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A. PALMER

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ADJUSTABLE TUFT CUTTING KNIFE FOR AXMINSTER LOOMS

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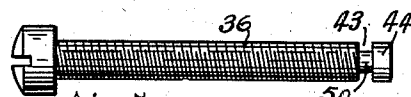
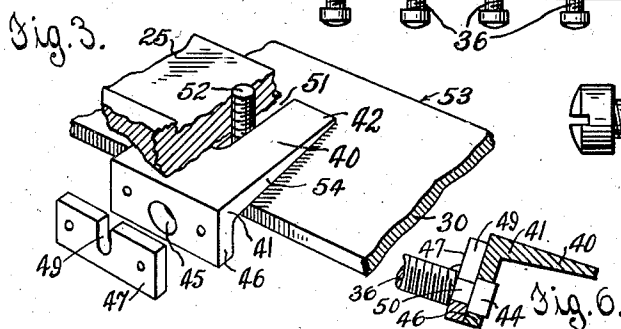
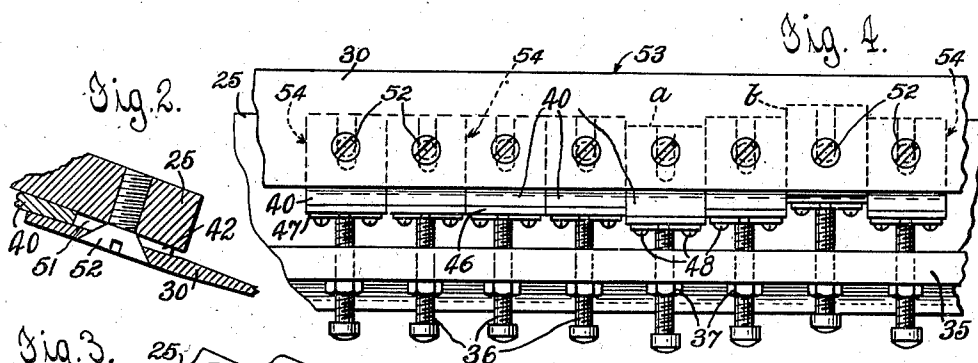
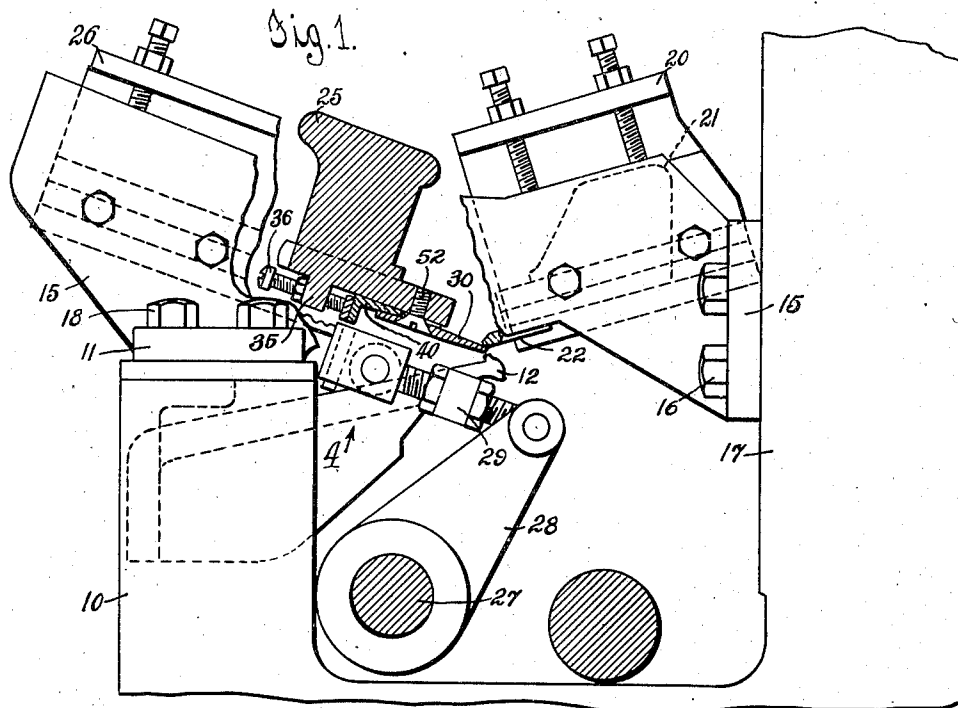


Fig. 5. 50
Inventor
Albert Palmer
By Bhas. T. Hawley
Attorney

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ADJUSTABLE TUFT CUTTING KNIFE FOR
AXMINSTER LOOMS

Albert Palmer, Worcester, Mass., assignor to
Crompton & Knowles Loom Works, Worcester,
Mass., a corporation of Massachusetts

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This invention relates to improvements in the pile tuft cutter knives or blades for Axminster looms and it is the general object of the invention to provide means by which independent adjustments can be made throughout the length of the knife to set the latter for proper cutting operations.

Axminster looms operate with front and back knives the purpose of which is to cut a row of tufts from the tube frame after the tufts have been incorporated into the fabric. One of the knives is behind the tufts and the other in front of them, and during the cutting operation the knives are moved relatively to each other in such a way that the point of cutting travels across the loom. In wide looms the knives are so long that it is difficult to mount them so that they will have proper shearing relationship throughout their length. It is an important object of my present invention to provide means affording multiple adjustments for at least one of the knives so that its shape can be altered to conform to the other knife. As set forth hereinafter I show the adjustment applied to the front knife, but I do not wish thus to be limited in the practice of my invention.

The front knife is mounted on a heavy casting or bar which extends across the loom over the fabric and is moved backwardly and then forwardly during each cutting operation. It has been customary heretofore to fasten the cutter blade directly to the under side of the bar and attempt to adjust the blade by changing the shape of the bar by means of truss rods or the like.

Such a means of adjustment, however, is distributed uniformly throughout the length of the knife and does not provide for adjustment of the blade at particular points along its length. It is another object of my present invention to provide a series of independently movable adjusting units distributed along the length of the bar and capable of causing local deformations of the blade. These units may include wedges interposed between the blade and its supporting bar and controlled so that they can be moved transversely of the blade to locate thicker or thinner parts thereof in contact with the blade. The blade is held against the adjusting units by screws or the like which cooperate with the units to control the shape of the blade.

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 an end elevation of a portion of an Axminster loom with parts broken away to show the front knife and its bar and my improved adjustment in vertical section,

Fig. 2 is an enlargement of a portion of Fig. 1 showing one of the adjusting wedge members and its relation to the knife and knife bar,

Fig. 3 is a perspective view of one of the wedges and the associated clamp plate detached from it, and showing part of the front knife and its bar,

Fig. 4 is a bottom plan looking in the direction of arrow 4, Fig. 1, and showing the adjusting units in different positions,

Fig. 5 is a detailed side elevation of one of the adjusting screws for wedge members, and

Fig. 6 is a detail vertical section through part of one of the wedge members and its associated clamp plate and adjusting screw.

Referring to Fig. 1, I have shown the frame 10 of an Axminster loom having a breast beam 11 from the rear edge of which extends a nose board 12. A bracket 15 has the rear end thereof secured as at 16 to an upright 17 forming part of the loom frame 10, and has its forward end secured as at 18 to the breast beam or some other stationary part of the loom frame. It is to be understood that there are two of these brackets 15, one at each end of the loom, but in Fig. 1 I show only one of them.

A guideway 20 is mounted on the rear end of bracket 15 and affords sliding support for the rear knife bar 21 to the lower forward edge of which is secured the rear cutter blade 22. Driving mechanism not shown operates in usual manner to move the bar 21 forwardly from its normal rear position for a tuft cutting operation of the loom, after which the bar 21 is returned to rear position.

A front knife bar 25 is slidably mounted in a guideway 26 secured on the forward part of bracket 15 and is moved backwardly and forwardly by shaft 27, arm 28 and link 29 when the shaft oscillates incident to a tuft cutting operation. A cutter blade or knife 30 is secured to the under rear edge of bar 25 in a manner to be described so that it can cooperate properly with the rear blade 22.

The knife or blade 30 extends across the loom and should be held in close shearing engagement with the rear blade throughout the cutting operation in order to insure proper severing of the tuft yarns. My present invention relates more particularly to means for mounting knife

or blade 30 on bar 25 so that this result may be accomplished.

In carrying my invention into effect I provide a rib 35 which extends downwardly from and along the length of front bar 25. Tapped in rib 35 are a number of screws 36 held in longitudinally adjusted position on the rib by check nuts 37. Each screw is part of an adjusting unit a number of which are arranged along the length of bar 25, and since all these units are alike only one of them will be described in detail.

A wedge member 40 tapered in the direction of its length and transversely of blade 30 has a relatively thick forward end 41 and a thin rear end 42. A circumferential groove 43 is cut in screw 36 near the rear end thereof and forms a head 44 which fits into a clear hole 45 in a laterally extending wall 46 projecting downwardly from the wedge. A clamping plate 47 held to wall 46 by screws 48 has a slot 49 therein extending upwardly and open at its top. The slot 49 aligns with the hole 45 but is of less width than the diameter of the hole. The neck 50 formed by groove 43 joins head 44 to the screw 36 and fits into slot 49 so that forward movement of the screws causes head 44 to move plate 46 and therefore the wedge 40 forwardly. When the screw moves rearwardly that part of it in front of groove 43 pushes the plate and wedge backwardly. A slot 51 in wedge 40 extends in the direction of the length of the wedge and is open at its rear end, and receives one of the screws 52 by which the blade 30 is secured to the bar 25.

In the practice of my invention the adjusting units, blade 30 and bar 25 will be assembled substantially as shown in Figs. 1 and 4 and the several screws 36 adjusted either backwardly or forwardly to provide proper engagement between each part of the cutting edge 53 of blade 30 and the opposite part of blade 22. This adjustment is made by turning screws 36 in the proper direction while the screws 52 are loose enough to permit movement of the wedges, after which the check nuts 37 and screws 52 are tightened.

If, for instance, a given part of blade 30 should be too low for proper cutting conditions the adjacent wedge 40 will be moved forwardly, as at a, Fig. 4, so that a narrower part thereof will engage the blade 30. If, on the other hand, it is found that a given part of blade 30 is too high the adjacent wedge 40 will be moved rearwardly as at b, Fig. 4, to locate a thicker part of the wedge in engagement with blade 30 and effect a slight lowering of that part of the blade. The wedges have parallel opposite sides 54 and when any wedge is moved transversely of the knife it will be guided by the sides of the adjacent wedges and be kept straight.

From the foregoing it will be seen that I have provided a simple means by which multiple adjustments can be made along the length of an Axminster loom tuft cutting knife to make it conform to any slight but unobjectionable irregularities which may exist in the companion knife. More specifically, it will be seen that the adjustment is effected by means of a plurality of adjusting units arranged along the bar and blade and each comprising a wedge 40, clamp plate 47 and adjusting screw 36 all movable transversely of the blade 30. The screws 52 serve to hold the blade against the wedges and cooperate with the latter to produce slight local deformations of the blade 30. Each screw 52 passes through the slot 51 of the corresponding wedge and clamps the latter against the bar 25.

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 tuft cutting mechanism for an Axminster loom, a knife bar extending across the loom, a cutter blade extending along said bar, a plurality of wedge shaped members located between said blade and said bar and tapered in a direction transversely of said blade, adjustable screws threaded into a portion of said bar and extending transversely of said blade, one screw for each member, means causing each screw and the associated wedge to move together transversely of said blade when the screw is turned in either direction relatively to said bar, and means holding the blade against said wedges and holding the latter against said bar.

2. In tuft cutting mechanism for an Axminster loom, a knife bar extending across the loom, a cutter blade extending along said bar, a plurality of adjusting units for the blade arranged along said bar, each unit including a member tapered transversely of said blade and a screw operatively connected to said member and screw threaded into said bar for movement toward and from said blade to move said member to different transverse positions relatively to said blade, and means holding said blade tightly against said units and holding the latter against said bar.

3. In tuft cutting mechanism for an Axminster loom having a bar and a cutter blade extending therealong, a plurality of blade adjusting units arranged along said bar, each unit including a member between said bar and blade tapered transversely of the latter and means cooperating with said bar to move said member transversely of said blade, and means to clamp said blade against said members and clamp the latter to said bar.

4. In tuft cutting mechanism for an Axminster loom having a bar and a cutter blade extending therealong, a plurality of blade adjusting units arranged along said bar, each unit including a member between said bar and blade tapered transversely of the latter and means cooperating with said bar to move said member transversely of said blade, and means passing through said members to clamp said blade against said members and clamp the latter to said bar.

5. In tuft cutting mechanism for an Axminster loom having a bar and a cutter blade extending therealong, a plurality of blade adjusting units arranged along said bar, each unit including a member between said bar and blade engaging and positioned by an adjacent member and tapered transversely of the blade and means cooperating with said bar to move said member transversely of said blade, and means to clamp said blade against said members and clamp the latter to said bar.

6. In tuft cutting mechanism for an Axminster loom having a bar and a cutter blade extending therealong, a plurality of blade adjusting units arranged along said bar, each unit including a member between said bar and blade engaging and positioned by an adjacent member and tapered transversely of the blade and means cooperating with said bar to move said member transversely of said blade, and means passing through said members to clamp said blade against said members and clamp the latter to said bar.

7. In an Axminster loom cutter bar having a

tuft cutting knife blade extending therealong, a plurality of blade adjusting units supported by and operatively connected to the bar, each unit having a part tapered transversely of the blade and located between and engaging the blade and bar and movable in directions toward and from the cutting edge of the blade to different positions relatively to the bar to locate the portion thereof engaged by the blade at different distances from the bar, and means holding the blade against said units.

8. In tuft cutting mechanism for an Axminster loom having a tuft cutting knife blade which has a given position and form during a tuft cutting operation, a second tuft cutting knife blade to cooperate with the first blade, a supporting bar along which said second blade extends, and a plurality of means arranged each tapered transversely of the blade and said means along and operatively connected to said bar and engaging said second blade and movable relatively to said bar and the second blade in directions toward and from the cutting edge of the blade to effect local independent adjustments of the latter relatively to said bar at points along the length of the latter to establish correct cutting relations between said blades.

9. In tuft cutting mechanism for an Axminster loom, a knife bar extending across the loom, a cutter blade extending along said bar, a plurality of adjusting units for the blade arranged along said bar, each unit including a member tapered transversely of said blade and formed with parallel sides engaging sides of adjacent tapered members, each unit including a screw operatively connected to said member and screw threaded into said bar for movement toward and from said blade to move said member to different transverse positions relatively to said blade, and means holding said blade tightly against said units and holding the latter against said bar.

10. In tuft cutting mechanism for an Axminster loom having a bar and a cutter blade extending therealong, a plurality of blade adjusting units arranged along said bar, each unit including a member between said bar and blade having parallel sides engaging sides of adjacent members and tapered transversely of the latter and means cooperating with said bar to move said member transversely of said blade, and means to clamp said blade against said members and clamp the latter to said bar.

11. In tuft cutting mechanism for an Axminster

loom having a bar and a cutter blade extending therealong, a plurality of blade adjusting units arranged along said bar, each unit including a member between said bar and blade tapered transversely of the latter and engaging and guided by adjacent members when moving transversely of the blade, each unit including means cooperating with said bar to move said member transversely of said blade, and means to clamp said blade against said members and clamp the latter to said bar.

12. An adjusting unit for the tuft cutting knife blade and knife bar of an Axminster loom, said unit comprising a wedge tapered in the direction of the length thereof, a screw extending from the wedge in the direction of the length of the latter and having the end thereof adjacent to the wedge formed with a peripheral groove, and means rigid with the wedge entering said groove and effective to cause said wedge and screw to move together.

13. An adjusting unit for the tuft cutting knife blade and knife bar of an Axminster loom, said unit comprising a wedge tapered in the direction of the length thereof, a wall extending laterally from said wedge, an adjusting screw for said unit having a peripheral groove in the end thereof adjacent to said wall, and means secured to said wall and entering said groove in such manner as to require the wedge, wall and screw to move together.

14. An adjusting unit for the tuft cutting knife blade and knife bar of an Axminster loom, said unit comprising a wedge tapered in the direction of the length thereof, a clamp secured to said wedge and having a slot therein, and a screw extending in the direction of the length of the wedge and having one end thereof extending on both sides of said clamp and provided with a reduced part located in said slot.

15. An adjusting unit for the tuft cutting knife blade and knife bar of an Axminster loom, said unit comprising a wedge member provided with a lateral wall having a circular opening therein, a clamp plate secured to said wall and having a slot therein aligned with said opening but of less width than the diameter of said opening, and a screw having a circumferential groove therein forming a head on one end of the screw located in said opening and forming a neck located in said slot.

ALBERT PALMER.