This invention relates to a loom and more particularly to the check for the picker stick.

In the operation of the picker stick of a loom, it is usual to have some friction device act upon a strap which checks the picker stick. The friction device may be adjusted so as to apply more or less friction upon the strap. In the operation of a loom at high speed the picker stick is moved toward the outer end of its swinging movement with considerable snap and a non-uniform location of the picker stick for receiving the shuttle will be had.

One of the objects of this invention is to provide an arrangement so that the check strap which retards the action of the picker stick and in turn the action of the shuttle will friction the picker stick the same amount each time the stick moves from dead position to the outermost point of its path of travel.

Another object of this invention is to preset the position of the check strap so that it will be at the same position every time it is engaged by the shuttle, thus applying the same amount of friction through the travel which it takes.

Another object of this invention is to provide an arrangement so that the position of the check strap may be adjusted in a simple and easy manner.

Another object of this invention is to provide an arrangement so that the adjustment of the position of the check strap may be accomplished during the operation of the loom.

A further object of this invention is to provide an adjusting device at the front of the loom which by simple hand manipulation will serve to adjust the check strap in response to its manipulation.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

Fig. 1 is a front elevation of a fragmental portion of a loom equipped with my improved check strap adjusting means:

Fig. 2 is a perspective view of a fragmental portion of a loom showing in greater detail the adjustment of the check-strap:

Fig. 3 is a sectional view of a fragmental portion of the loom looking down on top of the adjusting means and check strap:

Fig. 4 is a sectional view of the hand wheel adjustment means:

Figs. 5-8 inclusive are diagrammatic views illustrating the relative position of the check strap, picker stick, and crank shaft which operates the lay:

Fig. 9 is a fragmentary sectional view showing a modified attachment of the check strap to the thong:

Fig. 10 is a section on line 10-10 of Fig. 9.

Fig. 11 is a view of a modified check strap.

In proceeding with this invention I attach a thong to the check strap and to a part carried by the lay and so arrange the position of this thong that it will be engaged by a member carried by the fixed frame of the loom. The position of this member will determine the position of the check strap and I arrange to adjust the position of this member so that it will pull upon the thong more or less as the lay reciprocates to the loom frame. By this arrangement the check strap is left completely free to operate during the time that the picker stick is active and yet is positioned a predetermined amount or to a predetermined point so that the friction on the check strap will act through the same amount of movement each time it is engaged by the picker stick, thus supplying the same frictional resistance at each operation of the shuttle and determining a more even operation of picker stick and shuttle.

With reference to the drawing, 10 designates the framework structure of the loom, the upper portion of which in Fig. 1, is broken away to expose the lay 11 mounted on swords 12 each of which pivots on a rock shaft 13 having a rocker foot 14 secured thereto as at 15 and carrying the parallel motion 16 for the picker stick 17 which is reciprocated by the lug strap 18 actuated from the cam mechanism 19 and shaft 20. The shuttle box designated generally 25 is at one end of the lay 11 for the reception of the shuttle 22 therein. The picker 21 is mounted at the upper end of the picker stick 17, which picker stick is guided in the slot 28, and may engage the cushioning device 29 at the end of the guide in the lay in which the upper end of the picker stick operates.

Depending from the lay 11 is a bracket 30 having an arm 31 carrying a bolt 32 which passes through slots 33 in a check strap 34 which forms a loop as shown in Fig. 3, extending about the picker stick 17 in a generally flattened elongated shape. Fingers 35 and 36 on one side and 37 on the other side provide a friction device and may be adjusted relative to each other so as to apply more or less friction on the check strap 34 which passes between them.

It will be understood that as the picker stick is
driven to throw the shuttle across the loom it engages the inner bite 38 of the loop to move the strap inwardly against the retarding frictional action of the fingers 35, 36 and 37 while when the picker stick is thrown outwardly the outer bite 33 of the strap 34 checks the stick as the portion of the strap which bends through the fingers 35, 36 and 37 will apply friction against movement of the check strap in an outer direction. This serves as a check or retardant for the motion of the picker stick after driving the shuttle across the loom and as a retardant for the shuttle which engages the stick as it enters the box and moves the stick outwardly ready for another power stroke. If the picker stick alone causes movement of the check strap, the strap will not always be positioned at the same point when the shuttle is received in the box and consequently the shuttle may not always be boxed in the same location which is particularly true at high speeds.

In order to control the position of the check strap 34 so that it will always be in the same position at the time the shuttle enters the box to engage the picker stick and thus a more uniform boxing will be had, I have attached a flexible member or thong 40 to the check strap by carrying it about the check strap and securing it by a bolt 32 while the other end of this thong 40 is secured to a bracket 42 which is secured to the lay by means of the arm 43 (see Fig. 1) which extends underneath the lay 11. In Fig. 3 the thong 40 follows the check strap through the tension means 35, 36, 37 while in the modified form the thong 40 is guided through a loop 41 formed on the bracket 31 that this thong is free of the straight line the check strap thong is so positioned that it will sweep over the portion 45 of the frame of the loom and in order to control the position of the check strap I have mounted a two pronged member 48 in a position to be engaged by the thong as the lay swings rearwardly through the back center of the crank shaft which operates the lay. The prongs have outwardly directed surfaces and pick up the thong 40 which is mounted on an upstanding arm 41 which extends upwardly from the block 48 having a threaded opening therein for the reception of the threaded rod 50 while this block also receives through openings 51 rods 53 for guiding the same in its movement. If the member 48 is well forward on the loom, then the thong 40 will be deflected or bowed to a greater extent and pull the check 34 inwardly of the loom. Adjustment of the member 48 may be by means of the hand wheel 54 which is readily accessible from the front of the loom and may be adjusted even though the lay is reciprocating.

In order to lock the hand wheel 54 in different desired positions the bracket 60 which supports it is provided with a pair of recesses 61 in which the hand wheel 54 is engaged and spring 62 which press outwardly balls 63. The hub 64 of the hand wheel 54 is provided with a plurality of recesses which are a portion of a sphere and adapted to receive balls 63. Thus, after the wheel has been moved to any desired position the balls will snap into one of the recesses and hold the wheel in this position so that the jar of the loom due to the reciprocation of the lay will not change the adjustment of the member 48 which engages the thong 40. With the shuttle in the left-hand box and the loom at front center, as the lay goes towards back center the shuttle is picked out towards the right-hand box. The check strap works to help cushion the action of the stick against the picker stick bumper at the end of slot 28. The loom passes through back center. The shuttle is approximately half way between the boxes. The left-hand picker stick is being urged. It is either in contact with the picker stick bumper or it is being urged to an outward position by the heel strap and heel strap spring which latter is fastened to the parallel 14 while the strap is fastened to the lower part of picker stick bumper. As the lay moves from back center to front center the shuttle will be boxing in the right-hand box but our interest is in the left-hand picker stick and check strap. As the lay moves from back center to front center the picker stick is being urged outwardly from the loom side by the heel strap. The thong 40 is free from 46. At some point before the stick reaches cushion 25 it will meet the outer bite 39 of the check strap. Having done so it will urge the bite 39 outward from the loomside by moving the check strap through the frictional fingers 35, 36 and 37. The amount of pull exerted by the heel strap, the resistance the shuttle offers to being picked out of the box and a number of other factors, such as the height of the lay strap and its sweep and the speed of the loom. For any one setting of the loom parts and for any one speed of the loom, there are variables present of the friction on the check strap. As the lay moves from back center to front center and the picker stick is urged outwardly by the factors described above it will be brought to rest by the check strap at a position that is by no means constant and uniform. Now as the loom goes from front center to back center the shuttle is being picked out of the right-hand box and this box and the shuttle again approaching half way between the boxes the thong 40 will be engaged by 46 and check strap 34 which this time encloses the dead stick 17 will as the loom goes through back center be positioned to a predetermined desirable point through the adjustable setting of 48. Then as the loom moves from back center to front center the picker stick and enclosing check strap will be again out of contact or control by 46 but will be set at a uniform predetermined favorable position to receive, through the picker, the shuttle and to absorb its kinetic energy so that it will box satisfactorily. The lay goes through back center twice after the shuttle has been thrown and before it reenters the same box. The first time 46 sets the strap 34 but not the stick; the second time it sets the stick and the picker stick. Then the incoming shuttle enters the box.

In Fig. 5 I have illustrated diagrammatically the lay 11 as attached to the pitman 55 with the crank 56 on crank shaft 57 so positioned that it is just about to pass through back center, member 46 is engaged with the thong 40 so that the check 34 will be positioned at a predetermined point relative to the lay with the picker stick 17 located therein. After the lay has passed through back center as shown in Fig. 6, the shuttle 26 will be approaching this box at the left-hand end of the loom. At
this point the lay is travelling forward. The thong 40 has left the member 46 and when the shuttle engages the picker on the picker stick, the check will be entirely free of the member 46 and will function in a normal manner to check the energy of the picker stick which has been imparted to it by the shuttle and will keep the picker stick in its outermost position so that it will not rebound after hitting the cushioning device 29. The position of the check strap 34 when the shuttle is boxed is shown in Fig. 7 and at this point the thong 40 will be substantially straightened out and the picker stick will be at its outermost position in the lay. In Fig. 8 I have illustrated the shuttle 26 after leaving the box with the picker stick 17 at the inner bite of the check 34 after the check has functioned through the friction fingers 35, 36, and 37 with the check entirely free of any restriction as it is out of engagement with the member 46. This occurs after the lay has beaten up the previously inserted filling and such harness change as is desired has been made in the shed. The lay will pass through back center just before the shuttle is boxed on the other side and the cranks will be coming forwardly an extent sufficient so that the thong will be clear of the member 46 at the other edge of the loom.

In Fig. 11 I have shown a check strap 34' which instead of a closed loop as heretofore referred to is open at its inner side. Hereofore this inner portion of the check strap was engaged by the picker stick and caused movement of the check strap into a position to be engaged by the stick as the shuttle was boxed but now that a thong 40' and a member 46 are provided to accomplish this positioning, there is no need to provide the check strap in a closed loop form and the inner portion may be omitted.

I claim:
1. In a loom, a frame, a lay reciprocally mounted with reference to the frame and having a swinging picker stick carried thereby, a flexible check forming a bight for engagement by said stick and mounted for movement with the lay, a friction device engaging said check for retarding movement of said check by said stick and means comprising a part fixed relative to said frame and a part for moving said check, said parts being engageable during a portion of the movement of the lay for setting said check in a predetermined position and disengageable during the functioning of said check on said picker stick.
2. In a loom, a frame, a lay reciprocally mounted with reference to the frame and having a swinging picker stick carried thereby, a flexible check forming a bight for engagement by said stick and mounted for movement with the lay, a friction device engaging said check for retarding movement of said check by said stick and means comprising a part fixed relative to said frame and a part for moving said check, said parts being engageable during a portion of the movement of the lay for setting said check in a predetermined position and disengageable during the functioning of said check on said picker stick.
3. In a loom, a frame, a lay reciprocally mounted with reference to the frame and having a swinging picker stick carried thereby, a flexible check forming a bight for engagement by said stick and mounted for movement with the lay, a friction device engaging said check for retarding movement of said check by said stick and means comprising a part fixed relative to said frame and a part for moving said check, said parts being engageable during a portion of the movement of the lay for setting said check in a predetermined position.
4. In a loom, a frame, a lay reciprocally mounted with reference to the frame and having a swinging picker stick carried thereby, a flexible check forming a bight for engagement by said stick and mounted for movement with the lay, a friction device engaging said check for retarding movement of said check by said stick and means comprising a part fixed relative to said frame and a part for moving said check, said parts being engageable during a portion of the movement of the lay for setting said check in a predetermined position and disengageable during the functioning of said check on said picker stick.
5. A loom as set forth in claim 4 wherein said check positioning means comprises a flexible thong attached thereto and a member fixed to the frame.
6. A loom as set forth in claim 4 wherein said check positioning means comprises a flexible thong attached thereto and an adjustable member fixed to the frame.
7. A loom as set forth in claim 3 wherein said part attached to said frame is adjustable.
8. A loom as set forth in claim 3 wherein said part attached to said frame is adjustable by a hand wheel at the forward part of the loom.
9. In a loom, a frame having a crank shaft, a lay operable by the crank shaft, said lay having a swinging picker stick carried thereby and a box at each end, a flexible check forming a loop encircling said stick, a friction device engaging said check for retarding movement of said check by said stick and means for activating said picker stick while the lay is moving in response to the crank shaft, means operating only during the movement of the lay through back center of said crank shaft for positioning the check at a predetermined position for retarding the picker stick and in turn the shuttle as received in said box.

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