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R. SEYFARTH

DEVICE FOR FIXING THE FREE THREAD ENDS OF THE SPOOLS OF EMBROIDERY MACHINES

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Fig. 1

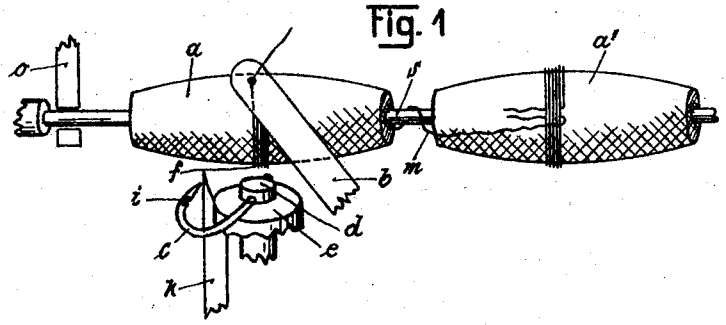


Fig. 2

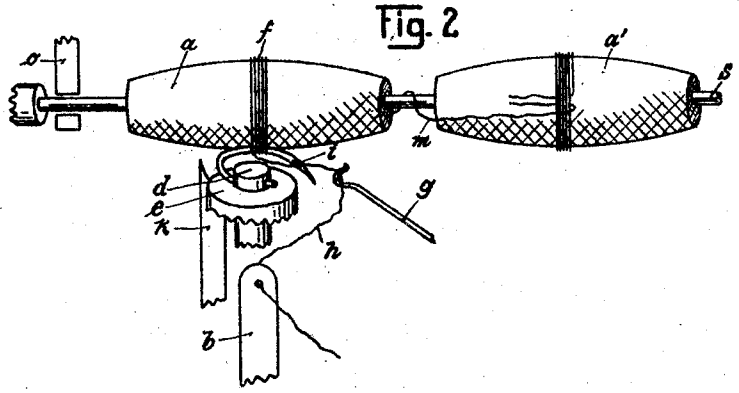
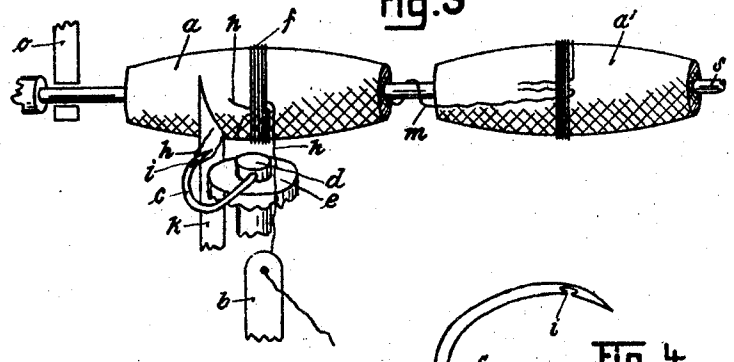


Fig. 3



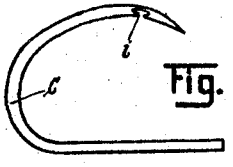


Fig. 4

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UNITED STATES PATENT OFFICE.

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DEVICE FOR FIXING THE FREE THREAD ENDS OF THE SPOOLS OF EMBROIDERY MACHINES.

Application filed February 7, 1924. Serial No. 691,171.

To all whom it may concern:

Be it known that I, RICHARD SEYFARTH, a citizen of the German Republic, and resident of Plauen, Saxony, Germany, have invented a new and useful Improvement in Devices for Fixing the Free Thread Ends of the Spools of Embroidery Machines, of which the following is a specification.

In the winding of the small spools necessary for operating embroidery machines fixing the thread end offers particular difficulties. It has been tried repeatedly to overcome these difficulties but the success has not been satisfactory. It has been proposed, for instance, to cause a tongue to take hold of the fastening windings of the spool after the driving mechanism for the spool mandril has been caused to stop, and to shove the free thread end under a few of said windings so as to have it clamped fast thereby. The fastening windings suffer, of course, very considerably by that procedure so that they can hardly be used for the embroidery procedure, but are, practically, lost. It has also been proposed to place a small hooked needle flat towards the spool body after the winding procedure proper has been finished, and then let it rotate together with the spool so that the fastening windings having been made, the free thread-end is laid into the hook of the auxiliary needle and this latter is drawn out of the fastening windings together with the thread-end laid into it. This procedure, is, however, only little reliable, as the fastening windings cannot be wound fast enough owing to the auxiliary hook having been laid therebetween, whereby the risk is caused that they are stripped off the spool and entangle with each other previous to the entire consumption thereof.

In order to obviate these deficiencies the free end of the thread of the spool is, according to this invention, fixed in the way that a needle preferably a circularly curved hook-needle can be passed through the fastening convolutions of the spool after these convolutions have been wound, whereafter the free thread-end is placed into the hook and, finally, this latter is drawn out of the fastening convolutions together with the piece of thread placed into it. In this way the thread-end is connected with the spool is a reliable manner so that the latter cannot unwind while it is transported.

My invention is illustrated, by way of example, in the accompanying drawing, in which Figure 1 is a front-view of those parts of the spooling machine as are necessary to understand fully the invention; Figures 2 and 3 show the same parts, some of which are in other positions, and Figure 4 is a representation of the curved needle drawn to an enlarged scale.

The spooling mandrel is shown to carry two spools a and a^1 which have been wound on it one after the other. In the lefthand half is shown the position of the parts in that moment in which just the last winding of the convolutions f is wound around the spool a.

When the driving means for the mandrel s is stopped so as to cause the spools to come to a standstill for a moment, the needle i is so turned as to pass through the convolutions f, below the same, as shown in Figure 2. The first part of the needle is suitably curved, whereas the other part is straight and passes through the centre point of the curved part, this point lying in the axis of the bolt d to which the needle is affixed. This bolt is rotatable in a bearing or sleeve e, of which only the uppermost part is shown.

The needle having arrived in the position illustrated in Figure 2, the thread h which runs from the spool to the thread-guide b is laid into a laterally open ear l (Fig. 4) of the needle c by means of an auxiliary thread guiding member g, whereafter the bolt d is turned in the opposite direction so as to cause it to withdraw the needle from the fastening convolutions and draw the thread h under these convolutions whereby it is secured in place.

The loop which the thread h forms on the other side of the fastening convolutions is cut open by a knife k, and the now finished spool is shifted along the mandrel by a shifting member o whereafter another spool is being wound.

The thread-piece running from one finished spool to the next finished spool leaves the fastening convolutions below and by

which it is held fast spontaneously when the respective spool is shoved farther of an auxiliary shifting member (not shown) which is practically a member like *o* and enters into the space between two consecutive spools (for instance *a* and a^1) shortly before the main shifting member *o* becomes active. Supposing, the auxiliary shifting member enters in the proper moment into the space between the spools *a* and a^1 and shifts the spool a^1 to the right, the thread *m* will get out of the fastening convolutions *f* of this spool, whereby the free thread-end is shifted to the right, the free thread-end *m* gets into the range of a pair of scissors arranged in known manner in front of the spools and cuts off said thread-end nearly completely leaving merely quite a short piece which cannot do any damage.

I wish it to be understood that the needle *c* need not at any rate be circularly or otherwise curved at its free half; also an entirely straight needle may be employed if suitably devised means for moving it through below the fastening convolutions are provided.

I claim:

1. A device for fixing the free thread-ends of the spools of automatically operating embroidery machines, comprising, in combination, a curved needle having a laterally open ear and being adapted to be moved through below the fastening convolutions of a spool, and means for thus moving said needle in one and the opposite direction.

2. A device for fixing the free thread-ends of the spools of automatically operating embroidery machines, comprising, in combination, with the spool mandrel and a spool thereon and the fastening convolutions of said spool, a needle, the working part of which is curved circularly and which has a laterally open ear located on the inner side of the curvature and is adapted to be moved through below said fastening convolutions, and means for thus moving said needle in one and the opposite direction.

3. A device for fixing the free thread-ends of the spools of automatically operating embroidery machines, comprising, in combination, a circularly curved needle having a laterally open ear on the inner side of the curvature and being adapted to be moved through below the fastening convolutions of a spool, means for thus moving said needle in one and the opposite direction, and means for severing off the thread-part drawn through below the said convolutions on the return movement of the said needle.

4. A device for fixing the free thread-ends of the spools of automatically operating embroidery machines, comprising, in combination, a needle having a circularly curved operating front part and a laterally open ear therein and being adapted to be moved through below the fastening convolutions of a spool, and means for thus moving said needle in one and the opposite direction.

5. A device for fixing the free thread-ends of the spools of automatically operating embroidery machines, comprising, in combination with the spool mandrel and a spool thereon and the fastening convolutions of said spool, a needle having circularly curved operating front part and a laterally open ear therein and being adapted to be moved through below the fastening convolutions of a spool, means for thus moving said needle in one and the opposite direction, and means for serving off the thread-part drawn through below the said convolutions on the return movement of the said needle.

In testimony whereof I affix my signature in presence of two witnesses.

RICHARD SEYFARTH.

Witnesses:
M. CROEBER,
H. THURBER.