Continuous twisting or stranding machine A twisting, doubling and/or stranding machine in which one of the yarns (1) is supplied from elemental spools (B) supported on a creel (3) mounted at the upper part of the machine, it being possible for said creel to be moved between a lowered loading position and a raised working position and vice versa.

According to the invention, control of the movements of the spool-holder creel (3) is provided by a ram (14) mounted on the articulated pantograph-form assembly and the end of the rod of which can pivot about a fixed point (15) of the plate (6) fixed to the structure of the machine, and can do so in such a way as to adopt two positions—one in which the rod of the ram is in the retracted position inside the body, positioning the creel (3) in a lowered loading position—movement into the raised position being obtained by action of a fluid, liquid or air under pressure, acting on the front face of the piston and tending thus to push the body of the ram (14) along the rod to bring it into the raised working position.
CONTINUOUS TWISTING OF STRANDING MACHINE

TECHNICAL FIELD

[0001] The present invention relates to the field of textile machines and more specifically of twisting, doubling and/or stranding machines in which one of the yarns for twisting, doubling or stranding is supplied from supply spools supported on a creel mounted at the upper part of the machine above the twisting and respooling assembly proper.

PRIOR ART

[0002] Supplying textile machines from supply creels mounted directly on the structure of the machine has been known for a very long time as is apparent, in particular, from FR-A-2 418 762, 2 603 908, 2 643 090 and 2 394 625 (this document corresponding to patents U.S. Pat. No. 4,180,167 and U.S. Pat. No. 4,163,357).

[0003] In what follows of the description, the invention will be described in its application to a twisting machine as depicted diagrammatically in the appended FIG. 1, but it is obvious that this is nonlimiting and that it could be used for all hardware in which the yarn supply is from a creel mounted on the structure of the machine.

[0004] Referring to the appended FIG. 1, a machine such as this comprises a number of identical working positions, mounted side by side on a support structure and preferably symmetrically with respect to the central part of this structure.

[0005] A machine such as this essentially comprises a double twist assembly DT, at the exit of which the two yarns (1) and (2) that are to be doubled are united, the yarn (1) coming from a spool (B) supported by a creel denoted by the general reference (3) and which is arranged at the upper part of the machine.

[0006] As emerges from FIG. 1, the creel (3) supports two spools (B) and (B1), the yarns of which are jointed together making it possible, when the spool (B) is used up, for supply to switch automatically to the second spool (B1), thus limiting machine down-time.

[0007] Such support creels (3) are made in such a way that they can adopt two positions—one, a raised working position as depicted in the left-hand part of FIG. 1, and the other a lowered position as depicted in the right-hand part of FIG. 1—allowing removal of the spools (B), (B1) that supply the yarn (1) when they have been used up and allowing them to be replaced with full spools.

[0008] Such a possibility of moving the support creel is achieved by mounting the latter on the structure of the machine via an assembly in the form of a deformable parallelogram, adopting the form of a tilting pantograph comprising two parallel longitudinal members (4, 5), the ends of which are articulated on the one hand, to a support plate (6) fixed at the upper part of the structure of the machine and, on the other hand, to a base (7) acting as a support for the supply spool (B) and for the spare spool (B1), the yarn (1) passing through a guide eye (8). This deformable assembly is associated with means which allow the creel to be locked automatically in position, this locking generally being obtained by means of a telescopic device associated with a return spring.

[0009] While such devices are satisfactory when the supply spools weigh just a few kilos, a retaining system such as this using return springs is not reliable where there is a desire to work from heavy spools which, these days, can be as heavy as 15 kilograms.

SUMMARY OF THE INVENTION

[0010] Now, and this is what forms the subject of the present invention, an improvement made to such moveable supply creels has been found which makes these easier to manipulate for moving them from the lowered loading position into the raised working position, and vice versa, and retaining them effectively throughout production.

[0011] In general, the device according to the invention is one wherein control of the movements of the spool-holder creel is provided by a ram mounted on the articulated pantograph-form assembly and the end of the rod of which can pivot about a fixed point of the plate fixed to the structure of the machine, and can do so in such a way as to adopt two positions—one in which the rod of the ram is in the retracted position inside the body, positioning the creel in a lowered loading position—movement into a raised position being obtained by action of a fluid, liquid or air under pressure, acting on the front face of the piston and tending thus to push the body of the ram along the rod to bring it into the raised working position.

[0012] It is obvious that it would not be departing from the scope of the invention if the mounting of the control ram were to be reversed, the body being mounted to pivot on the plate fixed to the structure of the machine and the end of the rod of the ram being associated with the articulated pantograph-form assembly.

[0013] Such an assembly, by pneumatic, hydraulic or even electric control, provides assistance with raising or lowering the supply spools of all textile machines, particularly stranding machines.

[0014] In one embodiment, control is provided by a valve associated with each elementary creel that the machine comprises, which valve can be operated directly by the operator and is connected, on the one hand, to a supply circuit connected to a source common to all the positions of the machine and, on the other hand, to a control circuit specific to each position and opening into the body of the ram to act on the piston thereof. Such a design makes it possible to lighten the heavy weight of the spools that the operator has to manipulate in order to lift the assembly into the operating position, said system also making it possible, during movement into the lowered position, to damp the descent of the assembly by compressing the residual air lying in the chamber of the ram.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The invention and the advantages it affords will, however, be better understood by virtue of the exemplary embodiment given indicatively but nonlimitingly herebelow, and which is illustrated by the appended diagrams, in which:

[0016] FIG. 1 illustrates, as stated earlier, the general structure of a textile machine (stranding machine) in which one of the yarns is supplied from spools supported by a mobile creel;
FIG. 2 is a general view showing the structure and operation of the means which, according to the invention, allow the mobile support creel to be moved between a lowered loading position and a raised working position, these two positions being depicted schematically in this figure, and the parts shown in chain line showing the general structure of the top part of the structure on which is fixed the plate (6) and the means for respooling the yarn produced;

FIGS. 3 and 4 are views in section illustrating the general structure of the ram control valve, providing for the movements of the mobile creel from a lowered position into a raised position and vice versa.

EMBODIMENT OF THE INVENTION

The invention therefore relates to an improvement to the creels (3) mounted on textile stranding, twisting or similar machines, at the upper part of the machine, and in the way illustrated in FIG. 1.

Adopting the same references as those used to describe the state of the art, the creel (3) is mounted on the plate (6) provided at the upper part of the machine via an assembly in the form of a deformable parallelogram comprising two longitudinal members (4, 5) articulated, on the one hand, about pins (10, 11) provided on the plate (6) and, on the other hand, pins (12, 13) at the support (7) of the spools (B, B1).

According to the invention (see FIG. 2), the spool-holder creel (3) is controlled and moved between a raised working position and a lowered loading position by means of a ram (14) mounted on the articulated pantograph-form assembly. This mounting is achieved in such a way that the end of the ram rod pivots about a pin (15) at the plate (6) fixed to the structure of the machine, the ram body being, for its part, fixed by means of a bearing (16) associated with the longitudinal members (4). Of course, the mounting could be the reverse.

This ram (14) is supplied via a valve, denoted by the general reference (17) in FIG. 2, connected, on the one hand, to a compressed-air supply circuit (18) supplied by a source common to all the positions of the machine and, on the other hand, to a circuit (19) for supplying the ram for raising the creel. These circuits are switched into or out of action directly by means of a control button (20) mounted at the end of the support (7) and accessible to the user.

The structure and operation of this supply valve (17), to supply or cut off the supply to the circuit (19) controlling the movements of the piston of the ram (14) is illustrated in FIGS. 3 and 4.

This control is achieved as follows.

When the control button (20) is pressed, the latter moves a piston (21) axially which allows air (23) to arrive to fill, after the seal (24), a supply chamber in direct communication with a supply orifice (25) of the creel lifting ram.

The control button (20), relieved of its manual pressure, is returned by a spring (26) making it possible to place a sealed chamber between the seals (24) and (27), thus avoiding any risk of leakage, the spring (26) abutting against an end plate (28) attached to the body of the piston (29).

A very simple system such as this allows the assembly to be used in the same way when lowering the creel, simply by discrete manual pressings of the button (21) so as to add air to the ram and damp the descent of the assembly on the load of spools on the creel.

An assembly such as this, of particularly simple design, makes it possible for the spool-support creel to be raised and lowered in complete safety.

Of course, the invention is not restricted to such an embodiment, but covers all alternative forms thereof which are made in the same spirit.

1. A twisting, doubling and/or stranding-machine in which one of the yarns for twisting, doubling or stranding is supplied from elemental spools (B) supported on a creel (3) mounted at the upper part of the machine above the twisting and respooling assembly proper, it being possible for said creel to be moved between a lowered loading position and a raised working position and vice versa, said movement being achieved by mounting the creel (3) on the structure of the machine via an assembly in the form of a deformable parallelogram known as a pantograph comprising two parallel longitudinal members (4, 5), the ends of which are articulated, on the one hand, to a support plate (6) fixed at the upper part of the structure of the machine and, on the other hand, to a base (7) acting as a support for the supply spool (B) and for the spare spool (B1), the yarn (1) passing through a guide eye (8), said deformable assembly being associated with means which allow the creel to be locked automatically in position, wherein control of the movements of the spool-holder creel (3) is provided by a ram (14) mounted on the articulated pantograph-form assembly and the end of the rod of which can pivot about a fixed point (15) of the plate (6) fixed to the structure of the machine, and can do so in such a way as to adopt two positions—one in which the rod of the ram is in the retracted position inside the body, positioning the creel (3) in a lowered loading position and the other a raised position—movement being obtained by action of a fluid, liquid or air under pressure, acting on the front face of the piston and tending thus to push the body of the ram (14) along the rod to bring it into the raised working position.

2. A twisting machine as claimed in claim 1, wherein the movements of the spool-holder creel are controlled by means of a valve (17) associated with each elemental creel that the machine comprises, which valve can be operated directly by the operator and is connected, on the one hand, to a supply circuit (18) connected to a source common to all the positions of the machine and, on the other hand, to a control circuit (19) specific to each position and opening into the body of the ram (14) to act on the piston thereof.