

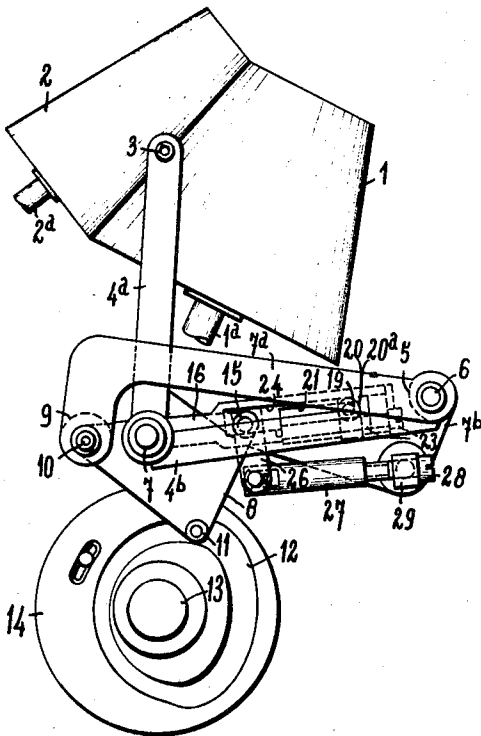
[72] Inventor **Theodorus Fransen**
Deurne, Netherlands
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[73] Assignee **N. V. Machinefabriek L. Te Strake**
Deurne, Netherlands

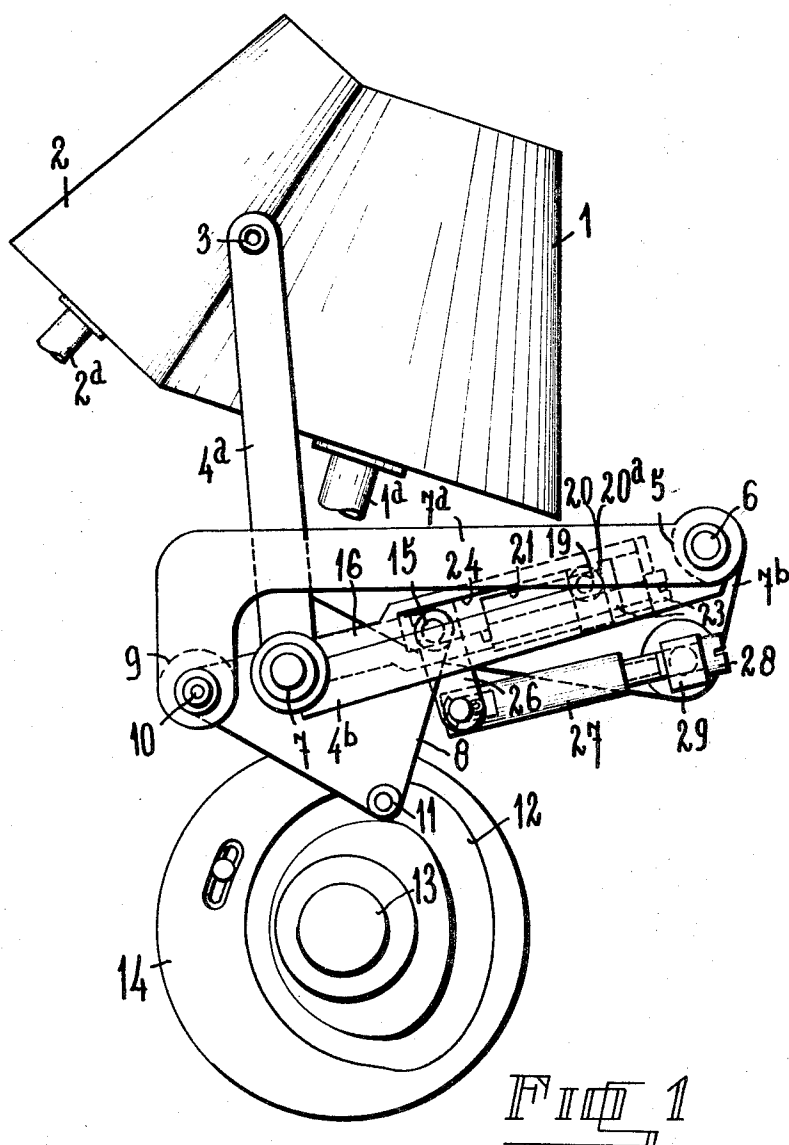
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[54] **DEVICE FOR DRAWING A THREAD FOR A
THREAD PACKAGE**
8 Claims, 4 Drawing Figs.
[52] U.S. Cl..... **226/178,**
226/184
[51] Int. Cl..... **B65h 51/06**
[50] Field of Search..... **226/178,**
184

ABSTRACT: The device comprises at least one conical roller, and a thread guide cooperating with the roller for orienting a thread at the circumference of the roller. The thread guide is in the form of a control arm which is provided with a thread eye and which is mounted for movement in a path such that the thread eye is displaced substantially parallel to a generatrix of the conical roller. A pivoted rocker arm is coupled to the control arm and is rocked by means of a cam mounted on a rotatable shaft.





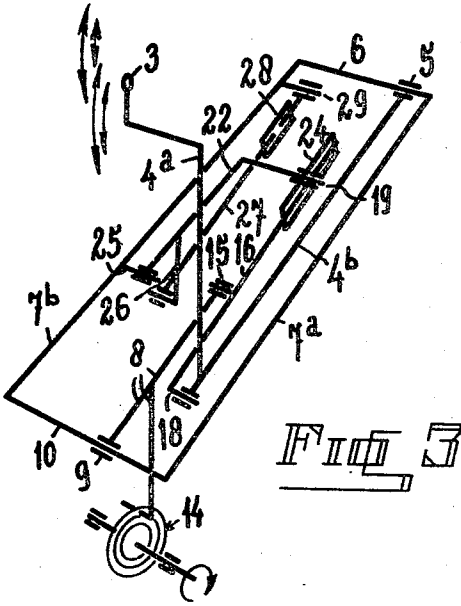


FIG 3

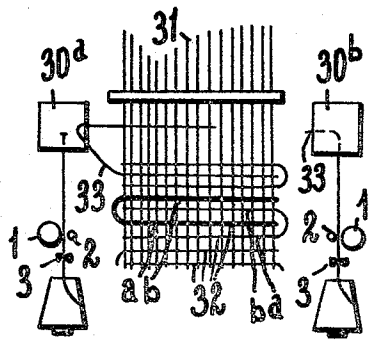


FIG 4

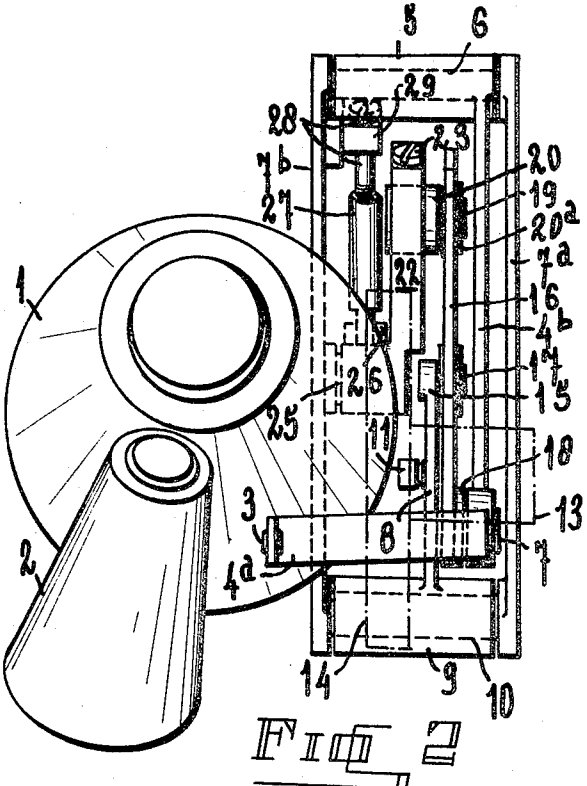


FIG 2

DEVICE FOR DRAWING A THREAD FROM A THREAD PACKAGE

BACKGROUND OF THE INVENTION

The invention relates to a device for drawing a thread from a thread package which device is provided with one or more conical rollers and a thread guide cooperating with the rollers for orientation of a thread at the circumference of the rollers.

In textile machinery, especially in weaving machines, in which wefts are drawn from stationary thread packages, it is desired to draw the thread from the thread packages at a definite speed in order to supply the thread with a speed which corresponds with the operation speed of the machine. The conical rollers are driven by a shaft which rotates synchronously with the machine.

By means of the thread guide the thread can be positioned at that part of the circumference of the conical roller which corresponds to the correct speed of the thread. Changing of the position of the thread at the circumference means a change in speed of the thread because the circumferential speed of the conical roller differs at each position along its circumference. In many cases it is desired to alter the speed of the thread at which the thread is drawn from the thread package and is to be supplied to the machine. Such circumstances occur e.g. in weaving machines in which wefts are woven into the fabric in a hairpin shape in order to provide a selvage at the fabric. One part of the weft which forms the first leg of the hairpin is to be supplied with a higher speed than the part of the thread which forms the second leg of the hairpin.

SUMMARY OF THE INVENTION

The object of the invention is to provide a device for drawing a thread from a thread package, which allows alteration of the drawing speed or supplying speed for the thread.

According to the invention such a device is characterized in that the thread guide is formed by a control arm provided with a thread eye, which control arm can move in such a path that the thread eye can be displaced about parallel to a generatrix of a conical roller. This displacement can be used for orientation of the thread at the circumference of the conical roller.

In order to obtain the alteration in the speed of the thread by means of the device for drawing the thread from the thread packages this device according to the invention has been adapted in such a manner that the control arm provided with a thread eye is coupled to a rocker arm cooperating with a disc provided with a control groove or a cam mounted on a rotatable shaft. Preferably the control arm and the rocker arm can swing around a fixed pivot whereas the coupling between the arms can be adjusted.

According to the invention this is possible as the coupling between the control arm and the rocker arm is formed by a lever having an adjustable pivot whereas the pivot of the lever can be displaced longitudinally of the lever for adjusting the stroke of the thread guide and the pivot of the lever can be adjusted transversely of the lever in its plane of movement for adjusting the average position of the thread guide at a generatrix of the conical roller.

It is advantageous to adapt the device according to the invention in such a manner that the pivot of the lever is situated on a pivotable arm whose position can be adjusted by means of a separate adjusting bar.

A practical embodiment of the device according to the invention is attained in that the adjustable pivot of the lever is formed as a bearing which can be displaced in a groove by means of an adjusting screw and that the adjusting bar is provided with an adjusting screw which is threaded through a pivot mounting.

In order to allow an adjustment when the machine is operative e.g. in order to adjust the length of a weft in a weaving machine it is desirable that the adjusting screw of the displaceable bearing and the adjusting screw of the adjusting bar be approximately parallel to each other and the heads of the adjusting screws be directed towards the same side of the

device. The length of the weft can be adjusted accurately by means of a wrench or screwdriver, when the device for drawing a thread from a thread package according to the invention has been mounted on the weaving machine in which wefts are drawn from stationary thread packages.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front view of a device for drawing a thread from a thread package according to the invention;

FIG. 2 is a plan view of the device shown in FIG. 1;

FIG. 3 is a perspective diagram, showing the function of the different parts of the device according to the invention, and

FIG. 4 is a diagram of a weave having hairpin-shaped wefts, and shows diagrammatically devices for inserting the wefts and devices for drawing the wefts from thread packages.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The device for drawing a thread from a thread package shown in FIG. 1 comprises a driven conical roller 1 and a conical pressure roller 2, cooperating with the conical roller 1. The shafts 1a and 2a of the conical rollers 1 and 2 are driven by a shaft of the textile machine upon which the device for drawing the thread has been mounted. In the embodiment described hereafter a weaving machine has been shown as an example of a textile machine in which weaving machine the wefts are drawn from stationary thread packages.

A thread which is to be clamped between the rollers 1 and 2 runs through a thread eye 3 which thread eye has a definite position along the generatrices or the line of tangency between the rollers 1 and 2. It will be evident that as a result of the conical shape of the roller 1 the speed at which the thread is drawn from the thread package, and thus the speed at which the thread runs as a result of clamping between the rotating rollers 1 and 2 will depend on the position of the thread at the circumference of the rollers 1 and 2 where the thread eye 3 has been positioned.

To allow a good adjustment of the thread eye along the line of tangency between the rollers 1 and 2 the thread eye has been mounted upon a control arm, which is formed by the parts 4a and 4b.

The control arm 4a, 4b can swing around a fixed pivot axis 6 by means of a bushing 5. The axis 6 has been mounted between two plates 7a and 7b (FIG. 2) which plates form the fixed frame of the device. A tight setting articulation 7 has been provided between parts 4a and 4b to allow an adjustment of the correct position of the thread eye with respect to the rollers 1 and 2 when the device is mounted on a textile machine. The tight setting articulation 7 can be considered as an adjustment of the thread eye 3.

The control arm 4a, 4b can rock around the pivot axis 6 in order to allow a periodical change in the speed of the thread and for this purpose the control arm 4a, 4b cooperates with an arm in the shape of a plate 8. This plate or rocker arm 8 has been provided with a bushing 9 by which the plate can swing around a fixed pivot axis 10 which has been mounted between the plates 7a and 7b. The rocker arm 8 has been provided with a pin or roller 11 which runs in a control groove 12 of a disc 14 which disc has been mounted on a shaft 13. By the eccentric position of the groove 12 with respect to the shaft 13 the rocker arm 8 will oscillate when the shaft 13 rotates; the shaft 13 is coupled to a rotating shaft of the weaving machine. If desired the shafts 1a and 2a can be connected to the shaft 13.

An oscillating point 15 of the rocker arm 8 has been coupled to a lever 16 at 17. The free end 18 of the lever has been articulated with the arm 4a, 4b at the axis of the tight setting articulation 7. It will be evident that when the rocker arm 8 oscillates the lever 16 the control arm 4a, 4b will rock around the axis 6. By means of the lever 16 it is possible to adjust the stroke of the oscillating movement of the arm 4a, 4b by displacement of the pivot axis 19 of the lever 16. To perform this the pivot axis 19 has been mounted in a block 20 which is slidable in a guide 21 in a rocker arm 22 which runs nearly

parallel to the lever 16. The block 20 can be displaced in the guide 21 by means of an adjusting screw 23. To allow an adjustment of the pivot axis 19 with respect to the lever 16 the lever has been provided with a guide 24. A block 20a can be displaced in this guide.

As has been mentioned above the stroke which the thread eye makes as a result of the oscillating movement of the control arm 4a, 4b can be adjusted by displacement of the pivot axis 19. As the guide 21 has been situated in a rocker arm 22 which has been articulated to the plate 7b of the frame at 25 the pivot axis 19 can be adjusted in a direction transverse to the lever 16 in its plane of movement. For this purpose the rockable arm 22 has been provided with an auxiliary arm 26 which has been articulated to a bar 27, in which an adjusting screw 28 has been situated. The adjusting screw 28 can turn but is prevented from moving axially by threading it through a block 29 which has been articulated to the plate 7b of the frame. When the adjusting screw 28 is turned the bar 27 will be displaced, whereby the arm 26 together with the arm 22 swings around the pivot point 25. When the arm 22 is tilted the pivot axis 19 will be displaced in a direction transverse to the lever 16 owing to which the control arm 4a, 4b together with the thread eye will also be displaced even when it performs its oscillating movement along the line of tangency between the rollers 1 and 2.

The system has been diagrammatically shown in FIG. 3 in which the reference numbers relate to the parts of the device. The displacement of the thread eye 3 has been indicated by arrows in FIG. 3 in which the variation from the little arrows to the large arrows represents the adjustment which is performed by displacement of the pivot axis 19 in the guides 21 and 24 whereas the displacement from one set of large and little arrows the other set is possible by adjustment of the bar 27. The screws 23 and 28 are nearly parallel to each other and their heads are directed towards one side owing to which they can be easily adjusted by means of a screwdriver or a wrench.

For clearness sake a fabric has been diagrammatically shown in FIG. 4 in which wefts have been inserted into the shed formed by the warp 31 by means of weft inserting devices 30a and 30b. The operation of the devices 30a and 30b will not be described as such devices are known per se and they can be of various constructions. The hairpin-shaped wefts 32 are to be inserted from one side of the shed by the device 30a and from the other side of the shed by the device 30b. Each hairpin-shaped weft possesses a first leg a and a second leg b. When now firstly the leg a has been inserted (in the drawing by the device 30b) a part of the weft ends between the fabric and the device 30b. The length of the this part is to be subtracted from the length of the part which is still to be supplied

which part must form the leg b when leaving the weft inserting device 30b. This means that the thread which is to be supplied by the rollers 1 and 2 must have a less speed in order to obtain the correct length of the leg b which is to be inserted by the device 30b.

As has been mentioned at the beginning the supplying speed of the thread is responsible for the correct length of the thread and with reference to FIG. 4 it will appear that any change in the speed of the thread must be periodically performed and for this purpose the control arm 4a, 4b is subjected to an oscillating movement controlled by the groove 12 via the rocker arm 8.

I claim:

1. A device for drawing a thread from a thread package, comprising at least one conical roller, a thread guide cooperating with the roller, in the form of a control arm which is provided with a thread eye and which is mounted for movement in a path such that the thread eye is displaced substantially parallel to a generatrix of the conical roller, for orienting a thread at the circumference of the roller, a pivoted rocker arm coupled to the control arm, and a cam mounted on a rotatable shaft, for rocking the rocker arm.

2. A device according to claim 1 wherein the control arm and the rocker arm are each pivoted on a fixed pivot, and are connected by an adjustable coupling.

3. A device according to claim 2, characterized in that the coupling between the control arm and the rocker arm is formed by a lever having an adjustable pivot.

4. A device according to claim 3, characterized in that the pivot of the lever is displaceable longitudinally of the lever for adjusting the stroke of the thread guide.

5. A device according to claim 3, characterized in that the pivot of the lever is adjustable transversely of the lever in its plane of movement for adjusting the average position of the thread guide at a generatrix of the conical roller.

6. A device according to claim 3, characterized in that the pivot of the lever is situated on a pivotable arm whose position can be adjusted by means of a separate adjusting bar.

7. A device according to claim 6 wherein the adjustable pivot of the lever is in the form of a bearing which is mounted in a groove in the pivotable arm and is displaceable in such groove by means of an adjusting screw, and the adjusting bar is coupled to the pivotable arm and is displaceable by means of an adjusting screw threaded through a pivoted mounting.

8. A device according to claim 7, characterized in that the adjusting screw of the displaceable bearing and the adjusting screw of the adjusting bar are approximately parallel to each other and the heads of the adjusting screws are directed towards the same side of the device.

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