

Nov. 19, 1940.

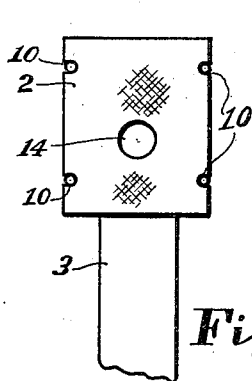
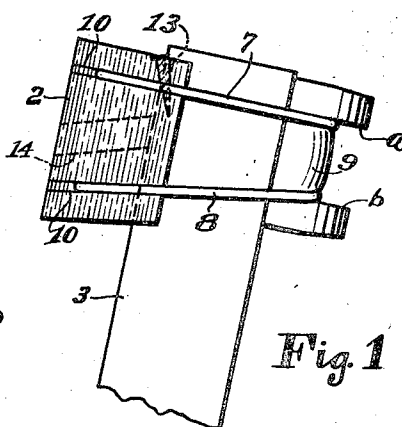
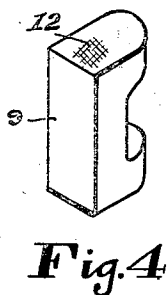
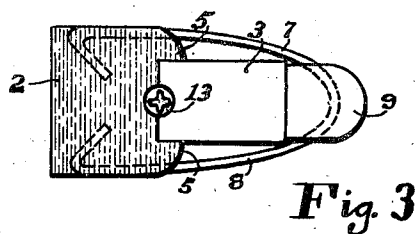
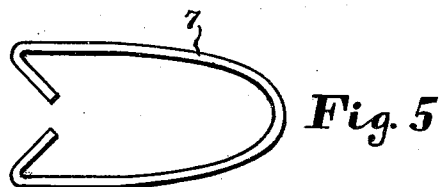
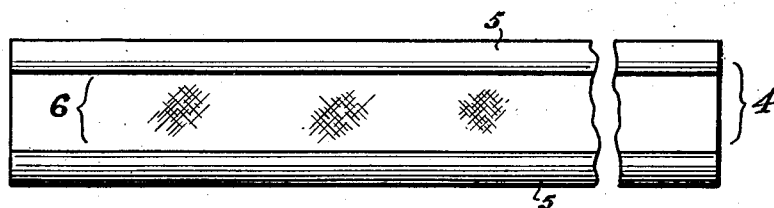
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2,222,351

LOOM PICKER

Filed March 14, 1939

2 Sheets-Sheet 1



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LOOM PICKER

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2 Sheets-Sheet 2

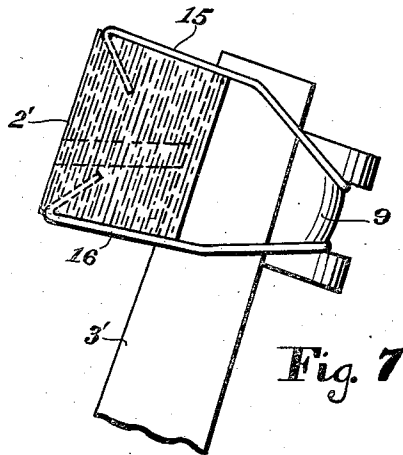


Fig. 8

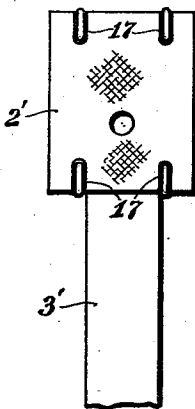
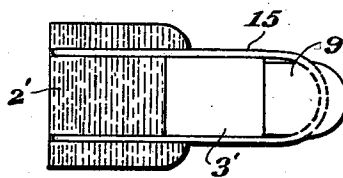


Fig. 9

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UNITED STATES PATENT OFFICE

2,222,351

LOOM PICKER

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Application March 14, 1939, Serial No. 261,752

5 Claims. (Cl. 139—159)

This invention relates to loom pickers and is more especially concerned with the construction and mounting on the picker stick of the block or "lug" which engages the shuttle.

5 It has been customary for many years in the textile industry to make picker stick lugs of such materials as leather, rawhide, fiber, or various rubber compositions. Because of the nature of the service required of these devices, the rate of wear of the lug itself is relatively rapid, the strains imposed on the means for securing it to the picker stick are extremely severe, and it is, consequently, necessary to replace these lugs at relatively frequent intervals. The usual methods of attachment also produce considerable wear on the picker stick.

10 The present invention deals especially with these conditions. It aims to improve both the construction of the picker stick blocks or lugs and also the means for mounting them on the picker stick with a view to providing a more serviceable construction, while still maintaining the factor of manufacturing cost within entirely practical limits.

15 The nature of the invention will be readily understood from the following description when read in connection with the accompanying drawings, and the novel features will be particularly pointed out in the appended claims.

20 In the drawings,

Figure 1 is a side view showing the upper end of a picker stick equipped with devices embodying the present invention;

25 Fig. 2 is a front view of the parts shown in Fig. 1;

Fig. 3 is a plan view of said parts;

30 Fig. 4 is an angular view of the backer block or cushion pad;

Fig. 5 is a plan view of one of the devices for holding the block in place;

35 Fig. 6 is a plan view of a strip from which the blocks are made;

Fig. 7 is a side view showing a slight modification of the form of the invention shown in the earlier figures; and

40 Figs. 8 and 9 are front and top views, respectively, of the form of the invention illustrated in Fig. 7.

Referring first to Figs. 1, 2 and 3, the construction there shown comprises a lug or block 2 mounted on the upper end of a picker stick 3. The block 2 should be of a yielding, resilient character, so as to afford the necessary cushioning action as the shuttle strikes it and comes to rest while being boxed at one end of its flight

without creating any substantial rebound. At the same time it must have the necessary coherence and solidity to propel the shuttle without damaging either it or the picker mechanism. For this reason I prefer to make the block 2 of some 5 fibrous material united by a resilient binder into a solid block having the desired degrees of hardness, elasticity, and the like. While it is contemplated that the block may be manufactured in various ways, and of a considerable variety of materials, the best method which I have so far devised includes the steps of making a long, narrow strip, such as that shown at 4 in Fig. 6, but having a cross-sectional shape like that of the block illustrated at 2 in Fig. 3. This may conveniently be accomplished by assembling strips 10 of a somewhat open mesh fabric, such as osnaburg, one upon the other, these strips preferably being cut on the bias and having previously been frictioned and skim coated with rubber prior to being cut into strips. Because considerable heat is developed in one of these blocks during operation, the rubber used should be a heat resisting compound possessing a high degree of adhesion. Raised edges or beads 5—5, Figs. 3 25 and 6, are formed at the opposite margins of the back of the strip 4 leaving a groove 6 between them to receive the forward edge of the picker stick 3. This may be done, for example, by properly proportioning the volume of material in such a way that the excess of fabric and binder will be forced upwardly during the subsequent molding operation so as to produce these raised edges, or narrower strips of fabric may be so assembled with the others as to produce essentially the same result after molding. Typical cross-sectional dimensions for the strip are seven-eighths of an inch in depth (from front face to the surface of the groove 6) and one and an eighth inches in width. The beads 5 need 40 be only approximately an eighth of an inch in height. The strip should be vulcanized under high pressure, a pressure of at least one thousand pounds per square inch being desirable. The composition and cure preferably are such that the finished strip has a hardness, as measured on a Shore durometer, of somewhere between 90 and 100. For most purposes I have found that a value in the neighborhood of 97 seems to give the best results.

50 Blocks of suitable length, say one and three-eighths inches, for example, are cut from the strip, the cut forming the top surface of the block being made at right angles to the front face and that forming the bottom surface, Fig. 1, be- 55

ing at an acute angle to said face so as to afford the necessary clearance with the raceway.

While the method above described produces a very satisfactory block or lug, it is contemplated that the fiber body may be made up in other ways and that other binders, such as the synthetic rubbers and those synthetic products known as Nylon, Koroseal, and others having the necessary resilience and permanence of adhesion, may be substituted for rubber. Such a block as that above described, however, has the necessary resilience or yield, both radially and longitudinally with reference to the point of impact of the shuttle, and when made of a proper composition and correctly cured, gives a remarkably long life without the laminations splitting away from each other, which has been an important source of failure in prior art blocks or lugs regardless of the materials of which they are made.

As above indicated, an important problem in the production of a satisfactory picker organization consists in the mounting of the shuttle engaging lug or block on the picker stick in such a manner that it will not work loose, will not wear the stick, and will present no projecting surfaces likely to catch the yarn. An important feature of this invention, therefore, resides in a novel mounting for a picker stick lug and this aspect of the invention is useful regardless of the specific composition or structure of the lug itself.

Referring again to Figs. 1, 2 and 3, it will be observed that the block 2 is held against the front face of the picker stick by means of upper and lower U-shaped wire holders 7 and 8, respectively. These two members are similar; and the forward ends of each are hooked into opposite sides of the block 2, while their rearward portions extend around the back of the picker stick and there engage a resilient backer block or pad 9 preferably notched to receive the wires. These holders are made of wire having a high degree of tensile strength and sufficiently stiff so that there is no danger of their hook-shaped ends being bent out of shape under the relatively high working pressure. As shown in Figs. 3 and 5, the forward ends of the holder 7 are bent backwardly and inwardly toward each other at angles of approximately 45°, and they extend into holes drilled or otherwise formed in the sides of the block. In addition, the lateral faces of the lug are grooved, as shown at 10, to receive the wires so that they will not project beyond the side faces of the block.

The backer block or cushioning pad 9 may conveniently be made of rubber but should be considerably softer than the block 2 and have a wider range of yield and elasticity. It is molded with a central cut-out at the back, bounded by abrupt shoulders *a* and *b*, Fig. 1, providing seats for the curved ends of the holders 7 and 8. The latter naturally sink into the rubber somewhat and because of this fact and the presence of the shoulders, there is no tendency for them to slip relatively to the pad or backer block itself. Preferably a stiffening element of some appropriate kind, such as a textile cord or a stiffer rubber compound, as indicated at 12 in Fig. 4, is molded into the body of this block along the side thereof in contact with the stock where it gives longitudinal stiffness and forms a backbone for the block which is particularly useful in mounting the picker assembly on the stick 3.

In assembling the parts on the picker stick the holders 7 and 8 are hooked into the opposite

sides of the block 2, the backer block or cushioning pad 9 is placed in the loops of the holders, and the upper end of the picker stick then is forced into position between the parts 2 and 9, as shown in Figs. 1 and 3. During this operation the block is centered on the stick by the groove in its rearward surface. Preferably the front and rearward edges of the picker stick, or the surfaces of the parts 2 and 9 to be engaged with them, are coated lightly with oil or grease, both for the purpose of ultimately reducing the tendency of these parts to slip on the stick after having once been assembled thereon, and also to provide a certain amount of lubrication facilitating the assembly of these members on the picker stick.

It will be observed that when this assembling operation has been completed, the parts 2, 7, 8 and 9 cooperate to encircle the upper end of the picker stick and they are elastically held in position by the engagement of this assembly with the front and rear edges of the stick. In other words, the holder has a resilient floating connection only with the picker stick through the elastic elements 2 and 9. The parts are so dimensioned that the assembling operation requires a very considerable degree of compression of the backer pad or block 9, and a lesser degree of compression of the member 2. This condition is maintained during the life of the picker, and the legs of the holders 7 and 8 are constantly held under tension at all times and notwithstanding the tendency to relieve the compression on the backer block 9 at the instant of impact of the block 2 with the shuttle either in stopping or propelling it. There is, however, a tendency for such impact to move the block 2 upwardly and this tendency can be effectively overcome by any kind of a stop. The arrangement which I prefer is to thread a screw 13 downward diagonally into the picker stick at the upper end of the block, as shown in Figs. 1 and 3, where it holds the block against upward movement. Or, a screw can be threaded centrally through the picker stick from back to front, either above or below the part 9, where, its forward end will project a short distance into the block 2. If such a screw is made of small wire it will not materially weaken the picker stick. I prefer the arrangement shown, however, for the reason that the screw 13 has no appreciable weakening action on the picker stick, it is easily inserted, is readily removed, and it may be countersunk so as to be entirely out of the way.

In using rubber in a picker stick lug there is a tendency for the rubber composition to polymerize and disintegrate at the area of contact with the extreme point of the shuttle. This action seems to occur only at the very small area subjected to maximum pressure. I find that this difficulty can be overcome by forming a hole, such as that shown at 14, in the block 2 so that the material which otherwise would be subjected to this destructive action is removed. I also find that as wear progresses, the hole is deepened in a rearward and upward direction at an angle of approximately 15° with reference to a perpendicular to the front face of the block, and accordingly, I make the hole 14 at this angle or at any other angle necessary to suit specific conditions. It should also be observed that the points of attachment of the hook ends of the holders to the block are entirely outside of the area exposed to the wear of the shuttle point.

It has been found in practice that this con-

struction gives exceptionally satisfactory service. Not only does a block made in the manner above described possess the peculiar combination of elasticity and firmness required for a good picker, but the mounting of the block on the stick seems to overcome completely the objections experienced in using prior art constructions. It should be noted that this mounting includes no metal attachment of the block to the picker stick other than a simple stop to prevent the block from sliding upwardly. All the prior art commercial pickers of which I have been able to learn have been held in place on the picker stick by screws or other metallic fasteners entering the stick from the side or rear, and this fact has been the cause of many of the troubles experienced with them. In the present construction the block is held on the stick fundamentally by parts encircling it and exerting their holding function by an elastic compression on the part of the stick so encircled. All that is necessary, in addition, is some simple stop to prevent the block from moving upwardly on the stick. This stop is conveniently placed at the front of the stick where the motion tending to displace the block or lug 2 occurs, and it thus relieves the holders and the backing pad from strains to which they would otherwise be subjected.

The impact of the block with the shuttle is absorbed in compression of the former. Such compression has two effects on the holders; one, a very slight tendency acting on the hooks to move them apart due to the direction of the compressive force acting on the inclined hooks, and the other a slight backward movement of both holders. The latter movement, however, is taken up by the expansion of the backer block 9 so that all of the parts are constantly held in a taut condition. There is no outward or inward bowing or bending of the portions of the holders at opposite sides of the stick, they are always working in tension, and there is no substantial tendency for them to crystallize.

In referring to the impact of the block with the shuttle, it is recognized that under ideal conditions the block should push the shuttle rather than to strike it a blow. Nevertheless, the effect on the block is much the same in both cases, and the term "impact" should be understood accordingly. Also, the reference to "striking" the shuttle with the block should be understood to refer to the operative engagements of these two members in practice rather than the strict definition of the term.

A further and important advantage of this construction is that the parts of the holders nowhere project beyond the surfaces of the block 2, except at its back where they enter or leave the grooves. This is important in eliminating the presence of parts liable to catch on the yarn and in minimizing the opportunity for lint and fly to collect.

For the foregoing reasons this construction affords a long period of service. When replacement becomes necessary it may be accomplished easily and quickly. At the same time the expense of the entire picker structure compares favorably with that of the less serviceable prior art constructions.

A slight variation of the form of the invention above described is illustrated in Figs. 7, 8 and 9. Here the block 2' is like the block 2 except that the holes for receiving the hooked ends of the holders 15 and 16 are inclined in vertical

planes instead of in approximately horizontal planes, as shown in Figs. 1 and 3, and these holders extend across the upper and lower ends, respectively, of the block. In other words, the holders are hooked into the opposite lateral sides of the block 2, but into the top and bottom sides of the block 2'. At the rearward side of the picker stick 3' the holders are engaged with a resilient backer block or cushioning pad 9 as in the construction previously described. This arrangement has the advantage, however, of permitting the holders to lie directly in contact with the opposite lateral surfaces of the picker stick 3' and thus making a very compact arrangement offering little opportunity for accumulation of fly and little danger of catching in the yarn. At the points where the holes accommodating the ends of the holders break into the front face of the block, as shown in Fig. 8, slots 17 may be formed of such depth as to prevent the exposure of any metal part at the front surface of the block. This arrangement has essentially the same advantages of those above set forth in connection with Figs. 1 to 6.

While I have herein shown and described preferred embodiments of my invention, it will be evident that the invention may be embodied in other forms without departing from the spirit or scope thereof.

No claim is here made to the picker lug or block per se, but this element is claimed in my continuing application Serial No. 328,976, filed April 10, 1940.

Having thus described my invention, what I desire to claim as new is:

1. The combination with a picker stick, of a yielding block for striking the shuttle, and means securing said block to the front face of said stick comprising two U-shaped wire holders located, one above the other, and each hooked into said block at opposite sides thereof, the hooked ends of said members extending diagonally backward toward the picker stick, and a resilient pad at the back of said stick around which said holders extend, said pad being grooved to receive said holders.

2. The combination with a picker stick, of a yielding block for striking the shuttle, and means securing said block in its operative position on said stick, said means including holders having hooks which project into said block at a substantially acute angle, said holders extending backwardly around the picker stick and lying closely against opposite sides of the stick.

3. The combination with a picker stick, of a yielding block for striking the shuttle, and means securing said block in its operative position on said stick, said means including holders having hooks which project into the upper and lower portions of the block at a substantially acute angle, said holders extending backwardly across the top and bottom thereof.

4. The combination with a picker stick, of a resilient block for striking the shuttle and means securing said block against the front face of said stick, comprising a U-shaped metal holder having its forward ends anchored in the block at opposite sides thereof and terminating therein, and a resilient pad bearing against the rear surface of said stick and encircled on three sides by said holder, said pad being held in a compressed condition by said holder so that the holder has a resilient floating connection with the stick through said block and said pad.

5. The combination with a picker stick, of a yielding block for striking the shuttle, and means securing said block to the front face of said stick comprising a U-shaped metal member straddling said stick and having its forward ends projecting into the block from opposite sides thereof and terminating therein, and a resilient pad at the back of said stick holding the curved end of said U-shaped member spaced from said stick so that said member has a floating connection with said stick through said block and said pad. 5

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