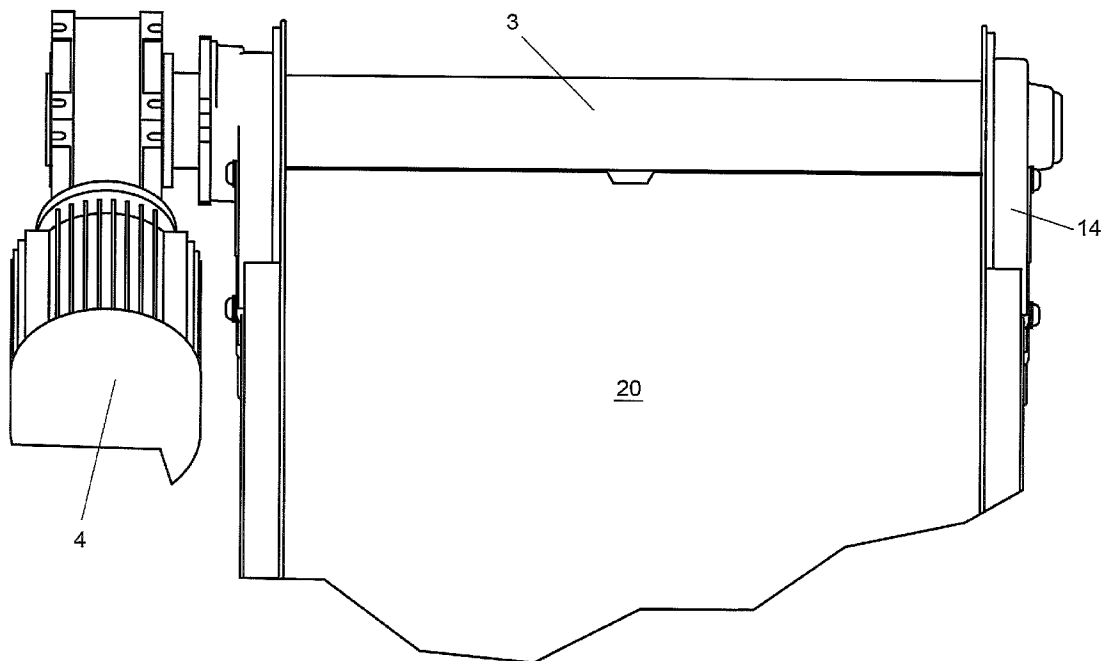




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(54) Title: **MOTORISED ROLLER FOR BELT CONVEYOR HAVING HIGH FRICTION IN RESPECT OF THE BELT**



(57) **Abrégé/Abstract:**

A description is given of a motorised or drive roller (1) of a belt conveyor (100) which provides, mounted forcedly thereon, an antiwear tube (3) made of PVC additioned with antiwear additives, so that the belt (2) of said belt conveyor (100) rotates around, and in contact with, said antiwear tube (3).

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(54) **Title:** MOTORISED ROLLER FOR BELT CONVEYOR HAVING HIGH FRICTION IN RESPECT OF THE BELT

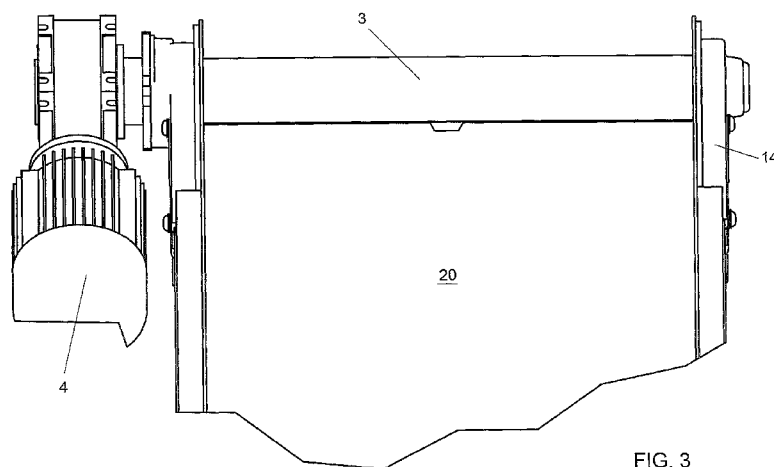


FIG. 3

(57) **Abstract:** A description is given of a motorised or drive roller (1) of a belt conveyor (100) which provides, mounted forcedly thereon, an antiwear tube (3) made of PVC additioned with antiwear additives, so that the belt (2) of said belt conveyor (100) rotates around, and in contact with, said antiwear tube (3).



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MOTORISED ROLLER FOR BELT CONVEYOR HAVING HIGH FRICTION IN RESPECT OF THE BELT

DESCRIPTION

5

The present invention relates to a motorised roller for a belt conveyor provided with a high traction capability in respect of the belt of the conveyor.

10

More particularly the present invention relates to such a motorised roller without machining which has high friction in respect of the belt.

15

As is known, belt conveyor are mechanical devices having the function of moving, in a continuous manner, semimanufactured or finished products (placed loose or ordered) along the production lines, for example for the feeding/loading of the products in a production line or for the transfer from one processing station to the next or, again, for the unloading/storage of the finished products.

20

Belt conveyor are typically made up of a metal framework including the support of the sliding surface of the belt, a drive roller or drive drum (typically the head drum), a reversing idle roller or drum (typically the tail drum), and a belt, closed in a loop, formed by a mat in canvas, rubber (canvas-covered or not), steel or in another suitable material on which the products or semimanufactured goods are placed and transported, in a varyingly ordered manner.

25

The motion is conferred to the belt by the drive drum which is connected to a motor (generally electric) and whereon the belt winds at one end, while at the other end it passes over a reversing idle drum and optionally over a tension drum which allows the necessary adherence of the belt to be ensured on the motorised drum and excessive lowering cambers to be avoided.

30

35

The adherence between motorised roller and belt is, together with the tension of the belt, the conditions necessary for the functioning of the conveyor: it is in order to make the two aforesaid elements (belt and motorised roller) as adherent as possible that machining processes are performed on said motorised roller, such as for example grooves or notches inside which appropriate inserts of material with high friction coefficient are keyed.

Other systems for ensuring the traction of the belt of the conveyor provide for the use of rollers covered by depositing a material with high friction coefficient resulting in a roller made of a single piece. However these types of machining processes of the roller are also expensive.

5

The main object of the present invention is, therefore, to provide a motorised roller which overcomes the disadvantages mentioned above and which is without grooves and provided with high adherence to the belts, in the absence of grooves, with high friction when in contact with the belt and which also shows high resistance to loads.

10

A further object is to provide such a motorised roller which is easy to make, simple and economical.

15

These and other objects, which will be made clearer here below, are achieved in accordance with the invention with the features listed in the appended independent claim 1.

Advantageous aspects of the invention are disclosed by the dependent claims.

20

According to the invention therefore a motorised roller of a belt conveyor is provided which exhibits high friction in respect of the belt so as to guarantee high roller-belt adherence also when the tension of the belt is slightly lower with respect to the operation tension, said motorised roller being characterised in that it has fitted thereon a tubular element in the form of a tube or sheath made of PVC additioned with of one or more antiwear additives.

25

The use of a tube or sheath in antiwear PVC, which is fitted on the motorised roller, enables any type of machining of the roller to be avoided which can therefore also be an unfinished roller, with consequent considerable saving in production costs.

30

Moreover this construction facilitates the replacement of the abrasive element and makes said replacement more economical in that only the tube fitted on the motorised roller is replaced rather than the motorised roller itself with evident economic advantages.

35

Moreover this system also enables an improvement in the friction coefficient in a simple manner without modifying the conveyor, without increasing the angle of adherence and

without altering the tightener of the belt.

In practice the Applicant has found that the application of a tube or sheath in antiwear PVC to a drive motorised roller entails the direct transfer, and without further
5 intermediations, of the friction, which is developed between the motorised roller and the applied tube, to the belt so that the belt is effectively driven by the tube simply and efficiently.

Further features of the invention will be made clearer by the following detailed
10 description, referred to a purely non-limiting exemplary embodiment thereof, illustrated in the accompanying drawings in which:

Figure 1 is a perspective view of a belt conveyor with one side shown blown up and the tube in PVC mounted on the motorised roller;

Figure 2 is an enlarged view of the detail enclosed in the circle denoted by E
15 indicated in Fig. 1;

Figure 3 is a front view, partially interrupted, of the motorised roller on which the tube in PVC is fitted;

Figures 4a) and 4b) are, respectively, a schematic view in longitudinal section of the motorised roller on which a tube in PVC is fitted and a cross section of the tube in
20 PVC only.

Figure 1 illustrates a belt conveyor, denoted overall by reference numeral 100.

It comprises a frame 12 formed by two opposite shoulders 14 and attached stably to the ground by means of a fixed plinth and uprights 18 (with adjustable height) attached to a
25 base 19 which can be moved by means of wheels.

Said frame 12 is divided into two adjacent sections defined as a horizontal section (of loading/unloading) and as a sloping transport section.

30 The frame 12 also comprises a motorised roller or drum 1 rotatably attached to the sloping section at the tail end thereof and a reversing roller or drum 2 rotatably attached to the horizontal section at the head end thereof, said motorised drum 1 and reversing drum 2 being placed between the two opposite shoulders 14.

35 A belt 20 which is subtended between the head end of the horizontal section and the tail end of the sloping section is actuated to slide, in the direction of the arrow indicated in

Figure 1, by means of an electric motor 4.

In particular the electric motor 4 rotates the motorised drum 1 so that the belt 20 is driven whereas the reversing drum 2 is an idle drum: in this way there is sliding movement of the belt 20 wound around said drums.

Said belt 20 can be in any suitable material used for the belts of belts conveyor such as PU, PVC, rubberised canvas and the like, with a smooth or wrinkled surface according to the end use.

A tubular element, in the form of a tube or sheath 3 and made of PVC additioned with one or more antiwear additives, is fitted in a forced manner on the motorised roller 1 inserting it from the free end of the motorised roller 1 detached from the frame 12. The length of said antiwear tube 3 is smaller than that of the motorised roller 1 (Fig. 2) to allow the ends of the motorised roller 1 to be restrained to the frame 12 (Fig. 3) without obstacles.

After having attached the free end of the motorised roller 1 to the frame 12, the tube in antiwear PVC 3 is found to have the same width of the belt 20 or a slightly smaller width so as to come into contact entirely with the transverse surface of the belt 20.

The antiwear sheath or tube 3 generally has a thickness, S , (Fig. 5b)) around 3 mm.

Moreover said tube or sheath preferably has such elasticity as to result in a SHORE A hardness of approximately 60-70, and can be made with any internal diameter D_r , which has a coupling fit of transition type (transition fit, "accoppiamento incerto") with respect to the outer diameter D_i of the motorised roller 1 sufficient in this way for ensuring a coupling with friction between sheath and roller by virtue of the high friction coefficient of the PVC material of the tube.

This type of coupling allows easy assembly of the sheath on the roller without the need for dedicated equipment suitable for widening the inner diameter of the sheath or tube. Numerous detailed changes and modifications may be made to the embodiment of the invention described above within the reach of a person skilled in the art, coming however within the scope of the invention expressed by the appended claims.

CLAIMS

1. A belt conveyor (100) provided with a frame (12), at least one reversing drum (2), at least one motorised or drive roller (1) associated with a motor (4) and a mat in belt
5 form (20) which is wound around said motorised roller (1) and said reversing drum (2), said belt (20) being driven with friction by said motorised roller (1),

said conveyor (100) being characterised in that said motorised roller (1) provides, mounted forcedly thereon, an abrasive removable element in form of an applied antiwear elastic tube or sheath (3) which has high friction coefficient and is made of PVC
10 additioned with antiwear additives, so that said belt (20) rotates around, and in contact with, said antiwear tube (3).

2. The belt conveyor according to claim 1, wherein said belt (20) is in a material chosen from among PU, PVC, rubberised canvas, with smooth or wrinkled surface
15 according to the end use.

3. The belt conveyor according to claim 1 or 2, wherein said antiwear sheath or tube (3) in antiwear PVC has a length shorter than that of the at least one motorised or drive roller (1).
20

4. The belt conveyor according to any one of claims 1 to 3, wherein said tube (3) in antiwear PVC has a length equal to or slightly shorter than the width of the belt (20) so as to come into contact entirely with the transverse surface of the belt (20).

25 5. The belt conveyor according to any one of claims 1 to 4, wherein said antiwear tube (3) has a thickness (S) around 3 mm.

6. The belt conveyor according to any one of claims 1 to 5, wherein said antiwear tube (3) is elastic with a SHORE A hardness of approximately 60-70.
30

7. A motorised roller (1) for the driving of belt of belt conveyor (100) provided with the antiwear sheath or tube (3) made of PVC additioned with antiwear additives as defined in any one of claims 3 to 6, said tube or sheath (3) being transition fit mounted on said motorised roller (1).
35

8. An antiwear sheath or tube (3) made of PVC additioned with antiwear additives as defined in any one of claims 3 to 6 suitable for being fitted on a drive motorised roller (1) for the driving with friction of a belt (20) of a belt conveyor (100).
- 5 9. The antiwear sheath or tube (3) according to claim 8 having a diameter adapted to a coupling fit of transition type with respect to the at least one motorised or drive roller (1) as to allow easy assembly on the roller without the need for dedicated equipment for widening the inner diameter of the sheath or tube.

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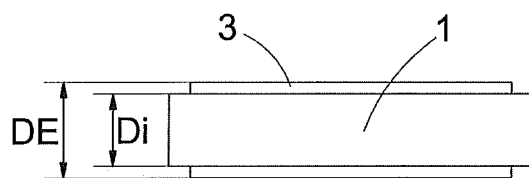
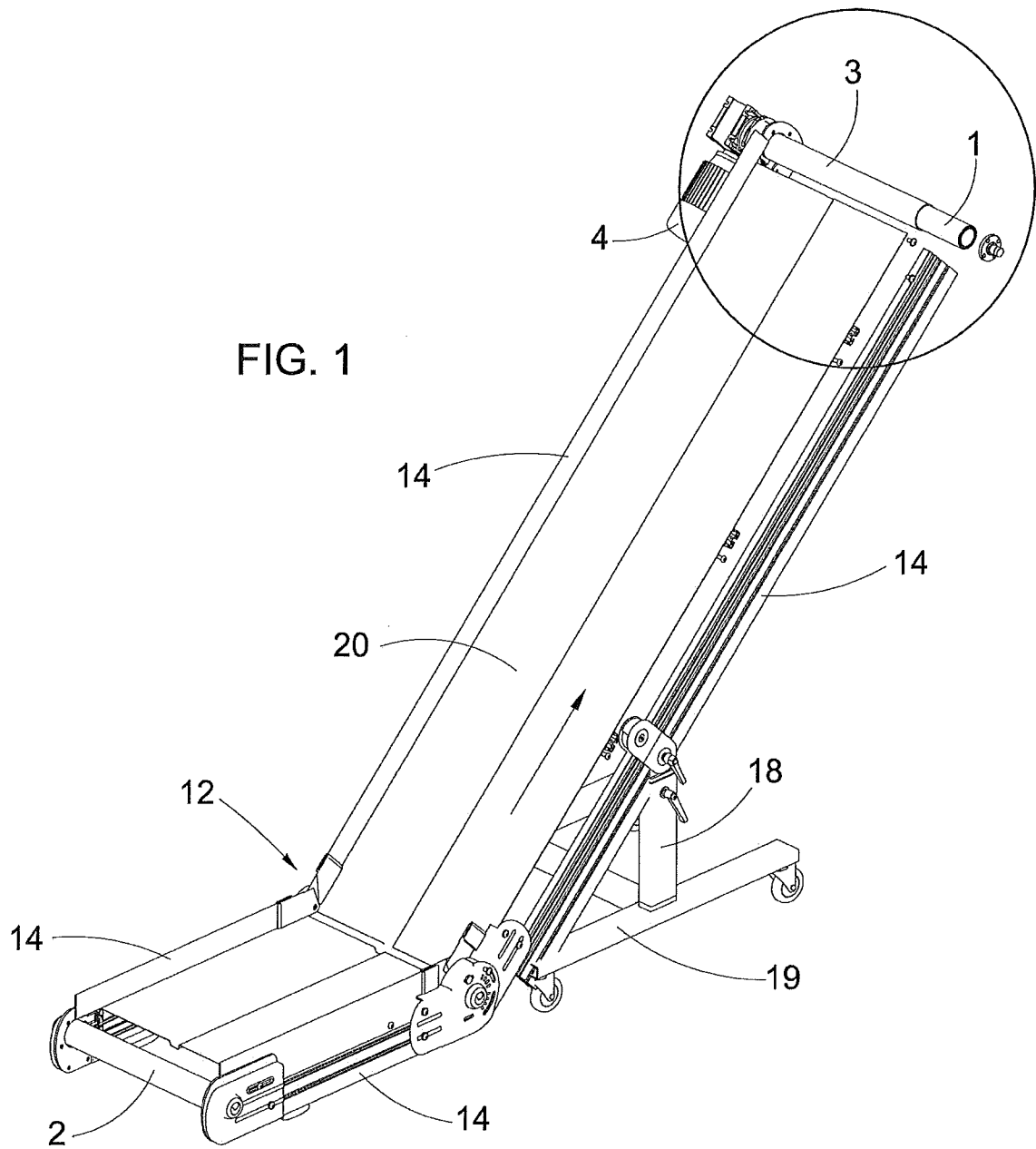


FIG. 4a

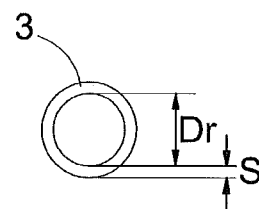
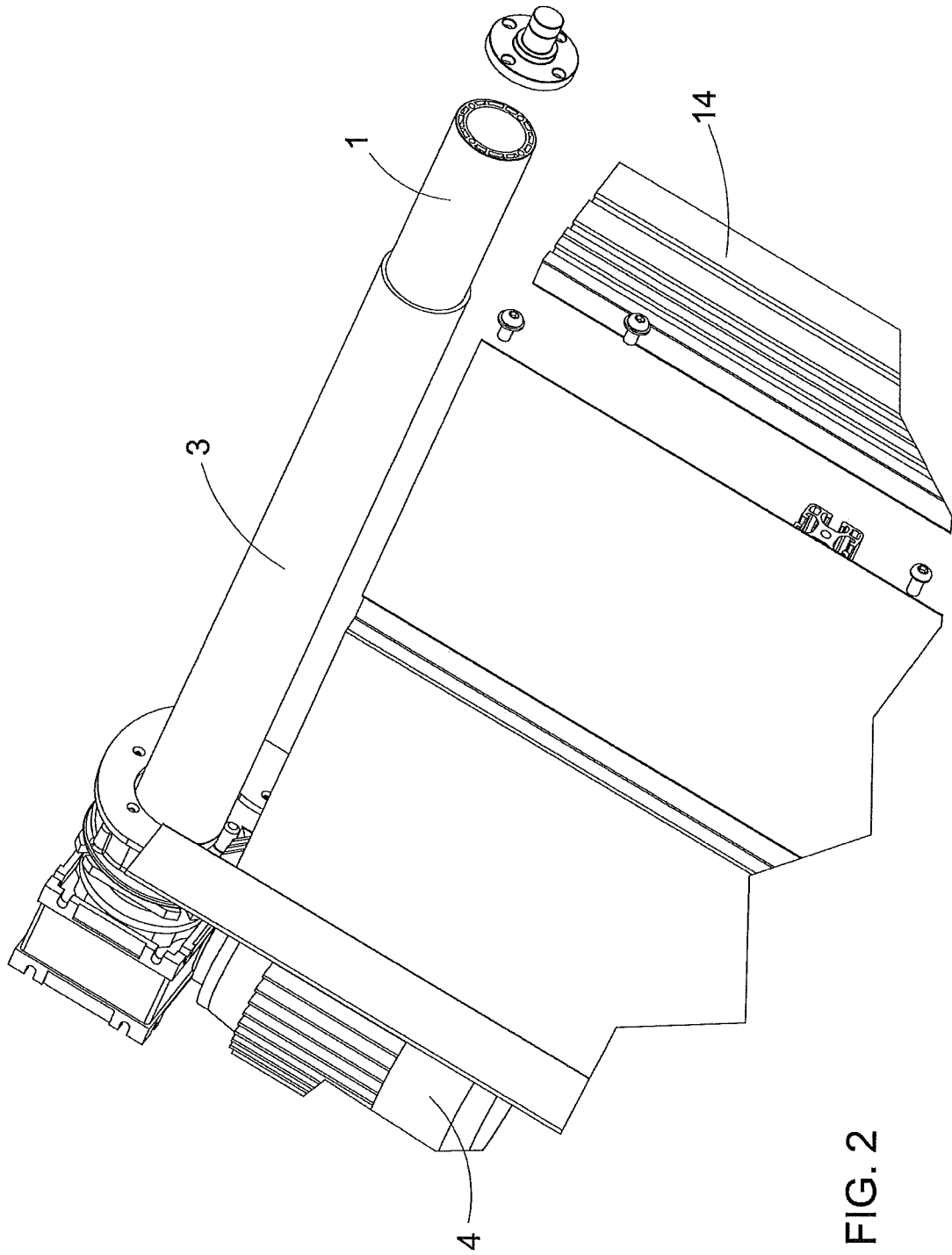


FIG. 4b

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