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Mildon

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[54] **PICK REMOVER**

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[52] **U.S. Cl.** .....**28/17,** 139/291 R

[51] **Int. Cl.** **D03j 1/04**

[58] **Field of Search** 26/2; 28/17, 18; 139/1, 21, 139/116, 291

[56] **References Cited**

UNITED STATES PATENTS

2,391,835	12/1945	Kavanagh	139/21
2,591,166	4/1952	Keen et al	28/17
2,389,809	11/1945	Moessinger	139/291

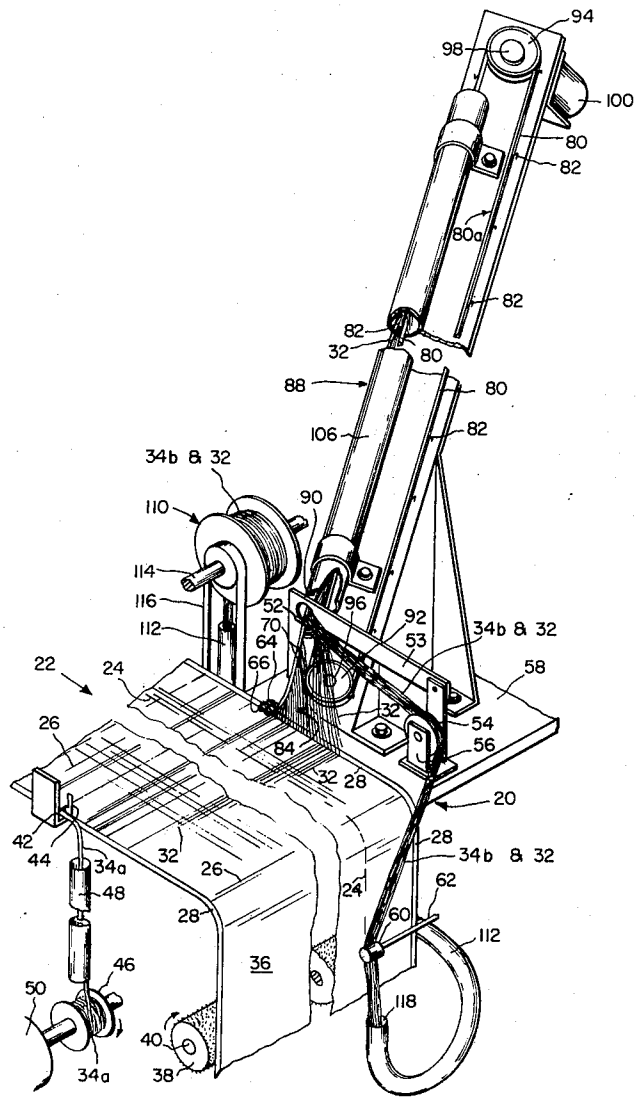
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[57] **ABSTRACT**

A part of, or an accessory for, a loom for weaving a looped pile fabric or the like which requires picks or the like for looping the fabric, including means to remove the picks comprising a belt with hooks to engage the picks for relative movement to a handling station while they are being removed from the woven material, and means to draw the picks from the handling station to a disposal station.

25 Claims, 2 Drawing Figures



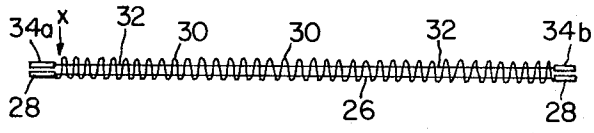


FIG. 1

FIG. 2

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PICK REMOVER

This invention relates to the art of removing picks or false picks from a woven fabric. There are many types of fabrics or textiles which are made in one or more processes which involve the use of a false pick to provide a loop or pile in the fabric. After the fabric is woven or manufactured, the picks must be removed as they are not a part of the fabric and are no longer necessary. Such picks, which are usually threads attached to a pair of false selveges, are usually removed by cutting the false selvege at one side of the material and pulling the false selvege on the other side of the material to remove the picks from the material. This is usually done by hand, and the hand operation may be simple with a small piece of light material. However, if the material concerned is a heavy, bulky material such as, for example, a 100-foot length of pile carpeting material, a hand operation would require an average of five persons working together. In addition, the hand operation would require some machinery to aid in handling the bulk of the carpeting.

The usual type of machinery of the prior art will comprise one or more rolls or tables. It will require two men on either side of the roll or table to move the carpet and a fifth person stationed at a position where the picks are pulled out to pull and bale the false selvege and picks. The hand operation of the prior art also permits the carpet to become distorted and has other disadvantages.

It is, therefore, an object of this invention to provide a loom, or an attachment for a loom, or an attachment for a carpet rolling or reeling device which will remove the picks by a mechanical operation, eliminating the need for manual work and reducing the required personnel for operating the machinery to only an occasional supervisory attendance, ordinarily usual in the operation of any mechanical device.

It is a further object of this invention to provide such apparatus which will remove the picks from a woven material without distorting the material.

It is also an object of this invention to provide such a device or attachment which will remove the picks as a step of a weaving operation so that a finished material will be produced by the loom or other weaving apparatus with the picks removed.

We attain these objects by providing a loom, or a loom attachment, or a material reeling attachment which has means to start the removal of the picks by pulling the pick selvege or false selvege to present an end of each pick to another means of the device which has moving pick engaging means, movable to a pick handling station, and pick selvege advance means to move the separated selvege and picks from the pick handling station to a pick disposal station.

In the preferred form of the invention as described herein, the selvege separator is in the form of a pulley displaced from the plane of movement of the material, the pick engaging means are in the form of hooks, preferably on a belt, and the pick handling station is substantially tubular so as to contain and guide the moving picks in a manner which will prevent entanglement with the balance of the machinery. The pick disposal station may be any type of machinery which bales and cuts the selvege and the picks after their removal from the material.

While we will use a carpeting material in demonstrating the construction and function of our pick removing device, it is to be understood that any similar type of material, or any material requiring the removal of picks, adapted to be used with the device, may be treated by our invention.

Further objects and advantages of the invention will appear in the specification hereinbelow. The invention is illustrated in the accompanying drawings in which:

FIG. 1 is an exploded diagrammatic view of the leading end of a piece of material showing a looped pile fabric in which the piles are spaced from the material by means of false picks attached to false selveges;

FIG. 2 is a perspective view with parts cut away, and;

Similar numerals refer to similar parts throughout the several views.

The preferred form of the invention is described herein as an attachment for a loom. However, it may be incorporated into new loom constructions as well as in attachments or accessories, and it is to be understood that the invention may also be embodied in an attachment for any type of material reeling device, whether a part of a loom or other type of construction. It is to be understood that the term "frame" or "body portion" shall mean the frame of a loom or the framework of the attachment itself, or both, depending on whether the invention is a part of a loom or other device, or an independent attachment or accessory therefor.

There is a frame **20** for the invention. The frame **20** may be in the form of a framework or housing or any other means capable of retaining the components of the invention in their desired positions. In its preferred form, the invention will cooperate with the rest of the machinery necessary to form a material having false picks supporting looped pile or the like. The weaving or material forming part of the machinery may be of any conventional type such as a carpet weaving loom having a warp pathway **22** along which the web of the carpet travels in the direction of the warp threads. In the usual material construction, there are warp threads **24** nd woof threads **26** substantially perpendicular thereto, and the woof threads **26** are joined at the edges of the material to the selvege **28** for the material.

Reference to FIG. **1** will show that in a loop pile fabric, we may provide loops **30** which are formed around woof threads in the form of false picks **32** joined to false selveges **34***a* and **34***b*. It can be seen that the purpose of the false picks **32** are to provide the form for the loops **30** to prevent the loops **30** from being drawn back into the material **36** during the manufacture thereof. It is not necessary to show the balance of the loom or material manufacturing machine since these are well known in the art and any type of loom for the purpose may be utilized.

Thus, in FIG. **2**, the carpeting material **36** is shown as it nears the end of the loom operation, and it is being reeled up on a take-up reel **38** of the loom which rotates on axle or shaft **40** attached to the main frame **20** of the device. Alongside the warp pathway **22** we provide a knife edge **42** on a knife **44** attached to the main frame **20**. As the material **36** is reeled forwardly, the knife edge **42** is positioned to cut false selvege **34a** on one side of the material to strip it off away from the material **36** and effectively cut the picks **32** which are

attached to it at the point shown by arrow X in FIG. 1. The severed selvege 34*a* continues to be reeled along onto a take-up reel 46 and may be guided to the take-up reel 46 by a guide tube 48. Take-up reel 46 may be driven off the main drive of the device through a transmission such as transmission 50, or it may have independent drive means or may be driven through a transmission off a motor such as motor 100.

As soon as picks 32 are cut at point X, any pull on selvege 34*b* will pull on cut picks 32 and start to remove them from the material 36. Thus, selvege 34*b* can be pulled from the material and is free to pull away from material 36 together with picks 32 which are still attached to it at their uncut ends adjacent selvege 34*b*. By providing a spacing or elevating pulley means such as an idler pulley 54 on a bracket 56 attached to frame means 58 which are in turn either a part of or attached to the main frame 20, and a guide means such as guide hook means 52, I provide means to space the selvege 34*b* from the material 36. Selvege 34*b* and the false picks 32 which are attached to it are pulled by a friction idler roller 60 on a shaft 62 attached to the main frame of the device. Selvege 34*b* is maintained between the friction idler roller 60 and the roller 38 which serves as a drive roller for the carpeting material 36 as well as the advance roller for the selvege 34*a*.

I have provided selvege restraining means in the form of one or more pin ring temples 64 mounted on friction bearings 66 either directly or by bracket means to the main frame 20. These selvege restraining means 64 are located at the plane of the warp pathway 22 and are positioned with sufficient friction to restrain the selvege 34*b* from free forward movement and yet permit the selvege advance means comprising rollers 38 and 60 to move the selvege 34*b* away in an increasing spaced relationship from selvege 28 at the edge of the material 36. Thus, because the guide means 52 is spaced away from the plane of the warp pathway 22, operation of the device will cause selvege 34*b* to become separated from the plane of the material 36, presenting the uncut ends 70 of picks 32, which are pulled by false selvege 34*b*, in a series forming a plane at an angle to the plane of the warp pathway 22 containing the material 36. This spacing or separating motion also commences the removal of the picks 32 as has been explained.

In order to complete the removal of the picks 32 in a suitable manner and to prevent entanglement, and for other reasons and advantages inherent in the invention, I provide a transmission chain or belt 80 having a plurality of pick engaging means such as hooks 82. The belt is arranged and positioned in a pathway which includes the plane 84 in which the ends 70 of the picks 32 are arranged substantially perpendicular to the plane of material 36, and the belt pathway also includes traversing a pick handling station 88 mounted on frame portion 58. The pick handling station 88 is designed to provide a confined area within which the picks 32 can be moved relative to their being pulled from the material 36 so that the flow of the picks 32 being removed can be controlled to prevent interference with the operation of the device.

The guide means portion 52 acts not only as a spacing means to space the selvege and picks away from the edge of the material 36, but also to guide and prevent the false selvege 34*b* and the cut pulled picks 32 from interfering with the moving parts of the device.

The belt pathway 80*a* is defined by wheels such as pulleys or sprockets 92 and 94 which are mounted on shafts 96 and 98 respectively, driven by a motor 100, or driven off the main drive of the device by any means known to the art. The pick handling station is preferably in the form of a tube 106 through which belt passes. Although I have shown a guide means 52 mounted on a bracket 53, in front of a mouth 90 of the tube 106, it may be mounted directly at the mouth 90 of the tube. However I prefer the construction shown in FIG. 2 of the drawings.

The speed of motor 100 is adapted to drive belt 80 to move the hooks 82 at a speed with relation of the forward speed of material 36 and false selvege 34*b* to ensure that there will always be a hook 82 within plane 84 to engage end 70 of a pick 32 so that each hook 82 will engage at least one or more picks with each succeeding hook 82 being able to engage at least one or more of the serially succeeding picks 32 advancing against the motion of the hooks 82.

OPERATION OF THE DEVICE

As the material 36 starts to come off the loom, it is pulled forward by advance roll 38. Selvege edge 34*a* is cut and selvege edge 34*b* is run through hook 52 and over pulley spacing means 54. The device continues to operate with hooks 82 engaging ends 70 of picks 32 which have been partially removed from the material 36 along with the ever-spacing false selvege 34*b*. False selvege line 34*b* is held taut between the forward pull of wheel 60 and the restraint of selvege restraining means 64 so that ends 70 will be serially uniform within a plane 84 for easy engagement by the hooks 82. Hooks 82 will then draw picks 32 into pick handling station 88, and at the same time picks 32 will be drawn forwardly by the advance of selvege 34*b* past guide 52, over pulley 54, toward advance roll arrangement of components 38 and 60; so that as the picks 32 are drawn into the pick handling station 88 by the sliding engagement of hooks 82, on their uncut ends 70, they may at the same time be drawn in a reverse direction, against the hooks 82 and around guide hook 52, by the forward movement of selvege 34*b* which is still connected to the picks 32 at uncut ends 70.

Selvege 34*b* will eventually be led either to a waste bin or preferably to a waste take-up reel 110 and the selvege 34*b* together with its picks 32 can be cut to be baled or otherwise treated and carted away. False selvege 34*b* is led to take-up reel 110 by means of a tube or tubing 112. Take-up reel is mounted on a shaft 114 and may be driven off the main drive of the device or by other power means to a transmission system comprising a belt 116 or other transmission means.

In the form of the device shown in FIG. 2 I show an advance means comprising rollers 38 and 60 as well as the take-up reel 110. I may eliminate roller 60 and provide that take-up reel 110 be the sole advance means for the false selvege 34*b*. In such case the selvege 34*b* is led directly to the mouth 118 of tube 112 and is pulled directly by the rotation of take-up reel 110.

In the operation of the device, the picks move in a fairly continuous manner, first away from the warp pathway into the pick handling station, by the hooks

82, and then in a reverse direction toward the false selvege strip 34*b* by the pull of the selvege 34*b*, and then in an advance direction with the selvege 34*b*. In this entire movement, the picks are held free and handled without permitting them to interfere with the normal operation of either the loom, or the attachment, or the combined operation. The result is that the material 36 will have all of the picks 32 removed automatically by mechanical means as described hereinabove.

While I have described my invention in its preferred forms, there are many forms which it may take within the scope of the claims hereinbelow, and I, therefore, desire to be protected for all forms coming within the claims as set forth hereinbelow.

Wherefore I claim:

1. A pick remover for removing false picks attached to false selvege from material moving along a material pathway, comprising frame means, pick handling station means, advance means to advance the false selvege, guide means to guide the false selvege in a pathway offset from the material pathway, and movable pick engaging means positioned on a pathway at least a part of which is lateral to the said false selvege part and through said pick handling station means, further comprising selvege spacing means and selvege restraining means arranged within a plane which includes the pathway for the movable pick engaging means, in which there is a main drive to move the material along said material pathway, and in which the advance means to advance the false selvege is connected to said main drive to run at a speed equivalent to the speed of the said material.

2. The pick remover as claimed in claim 1, in which the drive means for the movable pick engaging means moves said pick engaging means at a faster rate of speed than the selvege advance drive means moves the selvege.

3. The pick remover as claimed in claim 1, in which the selvege advance means comprises a drive roller and an idler roller, and the drive means for the movable pick engaging means comprises transmission belt means.

4. A pick remover for removing false picks attached to false selvege from material moving along a material pathway, comprising frame means, pick handling station means, advance means to advance the false selvege, guide means to guide the false selvege in a pathway offset from the material pathway, and movable pick engaging means positioned on a pathway at least a part of which is lateral to the said false selvege pathway and through said pick handling station means, further comprising selvege spacing means and selvege restraining means arranged within a plane which includes the pathway for the movable pick engaging means, in which the pick handling station means comprises an area enclosed by at least one wall and having at least one opening, and in which the pathway for the movable pick engaging means is positioned through the opening and at least a portion of the enclosure thus formed.

5. The pick remover as claimed in claim 4, in which the movable pick engaging means is an endless belt on a pathway adjacent in part to a side of the material pathway, and positioned to move through the area of the pick handling station means.

6. The pick remover as claimed in claim 5, in which the selvege spacer means is in the form of a wheel or roller.

7. The pick remover as claimed in claim 6, in which the selvege restrainer means is provided with at least one pin ring.

8. The pick remover as claimed in claim 4, in combination with at least one selvege or pick disposal means.

9. The pick remover as claimed in claim 8 further comprising cutting means to cut the waste selvege or picks.

10. The pick remover as claimed in claim 4, in the form of an attachment for a device which includes material reeling.

11. A pick puller system comprising material reeling means, comprising frame means, a web pathway, and means to reel a web of material having false picks, or the like, in an advancing direction, in combination with: pick pulling apparatus comprising; an elongated, enclosed, open ended, pick handling station means positioned in end relation to a first edge of the web pathway of the material reeling means, spacing means mounted with relation to said frame spaced from said web pathway to guide false picks away from said edge of said web pathway to form a series of pick portions extending away from said material in moving plane formation, pick engaging means movably arranged in a pathway in part contiguous to said plane formation and in part within the pick handling station means, and advance means to advance the false picks substantially in the advancing direction of the web of material wherein the part of the pathway of the pick engaging means is longitudinal to the elongated pick handling station means and lateral to said moving plane formation.

12. The pick puller system as claimed in claim 11 which includes means to restrain the movement of the false picks in the advancing direction of the web of material.

13. The pick puller system as claimed in claim 12, in which the means to restrain movement of the false picks is in the form of at least one roller having friction means to engage the pick ends.

14. The pick puller system as claimed in claim 12, in which the roller having friction means is in the form of at least one pin temple.

15. The pick puller system as claimed in claim 12, in which the friction means, the pick engaging means, and the pick advance means are comprised in the system with the pick engaging means between the pick advance means and the pick restraining means.

16. The pick puller system as claimed in claim 11, in which the elongated enclosed open ended pick handling station is in the form of a tube.

17. The pick handling station as claimed in claim 11, in which the spacing means is in the form of a pulley or roller offset from the web pathway edge.

18. The pick handling system as comprised in claim 11, in which the pick engaging means are in the form of hooks associated with an endless cable movably mounted along the pathway tangent to the plane formation and within the pick handling station enclosure.

19. The pick puller system as defined in claim 11, in which there are drive means to drive the means to reel the web in an advancing direction and to drive the advance means to advance the false picks.

20. A pick puller system comprising material reeling means, comprising frame means, a web pathway, and means to reel a web of material having false picks attached to false selveges, in an advancing direction, in combination with: pick pulling apparatus comprising pick handling station means positioned in end relation to a first edge of the web pathway of the material reeling means, spacing means mounted with relation to said frame means spaced from said web pathway to guide a first false selvege to offset it from said edge of said web pathway to form a series of pick portions in moving plane formation, pick engaging hook means on transmission means arranged in a pathway in part contiguous to said moving plane formation and in part within the pick handling station means, advance means to advance the false selveges substantially in the advancing direction of the web of material, and means to restrain the advance movement of the selveges, said transmission means pathway part within the pick handling station means being arranged in a direction lateral to and away from said moving plane formation so that the pick engaging hook means will move false picks away from the pathway of the first false selvege during the operation of the device.

21. The pick puller system as claimed in claim 20, in which the elongated pick handling station means comprises at least one wall.

22. The pick puller system as claimed in claim 20, in which the pick handling station means is comprised in a tubular formation having at least one open end.

23. The pick puller system as claimed in claim 22, in which there is a cutting means mounted on the frame of the system contiguous to a second edge of the web pathway and to a second false selvege positioned to cut the ends of the false picks attached to the second mentioned false selvege.

24. The pick puller system as defined in claim 20, in which the tubular pick handling station is disposed at an angle with respect to the web pathway.

25. The pick puller system as defined in claim 20, in which there are drive means to drive the means to reel the web in an advancing direction and to drive the advance means to advance the false selveges.

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