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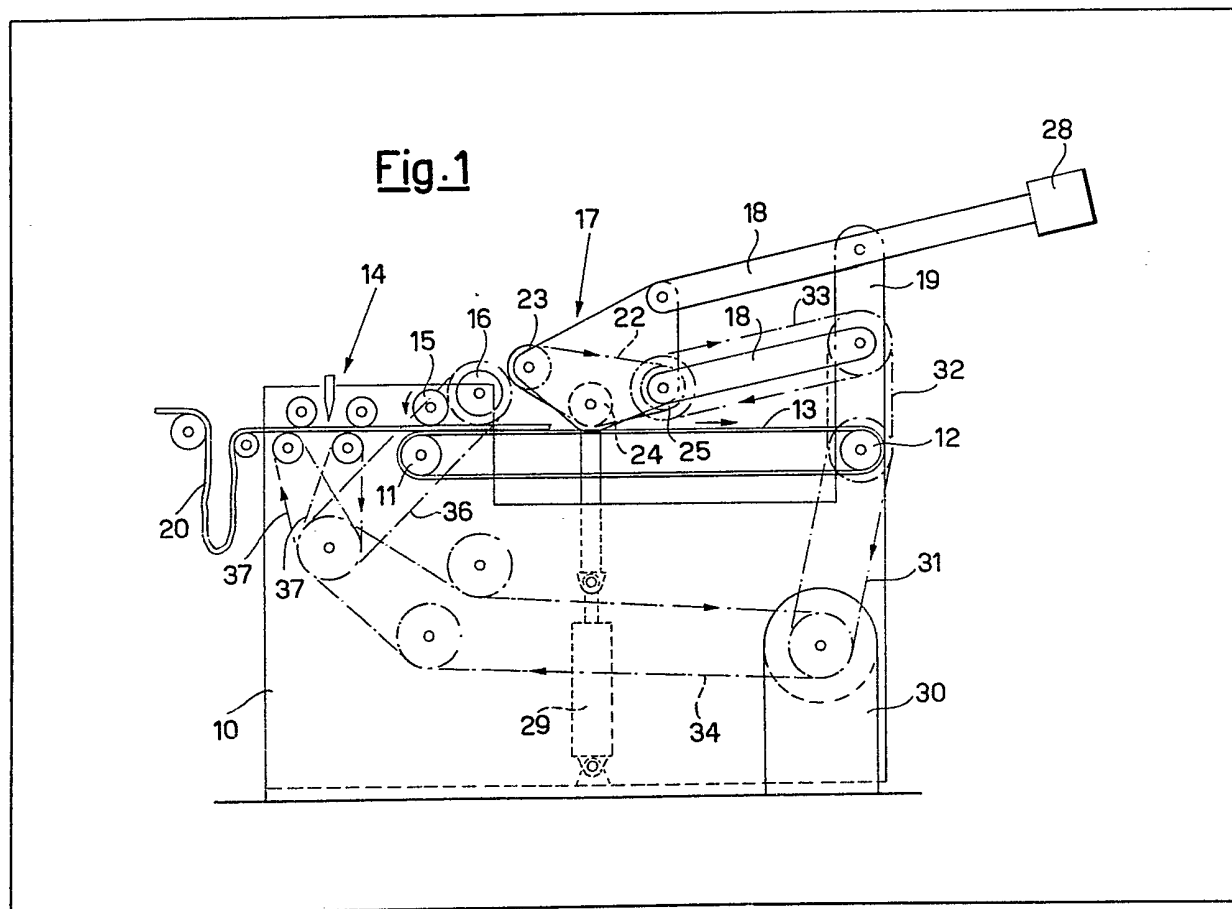
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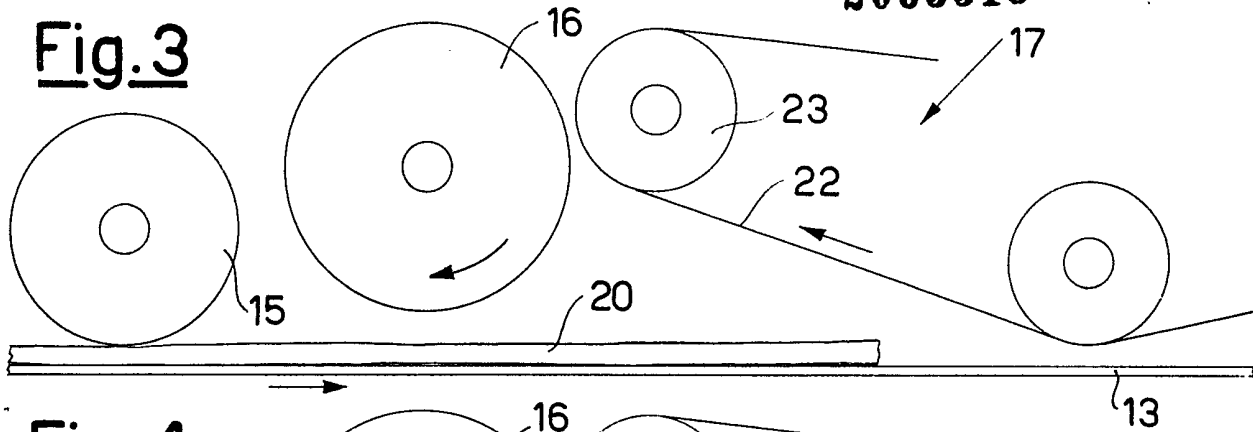
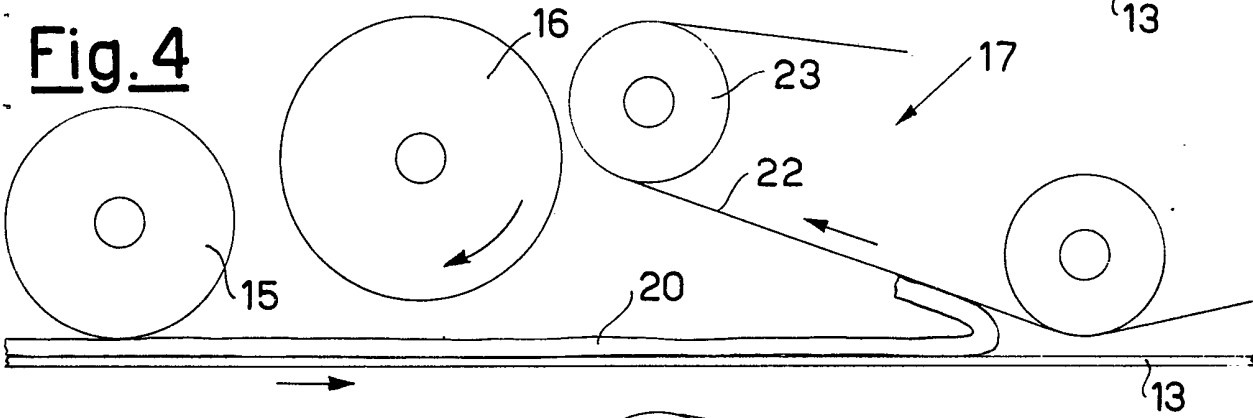
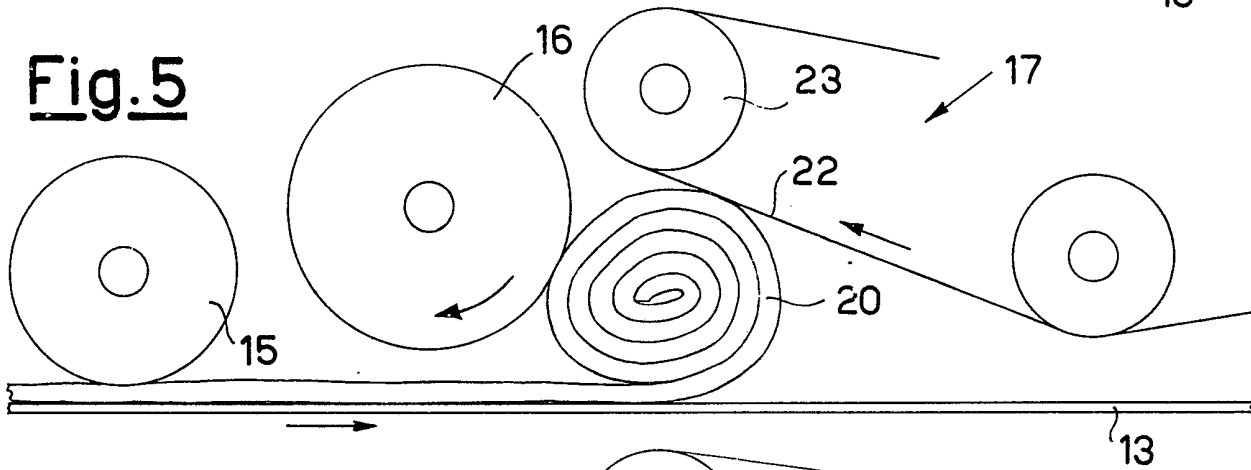
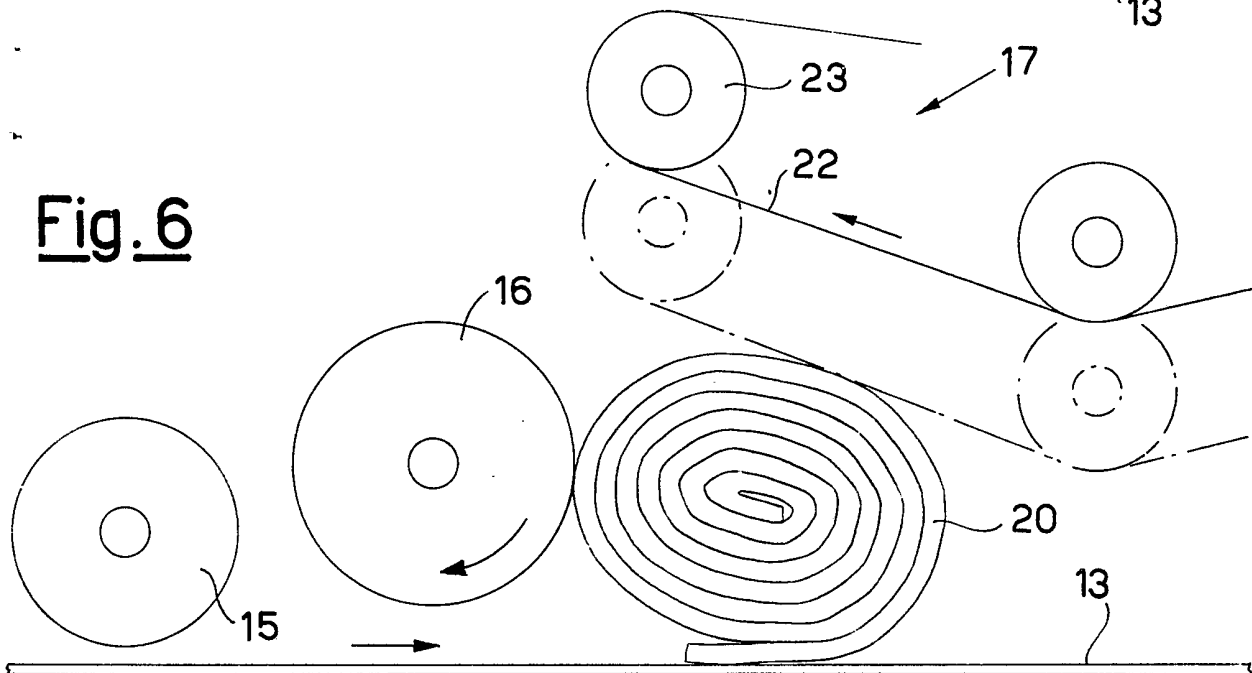
(54) Machine for making sliver rolls

(57) A machine for making rolls of a
fibrous material from sliver material,

which is received on a conveyor belt
(13), which passes under a cylinder
16 has a displaceable conveying
member (22), which is moved in
opposition to conveyor (13) for
grasping the sliver end thus initiating
the formation of the roll. Conveying
member (22) checks the growth of the
roll diameter and is displaceable to
release the roll when formed.



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Fig. 3**Fig. 4****Fig. 5****Fig. 6**

SPECIFICATION

Machine for making sliver rolls

It is known that the necessity is often felt of preparing rolls which contain a determined length of a fibre sliver. Thus, for example, staple cotton is treated.

In general this operation, which is conceptually very simple, requires a certain amount of workmanship and is ill matched with the feed of the silver: such feed is continuous whenever the roll making machine is arranged immediately downstream of the sliver-forming unit.

The object of the invention is to provide a machine which is capable of forming rolls of sliver having a certain size without requiring any winding hub. Another object is to carry out the wrapping of the roll with a minimum time lag between the makeup of a roller and the start of the formation of the next roller: thus a machine is provided which is particularly adapted to receive a continuously fed in sliver.

In addition, the invention aims at rendering the formation of the rollers and their discharge completely automatic even if adopting not too intricate mechanical means.

To achieve these objects, according to the invention, a machine for the formation of a roll of sliver is provided, which comprises a feeding and severing unit for the fibrous material, a conveyor belt in the neighbourhood of which there are confrontingly installed a first fixed roller the peripheral surface of which is moved concurrently with the machine direction of the conveyor belt, and a second conveying unit the surface of which confronting the conveyor belt is moved in opposition thereto, said conveying unit being yieldably supported so as to be moved away of said belt from an at rest position wherein it is spaced from the belt by a distance shorter than the thickness of the fed-in material, an actuator being further provided for withdrawing said second conveying unit from the conveyor belt.

In order that the objects and features of the invention may better be understood, an exemplary embodiment thereof will now be described hereinafter with reference to the accompanying drawings, wherein:

FIGURES 1 and 2 show general layout diagrams of the machine, in side elevational and front elevational view, respectively.

FIGURES 3, 4, 5 and 6 are diagrammatical views of the machine shown in FIGURE 1 in several working stages of same machine.

As depicted in the diagrams of FIGURES 1 and 2, the machine in question comprises a framing 10, on which runs between two rollers 11 and 12 a conveyor belt 13, the upper lap of which receives a fibre sliver 20 fed in by a feeding and cutting unit generally shown at 14.

Confrontingly with respect to the top edge of the conveyor belt 13, a cylinder 15 is rotated and gently urges the sliver 20 against the surface of the conveyor belt 13 in order to ensure an adhesion thereto which is adequate to ensure a

smooth forward feed.

Still in confronting relationship relative to the belt 13, there is a roller 16 and also a rocking unit 17 is provided: such rocking unit 17 is supported by a parallelogram frame comprised of arms 18 linkably connected to an upright 19 of the machine frame. The unit 17 has a counterweight 28 and is movable by the agency of a pneumatic ram actuator 29.

The unit 17 comprises a belt 22, which is mounted on three rollers 23, 24 and 25 to provide, quite characteristically in this invention, a surface which is at an incline relative to the belt 14 to fulfil a task to be specified in more detail hereinafter.

The drive of the several machine members described above is diagrammatically shown and comprises a gearbox with built-in motor 30, which drives to clockwise rotation (FIGURE 1) the roller 12 and the chain 31, whereby the drive is further transferred, via the chains 32 and 33, to the roller 25.

The prime mover 30 also drives via the chains 34—36 the cylinder 16 and, via the chains 34—37, the feeding and severing unit 14.

The layout of the drive transfer as shown in the drawings is merely exemplary of the component parts and their directions of rotation.

The operation of the machine will become still more clearly apparent from a scrutiny of the diagrams of FIGURES 3 to 6 inclusive.

The sliver 20 is fed forward by the belt 13 (FIGURE 3) and its end is grasped by the belt 22 of the unit 17: this latter, in its at rest position, sweeps the sliver 13, so that the sliver end is folded back and starts the formation of the roll (FIGURE 4). Now, the roller continues to be wrapped over itself gradually (FIGURE 5) whereas the yieldability of the supporting member of the unit 17 allows the diameter of the roll to grow freely and progressively, until the peripheral surface of the roll abuts the roller 16. As soon as the roll has attained the desired diametrical size, the feeding and severing unit 14 enters action and cuts the sliver, whereby the machine feed is very shortly discontinued.

On completion of roll wrapping, the unit 17 is lifted by the actuating mechanism 29 (FIGURE 6) and the roll is disengaged and can be carried away on and by the conveyor belt 13. The unit 17 is then lowered again to receive the leading edge of the next sliver length 20, which, meanwhile, has become to be fed forward again the the unit 14, the latter having been brought back to the position of FIGURE 3.

The scrutiny of the diagrams which have been commented above, suggests a few logical considerations to anyone skilled in the art, viz.:

The surface speed of the belt 22 shall not be lower than the speed of the belt 13, to prevent unwrapped sliver build up. Conversely, a slightly exceeding surface speed of the belt 22 originates a certain sliver drag, conducive to a tight wrap. The surface speed of the roller 16 shall be, as a rule, equal to that of the belt 22.

It is likewise apparent that a number of constructional changes may be envisaged for the several component parts of the machine described hereinbefore by way of example.

5 More particularly, the belt 22 running over three rollers can also be replaced by a rotary cylinder. Likewise, the way in which the unit 17 is yieldably suspended can be varied, irrespective of how the unit itself is composed. The unit 17 can
10 also be counterbalanced by springs so as to urge the sliver roller being formed and ensure a good adherence thereof to the belt 22, without, however, impressing to the wrapped material an exceedingly intense deformation.

15 Also the feeding and severing unit 14, which is conventional per se, can variously be embodied.

The sequential actuation of the several units of the machine can conveniently be obtained by timing, whereby also the diameter of the sliver roll
20 before being unloaded can also be regulated.

The diameter of the sliver roll could also be adjusted by providing an adjustable end of stroke abutment for the unit 17 so that, as the unit has reached a certain preselected level, the sliver
25 severing is commanded and, sequentially therewith, the unloading of the wrapped sliver roll.

These constructional details may anyhow be variously embodied: what actually counts to the ends of the invention is the cooperation between
30 the surfaces of the conveyor belts 13 and 22 and the roller 16 so as to carry out the formation of the sliver roll without any inner core.

It can also be seen that the machine of this invention is adapted to wrap sliver rollers with an

35 interposer made of a web of a thin material, for example paper, so that the sliver roll is a fibrous material wrap with intervening spirals of paper or any other appropriate material.

CLAIMS

40 1. A machine for the formation of a roller of a sliver material, comprising a sliver feeding and severing unit, a conveyor belt in the vicinity of which there are confrontingly located a first fixed roller the surface of which is moved concurrently
45 with the conveyor belt and a second conveying unit the surface of which in front of the conveyor belt is moved in opposition to the motion of the conveyor belt and which is supported yieldably to be withdrawn from said belt from an at rest
50 position in which it is at a distance from the conveyor belt shorter than the thickness of the fed in sliver, an actuator being further provided for bringing the second conveying unit away of the first-named conveyor belt.

55 2. Machine according to Claim 1, characterized in that said second conveying unit is composed by a second conveyor belt the active lap of which is at an angle relative to the active lap of the first belt.

60 3. Machine according to Claim 1, characterized in that said second conveying unit is carried by rocker-arm linkage equipped with means for adjusting the force with which said linkage can be withdrawn from the conveyor belt.

65 4. Machine according to the preceding Claims, substantially as hereinbefore described and illustrated in the accompanying drawings.