

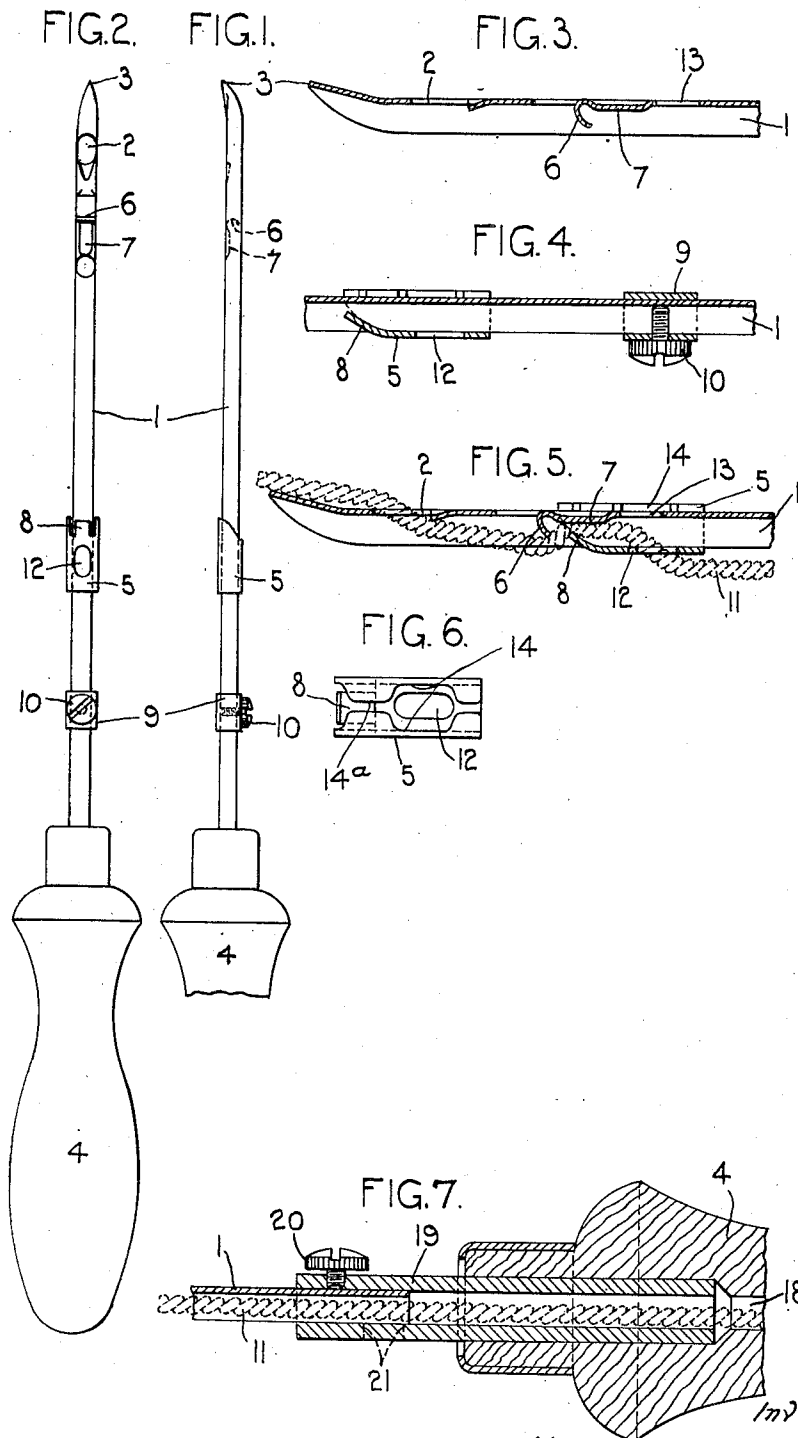
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NEEDLE FOR USE IN MAKING RUGS AND FOR OTHER PURPOSES

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NEEDLE FOR USE IN MAKING RUGS AND
FOR OTHER PURPOSES

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This invention relates to tools or appliances, conveniently termed needles, for use with a continuous length of wool or the equivalent in making rugs or for other purposes. The rugs in the making of which the needle according to the invention is particularly useful are of the kind in which the pile consists of portions of wool or the equivalent threaded from a continuous length through an appropriate backing or fabric ground such, for example, as an openwork string canvas or hessian, by means of a needle, the wool being knotted to the backing or being otherwise secured thereto.

It is an object of the invention to provide an improved needle by the use of which rugs of the kind referred to may be made more quickly, and with a pile of even depth, another object being to provide a needle by the use of which knotting of the wool to the backing where required, will be facilitated.

Whilst the needle according to the invention is particularly advantageous for use in making by hand rugs of the kind mentioned above, it may be used for other purposes, and it might form part of a machine.

A needle according to this invention has on the needle member proper a fixedly positioned stop and co-operating therewith a sliding clutch member which engages the wool or equivalent and which, at an appropriate time in the stroke cycle of the needle and by tension placed upon the wool or the equivalent, is brought into a position on the needle member in which such wool or equivalent is gripped between said clutch member and the stop to prevent its feed past the clutch member.

The expression "stroke cycle" is intended to define the movements of the needle for making a loop of wool or the equivalent on the open work canvas or other foundation material or backing for the rug or the like, and, it may be, knotting the wool or equivalent at such loop, the movements including that of inserting the needle into and withdrawing it from the backing, and, it may be, drawing it so as to tension the wool or equivalent and thereby tighten the knot.

It is in accordance with the present invention to provide on the needle member two stops between which the clutch member slides and with which stops it co-operates to determine the length of wool fed for each stroke cycle of the needle.

The slidable clutch member of the needle according to this invention is such that, during the forward stroke of the needle through the

backing of the rug or equivalent, it contacts with the backing so that the continued forward movement of the needle member proper carries the forward clutch stop away from it and at the same time draws a predetermined length of wool or the equivalent past it, the forward stroke and feed of wool or the equivalent being completed when the rear clutch stop engages the said clutch member.

In a needle according to this invention the needle member proper is channel shaped in cross section and the clutch member, which is slidable on the needle member or in the channel thereof, has a forwardly directed tongue projecting towards the base of the channel of the needle member, the wool or equivalent lying in said channel between the end of said tongue and the base of the channel.

It is also in accordance with the invention to mount the rear clutch stop on the needle member so that its position in relation to the forward clutch stop may be adjusted to determine the travel of the clutch member and thus the length of wool or the equivalent fed during each stroke cycle of the needle.

It is within the invention to provide the needle with a handle through which the wool or equivalent may pass, the wool or equivalent also passing through the rear clutch stop and lying in the channel of the needle proper between said stop and the sliding clutch member.

In the description which follows reference will be made to the accompanying drawing in which,—

Fig. 1 is a side elevation of a needle according to one embodiment of the invention.

Fig. 2 is an underneath view of the needle shown in Fig. 1.

Fig. 3 is an enlarged longitudinal section of the end portion of the needle member proper shown in Figs. 1 and 2, the portion illustrated including the point, the eye and the forward clutch stop.

Fig. 4 is a fragmentary sectional view to the same scale as Fig. 3 of a portion of the needle member proper and showing the clutch member and rear clutch stop shown in Figs. 1 and 2.

Fig. 5 is a view similar to Fig. 3 but showing a portion of wool or equivalent in position in the needle and held by the clutch member shown in Fig. 4.

Fig. 6 is a plan of the clutch member shown in the preceding figures removed from the needle member proper, and

Fig. 7 illustrates a manner of mounting the

needle in a handle a portion of which is employed to form the rear clutch stop.

Referring firstly to Figs. 1 to 6 inclusive, 1 is the needle member proper having an eye 2 adjacent its point 3 and being equipped at the end remote from the point with appropriate handle 4. 5 is a sleeve-like clutch member which slidably embraces the needle proper. The needle proper or needle member 1 is channel shaped in cross section and may be straight as shown in Figs. 1 and 2 or may be curved as desired. In the latter case the channel of the needle member would be on the convex side of the said needle member. Adjacent the eye 2 of the needle, the metal of the base of the channel is cut or slit and a tongue-like portion 6 is bent or pressed into the channel as clearly shown in Fig. 3. This tongue 6 constitutes the forward clutch stop. Immediately in rear of the clutch stop 6 the metal of the base of the channel is pressed for an appropriate distance towards the open side of the channel as at 7. The sleeve-like clutch member 5 embracing and sliding on the needle member 1 has an inturned tongue 8 directed towards the base of the channel in the needle member 1. 9 is a short sleeve-like member embracing and slidable on the needle member 1 and adapted to be clamped in a predetermined position by a clamping screw 10. The part 9 constitutes the rear stop for the clutch member 5. A portion of the wool 11 is shown in Fig. 5. The wool extends through a hole 12 in the clutch member 5 and passes between the tongue 8 of the clutch member and the base of the channel in the needle member 1, and thence through the eye 2 of the needle. In Fig. 5 the clutch member is shown in its forward position gripping the wool. As the clutch member approaches its forward position, the pressure and frictional hold of the tongue 8 on the wool is increased by the pressed-in portion 7, and on the clutch reaching the position shown in Fig. 5 the wool becomes firmly held between the end of the tongue 8 and the forward stop 6. To some extent also the wool is held between the tongue 8 and the pressed-in portion 7.

It will be convenient to describe now the manner in which the needle is used, and the functioning of its parts, in making a rug. The needle is first threaded, in a manner to be described in detail later, and an appropriate length of wool, say about 6", is drawn through the eye 2 of the needle and left free, the clutch member 5 being held by the operator rearwardly of the pressed-in portion 7 until approximately the required length of wool has passed the eye. Continued tension on the free end of the wool will draw the clutch into the position shown in Fig. 5 and cause the wool to be held against further feed. In starting up the work, the wool must be knotted to the backing, which may be done in any convenient manner. For example, the threaded needle may be inserted in the openwork string canvas or equivalent backing from the side thereof on which the pile is to be formed, it being passed under one or more threads of the backing, according to the nature of the backing being worked upon, so that the point of the needle issues as well as enters at the pile side of the backing. As the needle is pushed forwardly, and owing to the friction of the wool in the eye of the needle, it carries a loop or bight of wool through the backing. In the forward movement of the needle the clutch member 5 will come into contact with and bear against the backing and the needle will travel through the

clutch member, drawing wool past the latter, until the clutch member is engaged by the rear stop 9 on the needle. The needle is then partially withdrawn from the backing and the free end of the wool is passed by the operator through the bight of wool between the backing and the eye of the needle, and the withdrawal of the needle completed. On the needle being withdrawn the friction of the wool on the tongue 8 of the clutch member again draws such member along the needle into the position shown in Fig. 5, leaving a portion of wool extending between the needle and the backing, which portion, by pulling on the needle whilst holding the backing and the free end of the wool, is put in tension and the knot which has been formed is drawn tight.

It will be remembered that on the insertion of the needle in the backing, wool was fed past the clutch as the needle passed through the clutch member. A similar feed takes place at each insertion or forward stroke of the needle. Thus of the portion of wool which passes through the canvas at each insert of the needle, which is equal in length to twice the distance between the eye of the needle and the canvas, one half is the feed. When the needle was withdrawn after the first described insertion with the exception of the small amount taken up in the actual knot, all of the length of wool comprised in the bight which was pushed through the backing was drawn back through the backing and obtains between the needle and the backing, the friction of the wool on the clutch having drawn the clutch into the position shown in Fig. 5 as already mentioned.

To proceed with the work the needle is again inserted in the backing in a manner similar to that already described, but, of course, at the next hole or position therein, and is moved forwardly through the backing, the clutch member again engaging the backing and the needle travelling through the clutch member until the rear stop 9 contacts with it as previously described.

The insertion of the needle does not draw through the canvas all the wool obtaining between its eye and the knot previously formed; there remains a slack portion of wool extending from the said knot which forms a loop on the pile side or face of the canvas. The needle is now drawn backwardly to a certain extent, and the said loop of slack wool is passed by the operator through the bight of wool obtaining between the backing and the eye of the needle, and such loop is then held by the operator. The withdrawal of the needle is completed and it is pulled to tighten the knot or stitch so formed. The tension placed upon the wool draws the clutch member 5 from its position against the rear stop 9 into the position shown in Fig. 5 and the wool is gripped between the tongue 8 and the stop 6 so that a proper tightening of the knot will be effected. As before, a length of wool will obtain between the stitch or knot so formed and the eye of the needle and this length of wool will provide a portion of the wool to be passed through the canvas at the next insertion of the needle and also the length of slack wool required to provide the loop which remains, and forms part of the pile of the rug, after the next withdrawal of the needle.

The stroke cycle as described will be repeated and to form the pile of the rug the loops would be cut. This cutting may be effected at any convenient time either as the work proceeds or after the work is finished.

It will be understood that the needle is employed with a continuous length of wool, and in

order to facilitate passing the free end of the wool under the tongue 8 of the clutch member 5, a hole 13 may be provided in the base of the channel of the needle member 1 and a hole or wide portion 14 of a slot through clutch member 5, this hole or slot portion 14 being opposite the hole 12 already referred to. A slot portion 14^a Fig. 6, extends from the hole or slot portion 14 to the forward end of the clutch member. The clutch member may be formed from a portion of tube of rectangular cross section, but conveniently and as shown it is formed from a piece of sheet metal bent or pressed to shape, the slot portions 14, 14^a being provided by appropriately shaping the metal blank. The free end of the wool is passed through the hole 12 and then through the hole 13 and slot 14 and the free end is then held by the operator. On moving the clutch member 5 rearwardly towards the stop 9 the tongue 8 will ride over the wool in the channel of the needle member proper, the slot 14^a permitting the clutch member to pass clear of the free end portion of the wool. The free end of the wool is then withdrawn from the hole 13 in the base of the channel of the needle member and passed through the eye 2 of the needle.

It will be appreciated that on each insertion of the needle into the backing the wool is drawn past the tongue 8 of the clutch member 5 as the needle passes through the member 5. The length of wool which passes the clutch at each inward stroke of the needle depends on the position of the rear clutch stop 9 and thus by varying the position of the stop 9 the size of the loops may be varied and the pile of the rug made of the desired thickness.

The wool may pass through a bore 18 in the handle in which the needle is mounted as shown in Fig. 7.

In Fig. 7 the needle member 1 is slidably entered in an elongated socket or tubular member 19 one end of which is a force fit in the wooden or other handle 4. A clamping screw 20 serves to hold the needle member 1 in the socket 19. The outer end of the socket 19 conveniently constitutes the rear stop for the clutch member 5. By adjusting the extent to which the needle member 1 extends into the socket 19 the distance between the forward clutch stop and the end of the socket 19 constituting the rear clutch stop may be adjusted and thus the desired length of wool be fed at each stroke of the needle. If desired, instead of the wool 11 entering the needle through the bore 18 in the handle 4 the wool may enter through an aperture 21 in the wall of the socket 19.

The needle member 1 shown in the drawing and referred to as channel shaped conveniently is of rectangular channel section, but if desired it may be of other appropriate channel section, for example of U or C shape in cross section.

Further, if desired, the channel section member constituting the needle member proper may have its edges inturned and the clutch member, instead of embracing and sliding on the needle member, may be arranged to slide in the channel and be retained therein by the inturned edges thereof, a portion of the clutch member projecting outwardly between the inturned edges of the channel to engage the backing on the forward stroke of the needle. In such case the clutch member may be channel-shaped in cross section with the open side of the channel lying next the base of the channel in the needle member proper.

The needle member may be made of any suitable metal, such for example as brass, and may have a solid point of a harder metal or alloy, such for example as rustless or stainless steel.

Some other variations in constructional details described herein with reference to the drawing might be made without departing from the invention, for instance, the forward clutch stop 6 and/or the surface 7 might be provided by a separate piece of metal appropriately secured in place in the channel of the needle member 1.

It may be pointed out that when working with hessian as a backing the wool or equivalent usually is not knotted, but is secured otherwise after being threaded into the hessian. The operator holds the wool or equivalent which has been passed through the hessian, whilst the needle is being withdrawn so that a loop remains projecting from the hessian.

What I claim is:—

1. A needle for the purposes indicated, comprising, in combination with the needle member proper having an eye adjacent its pointed forward end, a clutch member slidable on the portion of said needle member rearward of said eye and adapted by engagement with the work during the inward stroke of the needle to be moved rearwardly in relation to the needle member and the wool or equivalent to effect a feed of the latter past the clutch member equal in length to the rearward travel of said clutch member, a rear clutch stop on the needle member adapted to be engaged by the clutch member to predetermine its maximum rearward travel, a part comprised in the clutch member in constant frictional engagement with the wool or equivalent whereby the clutch member will be moved forwardly on the needle member by and with the wool or equivalent when, after the outward stroke of the needle, the operator holds the appropriate loop of the wool or the equivalent and by pulling the needle away from the work draws such wool or equivalent through the eye of the needle to an extent equal to said feed past the clutch member, and a forward clutch stop on the needle member rearward of its eye to limit the forward travel of the clutch member and provide a means between which and said part of the clutch member the wool or equivalent will be gripped when, at the end of such forward travel of the clutch member, the tensioned wool or the equivalent draws the clutch member into gripping relation with such stop.

2. A needle as claimed in claim 1, and having its rear clutch stop adjustably positioned on the needle member to permit the maximum rearward travel of the clutch member to be varied at will.

3. A needle as claimed in claim 1 and having its rear clutch stop constituted by a sleeve slidably embracing the needle member and equipped with a screw for clamping it in a position on the needle member selected according to the required maximum rearward travel of the clutch member.

4. A needle as claimed in claim 1, having the rear end of the needle member slidably mounted in a sleeve itself mounted in and projecting forwardly from a handle, the forward end of the sleeve constituting the rear clutch stop and the position of the sleeve on the needle member being adjusted according to the required maximum rearward travel of the clutch member, means being provided for retaining the sleeve in its adjusted position on the needle member.

5. A needle as claimed in claim 1, having the rear end of the needle member slidably mounted in a sleeve itself mounted in and projecting forwardly from a handle, the forward end of the sleeve constituting the rear clutch stop and the position of the sleeve on the needle member being adjusted according to the required maximum rearward travel of the clutch member, means being provided for retaining the sleeve in its adjusted position on the needle member, and a bore being formed longitudinally through the handle through which bore and said sleeve the wool or equivalent enters the needle.

6. A needle for the purposes indicated, comprising in combination, a needle member proper channel shaped in cross section and having an eye adjacent its pointed forward end, a clutch member embracing and slidable on the portion of said needle member rearward of said eye and adapted by engagement with the work during the inward stroke of the needle to be moved rearwardly in relation to the needle member and the wool or equivalent to effect a feed of the latter past the clutch member equal in length to the rearward travel of said clutch member, a rear clutch stop on the needle member adapted to be engaged by the clutch member to predetermine its maximum rearward travel, a forwardly directed tongue comprised in the clutch member and projecting towards the base of the channel of the needle member and in constant frictional engagement with the wool or equivalent lying in said channel whereby the clutch member will be moved forwardly on the needle member by and with the wool or equivalent when, after the outward stroke of the needle, the operator holds the appropriate loop of the wool or the equivalent and by pulling the needle away from the work draws such wool or equivalent through the eye of the needle to an extent equal to said feed past the clutch member, and a forward clutch stop on the needle member rearward of its eye to limit the forward travel of the clutch member and provide a means between which and said tongue of the clutch member the wool or equivalent will be gripped when, at the end of such forward travel of the clutch member, the tensioned wool or the equivalent draws the clutch member into gripping relation with such stop.

7. A needle as claimed in claim 6 having rearward of its eye a rearwardly directed tongue formed by slitting and turning inwardly the base of the channel in the needle member proper, said tongue constituting the forward clutch stop.

8. A needle as claimed in claim 6 and having a raised surface in the base of the channel in the needle member proper immediately in rear of the forward clutch stop operating to increase the friction obtaining between the tongue of the clutch member and the wool or the equivalent as the clutch member approaches said stop.

9. A needle as claimed in claim 6 having rearward of its eye a rearwardly directed tongue formed by slitting and turning inwardly the base of the channel in the needle member proper, said tongue constituting the forward clutch stop, and having a portion of the base of said channel im-

mediately in rear of said stop raised above the surface of the remainder of the base of said channel and operating to increase the friction obtaining between the tongue of the clutch member and the wool or the equivalent as the clutch member approaches said stop.

10. A needle as claimed in claim 6, having in the wall of the clutch member lying next the base wall of the channel of the needle member a slot open at the forward end of the clutch member and through the wall of the clutch member remote from the base of the said channel a hole opposite a portion of said slot, and having through the said base wall rearwardly of the forward clutch stop a hole, whereby the threading of the needle may be readily effected, the free end of the wool or equivalent being passed through said holes and slot, when aligned, from the side of the clutch member remote from the base of the channel and the clutch member being moved rearwardly to bring the wool or equivalent under the tongue of the clutch member, the wool being subsequently withdrawn from the hole in said base wall and threaded through the eye of the needle.

11. A needle for the purposes indicated, comprising, in combination, a needle member proper channel shaped in cross section and having an eye adjacent its pointed forward end, a clutch member embracing and slidable on the portion of said needle member rearward of said eye, a forwardly directed tongue on the clutch member projecting towards the base of the channel of the needle member and in constant frictional engagement with the wool or equivalent lying in said channel, a forward clutch stop on the needle member rearward of its eye and constituted by a tongue formed by slitting and turning inwardly the base of the channel in the needle member, between which stop and said tongue of the clutch member the wool or equivalent is gripped at the end of such forward travel of the clutch member, the tensioned wool or the equivalent drawing the clutch member into gripping relation with such stop, a portion of the base of the channel in the needle immediately in rear of the forward clutch stop raised above the surface of the base of the channel, a rear clutch stop sleeve adjustably positioned on the needle member, means for retaining said rear clutch stop in a selected position, a slot in the wall of the clutch member lying next the base wall of the channel of the needle member and having its forward end open, a hole through the opposite wall of the clutch member, a hole through the base wall of the channel of the needle member at a position intermediate the clutch stops and adapted to be aligned with the hole and slot in the clutch member for threading the needle, and a handle on the needle member.

12. A needle as claimed in claim 11, and having the adjustable rear clutch stop sleeve mounted in and projecting forwardly from the handle, the latter having a bore extending longitudinally through it, through which bore and said sleeve the wool or equivalent enters the needle.

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