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(54) **Labelling machine for products having an irregular elongated shape like sausages**

Etikettiermaschine für Produkte mit unregelmässiger länglicher Form wie Würste

Dispositif d'étiquetage pour produits ayant une forme irrégulière allongée comme des saucissons

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Description

[0001] The present invention relates to a labelling machine for products having an irregular elongated shape according to the preamble of claim 1.

[0002] More particularly, the present invention relates to a labelling machine for alimentary products having an irregular, elongated shape, such as, for instance, salami or charcuterie in general.

[0003] A labelling machine for paper rolls is known from FR-A-2 443 387. Said machine has the features of the preamble of claim 1.

[0004] As is known, the products having an irregular elongated shape, in particular alimentary products, are usually packed in containers, envelopes, bags, sheaths and the like, on which there is reported the general information on production, quality and composition and the indications provided for by the law. Some products, and in particular some alimentary products, are packed only with labels or wrappers as their fundamental and origin characteristics require such a presentation, either by tradition or because of their organoleptic and constitutional characteristics.

[0005] A specific example of such products is constituted by charcuterie in general; they have elongated configurations of an approximately cylindrical shape in the central part, but with more or less regular profiles, according to the type of products, the bowel or the envelope adopted for the charcuterie, and so on.

[0006] Among charcuterie, salami in general are those that show the most irregular peripheral characteristics, and for which the operations of automated labelling with wrappers have not given till now satisfactory results. This is due to the fact that the wrapping effect of labels has been always too associated to the configuration of the application peripheral surfaces, and they assume imperfect wrappings, with twisted or helical orientations, without a correct superposition of edges, etc.; actually, still today they are preferably applied by hand, which is obvious a time and work consuming operation.

[0007] Object of the present invention is to eliminate the above drawback.

[0008] More particularly, object of this invention is to provide a labelling machine particularly suitable for the application of labels in a perfect manner and without edge superposition, on the surface of alimentary products such as charcuterie and in particular salami, having elongated configurations with irregular profiles or surfaces.

[0009] According to the present invention, these objects are achieved by a labelling machine having the features as defined in the characterizing part of claim 1.

[0010] The rotating means for grasping the products may be two opposite side pliers which engage at the ends of the products which advance on the machine, whose feeding is by step-by-step advancement means. The rotary grasping means or pliers, and therefore the product engaged therewith, result to be orthogonally aligned with a feed channel wherein labels, still in the form of a continuous tape, unwind from a roll and remain perfectly coaxially guided until the humidifying of the glue and of the measure-cutting, with subsequent pressing, independently on the peripheral irregularity of the surface of the product, whereon the label is wound in the form of a wrapper. This wrapping is obtained by the natural drawing of the label by small pliers directly engaged on one of the rotary grasping means. The rotation of said grasping pliers causes the same motion on the small pliers engaged with the label and the ensuing drawing of the same outside the feed channel which, because of its precise and adjustable configuration, imposes to the tape label coming out a perfectly guide sliding movement which keeps it also aligned even during the wrapping on the product, independently on the more or less irregular configuration of the peripheral surface of the product. Before the transversal measure-cutting, the lower tackified part of the label is humidified by means of a pad which remains then slidingly engaged with the end of the label, even after the cross-cut, operating in this way an adjustable pressure during the last stage of the wrapper winding, in order to keep on the same a correct product-adhesion tension, without causing side shifting of the label, especially of the last edge, but keeping its cylindrical ring-like aligned wrapping. An upper pressure means, which moves at the same speed of the advancement means, acts on the last humidified edge, pressing it on the underlying wound part of the wrapper so as to complete the gluing. The pressing action is exercised for all the time necessary to deposit the products on the side step-by-step advancing means and the release means of the grasping pliers, up to the complete adhesion of the superposed parts.

[0011] Thanks to the labelling machine of the present invention, labels are wrapped around any type of elongated product having any cylindrical, conic, semiconic, regular or irregular shape, according to a perfectly circular/cylindrical motion, in an entirely guided manner, not strictly associated to the conformation of the product. The machine is provided with adjustable guides, which keep the labels than unwind from continuous rolls, correctly guided up to the final gluing. The products are taken and kept in a correct rolling position by means of side grasp pliers to which small pliers are associated which grasp the wrapping end edge of the tape labels. Besides the continuous label tape is kept in controlled guide and wrapping tension also after the end cross-cut and up to the release of the wrapped product.

[0012] The advantages achieved by the labelling machine of the present invention lie essentially in that the wrapper-labelling on the products having an elongated shape and an irregular peripheral surface is obtainable in an entirely automatic manner, with high possibilities of production and product uniformity, without using workmen, except those that are necessary to load and unload the product, unless the machine is automatically fed. Besides, the regular and periodic maintenance is

very limited, thanks to the structural simplicity of the machine.

[0013] In order to better understand the construction and functional characteristics of the labelling machine of the present invention, the same will be now described in detail with reference to the figures of the drawings which represent an embodiment of the same, solely given by way of non limiting example, and wherein:

Figure 1 shows a schematic side view of the labelling machine of the present invention in its basic components;
Figure 2 shows a schematic cross-view of the labelling machine of Figure 1, corresponding to the controls for opening/closing the grasping pliers;
Figure 3 shows a schematic side view of a second solution of the control for opening/closing the pliers;
Figure 4 shows a plan view of grasping pliers provided with small hooking pliers for the tape labels, complete of control means, applied to said pliers;
Figure 5 shows a plan view of the adjustable guide of tape labels, according to their width;
Figure 6 shows a schematic view of a particular section which illustrates an example of progress system of the tape label, for the wrapping-start alignment.
Figure 7 shows an unwinding example with an excess free amount of continuous tape, with the possible presence of a supplementary tension brake;
Figure 8 shows a side and front view of a multiple drum control for the opening adjustment of grasping pliers, for the adjustment of the inclination of the slide race of the labels and the lifting adjustment of the step-by-step progress means;
Figures 9 and 10 shows schematically an alternative embodiment of the restraint and wrapping means of the end edge of the labels; and
Figure 11 shows an example of adjustment and stopping control of the inclined orientation of label sliding race, operating in function of the size of the product to be labelled.

[0014] The Figures show a labelling machine for products having an elongated shape and irregular surfaces, such as for instance and in particular salami, which comprises a bearing structure 1 provided with an inclined race 2 whereon a continuous label tape 3 can slide which unwinds from a roll 4 and aligns with a product 6 to be wrap-labelled, such as for instance a salami 6.

[0015] Race 2 is substantially made up by a longitudinal channel provided with a longitudinal fixed shoulder 8 and a lower fixed guide 10. The thickness of said channel is sufficient to comprise the continuous label tape 3 and its width is adjustable in function of the width of the tape. Width adjustment is obtained by means of a mobile plate 7, that can be positioned with respect to the longitudinal fixed shoulder 8 of race 2. A lid 9 closes at the top race 2, so as to circumscribe to a sufficient minimum the space within which the continuous label tape 3 can move in a closely guided manner, during the unwinding. The inclination of the lower fixed guide 10 of said race 2, with the related plate 7 and lid 9, is adjustable in function of the diameter of the products to be labelled, preferably with respect to prefixed size ranges. The fixed guide 10 is provided with an aperture 11, aligned to race 2 wherein there slides the continuous tape 3, in correspondence of which, from the lower part, an advancement roll 12 appears which has a free wheel and is moved in alternated motion by a lever 13 activated by a piston 14. To said advancement roll 12 there is coupled, from the upper part of race 2, a supplementary small wheel 15, which is supported by a bracket 16 integral with a small piston 17. Said piston 17, provided with a point-piece 20 oriented toward lid 9, is fixed to the end of a lever 18 which has its fulcrum, at the opposite end, on the bearing structure of the fixed guide 10. The continuous label tape 3 rests on the bottom of race 2 and slides thereon, between said advancement roller 12 and the small upper wheel 15. At each operating stage of alternated advancement, the supplementary upper small wheel 15 lowers, pressing the label tape 3 against the advancement roll 12, which is caused to rotate by piston 14. In this way, the start edge 19 of tape 3 is caused to advance up to its positioning in alignment with the underlying product 6, or salami 6, to be wrapped. In the subsequent stage, piston 17 acts with its point-piece 20 on lid 9 of the fixed guide 10, lifting bracket 16 and the small wheel 15 associated to the same, so that tape 3 is free again, simply resting in its guide 2, with no hindrances to its guided sliding, except that due to the calibrated width of the race and the sliding friction in the same. At the same time, a small friction roll 21, combined with a free wheel control 22 by means of a small piston 23, acts on the peripheral surface of roll 4 of a continuous label tape 3, and unwinds it for just the length sufficient to create an excess free amount 24 which ensures the subsequent traction stages of said tape, without the effect of the natural resistance ensuing from the inertia of roll 4. After every unwinding, the small piston 23, makes a free wheel return travel for positioning the small roll 21, for a subsequent operating stage.

[0016] In correspondence of the starting edge 19 of the label tape 3 and in cross-alignment, two rotary pliers 25 are provided which engage with the ends of product 6 to be labelled and grasp it in such a way as to drag it in rotation about an axis substantially corresponding to the theoretical axis of said product. Each pliers 25 are provided with a bent panel 26 and on a bent panel 26 of at least one of said pliers 25 a guide 27 is applied. Along said guide 27 two superposed saddles 28, 29 slide which comprise, at the front ends, the two superposed point-pieces of pliers 30 which align with said edge 19 of tape 3 and engage with it in a dragging grasp. The lower saddle 28 is integral with the lower horizontal fixed point of the small pliers 30 and is coupled to the piston of a first cylinder-piston system 31 which causes it to

axially slide along guide 27. The upper saddle 29 is coupled to the lower one 28 and moves together with it, in the same way, along guide 27, but its front end is engaged with hinge 32 of pliers 30 and its back end is engaged with the piston of a second cylinder-piston system 33, whose function is to cause the opening/closing of the mobile upper point, hinges in 32, of said small pliers. The piston of the second cylinder-piston system 33 is directly engaged with that of the first cylinder-piston system 31 and is therefore subject to all the axial forwards and/or backwards shifting generated by the latter. The position of said pliers 30 is therefore near the surface of product 6 and in correspondence of the tangency coupling point with the label tape 3, with the possibility of axial advancement/backing and opening/closing. In the subsequent coaxial rotation stage, after the grasp of the small pliers 30 on edge 19, tape 3 is wound on product 6, forming two annular vaults (generally and preferably at least two), which are perfectly aligned with each other, independently on the possible irregular configuration of the peripheral surface of the product, thanks to the unwinding of tape 3, guided by race 2 and not restrained by mechanical means, but unwound by the only effect of the sliding friction. For possible particular types of label tapes 3, however, there is provided the possibility of applying a tension brake made up by a transversal strip 34 from flexible elastic material, which rests on the front surface of the label tape 3, with an adjusted pressure produced by the action of a piston 35. In the last stage of wrapping of label 5, a humidifying pad 36 is pushed by the action of a piston 64 in touch with the lower surface of the last length of said label, in order to humidify the glue. Pad 36 operates in opposition to an upper guide bent panel 37, so that the last edge of label, already separated from tape 3 by means of a transversal blade 68, is engaged between them and kept in traction during the last wrapping stage: in this way, the wrapper is substantially stretched around product 6 and goes near to it to wrap it in a way as adhering as possible, while remaining perfectly aligned thanks to the lasting grasp of pliers 30, on the one side, and the grasp of pad 36 against the bent panel 37, on the other side. At the same time a pressure pad 38 is caused to lower until it rests on the surface of product 6, in correspondence of the humidified edge of wrapper 5. The pressure pad 38 has the function of keeping said humidified edge adhering to the underlying vault or the wrapper, to ensure the mutual adhesion. The pressing action of the pressure pad 38 is kept for all the time necessary to a one step forwards shifting of the labelled product, corresponding to the time necessary for a correct adhesion to said parts; for this reason, pad 38 is directly engaged with the bearing structure 39 of the advancement devices. In a different embodiment, represented in Figures 9 and 10, the wrapping of the label is still guided according to what has been already described with sliding freedom, but at a given time, i.e. when the end of the label is near, or when the cutter 68 is ready to step in, or when the provided photocell detects the notch that defines the length of said label, the humidifying pad 36 approaches the surface of said label to activate with water the glue while a braking element creates a simultaneous tension on the label whose effect, however, does not affect the correct winding, as it has already completed almost all its rotation on product 6. Now, the rotation is stopped and pad 38 lowers on the label and keeps it wound on the product, while cutter 68 performs the separation cutting from the continuous tape 3. In this way, the end edge 19' which remains between the grasp area of pad 38 and the cutting area of cutter 68 does not rest against the product; this finishing is carried out by a secondary rubberised roll 65, connected to a piston-cylinder system 66. Said rubberised roll 65, activated by the piston-cylinder system, is caused to adhere to said edge 19' and slides on the same until it is bent on product 6, causing the complete gluing to the lower vault.

[0017] The stop of the rotation of the grasp pliers 25, required by said operation, is therefore casual; at the end of labelling and during the stage of shifting of the labelled product towards the unloading, there is therefore provided a partial rotation stage of said pliers 25, to restore their correct position of cycle start. In this way, the packings obtained are substantially perfect and homogeneous on any diameter of product 6, from salami to "coppe" or other products that are in general subject to labelling.

[0018] Having concluded the stage of winding and adhesion of the wrapper, pliers 30 release their grasp on edge 19, by effect of the release of the pressure in the second cylinder-piston system 33. Afterwards, the first cylinder-piston system 31 causes pliers 30 to return backwards by unthreading it entirely from under the wrapper, without opening it, while the bent panels of the grasp pliers 25 are caused to open to release the labelled product 6. The opening of pliers 30 for the preparation of the subsequent work stage, takes place sequentially. Following the release, the labelled products 6 are laid on parallel side grids 40 provided with sequential V-shaped spaces wherein the end parts of said products rest. Side grids 40 are supported together and are free to slide with alternate movement for- and backwards on a bench-saddle 41 which, in its turn, has an alternate lifting and lowering motion. On each release, grids 40 are adequately lifted to collect the unloaded products. Figure 1 shows an embodiment, solely given by way of example, of said movement and control means. They comprise cylinder-piston systems 42 which, through levers 43, having their fulcrum in 44, cause the lifting of the bench saddle 41, the side grids 40 associated to the same and the pressure pad 38, which acts on the just manufactured wrapper 5.

[0019] At the same time, the same action engages, in the back part of the machine, the collection of other products 6 to be labelled from the feed grids 45. Other cylinder-piston systems 46, connected to the side grids 40 through levers, cause said raised side grids 40 to ad-

vance by a step, causing the already treated product to go away from race 2 and to bring in the same position another product to be labelled, which is grasped by pliers 25. The lowering of saddle 41 caused by the cylinder-piston system 42 and the backwards motion of the side grids 40 caused by the cylinder-piston system 46, restore the operating conditions for the subsequent feed and unloading stages.

[0020] Examples of opening/closing means of the grasp pliers 25 are represented in Figures 2 and 3. Pliers 25, aligned with one another in opposition to grasp the opposite ends of products 6, are engaged with back pins that rotate in support 47 and which receive the motion through chain gearing systems 48 or the like, coupled to a ratio-motor 49. Coaxially with said pins drive bars 50 are provided which, through levers 51 with elastic fulcrum 52 and cylinder-piston systems 53 and 54, cause the return and/or the release of the activating levers 55, with ensuing opening and/or closing of the grasp bent panels 26. Preferably, fulcra 52 are constituted by small rolls which are free to oscillate on the surface of supports 56, to make up for possible axial shifting. Said rolls are kept in touch with supports 56 by elastic means 57. The cylinder-piston control systems 53 and 54 are preferably couples by twos: the first ones 53, thrusters, and the second one 54, pressure adjusters, to prevent possible lacerations of the peripheral surfaces of products 6. Alternatively, and more simply, the same opening/closing controls of the pliers may be realised by cylinder-piston systems 58 applied directly and coaxially to the control bars 50 (see Fig. 3).

[0021] Based on the type of product to be labelled, or based on its more or less regular diameter dimension around which the labels must be wrapped, the machine is provided with adjustment means that allow an adequate alignment of the continuous label tape 3 with said product. In particular, and according to an elementary and economical solution, said means are constituted by simple end-of-travel means, such as, for instance, adjustment screws applied to an only drum 59. Said drum 59 is placed near one of the control end of the grasp pliers 25 and allows the adjustment of the inclined orientation of race 2, in function of the tangency point of the label tape 3 with the product diameter, and an adjustment of the opening/closing of grasp pliers 25 and the raising/lowering of the bench-saddle 41, with the related side grids 40, always in function of the diameter of the product being treated. Obviously, said devices are adopted within defined, circumscribed and preferred use fields. On drum 59, there are provided a first set of axial end-of-travels 60', a second set of radial end-of-travels 60'', and at least a third type of radial end-of-travels 60''' for raising the bench saddle 41. The axial end-of-travels 61', selected with disc 61 stops the closing travel of pliers 25 in function of the diameter of the product they must grasp. The radial end-of-travels 60'', in function of the same product diameter, form the front rest 62, suitably inclined, of the fixed guide 10 with race 2, which rotates around its back fulcrum 63. The third type of end-of-travel 60''' allows to adjust the raising of the bench saddle 41 with the related side grids 40.

[0022] According to an alternative solution, given by way of non limiting example, the inclined orientation of guide 10 that feeds the continuous label tape 3, the opening/closing of grasp pliers 25 and the raising/lowering of the transport means 40 may be realised without the utilisation of said drum 59. In rest conditions, said devices are positioned in the maximum opening condition, or they are positioned as if they were to label the products having the maximum diameter. Once the approx. average diameter of products 6 to be labelled is known, the various adjustments are performed. The raising/lowering of the transport means 40 is made through a proximity switch (not shown), located on the control board of the machine, through which it is possible to select, among defined positions, the one corresponding to the travel desired. To each position a given fixed striker corresponds that is located on at least one of the slide axes 69 of the bench saddle 41. By means of variable position targets provided with a continuous board adjuster, any desired travel comprised within the use field of the machine may be selected. In any case, the choice of the travels should be made taking into account the fact that the products to be labelled must assume a loading position that is almost axed with the open grasp pliers 25. The raising/lowering of the bench saddle 41 is generated, as described, by pistons 42 controlled by closed centre electro-valves,

[0023] The bent panels 26 of pliers 25 close on the products to be labelled 6 according to the same principle described above, by means of coupled pistons 53 and 54. The fixed guide 10 which feeds the continuous label tape 3 and the grasp pliers 25 are at the maximum opening, but in such a position that the start edge 19 of the label is aligned, with a correct feed, with pliers 30. On the arrival of the product 6 to be labelled, pliers 30 engage with edge 19 of the continuous label tape 3, pliers 25 close their bent panels 26 around said product and guide 10 feeding tape 3 rotates, inclining, until it steps near the external periphery of said product, controlled by a proximity micro-switch 67 to which a lever 70 is coupled which lies against one of said bent panels 26 already closed in restraining position. In this way, the smaller the diameter of the product the more the bent panels close to grasp it and, consequently, the more guide 10 inclines and can therefore be always correctly aligned with pliers 30. The rotation of guide 10 feeding the continuous tape 3, takes place around its back fulcrum 63 and is produced by means of at least a piston, piloted by at least a closed centre electro-valve. At the end of the labelling, feed guide 10 raises again, the bent panels 26 open again entirely, the bench saddle 41 raises and the side grids 40 collect and shift towards the unloading point the labelled product and align in the machine another product to be labelled.

[0024] Even though the present invention has been

described and illustrated according to embodiments solely given by way of non limiting example, it is obvious that many modifications and changes in the structure, the components, the types of controls adopted, the orientations and the positions of the operating units, the configuration of details, the technical and functional devices may be introduced by those skilled in the art in the light of the above teaching and description. It is therefore understood that the present invention intends to embrace all the changes and modifications that fall within the spirit of the present invention and the protection scope of the appended claims.

Claims

1. A labelling machine for products having an irregular elongated shape comprising:

   - a guided and aligned sliding means for a continuous tape (3) of tackifield labels provided with aligned positioning means (12, 15);
   - motor driven, and laterally arranged grasping means for the products (6) to be labelled with drawing and orthogonal guided wrapping means of the continuous tape (3) on the products (6) to be labelled and
   - means for the advancement and lifting of the products (6) to be treated and/or already treated;

   characterised in that:

   the guided and aligned sliding means are provided with dimensional adjustment (7) and orientation devices (60", 62, 67, 70);
   the grasping means are coaxially rotating, and opposed and comprise hooking means (30) of the end edge (19) of the continuous tape (3) with grasping adjusting and positioning means (60', 61, 53, 54) and with opening and closing means (31, 32, 33, 50, 55), and
   the means for the advancement and lifting of the products (6) to be treated and/or already treated comprise means for the alternate lifting (41) and step-bystep advancing (40) of the products and related devices for the adjustment of the specified shifting travels.

2. The labelling machine according to claim 1, **characterised in that** the guided and aligned sliding means for the continuous tape (3) of tackifield labels is an inclined race (2) comprising a lower guide (10), whose inclination is adjustable in function of the diameter of the products (6), a longitudinal fixed shoulder (8), an opposite shoulder (7), mobile and adjustable in function of the width of the tape, and an opening-tiltable upper lid (9); said race (2) forming a delimited channel inside which the continuous tape (3) slides in perfect alignment under the action of the hooking (30) and drawing means of the grasping means.

3. The labelling machine according to claims 1 or 2, **characterised in that** the aligned positioning means (12, 15) of the continuous tape (3) to the tangency point of its end edge (19) with product (6) to be labelled, comprise:

   an aperture (11) obtained on the guide (10) and aligned with the race (2);
   a free wheel advancement roll (12), which aligns through said aperture (11) with the race (2), said advancement roll (12). being provided with means (13, 14) for its alternate rotation movement; and
   an upper small wheel (15) located on the same race (2) and aligned with said advancement roll (12), said upper small wheel (15) being connected to the bearing structure of the guide (10) through a lever (18), a bracket (16) and a small piston (17) provided with a point-piece (20) operating on upper lid (9) of said guide (10) for raising or lowering said upper wheel (15) to be in touch with or detached from the advancement roll (12).

4. The labelling machine according to any of the preceding claims, **characterised in that** the grasping means for the products (6) to be labelled comprise two opposite rotating pliers (25) comprising each bent panels (26) closing and opening activated by a couple of thrusting (53) and pressure adjusting (54) serially arranged cylinder-piston systems (53, 54); said cylinder-piston systems (53, 54) transmitting an axial translation motion to small levers (55) activating said bent panels (26).

5. The labelling machine according to any of the preceding claims 1 to 3, **characterised in that** the grasping means for the products (6) to be labelled comprise two opposite rotating pliers (25) comprising each bent panels (26) closing and opening activated by cylinder-piston systems (58) directly connected to the small levers (55) activating said bent panels (26).

6. The labelling machine according to any of the preceding claims, **characterised in that** the hooking means (30) for the aligned end edge (19) of the continuous tape (3) comprise at least one grasp pliers applied to the open end of at least one bent panel (26) of said rotating pliers (25) in a position substantially tangent to a peripheral engagement point of the products (6) to be labelled with said pliers; said grasp pliers comprising a lower fixed point integral

with a first saddle (28) and an upper mobile point, opening and closing engaged with a hinge (32) integral with a second saddle (29), superposed to the first one (28) and axially slidable with it along a common guide (27) applied to the back of said bent panel (26); said saddles (28, 28), being axially moved by a piston (31) to which a second piston (33) for opening and closing the mobile point of grasp pliers is coupled.

7. The labelling machine according to any of the preceding claims, **characterised in that** a humidifying pad (36) is pushed by a piston (64) in touch with the lower surface of the last length of the label of the continuous tape (3) to humidify it, operating on the same a controlled pressure, in opposition to a overlaying guide bent panel (37).

8. The labelling machine according to claim 7, **characterised in that**, a pressing pad (38), engaged with a bearing structure (39) of the advancement means, keeps in adherent position the humidified end edge , with the underlying part of the wrapper already wound on product (6).

9. The labelling machine according to any of the preceding claims, **characterised in that** the means for the alternate lifting (41) and step-by-step advancing (40) of the products comprise a bench saddle which moves upwards and downwards in a controlled manner by means of activating pistons (42) that act tilting lever systems (43), and side grids with serial V-shaped spaces wherein the ends of products (6) rest, provided with axial forwards and backwards movement.

10. The labelling machine according to any of the preceding claims, **characterised in that** means for adjusting the various positions are located on one only drum (59) which is located near one of the control ends of the rotating pliers (25) and comprises:

a plurality of axial end-of-travels (60') adjustable to different lengths in function of the diameters of products (6) and the corresponding opening and closing of the rotating pliers (25) said axial endof-travels (60') being coupled to a disk (61) coaxially engaged with at least one of the ends of said pliers;
a plurality of radial end-of-travels (60") adjustable to different lengths in function of the diameters of products (6) and the corresponding inclination of the race (10) to constitute the tangency point of the end edges (19) of said products (6); and
at least one radial end-of-travel (60"') adjustable to different lengths in function of the diameters of products (6) and the corresponding upwards and downwards travel of the bench saddle.

11. The labelling machine according any one of the preceding claims 1 to 9, **characterised in that** the means for adjusting the various positions include:

means for closing the bent panels (26) of said grasp pliers with grasp and pressure adjusting serially combined pistons (53, 54);
means for adjusting the upwards and downwards travels of the bench saddle with the related parallel grids, consisting of a finished or continuous position switch, located on a control board, coupled to fixed or target strikers, applied to at least one of the slide axes (69) of said saddle (41), said upwards and downwards motions being due to the action of pistons (42) controlled by closed centre piston electrovalves, and
means for adjusting the inclined position of the guide (10), the alignment of the race (2) of the continuous tape (3) with the products to be labelled engaged in the grasp pliers consisting of at least a proximity microswitch (67) combined and activated by means of a lever (70) engaged with the same guide (10), which, during the lowering rotation, gets in touch and engages with one of said bent panels (26) already closed in grasp positions, said rotation of guide (10) being due to the movement produced by a piston which is piloted by at least a closed centre electro-valve for stopping in the positions desired.

12. The labelling machine according to any of the preceding claims, **characterised in that** it comprises an auxiliary brake of the continuous tape (3), comprising a transversal strip from flexible elastic material (34) resting on the upper surface of said tape (3) with a pressure adjusted by a cylinder-piston system (35).

13. The labelling machine according to any of the preceding claims, **characterised in that** the roll (4) of the continuous tape (3) is provided with a free length unwinder (24), comprising a friction roll (21) combined with a free wheel control (22) activated by a piston (23).

Patentansprüche

1. Etikettiermaschine für Produkte mit einer unregelmäßigen, länglichen Gestalt, umfassend:

- geführte und ausgerichtete Gleitmittel für ein durchgehendes Band (3) aus Klebeetiketten ausgestattet mit ausgerichteten Positionie-

rungsmitteln (12, 15);

- motorisch angetriebene und seitlich angeordnete Erfassungsmittel für die zu etikettierenden Produkte (6) mit einem Zieh- und rechtwinklig geführten Einwickelmittel des durchgehendes Bandes (3) an den zu etikettierenden Produkten (6); und
- Mittel für die vorwärts gerichtete Bewegung und das Anheben der zu behandelnden (6) und/oder der bereits behandelten Produkte;

dadurch gekennzeichnet, dass:

die geführten und ausgerichteten Gleitmittel mit dreidimensionalen Einstell- (7) und Ausrichtungsmitteln (60", 62, 67, 70) ausgestattet sind; die Erfassungsmittel koaxial umlaufen und einander gegenüberliegen und Anhakungsmittel (30) für den Endrand (19) des durchgehendes Bandes (3) mit Erfassungseinstell- und Positionierungsmitteln (60', 61, 53, 54) und mit Öffnungs- und Schließmitteln (31, 32, 33, 50, 55) umfassen, und
die Mittel für die vorwärts gerichtete Bewegung und das Anheben der zu behandelnden und/oder der bereits behandelten Produkte (6) Mittel zum abwechselnden Anheben (41) und zum schrittweisen vorwärts gerichteten Bewegen (40) der Produkte und der zugehörigen Vorrichtungen für die Einstellung der besonderen Schiebewege umfassen.

2. Etikettiermaschine nach Anspruch 1, **dadurch gekennzeichnet, dass** die geführten und ausgerichteten Gleitmittel für das durchgehende Band (3) aus Klebeetiketten eine geneigte Bahn (2) sind, die eine untere Führung (10), deren Neigung in Abhängigkeit von dem Durchmesser der Produkte (6) einstellbar ist, eine längsgerichtete feststehende Schulter (8), eine gegenüber liegende Schulter (7), die bewegbar und in Abhängigkeit von der Breite des Bandes einstellbar ist, und eine an ihrer Öffnung kippbare obere Abdeckung (9) umfassen; wobei die Bahn (2) einen abgegrenzten Kanal bildet, innenseitig desselben das fortlaufende Band (3) in perfekter Ausrichtung unter der Wirkung des Anhakungs- (30) und Ziehmittels der Erfassungsmittel gleitet.

3. Etikettiermaschine nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die ausgerichteten Positionierungsmittel (12, 15) des fortlaufenden Bandes (3) auf den Berührungspunkt seines Endrandes (19) mit dem zu etikettierenden Produkt (6) umfassen:

eine Öffnung (11), die an der Führung (10) vorgesehen ist und mit der Bahn (2) fluchtet;
eine Freilauf-Vorwärtsbewegungsrolle (12), die über die Öffnung (11) mit der Bahn (2) fluchtet, wobei die Vorwärtsbewegungsrolle (12) mit Mitteln (13, 14) für ihre abwechselnde Umlaufbewegung ausgestattet ist; und
ein oberes kleines Rad (15), das an der gleichen Bahn (2) angeordnet ist und mit der Vorwärtsbewegungsrolle (12) fluchtet, wobei das obere kleine Rad (15) mit der Lagerungsstruktur der Führung (10) über einen Hebel (18), eine Konsole (16) und einen kleinen Kolben (17) verbunden ist, der mit einem Spitzenteil (20) ausgestattet ist, das auf die obere Abdeckung (9) der Führung (10) zum Anheben oder Absenken des oberen Rades (15) einwirkt, um mit der Vorwärtsbewegungsrolle (12) in Berührung zu stehen oder von dieser gelöst zu sein.

4. Etikettiermaschine nach irgendeinem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Erfassungsmittel für die zu etikettierenden Produkte (6) zwei einander gegenüberliegende, umlaufende Zangen (25) umfassen, die je gekrümmte Flügel (26) umfassen, die zum Schließen und Öffnen durch ein Paar von Schubzwecken (53) und Druckeinstellzwecken (54) dienenden, hintereinander angeordneten Zylinder/Kolben-Systemen (53, 54) aktiviert werden; wobei die Zylinder/Kolben-Systeme (53, 54) eine axiale Translationsbewegung an kleine Hebel (55) übertragen, die die gekrümmten Flügel (26) aktivieren.

5. Etikettiermaschine nach irgendeinem der vorhergehenden Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** die Erfassungsmittel für die zu etikettierenden Produkte (6) zwei einander gegenüberliegende, umlaufende Zangen (25) umfassen, die je gekrümmte Flügel (26) umfassen, die zum Schließen und Öffnen durch Zylinder/Kolben-Systeme (58) aktiviert werden, die direkt mit den kleinen Hebel (55) verbunden sind, die die gekrümmten Flügel (26) aktivieren.

6. Etikettiermaschine nach irgendeinem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Anhakungsmittel (30) für den ausgerichteten Endrand (19) des fortlaufenden Bandes (3) umfassen mindestens eine Erfassungszange, die auf das offene Ende mindestens eines gekrümmten Flügels (26) der umlaufenden Zangen (25) in einer Position im Wesentlichen tangential zu einem umfangsseitigen Erfassungspunkt der zu etikettierenden Produkte (6) mit der Zange einwirken, wobei die Erfassungszange eine untere feststehende Spitze einstückig mit einem ersten Sattel (28) und eine obere bewegbare Spitze umfasst, die zum Öffnen und Schließen mit einem Gelenk (32) einstükkig mit einem zweiten Sattel (29) in Berührung

steht, der an dem ersten Sattel (28) vorgesehen ist und mit diesem entlang einer gemeinsamen Führung (27) axial verschiebbar ist, die an der Rückseite des gekrümmten Flügels (26) angebracht ist; wobei die Sattel (28, 29) durch einen Kolben (31) axial bewegt werden, mit dem ein zweiter Kolben (33) zum Öffnen und Schließen der bewegbaren Spitze der Erfassungszange gekoppelt ist.

7. Etikettiermaschine nach irgendeinem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** ein Anfeuchtungskissen (36) durch einen Kolben (64) mit der unteren Fläche der letzten Länge des Etiketts des fortlaufenden Bandes (3) zum Anfeuchten desselben in Berührung gedrückt ist, wobei es auf dasselbe mit einem geregelten Druck in Gegenüberstellung zu einem darüberliegenden, Führungszwecken dienenden gekrümmten Flügel (37) einwirkt.

8. Etikettiermaschine nach Anspruch 7, **dadurch gekennzeichnet, dass** ein Presskissen (38), das mit einer Lagerungsstruktur (39) des Vorwärtsbewegungsmittels in Berührung steht, den angefeuchteten Endrand in Klebeposition mit dem darunter liegenden Teil des bereits auf das Produkt (6) aufgewickelten Einwicklers hält.

9. Etikettiermaschine nach irgendeinem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Mittel für das abwechselnde Anheben (41) und das schrittweise Vorwärtsbewegen (40) der Produkte einen Banksattel, der sich nach oben und nach unten in einer geregelten Weise mit Hilfe von Aktivierungskolben (42) bewegt, die Schwenkhebelsysteme (43) betätigen, und Seitengitter mit aufeinanderfolgenden V-förmigen Räumen umfasst, in denen die Enden der Produkte (6) ruhen, ausgestattet mit einer axialen Vorwärts- und Rückwärtsbewegung.

10. Etikettiermaschine nach irgendeinem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** Mittel zum Einstellen der verschiedenen Positionen an ausschließlich einer einzigen Trommel (59) vorgesehen sind, die in der Nähe eines der Regelungsenden der umlaufende Zange (25) angeordnet ist, und umfasst:

eine Vielzahl von axialen Bewegungsendpunkten (60'), die auf unterschiedliche Längen in Abhängigkeit von den Durchmessern der Produkte (6) und dem entsprechenden Öffnen und Schließen der umlaufenden Zangen (25) einstellbar sind, wobei die axialen Bewegungsendpunkte (60') mit einer Scheibe (61) gekoppelt sind, die koaxial mit mindestens einem der Enden der Zangen in Eingriff steht;

eine Vielzahl von radialen Bewegungsendpunkten (60"), die auf unterschiedliche Längen in Abhängigkeit von den Durchmessern der Produkte (6) und der entsprechenden Neigung der Bahn (2) einstellbar sind, um den Berührungspunkt der Endränder (19) der Produkte (6) zu bilden; und

mindestens einen radialen Bewegungsendpunkt (60"'), der auf unterschiedliche Längen in Abhängigkeit von den Durchmessern der Produkte (6) und der entsprechenden aufwärts und abwärts gerichteten Bewegung des Banksattels einstellbar ist.

11. Etikettiermaschine nach irgendeinem der vorhergehenden Ansprüche 1 bis 9, **dadurch gekennzeichnet, dass** die Mittel zum Einstellen der verschiedenen Positionen aufweisen:

ein Mittel zum Schließen der gekrümmten Flügel (26) der Erfassungszangen mit aufeinanderfolgend kombinierten Erfassungs- und Druckeinstellungs-Kolben (53, 54);

ein Mittel zum Einstellen der aufwärts und abwärts gerichtete Bewegungen des Banksattels mit den zugehörigen parallelen Gittern bestehend aus einem Schalter für die Endposition oder eine fortlaufende Position, der an einer Regelungstafel angeordnet ist, gekoppelt mit festgelegten oder Zielanschlägen, die auf mindestens eine der Schiebeachsen (69) des Sattels (41) einwirken, wobei die aufwärts und abwärts gerichtete Bewegungen infolge der Wirkung der Kolben (42) durch geschlossene Elektroventile des zentralen Kolbens geregelt sind, und

ein Mittel zum Einstellen der geneigten Position der Führung (10), wobei die Fluchtung der Bahn (2) des fortlaufenden Bandes (3) mit den zu etikettierenden Produkten, die in den Erfassungszangen erfasst sind, aus mindestens einem Annäherungs-Mikroschalter (67) kombiniert und aktiviert durch einen Hebel (70) bestehen, der mit derselben Führung (10) in Eingriff steht, die während der nach unten gerichteten Umlaufbewegung mit einem der gekrümmten Flügel (26) in Berührung und in Eingriff kommt, die bereits in den Erfassungspositionen geschlossen sind, wobei die Umlaufbewegung der Führung (10) auf der durch einen Kolben erzeugten Bewegung beruht, der durch mindestens ein geschlossenes zentrales Elektroventil zum Anhalten in den gewünschten Stellungen gesteuert ist.

12. Etikettiermaschine nach irgendeinem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie umfasst eine Hilfsbremse für das fortlau-

fende Band (3), die einen Querstreifen aus einem flexiblen, elastischen Material (34) umfasst, der auf der oberen Fläche des Bandes (3) mit einem Druck aufliegt, der durch ein Zylinder/Kolben-System (35) eingestellt ist.

13. Etikettiermaschine nach irgendeinem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Rolle (4) des fortlaufenden Bandes (3) mit einem Abwickler (24) für eine freie Länge ausgestattet ist, der eine Reibrolle (21) in Kombination mit einem Freilaufregler (22) aktiviert durch einen Kolben (23) umfasst.

Revendications

1. Machine d'étiquetage pour des produits ayant une forme allongée irrégulière, comportant :

- un moyen coulissant guidé et aligné pour une bande continue (3) d'étiquettes rendues adhésives, pourvu de moyens alignés (12, 15) de positionnement ;
- un moyen entraîné par moteur et agencé latéralement pour la préhension des produits (6) devant être étiquetés, pourvu d'un moyen de traction et d'un moyen orthogonal guidés d'enveloppement de la bande continue (3) sur les produits (6) devant être étiquetés, et
- des moyens destinés à faire avancer et élever les produits (6) devant être traités et/ou déjà traités ;

caractérisée en ce que :

les moyens coulissants guidés et alignés sont pourvus de dispositifs de réglage dimensionnel (7) et d'orientation (60", 62, 67, 70) ;
les moyens de préhension sont en rotation coaxiale et opposés et comprennent des moyens d'accrochage (30) du bord extrême (19) de la bande continue (3) avec des moyens de préhension, de réglage et de positionnement (60', 61, 53, 54) et avec des moyens d'ouverture et de fermeture (31, 32, 33, 50, 55), et
les moyens pour l'avancement et le soulèvement des produits (6) devant être traités et/ou déjà traités comprennent des moyens pour alternativement le soulèvement (41) et l'avance pas à pas (40) des produits et des dispositifs associés pour le réglage des courses de déplacement spécifiées.

2. Machine d'étiquetage selon la revendication 1, **caractérisée en ce que** les moyens coulissants guidés et alignés pour la bande continue (3) d'étiquettes rendues adhésives comprennent un chemin incliné (2)

comportant un guide inférieur (10), dont l'inclinaison est réglable en fonction du diamètre des produits (6), un épaulement longitudinal fixe (8), un épaulement opposé (7), mobile et réglable en fonction de la largeur de la bande, et un couvercle supérieur ouvrant-inclinable (9) ; ledit chemin (2) formant un canal délimité à l'intérieur duquel la bande continue (3) glisse en alignement parfait sous l'action des moyens d'accrochage (30) et de traction des moyens de préhension.

3. Machine d'étiquetage selon les revendications 1 ou 2, **caractérisée en ce que** les moyens alignés (12, 15) de positionnement de la bande continue (3) au point de tangence de son bord extrême (19) avec un produit (6) devant être étiqueté comprennent :

une ouverture (11) obtenue sur le guide (10) et alignée avec le chemin (2) ;
un rouleau d'avance (12) à roue libre, qui s'aligne à travers ladite ouverture (11) avec le chemin (2), ledit rouleau d'avance (12) étant pourvu de moyens (13, 14) pour son mouvement de rotation alternée ; et
une petite roue supérieure (15) située sur le même chemin (2) et alignée avec ledit rouleau d'avance (12), ladite petite roue supérieure (15) étant reliée à la structure d'appui du guide (10) par l'intermédiaire d'un levier (18), d'une équerre (16) et d'un petit piston (17) pourvus d'une pièce pointue (20) agissant sur le couvercle supérieur (9) dudit guide (10) pour faire monter ou descendre ladite roue supérieure (15) afin qu'elle soit en contact avec le rouleau d'avance (12) ou en soit écartée.

4. Machine d'étiquetage selon l'une quelconque des revendications précédentes, **caractérisée en ce que** les moyens de préhension pour les produits (6) devant être étiquetés comprennent deux pinces tournantes opposées (25) comprenant chacune des panneaux courbes (26) se fermant et s'ouvrant, activés par une paire de systèmes à cylindre-piston (53, 54), agencés en série, de poussée (53) et de réglage de pression (54), lesdits systèmes à cylindre-piston (53, 54) transmettant un mouvement de translation axial à de petits leviers (55) activant lesdits panneaux courbes (26).

5. Machine d'étiquetage selon l'une quelconque des revendications précédentes 1 à 3, **caractérisée en ce que** les moyens de préhension pour les produits (6) devant être étiquetés comprennent deux pinces tournantes opposées (25) comprenant chacune

des panneaux courbes (26) s'ouvrant et se fermant, activés par des systèmes à cylindre-piston (58) reliés directement aux petits leviers (55) actionnant lesdits panneaux courbes (26).

6. Machine d'étiquetage selon l'une quelconque des revendications précédentes, **caractérisée en ce que** les moyens d'accrochage (30) pour le bord extrême aligné (19) de la bande continue (3) comprennent au moins une pince de préhension appliquée à l'extrémité ouverte d'au moins un panneau courbe (26) desdites pinces tournantes (25) dans une position sensiblement tangente à un point d'engagement périphérique des produits (6) devant être étiquetés avec lesdites pinces ; lesdites pinces de préhension comprenant un point fixe inférieur intégral avec une première selle (28) et un point mobile supérieur, s'ouvrant et se fermant en prise avec une charnière (32) intégrale avec une seconde selle (29), superposée à la première selle (28) et pouvant coulisser axialement avec elle le long d'un guide commun (27) appliqué au dos dudit panneau courbe (26) ; lesdites selles (28, 28) étant déplacées axialement par un piston (31) auquel un second piston (33) destiné à ouvrir et fermer le point mobile des pinces de préhension est accouplé.

7. Machine d'étiquetage selon l'une quelconque des revendications précédentes, **caractérisée en ce qu'**un tampon humidificateur (36) est poussé par un piston (64) en contact avec la surface inférieure de la dernière longueur de l'étiquette de la bande continue (3) afin de l'humidifier, lui appliquant une pression réglée, en opposition à un panneau courbe (37) de guidage s'étendant par-dessus.

8. Machine d'étiquetage selon la revendication 7, **caractérisée en ce qu'**un tampon presseur (38), engagé avec une structure d'appui (39) des moyens d'avance, maintient en position d'adhérence le bord extrême humidifié, avec la partie sous-jacente de l'enveloppe déjà enroulée sur le produit (6).

9. Machine d'étiquetage selon l'une quelconque des revendications précédentes, **caractérisée en ce que** les moyens destinés à alternativement soulever (41) et faire avancer pas à pas (40) les produits comprennent un chariot de table qui monte et descend d'une manière commandée au moyen de pistons d'actionnement (42) qui actionnent des systèmes de leviers d'inclinaison (43), et des grilles latérales avec des espaces en forme de V en série dans lesquels les extrémités des produits (6) reposent, recevant des mouvements axiaux d'avance et de recul.

10. Machine d'étiquetage selon l'une quelconque des revendications précédentes, **caractérisée en ce que** des moyens pour régler les diverses positions sont situés sur un seul tambour (59) qui est placé à proximité de l'une des extrémités de commande des pinces tournantes (25) et qui comporte :

plusieurs butées axiales de fin de course (60') réglables à différentes longueurs en fonction des diamètres des produits (6) et de l'ouverture et de la fermeture correspondantes des pinces tournantes (25), lesdites butées axiales de fin de course (60') étant accouplées à un disque (61) engagé coaxialement avec au moins l'une des extrémités desdites pinces ;
plusieurs butées radiales de fin de course (60") réglables à différentes longueurs en fonction des diamètres des produits (6) et de l'inclinaison correspondante du chemin (10) pour constituer le point de tangence des bords extrémités (19) desdits produits (6) ; et
au moins une butée radiale de fin de course (60'") réglable à différentes longueurs en fonction'des diamètres des produits (6) et de la course correspondante de montée et de descente du chariot de table.

11. Machine d'étiquetage selon l'une quelconque des revendications précédentes 1 à 9, **caractérisée en ce que** les moyens pour régler les diverses positions comprennent :

des moyens destinés à fermer les panneaux courbes (26) desdites pinces de préhension à l'aide de pistons (53, 54), combinés en série, de préhension et de réglage de pression ;
des moyens destinés à régler les courses de montée et de descente du chariot de table avec les grilles parallèles associées consistant en un commutateur de position finie ou continue, placé sur un tableau de commande, couplé à des poussoirs fixes ou cibles, appliqués à au moins l'un des axes coulissants (69) dudit chariot (41), lesdits mouvements de montée et de descente étant dus à l'action de pistons (42) commandés par des électrovannes de piston à centre fermé ; et
des moyens pour régler la position inclinée du guide (10), l'alignement du chemin (2) de la bande continue (3) avec les produits devant être étiquetés engagés dans les pinces de préhension consistant en au moins un microcontact de proximité (67) combiné et activé au moyen d'un levier (70) engagé avec le même guide (10), lequel, pendant la rotation de descente, vient en contact avec et engage l'un desdits panneaux courbes (26) déjà fermés dans des positions de préhension, ladite rotation du guide (10) étant due au mouvement produit par un piston qui est piloté par au moins une élec-

trovanne à centre fermé pour s'arrêter dans les positions souhaitées.

12. Machine d'étiquetage selon l'une quelconque des revendications précédentes, **caractérisée en ce qu'**elle comporte un frein auxiliaire de la bande continue (3), comportant un ruban transversal en matière élastique et flexible (34) reposant sur la surface supérieure de ladite bande (3) sous une pression ajustée par un système (35) à cylindre-piston.

13. Machine d'étiquetage selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la bobine (4) de la bande continue (3) est pourvue d'un dérouleur (24) de longueur libre, comportant un galet de friction (21) combiné avec une commande à roue libre (22) activée par un piston (23).

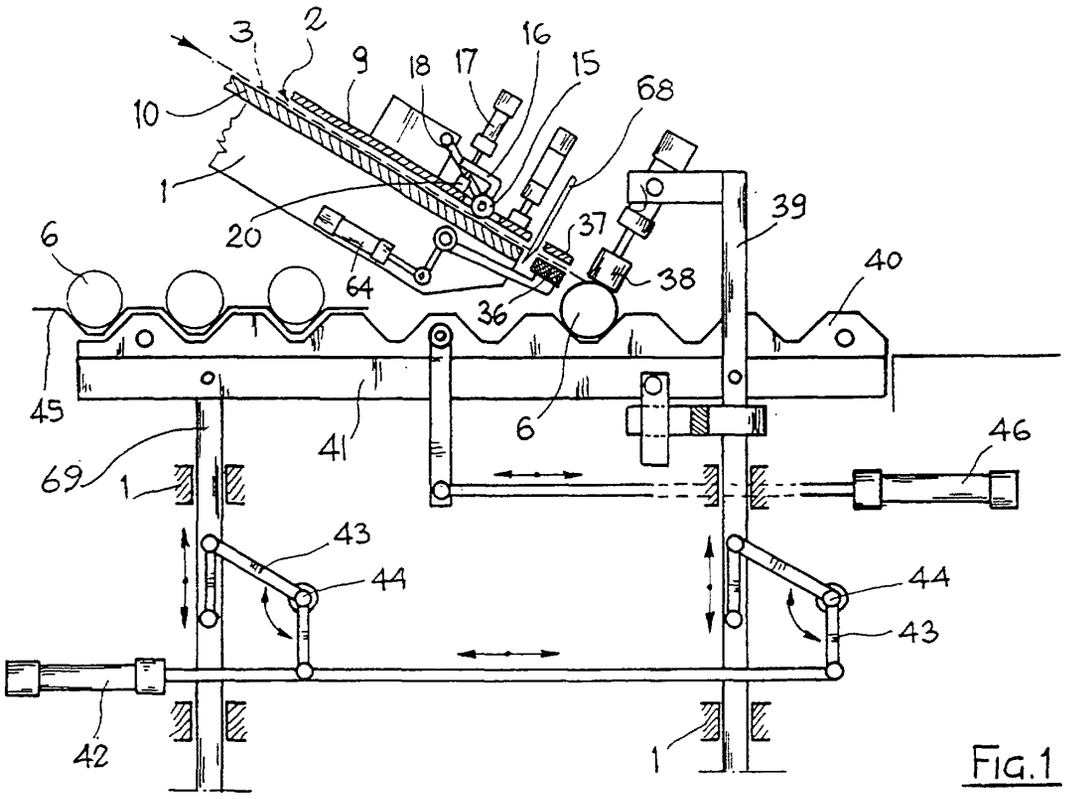
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FIG.1

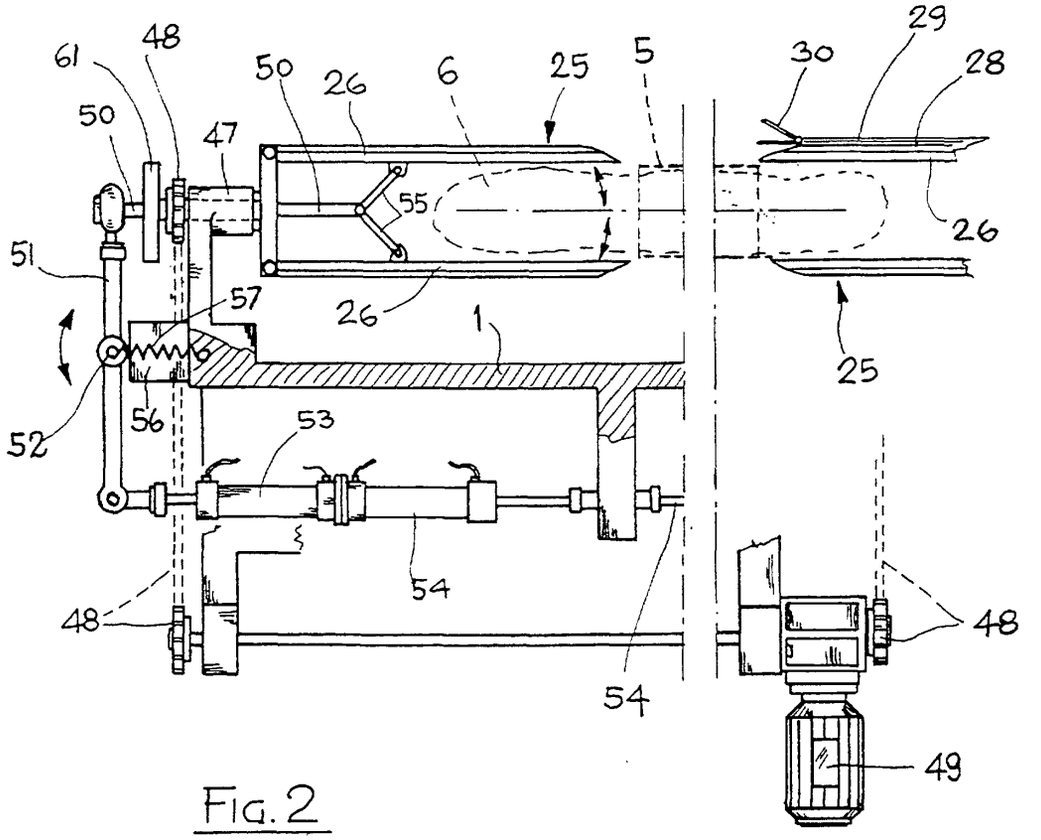
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FIG. 2

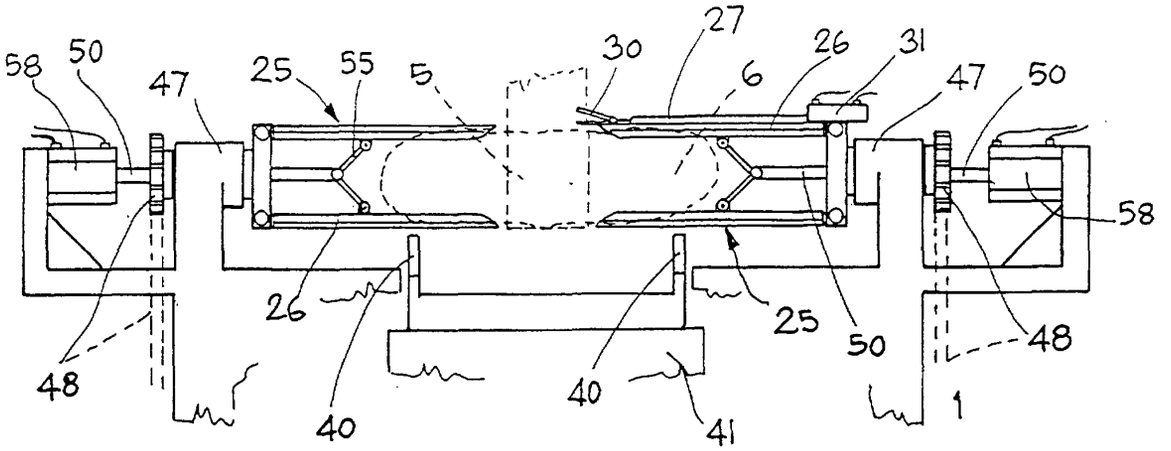


FIG. 3

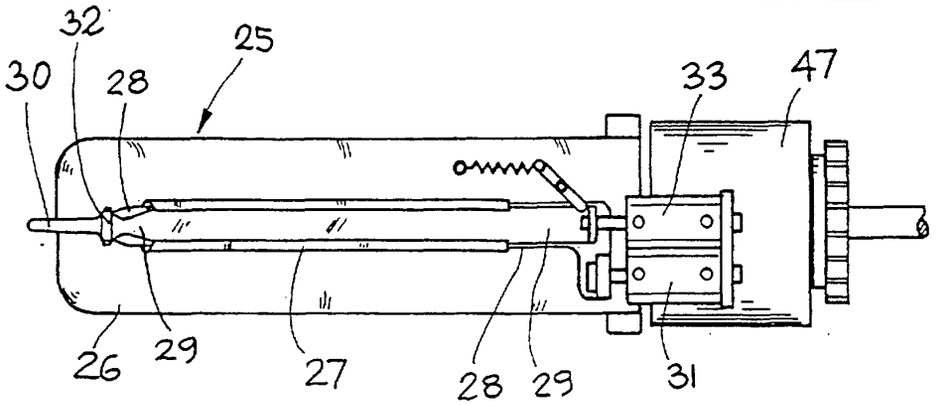


FIG. 4

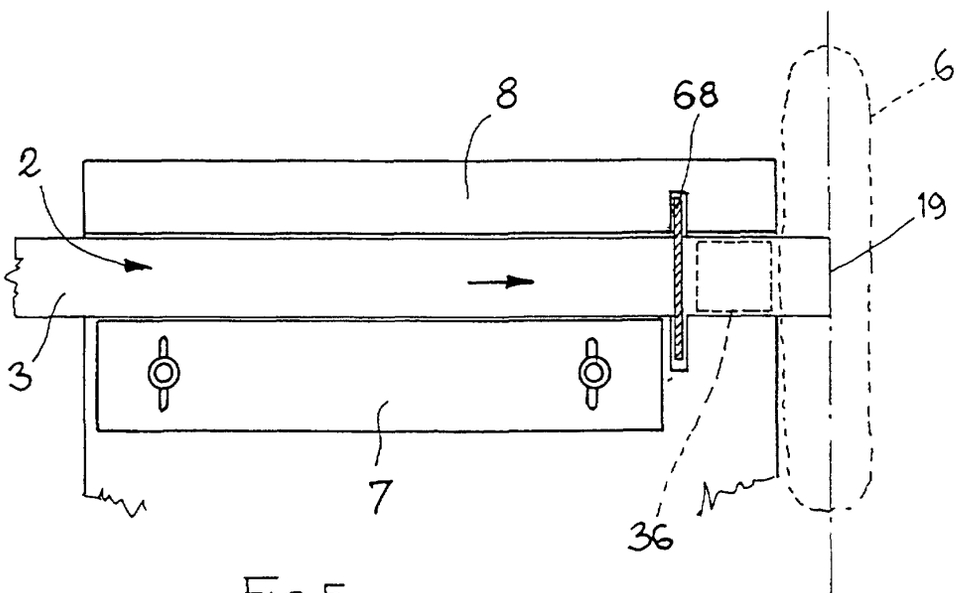


FIG. 5

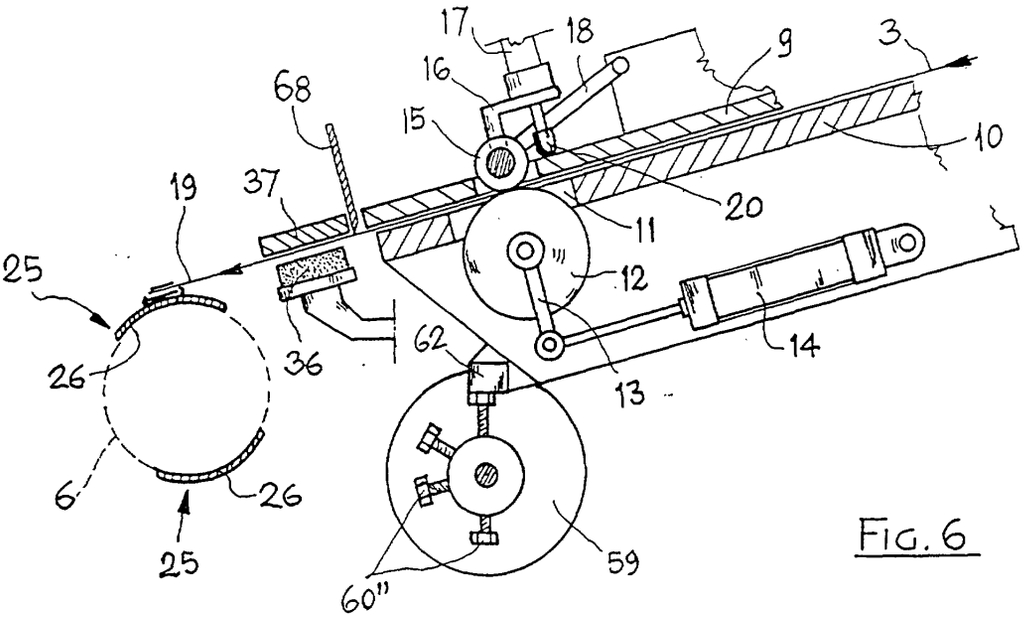
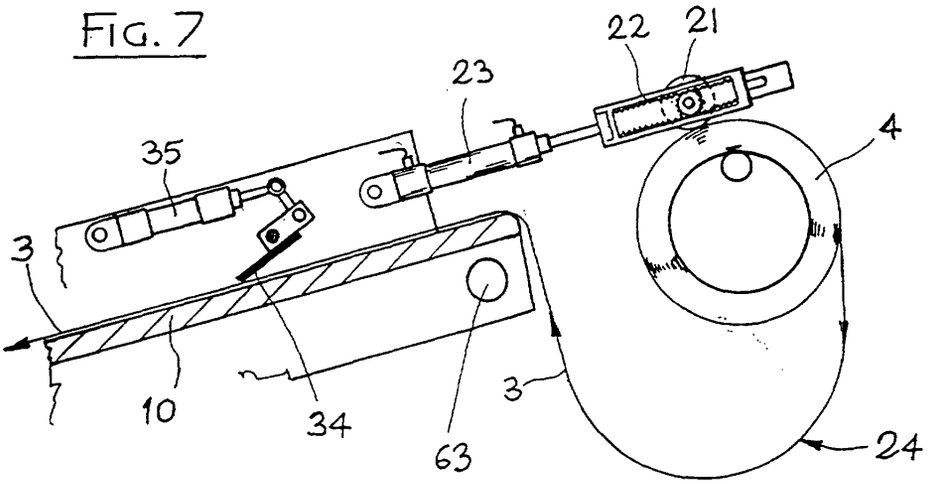


FIG. 6

FIG. 7



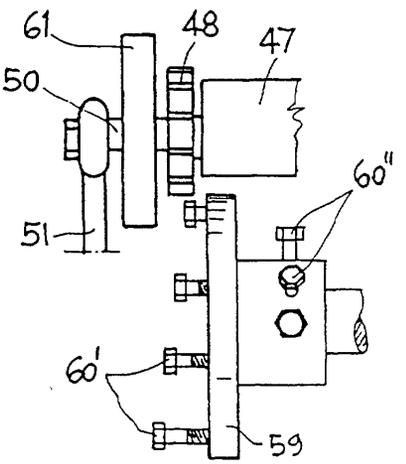
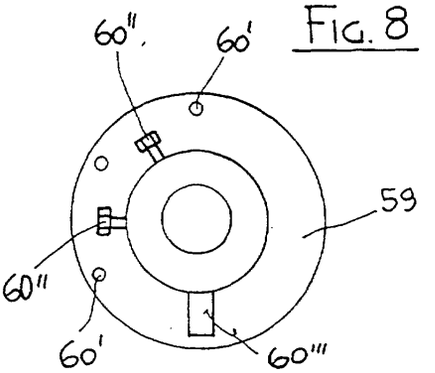


FIG. 8



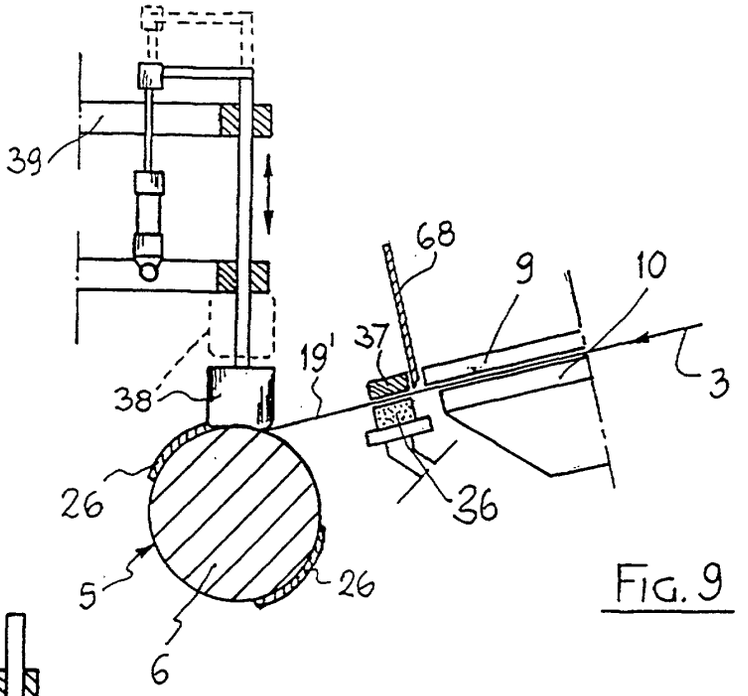


FIG. 9

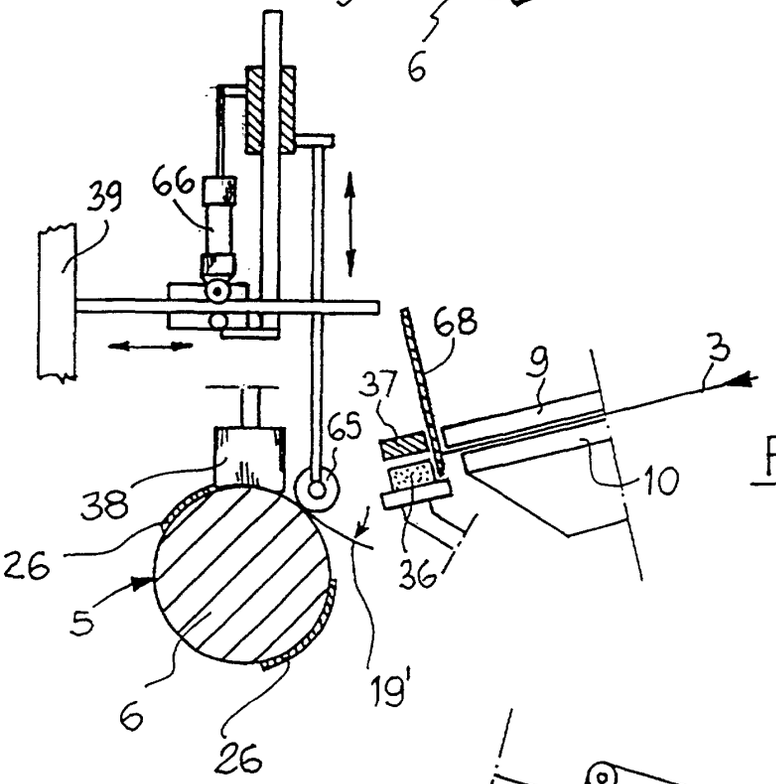


FIG. 10

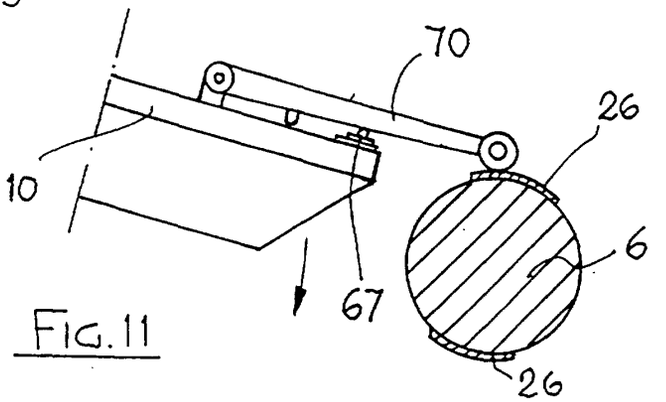


FIG. 11