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(54) **A MULTIFUNCTIONAL MACHINE FOR THE JOINING CALENDERING, CUTTING AND
REWINDING OF FILMS**

VIELZWECKSVORRICHTUNG ZUM VERBINDEN, KALANDERN, SCHNEIDEN UND WIEDER
AUFWICKELN VON FOLIENBAHNEN

MACHINE MULTIFONCTIONS POUR LE CALANDRAGE, LA COUPE ET LE REMBOBINAGE DE
FILMS

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(56) References cited:
EP-A- 0 154 057 **FR-A- 2 496 552**

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Description

Field of the invention

The present invention relates to a multifunctional machine for the joining, calendering, cutting and rewinding of adhesive or nonadhesive paper or plastic films in the form of continuous strips or in sheets and in particular, but non exclusively, for the automatic joining of an adhesive application tape to sheets of cut out labels or to a tape of prespaced cut out labels.

Background art

In the production of self-adhesive labels the film bearing the writing and the designs of the label is applied by means of a biadhesive tape to a silicon-coated support sheet. Subsequently, by means of appropriate and known techniques of die-cutting, the film is cut around the writing and the designs allowing the scrap, that is the unutilized film, to be removed.

After the removal of the unused film, which can be carried out manually or mechanically by means of a machine produced by the same applicant (Italian patent application No.FI/91/A/86), the label is covered with a transparent or semitransparent adhesive film the adhesive force of which is greater than that existing between the label and the silicon-coated support. Thus, to apply the label, it is sufficient to lift the adhesive film from the silicon-coated support from which the writing and the designs disengage remaining attached to the adhesive film itself which is then placed on and fixed to the application surface.

The silicon-coated support with the writing and the designs of the label is cut into sheets of various dimensions corresponding to the dimensions of the label itself.

Currently the application of these sheets to the transparent adhesive film, also called "application tape", is carried out manually. The silicon-coated and cut out sheets are placed on the application tape and pressed to it. Subsequently, the resulting tape is cut.

To press the silicon-coated support to the application tape a simple and well-known machine is used comprising a pair of pressure rollers at the output of which the resulting tape is manually cut. This type of machine resolves only the problem of pressing the application tape to the silicon-coated support without however working out the problems surrounding it, which are the cause of material waste and slow processing.

Among these problems is that of the continuous feed upstream from the calender of an application tape of appropriate width and the placement on it of the silicon-coated support sheets holding the label. In order to obtain a high quality product, these operations are carried out manually with great care, without consequently being able to accomplish a high production rate.

The variability of width of the labels in turn, inevitably creates problems of material waste as a result of the unavailability on the market at reasonable prices of

reels of application tape of pre-established widths. The exigence for having said tape in different widths as a function of the dimensions of the label implies therefore, according to current technology, considerable costs of managing the unused material in order to limit as much as possible the waste of this type of material the cost of which is not negligible.

The problems downstream from the calender, on the other hand, are due to the necessity of cutting, with speed and precision at pre-established lengths, the resulting tape and providing the most rapid withdrawal possible of said sheets in order to allow for an increased production rate.

A further problem is in the exigency often felt in laboratories in this field to join two continuous tapes, of which one usually holds prespaced labels or is of a biadhesive type, in order to obtain a combined tape utilizable for other objects. In many laboratories, because of the light production of this type of tape, it is not cost-efficient to procure a machine dedicated to this single purpose which would therefore be left partially unutilized. Therefore for this type of production, in most cases the manual technique continues to be used.

The attention is also drawn to document FR-A-2 496 552 which describes a label producing machine of the type here in question.

One object of the present invention is to provide a machine which is able to accomplish contemporaneously several tasks among which those of joining, calendering, and cutting of two or more adhesive or nonadhesive paper or plastic films, and which is able to considerably increase the production rate and decrease the waste of material.

A particular object of the present invention is to provide a machine for automatic joining of the application tape to sheets of cut out labels.

Summary of the invention

These and other objects are accomplished by the multifunctional machine according to the present invention characterized in that it comprises: a first idle support for a first reel of tape; a longitudinal cutter with a knife orthogonal to the support and in an adjustable position for cutting at any point along the entire width of the tape; a roller for pulling the tape as it unwinds from the reel; a sheet feeder positioned above a plane on which the tape coming from the pulling roller advances; a calender downstream from the feeder to pull and press together the tape and the sheets placed in succession upon it; a transversal cutter downstream from the calender; a conveyor belt at the output downstream from the cutter for the rapid withdrawal of the resulting sheets; programmed control means in particular operating the intermittent rotation of the pulling roller of the calender in synchronism with the sheet feeder and with the cutter; sensing means provided for downstream from the cutter suited to signal said control means of the presence of the resulting sheets.

Advantageously combined with the first reel-holder support, a second motorized support is provided for suited to operations of either rewinding or contemporaneous feeding of two tapes to the machine.

Brief description of the drawings

Further characteristics and advantages of the multifunctional machine according to the present invention will be made more apparent in the following description of one of its embodiments given as an example, but not limitative, with reference to the attached drawings in which:

- figure 1 shows a longitudinal elevational view of the multifunctional machine according to the present invention;
- figure 2 shows a partial perspective view of a cutter at the output of the machine of figure 1 and a conveyor belt for the sheets;
- figure 3 shows a top plan view of the transversal cutter of figure 2;
- figures 4 and 5 show a front view of the cutter of figure 3 respectively in raised and lowered positions;
- figure 6 shows a perspective view of a cutter for the longitudinal cutting of a tape present on a reel;
- figure 7 shows a side view of the cutter of figure 6;
- figure 8 shows a top plan view of the cutter of figure 6;
- figure 9 shows a longitudinal sectional view of the reel cut by the cutter of figure 8;
- figure 10 shows a top plan view of a different embodiment of the cutter of figure 8;
- figures 11 and 12 show respectively in a side view and in a front view a double-edged knife for the cutter of figure 10;
- figure 13 shows a different embodiment of the knife of figure 11;
- figure 14 shows a top plan view of a different embodiment of the cutter of figure 3;
- figure 15 shows an elevational side view of an auxiliary support for a reel of application tape.

Best way of carrying out the invention

With reference to figure 1, a multifunctional machine which accomplishes the objectives described above comprises a first idle support 1 for a first reel 2 of tape 3 unrolled by a pulling roller 4 located above the support 1. Next to the support 1 a second support 5 is provided for a possible second reel 6 of tape 7 to be unrolled together with tape 3. The support 5 has a motor in order to allow the possibly desirable rewinding of tape 3a left over from a previous utilization of the machine, whereas the support 1 is held braked by registrable frictions not shown. On the sides of the supports 1 and 5 respectively cutters 8 and 9 with knives 10 are provided which operate orthogonally with respect to the reels 2 and 6 and cut longitudinally, one layer at a time, the

tapes 3 and 7. The supports 1 and 5 are preferably able to slide in a horizontal direction on coaxial guides 1a and 5a in such a way that they allow a simple and correct positioning of the reels 2 and 6 in particular when said reels are not as wide as the maximum width of the supports themselves.

Downstream from pulling roller 4 a feeder 11 of sheets 12 is provided for located above a plane 13 on which tape 3 advances. The sheets 12 can for example be made of silicon-coated paper on which the writing and the designs of the labels on cut out adhesive film are applied. The feeder 11 selectively supplies sheets 12 onto tape 3 below it in a way that the tape and each sheet move ahead joined towards a calender 15 composed of a lower roller 16 motorized in synchronism with the roller 4 by means of a toothed belt or a chain 17, and an upper roller 18 which can be pressed against the roller 16 in an adjustable way by means of a hand-wheel 19.

Downstream from calender 15, a transversal cutter 20 with a knife 21 is provided which performs the cutting together with an opposing knife 22.

At the output of cutter 20, a conveyor belt 23 is provided stretched between two shafts 24 and 25, of which one is motor-driven, and is suited to the rapid withdrawal of resulting sheets 26 obtained from the joining and subsequent pressing together and cutting of the sheets 12 and the tape 3. The length of the sheets 26 is determined by sensors 27 and 29 aligned in the direction of advancement of conveyor belt 23 and communicating, by means of a cable 28 to programmed control means, not shown, the arrival of the front edge of a sheet 26 thus causing the arrest of tape 3 and the operation of cutter 26. More precisely, when the front edge of tape 3 joined to sheet 12 moves in correspondence to sensor 27 the control means command a slowing of the advance which is followed by an arrest at the precise point of the passage of said front edge in correspondence with sensor 29. The presence of only one sensor would not allow for a sufficiently precise cut due to the inertia of advancement, which would have made an instantaneous arrest impossible. The two sensors 27 and 29 are mounted on one common support 28a adjustable in two directions in order to allow the cutting of sheets 26 of different lengths and widths.

With reference also to figure 2, according to one particularly advantageous embodiment of the invention, conveyor belt 23 is composed of a plurality of belts 23a stretched between belt pulleys 31 fit on the shafts 24 and 25 and rotating at a speed considerably faster than the advancement of tape 3 pulled by the rollers 4 and 16. Thus the sensors 27 and 29 can be placed under conveyor belt 23 making possible a more precise signalling of the presence of sheet 26. Small rollers 32 are provided for which are able to press sheet 26 against the belts 23a which, to avoid damaging the sheets, are made of a very smooth material, for example nylon. In this way, the adherence between the belt and the sheet

is increased facilitating the detaching of the latter at the cutter.

With reference also to figures 3, 4 and 5, cutter 20 has knife 21 inclined with respect to opposing knife 22 in order to obtain a perfect cut and avoid tears. This is necessary in particular because sheet 26 is composed of a silicon-coated support layer, an adhesive film and an application tape, all being relatively thin materials which require precision in cutting in order not to be damaged. In figures 4 and 5, the operation of knife 21 with respect to opposing knife 22 is shown, as well as a screw 21a and a spring 21b which regulate the bending of knife 21 with respect to opposing knife 22 to adapt the cut to different types of material which the application tape and the label support can be made of. Advantageously, a register 56 of the curvature of knife 21 is also provided for (figure 14). The register 56, engages in the mid-point of a stick 57, fixed by means of screws 58 to the end of knife 21 on the side opposite the opposing knife 22, with one end pointing against the knife 21 bending it as a function of its turning with respect to the stick itself. Also the fulcrum 59 of knife 21 with respect to opposing knife 22 comprises registration means not shown.

With reference to figures 6, 7 and 8, cutter 8 (and similarly cutter 9) by means of knife 10 has the function of cutting with constant pressure tape 3 present on reel 2 cutting only one layer at a time on the side 2a of the reel, while leaving the side 2b complete for other utilization. As can be better seen in figure 9, the removal of the layers 2a of the reel 2 leaves complete the portion 2b of reduced width and the portion 2c of the entire width. In the event that in a subsequent utilization a tape wider than that of portion 2b is needed, it is possible to rewind the portion 2b on second support 5 and utilize the entire tape 2c.

As shown in figure 8, knife 10 can slide along a bar 33 and can be locked into the desired position by means of screws 38. Knife 10 is sharpened only on the side 34 whereas the side 35 has a flat portion 35a, acting against the rolls of tape of the portion of reel 2b, and a receded portion 35b acting as a relief in order to avoid excessive friction against the rolls. The pressure of the cutting edge 10 against the tape 3 is given by the tension of a spring 36 (figure 7) adjustable by rotation of an arm 37 pivotally connected to the bar 33 with the possibility of locking its position by means of a screw 38.

The cutter 8 can advantageously allow the placement, in the position shown by a dashed line in figure 7, of another knife 10a or the same knife 10, to allow the cutting on the reel 2 of a portion of tape 3 beginning from one end or the other of the reel 2 itself. As it is more apparent in the advantageous embodiment shown in figure 10, the cutter 8 comprises a knife 10, having an interchangeable blade 50, movably connected to an arm 51 by means of a screw 52. The same knife 10 can be used as both left and right, and the change of position is made by loosening screw 52 and moving the knife to the position indicated by a dashed line.

In figure 10 two cylindrical springs 36 are also shown stretched between pins 53 and 54 and housed in two circumferentially grooved disks 55 provided for on the body of the cutter 8. The arm 51 abuts alternatively against pin 53 and pin 54 when knife 10 is in the positions of figure 7, indicated respectively with a continuous and a dashed line. To make possible the use of only one knife 10 in the four positions possible (left, right, cut from above and cut from below) the knife 50 has two blade edges 50a or 50b, as shown in figures 11 and 12. Advantageously, as can be seen in figure 13, the knife 50 is connected to a small wheel which allows for a constant sinking of the blades 50a and 50b into the tape to be cut.

For the production of adhesive labels, and as an alternative to the already illustrated application of sheets 12 onto a tape 3 referred to as "application tape" by means of a sheet feeder 11, the machine according to the invention can also be utilized for joining the tape to a continuous strip of "prespaced" labels or labels printed by a computer or serigraphed continuously on an adhesive film placed on a silicon-coated support possibly already cut and separated from the scrap. The joining of the two tapes 3 and 7, besides being able to be carried out as shown in figure 1, can also be executed according to a different embodiment of the invention (figure 15), wherein an auxiliary support 60 is provided for mounted with rapid locking means 61 on the plane 13 directly upstream from the calender 15. The reel 2 can therefore be mounted on the auxiliary support 60 and unrolled and stopped intermittently by a friction 62 in such a way that the joining of the adhesive face 3b of tape 3 to tape 7 of prespaced labels occurs in correspondence to calender 15. This operation can in many cases be preferable due to the imperfect flatness of the silicon-coated paper combined with tape 7, due to a residual curvature caused by the previous rolling of the reel 6 of tape 7 itself. Said residual curvature, which causes the formation of bubbles and other inevitable defects even following the strong pressing carried out by the calender 15, is on the contrary eliminated by the passage under a guide plate 63 fixed to plane 13 and the immediately subsequent calendering together with the contemporaneous joining of the application tape.

Figure 1 also shows: a control board 40 with display 41 suited to visualize the type of operative program in course; a base 42 with a door 43 for access to the motors and to the programmed control means; a pedal switch 44 for manual positioning; an auxiliary sheet feeder 45 and a belt 46 bringing into rotation the second support 5.

The multifunctional machine according to the invention accomplishes the predetermined objects and that is: carrying out the functions of joining the application tape to the cut out sheets for labels in an automatic way and at a high production rate; cutting of the reels of tape at the input in order to optimize the material utilized; possibility of quick rewinding of the unused tape by means of a second motorized support 5, joining of two

continuous tapes 3 and 7, of which one is for example biadhesive or bearing the prespaced labels.

Variations and/or modifications can be brought to the multifunctional machine as described above within the scope of the following claims.

Claims

1. Multifunctional machine for the joining, calendering, cutting and rewinding of adhesive or nonadhesive paper plastic films, in particular but not exclusively for the automatic joining of an adhesive application tape (3) to sheets of cut out labels (12) or to a tape (7) of prespaced cut out labels, characterized in that it comprises:
 - a first idle support (1) for a first reel (2) of tape (3);
 - a longitudinal cutter (8) with a knife (10) orthogonal to said support (1) and in a position adjustable along the entire width of said tape (3) for its cutting;
 - a pulling roller (4) of said tape (3) unrolled from said reel (2);
 - a feeder (11) of sheets (12) located above a plane (13) on which said tape (3) coming from said pulling roller (4) advances;
 - a calender (15) downstream from said feeder (11) pulling and pressing together said tape (3) joined to said sheets (12) placed upon it in succession;
 - a transversal cutter (20) downstream from said calender (15);
 - a conveyor belt (23) at the output downstream from said transversal cutter (20), suited for the rapid withdrawal of the resulting sheets (26) in output from the calender (15) and cut from said tape (3) by said transversal cutter (20);
 - programmed control means operating in particular the intermittent rotation of said pulling roller (4) and said calender (15) in synchronism with said sheet feeder (11) and said transversal cutter (20);
 - sensing means (27,29) provided for downstream from said transversal cutter (20) connected electrically (28) with said control means suited to signal the presence of said resulting sheets (26) and to control the measured cutting of said sheets (26) by said transversal cutter (20).
2. Multifunctional machine according to claim 1, wherein said conveyor belt (23) comprises a plurality of thin parallel belts (23a) stretched between two shafts (24,25), of which one is motorized, said sensing means (27,29) connected electrically with said control means comprising a first (27) and a second sensor (29) mounted on one same support (28a) adjustable in two directions and aligned in the direction of advancement of said conveyor belt (23), said control means commanding the slowing of said tape (3) one edge of which moves in correspondence to said first sensor (27) and, its precisely measured arrest when said edge moves in correspondence to said second sensor (29).
3. Multifunctional machine according to the previous claims, wherein downstream from said transversal cutter (20) small idle rollers (32) are provided for pressing said resulting sheet (26) against said conveyor belt (23).
4. Multifunctional machine according to claim 3, wherein said small rollers (32) and said thin parallel belts (23a) of said conveyor belt (23) are made of a smooth material, in particular nylon.
5. Multifunctional machine according to the previous claims, wherein said transversal cutter (20) comprises a knife (21) oscillating with respect to an opposing fixed knife (22) and adjustable means (21a,21b,56) for keeping it flexed with respect to the opposing knife.
6. Multifunctional machine according to the previous claims, wherein said longitudinal cutter (8) comprises a knife (10) oscillating with respect to a bar (33) with which it is slidably engaged, there being provided adjustable elastic means (36) for assuring a correct pressure of said knife (9) against the tape (3) to be cut, as well as screw means (38) for blocking the sliding of said cutter (8) along said bar (33).
7. Multifunctional machine according to the previous claims, wherein there is provided a second support (5) for a second reel (6) of tape (7) adjacent to said first support (1) and comprising a second longitudinal cutter (9), detachable means of transmission (46) being provided for to putting said second support (5) into rotation in synchronism with said pulling roller and said calender (15).
8. Multifunctional machine according to claim 6, wherein said longitudinal cutter (8) comprises an arm (51) of a movable support of said knife (10), said arm abutting against pins (53,54) extending from said cutter (8) and connected by a spring (36) housed in a circumferentially grooved disk (55) provided for on the cutter (8).
9. Multifunctional machine according to claim 8, wherein said knife (10) has an interchangeable blade (50) with two cutting edges (50a,50b), an idle roller (66) being provided for extending from said knife from the side of said blade (50), making the latter capable of cutting said tape sinking into it in a constant way.
10. Multifunctional machine according to the previous claims, wherein upstream from

said calender (15) an auxiliary support (60) is provided fixable (61) to said plane (13) and suited to unroll said first reel (2) of tape (3), to said plane (13) also being connected immediately upstream from said calender (15) a guide plate (63) underneath which said tape (7) coming from said second reel (6) engages.

Patentansprüche

1. Mehrzweckmaschine zum Verbinden, Kalandern, Schneiden und Wiederaufwickeln von klebenden oder nicht klebenden Filmen aus Papier oder Kunststoff, insbesondere jedoch nicht ausschließlich zum automatischen Verbinden eines klebenden Bandes (3) mit Bögen (12) aus ausgeschnittenen Aufklebern oder mit einem Band (7) aus voneinander beabstandeten, ausgeschnittenen Aufklebern, **dadurch gekennzeichnet**, daß die Mehrzweckmaschine enthält:

- eine erste lose Lagerung (1) für eine erste Rolle (2) des Bandes (3);
- einen Längsschneider (8) mit einem Messer (10), das rechtwinklig zur Lagerung (1) angeordnet und entlang der gesamten Breite des Bandes (3) zum Schneiden desselben verstellbar ist;
- eine Abzugsrolle (4) zum Abrollen des Bandes (3) von der Rolle (2);
- eine Zuführvorrichtung (11) für die Bögen (12), die oberhalb einer Ebene (13) angeordnet ist, auf der das von der Abzugsrolle (4) kommende Band (3) transportiert wird;
- einen in Transportrichtung gesehen hinter der Zuführvorrichtung (11) angeordneten Kalandrier (15) zum Abziehen und Verpressen des Bandes (3), das mit den nacheinander auf dem Band angeordneten Bögen (12) verbunden ist;
- einen Querschneider (20), der in Transportrichtung gesehen hinter dem Kalandrier (15) angeordnet ist;
- ein Transportband (23), daß in Transportrichtung gesehen hinter dem Querschneider (20) angeordnet ist und das zum schnellen Entfernen der am Ausgang des Kalandriers (15) entstehenden und vom Band (3) durch den Querschneider (20) abgetrennten Bögen (26) geeignet ist;
- eine Programmsteuerung, insbesondere zum Steuern der intermittierenden Drehung der Abzugsrolle (4) und des Kalandriers (15) syn-

chron mit der Zuführvorrichtung (11) und dem Querschneider (20);

- eine Sensorvorrichtung (27, 29), die in Transportrichtung gesehen hinter dem Querschneider (20) angeordnet, elektrisch mit der Steuerung verbunden und die geeignet ist, die Anwesenheit eines der entstehenden Bögen (26) zu signalisieren und das maßhaltigen Abtrennen der Bögen (26) durch den Querschneider (20) zu steuern.

2. Mehrzweckmaschine nach Anspruch 1, **dadurch gekennzeichnet**, daß das Transportband (23) eine Vielzahl dünner, paralleler Riemen (23a) enthält, die zwischen zwei Wellen (24, 25) gespannt sind, von denen eine angetrieben ist, daß die elektrisch mit der Steuerung verbundene Sensorvorrichtung (27, 29) einen ersten (27) und einen zweiten Sensor (29) enthält, die auf demselben Träger (28a) in zwei Richtungen verstellbar angeordnet und in Vorschubrichtung des Transportbandes (23) ausgerichtet sind, und daß die Steuerung das Verlangsamen des Bandes (3) unter Bewegungen der Kante desselben abhängig vom Signal des ersten Sensors (27) veranlaßt, sowie sein genaues maßhaltiges Anhalten steuert, wenn sich die Kante abhängig vom Signal des zweiten Sensors (29) bewegt.

3. Mehrzweckmaschine nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet**, daß in Transportrichtung gesehen hinter dem Querschneider (20) kleine, lose Rollen (32) zum Anpressen der entstehenden Bögen (26) gegen das Transportband (23) vorhanden sind.

4. Mehrzweckmaschine nach einem der vorgehenden Ansprüche, **dadurch gekennzeichnet**, daß die kleinen Rollen (32) und die dünnen, parallelen Riemen (23a) des Transportbandes (23) aus einem glatten Material angefertigt sind, vorzugsweise aus Nylon.

5. Mehrzweckmaschine nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet**, daß der Querschneider (20) ein Messer (21) enthält, das bezüglich eines gegenüber liegenden feststehenden Messers (22) schwingt, und daß der Querschneider eine Stellvorrichtung (21a, 21b, 56) enthält, die das Messer (21) in einem gebogenem Zustand bezüglich der gegenüber liegenden Schneide (22) hält.

6. Mehrzweckmaschine nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet**, daß der Längsschneider (8) ein Messer (10) enthält, das bezüglich einer Schiene (33) schwingt, auf der es gleitend aufgenommen wird,

wobei eine einstellbare elastische Vorrichtung (36) vorhanden ist, die einen richtigen Druck des Messers (10) gegen das zu schneidende Band (3) sichert,
und wobei eine Feststellvorrichtung (38) das Gleiten des Längsschneiders (8) entlang der Schiene (33) verhindert.

7. Mehrzweckmaschine nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet**, daß für eine zweite Rolle (6) aus dem Band (7) nahe der ersten Lagerung (1) eine zweite Lagerung (5) vorhanden ist, die einen zweiten Längsschneider (9) enthält,
und daß eine lösbare Übertragungsvorrichtung (46) zum synchronen Drehen der zweiten Lagerung (5) mit der Abzugsrolle (4) und dem Kalandr (15) vorhanden ist.
8. Mehrzweckmaschine nach Anspruch 6, **dadurch gekennzeichnet**, daß der Längsschneider (8) einen Arm (51) mit einer lösbaren Halterung des Messer (10) enthält,
wobei der Arm (51) gegen Stifte (53, 54) stößt, die vom Längsschneider (8) abstehen und durch eine Spiralfeder (36) verbunden sind, die in einer am Umfang eingekerbten Scheibe (55) geführt wird, die am Längsschneider (8) vorhanden ist.
9. Mehrzweckvorrichtung nach Anspruch 8, **dadurch gekennzeichnet**, daß das Messer (10) eine austauschbare Klinge (50) mit zwei Schneiden (50a, 50b) enthält,
daß eine lose Rolle (66) vom Messer (10) seitlich der Klinge (50) absteht,
so daß es der Klinge ermöglicht wird, das Band (3) bei ihrem Eindringen gleichmäßig zu schneiden.
10. Mehrzweckmaschine nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet**, daß in Transportrichtung gesehen vor dem Kalandr (15) eine auf der Ebene (13) feststellbare Hilfsagerung (60) vorhanden ist, die zum Abrollen der ersten Rolle (2) des Bandes (3) geeignet ist,
wobei mit der Ebene (13) unmittelbar in Transportrichtung gesehen vor dem Kalandr (15) auch eine Leit-Platte (63) verbunden ist, unter der das von der zweiten Rolle (6) kommende Band (7) entlangläuft.

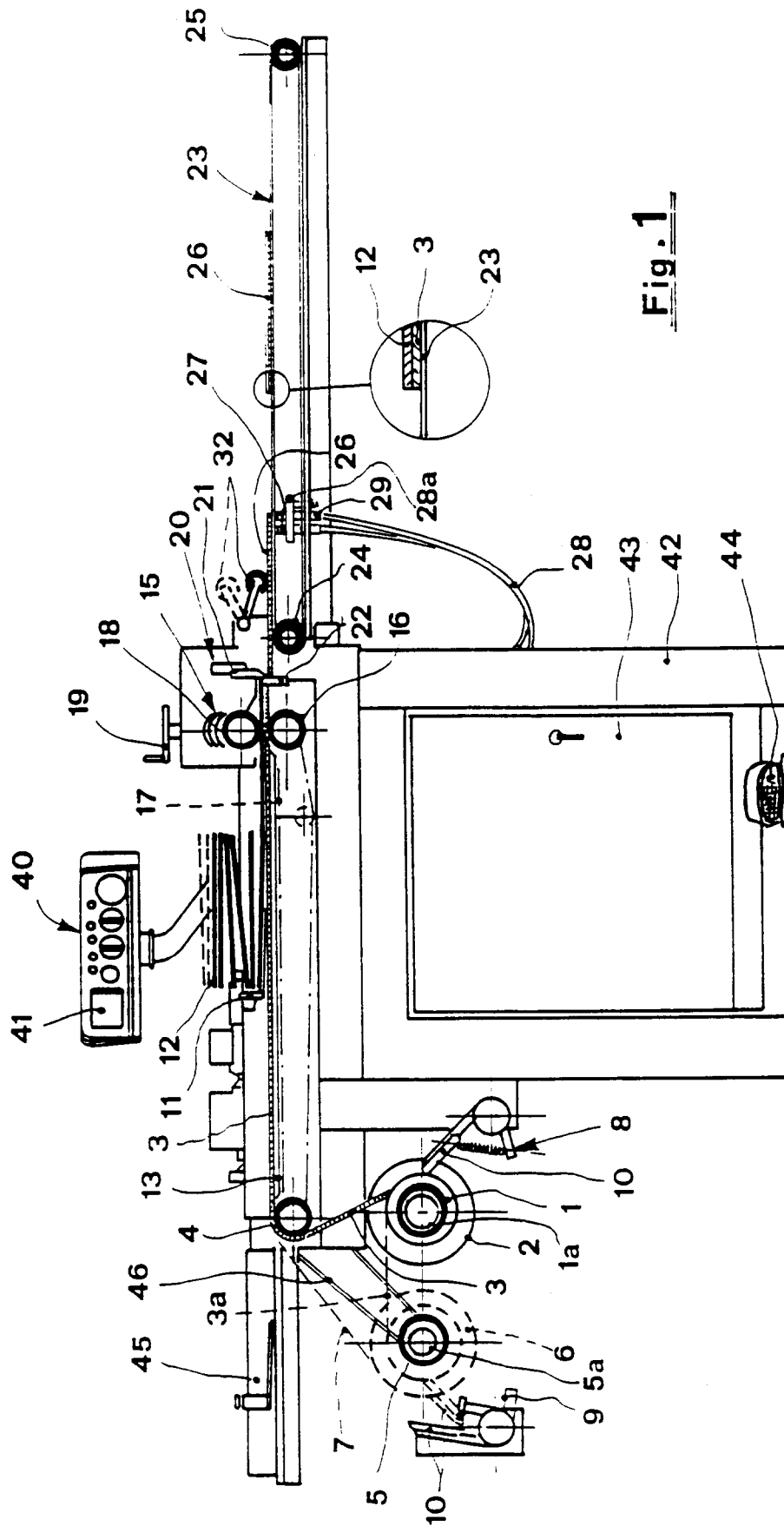
Revendications

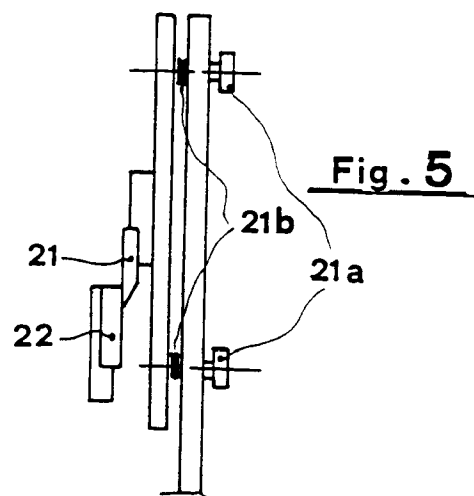
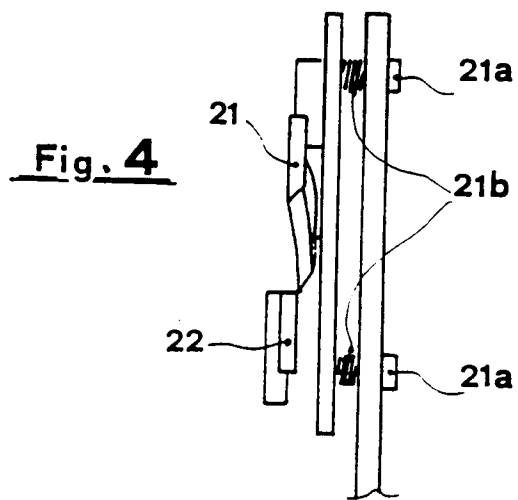
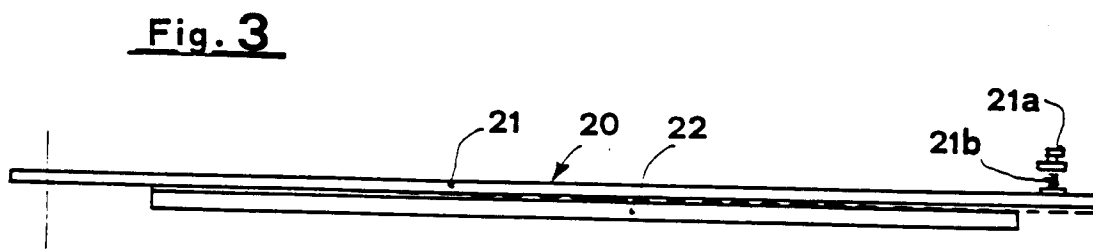
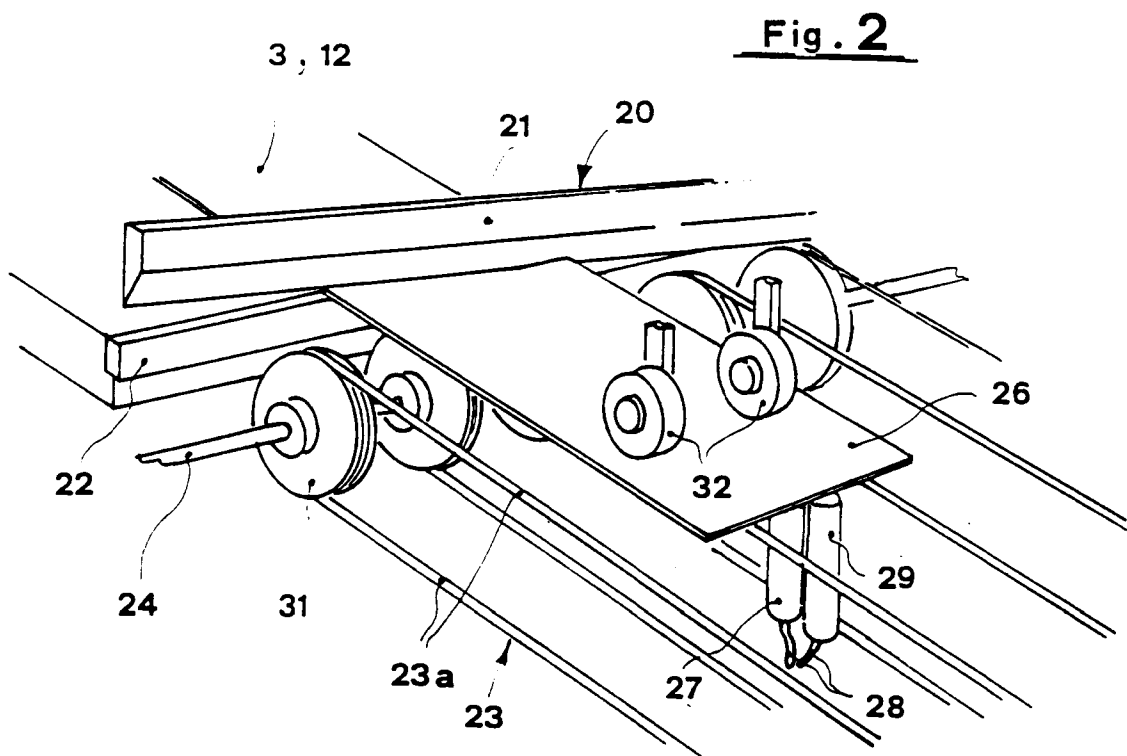
1. Machine multifonctions pour la réunion, le calandrage, la coupe et le rembobinage de films en papier/matière plastique adhésifs ou non adhésifs, en particulier mais non exclusivement pour la réunion automatique d'une bande (3) d'application d'adhésif avec des feuilles d'étiquettes découpées (12) ou avec une bande (7) d'étiquettes découpées

pré-espacées, *caractérisée en ce qu'elle comprend :*

- un premier support libre (1) pour une première bobine (2) de bande (3);
 - un outil de coupe longitudinal (8) avec un couteau (10) orthogonal audit support (1) et dans une position réglable sur toute la longueur de ladite bande (3) pour son découpage;
 - un rouleau (4) de traction de ladite bande (3) déroulée de ladite bobine (2);
 - un dispositif d'alimentation (11) de feuilles (12) situé au-dessus d'un plan (13) sur lequel avance ladite bande (3) en provenance dudit rouleau de traction (4);
 - une calandre (15) en aval dudit dispositif d'alimentation (11) tirant et pressant ensemble ladite bande (3) réunie auxdites feuilles (12) placées sur elle en succession ;
 - un outil de coupe transversal (20) en aval de ladite calandre (15);
 - une courroie transporteuse (23) à la sortie en aval dudit outil de coupe transversal (20), apte au retrait rapide des feuilles obtenues (26) en sortie de ladite calandre (15) et découpées à partir de ladite bande (3) par ledit outil de coupe transversal (20);
 - des moyens de commande programmés commandant en particulier la rotation intermittente dudit rouleau (4) de traction et ladite calandre (15) en synchronisme avec ledit dispositif d'alimentation (11) de feuilles et ledit outil de coupe transversal (20);
 - des moyens de détection (27, 29) prévus en aval dudit outil de coupe transversal (20) reliés électriquement (28) auxdits moyens de commande et aptes à signaler la présence desdites feuilles obtenues (26) et à commander le découpage cadencé desdites feuilles (26) par ledit outil de coupe transversal (20).
2. Machine multifonctions selon la Revendication 1, dans laquelle ladite courroie transporteuse (23) comprend une pluralité de minces courroies parallèles (23a) tendues entre deux arbres (24, 25) dont l'un est motorisé, lesdits moyens de détection (27, 29) reliés électriquement auxdits moyens de commande comprenant un premier (27) et un second (29) capteurs montés sur un seul et même support (28a) réglable dans deux directions et aligné dans le sens de défilement de ladite courroie transporteuse (23), lesdits moyens de commande commandant le ralentissement de ladite bande (3) dont un bord est amené en correspondance avec ledit premier capteur (27) et son arrêt mesuré avec précision lorsque ledit bord est amené en correspondance avec ledit second capteur (29).

3. Machine multifonctions selon les Revendications précédentes, dans laquelle, en aval dudit outil de coupe transversal (20), des petits galets presseurs (32) sont prévus pour presser ladite feuille obtenue (26) contre ladite courroie transporteuse (23). 5
4. Machine multifonctions selon la Revendication 3, dans laquelle lesdits petits galets (32) et lesdites minces courroies parallèles (23a) de ladite courroie transporteuse (23) sont faits d'un matériau lisse, en particulier de nylon. 10
5. Machine multifonctions selon les Revendications précédentes, dans laquelle ledit outil de coupe transversal (20) comprend un couteau (21) oscillant par rapport à un couteau fixe opposé (22) et des moyens réglables (21a, 21b, 56) pour le garder fléchi par rapport au couteau opposé. 15
6. Machine multifonctions selon les Revendications précédentes, dans laquelle ledit outil de coupe longitudinal (8) comprend un couteau (10) oscillant par rapport à une barre (33) avec laquelle il est engagé de manière coulissante, étant prévus des moyens élastiques réglables (36) pour assurer une pression correcte dudit couteau (9) contre la bande (3) à couper, ainsi que des moyens de vis (38) pour bloquer le coulissement dudit outil de coupe (8) le long de ladite barre (33). 20
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7. Machine multifonctions selon les Revendications précédentes, dans laquelle est prévu un second support (5) pour une seconde bobine (6) de bande (7) adjacent audit premier support (1) et comprenant un second outil de coupe longitudinal (9), des moyens détachables de transmission (46) étant prévus pour mettre ledit second support (5) en rotation en synchronisme avec ledit rouleau de traction et ladite calandre (15). 35
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8. Machine multifonctions selon la Revendication 6, dans laquelle ledit outil de coupe longitudinal (8) comprend un bras (51) d'un support mobile dudit couteau (10), ledit bras s'aboutant contre des broches (53, 54) s'étendant à partir dudit outil de coupe (8) et reliées par un ressort (36) logé dans un disque rainuré circonférentiellement (55) prévu sur l'outil de coupe (8). 45
9. Machine multifonctions selon la Revendication 8, dans laquelle ledit couteau (10) possède une lame interchangeable (50) avec deux tranchants (50a, 50b), un galet presseur (66) étant prévu pour s'étendre à partir dudit couteau du côté de ladite lame (50), rendant cette dernière capable de couper ladite bande en s'enfonçant dans celle-ci de manière constante. 50
55
10. Machine multifonctions selon les Revendications précédentes, dans laquelle en amont de ladite calandre (15) est prévu un support auxiliaire (60) fixable (61) audit plan (13) et apte à dérouler ladite première bobine (2) de bande (3), audit plan (13) étant également raccordée, immédiatement en amont de ladite calandre (15), une plaque de guidage (63) sous laquelle s'engage ladite bande (7) venant de ladite seconde bobine (6).





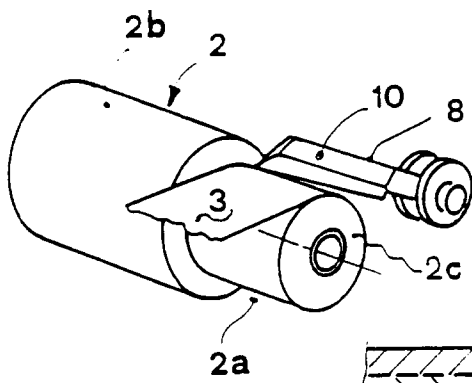


Fig. 6

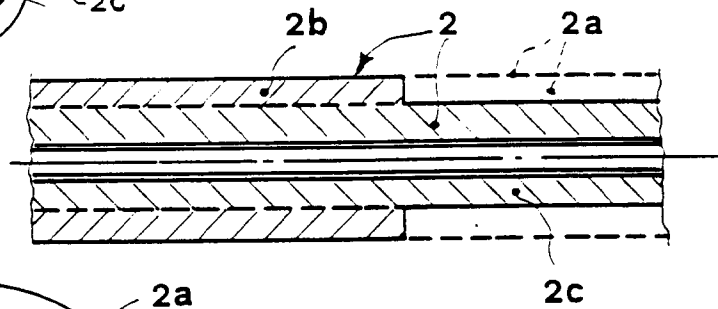


Fig. 9

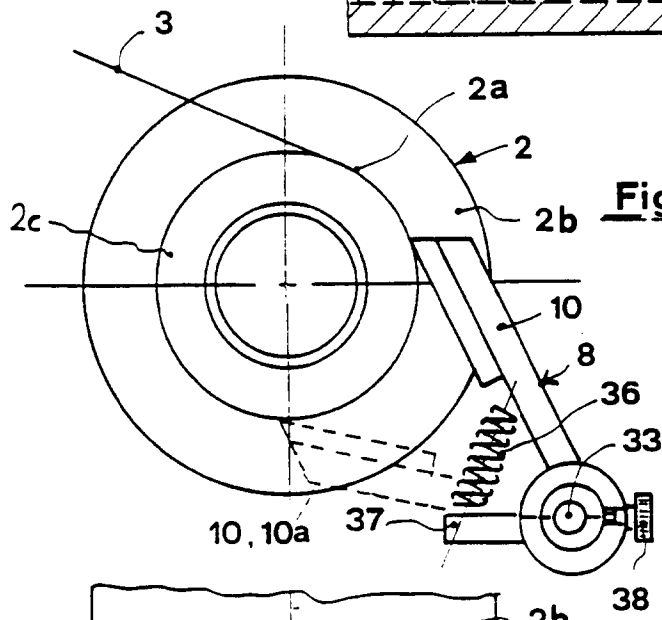


Fig. 7

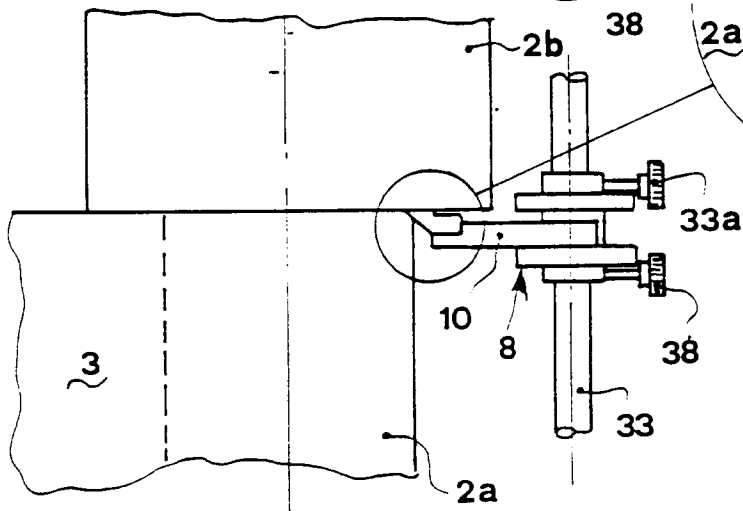


Fig. 8

