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P. LEMAIRE ET AL

2,786,325

RING AND TRAVELLER DEVICE FOR SPINNING AND TWISTING FRAMES

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2 Sheets-Sheet 2

Fig. 3

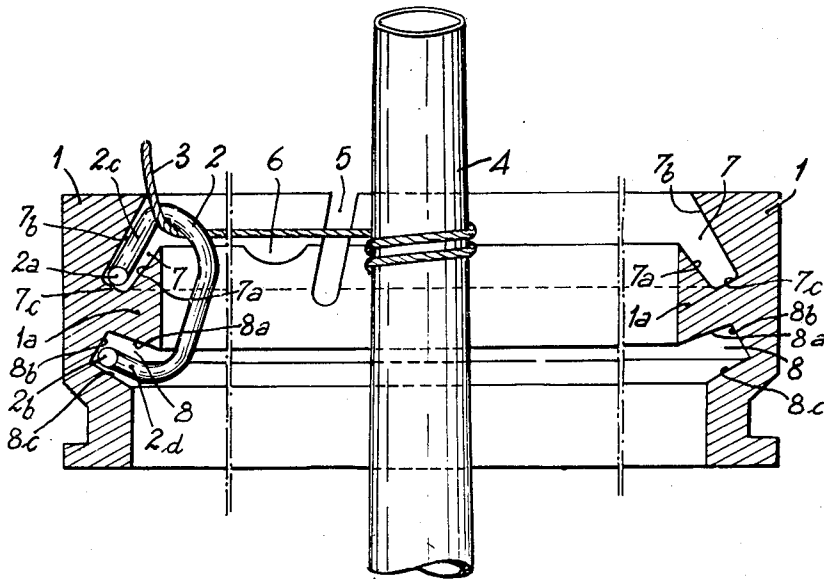
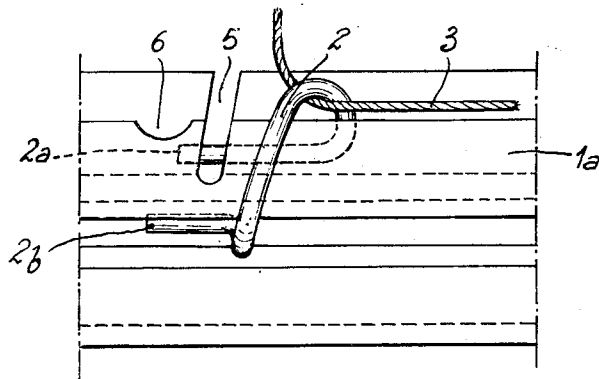


Fig. 4



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RING AND TRAVELLER DEVICE FOR SPINNING AND TWISTING FRAMES

Paul Lemaire and Pascal Derreumaux, Wambrechies, France

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6 Claims. (Cl. 57—119)

In known ring and traveller systems in spinning and twisting frames, the spindle speeds must be maintained within certain limits, according to the count of the thread, the weight of the traveller and the diameter of the ring, so that the wear of the traveller, due to its speed and its pressure against the ring, does not become too rapid.

It is the object of the present invention to provide a new ring and traveller device giving a large surface of contact between ring and traveller so as to reduce appreciably, for a traveller of given weight, the pressure per unit area between these two components and, consequently, to reduce their wear and overheating compared with hitherto known ring and traveller devices.

According to the present invention, a ring and traveller device is provided wherein the traveller is mounted and works entirely within the interior of the ring and is provided with arms which are adapted to engage the interior surface of the ring for the purpose of braking the movement of said traveller, the said arms being curved inward on a radius of curvature substantially the same as that of said interior surface so that they are adapted to slide along said surface when the traveller is subjected to the action of centrifugal force, and wherein the interior surface of the ring is provided with an annular rib.

The annular flanged part retains the traveller in position when the frame is stopped or when the thread draws the traveller towards the spool during its initial operation.

Further, in order to facilitate the threading of the traveller, a slot is provided in the upper part of the ring.

In one particular embodiment of the invention, the ring is provided with two grooves having inclined walls formed one on each side of the annular rib, and inside which the curved arms of the traveller freely engage so as to be thrust against the walls and also the bottoms of the said grooves when the traveller is rotated.

Two embodiments of the invention will now be described by way of example with reference to the accompanying drawings in which:

Fig. 1 illustrates one embodiment of the invention, showing a ring in section and a traveller located inside the ring in elevation,

Fig. 2 shows a fragmentary view in elevation from the inside of the ring shown in Fig. 1,

Fig. 3 illustrates a further embodiment, showing a ring in section and a traveller and winding support in elevation, and

Fig. 4 shows a fragmentary view in elevation from the inside of the ring shown in Fig. 3.

Figs. 1 and 2 show a steel ring 1 and a traveller 2 made of resilient steel wire. The traveller, mounted inside the ring, forms an open loop laterally extended by two arms 2a, 2b, which possess a curvature corresponding to that of the inside wall of ring 1.

The ring 1 is formed with an internal annular T-section flange 1a on which the traveller, inserted by means of its

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resilience, is frictionally maintained by its arms 2a, 2b.

In order to facilitate the threading of the traveller with the thread passing to spool 4, ring 1 is provided with a slot 5 in its upper part.

If, in operation, the thread 3 takes its normal path that is to say coming from the delivery roll of the spinning frame, and passing through the traveller 2 to be wound on to the spool 4, then when the spindle begins to turn, the thread 3 draws the traveller 2 towards the inside of the ring 1 in the direction of the spool 4 so that the arms 2a, 2b come into contact with the inner surfaces 1b, 1c of the flange 1a. The traveller slides on these surfaces as it rotates until its speed is high enough for its arms 2a and 2b to lose contact with the flange 1a and to be thrown by centrifugal force against the surfaces 1d and 1e respectively of the inside walls of the ring 1.

It is readily understood from the fact that the arms 2a, 2b of the traveller are, in operation, thrust against the inside walls of the ring 1 that a large contact surface is obtained and therefore a greatly reduced pressure applied per unit area, thus permitting higher spindle speeds.

It must be noted that the length of the arms 2a, 2b can easily be related to technical requirements such as the gauge of the thread, the speed of the spindle and the required tension.

The embodiment illustrated in Figs. 3 and 4 possesses additional advantages compared with that illustrated by Figs. 1 and 2, particularly in that the surface of contact between the traveller and the ring is greater when the traveller is rotating, so further reducing the pressure per unit area between the two components and that it also provides for a greater stability of the traveller in rotation.

The reference numbers used in Figs. 1 and 2 are used to designate the same or equivalent parts in Figs. 3 and 4.

The annular projecting flange 1a has a triangular section; the traveller 2, fitted onto this flange by means of its resilience and of a small hollow 6 formed in the upper edge of the said flange, is held in position when at rest by its sides 2c and 2d.

Annular grooves 7, 8 are formed on either side of the flange 1a inside which are situated, besides the sides 2c and 2d, the arms 2a and 2b which are curved to conform with the curvature of the walls of the said grooves.

If, in operation, the thread 3 takes its normal path, passing from the loop of the traveller 2 to be wound on to the spool 4, then when the spindle begins to turn, the thread 3 draws the traveller 2 towards the inside of the ring in the direction of the spool 4 so that the arms 2a and 2b come into contact with the walls 7a and 8a respectively of the grooves 7 and 8. The traveller slides on these surfaces as it rotates until its speed is high enough for its arms 2a and 2b to lose contact with the walls 7a and 8a and to be thrown by centrifugal force against the walls 7b and 8b respectively, and also, because of the inclination of the walls 7b and 8b of the grooves, against the bottoms 7c and 8c of the said grooves.

It is readily understood from the fact that the arms 2a and 2b of the traveller are, in operation, thrust not only against the inside walls of the ring but also against the bottom of the grooves 7 and 8 that a large contact surface is obtained and therefore a greatly reduced pressure applied per unit area, thus permitting higher spindle speeds. Further, the stability of the traveller is greatly enhanced, in its rotation, by the length of its arms and their support in the depth of the grooves.

What we claim is:

1. Ring and traveller device for spinning and twisting frames, comprising a ring having an annular rib projecting inwardly between two annular inwardly facing surfaces thereof and a traveller mounted entirely within the

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ring so as to be guided and supported by said rib and provided with curved arms located parallel to said rib and having substantially the same curvature as said surfaces, said traveller being mounted for free movement along said rib and being capable of limited radial movement between an outer position in which said arms engage said surfaces and a radially inner position in which said arms are out of contact with said surfaces.

2. Ring and traveller device for spinning and twisting frames as claimed in claim 1, wherein the ring is provided with a slot extending through the thickness of said ring in a direction transverse to the central plane of the rib and completely interrupting the upper of said two annular inwardly facing surfaces thereof.

3. Ring and traveller device for spinning and twisting frames as claimed in claim 1, wherein the annular rib is provided with annular flanges projecting laterally from its radially inner edges.

4. Ring and traveller device for spinning and twisting frames as claimed in claim 3, wherein the ring is provided with a slot extending through the thickness of said ring in a direction transverse to the central plane of the rib and completely interrupting the upper of said two annular inwardly facing surfaces thereof.

5. Ring and traveller device for spinning and twisting frames, comprising a ring having an annular rib projecting inwardly between two annular grooves provided with inclined walls and located on the interior of the ring, and a traveller mounted entirely within the ring

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so as to be guided and supported by said rib and having curved arms located parallel to said rib, said arms having substantially the same curvature as the walls of said grooves, said traveller being mounted for free movement along said rib and being capable of limited radial movement between an outer position in which the arms engage the walls and the bottoms of said grooves and a radially inner position in which said arms are out of contact with said walls and bottoms.

5 6. Ring and traveller device for spinning and twisting frames as claimed in claim 5, wherein the ring is provided with a slot extending through the thickness of said ring in a direction transverse to the central plane of the rib and completely interrupting the upper of said two annular grooves thereof.

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