This invention relates to needles such as are used in tufting machines and other machines for performing sewing operations and the object of the invention is to provide improvements by which the threading of the needle may be facilitated.

The needle herein illustrated is in some respects similar to that shown in United States Patent No. 1,450,101, March 27th, 1923, in that it is provided adjacent its pointed end with an eye and is also provided with a central thread-receiving bore extending to the eye and with a threading slot extending longitudinally of the bore and opening therein, the mouth of the slot being of less width at the diameter of the bore and presenting relatively sharp edges which are directed toward each other.

The needle illustrated in the above-mentioned patent is also provided with a transverse opening at the heel end of the needle which communicates with said bore and in threading up said needle it is necessary to first insert the thread through said transverse opening and then draw the thread longitudinally of the slot, which operation draws the thread into the bore, and finally to insert the thread through the eye at the pointed end of the needle.

In the tufting machine with which the needle illustrated in the above-mentioned patent is used the needle is secured to a needle bar which reciprocates in a guide and in order to facilitate the insertion of the thread through the transverse opening of the needle when the latter is to be threaded up the needle bar was made in two sections hinged together so that the needle might be swung away from the guide sufficiently to give access to the transverse opening.

My present invention provides a novel construction by which the needle can be threaded while it is in its normal position and entirely from the front thereof. This end is accomplished by so constructing the needle that a portion of the threading slot is widened to present a threading opening which has sufficient transverse dimensions to freely receive the thread or cord and by providing a threading finger which overlies a portion of the opening and is so arranged that by drawing a loop of the cord or thread around the finger the latter will be guided into the threading opening, after which by simply drawing on the thread or cord in the direction of the slot said thread or cord will be drawn through the slot to the eye as in the construction shown in the above-mentioned patent.

In order to give an understanding of the invention I have illustrated in the drawings a selected embodiment thereof which will now be described after which the novel features will be pointed out in the appended claims.

Fig. 1 is a front view of a needle embodying my invention showing a portion of the needle bar to which it is secured;
Fig. 2 is a side view of Fig. 1;
Fig. 3 is an enlarged fragmentary view showing the manner in which the threading finger operates to guide the thread into the threading opening;
Fig. 4 is an enlarged front view of the portion of the needle having the threading opening with the threading finger shown in dotted lines;
Fig. 5 is a side view of Fig. 3 looking toward the left;
Fig. 6 is a view similar to Fig. 5 with a portion of the needle and the guiding finger in section on the line 6-6, Fig. 3;
Fig. 7 is an enlarged section on the line 7-7, Fig. 6 showing a cord or thread being drawn under the threading finger into the threading opening;
Fig. 8 is an enlarged section on the line 8-8, Fig. 6 showing the thread or cord after it has been drawn into the threading opening;
Fig. 9 is a fragmentary view of the threading member.

I indicates a needle adapted for use in a tufting machine such as that shown in United States Patent No. 319,954, May 8th, 1906 or for use in some other similar machine adapted to carry out a sewing operation. This needle is formed with a pointed end 2 and is provided with an eye 3 extending transversely therethrough adjacent the pointed end.

The needle is shown as secured in a needle bar 4 of any suitable or usual construction.

The needle is of that type which is provided with a central thread-receiving bore 5 leading to the eye 3 and through which the thread or cord 6 is led to the eye. The needle is also provided with a longitudinal threading slot 7 which communicates with the bore 5 and terminates at the eye 3.

The needle is made so as to present two relatively sharp lips or edges 8 at the mouth of the slot 7, said lips or edges 8 being spaced...
a distance apart slightly less than the diameter of the thread or cord 6 all as illustrated in the above-mentioned Patent No. 1,450,101.

As stated above my present invention relates to a novel means for introducing the thread or cord into one end of the bore 5 and in a position whereby it may be drawn down through the slot 7 to thread the needle. At some portion in its length, and preferably at the end adjacent the heel of the needle, the slot 7 is widened as shown at 9 to present a threading opening which is wide enough to freely receive the thread or cord 6. This threading opening 9, which leads to the bore 5, communicates with the slot 7 through the converging throat 10.

The needle is threaded up by first introducing a loop of the thread or cord into the bore 5 through the threading opening 9 and then drawing on one end of the thread or cord to pull it through the throat 10 into the slot 7 and down the slot to the eye 3.

For assisting in introducing the thread into the threading opening 9 employ a threading member 11 which is provided with a threading finger 12 that lies against the needle and extends across a portion of the threading opening 9 and the throat 10. The threading member 11 is shown as in the form of a plate and the threading finger 12 may conveniently be formed thereon by providing the plate with an eye 13 adjacent one end and with an inclined slot 14 leading to the eye. This threading member is so placed with reference to the needle that the eye 13 registers with the threading opening 9 and the end 15 of the threading member extends just beyond the converging throat 10.

The threading member is also of such a transverse dimension that the pointed end of the threading finger 12 extends laterally beyond the needle and said member has such a shape that the end 15 thereof and the portion in which the eye 13 is formed lies against the needle as shown in Figs. 6 and 8. This threading member may be secured in any suitable way and I have herein illustrated it as attached to the needle bar 4 by means of a clamping bolt 16. The Shank or body of the threading member 11 is resilient and hence the lower end thereof rests resiliently against the needle.

In threading up the needle a loop 17 of the thread 6 is passed around the threading finger 12 as shown in Fig. 5 and is drawn between said finger and the needle, the resiliency of the threading member allowing it to spring away from the needle sufficiently to permit the thread or cord to be drawn into the eye 13 as shown in Fig. 7. When one leg of the loop 17 has been drawn into the eye 13 said loop will drop into the threading opening 9 due to the resiliency of the threading member 11 and at this time the upper leg of said loop 17 will pass through the eye 13 and the threading opening 9 into the thread receiving bore 5 and the lower leg will emerge from under the end 15 of the threading device at the point where the latter overhies the slot 7. The thread is thus crowded into the converging throat 10 and if the lower leg is then drawn downwardly the thread will be drawn through the throat 10 in to the slot 7 and because the thread is gripped by the edges 8 of the slot said thread will be drawn down the slot to the eye 3 thus placing the thread in the thread-receiving bore 5. The end of the thread is then inserted through the eye 3 as in the above-mentioned patent thus completing the threading operation.

It will be seen that the operation of threading the needle thus involves merely pulling a loop of thread underneath the threading finger 12 and then drawing downwardly on the lower leg of the loop to draw the thread through the slot into the thread-receiving bore. This operation can be performed entirely from the front of the needle and without requiring that the needle should be removed from its guide as in the construction shown in the above-mentioned Patent No. 1,450,101.

I claim:

1. A needle having a central thread-receiving bore and a single longitudinally-extending slot communicating with the bore in a radial direction, the mouth of the slot being of less width than the diameter of the bore and presenting relatively sharp edges directed toward each other and situated equidistant from the center of the bore, said needle also having at one end of the slot and in line therewith a threading opening which is wider than the slot, said opening communicating with the bore and also communicating with the slot through a converging throat, and said needle further having at the other end of the slot an eye extending transversely therethrough, in combination with a threading finger separate from the needle and extending across the converging throat and the adjacent portion of the threading opening, said threading finger being resiliently held against the needle whereby when a thread or cord is drawn under said finger the portion of the cord beneath the finger will be forced in the threading opening and the converging throat and the needle may then be threaded by drawing the cord or thread longitudinally of the slot and into the bore and subsequently inserting the end of the thread through the eye.

2. A needle having a central thread-receiving bore and a single longitudinally-extending slot communicating with the bore in a radial direction, which slot is of less width than the diameter of the bore, said needle also having a threading opening leading to the bore and communicating with the slot through a converging throat, said opening being...
ing wider than the slot, in combination with the threading member separate from the needle and resiliently held thereagainst, said threading member having an eye registering with the threading opening, an open-ended slot of less width than the diameter of the eye leading to said eye, and a pointed threading finger forming one wall of the slot and extending across a portion of the threading opening and said throat.

In testimony whereof, I have signed my name to this specification.

OSCAR TERVO.