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DOUBLE BELT DRAWING MECHANISM FOR SPINNING MACHINES

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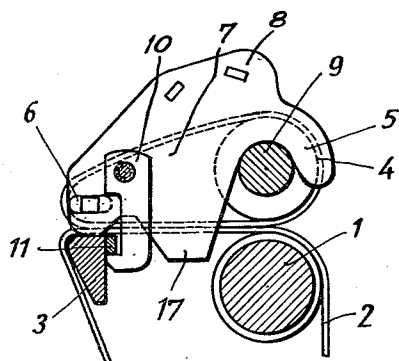


Fig. 1

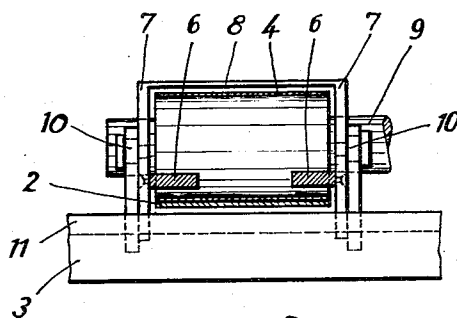


Fig. 2

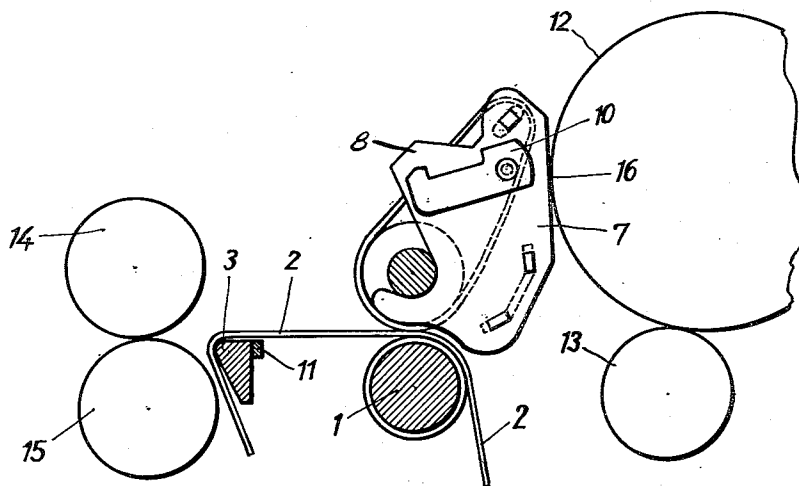


Fig. 3

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DOUBLE BELT DRAWING MECHANISM FOR SPINNING MACHINES

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Continuation of application Ser. No. 272,449, Feb. 19, 1952, which is a division of application Ser. No. 186,698, Sept. 26, 1950. This application Dec. 26, 1956, Ser. No. 630,572

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Public Law 619, Aug. 23, 1954
Patent expires Oct. 1, 1968
6 Claims. (Cl. 19—131)

The present invention relates to a double belt drawing mechanism for spinning machines and more particularly to a cage apparatus for the upper belt of the drawing mechanism which simultaneously guides both the upper and the lower belts.

The present application is a continuation of U.S. application Serial No. 272,449, filed February 19, 1952, entitled "Double Belt Drawing Mechanism for Spinning Machines," now abandoned, which is a division of U.S. application Serial No. 186,698, filed September 26, 1950, and entitled "High-Draft Drawing Mechanism for Spinning Machines," now abandoned.

In known double belt drawing mechanism, there are belt cage members which serve to guide the belt to prevent lateral displacement thereof, but these cage members are not tiltable with the upper belt and its guide member as well as the holder therefor, so that these cages, when the upper belt is turned upwardly, still prevent free access to the area surrounding these cages.

One of the objects of the present invention is to overcome the above disadvantage by providing a belt cage which is tiltable together with the upper belt and its guide member.

An additional object of the present invention is to provide a cage member of the above type which will also serve to insure the proper position of the upper and lower belts with respect to each other.

A further object of the present invention is to provide a means for limiting the upward movement of the cage member together with the upper belt and guide member therefor in a direction away from the lower belt member.

Yet another object of the present invention is to provide a cage member capable of accomplishing all of the above objects and at the same time being a relatively simple and inexpensive construction and being reliable in operation.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

FIG. 1 is a side elevational view, partly in section, of a drawing mechanism constructed in accordance with the present invention and showing the cage member of the present invention in the operative position thereof;

FIG. 2 is an end view taken of the structure of FIG. 1, as viewed from the left hand side thereof, and showing part of the cage construction in section; and

FIG. 3 is a side elevational view, partly in section, of a structure similar to that of FIG. 1, but slightly modified, showing the cage member of the present invention in its inoperative position and also illustrating the supply and delivery rollers for the drawing mechanism.

Referring now to the drawings, there is illustrated in

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FIG. 1, the driving roller 1 which may be rotated by any suitable means and which has the belt 2 of the double belt drawing mechanism mounted thereon. This belt 2 passes over a guide member 3, which is fixedly mounted on the spinning machine by any suitable means, not shown, this guide member 3 being elongated and parallel to the axis of rotation of roller 1. The guide member 3 has the projection 11 fixedly mounted thereon. This projection 11 may be fixedly mounted on the guide member 3 by any suitable means such as screws, welding, or the like, or it may be formed as an integral part of the guide member 3.

Located over the driving roller 1 is the driven roller 5 which may be mounted on the shaft 9 for free rotation thereon or which may rotate with the shaft 9, the latter then being mounted for free rotation. The roller 5 supports the upper belt 4 of the double belt drawing mechanism, this belt 4 contacting the belt 2 so as to be driven by the latter upon rotation of driving roller 1, the driven roller 5 rotating along with the belt 4.

A tensioning idle roller, not shown in the drawings, rests with its weight on the lower portion of belt 2 so as to maintain the same taut over the driving roller 1 and guide member 3.

Located about the belt 4 is a cage means 8, which is essentially a channel-shaped member having an open bottom. The side walls 7 of the cage means 8 have lower curved portions adjacent the right hand end portion of the cage means 8, as viewed in FIG. 1, and these lower edge portions rest on the shaft 9 on opposite sides of the roller 5, respectively, so as to support the cage means 8 for turning movement about the axis of rotation of the upper roller 5. Pivotaly mounted on each of the side walls 7 of the cage means 8 is a hook member 10 which engages the projection 11 of guide member 3, when the cage means is in its operative position, so as to maintain the cage means 8 in proper position in the drawing mechanism during the operation thereof. Between the side walls 7 of the cage means 8 there are located the guide members 6 which are positioned over the guide member 3 and respectively fixed to one of the side walls 7 of the cage means 8, as shown in FIG. 2. The guide members 6 support the belt 4 for movement with the belt 2 and roller 5. It will be noted that the hook members 10 maintain the cage means 8 in the desired location during the operation of the drawing mechanism and prevent any upward turning of the belt 4 and cage means 8 about the axis of rotation of roller 5 during operation of the drawing mechanism.

In order to enable the cage means 8 to guide the belts 2 and 4 so as to prevent lateral displacement thereof, the sides 7 of the cage means 8 are provided with lower intermediate extensions 17 which extend below the upper belt 4 and a portion of the lower belt 2 so that the inner sides of these extensions prevent lateral displacement of the belts 2 and 4.

When it is desired to have access to the area surrounded by the cage means 8, when the latter is in its inoperative position, for cleaning purposes, for example, it is only necessary to release the hooks 10 from the projection 11 and turn the cage means 8 in a clockwise direction, as viewed in the drawings, about the axis of rotation of roller 5, so that the cage means 8 together with the belt 4 and guide member 6 is turned upwardly away from the lower belt 2 of the double belt drawing mechanism.

The parts of the mechanism are illustrated in this latter position in FIG. 3 of the drawings, where the supply rollers 12 and 13 and the delivery rollers 14 and 15 are diagrammatically illustrated in their inoperative position with respect to the structure shown in FIG. 1. The fibers to be drawn travel from the right to the left, as

viewed in FIG. 3. It will be noted that in the inoperative position of the belt double drawing mechanism, illustrated in FIG. 3, there is free access to the area surrounded by the cage in the position of the structure illustrated in FIG. 1.

In order to limit the upward turning movement of the cage means 8 away from the belt 2, the sides 7 thereof may be provided with upper extensions 16 which rest against roller 12, as shown in FIG. 3, when the cage means 8 is in its inoperative position.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of double belt drawing mechanisms differing from the types described above.

While the invention has been illustrated and described as embodied in cage means for a double belt drawing mechanism, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can be applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. In a spinning machine, a double belt drawing mechanism, comprising, in combination, a lower driving roller; a lower fixedly mounted elongated, first guide member spaced from said lower driving roller and being substantially parallel to the axis of rotation thereof; a lower belt mounted on said lower roller to be rotated thereby and passing over said first guide member; an upper driven roller mounted for rotation about an axis parallel to the axis of rotation of said lower roller and being located adjacent thereto; an upper belt mounted on said upper roller and contacting said lower belt so as to be driven by the latter to rotate said driven roller; a shaft member supporting said upper roller for rotation thereon; a channel-shaped cage member having an open bottom and having side walls provided with lower edge portions adjacent one end of said cage member and resting on said shaft member on opposite sides of said upper roller, respectively, to support said cage member for pivotal movement about said axis of rotation of said upper roller; at least one second guide member located between said side walls of said cage member and being fixedly mounted over said first guide member on said side walls, said second guide member supporting said upper belt for rotation together with said upper roller; a projection fixedly mounted on said first guide member; and a hook pivotally mounted on said cage member for releasable engagement with said projection, whereby, when said hook is released from said projection, said cage member together with said second guide member and upper belt may be pivoted about said axis of rotation of said upper roller.

2. In a spinning machine, a double belt drawing mechanism, comprising, in combination, a lower driving roller; a lower fixedly mounted, elongated, first guide member spaced from said lower driving roller and being substantially parallel to the axis of rotation thereof; a lower belt mounted on said lower roller to be rotated thereby and passing over said first guide member; an upper driven roller mounted for rotation about an axis parallel to the axis of rotation of said lower roller and being located adjacent thereto; an upper belt mounted on said upper roller and contacting said lower belt so as to be driven by the latter to rotate said driven roller; a shaft member supporting said upper roller for rotation thereon; a chan-

nel-spaced cage member having an open bottom and having side walls provided with lower edge portions adjacent one end of said cage member and resting on said shaft member on opposite sides of said upper roller, respectively, to support said cage member for pivotal movement about said axis of rotation of said upper roller, said side walls having intermediate bottom extensions which extend below a portion of said lower belt on opposite sides thereof so as to simultaneously guide said upper and lower belts; at least one second guide member located between said side walls of said cage member and being fixedly mounted over said first guide member on said side walls, said second guide member supporting said upper belt for rotation together with said upper roller; a projection fixedly mounted on said first guide member; and a hook pivotally mounted on said cage member for releasable engagement with said projection, whereby, when said hook is released from said projection, said cage member together with said second guide member and upper belt may be pivoted about said axis of rotation of said upper roller.

3. In a spinning machine, a double belt drawing mechanism having a feed roller and, comprising, in combination, a lower driving roller; a lower fixedly mounted, elongated first guide member spaced from said lower driving roller and being substantially parallel to the axis of rotation thereof; a lower belt mounted on said lower roller to be rotated thereby and passing over said first guide member; an upper driven roller mounted for rotation about an axis parallel to the axis of rotation of said lower roller and being located adjacent thereto and adjacent to the feed roller of the drawing mechanism; an upper belt mounted on said upper roller and contacting said lower belt so as to be driven by the latter to rotate said driven roller; a shaft member supporting said upper roller for rotation thereon; a channel-shaped cage member having an open bottom and having side walls provided with lower edge portions adjacent one end of said cage member and resting on said shaft member on opposite sides of said upper roller, respectively, to support said cage member for pivotal movement about said axis of rotation of said upper roller, said side walls having intermediate top extensions; at least one second guide member located between said side walls of said cage member and being fixedly mounted over said first guide member on said side walls, said second guide member supporting said upper belt for rotation together with said upper roller; a projection fixedly mounted on said first guide member; and a hook pivotally mounted on said cage member for releasable engagement with said projection, whereby, when said hook is released from said projection, said cage member together with said second guide member and upper belt may be pivoted about said axis of rotation of said upper roller and said top extensions of said side walls may rest against the feed roller of the drawing mechanism.

4. In a spinning machine, a double belt drawing mechanism having a feed roller and comprising, in combination, a lower driving roller; a lower fixedly mounted, elongated, first guide member spaced from said lower driving roller and being substantially parallel to the axis of rotation thereof; a lower belt mounted on said lower roller to be rotated thereby and passing over said first guide member; an upper driven roller mounted for rotation about an axis parallel to the axis of rotation of said lower roller and being located adjacent thereto and adjacent to the feed roller of the drawing mechanism; an upper belt mounted on said upper roller and contacting said lower belt so as to be driven by the latter to rotate said driven roller; a shaft member supporting said upper roller for rotation thereon; a channel-shaped cage member having an open bottom and having side walls provided with lower edge portions adjacent one end of said cage member and resting on said shaft member on opposite sides of said upper roller, respectively, to sup-

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port said cage member for pivotal movement about said axis of rotation of said upper roller, said side walls having intermediate top extensions and intermediate bottom extensions which extend below a portion of said lower belt on opposite sides thereof so as to simultaneously guide said upper and lower belts; at least one second guide member located between said side walls of said cage member and being fixedly mounted over said first guide member on said side walls, said second guide member supporting said upper belt for rotation together with said upper roller; a projection fixedly mounted on said first guide member; and a hook pivotally mounted on said cage member for releasable engagement with said projection, whereby, when said hook is released from said projection, said cage member together with said second guide member and upper belt may be pivoted about said axis of rotation of said upper roller and said top extensions of said side walls may rest against the feed roller of the drawing mechanism.

5. In a spinning machine, a double belt drawing mechanism comprising, in combination, a lower driving roller; a lower fixedly mounted, elongated, first guide member spaced from said lower driving roller and being substantially parallel to the axis of rotation thereof; a lower belt mounted on said lower roller to be rotated thereby and passing over said first guide member; an upper driven roller mounted for rotation about an axis parallel to the axis of rotation of said lower roller and being located adjacent thereto; an upper belt mounted on said upper roller and contacting said lower belt so as to be driven by the latter to rotate said driven roller; a shaft member supporting said upper roller for rotation thereon; a channel-shaped cage member having an open bottom and having side walls provided with lower edge portions adjacent one end of said cage member and resting on said shaft member on opposite sides of said upper roller, respectively, to support said cage member for pivotal movement about said axis of rotation of said upper roller; a pair of second guide members located between said side walls of said cage member and being fixedly mounted over said first guide member on said side walls, respectively, said second guide members supporting said upper belt for rotation together with said upper roller; a projection fixedly mounted on said first guide member; and a hook pivotally mounted on said cage member for releasable engagement with said projection, whereby, when said hook is released from said projection, said cage member together with said second guide members and upper belt may be pivoted about said axis of rotation of said upper roller.

6. In a spinning machine, a double belt drawing mecha-

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nism having a feed roller and comprising, in combination, a lower driving roller; a lower fixedly mounted, elongated, first guide member spaced from said lower driving roller and being substantially parallel to the axis of rotation thereof; a lower belt mounted on said lower roller to be rotated thereby and passing over said first guide member; an upper driven roller mounted for rotation about an axis parallel to the axis of rotation of said lower roller and being located adjacent thereto and adjacent to the feed roller of the drawing mechanism; an upper belt mounted on said upper roller and contacting said lower belt so as to be driven by the latter to rotate said driven roller; a shaft member supporting said upper roller for rotation thereon; a channel-shaped cage member having an open bottom and having side walls provided with lower edge portions adjacent one end of said cage member and resting on said shaft member on opposite sides of said upper roller, respectively, to support said cage member for pivotal movement about said axis of rotation of said upper roller, said side walls having intermediate top extensions and intermediate bottom extensions which extend below a portion of said lower belt on opposite sides thereof so as to simultaneously guide said upper and lower belts; a pair of second guide members located between said side walls of said cage member and being fixedly mounted over said first guide member on said side walls, respectively, said second guide members supporting said upper belt for rotation together with said upper roller; a projection fixedly mounted on said first guide member; and a hook pivotally mounted on said cage member for releasable engagement with said projection, whereby, when said hook is released from said projection, said cage member together with said second guide members and upper belt may be pivoted about said axis of rotation of said upper roller and said top extensions of said side walls may rest against the feed roller of the drawing mechanism.

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