

UNITED STATES PATENT OFFICE.

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REVERSIBLE LOOM DOBBY KNIFE.

Application filed May 25, 1926. Serial No. 111,658.

This invention relates to improvements in loom dobbyes and it is the principal object of the invention to provide a reversible dobby knife to cooperate properly in either position with the hooks of the dobby.

The form of pattern control mechanism which is known in this country as a dobby comprises a pair of spaced knives which reciprocate in opposite directions and cooperate with hooks arranged in sets, one set for each knife. A pattern chain controls the vertical position of the hooks by means of so-called dobby fingers, a peg on the dobby chain lifting the corresponding finger to depress the associated hook and the hooks are connected in pairs to the dobby levers which in turn actuate the harness jacks. The knives are given their reciprocating movement by means of two rocker arms, one for the front ends and one for the rear ends of the knives, the rocker arm at the rear giving a slightly greater motion to the rear ends of the knives than to the front ends in order to produce the proper angle of the shed by giving a little more motion to the rear harness frames than is given to the front ones. Links connect the rocker arms with the knives and the latter are guided on supporting ways formed on the dobby frame.

As heretofore constructed dobby knives have had but one operative hook engaging edge which has usually been chilled in the molding operation and is so placed in the dobby as to engage the hooks when the latter are depressed. In order to insure continued contact between the hooks and the knives the latter have their hook engaging faces inclined downwardly and inwardly with respect to the hooks and it is a further object of my invention to provide a reversible dobby knife having two faces similarly disposed with respect to the axis of the knife and each so formed as to be downwardly and inwardly inclined when presented to the hooks.

It is a further object of the invention to provide a reversible dobby knife having a plurality of similarly formed hook engaging portions all of which may assume the same relative position with respect to the guiding ways and the hooks to the end that

no matter which of the knife portions is called upon to engage the hooks the latter will be properly engaged.

The dobby hooks are usually formed with a downwardly and inwardly extending lower edge and it is a further object of my invention to provide a reversible dobby knife so formed that in any of its positions it will have a receding upper face to engage and raise the hooks with a smooth motion.

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 claims.

In the accompanying drawings wherein I have shown one of several forms of dobbyes which may be used with my improved dobby knife,

Fig. 1 is a front elevation of a dobby and adjacent loom parts, a part of the dobby being broken away to show my improved knife in section,

Fig. 2 is a top plan view of the improved knife,

Fig. 3 is an enlarged cross section on line 3—3 of Fig. 2 showing the adjacent supporting ways,

Fig. 4 is a perspective view of the knife, and

Fig. 5 is a diagrammatic vertical section through the dobby showing the relation of the knife, hooks, controlling fingers, and pattern chain.

Referring to the drawings it will be seen that I have provided a loomside 10, arch 11, and dobby support 12. The dobby is formed of a pair of parallel spaced front and rear sides 13 and 14, respectively, between which extends a pin 15 on which is pivotally mounted a plurality of harness jacks 16. Each of the latter is pivotally connected to a dobby lever 17 the upper and lower ends of which are connected respectively with hooks 18 and 19.

As indicated in Fig. 5 the pattern chain 20 controls the vertical position of a plurality of dobby fingers 21 some of which have their inner ends upturned as at 22 to engage the lower hooks 19 and the others of which cooperate with lifter rods 23 to control the vertical position of the upper hooks 18. Said fingers move pivotally about a pin 24

fixed in the dobby sides. By means of the pattern chain 20, which may be given a movement every pick of the loom if the dobby is single index or every second pick of the loom is the dobby is double index, the fingers 21 will be raised or lowered according to the requirements of the weave and the hooks of the corresponding lever lowered or raised.

A rocker shaft 25 is journaled in the sides 13 and 14 and has keyed thereto a pair of rocker arms 26 one only of which is shown in Fig. 1. Said rocker arms are oscillated by means of a connector 27 which receives a regular vertical reciprocating movement every pick of the loom. The upper and lower parts of the rocker arms are provided with links 28 and 29, respectively, by means of which the dobby knives to be described are oscillated.

My improved knife is shown more particularly in Figs. 2, 3, and 4, and comprises a pair of aligned gudgeons 40 which receive the outer ends of the links. Adjacent each gudgeon is a guide and supporting portion 41 which may be rectangular in section and formed with a slight depression 42 defining spaced bearing surfaces. Said supporting portions move on ways 43 which in effect are the lower sides of slots 44 formed in the upper and lower portions of both front and back frames, there being two ways for each knife.

The portion of the knife lying between the guides 41 is substantially the same in cross section as indicated in Fig. 3, having a pair of acute angled edges 45 formed by an inclined face 46 on the narrower part of the knife and the receding face 47 on the broader portion of the knife. The edges 45 may be chilled if desired and both edges are symmetrically disposed with respect to the axis of the gudgeons 40. They are also placed so that in either position of the knife the edge which cooperates with the hooks will be at the same vertical distance above the adjacent ways 43. It is desirable to have the edges not only the same vertical distance above the ways, but also the same horizontal distance from the axis of the gudgeons 40 so that when a reversal is made the new edge 45 will assume the same position with respect to the hooks as previously existed with the old edge 45. As shown in Fig. 3 the obtuse angled edges defined by the intersections of the faces 46 and 47 are rounded so as to cooperate with the under edges of the hooks to give the latter a gradually rising motion when said hooks are in lower position and are to be engaged by the knife on the next outward movement thereof.

The parts of the dobby set forth in Fig. 1 are well understood with the exception of the improved knife and it is deemed that further explanation of the same is unneces-

sary, the upper knife moving in one direction while the lower knife moves in the opposite direction and the selected hooks producing the desired movement of the associated harness jacks either to cause vertical movement of the corresponding harness frames (not shown) or to leave them unmoved.

From the foregoing it will be seen that I have provided an improved dobby knife for the hooks of dobbies so formed as to have a plurality of edges each of which may be presented to the hooks so that when one edge is worn or becomes chipped another edge can be used without discarding the knife. It will further be seen that the broad upper surface of the knife in any of the different positions is inclined slightly and terminates in a rounded portion which cooperates with the hooks to give the same an easy rising motion. Obviously, the principle set forth herein is not limited in application to a knife having but two working edges. It will be seen from an inspection of Fig. 3 that the center of gravity of the hook engaging portion of the knife is in substantial alignment with the axis of the gudgeons.

Having thus described my invention, it will be apparent 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. A reversible dobby knife for looms having dobby hooks, said knife having at the ends thereof aligning gudgeons and having between the gudgeons a plurality of knife edges to engage the hooks, said edges all being symmetrically disposed with respect to the axis of the gudgeons.

2. A reversible dobby knife for looms having dobby hooks, said knife having aligning gudgeons on the ends thereof and having intermediate the gudgeons a plurality of hook engaging portions, said portions being substantially the same distance from and symmetrically disposed with respect to the axis of the gudgeons.

3. A reversible dobby knife for a dobby having hooks, said knife having aligning gudgeons at the ends thereof and having the intermediate hook engaging portions between the gudgeons of such cross section that the horizontal dimension thereof is greater than the vertical dimension, the longer top and bottom faces being inclined to cooperate with the hooks to raise the same gradually, and the shorter side portions being inclined to form with the top and bottom portions a plurality of acute angled hook engaging edges, all of said edges being symmetrically disposed with respect to the axis of the gudgeons.

4. A reversible dobby knife for dobbies

having hooks, said knife having a guide portion adjacent each end thereof, each guide portion having opposite bearing surfaces, the intermediate hook engaging portion of the knife having a plurality of hook engaging edges which are similarly disposed with respect to the bearing surfaces.

5. A reversible dobby knife for dobbies having hooks, said knife having aligning gudgeons at the ends thereof and having bearing portions having upper and lower flat bearing surfaces symmetrically placed with respect to the axis of the gudgeons, the intermediate hook engaging portion of the knife having a plurality of hook engaging edges, the edges all being equally spaced from the adjacent flat bearing surfaces.

6. A reversible dobby knife for dobbies having hooks, said knife having gudgeons at the ends thereof and having bearing portions having upper and lower flat bearing surfaces, the intermediate hook engaging portion of the knife having a plurality of hook engaging edges, the edges all being equally spaced from the adjacent flat bear-

ing surfaces, the gudgeons lying midway the knife edges in a horizontal direction.

7. In a loom dobby, a plurality of dobby hooks, a knife for the hooks, ways on which the knife is slidably mounted, said knife having a plurality of hook engaging edges and said knife being reversible to present each of the edges to hook engaging position, each hook engaging edge when in operative hook engaging position being the same distance from the ways.

8. In a loom dobby, a plurality of hooks, a knife for the hooks having aligning gudgeons at the ends thereof, links for the gudgeons by which the knife is reciprocated, said knife having a plurality of hook engaging edges, said knife being reversible to present any one of the edges to hook engaging position, the edges all being symmetrically disposed with respect to the axis of the gudgeons.

In testimony whereof I have hereunto affixed my signature.

JOHN W. GILES.