

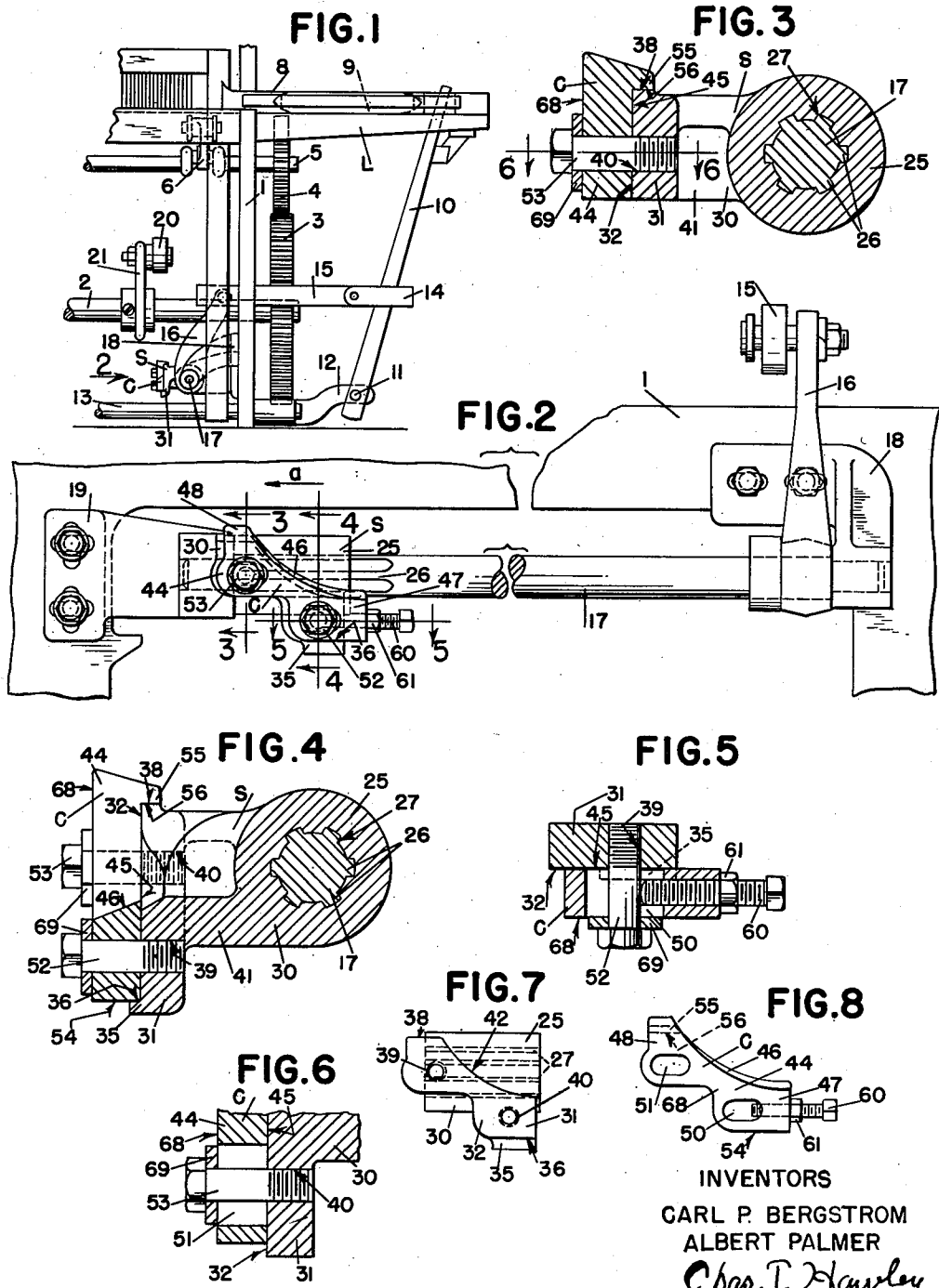
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PICKING SHOE FOR LOOMS

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## PICKING SHOE FOR LOOMS

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This invention relates to shuttle picking mechanism for looms and it is the general object of the invention to provide an improved picking shoe made with a picking cam adjustable on a picking carrier to compensate for wear or alter the character of the picking stroke.

Certain types of looms employ a picking mechanism having a shaft extending back and forth in the loom and supporting a picking shoe which is periodically engaged by a revolving actuator to rock the shaft. In the past it has been customary to make the picking cam integral with the picking shoe and the only way in which the position of the cam could be adjusted was by a bodily adjustment of the shoe along the shaft. It is an important object of the present invention to provide the picking shoe with a cam carrier to which the cam can be bolted in different longitudinal positions while the carrier remains in a fixed position on the picking shaft.

In order that the cam may be adjusted and then secured tightly to the carrier it is a further object of the invention to provide the cam with slots elongated in the direction of the length of the shaft and provide clamping screws which pass through the slots to clamp the cam to the carrier in adjusted position lengthwise of the shaft.

Picking cams of the type to which the invention more particularly relates ordinarily have an actuator engaging cam surface which starts from a low position at one end of the cam and rises to the high position at the other end of the cam. During the picking operation the actuator exerts a downward force on the picking cam. It is another object of the invention to provide the cam and its carrier with cooperating supporting surfaces which permit the aforesaid lengthwise adjustment but also prevent slipping or relative movement of the cam and carrier when said downward force is exerted.

It is a further object of the invention to provide an improved cam having an adjusting screw thereon for engagement with a part of the carrier to effect the previously mentioned lengthwise adjustment. The adjusting screw preferably enters a slot in the cam for engagement with a screw which clamps the cam to the carrier.

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

In the accompanying drawings, wherein a convenient embodiment of the invention is set forth,

Fig. 1 is a front elevation of part of a loom having an improved picking shoe applied thereto,

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Fig. 2 is an enlarged side elevation looking in the direction of arrow 2, Fig. 1,

Figs. 3 and 4 are enlarged vertical sections on lines 3—3 and 4—4, respectively, Fig. 2,

Fig. 5 is an enlarged horizontal section on line 5—5, Fig. 2,

Fig. 6 is a detailed horizontal section on line 6—6, Fig. 3,

Fig. 7 is a view of the carrier forming part of the shoe as seen in Fig. 2, but with the cam removed, and

Fig. 8 is a side elevation of the cam detached from the carrier and seen as viewed in Fig. 2.

Referring more particularly to Fig. 1, the loom frame 1 supports a bottom shaft 2 having secured thereto a gear 3 which meshes with another gear 4 on the top or crank shaft 5. The lay L is reciprocated in usual manner by connectors, one of which is shown at 6, on the top shaft.

The lay has a shuttle box 8 for a shuttle 9 to be picked by a picker stick 10 the lower end of which is pivoted at 11 to a rocker iron 12 on a rocker shaft 13. A lug strap 14 extending around the picker stick is attached to a sweep stick 15 the inner or left end of which as viewed in Fig. 1 is connected to a power arm 16 secured to a picking shaft 17. The latter rocks in front and back bearings 18 and 19, respectively, secured to the loom frame.

Secured to the rear part of the picking shaft is a picking shoe designated generally at S for cooperation with a picking roll 20 on an actuator or picking arm 21 secured to the bottom shaft 2. Whenever the picking roll engages the shoe S the shaft 17 will be rocked in a counter-clockwise direction as viewed in Fig. 1 to cause movement of the picker stick to the left to pick the shuttle 9 out of the box 8.

The matter thus far described is of common construction and operates in the usual manner.

The present invention relates more particularly to the construction of the picking shoe S. This shoe is formed with a hub 25 through which the rear end of the picking shaft 17 extends. The shaft 17 may have a plurality of integral keys 26 to enter a plurality of key slots 27 cut in the hub. The shaft 17 and hub 25 have a common axis and rock together in the bearings 18 and 19.

The hub is part of a cam carrier 30 having an integral vertical plate or wall 31 provided with a flat abutting surface 32 the plane of which is substantially parallel to the axis of the hub 25. Integral with the right end of wall 31 as viewed in Fig. 2 and extending to the left of the abutting

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surface 32 as viewed in Fig. 4 is a support lug 35 which extends in the direction of the length of the hub and has an upwardly facing support surface 36. This support surface is preferably parallel to the axis of the hub and is preferably parallel to a top upwardly facing stop or support surface 35 formed on the left upper end of the wall 31 as viewed in Fig. 2 and extending from the abutting surface 32 in a direction opposite to the lug 35. The wall is provided with screw threaded holes 39 and 40 for a purpose to be described. The hub 25 and wall 31 are connected by an arm or web 41 formed with a surface 42 which curves upwardly and to the left, as shown in Fig. 7.

The cam, designated generally at C, has a body 44 made with a flat surface 45 to engage the abutting surface 32 and has a cam surface 46 which extends upwardly from a low position at the right end 47 of the cam as viewed in Fig. 8 to a high position at the other end 48 of the cam. Cam surface 46 preferably extends somewhat above surface 42 of wall 31 for engagement with roll 20. The cam is provided with slots 50 and 51 located in the ends 47 and 48, respectively, thereof and these slots, which extend lengthwise in the cam in a direction substantially parallel to the hub axis, receive clamping screws 52 and 53, respectively, which are tapped into the previously mentioned screw threaded holes 39 and 40. The cam has a bottom support surface 54 which rests on surface 36 of lug 35.

The upper left end of the cam as viewed in Fig. 2 is formed with an integral stop or support lug 55 having a downwardly facing surface 56 which overhangs and normally engages the surface 38. When the right end of the cam, Fig. 2, is resting on the support lug 35 and the stop lug 55 is on surface 38 the slots will register vertically with their corresponding tapped holes 39 or 40 and the clamping screws can be passed through the slots and turned into the tapped holes to hold the cam tightly against the abutting surface 32.

In order to provide for adjustment of the cam along the carrier an adjusting screw 60 is screw threaded into the end 47 of the cam. This adjusting screw is preferably parallel to support surfaces 54 and 56, and is parallel to the axis of the hub when these surfaces engage the supporting surfaces 36 and 38, respectively. The adjusting screw is in register with the slot 50 so that it can enter the latter and engage the shank of the clamp screw 52, as shown for instance in Fig. 5. A lock nut 61 may be used to hold the adjusted setting of the screw 60.

In assembling the shoe the cam may be placed on the carrier 30 so that its surface 54 will rest on the lug 35 and its stop lug 55 will rest on the stop or support surface 38. The cam will then be moved along these supporting surfaces until it projects slightly above the surface 42 of the wall 31, after which the clamp screws 52 and 53 can be put in place to hold the cam on the carrier. The adjusting screw 60 will then be turned until it engages the screw 52 and will be given any additional turning needed to locate the cam correctly with respect to the carrier. If for instance it is desired to move the cam to the left along the carrier, Fig. 2, the screw 60 will be turned in one direction and act positively to move the cam relatively to the carrier. If on the other hand it is desired to adjust the cam to the right as viewed in Fig. 2 the screw 60 will be turned in the opposite direction and the cam slid along the support surfaces 36 and 38 until the screw 60 abuts the clamping screw 52. The clamping

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screws 52 and 53 will then be tightened to hold the cam against the plate or wall 31 in close engagement with the abutting surface 32 with the cam resting on and supported by the surfaces 36 and 38. The parts of the cam shoe will then be tight with respect to each other and in readiness for cooperation with the picking roll 20.

If the upper part of the cam surface 46 wears the adjusting screw can be turned in the correct direction to move the cam to the right, Fig. 2, while the screws 52 and 53 are slackened. During this adjustment the cam will slide on the surfaces 36 and 38 in a direction substantially parallel to the axis of the hub. The cam body 44 has an outer flat surface 68 preferably parallel to surface 45 to engage washers 69 under the heads of the screws 52 and 53.

During the picking operation roll 20 will exert a downward force on the cam but the latter will be held against downward motion relative to the carrier by engagement of its surfaces 54 and 56 with surfaces 36 and 38 on the carrier. The roll 20 will move in the direction of arrow *a*, Fig. 2, and any tendency of the roll as it approaches the high part 49 of the cam to move the latter to the left, Fig. 2, will be resisted by the clamping screws and also the adjusting screw 60 which is in engagement with the clamping screw 52.

From the foregoing it will be seen that the invention sets forth a picking shoe having a carrier formed with a hub for the picking shaft and having a cam made separate from the carrier and adjustable thereon in the direction of the axis of the hub. It will also be seen that the cam and carrier have cooperating parts which guide the cam in a direction substantially parallel to the axis of the hub when the cam is adjusted along the carrier by screw 60. In all longitudinally adjusted positions along the carrier the cam is supported by surfaces 36 and 38. Also, the cam has slots elongated in the direction of the length of the hub for the clamping screws, and adjustment of the cam with respect to the carrier can be effected by the adjusting screw 60 which engages one of the clamping screws. The screw 60 is also preferably parallel to the axis of the hub and is aligned with the bottom slot in the cam so that it can enter the slot for engagement with the clamping screw 52. Engagement of the screw 60 with the clamping screw 52 assists in resisting motion of the cam along the carrier as the roll 20 approaches the high point of the cam.

Having thus described the invention it will be seen that changes and modifications of the foregoing specific disclosure may be made without departing from the spirit and scope of the invention.

What is claimed as new is:

1. In a picking shoe for the picking shaft of a loom, a cam carrier having a hub for the shaft and provided with a flat abutting face the plane of which is substantially parallel to the axis of the hub, a support lug extending in the direction of the length of the hub projecting laterally from the carrier from one side of said abutting surface, said carrier having a stop surface substantially parallel to the support lug on the other side of said abutting surface, a picking cam having a part thereof for engagement with said support, a stop lug on the cam overhanging said stop surface on the carrier, and means securing the cam to said carrier against said abutting surface with the cam engaging said support lug and said stop lug engaging said stop surface.

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2. In a picking shoe for the picking shaft of a loom, a cam carrier formed with a hub for the shaft and having a flat abutting surface substantially parallel to the axis of the hub, support surfaces on the carrier transverse of the abutting surface parallel to each other and lying in planes parallel to said axis, a picking cam having slots therethrough extending in a direction substantially parallel to said support surfaces, means extending through said slots securing the cam to the carrier and against said abutting surface, and means to effect adjustment of the cam relative to the carrier in a direction substantially parallel to said support surfaces.

3. In a picking shoe for the picking shaft of a loom, a cam carrier having a hub for the shaft and having a flat abutting surface substantially parallel to the axis of the hub, a picking cam extending along said abutting surface and having slots therein extending in a direction parallel to said axis, clamping screws extending through said slots and screw threaded into said carrier to clamp the cam against said abutting surface, and an adjusting screw parallel to said slots screw threaded into the cam and engaging one of said clamping screws to vary the position of the cam relative to the carrier in a direction parallel to said axis.

4. In a picking shoe for the picking shaft of a loom, a cam carrier having a hub for the shaft and provided with cam supporting surfaces extending in a direction parallel to the axis of the hub, said carrier having an abutting surface transverse of said supporting surfaces and parallel to said hub, a picking cam having slots therein extending in a direction parallel to said axis, clamping screws extending through said slots and screw threaded into the carrier to clamp the cam against said abutting surface with the cam in engagement with said supporting surfaces, and an adjusting screw on the cam parallel to said cam supporting surfaces engaging one of said clamping screws and effective when turned in a given direction relatively to the cam to effect movement of the cam along said abutting surface.

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5. In a picking shoe for the picking shaft of a loom, a cam carrier having a hub for the shaft, a picking cam extending along said carrier in the direction of the length of the hub having a picking surface rising from a low point at one end thereof to a high point at the other end thereof, an adjusting screw in said one end of the cam parallel to the axis of the hub, said cam having slots therein parallel to the adjusting screw, one slot near said one end and the other slot near said other end of the cam, and a clamping screw extending through each slot screw threaded into the support and clamping the cam to the carrier, said adjusting screw engaging the clamping screw adjacent to said one end of the cam and being effective when turned in a given direction relatively to the cam to move the latter relatively to the carrier in a direction parallel to said axis.

6. In a picking shoe for the picking shaft of a loom, a cam carrier formed with a hub for the shaft and having a flat abutting surface substantially parallel to the axis of the hub, a picking cam extending along said abutting surface and having a slot therein substantially parallel to said axis, a clamping screw extending through the slot into the carrier to clamp the cam against said abutting surface, and an adjusting screw carried by the cam aligned with said slot engaging said clamping screw and effective when turned in a given direction to effect bodily movement of the cam along said abutting surface.

7. In a cam for a picking shoe provided with a clamping screw, the cam having a body formed with a cam surface rising from a low point at one end of the body to a high point at the other end of the body, said body having a slot therein for the clamping screw extending in a direction from said one end toward said other end of the body, and an adjusting screw in said one end of the body parallel to and capable of entering said slot for engagement with the clamping screw.

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