

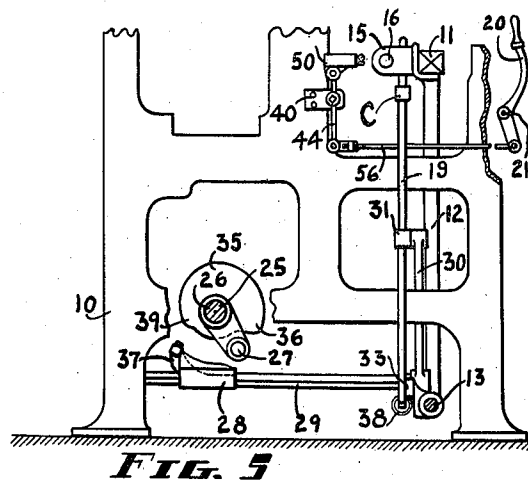
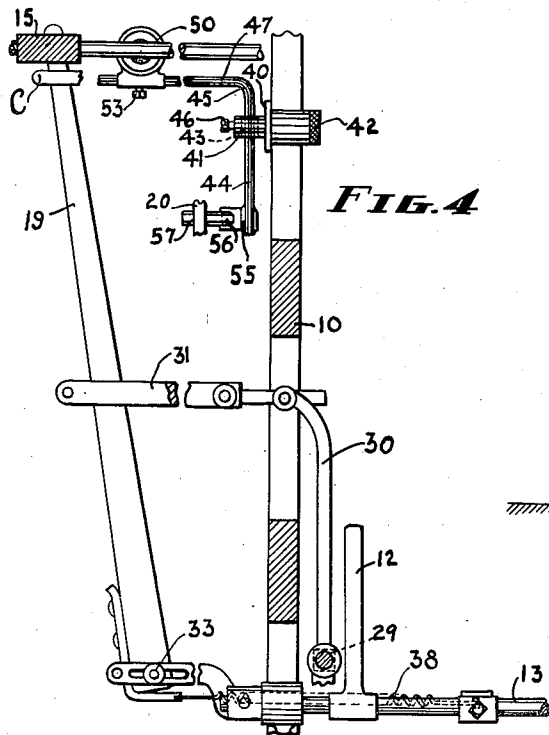
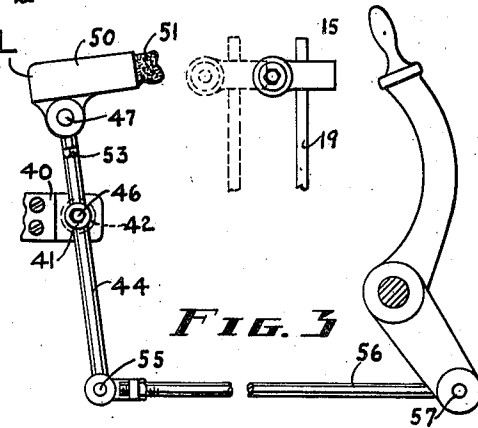
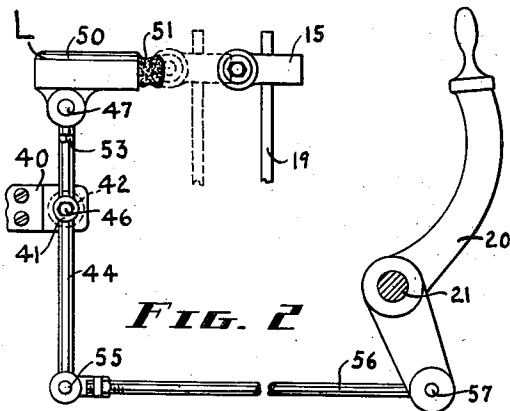
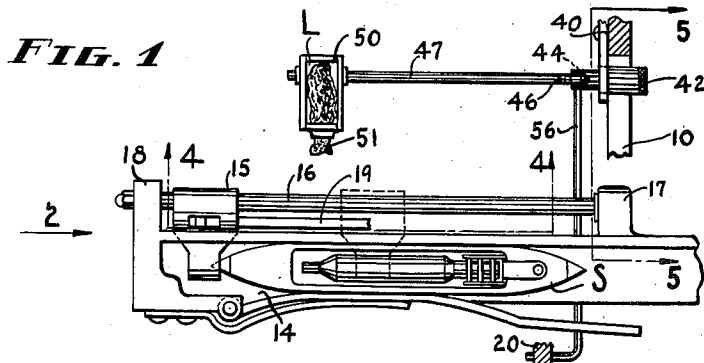
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PICKER SPINDLE LUBRICATOR

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PICKER SPINDLE LUBRICATOR

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This invention relates to improvements in lubricators for picker spindles and it is the general object of the invention to provide means by which the spindle may be lubricated during operation of the loom without attention on the part of the weaver.

In certain types of looms the shuttle is actuated by a picker which slides along a rod or spindle fastened to the lay behind the shuttle. As the lay reaches approximately mid position in its backward stroke, or at so-called top center, the picker is moved along the spindle toward the center of the loom to eject the shuttle from the shuttle box. This motion occurs every other beat of the loom on those looms which have automatic weft replenishment, but on certain types of looms which are employed more particularly for the weaving of fancy fabrics the picker may slide along its spindle every beat of the loom. In either type of loom it is customary for the weaver to move the lay to its back center position after the loom has been stopped by the breakage of filling, and remove the shuttle by pushing the picker stick and picker inwardly or toward the center of the loom. It is an important object of my present invention to provide a control for a picker spindle lubricator which shall operate to deposit a thin film of oil on the spindle when the lay is in the back center position during normal loom operation, but in which the lubricator is moved out of contacting position with the spindle when the loom is stopped to permit manual removal of the shuttle. This result I conveniently achieve by mounting the lubricator on a carrier connected to the shipper mechanism of the loom.

In certain types of looms the return of the picker to normal or starting position after a picking stroke is controlled by some part of the loom. In such looms the picker will be near the inner end of the spindle on one back center position and will be near the outer end of the spindle on the following back center position of the lay. It is another object of my present invention to place the lubricator at such a position that it will lubricate the picker spindle at a point between the inner and outer positions of the picker. In this way the inner end of the spindle bore is lubricated on one pick of the loom while the outer end of the bore is lubricated on the next pick of the loom. In this way oil enters the bore from each end thereof.

It is a still further object of my invention to provide a mounting for the lubricator which will permit the same to be adjusted in a direction longitudinally of the lay so that it may be caused to

engage the spindle at the proper point, and also permit vertical adjustment to permit the lubricator to engage the spindle near either its upper or lower side or along a rear surface thereof.

With these and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth.

In the accompanying drawing, wherein a convenient embodiment of my invention is set forth, Fig. 1 is a plan view of one end of a loom having my invention applied thereto.

Fig. 2 is an end elevation looking in the direction of arrow 2, Fig. 1, and showing the loom in running position.

Fig. 3 is a diagrammatic view similar to Fig. 2 showing the loom in stopped position.

Fig. 4 is a detail front elevation of the mounting of the lubricator looking in the direction of arrow 4, Fig. 1, and

Fig. 5 is a detail vertical section on line 5—5 of Fig. 1 showing the controller for the picker and picker stick.

Referring to the drawing, the loom frame 10 is provided with a lay 11 mounted on lay swords 12 pivoted as at 13. The lay moves back and forth in the loom, or to the right and left as viewed in Fig. 2, and has a complete reciprocation each beat of the loom. The lay has a shuttle box 14 to receive a shuttle S which is propelled by a picker 15. The latter slides along a spindle 16 extending between inner and outer supports 17 and 18, respectively, secured to the lay. A picker stick 19 moves from outer to an inner position, or from the left to the right as viewed in Fig. 1, to propel the shuttle from the shuttle box and cause the picker to slide along the spindle.

The loom is provided with a shipper handle 20 on a shipper rod 21. By connections not shown herein but well understood the shipper handle is connected to the driving mechanism not shown of the loom. It is thought sufficient for present purposes to state that when the shipper handle has been pulled forwardly or to the right as viewed in Fig. 2 the driving mechanism is connected to drive the loom, and when the loom is to be stopped the shipper handle is moved rearwardly or to the left from the position shown in Fig. 2 to that shown in Fig. 3, at which time the driving mechanism is disconnected from the loom and the latter comes to rest. The loom may be stopped because of a broken weft thread, in which case the weaver will ordinarily move the lay manually to back center position to open the shed so that the broken thread may be withdrawn and at

the same time permit removal of the shuttle from the shuttle box so that a new supply of weft can be inserted therein or the shuttle rethreaded preparatory to the resumption of weaving operations.

The bottom shaft 25 of the loom turns once for two beats of the loom as usual and has secured thereto a picking arm 26 on which is mounted a picker roll 27 for engagement with a picker cam 28. The latter is mounted on a picker shaft 29 which extends from front to back of the loom and carries at its forward end an upstanding arm 30 to the top of which is attached a lug-strap 31 attached to the picker stick 19 pivoted at 33. By this arrangement the picker stick is given an operative shuttle propelling motion every other beat of the loom. The effect of the roll 27 and cam 28 is to move the picker from the dot and dash line position of Fig. 1 to the right to some such position as that indicated in dotted lines while the lay is moving rearwardly.

In order to control the return of the picker an eccentric or cam 35 is fastened to the bottom shaft 25 and has a relatively high area 36 which contacts with a cam follower 37 moving with the cam 28. As soon as the picking stroke is completed the high point 36 of the cam 35 moves over the follower 37 to prevent sudden return of the picker cam 28 and parts controlled thereby to normal starting position by the usual return spring 38. As the bottom shaft continues to turn, however, the follower 37 rises gradually because of the shape of cam 35 and will leave the latter when the low point 39 passes from controlling position with respect to the follower 37.

Because of the action of cam 35 the picker will be held in the dotted line position of Fig. 1 until the lay reaches the back center position immediately following picking, and the picker moves gradually outwardly. By the time the lay reaches its next back center position the cam 35 will have permitted spring 38 to move the picker back to the full line position of Fig. 1. The purpose of this gradual return of the picker is to place the stick 32 for correct operation with a picker stick check herein illustrated as a strap loop C which is effective to hold the picker in the full line position of Fig. 1 after cam 35 releases follower 37. As the shuttle enters the box the picker slides against the action of the check from the full to the dot and dash position shown in Fig. 1.

It is to be understood that the parts operate in such a way that the picker is in the dotted line position shown in Fig. 1 when the lay is on back center of that beat on which the shuttle is picked from the box to the right, and that when the lay is on back center on the following beat the picker will be in the full line position. It will be seen that the distance between these two positions is considerably more than the length of the picker measured along the spindle.

While I have described the picker stick controlling cam 35 and the check C I wish it to be understood that I am not limited in the practice of certain features of my invention to these parts and they may be omitted without sacrificing certain advantages of my invention. When the cam 35 and check are used, however, my invention possesses additional advantages which will be pointed out hereinafter.

The matter thus far described is of common construction and except as indicated hereinafter forms no part of my present invention. The shipper handle 20 is moved either manually or automatically by the loom from the running for-

ward position of Fig. 2 to the rearward stopping position of Fig. 3, and the weaver can move the lay manually to the rear position to permit removal of the shuttle from the box.

In carrying my invention into effect I provide a stand 40 secured to the loom frame and having a horizontal hub 41 which receives a stud 42 rotatable therein and having a vertical bore 43 to receive the vertical arm 44 of a lubricator carrier lever 45. A set screw 46 holds the arm 44 in vertically adjusted position on the stud. The carrier lever 45 has a horizontal arm which extends substantially parallel to the lay and spindle behind the latter. An oil reservoir 50 containing a liquid lubricant L, which may be machine oil, carries a flexible wick element 51 immersed in the oil. The wick extends forwardly from the reservoir and is made of fibrous material to be sufficiently flexible to yield when in contact with the spindle. The reservoir is mounted on the arm 47 and is held in both longitudinal and angularly adjusted position with respect to said arm 47 by means of a set screw 53.

The lower end of the vertical arm 44 is pivotally connected as at 55 to a rod 56 extending forwardly and connected as at 57 to the lower end of the shipper handle 20. By reason of this connection the position of the reservoir and the wick 51 are given either of two positions with respect to the range of movement of the spindle, depending upon whether the loom is running or at rest.

In operation, while the loom is stopped the shipper handle will be in the left hand position indicated in Fig. 3 the effect of which is to move the rod 56 and lower end of arm 44 forwardly or to the right and therefore place the reservoir 50 in its rearward position with the wick out of the path of the picker. When the loom is set in operation the shipper handle will be moved forwardly or to the right, from the position in Fig. 3 to that shown in Fig. 2, at which time the vertical arm 44 is rocked in a clockwise direction as viewed in Fig. 3 and the reservoir 50 at the upper end of said arm is moved forwardly so that the flexible wick 51 will be in position to have yielding engagement with the spindle 16 when the lay is in its rearmost position. The angular adjustment of the reservoir permits the amount of feed of the oil to be regulated. As long as the loom continues to run the wick 51 will touch the rear part of the spindle 16 at each backward motion of the lay and will leave a small film of oil on the spindle in the path of the picker.

In Fig. 2 the spindle and lay are shown in full lines in the picking position, and it is in this position that the picker will slide along the spindle. It will be seen from this figure, however, that the wick 51 is behind the spindle a sufficient distance to be out of the path of the picker at the time of picking and when the lay reaches back center position, indicated by dotted lines in Fig. 2, the spindle 16 will contact with the wick 51. When the loom stops either automatically or by the will of the weaver the shipper handle will move to the rear position shown in Fig. 3 with resultant backward shift of the reservoir to the position shown in Fig. 3 with the wick 51 out of the path of the picker indicated in dotted line position when the lay is on back center. The weaver may therefore move the picker stick manually toward the center of the loom to eject the shuttle from the shuttle box without causing contact between the picker and the wick. This

is a matter of considerable practical importance, since I have found that certain previously proposed lubricators have been so constructed as to lie in the path of the picker on the shuttle re-

5 moving operation. By reason of the control derived from the shipper handle as set forth herein, however, the lubricator is always moved to a non-interfering position with respect to the picker whenever the loom stops.

10 Another feature of my invention relates to the position of the picker with respect to the spindle on successive loom beats and the advantages accruing from these different positions with respect to the lubricator. It is to be understood that the advantages and operation already described is in no way dependent upon the control of the picker exercised by the cam 35, but I have found that additional advantages in the lubrication of the picker spindle accompanies such a picker control

15 when the lubricator is adjusted along the horizontal arm 47 to such a position that the wick will contact the spindle at a point between the inner and outer positions of the picker shown respectively in dotted and full lines, respectively, in Fig. 1. When in this position the wick 50 will deposit a film of oil in front of the picker when the latter is to move inwardly on a picking stroke, and behind the picker before it starts its return motion. In this way the forward part of the bore of the picker is lubricated on alternate beats of the loom, and the outer or rear part of the picker bore is lubricated on the intervening picks.

While I have described the cam 35 in connection with the two positions of the picker I wish to state that it has the additional effect of delaying immediately return of the picker to its outer position on the picking stroke of the loom. By the action of the high point 36 the picker is held in an inner position during the time that the lay passes through back center and starts forwardly, and by this relation assurance is given that the picker will not return under the action of spring 38 until the lay has moved far enough forwardly from that center position to prevent engagement of the returning picker and the wick 51. This advantage accrues from the use of cam 35, but I am not obliged to use this cam in order to secure certain benefits of my invention, inasmuch as the lubricator can be moved along arm 47, or the center of the loom from the position shown in Fig. 1 with satisfactory results if the cam 35 is omitted.

From the foregoing it will be seen that I have provided a picker spindle lubricator which is under control of the mechanism which drives the loom with the result that when the loom is running the rearward motion of the lay acts automatically to deposit a film of lubricant on the spindle 16, but when the loom is stopped the lubricator is moved out of the path of the picker and the latter may therefore be moved along the spindle to move the shuttle out of the box even though the lay be at back center position. It will further be seen that in those looms which are equipped with the cam 35 and mechanism connected to it for controlling the position of the picker, the oil film is deposited in front of the picker on alternate beats of the loom and behind the picker on intervening picks, with the result that the both ends of the picker bore are lubricated. It will also be seen that the adjustments afforded by the construction of the mounting or support for the lubricator reservoir 50 permits the latter to be moved longitudinally of the lay to have contact with the spindle at any one of a

plurality of positions and furthermore permits a vertical adjustment of the reservoir to enable the wick to engage the spindle throughout a limited degree of vertical adjustment.

Having thus described my invention it will be seen that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention and I do not wish to be limited to the details herein disclosed, but what I claim is:

1. In a loom having a lay reciprocating through a given range of movement, loom controlling means to stop and start the loom, a spindle lubricator mounted for movement with respect to said range, and connections between the lubricator and the loom controlling means to move the lubricator into said range to contact the spindle when the loom is running and move said lubricator out of said range when the loom is stopped.

2. In a loom having a lay reciprocating through a given range of movement, loom controlling means to stop and start the loom, a lubricator movable with respect to said range, and means to cause the lubricator to move with the loom controlling means to place the lubricator within said range to contact the spindle when the loom is running and place said lubricator out of said range when the loom is stopped.

3. In a loom having a lay reciprocating through a given range of movement, loom controlling means to stop and start the loom, a lubricator having a flexible spindle engaging element, means to mount the lubricator and element for movement with respect to said range, and connections between the loom controlling means and the lubricator to move the flexible element into said range to contact the spindle when the loom is running and move said element out of said range when the loom is stopped.

4. In a loom having a picker spindle movable through a given range of movement during loom operations, a picker on said spindle having a bore extending along the spindle and through which the latter extends, the picker being movable from normal position along the spindle with one end of the bore advancing during a picking operation of the loom as the spindle moves toward one extreme of its range of movement, means to lubricate the spindle at a point along which the picker travels when the spindle is in said extreme of its range of movements, means to prevent movement of the picker through said point along the spindle toward normal position until after the spindle has moved away from said extreme of its range of movements, and means to thereafter move the picker back to normal position with the other end of the bore advancing, whereby both ends of the bore are lubricated by movement of the picker past said point on a complete picking operation of the picker.

5. In a loom having a picker spindle to be lubricated, a lubricator to have contact with the spindle to lubricate the same, a lever having an arm substantially parallel to the spindle and on which the lubricator is mounted, said lever having a second arm extending transversely of the first arm, means carried by the loom defining a pivotal support for the lever, shipper mechanism for the loom, and connections between the shipper mechanism and the second arm of the lever to rock said lever to place the lubricator in lubricating position with respect to the spindle when the shipper mechanism is in running position and rock said lever in the op-

posite direction to move said lubricator away from the spindle when the shipper mechanism is in stopping position.

6. In a loom having a picker spindle to be lubricated, a lubricator to have contact with the spindle to lubricate the same, a lever having an arm substantially parallel to the spindle and on which the lubricator is mounted, said lever having a second arm extending transversely of the first arm, means carried by the loom defining a pivotal support for the lever, shipper mechanism for the loom, and connections between the shipper mechanism and the second arm of the lever to rock said lever to place the lubricator in lubricating position with respect to the spindle when the shipper mechanism is in running position and rock said lever in the opposite direction to move said lubricator away from the spindle when the shipper mechanism is in stopping position, and means to adjust the second arm of the lever transversely of said pivotal connection to vary the distance of the first arm of the lever from the axis of the latter.

7. In a loom having a picker spindle to be lubricated, a lubricator to have contact with the spindle to lubricate the same, a lever having an arm substantially parallel to the spindle and on which the lubricator is mounted, said lever having a second arm extending transversely of the first arm, means carried by the loom defining a pivotal support for the lever, shipper mechanism for the loom, connections between the shipper mechanism and the second arm of the lever to

rock said lever to place the lubricator in lubricating position with respect to the spindle when the shipper mechanism is in running position and rock said lever in the opposite direction to move said lubricator away from the spindle when the shipper mechanism is in stopping position, and means to hold the lubricator in any one of a plurality of angular positions with respect to the first arm of the lever.

8. In a loom having a reciprocating lay and a picker spindle thereon moving to a given extreme position for each beat of the loom, a picker having a bore through which the spindle extends, means to hold the picker adjacent one end of the spindle when the latter is in said given extreme position on one beat of the loom, means to move the picker along the spindle to a position adjacent the other end of said spindle, means to hold said picker adjacent the other end of the spindle when the latter is in said given extreme position on the next beat of the loom, means operative when the spindle is in said given extreme position to lubricate the spindle at a point along which the picker travels, and means to return the picker to a position adjacent the first named end of the spindle after the latter has moved away from said given extreme position on said next beat of the loom, whereby one end of the bore is advancing and is lubricated on one beat of the loom, and the other end of the bore is advancing and is lubricated on the next beat of the loom.

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