell and increasing resistance on the picker-stick, as described.

In witness whereof I have hereunto set my hand.

RICHARD THACKERAY.

Witnesses:

JOSEPH A. MILLER, Jr.,

M. F. BLIGH.