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METHOD AND DEVICE FOR TIEING THREAD ENDS IN WINDING FRAMES OR OTHER TEXTILE MACHINES
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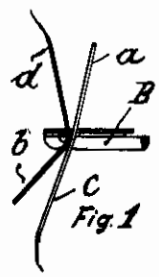

Fig. 1

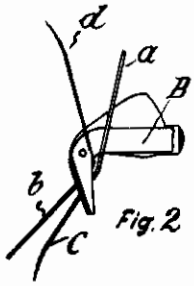

Fig. 2

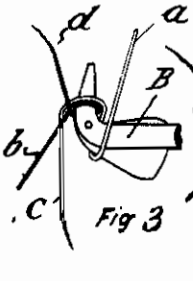

Fig 3

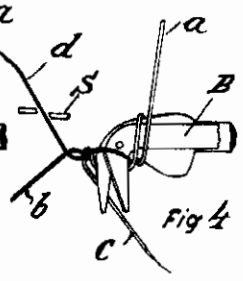

Fig 4

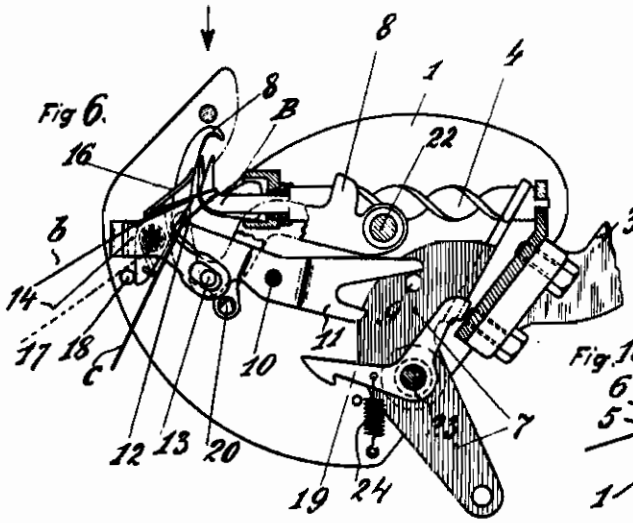

Fig 6.

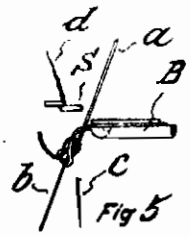

Fig 5

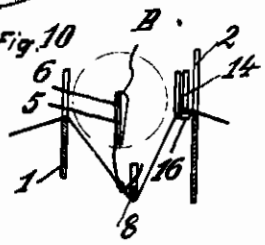

Fig. 10

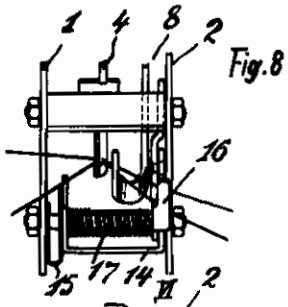

Fig. 8

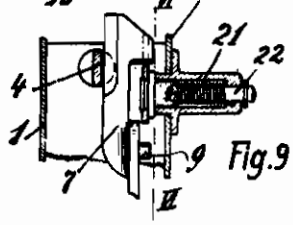

Fig. 9

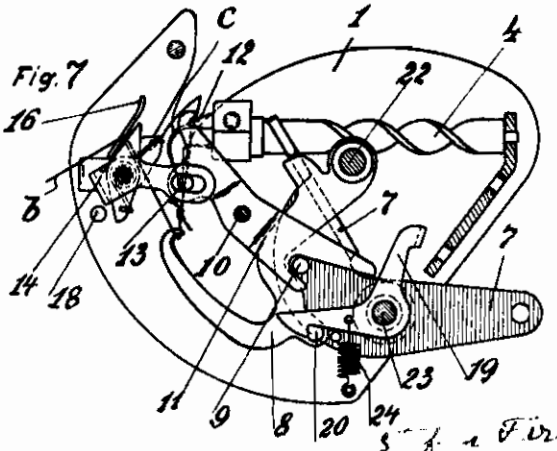

Fig. 7

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ALIEN PROPERTY CUSTODIAN

METHOD AND DEVICE FOR TIEING THREAD ENDS IN WINDING FRAMES OR OTHER TEXTILE MACHINES

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In order to tie the one with the other the thrums of the running on and running off thread by a weaver's knot, a loop with crossed arms has hitherto been formed from one of the thrums to be tied. This loop is then laid around a support shiftable in its axial plane and an auxiliary loop is formed by means of a thread guide through which auxiliary loop the other thread thrum is pulled. The thread guide then moves out of the first auxiliary loop with formation of another auxiliary loop without crossing of the thread arms, whereupon the auxiliary loop is undone and the knot pulled together after the tieing has been liberated by the supporting element. This tieing proceeding is very complicated and accordingly also the arrangement for carrying it out mechanically.

According to the invention the tieing proceeding is considerably simplified, so that the binding nose-ends generally used successfully in hand-operated implements can be used for carrying out this tieing proceeding.

The tieing proceeding takes place, according to the invention, in that the thread thrums, the ends of which point in opposite directions are laid non-crossed into the bent of a binding nose-ends, their mutual position being such, that the binding nose-ends when carrying out a three-quarter rotation grip behind the thread parts lying on one side and oscillates between the thread parts lying on the other side, so that two thread-loops are formed, whereupon at a further semi-rotation of the binding nose-ends these binding nose-ends open and grip the end of the one thrum and finally cut off this end at a further quarter-rotation and clamps the same in, whereas the other thread-thrum is cut off by scissors and finally the thread tieing is pulled off the binding nose-ends.

The pulling off end itself is preferably temporarily clamped according to the invention at the drawing off of the thread tieings from the binding nose-ends and the pull is exerted by means of a separate element moved towards the thread.

The former employment of the binding nose-ends or the construction of the coordinated thread slits and clamps depended at the formation of the weaver's knot on the supposition, that the ends of the torn thread thrums had to be laid in pointing in the same direction, in order to produce the knotting. If namely it had been tried in the usual manner of operation with ends of the thread thrums pointing to different sides to form a weaver's knot, a tieing in the sense of a weaver's knot would occur, but the ends to be pulled are then lying so that the knot formed at the tieing is not self-checking but unties again when a pull is exerted upon the knotted thread.

An embodiment of the invention is illustrated by way of example in the accompanying drawing, in which

Figs. 1 to 5 illustrate the main phases of the tieing proceeding,

Figs. 6 and 7 show the knotter in a central section on line VI—VI of Fig. 9, viewed from the side, its elements being in different positions,

Fig. 8 shows a part top plan viewed, in the direction of the arrow VIII in Fig. 6,

Fig. 9 the guiding of the bolt 22 in front view, partly in section.

Fig. 10 a detail of the knotting proceeding.

In the side walls 1, 2 of the shape common in knotters the several notched bars and the means for moving the same are mounted. The knotter is connected in the form of construction shown in Fig. 6 with its carriage by an arm 3. The binding nose-ends B consist in usual manner of a main part comprising a worm 4 and of clamping parts 5 and scissors parts 6 being in front of said main part. All movements are released by a feed lever 7 oscillatable about a bolt 23 and correspondingly bent at an angle as shown in Fig. 9 and connected with any control element of the frame. At an oscillation of lever 7 in anti-clockwise direction from the position shown in Fig. 6 into the position shown in Fig. 7 the worm 4 of the binding nose-ends is turned, the lever 7 striking, shortly before its extreme position, against the nose of an ejector 8, by which ejector the tied threads are pulled off the binding nose-ends in known manner, as shown in Fig. 7. A bolt 9 is further fixed on lever 7 and acts on a lever 11 pivotably mounted on pin 10, the front end of said lever having a small notch 12 for holding the thread c. The lever 11 further carries a bolt 13, which moves in the slit of a notched bar 14. The notched bar 14 and the notched bar 15 form scissors as shown in Fig. 8. A clamping plate 16 is further coordinated to the notched bar 14 and controlled by a spring 17, the starting position of the clamping plate being limited by a bolt 18, as shown in Fig. 6.

In front of the lever 7 a pawl 19 is mounted oscillatable about the same pin 23 under the action of a spring 24. If the lever 7 arrives in the position shown in Fig. 7 the pawl 19 catches a bolt 20 fixed on the ejector 8. The ejector 8 shown in Fig. 7 is for clearness sake partly broken off in Fig. 6.

The knotting proceeding illustrated in Figs. 1

to 5 takes place in that the thread thrums *a*, *b* are laid behind the bent end of the binding nose-ends B, so that their ends *c*, *d* point in opposite directions. If then the binding nose-ends B turn, they grip behind the thread part *b*, *c* as shown in Fig. 2 and continuing its turning movement they get, in forming two loops, between the thread parts *a*, *d* as shown in Fig. 3. After the binding nose-ends have carried out a complete rotation, they open and grip at the next following quarter-rotation as shown in Fig. 4 the thread end *c* and cut off the same at a further quarter-rotation, as shown in Fig. 5. At the same time scissors S, the elements 14, 15 are shown in Figure 8, have come into effect and cut off the thread ends *d*. The end *c* of the thread which is not cut off is securely held by the binding nose-ends B, whereas then the ejector 8, as shown in Figs. 7, 8, 10, pulls off the loops from the binding nose-ends. The part of the thread end *c*, which has not been cut off, is then securely held by the clamp 5 of the binding nose-ends as shown in Fig. 10, whilst in turn the thread is securely held by the clamping arrangement 14, 16, so that the knot is tied orderly under the action of the ejector 8 moving downward as shown in Fig. 7 and 10. In the position shown in Fig. 7 the knotted threads are held until the notched bars have returned approximately into their starting position, as otherwise the backward moving binding nose-ends would grip the already knotted thread ends and tear the same, as the threads either are caught in the scissors or would intertwine with the same. Shortly before the starting position is reached, as shown in Fig. 6, the lever 7 lifts the pawl lever 19 from bolt 20, so that now the ejector 9 can also return into its starting position under the action of a spring 21 on bolt 22 as shown in Fig. 9, in liberating the threads.

Although the form of construction of the knotter as shown is intended in the first instance for winding frames, the invention is not limited hereto, but may be applied anywhere in textile machines, when thread thrums have to be knotted mechanically as for instance also in warping machines.

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