May 17, 1960 H. J. SHIVELL ET AL 2,936,794

PICKER STICK CHECK STRAPS

Filed March 20, 1958 2 Sheets-Sheet 1

Fig. 1.

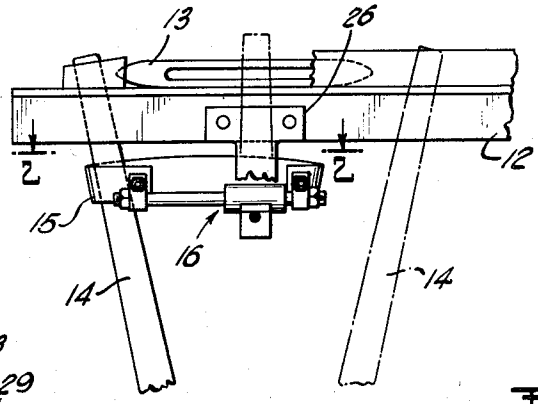

Fig. 2.

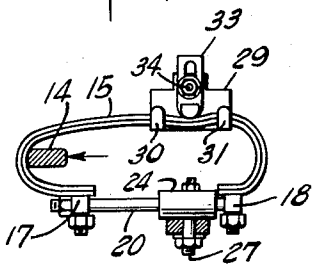

Fig. 3.

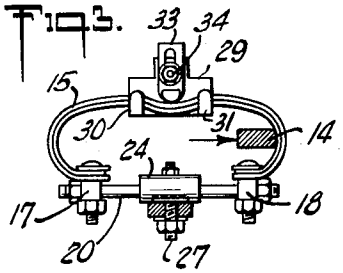

Fig. 4.

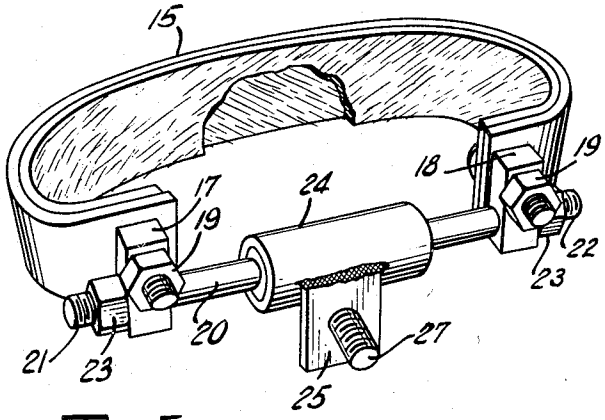

Fig. 5.

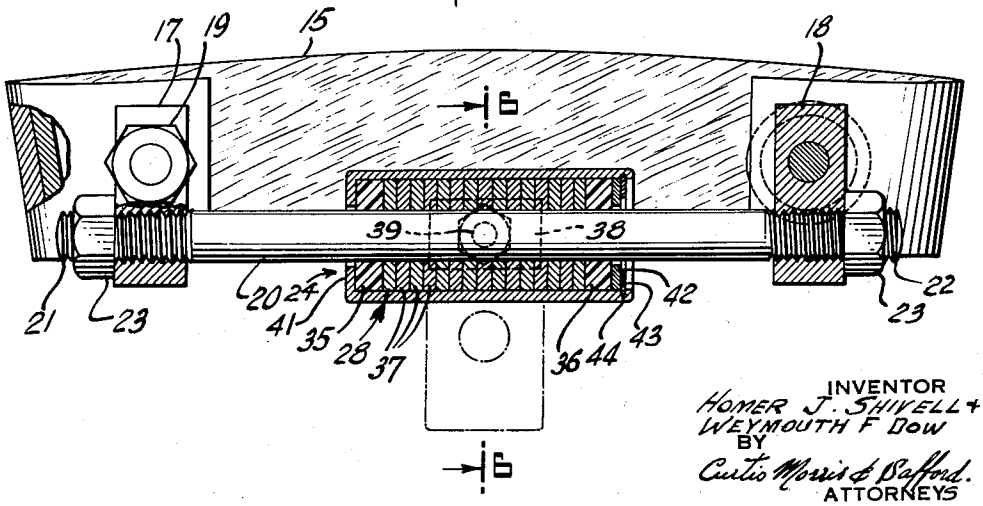

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Fig. 6.

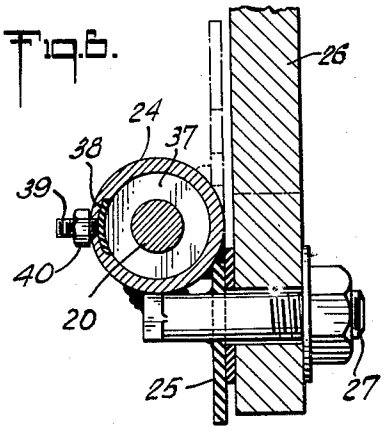


Fig. 7.

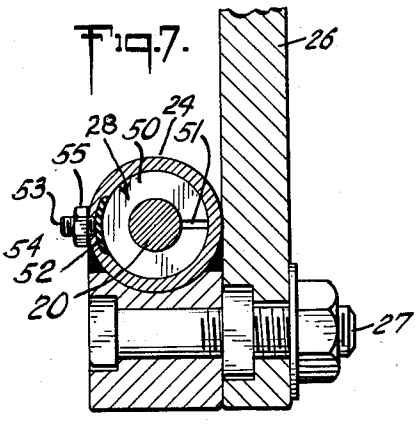


Fig. 8.

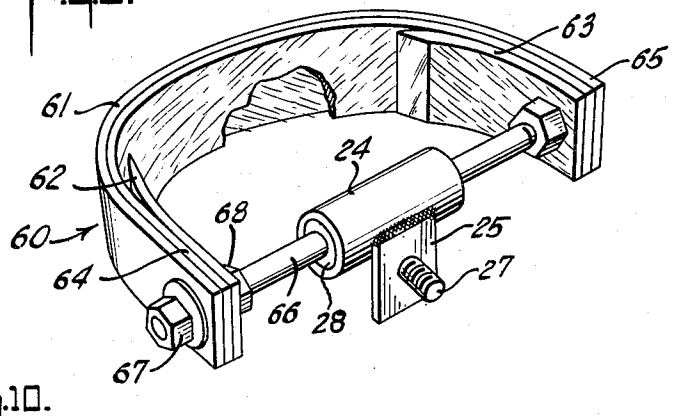


Fig. 10.

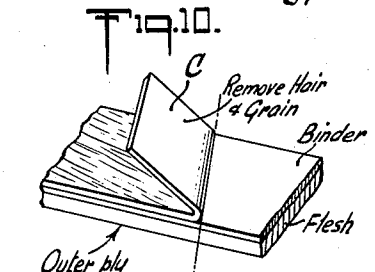
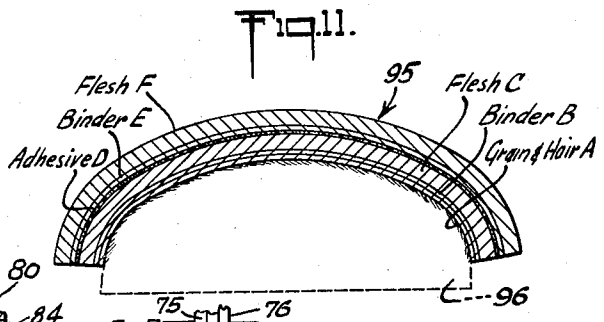


Fig. 11.



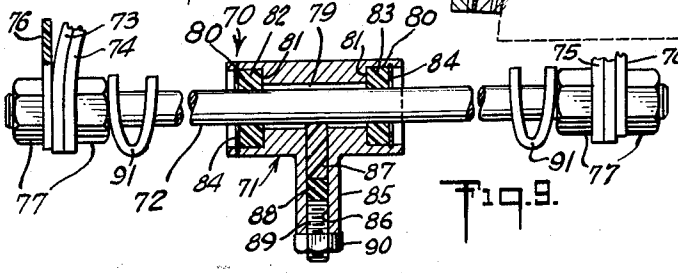


Fig. 9.

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PICKER STICK CHECK STRAPS

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Application March 20, 1958, Serial No. 722,679

19 Claims. (Cl. 139—165)

This invention relates to a device for checking the motion of picker sticks in looms.

For many years, it has been standard practice in looms to use a belt, known as a "picker check strap," to check the motion of the picker stick when it has caught the shuttle and moved back to the position in which it is ready to throw the shuttle. In some cases, such straps have their ends overlapped and secured to a bracket on the loom. The opposite side of the resulting loop, or belt, passes between fingers which are staggered slightly to produce a slight bend in the loop and at least one of the fingers is adjustable to vary the amount of offset and tension applied to the loop. When the loop is drawn between the fingers it is subjected to some frictional drag on the fingers. In other cases, the strap is formed into an endless loop and is held by a bracket which exerts in this same way a bending and frictional resistance. The loop, in either case, is shorter than the amplitude of the picker stick stroke.

It is very important that the checking of the picker stick be exactly right. If the shuttle is not stopped at the correct position by the picker stick and its checking device, or if it is caused to jump a little or is in any way deflected from its proper path or direction, it is likely to cause a defect in the woven goods, which will reduce its value and sale price.

Therefore, very skillful adjustment and maintenance of the checking device is required. Often a loom which was running perfectly on Friday afternoon may run badly when first brought back into operation on Monday morning, and after being properly adjusted to its new condition will have to be readjusted as the leather straps limber up. This is troublesome and expensive. Other materials than leathers and other types of checking devices also have been suggested, but nothing else has been able to meet as fully the need for absorbing the repeated shocks of the shuttle impacts and for checking the throw of the picker stick without bounce or deflection of the shuttle.

The shuttle is thrown back and forth by the picker stick at high speed and with relatively high power across the loom and is sensitive to any variations which may change, even slightly, the length or direction of travel of the shuttle. Proper check strap action is a prerequisite to weaving first-quality fabrics and any variations in the action of the check strap are apt to produce defects in the fabric. It has long been known that more accurate control has been needed to stop the action of the picker stick at just the right place in the lay and that, for lack of such control, expensive shut-downs and imperfectly woven fabrics have been the common experience. Improvements toward this end have been made by designing check straps of dimensions better adapted to their proper functioning or of better form, e.g., conical belts and endless belts. I have now shown, by the present invention, that perfect weaving also requires accurate tension adjustments on both sides of the path of the picker stick, so that the checking action is both accurate

in its total amount and balanced relative to the plane of the shuttle path.

It is customary for the manufacturer of looms to provide an adjustment bracket for the check strap on the outside of the path of the stick, i.e., the side away from the lay, but looms heretofore manufactured have not provided any means for maintaining the accurately balanced drag required for properly checking the picker stick. The present invention fills this long-felt need.

In addition to adjusting the drag and limiting the positions of the checking device, the present invention also provides a simple adjustment of the length of the check strap and of its orientation to the stick when the stick is checked. It also permits use of check straps in such a way as to reduce wear and secure maximum service life.

The invention also facilitates installation of the checking device on looms of various sizes and types and adjustment of the devices to special and even peculiar requirements. Installation is simple, and only a moment is required to adjust the balance. Once adjusted, the device will operate for indefinite periods without attention.

Another advantage of the present invention is that the binder facings in the shuttle box and the terminal bumpers are subjected to much less wear because the picker checking device does its job of slowing down the shuttle much better. For the same reason, the shock and vibration imposed on the loom is much less than when other checking devices are used and "shuttle jumping" can be completely eliminated.

In contrast to the conventional checking devices which require difficult and costly adjustment after a loom has been standing idle for a time, as over a weekend, the devices of this invention eliminate this requirement for successive adjustments by use of a bearing of anti-friction material which is unaffected by shutdowns and will continue to operate for long periods, whether operation is continuous or with alternate idle periods.

We have now found that the life of a check strap can be increased and an improved action attained if the action of a leather strap is combined with a mounting which can yield by slipping on an anti-friction bearing. The loading of the bearing is adjustable to give a resistance to sliding which balances the resistance of the strap to flexing and pulling through the bracket.

The device of the present invention uses a checking strap which is engaged by the picker stick as it nears each end of its travel, but, unlike prior checking devices, most of the force for slowing down the shuttle is provided by a bearing of anti-friction material and an adjustable means for pressing it against a smooth slide parallel to the path of the picker stick. The check strap is secured at spaced points to a member which is slidable by reason of said bearing, i.e., on the bearing or means carried thereby if the slide is fixed on the loom, or on the slide if the bearing is fixed on the loom. The strap is clamped thereon at each end adjacent the path of the stick and projects across and approximately perpendicular to the path of the stick, and the strap between these end portions is yieldably held by a tensioning device for imposing a drag balanced against that of the anti-friction bearing. This tensioning device may comprise the usual check strap bracket consisting of staggered fingers adapted, by bending the strap around them, to exert both a resistance to rebending and a friction due to the resilient pressure of the strap on the fingers. The resulting drag on the strap supports it against being twisted out of its perpendicular relation when the picker stick hits it. The relatively slidable bearing or rod and the strap both yield to the impact, but with resistance adapted to absorb some of the impact at each side.

Because of the use of anti-friction bearing material, the checking device immediately yields to the impact, avoiding any serious shock, and because it slides as it checks the impact, any heating due to absorption of kinetic energy is distributed along the length of the strap and slide, respectively, with no part being overheated so as to cause rapid deterioration. The anti-friction material is advantageously one which is substantially uniform to an appreciable depth, and advantageously substantially dry and one in which its characteristics to relative sliding remain stable with ordinary atmospheric changes, especially humidity and temperature.

The clamped ends of the strap are easily adjusted lengthwise of the strap to give the exact length of strap required for perfect checking action. This structure allows the picker stick to travel back and forth in its plane of movement without any stress or strain which would twist it or cause it to jump.

In this specification and accompanying drawings, several embodiments of my invention and suggested modifications thereof are shown and described, but it is to be understood that these illustrations are not intended to be exhaustive nor limiting of the invention. On the contrary, the various modifications are given for the purpose of illustration in order that others skilled in the art may fully understand the invention and the principles thereof and the manner of applying it in practical use so that they may modify and adapt it in various forms each as may be best suited to the conditions of a particular use.

In the drawings:

Figure 1 is a side elevational view of the lay and picker stick of a loom and showing the checking device of the present invention applied thereto;

Figure 2 is a plan view of the checking device at one end of its travel and showing the drag bearing at one side and tensioning device at the other side of the device;

Figure 3 is a plan view similar to Figure 2 showing the checking device being actuated by the picker stick;

Figure 4 is an enlarged perspective view of a checking device incorporating the present invention and showing the manner of adjusting the ends of the check strap;

Figure 5 is a front elevational view of the checking device partly in section to show the construction of the bearing element for producing a predetermined constant drag on the slide rod of the checking device;

Figure 6 is a transverse sectional view taken on line 6—6 of Figure 5 to show the manner of compressing the packing to adjust the drag on the checking device.

Figure 7 is a view similar to Figure 6, but showing a split nylon sleeve in the bearing for applying a predetermined drag on the checking device;

Figure 8 is a perspective view of a checking device of modified construction and showing the ends of the check strap directly connected to the ends of the slide rod;

Figure 9 is a longitudinal sectional view of a bearing of modified construction in which the end of a bar of nylon, Teflon or other material having good lubricity engages the periphery of the slide rod of the checking device for applying a predetermined constant drag thereon;

Figure 10 is a perspective view showing the various layers of a leather strap and the manner of splitting the leather to form a composite strap; and

Figure 11 is a side elevational view showing the composite strap fabricated on a curved form.

Referring to Figure 1 of the drawings, the picker stick checking device of the invention is shown applied to the lay 12 of a loom for weaving fabric. In such looms, the shuttle 13 is thrown across the loom in the shed between the warp strands by the picker stick 14. Picker stick 14 is moved from the position illustrated in full lines to the position illustrated in dash lines in Figure 1 with a snap action by a driving mechanism (not shown) to propel the shuttle 13. After the picker stick 14 has thrown the shuttle, its forward motion is checked by a

check strap 15 of the checking device 16 constituting the subject matter of the present invention. The picker stick 14 is returned to its initial position illustrated in full lines in Figure 1 by the shuttle 13 striking its upper end and this motion of the picker stick also is checked by the check strap 15 of device 16.

In accordance with the present invention, the check strap 15 may comprise a single or double ply of a suitable material such as leather, or may include an additional wear strip as illustrated in Figure 8, or may be formed of a composite leather strap as illustrated in Figure 11. In any of the strap constructions the grain and hair side of the inner ply is positioned at the inside for engagement by the picker stick 14. In the embodiment of the invention illustrated in Figures 1 to 6, the ends of the check strap 15 are folded inwardly towards each other to form a loop and the ends are attached to the blocks 17 and 18 by means of bolts 19. The blocks 17 and 18 are adjustably mounted on a slide bar 20 in the form of a rod having a smooth peripheral surface. Rod 20 has threaded ends 21 and 22 which cooperate with tapped holes in the blocks 17 and 18 to adjust the length of the check strap 15 for the throw of the particular picker stick 14 and the blocks are held in adjusted position on the rod by means of check nuts 23. Thus, the ends of the check strap 15 are attached to the rod 20 and form a loop for engagement by the picker stick 14 at each end thereof. The ends of the loop may be parallel, but advantageously as illustrated the leather plies of the check strap 15 are so cut that when their ends are folded inwardly the loop will have a generally conical form to provide inclined sides having substantially the same angle as the picker stick 14 when the latter engages the strap.

In accordance with a particular feature of the present invention, the rod 20 of the checking device 16 is mounted to slide in a cylindrical bearing sleeve 24 in a bearing block 25 which is attached to a fixed bracket 26 on a part of the loom such as the lay 12. As illustrated, the bearing block 25 has a laterally projecting stud 27 projecting through a hole in the bracket 26. In some looms, the bearing sleeve 24 projects from the upper end of supporting block 25, as illustrated in full lines in Figure 6, and in other installations the bearing sleeve projects from the lower end of the block, as illustrated in dash lines in Figure 6, depending upon the position of the attaching bracket 26 and stud hole in the particular loom. In any case, the bearing sleeve 24 is fixed and the checking device 16 moves in either direction relative to the cylindrical bearing sleeve 24 when engaged by the picker stick 14.

The movement of the checking device 16 is controlled at one side by a bearing element 28 in the sleeve 24 which produces a constant drag on the rod 20 throughout a stroke as it slides in the bearing sleeve. The bearing element 28 maintains a constant drag on rod 20 under all operating conditions and the amount of constant drag produced may be initially adjusted for a particular loom. As shown in Figures 2 and 3, a tensioning device 29 is attached to the loom for engaging and applying a fixed tension to the check strap 15 at a position opposite the cylindrical bearing 24. Tensioning device 29 has a pair of spaced fingers 30 and 31 engaging the inside face of the inner ply of check strap 15 and a finger 32 engaging the outside face of the outer ply for producing a fixed resistance to sliding movement therethrough. The finger 32 is mounted on an adjustable slide 33 which may be locked in position by a nut 34 to adjust the particular tension applied by the tensioning device 29. Thus, when the picker stick 14 engages the check strap 15 to move it to the left, as illustrated in Figure 2, the bearing element 28 in sleeve 24 produces a predetermined fixed drag on the rod 20 while the tensioning device 29 produces a corresponding drag on the opposite side of the check strap.

As shown in detail in Figure 5, the bearing element 28 in sleeve 24 comprises anti-friction bushings 35 and 36 at each end and a packing material 37 between the bushings for applying the predetermined fixed drag on the rod 20. The anti-friction bushings 35 and 36 are of a kind which operate dry or, in other words, do not require any added lubricant so that its coefficient of friction does not vary with the condition of the lubricant. A suitable material for the bushings 35 and 36 is nylon or Teflon which has a low coefficient of friction with a steel rod 20, but porous oil impregnated metal bearing bushings can be used.

The packing 37 between the end bushings 35 and 36 is in the form of a series of leather washers having central holes of substantially the same diameter as the outside diameter of the rod 20. The leather washers are soaked in oil for a period of time to completely impregnate the leather after which excess oil is removed as by pressing. The leather washers of packing 37 engage the periphery of rod 20 and produce a predetermined fixed drag thereon with a coefficient of friction which remains substantially constant throughout the life of the washers. Overlying the central portion of the packing 37 is compression plate 38 actuated by a set screw 39 for compressing the packing to adjust the drag produced by the packing. It has been found that a resilient plate 38 of natural or synthetic rubber is especially advantageous as its yielding pressure permits and maintains a closer adjustment of the drag on the checking device 16. Thus, the bearing sleeve 24 requires no lubrication and will produce and maintain a constant uniform drag on the rod 20 which may be adjusted by means of the set screw 39 and compression plate 38 for the particular installation. When once adjusted the set screw 39 is locked in adjusted position by means of the lock nut 40.

The bearing elements are assembled in the bearing sleeve 24 by first inserting the nylon bushing 35 against an annular flange 41 at one end of the sleeve 23, inserting the plurality of leather washers 37 into the sleeve one after the other and finally inserting the other nylon bushing 36. A metal washer 42 is then applied over the outer face of the nylon bushing 36 and the entire assembly is locked in the sleeve 24 by means of a spring clip 43 engaging a peripheral groove 44 in the sleeve. One form of the invention having now been described in detail the mode of operation is explained as follows:

When the picker stick 14 is in the full line position illustrated in Figures 1 and 2, the checking device 16 is located at its extreme left hand position relative to the bearing sleeve 24. Picker stick 14 is then moved by its driving mechanism from the position illustrated in the full lines to that illustrated in dash lines in Figure 1. The upper end of the picker stick 14 engages the rearward end of the shuttle 13 and propels it to the opposite side of the loom. After the shuttle 13 leaves the end of the picker stick 14 the movement of the latter is checked by the checking device 16. As the end of the picker stick 14 engages the right hand end of the check strap 15 the motion of the picker stick is transmitted to the checking device 16 which moves as a unit relative to the bearing sleeve 24.

During such relative movement, the rod 20 slides in the bearing sleeve 24 which produces a predetermined fixed drag therefor and the strap opposite the bearing sleeve slides through the tensioning device 29 which produces a corresponding drag on the strap. The spaced anti-friction bearing bushings 35 and 36 permit free longitudinal movement of the rod 20 and prevent it from cramping while the packing 37 of leather washers applies a centrally located predetermined constant drag on the rod between the bushings. Such movement of the checking device 16 relative to the fixed bearing sleeve 24 is illustrated in Figures 2 and 3. As the bearing element 28 and tensioning device 29 are initially adjusted to

produce the same drag on the rod 20 and check strap 15, the checking device 16 will move in a straight line and retard the motion of the picker stick 14 without tilting or cramping the checking device or stick. Furthermore, as the force applied to the picker stick 14 and the drag produced by the checking device 16 remain constant during each pick, the picker stick will be stopped at the same position after each pick. Conversely, the shuttle 13 will produce the same force on the end of the picker stick during its return movement and will be checked by the check strap 15 with the same drag to stop the picker stick in the same position at the other end of its movement after each pick.

Thus, the picker stick 14 is always properly positioned after each pick to throw the shuttle 13 with the same force and direction. This results in applying the same tension to the weft strand as it pays out from the shuttle. As a result "shuttle jumping" and irregular movement of the shuttle 13 is eliminated so that the uniform fabric is produced. This result may be depended upon for all operating conditions and upon start-up after a shut down as well as during continuous operation of the loom. This uniformity of operation is due to the fact that the rod 20 of the checking device 16 is supported at spaced points in anti-friction bearings while the drag is applied between the spaced bearings by the leather washer packing 37 and the drag remains constant without variation.

Figure 7 illustrates a bearing element 28 of modified construction for applying drag on the rod 20. In this modified construction the bearing is in the form of a split bushing 50 of a dry anti-friction material such as nylon which extends throughout the length of the cylindrical bearing sleeve 24. Nylon bushing 50 is slotted throughout its length at 51 to provide spaced edges to adapt it to be compressed to a smaller inside diameter. One end of the bushing 50 engages the annular flange 41 in the bearing sleeve 24 and is held in position in the sleeve 24 by a spring clip 43 engaging its other end as in Figure 5. The nylon bushing 50 has an inside diameter to provide anti-friction bearing surfaces for the rod 20 at each end. The central part of the nylon bushing 50, however, is compressed in the bearing sleeve 24 to apply a predetermined constant drag. The compression of the central portion of the nylon sleeve 50 is produced by a yielding rubber plate 52 at the side opposite the slot 51 which, in turn, is compressed by a set screw 53 threaded in a tapped hole 54 in the bearing sleeve 24. A lock nut 55 is provided for locking the set screw 53 in any adjusted position. Such compression of the split bushing 50 in the bearing sleeve 24 by set screw 53 tends to contract its central portion into frictional engagement with the periphery of the rod 20 with the force required to produce the predetermined constant drag. It has been found that such a bushing construction will produce a predetermined constant drag under all operating conditions.

The modified nylon bearing construction illustrated in Figure 7 operates in the same way as the construction illustrated in Figure 5 to check the motion of the picker stick 14. As the bearing sleeve 50 produces a predetermined constant drag on the rod 20 and as the tensioning device 29 controls the movement of the check strap 15 the movement of the picker stick 14 and shuttle 13 is uniform under all operating conditions.

Figure 8 illustrates a picker stick checking device 60 of further modified construction. In the construction illustrated in Figure 8, a double ply check strap 61 is provided having short wear straps 62 and 63 at each end for engagement by the picker stick. The ends 64 and 65 of the check strap 61 and wear straps 62 and 63 are provided with holes and apply directly over the ends of a slide rod 66. The ends of the rod 66 are threaded and have nuts 67 and 68 at each end for clamping the ends 64 and 65 of the check strap 61 thereto. The length of the check strap 61 may be adjusted by screwing the

nuts 67 and 68 inwardly or outwardly on the rod 66 and thereby adjusting the spacing of the ends 64 and 65 of the check strap 61.

In the checking device 60 illustrated in Figure 8, the bearing element 28 for the rod 66 may be of the leather washer type illustrated in Figure 5 or the continuous split nylon bushing illustrated in Figure 7. The bearing sleeve 24 is mounted on a bearing block 25 with a laterally projecting stud 27 as in Figure 4 for attaching the checking device 60 to a bracket 26 on the loom.

The checking device 60 operates in substantially the same way as the check device 16 illustrated in Figures 1 to 6. Checking device 60 is particularly adapted for use in looms of the type having an inside check strap bracket with a limited space for the check strap. However, the wear straps 62 and 63 provide additional stiffness to the check strap 61 and provide a separate wearing surface engaged by the picker stick 14. Thus, only the relatively short back-up straps 62 and 63 are subjected to wear and may be easily replaced.

Figure 9 illustrates a checking device 70 having a fixed bearing block 71 of further modified construction for applying a predetermined constant drag on the slide rod 72. The modified form of bearing block 71 is shown applied to a checking device of the type illustrated in Figure 8, but it will be understood that it can be applied to a checking device of the type illustrated in Figures 1 to 6. As in Figure 8, the checking device illustrated in Figure 9 has a double or single ply check strap 73 of conical form with back-up straps 74 and 75 directly applied on the threaded ends of the rod 72. In addition, plates 76 of a plastic such as nylon, or metal with leather cushioning and reinforcing pieces are provided between the outside ends of the check strap 73 and the clamp nuts 77. These plates 76 provide an additional cushioned stiffness to the portion of the check strap engaged by the picker stick 14.

The rod 72 of the checking device 70 slides in bearing block 71 adapted to be bolted to the bracket 26 on the loom and having a transverse bore 79 of greater diameter than rod 72 and through which the rod extends. The bearing block 71 has counterbores 80 at the ends of the bore 79 to provide an annular shoulder 81. Anti-friction bearing bushings 82 and 83 are mounted in the bearing block 71 to bear against the annular shoulders 81 and are locked in place therein by means of snap rings 84. Projecting outwardly from the bearing block 71 is a cylindrical boss 85 having a central bore 86 at right angles to the bore 79. Mounted in the bore 86 of the boss 85 is a nylon bar 87 of cylindrical form which projects in bore 79 to engage its end with the periphery of the slide rod 72 to apply the drag thereon. At the rear of the nylon bar 87 is a resilient plug 88 of rubber or the like and beyond the rubber plug is a set screw 89 engaging threads in the bore 86. The threads in the bore 86 extend for a limited distance only so that the set screw can never engage the periphery of slide rod 72. Thus, by turning the set screw 89, the end of nylon bar 87 is engaged with the periphery of the rod 72 with predetermined resilient pressure. Set screw 89 is held in adjusted position by a lock nut 90.

Also in this construction U-shaped leather washers 91 are provided on the rod 72 between the bearing block 71 and the clamp nuts 77 for attaching the ends of the check straps 73 to the ends of the rod. The leather washers 91 prevent a metal to metal contact of the bearing block 78 with the clamping nuts and thereby serve as a safety device.

The checking device 71 illustrated in Figure 9 operates in the same way as the previously described constructions except that the bar 87 of nylon, Teflon or other material having good lubricity produces the predetermined drag on the checking device between the anti-friction bearing bushings 82 and 83. It has been found that the engagement of the end of the bar 87 with the periphery of the steel rod 72 produces a predetermined constant drag under all operating conditions.

A composite leather strap 92 as illustrated in Figure 11 can be used to advantage as a check strap 15 in the checking devices illustrated in Figures 1 and 9. Natural leather comprises an outer hair and grain layer, a middle binder layer and an inner flesh layer. In a piece of leather ¼ inch thick the hair and grain is about 1/32 of an inch in thickness, the middle binder layer is about 1/32 of an inch thick and the inner flesh layer is about 3/16 of an inch thick. The surface of the grain layer is best for wear, abrasion and frictional contact but has only about 5% to 7% of the tensile strength and a limited stretch relative to the flesh layer. The flesh layer has 90% to 95% of the tensile strength and can be stretched to a much greater degree than the grain surface. Furthermore, stretching of the flesh layer is an advantage as it changes the position of the fibers from vertical to horizontal. If the grain layer is stretched to the limit of the flesh layer it is apt to crack.

The composite check strap 95 having better wearing characteristics than either a single ply or double ply natural leather strap can be made by cementing an outer flesh layer of one piece of leather onto the flesh layer of another piece of leather. The outer flesh layer is formed in the manner illustrated in Figure 10 by sciving the hair and grain layer from the binder layer. The flesh layer including the binding layer from which the grain layer has been removed is then stretched to nearly its elastic limit so that it will have the same stretching characteristics as a grain layer. Furthermore, the stretching of the flesh layer will increase its length so that it will have the same length as the grain layer of the unstretched inner leather strap when folded in a loop. The stretched flesh layer is then reversed and placed over the inner leather strap so that its binder layer will overlie the flesh layer of the inner strap as illustrated in Figure 11. The outer stretched flesh layer is then cemented to the flesh layer of the inner piece to form the composite strap 95. The combining of the two pieces is performed over a curved mold 96 having the contour of the loop in the check strap 95 to be formed and is cemented under pressure on the form.

The composite strap 95, as illustrated in Figure 11 then has an inner natural leather strap with an inner grain and hair layer A adapted to be contacted by the picker stick 14, an adjacent integral binder layer B, and an integral intermediate unstretched flesh layer C. Adjacent the flesh layer C of the inner strap is an adhesive layer D, the stretched binder layer E of the outer strap and an integral stretched flesh layer F at the outer periphery. The inner grain and hair layer A provides the wearing characteristics required and the outer stretched layer F prevents stretching of the inner layer A to prevent it from cracking or breaking. Preferably, we prefer to use chrome leather in the outer stretched layer F, but other high strength materials such as rayon or nylon can be used or even unstretched leather.

While several embodiments of the invention are herein illustrated and described, it will be understood that further changes may be made in the construction and arrangement of elements without departing from the spirit or scope of the invention. Therefore, without limitation in this respect the invention is defined by the following claims.

We claim:

1. A device for checking the motion of a picker stick in a loom comprising a sliding element having a smooth bearing surface, a check strap, means adjacent the opposite ends of said sliding element for clamping the ends of the check strap thereto to form a loop, said last named means being adjustable along each end of the sliding element to adjust the length of the check strap, a fixed bearing element having anti-friction bearing surfaces at each end for supporting the sliding element for free slid-

ing movement therein, a central bearing surface in the fixed bearing element between the end bearing surfaces for engaging at least one side of the sliding element to apply a fixed drag thereon, and means for adjusting the bearing pressure of the central bearing surface on the sliding element.

2. A device for checking the motion of a picker stick in a loom comprising a movable unit having a metal rod with a smooth peripheral surface and a looped check strap having its ends attached to the end portions of the rod, a fixed cylindrical bearing sleeve at one side of the movable unit in which the rod slides, said bearing sleeve having anti-friction bearing surfaces at its ends in which the rod freely slides and a central bearing surface engaging the rod between the anti-friction bearing surfaces to apply a drag thereon, and means for varying the pressure applied by the central bearing surface for adjusting the drag on the rod.

3. A device for checking the motion of a picker stick in a loom comprising a movable unit having a metal rod with a smooth peripheral surface and a looped check strap having its ends attached to the end portions of the rod, a fixed cylindrical bearing sleeve at one side of the movable unit in which the rod slides, a fixed tensioning device at the other side of the movable unit through which the check strap slides, said bearing sleeve having anti-friction bearing surfaces at its ends in which the rod freely slides and a central bearing surface engaging the rod between the anti-friction surfaces to apply a drag thereon, said tensioning device having a bearing surface engaging the check strap to apply a drag thereon, and means for varying the pressure applied by the central bearing surface and tensioning device for adjusting the drag on the rod and check strap, respectively.

4. A device for checking the motion of a picker stick in a loom comprising a stationary part attached to the loom and a movable part adapted to slide relative to the stationary part, said stationary part comprising a bearing block having a cylindrical bearing sleeve, said movable part comprising a metal rod having a smooth peripheral surface, a looped check strap having its end attached to the ends of the rod for enclosing a picker stick therebetween, said bearing sleeve having anti-friction bushings at each end for supporting the rod for free sliding movement in the sleeve, a central bearing element in the sleeve between the bushings for engaging the periphery of the rod to apply a drag thereon, means for adjusting the pressure of the central bearing means against the rod, and a resilient element between the adjusting means and bearing element to yieldably engage the latter with the rod with a predetermined pressure.

5. A device for checking the motion of a picker stick in a loom comprising a metal slide bar having a smooth bearing surface, a check strap so formed as to provide a conical shape when the ends are folded inwardly to form a loop, clamping elements mounted on the bar adjacent its opposite ends for clamping the ends of the looped check strap thereto, said clamping elements being adjustable along the bar to vary the length of the looped check strap, a fixed bearing sleeve having annular bearing surfaces at each end for supporting the bar for free sliding movement in the sleeve, a central bearing surface in the sleeve between the end bearing surfaces which is deformed relative to the end bearing surfaces for engaging at least one side of the bar to apply a drag thereon, and means for varying the pressure of the central bearing surface on the bar to adjust the drag applied to the bar.

6. A checking device for a picker stick in accordance with claim 2 in which the anti-friction bearing surfaces in the bearing sleeve are of a self-lubricating material of the class including nylon and porous oil impregated metals.

7. A checking device for a picker stick in accordance with claim 6 in which the central bearing surface in the sleeve for applying a drag to the rod is a packing of oil impregnated leather washers surrounding the rod and engaging the periphery thereof.

8. A checking device for a picker stick in accordance with claim 7 in which the resilient means for pressing the central bearing surface into engagement with the rod is a rubber plate, and the means for compressing the resilient element is a set screw having a threaded engagement with the cylindrical bearing sleeve and engaging the resilient plate.

9. A checking device for a picker stick in accordance with claim 2 in which the anti-friction bearing surfaces in the cylindrical bearing sleeve are the ends of a continuous nylon sleeve extending throughout the length of the bearing sleeve and split at one side on a line parallel to the axis.

10. A checking device for a picker stick in accordance with claim 9 in which the central part of said split nylon bushing is compressed into bearing engagement with the periphery of the rod, and the means for compressing the central part of said split nylon bushing is a resilient plate and set screw.

11. A checking device in a picker stick in accordance with claim 2 in which the cylindrical bearing sleeve has a hollow internally threaded boss projecting therefrom at right angles to the rod, and the central bearing surface engaging the periphery of the rod is a bar in the hollow boss, and a screw in the threaded portion of the boss for engaging the outer end of the bar to press the inner end of the bar against the periphery of the rod.

12. A checking device for a picker stick in accordance with claim 11 in which the bar of bearing material is of cylindrical form and composed of nylon, and a resilient plug in the hollow boss between the screw and outer end of the nylon bar.

13. A checking device for a picker stick in accordance with claim 1 in which the bar is in the form of a cylindrical rod having threaded ends, and the means adjacent opposite ends of the bar for clamping the ends of a looped check strap thereto comprise elements having screw threaded engagement with the threaded ends of the rod for adjustment along the rod to adjust the length of the check strap.

14. A checking device for a picker stick in accordance with claim 13 in which the means for clamping the ends of a looped check strap comprise metal blocks, bolts for attaching the ends of the straps to the blocks, said blocks having tapped holes extending at right angles of the bolts, the threaded ends of said rods being turned in the tapped holes to adjust the length of the check strap, and lock nuts on the threaded ends of the rod for clamping the blocks in adjusted position on the rod.

15. A checking device for a picker stick in accordance with claim 13 in which the ends of the check strap have holes to apply the ends of the check strap over the threaded ends of the rod, and nuts on each threaded end of the rod and located at opposite sides of the check strap for clamping the ends of the check strap therebetween, and said nuts being adjustable along the rod at each end thereof to clamp the ends of the check strap in any adjusted position along the rod.

16. A checking device for a picker stick in accordance with claim 13 in which wear straps of short length are provided at the inside face of the check strap adjacent each end for engagement by the picker stick.

17. A checking device for a picker stick in accordance with claim 13 in which resilient plates are provided at each end of the check strap at the outside face thereof to resist bending of the ends of the strap.

18. A device for checking the motion of a picker stick in a loom comprising a metal slide rod having a smooth bearing surface, a composite leather check strap having its ends folded inwardly to form a loop, clamping element mounted for adjustment along the opposite ends of the rod and clamping the ends of the looped check strap thereto, a fixed bearing sleeve in which the rod slides

and having a central bearing surface for applying a drag on the rod, and said composite check strap comprising an inner strap portion having a grain and hair surface engaged by the picker stick, an integral intermediate flesh layer outwardly from the grain layer, and a stretched flesh layer of another strap overlying the intermediate flesh layer and cemented thereto.

19. A composite check strap for a picker stick in a loom comprising an inner leather section having an inner grain and hair surface and an integral outer flesh layer, and an outer prestretched leather section cemented to the inner section comprising a separate flesh layer, said composite leather check strap being formed on a curved surface to form a loop.

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