Sept. 2, 1969 W. KUPPER 3,464,640

DEVICE FOR PNEUMATICALLY REMOVING THE TIP OR FOOT BUNCH FROM SUPPLY COILS

Filed Nov. 30, 1966 5 Sheets-Sheet 1

FIG. 1

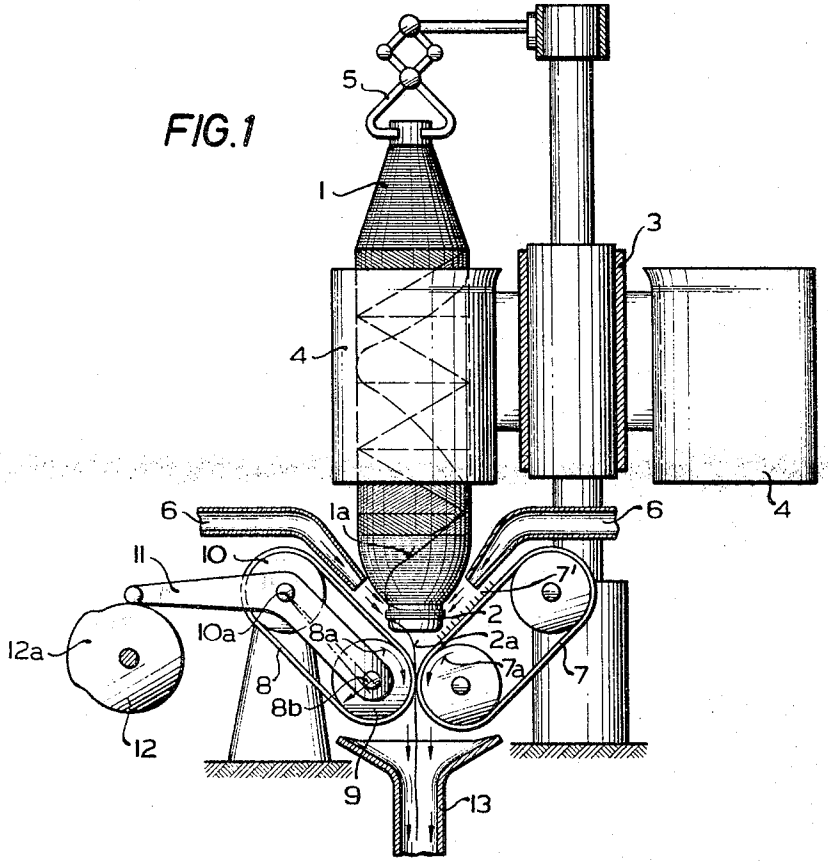

FIG. 2

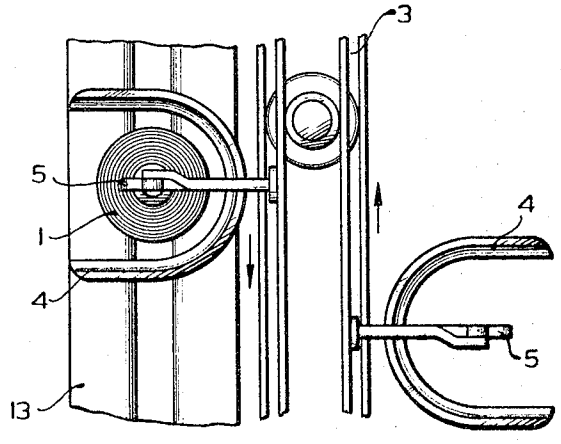

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FIG. 3

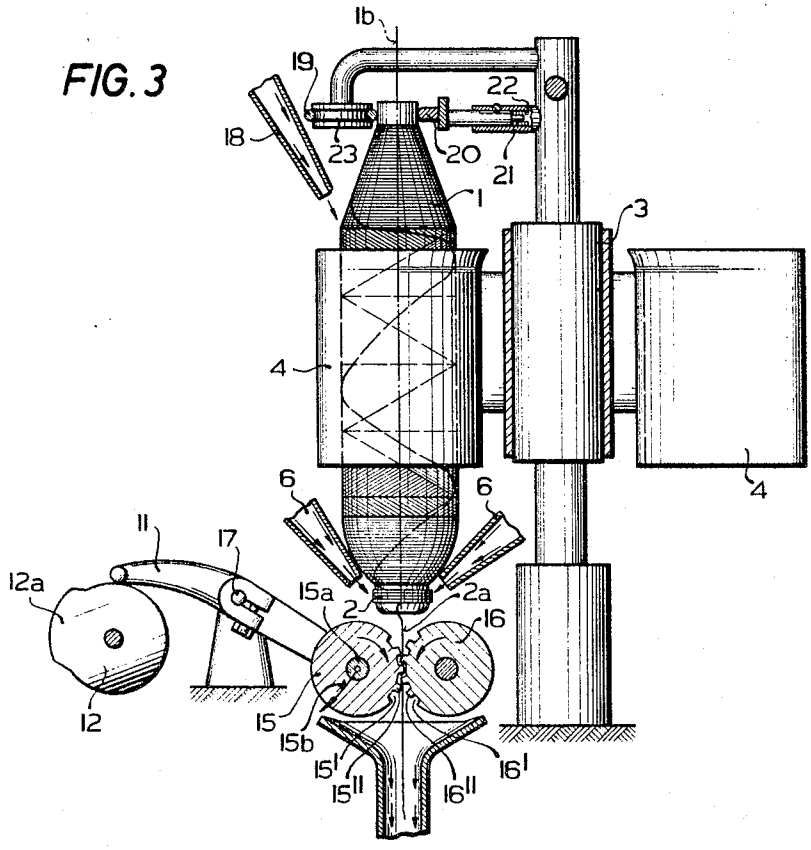

FIG. 4

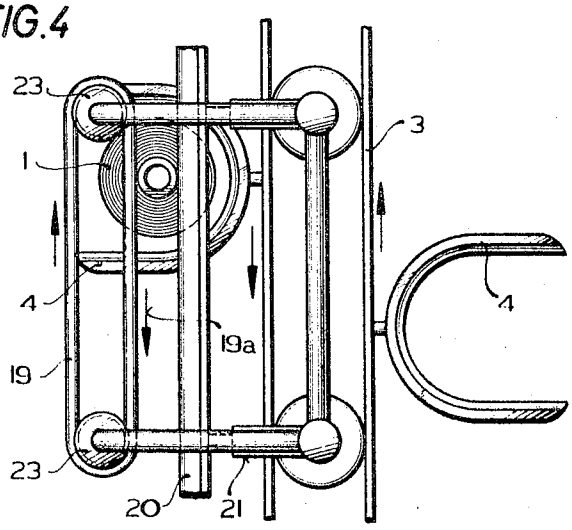

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FIG. 5

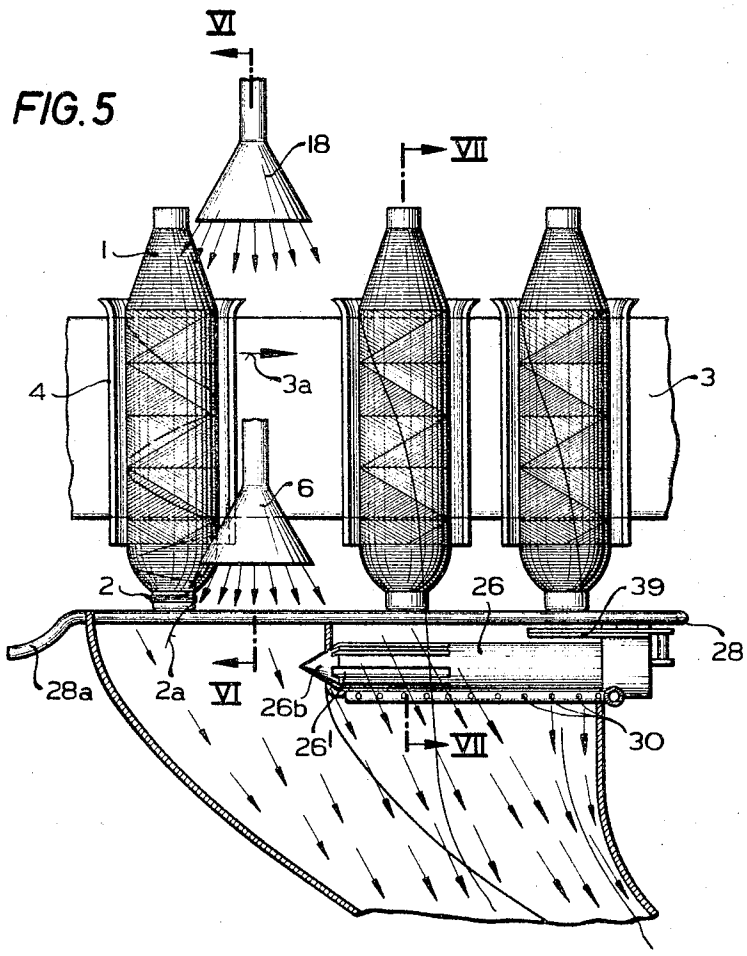

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FIG. 6

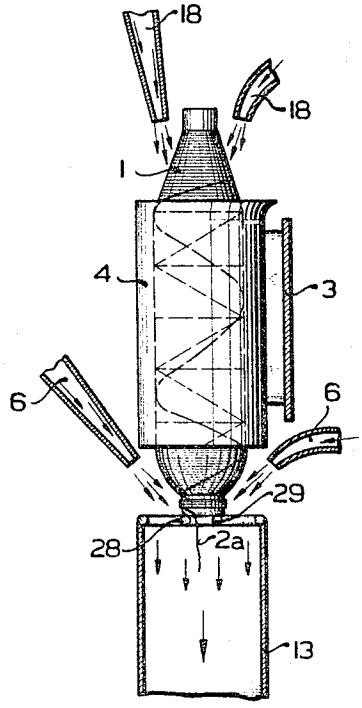

FIG. 7

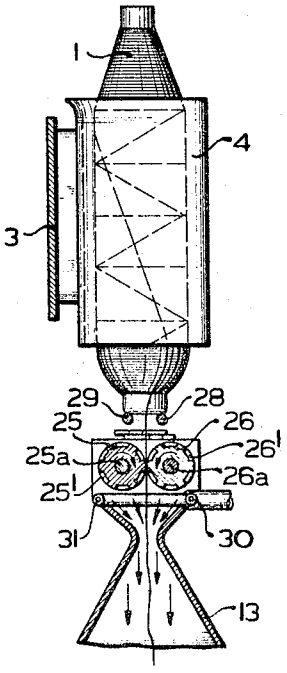

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FIG.8

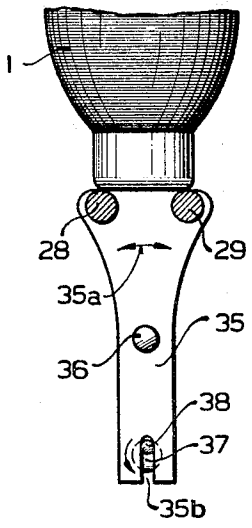
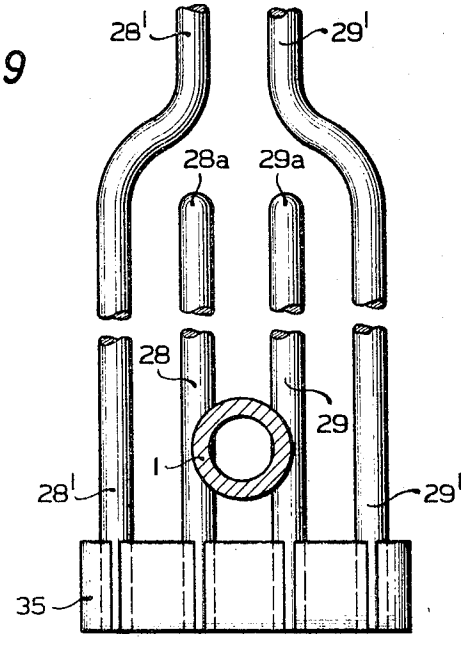


FIG.9



United States Patent Office 3,464,640 Patented Sept. 2, 1969

3,464,640

DEVICE FOR PNEUMATICALLY REMOVING THE TIP OR FOOT BUNCH FROM SUPPLY COILS

Wilhelm Kupper, Rickelrath, Kreis Erkelenz, Germany, assignor to Walter Reiners, Monchen-Gladbach, Germany

Filed Nov. 30, 1966, Ser. No. 598,062
Claims priority, application Germany, Dec. 2, 1965, R 42,100
Int. Cl. B65h 54/86
U.S. Cl. 242—35.6 9 Claims

ABSTRACT OF THE DISCLOSURE

Device for pneumatically removing the tip or foot bunch from supply coils comprising means for placing the end of a supply coil wound with a bunch, that is to be removed, within an air current so that a thread end in the bunch is exposed, and mechanical removing mechanism for slidingly seizing the thread end and drawing it off in the flow direction of the air current. The mechanical removing mechanism comprises two rotary members having peripheral surfaces at least nearly in engagement with one another.

My invention relates to device for pneumatically removing the tip or foot bunch from supply coils, such as, for example, spinning cops, bobbins, pirn or the like.

Devices of the aforementioned type serve for placing in readiness the upper or lower winding, that is the bunch of windings located at the tip of the coil or at the foot of the coil, for a further processing operation whereby the thread ends can be gripped by the thread gripping members of the further processing machine, such as, for example, a thread winding machine. In order to be able to place these thread ends in readiness, it is necessary also to remove the tip bunch or foot bunch in which the thread end is located.

In patent No. 2,208,930 to G. Kahlisch, and more particularly in FIGS. 5 and 6 therein, there is disclosed a device employing both pneumatic as well as mechanical means for effecting the removal of the tip or foot bunch from supply coils. Mechanical devices for drawing off the tip or foot bunch are advantageous in one respect, in that they provide virtually total assurance that the bunch will be removed, but such mechanical devices, however, have the disadvantage in another respect, in that they can be used only to a limited extent for coil cores of varying dimensions. Moreover, with these mechanical bunch removal devices, the danger is ever present that damage will be done to the coil winding. The pneumatic devices which operate either with suction (negative pressure) or with positive air pressure have the advantage that they virtually preclude the possibility of any damage to the coil, and these devices can be used without difficulty for any desired coil core dimensions. It has been found, however, that there is no absolute assurance that the tip or foot bunch will be removed by suction or air pressure from all supply coils submitted thereto. Difficulties are encountered in the pneumatic removal of a tip or foot bunch when the thread is interlocked or entangled with adjacent threads or thread layers or is wound up with airborne dust. It is also possible that the core on which the tip or foot bunch is wound, has defects therein such as nicks or scratches in which the threads can be caught. In all such cases, there can be no assurance of reliable removal of a winding or bunch by means of pneumatic devices.

It is accordingly an object of my invention to provide device for pneumatically removing the tip or foot bunch from supply coils which affords an improvement over the heretofore known devices of this type so that it affords at least substantially the same reliability for removing the

bunches as has been able to be achieved heretofore only by mechanical bunch-removing devices. More particularly, it is an object of my invention to provide such a pneumatic device that will exhibit the advantages both of the heretofore known pneumatic and mechanical devices while eliminating the disadvantages heretofore associated with these types of devices.

With the foregoing and other objects in view, I provide in accordance with my invention a device for pneumatically removing the tip or foot bunch from supply coils, which comprises means for disposing within an air current, a coil end wound with a bunch that is to be removed and a mechanical removing mechanism slidingly gripping the free end of the thread wound in the bunch intermittently or continuously and acting substantially in the direction of flow of the air current. Since a thread end is always exposed first when pneumatically removing the tip or foot bunch of a supply coil, it is possible, in accordance with my invention, to seize this pneumatically exposed thread end, that may be very short, by means of the mechanical removing mechanism. The action of the air current is then assisted by the mechanical removing mechanism in such a way that the winding is removed even when the thread has been entangled within the winding or caught on the core for any reason whatever.

In accordance with more detailed features of my invention, my bunch-removing device comprises two rotary members that are at least nearly in engagement with one another. The rotary members are located only so close to one another that the free end of the thread is slidingly caught but not pinched or wedged therebetween.

In accordance with an alternate feature of my invention, the thread is slidingly seized by sling-shaped gripping elements provided at the surface of the rotary members engaging with the thread so that the thread end can slide through these elements as for a rake-type tensioner.

In accordance with a further feature of my invention, means are provided for periodically bringing the rotary members into engagement either by a pivoting movement of one or of both of the rotary members or also by means of a suitable construction of the peripheral surface of the rotary members whereby the rotary members engage one another only at intervals and consequently intermittently grip the thread end.

In accordance with yet another feature of my invention, my device is adapted to clamp the thread end between the rotary members in order to maintain a continuous grip on the thread end.

Other features which are considered as characteristic for the invention are set forth in the appended claims.

Although the invention is illustrated and described herein as embodied in device for pneumatically removing the tip or foot bunch from supply coils, it is nevertheless not intended to be limited to the details shown, since various modifications and structural changes may be made therein without departing from the spirit of the invention and within the scope and range of equivalents of the claims.

The construction and operation of the invention, however, 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 diagrammatic elevational view of one embodiment of the device for pneumatically removing a tip or foot bunch from supply coils constructed in accordance with my invention;

FIG. 2 is a top plan view of FIG. 1;

FIG. 3 is a diagrammatic elevational view of another embodiment of the device of FIG. 1;

FIG. 4 is a top plan view of FIG. 3;

FIG. 5 is a diagrammatic elevational view of still another embodiment of the device of my invention;

FIGS. 6 and 7 are sectional views respectively taken along the lines VI—VI and VII—VII of FIG. 5 in the direction of the arrows;

FIG. 8 is a fragmentary view partly in section of a modified form of the embodiment of FIG. 5; and

FIG. 9 is a top plan view of a modification of the embodiment of FIG. 8 with a supply coil shown in cross section.

Referring now to the drawings and first particularly to FIGS. 1 and 2 thereof, there are shown a side-elevational view and a top plan view respectively of a device for pneumatically removing the foot bunch **2** of a spinning cop **1** which, in this embodiment, is advanced in a hanging position by gripping device **5** holding the cop at the tip thereof while the cop is disposed in a transporting pouch or pocket **4** secured to a moving conveyor belt **3**. Reference may be had to Patent No. 2,707,548 of S. Fürst for further details of construction of such pockets and conveyor belt. Air jet nozzles **6** serve for removing the foot bunch **2**, and a mechanical removing device in the form of two intermittently engaging rotational members is located in the air current from the nozzles **6** and seizes the free thread end **2***a*. In this embodiment of FIGS. 1 and 2, both rotary members are formed of two endless bands or belts **7** and **8** which are rotated by non-illustrated driving means in opposite rotary directions as indicated by the arrows **7***a* and **8***a*. The reversing roller **9** of the conveyor belt **8** is mounted for pivotal movement in the direction of the arrow **8***b* about the axis **10***a* of the other reversing roller **10** of this conveyor belt **8** so that both conveyor belts **7** and **8** are intermittently engageable. The reversing roller **9** that is to be pivoted is provided with a mounting support at its axis **10***a* which is connected with a lever **11** pivotable in a clockwise direction by following a suitably driven rotary cam **12***a* of a cam plate **12** so as to effect intermittent engagement of both conveyor belts. Consequently, in the position of the band **8** in which it is pivoted out of engagement with the band **7**, the air current is able to flow more easily through the location in which the bands **7** and **8** are otherwise in engagement.

It is of particular advantage that, in accordance with the embodiments of FIG. 1, both endless belts **7** and **8** are disposed in a V-shape and the end of the cop which has the bunch **2** that is to be removed is mounted between the belts **7** and **8**. At least one of the belts **7** and **8** proper is advantageously provided with naps, burls, brushes **7'** or the like. In the embodiment of FIGS. 1 and 2, the angle of inclination of band **7** or band **8** or of both can be so chosen that the effect of the jet air current emitted by the nozzles **6** can be reinforced by friction engagement of the brushes or the like of the conveyor belts **7** and **8** on the foot bunch **2**. If desired, it is also possible only to have the naps, burls or brushes or the like of one of the conveyor belts engage the foot bunch **2** so that a separate air jet nozzle is not required at this location.

A flow discharge channel **13** which is located beneath the rotary members **7** and **8**, advantageously serves for receiving the discharging air current from the nozzles **6**. When the foot bunch **2** is completely removed, the steeply wound back winding **1***a* of the thread end on the periphery of the coil **1** is seized by the conveyor bands **7** and **8** so that this thread end must inevitably be torn off. The torn thread end can then be removed by being sucked into the air current discharge channel **13**.

In FIGS. 3 and 4 there is shown substantially the same device as is shown in FIGS. 1 and 2, however, with the difference that instead of the endless belts **7** and **8** of the embodiment of FIG. 1, the rotary members of the embodiment shown in FIGS. 3 and 4 are formed of two rollers **15** and **16**. A bunch-removal device consisting of two rotary members in the form of rollers has the advantage over the aforedescribed conveyor belt forms of the embodiment of FIGS. 1 and 2 in that it has a more simplified construction. The rollers **15** and **16** can slidingly grip the thread end **2***a* either intermittently or continuously. A sliding retention of the thread end is possible due to the fact that the rollers only lightly abut against one another. It is more advantageous for attaining a secure grip on the free thread end **2***a* that at least one of the rollers **15** and **16** be provided with recesses distributed on the periphery thereof. A form of such recesses is indicated in FIG. 3 by the reference characters **15'** and **16'**. If the recesses **15'** and **16'** are greater in depth than the height of the projecting portions **15''** and **16''** of both rollers **15** and **16**, the thread can then be slidingly retained solely due to the tortuous path resulting from the meshing between the respective projecting portions of the rollers and the recesses thereof. It is also possible, however, to so arrange both rollers **15** and **16** with respect to one another that the thread is firmly pinched or wedged therebetween. It is equally possible to distribute the recesses **15'** and **16'** only on one portion of the periphery of the rollers as can be seen clearly in FIG. 3 so that the thread end is alternately drawn off slidingly or intermittently and continuously. In the embodiment of FIGS. 3 and 4, it can be advantageous for the purpose of avoiding slip or backlash between the rollers **15** and **16**, that both of these rollers be operatively connected with one another. Also, in the embodiment of FIGS. 3 and 4, at least one of the two rotatable members can be mounted so that it is pivotable in a direction toward the other of the rotatable members. For this purpose, the axis **15***a* of the roller **15** in the embodiment of FIGS. 3 and 4 is mounted so as to be rotatable about the fixed axis **17** and is connected with the arm **11** which follows the rotatable cam disc **12**. When the lever arm **11** rises up on the cam portion **12***a* of the disc **12**, the roller **15** pivots in the direction of the arrow **15***b* so that the air current emitted from the nozzles **6** can pass more easily between the rollers **15** and **16**.

As compared with the embodiment of FIGS. 1 and 2, it may be noted that in the embodiment of FIGS. 3 and 4 an additional air jet nozzle **18** is provided for the purpose of blowing down a thread end projecting out of the foot bunch **2** and lying on the surface of the coil, so that it can be reliably entrained in the air currents from the air jet nozzles **6**. An additional air jet nozzle of this type can naturally also be employed with the embodiment of FIGS. 1 and 2.

There is furthermore also provided in the embodiment of FIGS. 3 and 4, a different suspension device for the cop than is provided in the embodiment of FIGS. 1 and 2. The suspension device of FIGS. 3 and 4 is formed of two holder members **19** and **20**, the holder member **19** being mounted so that it is displaceable in the direction of the arrow **19***a* (FIG. 4), that is, in the direction in which the cops are conveyed, whereas the holder member **20** is mounted so that it is stationary with respect to the direction in which the cops are conveyed. The holder member **19** is formed of a rotatably mounted endless belt or the like which is guided over two reversing rollers **23** so that it is displaceable in the cop conveying direction.

When the core tip of the cop **1** is conveyed by the conveyor pocket **4** between the two holder members **19** and **20**, the core tip is rigidly clamped so that the cop is thereafter conveyed in a suspended condition and the support at the foot of the cop, known for example from the aforementioned Patent No. 2,707,548, can be pivoted away so as to permit reliable removal of the foot bunch.

Since the holder member **20** is stationary in regard to the direction of conveyance of the cops and only the holder belt **19** is mounted so that it is movable in the direction in which the cops are being conveyed, the cop **1** is caused to rotate. By means of this mounting of the cop so that it is rotatable about its longitudinal axis in the direction of conveyance thereof, the entire periphery of the cop is subjected to the action of the air jet nozzles **6** and **18** and consequently the thread end can be reliably removed even under difficult conditions.

Mounting the cops so that they are rotatable about

their longitudinal axes can also be effected by other means, such as for example by means of one or more rotatable rollers or the like which engage the periphery of the cop or the core thereof, as has for example been described in Patent No. 3,029,031, and more particularly as shown in FIG. 4 thereof. Such means can be used particularly advantageously when the cops are not suspended during the removal of the tip or foot bunch but rather are supported from below as shown in FIGS. 5 to 9 of the instant application and as described hereinafter.

Further in regard to the embodiment of FIGS. 3 and 4, in order to permit a reliable clamping of coil cores having different diameters, the holder member 20 is oscillatingly mounted under the effect of a biasing force directed toward the axis 1*b* of the cop. In the specific embodiment of FIGS. 3 and 4, the oscillatingly mounted holder member 20 is yieldably biased in a direction toward the cop axis 1*b* by the action of a spring 22 located in the bushing 21. It is also possible, however, to swingingly suspend this holder member 20. The biasing force can also be supplied by a pneumatic or magnetic force instead of a spring force, and by suitably suspending the holder member 20, the force of its own weight can be employed as the biasing force.

In the further embodiment shown in FIGS. 5, 6 and 7, there is again provided a conveyor belt 3 which is mounted in the same manner as in the embodiments of FIGS. 1 to 4, with conveyor pockets 4 in which the cops 1 are guided. The rotary members in the embodiment of FIGS. 5 to 7 are again formed by two rollers 25 and 26 (FIG. 7) which are provided with recesses 25′ and 26′ distributed on their peripheral surface. However, the projecting portions of the rollers 25 and 26 are always disposed opposite one another at the substantially abutting location thereof as is clearly shown in FIG. 7 so that the thread end is drawn off intermittently.. The conveyor device of the cops 1 in the embodiment of FIGS. 5 to 7, in the same manner as in the embodiment of FIGS. 1 to 4, moves in the direction of the rotary axes 25*a* and 26*a* of the rollers 25 and 26. In the embodiment of FIGS. 5 to 7, however, the cops 1 are not guided in suspended condition into the vicinity of the bunch-removing device but, rather, cop-supporting spacer rods 28 and 29 of advantageously circular cross section are located between the cops 1 and the bunch-removing device.

As soon as the cops 1, which are initially held in the conveyor pockets 4 by supporting flaps located beneath the pockets in a manner known for example from the aforementioned Patent No. 2,707,548, reach the vicinity of the bunch-removing device, the supporting flap is then pivoted in a manner such as is disclosed for example in the aforementioned Patent No. 2,707,548, so that the cops fall onto the downwardly bent entering end portions 28*a* of the supporting rods 28. The cops then slide upwardly on the supporting rods and are thus guided further over the bunch-removing device. Before the cops 1 slide off the supporting rods 28, 29 at the end of the bunch-removing device, the aforementioned non-illustrated foot flaps of the conveyor pockets 4 are again raised so that the cops can fall onto and be supported by the foot flaps.

The advantage of the supporting rods 28, 29 over the suspended guidance of the cop 1 in accordance with the embodiment of FIGS. 1 to 4, is its structural simplicity thereover. The disadvantage of the supporting rods 28, 29 consists, however, in that the thread end 2*a* which is blown off at the end of the cop can become twisted in the form of a loop or the like around the supporting rods 28 or 29, under adverse conditions. This disadvantage can be minimized, however, when the supporting rods are given a circular cross section and also if the supporting rods are inclined from the left-hand side to the right-hand side, as viewed in FIG. 5, so that the thread can be blown by the air current flowing out of the nozzles 6 in a direction toward the rollers 25 and 26 and can be thereafter gripped by the rollers 25 and 26 and drawn off.

To facilitate the blowing off of the upper or lower windings, i.e. the tip or foot bunch, as well as to prevent thread loops from being wound around the supporting rods 28 and 29, it can be of advantage if the supporting rods are mounted so that they are displaceable transversely to the direction of movement of the cops so that the bearing surface on which the cop cores are supported can be changed continuously. Such a mounting of the supporting rods is shown in enlarged view in FIG. 8. Both support rods 28 and 29 are shown having a common mounting member 35 which can be suitably pivoted about the axis 36 in either direction of the double-headed arrow 35*a*. An eccentrically mounted pin 38 rotatable about a fixed axis 37 and slidably movable in a slot 35*b* of the mounting member 35 suitably serves for pivoting the mounting member 35 so as to displace the supporting rods 28 and 29 transversely to the conveying direction of the cops.

Another means for removing the thread loops or the like which, as aforementioned, sometimes tend to wrap around the supporting rods 28 and 29, is to provide supporting rods which, separately or in combination with the movable mounting of the supporting rods shown in FIG. 8, are clamped together at only one end thereof. An embodiment for such an arrangement is shown in FIG. 9 which is a top plan view of a modification of FIG. 8 showing in section the foot of the core of the cop 1. As can be readily noted, the supporting rods 28 and 29 are clamped together only at one end in the mounting member 35. Consequently, any thread wrapped around the supporting rods 28 and 29 in the form of a loop or the like, slides off the free ends 28*a* and 29*a* of the respective rods and can be gripped without difficulty by the bunch-removing device.

To remove the thread loops or the like, it is also advantageous, according to the aforedescribed embodiments, if the supporting rods 28 and 29, contrary to the schematic showing in FIG. 6, do not uninterruptedly extend over the entire length of the bunch-removing device, but rather consist of several supporting rods connected so that they are slightly spaced from one another. The thread can then slide off the free end 28*a*, 29*a* of a supporting rod 28, 29 and can be seized by the bunch-removing device. A particularly advantageous embodiment for this purpose is shown in FIG. 9 wherein the supporting rods 28′ and 29′ are mutually connected with a slight spacing to the supporting rods 28 and 29. These supporting rods 28′ and 29′ are shown in the embodiment of FIG. 9 as being clamped on one side by the mounting member 35 together with the rods 28 and 29. In this manner, the supporting rods 28′ and 29′ are able to be pivoted back and forth transversely to the direction of movement of the cops by means of the aforementioned pivoting motion of the support member 35 hereinbefore described in relation to FIG. 8. In many cases it will be sufficient, however, to fixedly mount the support rods 28′ and 29′ separated from the rods 28 and 29.

To facilitate the entry of the thread end 2*a* between the rollers 25 and 26, the air current discharge channel 13 which at least partly surrounds the bunch-removing device in the direction of movement of the conveyor belt 3, as indicated by the arrow 3*a*, is slightly curved so that the illustrated current passage for the air jet flow is produced. It is furthermore especially advantageous when inserting the thread between the rollers 25 and 26, that the rollers, at least at their end 26*b* (FIG. 5) directed opposite to the direction of movement 3*a* of the conveyor apparatus, have a conical construction, it being sufficient possibly to provide only one of the rollers 26 with the conical shape. It is furthermore noted that the recesses 26′ extend from the conical roller end only along a portion of the length of the roller so that the gripped thread

end is drawn off intermittently at first, and continuously thereafter. The intermittent drawing off of the thread end has the advantage that the air jet current can be guided more effectively between the rollers **25** and **26** and the thread end **2***a* can also therefore be guided reliably. This reliable guidance of the thread can be assisted in an advantageous manner by locating additional blower nozzles **30, 31** within the current discharge channel **13** for acting upon the thread end extending out of the bunch-removing device **25, 26**. By suitable arrangement of these nozzles **30, 31** and advantageous construction of the current discharge channel **13**, for example in the manner indicated in FIG. 7, a type of injection effect can be achieved which prevents the thread end from looping around or getting caught on the rollers **25, 26**. In addition, an advantage is afforded by the fact that the blower nozzles **6** are directed toward the tip or foot bunch in the direction **3***a* of conveyance of the cops **1** only in front of the bunch-removing device **25, 26**, and the auxiliary nozzles **30, 31** are located only in the vicinity of the bunch-removing device so that an even more reliable passage of air into the air current discharge channel is obtained. In many cases, the location of a special air suction current at the current discharge channel **13** becomes superfluous. A known severing device **39** can be located at the end of the bunch-removing device for severing the freely readied thread ends.

The various schematically shown embodiments clearly indicate that in accordance with the basic concept of the invention of the instant application it is possible, in a relatively simple manner, to remove the tip or foot bunch from supply cops reliably with pneumatic means, whereby the advantages afforded by the pneumatic means as against the purely mechanical stripping means, are able to be attained. Obviously, the invention of this application is not to be considered to be limited only to the embodiments disclosed herein. For example, the forced air current issuing from the nozzles **6, 18** and **30, 31** can be replaced by an air suction or negative pressure current produced from the current discharge channel **13**. It is also not required that the cops whose tip or foot bunch is to be removed should be conveyed by means of a rotary conveyor belt over the bunch-removing device, but rather, the cops can also, heretofore known manner, be removed individually from a supply container or magazine and delivered to the bunch-removing device automatically or by hand. It is furthermore possible to mount the cops obliquely or horizontally to the direction of conveyor movement instead of the hereinaforedescribed perpendicular mounting of the cops.

I claim:

1. Device for pneumatically removing the tip or foot bunch from supply coils comprising means for disposing within an air current the end of a supply coil wound with a bunch that is to be removed so that a thread end in the bunch is exposed, mechanical removing mechanism for slidingly seizing the thread end and drawing it off in the flow direction of the air current, at least one nozzle directed toward the bunch that is to be removed from the supply coil for supplying the air current, an air current discharge channel at least partly surrounding said mechanical removing mechanism and adapted to receive the air current supplied by said nozzle, and at least one additional nozzle located within said air current discharge channel, said additional nozzle being adapted to provide an auxiliary air current acting upon the thread end projecting from said mechanical removing mechanism.

2. Device for pneumatically removing the tip or foot bunch from spinning cops comprising means for disposing within an air current the end of a spinning cop wound with a bunch that is to be removed so that a thread end in the bunch is exposed, mechanical removing mechanism for slidingly seizing the thread end and drawing it off in the flow direction of the air current, said mechanical removing mechanism comprising two rotary members having peripheral surfaces at least nearly in engagement with one another, movable conveyance means wherein the spinning cop is mounted, said conveyance means and the spinning cop mounted therein being movable in the direction of the rotary axes of said rotary members, and including means for suspending said spinning cop as it is conveyed into the vicinity of said mechanical removing mechanism.

3. Device for pneumatically removing the tip or foot bunch from supply coils comprising means for disposing within an air current the end of a supply coil wound with a bunch that is to be removed so that a thread end in the bunch is exposed, mechanical removing mechanism for slidingly seizing the thread end and drawing it off in the flow direction of the air current, said mechanical removing mechanism comprising two rotary members having peripheral surfaces at least nearly in engagement with one another, movable conveyance means wherein the supply coil is mounted, said conveyance means and the supply coil mounted therein being movable in the direction of the rotary axes of said rotary members, and at least one support rod located between the supply coil aid the mechanical removing mechanism and extending in the conveyance direction of the supply coil.

4. Device according to claim **3** wherein said support rod is mounted so that it is movable transversely to the conveyance direction of the supply coil.

5. Device according to claim **3** wherein said support rod is in the form of a carrier clamped at only one end.

6. Device according to claim **3** including a plurality of said support rods connected together with spacing therebetween.

7. Device for pneumatically removing the tip or foot bunch from supply coils comprising means for disposing within an air current the end of a supply coil wound with a bunch that is to be removed so that a thread end in the bunch is exposed, mechanical removing mechanism for slidingly seizing the thread end and drawing it off in the flow direction of the air current, said mechanical removing mechanism comprising two rotary members having peripheral surfaces at least nearly in engagement with one another, said rotary members being rollers, and including movable conveyance means for the supply coil, said conveyance means and the supply coil being movable in the direction of the rotary axes of said rollers, at least one of said rollers having a conical end extending in a direction opposite to the direction of movement of said conveyance means.

8. Device according to claim **7** wherein said one roller is formed with recesses distributed over the periphery thereof along a portion of the length thereof from said conical end.

9. Device according to claim **8** wherein said nozzle directed toward the bunch that is to be removed from the supply coil is located upstream of said mechanical removing mechanism in the conveyance direction of the supply coil, and said additional nozzle located within said air current discharge channel is located in the vicinity of said mechanical removing mechanism.

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