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NEEDLE AND THREAD GUARD FOR AN EMBROIDERING MACHINE

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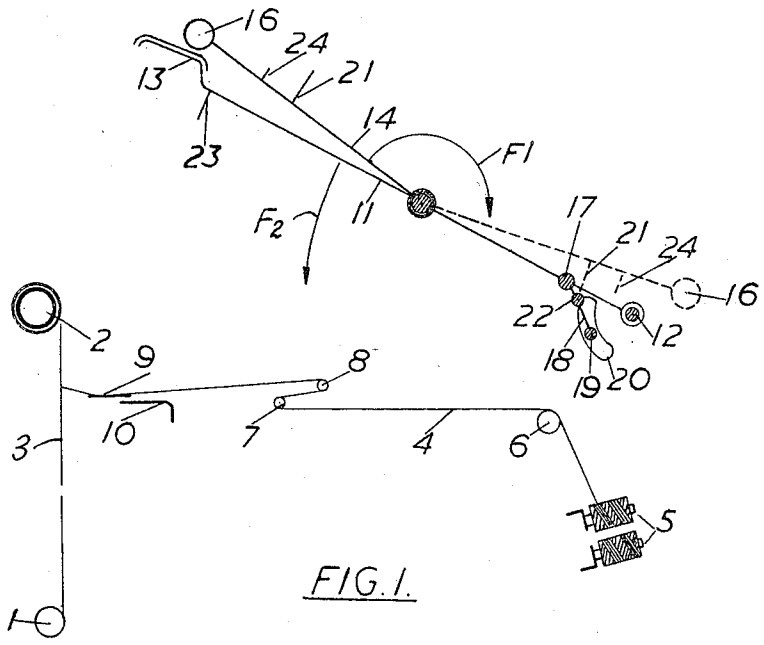

FIG. 1.

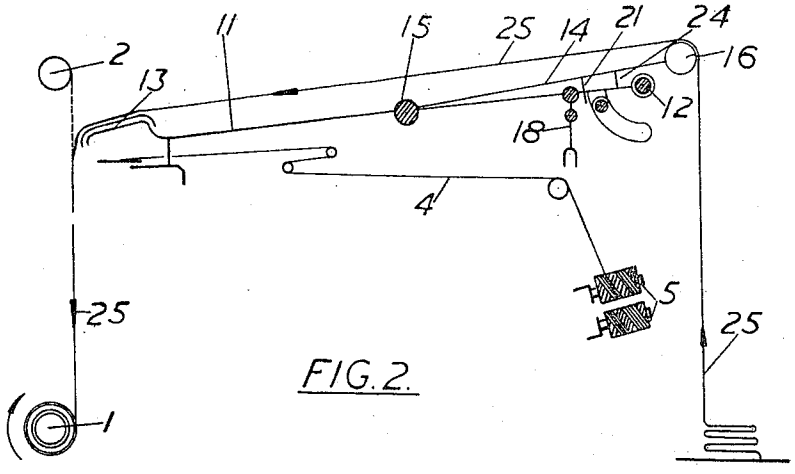

FIG. 2.

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NEEDLE AND THREAD GUARD FOR AN EMBROIDERING MACHINE

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8 Claims. (Cl. 112—83)

This invention relates to a device adapted to protect needles and threads passed therein during the loading operations of the fabric to be embroidered on the lower beam of embroidering machines.

It is well known that on the embroidering machines now in use, at the end of each embroidering operation the finished fabric is replaced with a virgin or plain fabric, which is raised above the thread spools and the needle bed and caused to slide downwardly to hook it up to the lower beam of the machine and to wind it thereon.

During the hookup and winding operation it is rather easy for the fabric to come in contact with the threads going from the spools to the needles, in which they have passed. It is likewise easy for the fabric to tend during its motion to move off the threads, to straddle and to unthread them from the needles with consequent considerable time loss when resuming the embroidering work. It may still happen that the fabric upon its sliding over the needles damages these or it is, conversely, damaged by them.

The above-outlined inconveniences are all eliminated by the protecting device according to this invention, which permits to make the loading of the fabric to be embroidered in an easy manner and above all without affecting the correct run of threads going to the needles. Such protecting device is substantially characterized in that it comprises a guard and a rod running parallel to the beam on which the fabric is wound and adapted to provide proper protection to the threads in the needle and spool zones, respectively, said guard and rod being normally maintained in rest position out of the working zone and being brought to the working position during the loading of the fabric by actuation of simple releasing means.

The invention will now be described in detail with reference to the accompanying drawings outlining a preferred non-limiting embodiment form given by way of example, in which:

FIG. 1 is a schematic side view of the protecting device according to this invention in rest position; and

FIG. 2 is an analogous schematic view of the protecting device in working position.

As shown in FIG. 1 the embroidering machine comprises at least a pair of beams, viz. lower beam **1** and upper beam **2**, between which the fabric **3** to be embroidered is stretched out. The embroidery thread **4** unwinds from the spool **5**, passes on rollers **6**, **7** and **8** to thread in the needles **9** of the needle holding bed **10**.

Substantially above this arrangement is provided the device according to this invention. It comprises at least a pair of arms **11**, pivoted at **12** on a stationary support or frame. At free ends of the arms **11** is fastened a guard **13**, which is adapted to protect the threads in the needle zone as will be seen hereinafter. A pair of arms **14** is pivoted at **15** at an intermediate point of the arms **11** and holds up at its free ends a rod **16**. On the same arm **11** is pivoted at **17** a fork **18**, adapted to engage on the pin **19**, the latter being fixed on said support or frame. On said pin **19** may slide an arcuate slot **20** fast with the arm **11**.

In the position shown in FIG. 1 the guard **13** is kept in raised position thanks to the support point of the fork or catch **18** on the pin **19**, which prevents the arm **11** from rotating around the pin **12** downwardly. The rod **16** is resting upon the guard **13**.

When it is desired to turn to the working position, for providing protection to the threads during the fabric loading the rod **16** and then also the arms **14** are caused to rotate around the pin **15** in the direction shown by the arrow F1. Thereafter the arms **11** are in turn forced to rotate around the pin **12** still in a clockwise direction until the fork **18** releases from the pin **19**. A metal point **21**, fast with the arm **14**, acts on the stop **22** of the fork **18** in such a way as to push it away from the pin **19** due to the weight of the rod **16** itself against the action of not shown spring-means.

In this manner the arms **11** are released and the guard **13** may be lowered upon the needles **9** as shown by the arrow F2 in FIG. 1. In this position the guard **13** is supported by the metal points **23** on the needle holding bed **10**.

The rod **16** is in turn spported via the arms **14** and the metal points **24** on the same arms **11**. In the position shown in FIG. 2 it is clearly visible how the rod **16** holds the fabric **25** to feed into the machine in a position remote from the spools **5**. From the rod **16** the fabric runs subsequently onto the guard **13** and from this to the lower beam **1** for the winding operation without coming in contact with the threads **4** and the needles **9**.

When it is desired to bring the device back into rest position, one should raise the rod **16** and simultaneously the guard **13** by causing the assembly to rotate around the pin **12**. The fork **18**, which is drawn back by said spring means (not shown) returns to a position corresponding to the pin **19** and rests thereupon when the rod **16** is released. The assembly is thus maintained again in the position as shown in FIG. 1. It is understood that the present invention is not confined to the above-described embodiment form but is subject to several changes and modifications of a technical nature, without departing from the scope of the invention.

What I claim is:

1. In an embroidering machine having a frame, a supply beam, and a plurality of needles through which threads are fed; a device for guarding the needles and threads of said machine during the loading of fabric to be embroidered on said supply beam, said device comprising at least a pair of first arms pivotably mounted about one of their ends on said frame, a guard member carried by the other ends of said first arms, at least a pair of supplemental arms each pivotably mounted about one of its ends on a corresponding first arm between the ends of said first arm, an operating rod carried by the other ends of said supplemental arms and extending parallel to said beam, all of said arms being pivotable from an inoperative position in which said guard and said rod are spaced from said machine to a fabric loading operative position in which said guard is disposed between the needles and the fabric being loaded, and in which said guard and said rod each support said fabric.

2. The device of claim 1 further comprising means to lock said first arms in said inoperative position.

3. The device of claim 2 wherein said locking means comprises a pin fixed with respect to said frame and a catch member pivotably mounted on at least one of said first arms and adapted to engage said pin in said inoperative position.

4. The device of claim 3 further comprising means on at least one of said supplemental arms to release said locking means as said supplemental arms are moved into said operative position.

5. The device of claim 4 wherein said release means comprises a first projection extending from said supplemental arm and adapted to engage and release said catch member from said pin as said supplemental arms are moved into said operative position.

6. The device of claim 1 wherein said operating rod rests on said guard in said inoperative position.

7. The device of claim 1 further comprising a second projection extending from at least one of said supplemental arms and adapted to engage a corresponding first arm to support said supplemental arms in said operative position.

8. The device of claim 1 further comprising means on at least one of said first arms adapted to support said arms adjacent said needles during said operative position.

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