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(54) METHOD FOR PACKAGING PRODUCTS, PARTICULARLY PORTIONS OF CHOCOLATE OR THE LIKE, AND FACILITY FOR IMPLEMENTING THE METHOD

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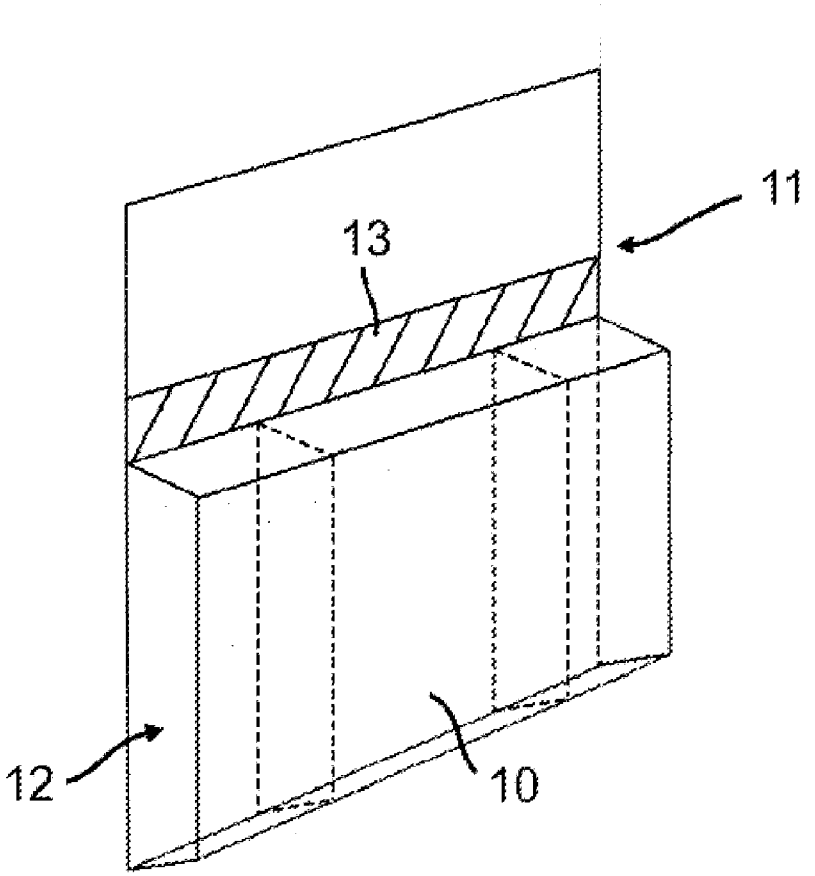
USPC **53/463**; 53/574; 53/373.7

(57) **ABSTRACT**

The invention relates to a method and facility for packaging products (**10**), said facility comprising a linear transporter (**20**) that includes a set of endless conveyor belts (**20***a*) associated with a belt having synchronizing cleats (**20***b*), with a linear pusher (**20***c*) actuated by a parallelogram mechanism (**20***d*) imparting rectilinear motion thereto, as well as with a counter-pusher (**20***e*) which is provided for gripping the product and the sheet of packaging material, and which is driven by a cam or the like. The products are placed in one of the receiving jaws (**21***a*) of a first revolver (**21**) so as to enter a first heat-sealing station (**30**) which is designed to seal the fold along the longitudinal edge of the product (**10**). At the outlet of a folding box, the products are transferred into the recesses (**23***a*) of a second revolver (**23**) which rotates in the direction opposite the direction of rotation of the first revolver (**21**). The products are consecutively conveyed into three identical stations (**40**, **41** and **42**) for heat-sealing the end folds, wherein all of the stations consecutively receive the same products. The reason for said plurality of stations is due to the fact that the end folds have more than two sheets of packaging material, and the greater the number of pieces of material, the longer the heat-sealing step takes.



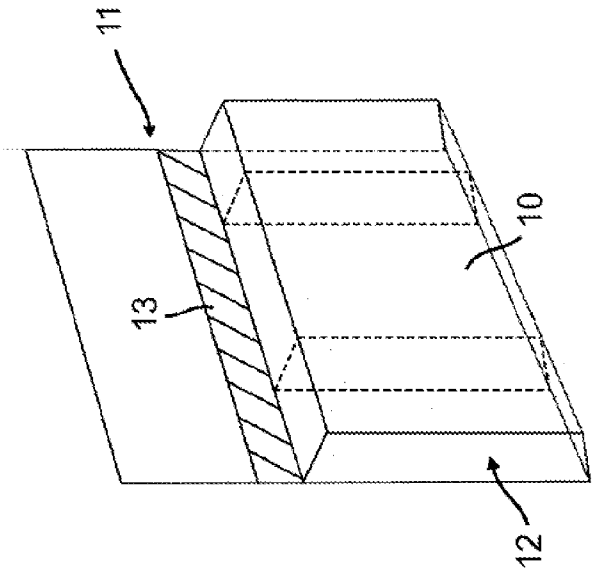


FIG. 1C

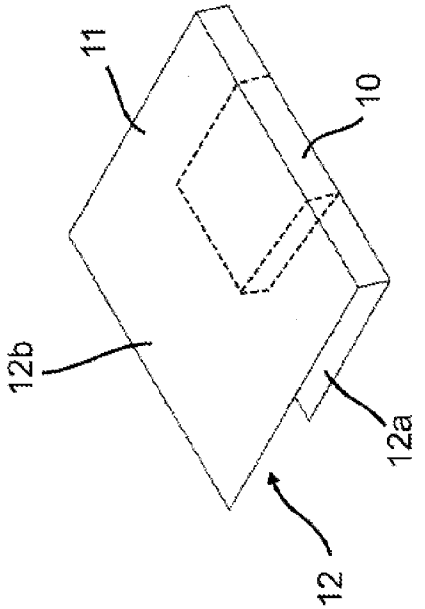


FIG. 1B

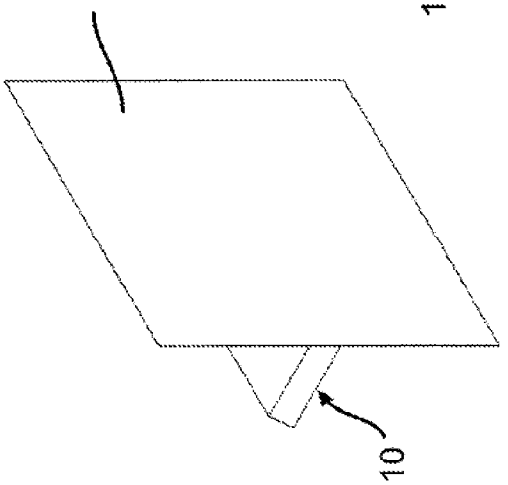


FIG. 1A

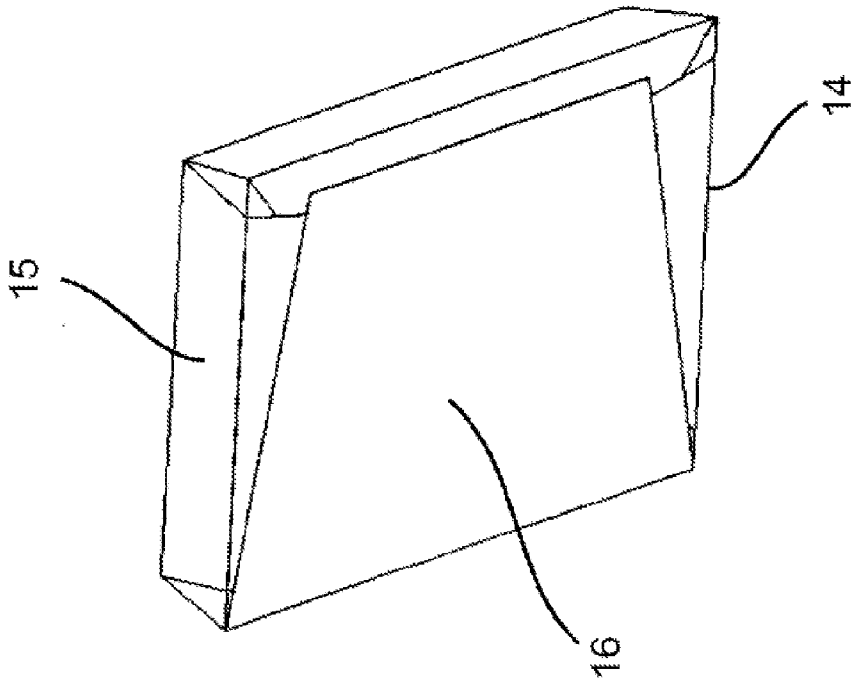


FIG. 1E

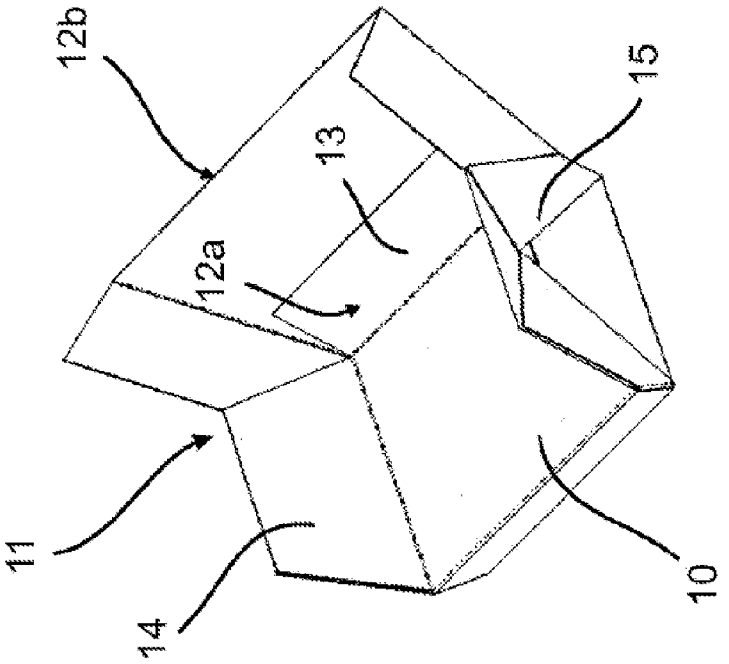


FIG. 1D

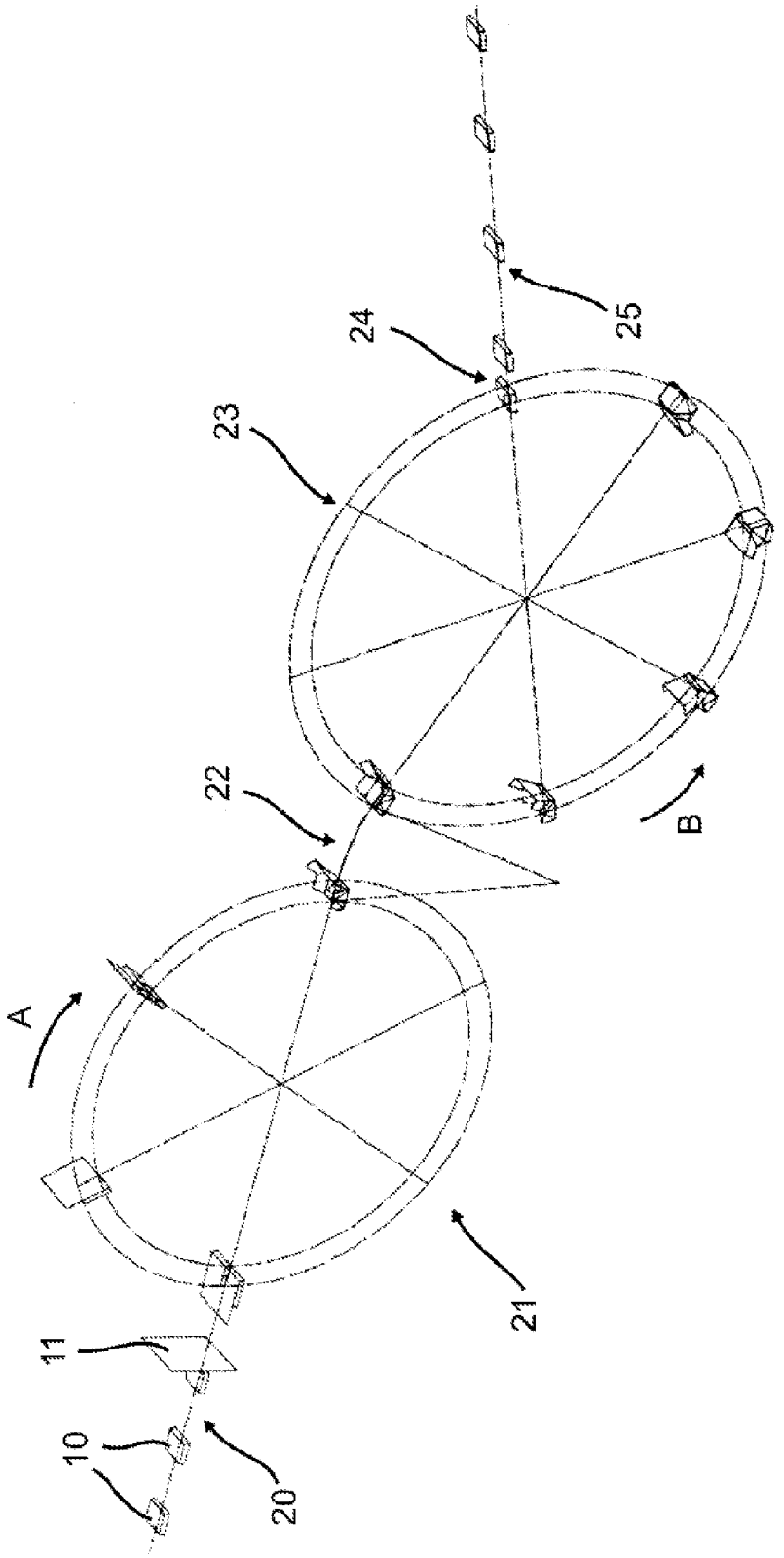


FIG. 2

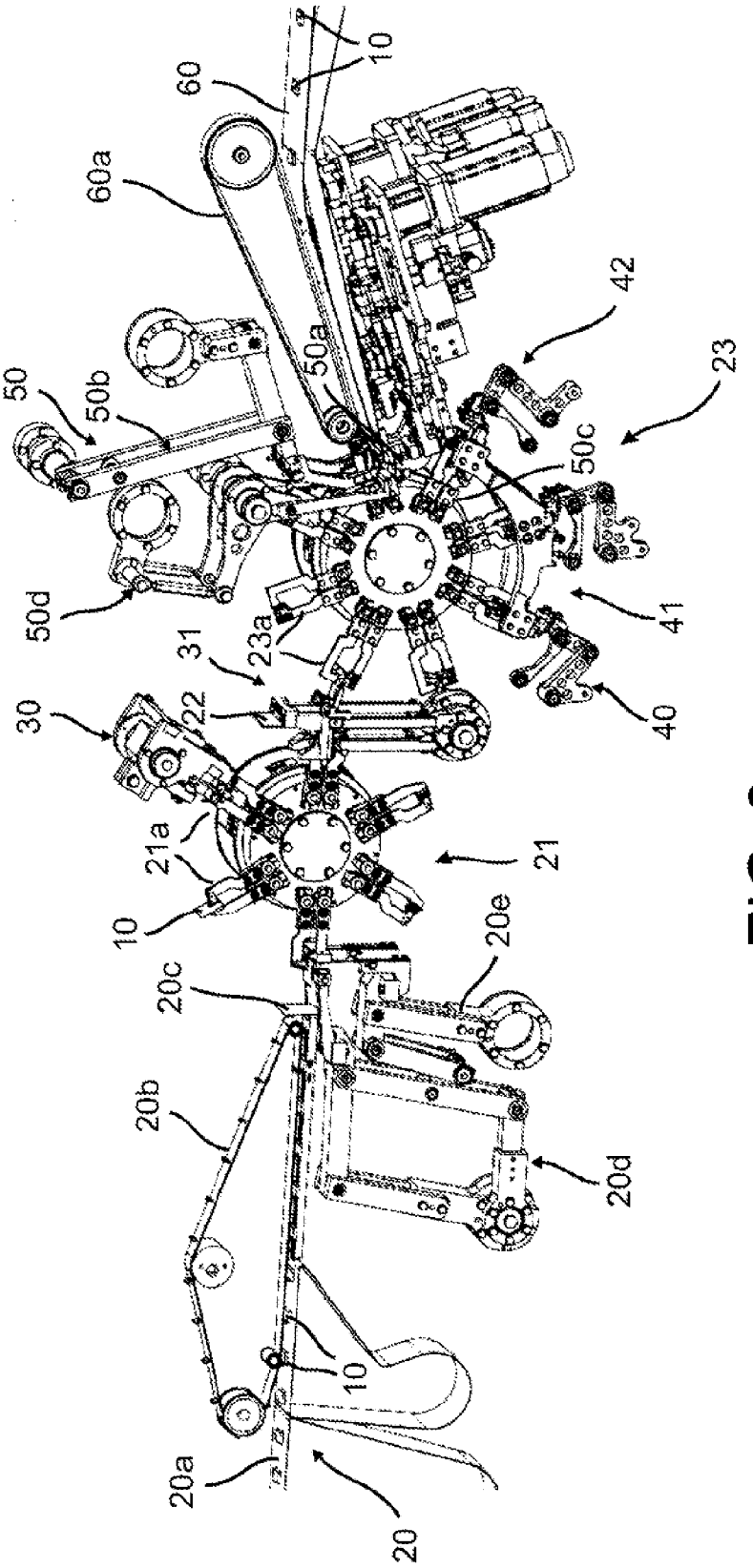

10
60
60a
42
23
50
50b
50a
50c
50d
41
31
23a
40
30
22
21a
21
10
20e
20c
20b
20d
10
20a
20

FIG. 3

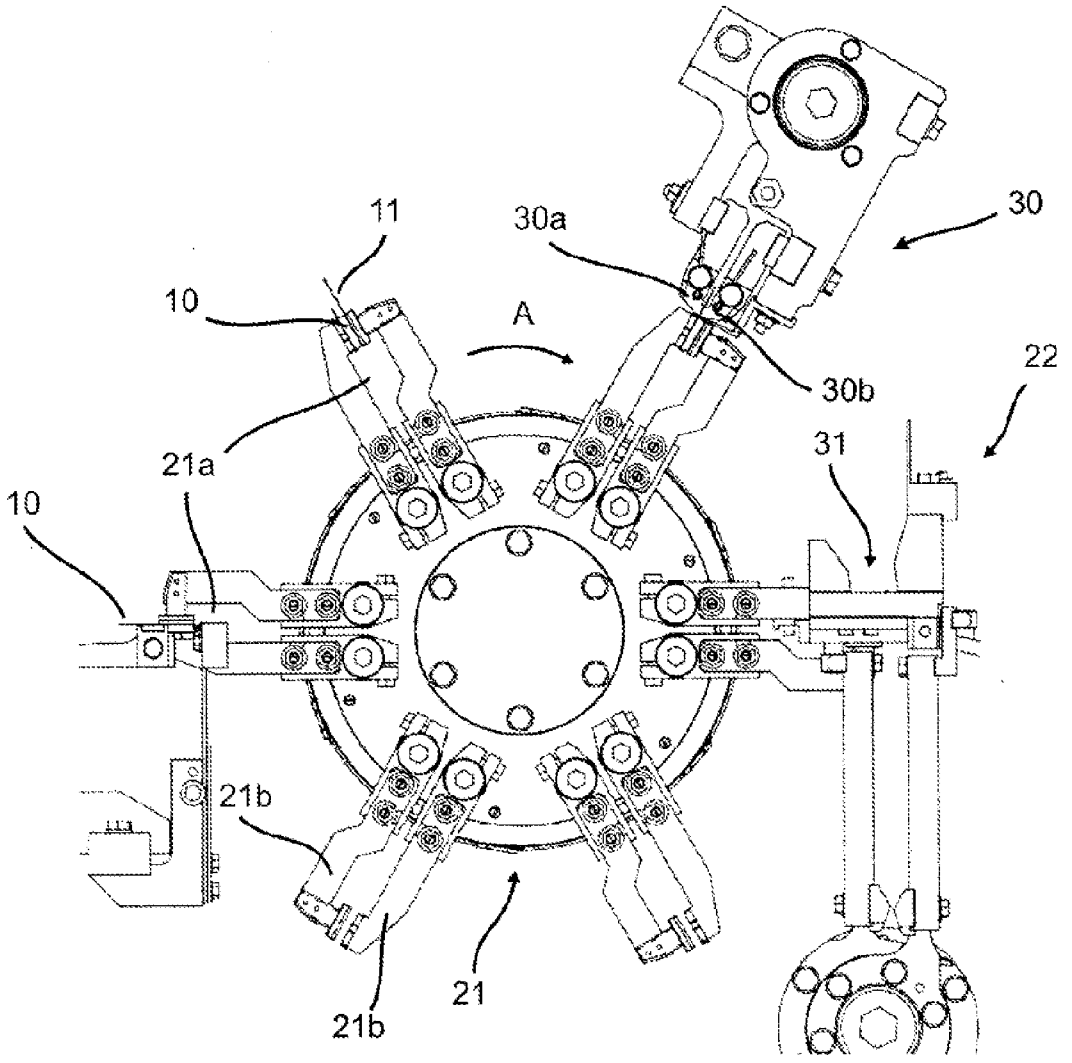


FIG. 4

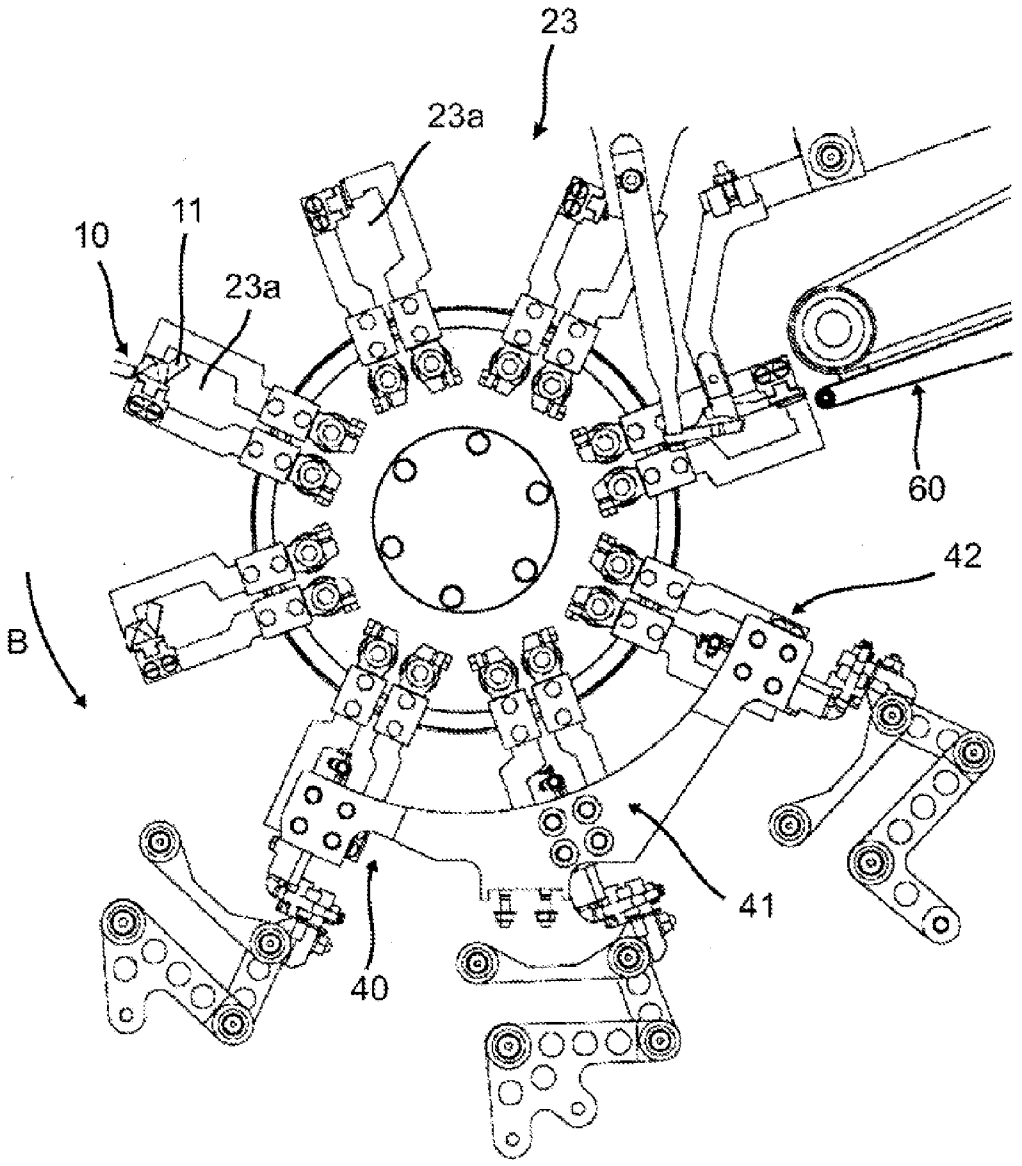


FIG. 5

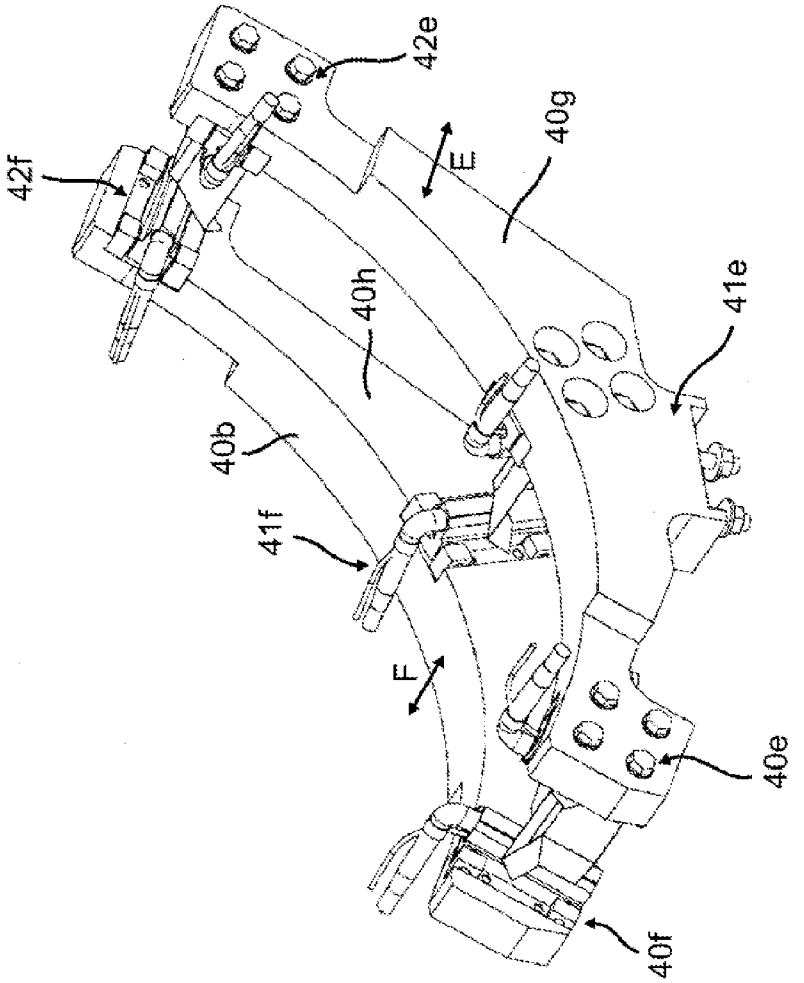


FIG. 6B

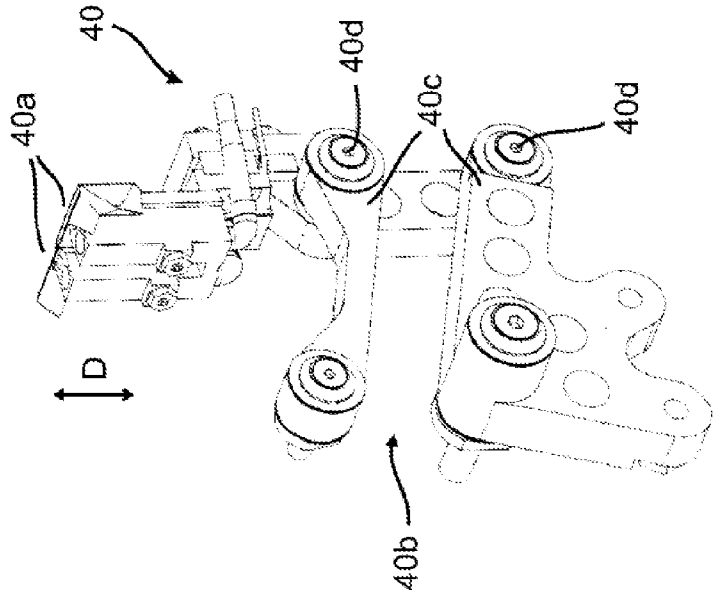


FIG. 6A

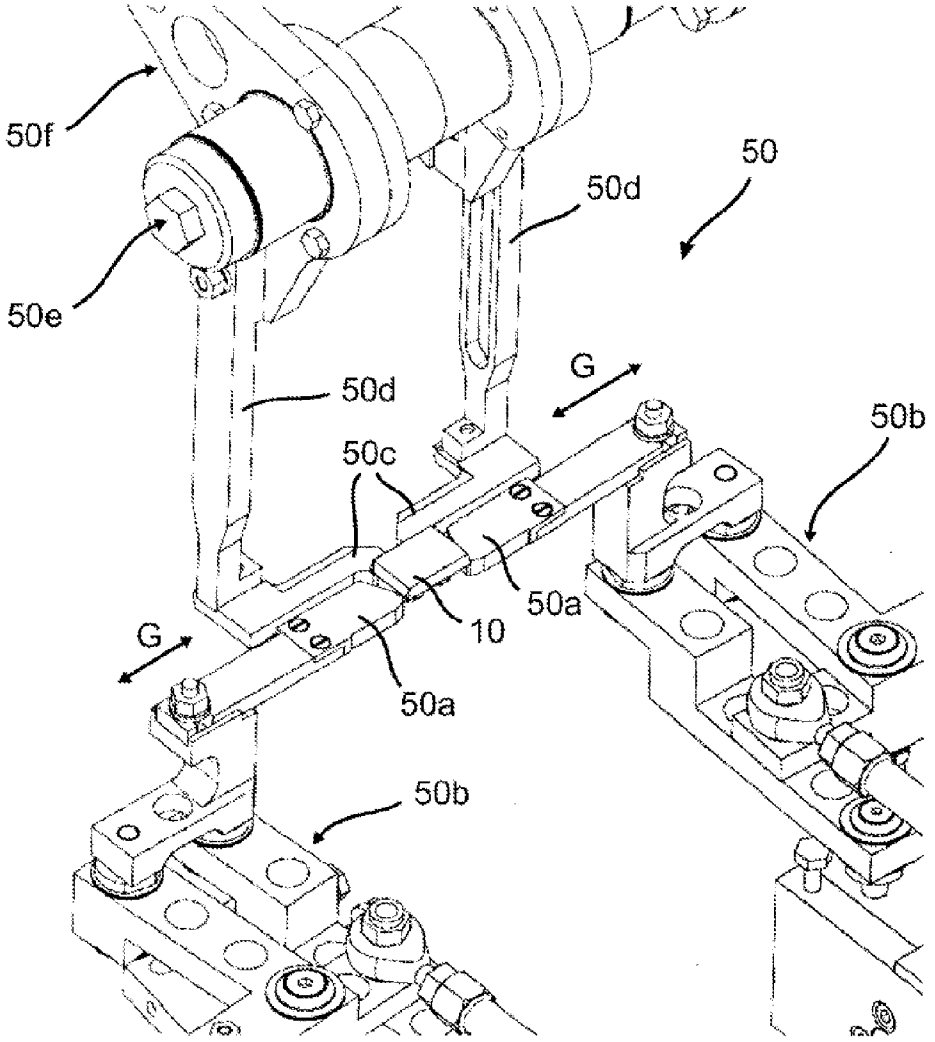


FIG. 7

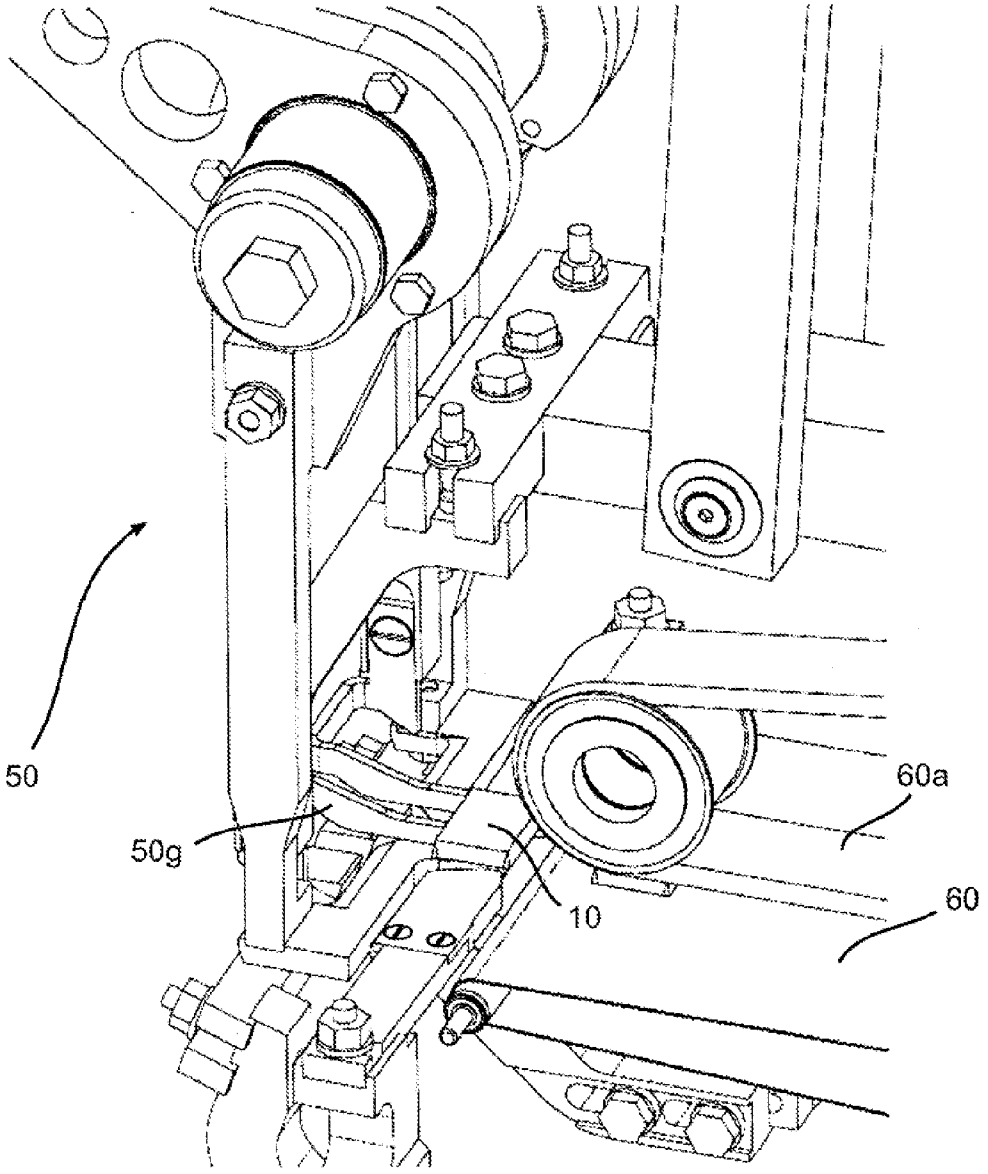


FIG. 8

METHOD FOR PACKAGING PRODUCTS, PARTICULARLY PORTIONS OF CHOCOLATE OR THE LIKE, AND FACILITY FOR IMPLEMENTING THE METHOD

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a method for packaging products, notably a food product and in particular a portion of chocolate or similar element, in a folded and sealed packaging, in which said product is carried on a linear transporter and a sheet cut in a strip of heat-sealable packaging material is interposed on the trajectory of said product.

[0002] A further subject thereof is a facility for packaging products, notably a food product and in particular a portion of chocolate or similar element, in a folded and sealed packaging, for the implementation of the method of the invention.

[0003] The packaging of products, in particular of food products presented in independent portions of small dimensions, poses many problems associated with the nature of the products, with their fragility and their conservation. As it usually involves products manufactured in large quantities, the packaging operation must be extremely rapid so that the packaging facilities must work at very high rates, namely several hundred pieces per minute. Moreover, since the food products have the characteristic of being fragile and of not withstanding high temperatures, the placement of the packaging materials must be carried out gently, without impact and in the case of sealed packagings, the welds of two or more sheets of packaging materials must be produced without direct contact with the products in order to prevent local overheating. Finally, in the particular case of products considered to be luxury products such as chocolate, the merest aesthetic defect on the surface of the product must be excluded, which imposes particularly severe constraints on the operators and on the facility during the packaging.

[0004] A packaging method of this type is already known, according to which the products are conveyed linearly and inserted into a sheet of a heat-sealable packaging material folded in a U to form two longitudinal flaps which will subsequently be welded in a heat-sealing station placed on the periphery of a rotary transporter of the revolver type. Such a method and the facility for the implementation of this method are described in the European Patent Application no. 0 295 203 A1.

[0005] This facility is not optimally suited to the packaging of products of small dimensions and at very high rates, of the order of 600 pieces per minute, notably because the sealing stations are designed respectively to heat the packaging material placed partially around the product and to cool this material for the purpose of preventing a local overheating of the product to be packaged and a marking of the latter. This double action takes time and slows the packaging rate. Moreover, the heating energy applied to the packaging is high, hence the necessity to carry out a cooling which risks damaging the product and imposes constraints which complicate the facility.

[0006] Overall this method and the corresponding facility do not lend themselves to the packaging of delicate and fragile small products such as portions of chocolate in the form of squares or rectangles packaged individually or of similar products. This is a matter of packaging with applied folding routinely called "die-fold" as opposed to welded tubular folding routinely called "flow-pack".

SUMMARY OF THE INVENTION

[0007] The object of the present invention is to alleviate the drawbacks of the prior art by proposing a method and a facility for carrying out a packaging with sealed applied folding, efficient and rapid heat-sealing by means of a sheet of a heat-sealable material, this method allowing a rapid and efficient action that preserves the quality and appearance of the product.

[0008] For this purpose, the method as defined in the preamble is characterized in that said product and the sheet of heat-sealable packaging material are inserted simultaneously into a first rotary transporter, called a first revolver, while folding this sheet in a U around said product so as to form two flaps, called longitudinal flaps, of unequal lengths, adjacent to one side of the product, in that said product and its packaging are carried in this configuration to at least one first heat-sealing station in which the two flaps are welded in order to produce a leakproof seal called a longitudinal seal and to form a longitudinal flap along said side of the product, in that, at the exit of said first revolver, said product and its longitudinally sealed packaging are transferred into a folding box in order to form lateral folds called end folds, in that said product in its longitudinally sealed configuration and comprising end folds is transferred into a second rotary transporter called a second revolver, associated with at least two pairs of heat-sealing stations, in that the product is carried successively into each of said at least two pairs of heat-sealing stations in order to complete the leakproof seal around said product, in that, at the exit of said second revolver, the lateral folds and the longitudinal flap are folded down, and in that the packaged product is discharged in a sealed manner while keeping said longitudinal flap pressing on the packaging of said product.

[0009] Advantageously, said first revolver is used exclusively for carrying out the longitudinal sealing of the packaging of the product and said second revolver exclusively for carrying out the sealing of the end folds of the packaging of the product.

[0010] In the preferred embodiment, the end folds of the packaging of the product are fashioned in a folding box which is interposed between said first revolver and said second revolver.

[0011] Said first revolver and said second revolver are advantageously driven in directions counter to one another.

[0012] Preferably, said product and the sheet of heat-sealable material that is associated therewith are made to travel from an entrance zone in said first revolver, through a heat-sealing station in order to seal said longitudinal edge to an exit zone of this first revolver in a time equal to that during which said product and the sheet of heat-sealable material that is associated therewith travel from an entrance zone in said second revolver, through three successive heat-sealing stations in order to seal said end folds into an exit zone of this second revolver.

[0013] Advantageously, the end folds and the longitudinal flap are folded down at the exit of said second revolver and the packaged product is discharged after the bonding of said longitudinal flap by means of a conveyor band and a pressure belt.

[0014] In the preferred embodiment of the method, the conveyor band and the pressure belt are driven at a speed higher than that of an exit pusher of the second revolver.

[0015] Furthermore, the facility for implementing the method as defined in the preamble is characterized in that it comprises first means arranged for simultaneously inserting

said product and said sheet of heat-sealable packaging material into a first rotary transporter, called a first revolver, and for folding this sheet in a U around said product so as to form two flaps, called longitudinal flaps, of unequal lengths, adjacent to one side of the product, at least one heat-sealing station arranged for welding the two flaps while producing a leakproof seal, called a longitudinal seal, and to form a longitudinal flap along said side of the product, a folding box arranged to form lateral folds, called end folds, placed at the exit of said first revolver, second means arranged to transfer said product in its longitudinally sealed configuration and comprising the end folds into a second rotary transporter, called a second revolver, at least two pairs of heat-sealing stations placed at the periphery of said second revolver, third means arranged, at the exit of said second revolver, to fold down the end folds and the longitudinal flap, and fourth means arranged for discharging the packaged product in a sealed manner while keeping said longitudinal flap pressing on the packaging of said product.

[0016] In the preferred embodiment of the facility according to the invention, said second revolver is associated with three heat-sealing stations placed after one another and arranged so that each carries out a partial sealing of the end folds of one and the same product.

[0017] Advantageously, said folding box is interposed between said first revolver and said second revolver, the exit of said first revolver corresponding to the entrance into the folding box and the exit of the folding box corresponding to the entrance into the second revolver.

[0018] Said first revolver may comprise six sets of pincers separated angularly by an angle of 60°, the first set of pincers corresponding to an entrance zone of the revolver, the second set to a waiting and holding zone of the product with said thermoformable sheet, the third set to a heat-sealing station along the longitudinal edge of the product, the fourth set to an exit zone of this first revolver and the fifth and sixth sets of pincers corresponding to positions of return on empty to said entrance zone.

[0019] Said second revolver may comprise eight cavities separated angularly by an angle of 45°, the first cavity corresponding to an entrance zone of the revolver, the second to a waiting and holding zone of the product, the next three to three successive heat-sealing stations to seal said end folds, the sixth to an exit zone of this second revolver and the last two to positions of return on empty to said entrance zone.

[0020] Preferably, the exit station comprises an axial motion pusher of which the function consists in ejecting the product onto a discharge conveyor band. It also comprises a pressure belt which interacts with said conveyor band to press on the product and its packaging and allow the time for a sealing adhesive to take in order to ensure the closure of said packaging.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] The present invention and its advantages will be more readily evident in the following description of an embodiment given as a nonlimiting example, with reference to the appended drawings, in which:

[0022] FIGS. **1**A, **1**B, **1**C, **1**D and **1**E represent respectively the various steps of the packaging of the product as they occur in the course of the method according to the invention,

[0023] FIG. **2** represents a schematic view of the kinematic sequence illustrating the phases of the method during the conveyance of the product through the facility according to the invention,

[0024] FIG. **3** represents an overview of the facility according to the invention,

[0025] FIG. **4** is a view in frontal elevation of the first rotary transporter, called the folding revolver, with the station for heat-sealing the longitudinal edge of the packaging of the product,

[0026] FIG. **5** is a view in frontal elevation of the second rotary transporter, called the sealing revolver,

[0027] FIG. **6**A is a detail view in perspective of the jaws for sealing the inner ends of the end folds of the packaging after it has been formed in the folding box,

[0028] FIG. **6**B is a detail view in perspective of the jaws for sealing the outer ends of the end folds of the packaging after it has been formed in the folding box,

[0029] FIG. **7** illustrates details of the final folding station with the lateral folders and a longitudinal folder, and

[0030] FIG. **8** illustrates details of the final folding station with a longitudinal folder, an exit pusher, a discharge band and an upper pressure belt.

DETAILED DESCRIPTION

[0031] FIGS. **1**A, **1**B, **1**C, **1**D and **1**E represent respectively the various steps of the packaging of the product as they occur in the course of the method according to the invention. FIG. **1**A shows a product **10**, which is typically a square or a small rectangle of chocolate, carried by a longitudinal transporter and a sheet of packaging material **11**, interposed on the trajectory of the product **10**. The sheet of packaging material is preferably cut in a strip and consists of a material or of a set of heat-sealable materials, known per se.

[0032] FIG. **1**B shows the sheet of packaging material **11** folded in a U around the product **10**, represented in dashed lines, inside a sheath **12** formed by the sheet of packaging material **11** and having two longitudinal flaps **12***a* and **12***b* of unequal lengths, which are folded down onto one another and which delimit the two sides of the U.

[0033] FIG. **1**C represents the product **10** and its sheet of packaging material **11** after formation of said sheath **12** and longitudinal sealing of the two longitudinal flaps **12***a* and **12***b* of the sheet of packaging material on a surface **13** of superposition. This longitudinal sealing is carried out by heat-sealing of the packaging material along the corresponding edge of the product **10**.

[0034] FIG. **1**D represents the product **10** and its packaging partially formed based on the sheet of packaging material **11**, at the exit of a folding box the function of which is to fold the ends **14** and **15** which are the lateral ends of the sheath **12**, on either side of the surface **13** of superposition of the two longitudinal flaps **12***a* and **12***b*. The ends **14** and **15** each consist of more than two thicknesses of packaging material that are intended to be sealed in order to make the packaging of the product **10** totally leakproof. The folding box carries out the forming of the end folds. Subsequently, they are to enter heat-sealing stations in order to be sealed.

[0035] FIG. **1**E represents the product **10** almost totally packaged. The end folds **14** and **15** have been sealed and the flap, called the longitudinal flap **16**, consisting of the two flaps **12***a* and **12***b* heat-sealed onto the surface of superposition **13** is folded down and then bonded to the bottom face of the packaged product **10**.

[0036] This set of operations must be carried out at a very high rate, namely approximately 600 products packaged per minute, and the facility that carries out these actions must be efficient and preferably compact.

[0037] FIG. **2** represents a schematic view of the kinematic sequence illustrating the phases of the method during the conveyance of the product through the facility. This facility comprises essentially a linear transporter **20** which carries the products **10** and synchronizes them, a device (not shown) for supplying sheets **11** of packaging material which are interposed on the trajectory of the products **10**, a first rotary transporter called a first revolver **21** which transports the products with their sheet of packaging material for approximately a half-revolution of the revolver **21** in the direction of the arrow A to an exit **22** corresponding to the entrance of the product in a folding box (not shown). At the exit of the folding box, the products are picked up by a second revolver **23**, over a sector that is substantially greater than a half-revolution in the direction of the arrow B to an exit **24** which corresponds to a final folding station. After this station, the products are picked up again by a linear conveyor **25** for discharging the packaged products.

[0038] FIG. **3** illustrates a particular construction of the facility according to the invention which is designed to implement the method for packaging the products according to the kinematic sequence as described above. The linear transporter **20** comprises a set of endless conveyor belts **20***a* associated with a belt with synchronizing cleats **20***b*, with a linear pusher **20***c* actuated by a parallelogram mechanism **20***d* providing it with a rectilinear movement, and a counter-pusher **20***e* which takes hold of the product and the sheet of packaging material, and which is driven by a cam or similar element. This set of components makes it possible to convey the products **10** and the corresponding sheets of packaging material, to position them at a predefined pitch and put them in place in one of the receiving pincers **21***a* of the first revolver **21**, called the folding revolver. The rotation of this revolver **21** is sequential so as to allow the products and its packaging being formed to enter stations, notably a first heat-sealing station **30**, which is designed to seal the two flaps of the sheet of packaging material and seal the fold along the longitudinal edge of the product **10**.

[0039] After a half-turn rotation, the products reach the exit **22** of the first revolver **21** in a folding box **31** where the end folds are formed. At the exit of the folding box, the products are transferred into the cavities **23***a* of the second revolver **23** which rotates in the counter direction to the revolver **21**. Said cavities have a receptacle shape adequate for holding the folds already formed. The products **10** are carried successively into at least two pairs of heat-sealing stations and, in the example shown, three heat-sealing stations **40**, **41** and **42** of the end folds. These three heat-sealing stations are identical and accommodate successively the same products. The reason for this multiplication of the stations is due to the fact that the end folds amount to more than two thicknesses of packaging material and that the heat-sealing is more protracted as the material thicknesses increase in number. The time required to carry out the heat-sealing of the end folds is therefore substantially three times longer than that which is necessary for sealing the longitudinal edge where only two layers are to be heat-sealed against one another. As it is impossible to apply the heating jaws of the sealing stations to the material with pressure directly on the product, the heat-sealing of the superposed layers of packaging material is carried out particularly efficiently by clamping them between an inner heating jaw and an outer heating jaw. Because of the extremely short dwelling time for each product in a station, this time being approximately of the order of 50 milliseconds, and because of the limits imposed to prevent local overheating of the product, the solution consists, according to one particular feature of the invention, in having the same product travel several times into a heat-sealing station. In the present case, the product enters three successive heating stations and the time for each product to enter all the stations is substantially equal to the product of the travel time in one station by the number of heat-sealable material layers to be welded.

[0040] After the operation of heat-sealing the end folds to obtain the complete applied folding, it is first necessary to fold or fold down these ends and then to fold down on top of these end folds the flap, called the longitudinal flap, **16**, which will be bonded to the bottom face of the product. Accordingly, the facility comprises an exit station **50** provided, on the one hand, with lateral folders **50***a* actuated by a mechanism **50***b* and arranged to fold down the end folds **14**, **15**, and, on the other hand, a longitudinal folder in two halves **50***c* supported by pivoting arms and actuated by a mechanism for folding down the longitudinal flap **16** of the sheet of packaging material. An axial motion pusher ejects the product onto a conveyor band **60**, and a pressure belt **60***a* keeps the products **10** in place on the conveyor band **60** in order to allow the time for a sealing adhesive to take in order to ensure that the packaging is closed.

[0041] FIG. **4** is a view in frontal elevation of the first rotary transporter called the first revolver **21** or folding revolver, which, in this case, comprises six receiving pincers **21***a* which successively receive a product at each advance of the revolver through an angle of 60°. The receiving pincers **21***a* are defined by two articulated arms **21***b* forming a pincer for taking hold of the products, themselves consisting, in this phase, of the product **10** itself and the sheet of packaging material **11** folded in a U. When the revolver **21** moves in the direction of the arrow A, its third stationary position corresponds to the heat-sealing station **30** which is designed to seal the two flaps of the sheet of packaging material along the longitudinal edge fold of the product **10**. This heat-sealing station **30** comprises two heated jaws or pairs of jaws **30***a* and **30***b* placed substantially at the end of two articulated arms which allow the jaws to open and close. The movement of the jaws may be controlled by any means, mechanical such as for example a cam, or electrical such as a motor, depending on the specific characteristics of the movements and of the parameters that are set. The total dwell time of the product when stationary is of the order of 50 milliseconds. During this period of time, the positioning of the jaws, the heat-sealing and the removal of the jaws must be able to be carried out. The exit of the first revolver at **22** corresponds to the entrance into the folding box **31**. This folding box **31** is not shown in greater detail, since it is a totally well known, usual component which is used in many packaging facilities and in particular in the facility described in the earlier European Patent no. 0 295 203 A1. Such a folding box comprises spiral-shaped lateral walls which allow the fashioning of the end folds of the sheet of packaging material when the product **10** and its packaging material **11** are brought inside this box.

[0042] FIG. **5** is a view in frontal elevation of the second rotary transporter, called the second revolver **23** or sealing revolver. The revolver **23** comprises eight receiving cavities **23***a* which pick up the products **10** and their sheet **11** of

packaging material previously sealed along the longitudinal edge. The revolver **23** rotates in the direction of the arrow B and carries each product **10** successively into the heat-sealing stations **40**, **41** and **42**. The components of these stations for heat-sealing the end folds **14** and **15** will be illustrated in greater detail by FIGS. **6**A and **6**B. Each product **10** has a right end fold and a left end fold and since the heat-sealing heating jaws cannot be applied directly against the surface of the product **10**, it is necessary to provide for each of the end folds **14** and **15** an inner heating jaw and an outer heating jaw which will be applied on either side of the packaging material during the heat-sealing operations. Each product travels from one of the heat-sealing stations to the next and the three stations **40**, **41** and **42** contain a product at all times, each of these products systematically entering the three stations before being ejected onto the conveyor band **60**.

[0043] FIG. **6**A is an enlarged view which represents the inner sealing jaws **40***a* of the end folds **14** and **15** (see FIG. **1**D), for example of the heat-sealing station **40**. Note that these jaws are placed in pairs and mounted on a parallelogram mechanism **40***b* comprising two arms **40***c* articulated on two fixed spindles **40***d* secured to the frame of the heat-sealing station **40** and of which the opposite ends support the jaws **40***a*. One of the arms **40***d* is actuated by a mechanical actuator (not shown) which consists for example of a mechanical assembly such as a cam, or of an electrical motor, in order to move the jaws **40***a* in the direction of the double arrow D. The effect of this action is to bring the jaws **40***a* into the space delimited between the two end folds of the packaging of the product which is momentarily in the heat-sealing station **40**, substantially parallel to the end fold in question, awaiting the placement of the outer jaws. The corresponding outer jaws, which will be described below with reference to FIG. **6**B, have the function of pressing the end fold in question against the inner jaws **40***a* so that the end fold is pinched between the outer jaws and the corresponding inner jaws for the time necessary for a first heat-sealing phase. This same operation is carried out simultaneously for the left end fold and the right end fold and recommences three times, successively in the heat-sealing stations **40**, **41** and **42**. Note that the construction of these heat-sealing stations **41** and **42** is identical to that of the heat-sealing station **40**.

[0044] FIG. **6**B is a view representing the three pairs of right outer sealing jaws **40***e*, **41***e* and **42***e* and the three pairs of left outer sealing jaws **40***f*, **41***f* and **42***f* of each of the sealing stations **40**, **41** and **42** of the end folds **14** and **15** (see FIG. **1**D). All the right outer sealing jaws are supported by one and the same support **40***g* and all the left outer jaws are supported by one and the same support **40***h*. The support **40***g* is fitted with an actuation mechanism (not shown) which moves it in the direction of the double arrow E and the support **40***h* is fitted with an actuation mechanism (not shown) which moves it in the direction of the double arrow F. The movement of the supports **40***g* and **40***h* initially brings the heat-sealing jaws to rest against the end folds which are then pinched between the inner heat-sealing jaws and the outer heat-sealing jaws. The three successive stations **40**, **41** and **42** will allow the three layers of heat-sealable material to be welded and to finalize the leaktight packaging of the product **10**.

[0045] After the sealing of the end folds **14** and **15**, the leaktight function of the packaging of the product **10** is ensured. The two end folds **14** and **15** should then be folded down and the bottom flap **16** should be closed (see FIG. **1**E). These operations are carried out in the exit station **50** which comprises two lateral folders **50***a* which are moved in the direction of the double arrows G respectively and which are actuated by two parallelogram mechanisms **50***b* and arranged to slide transversely relative to the direction of longitudinal movement of the products **10** for the purpose of folding down the end folds. Furthermore, the exit station **50** comprises the longitudinal folder divided into two halves **50***c*, supported by two lateral arms **50***d* articulated around a pivoting spindle **50***e* and actuated by a mechanism **50***f* in order to fold down the longitudinal flap of the sheet of packaging material beneath the product **10**. The longitudinal flap **16** is in fact bonded by means of a hot adhesive, which makes it possible to hold the end folds **14** and **15** and to apply the longitudinal flap **16** onto the packaging sealed around the product **10**.

[0046] FIG. **8** represents more particularly the portion of the exit station **50** which comprises an axial motion pusher **50***g* the function of which consists in ejecting the product **10** onto the conveyor band **60** for discharging the products **10**. Since the final flap **16** of the sheet of packaging material has been applied on a glued zone of the packaging, it must be held applied to this packaging while the adhesive takes. This retention is provided by the pressure belt **60***a* which interacts with the conveyor band **60** in order to allow the time for the adhesive to take and ensure the closure of the packaging. Note that the final flap **16** of the sheet of packaging material is closed in the same direction as the direction of movement of the product, which risks causing this flap to open. This drawback is prevented by a speed of travel of the conveyor band **60** and the pressure belt **60***a* that is slightly higher than that of the pusher **50***g*.

[0047] Industrial Application Possibilities

[0048] It emerges clearly from this description that the invention makes it possible to achieve the set objectives, namely to carry out the packaging by an applied, leakproof folding of a fragile and delicate product the aesthetic appearance of which must be preserved, at a very high rate, by means of a compact and reliable facility. The dimension and the nature of the products may vary and the packaging material can be adapted according to the products. The driving mechanisms can be adapted according to the requirements, but the essential basis, notably the principle of leakproof packaging by use of a heat-sealable material, remain immutable. Accordingly, the facility comprises two revolvers of which one comprises at least one heat-sealing station for heat-sealing two layers of packaging material and of which the other comprises several heat-sealing stations for the successive sealing of several layers, for example three layers of packaging material.

1. A method for packaging products, in which a product (**10**) is carried on a linear transporter (**20**) and a sheet (**11**) cut in a strip of heat-sealable packaging material is interposed on a trajectory of said product, the method comprising:

inserting said product (**11**) and the sheet of heat-sealable packaging material (**11**) simultaneously into a first rotary transporter, called a first revolver (**21**), while folding this sheet in a U around said product so as to form two flaps (**12***a*, **12***b*) called longitudinal flaps of unequal lengths, adjacent to one side of the product,

carrying said product and its packaging in this configuration to at least one first heat-sealing station (**30**) in which the two flaps (**12***a*, **12***b*) are welded in order to produce a leakproof seal called a longitudinal seal along said side of the product and to form a longitudinal flap (**16**),

at the exit of said first revolver (**21**), transferring said product and its longitudinally sealed packaging into a folding box (**31**) in order to form lateral folds called end folds (**14**, **15**),

transferring said product in its longitudinally sealed configuration and comprising end folds into a second rotary transporter called a second revolver (**23**), associated with at least two pairs of heat-sealing stations (**40**, **41**, **42**),

carrying the product successively into each of said at least two pairs of heat-sealing stations in order to complete the leakproof seal around said product,

at the exit of said second revolver (**23**), folding down the lateral folds and the longitudinal flap (**16**), and

discharging the packaged product in a sealed manner while keeping said longitudinal flap (**16**) pressing on the packaging of said product.

2. The method as claimed in claim **1**, characterized in that said first revolver (**21**) is used exclusively for carrying out the longitudinal sealing of the packaging of the product and said second revolver (**23**) exclusively for carrying out the sealing of the end folds (**14**, **15**) of the packaging of the product.

3. The method as claimed in claim **1**, characterized in that the end folds (**14**, **15**) of the packaging of the product are fashioned in a folding box (**31**) which is interposed between said first revolver (**21**) and said second revolver (**23**).

4. The method as claimed in claim **1**, characterized in that said first revolver (**21**) and said second revolver (**23**) are driven in directions counter to one another.

5. The method as claimed in claim **1**, characterized in that said product (**10**) and the sheet of heat-sealable material (**11**) that is associated therewith are made to travel from an entrance zone in said first revolver (**21**), through the heat-sealing station (**30**) in order to seal said longitudinal edges of the flaps (**12***a*, **12***b*) to an exit zone of this first revolver in a time equal to that during which said product and the sheet of heat-sealable material that is associated therewith travel from an entrance zone (**22**) in said second revolver (**23**), through three successive heat-sealing stations (**40**, **41**, **42**) in order to seal said end folds (**14**, **15**) into an exit zone (**24**) of this second revolver (**23**).

6. The method as claimed in claim **1**, characterized in that the end folds (**14**, **15**) and the longitudinal flap (**16**) are folded down at the exit of said second revolver (**23**).

7. The method as claimed in claim **1**, characterized in that the packaged product is discharged after the bonding of said longitudinal flap (**16**) by means of a conveyor band (**60**) and a pressure belt (**60***a*).

8. The method as claimed in claim **7**, characterized in that the conveyor band (**60**) and the pressure belt (**60***a*) are driven at a speed higher than that of an exit pusher (**50***g*) of the second revolver (**23**).

9. A facility for packaging products, in a sealed packaging, for the implementation of the method as claimed in claim **1**, this facility comprising a linear transporter (**20**) arranged to move said product and a device for interposing the sheet cut in a strip of heat-sealable packaging material on the trajectory of said product, characterized in that the device comprises first means arranged for simultaneously inserting said product (**10**) and said sheet of heat-sealable packaging material (**11**) into the first revolver (**21**), and for folding this sheet of heat-sealable packaging material (**11**) in a U around said product (**10**) so as to form the longitudinal flaps, of unequal lengths, adjacent to the one side of the product (**10**), at least one heat-sealing station (**30**) for welding the two flaps (**12***a*, **12***b*) while producing the longitudinal seal, along said side of the product and to form the longitudinal flap (**16**), a folding box (**31**) arranged to form the end folds (**14**, **15**), placed at the exit (**22**) of said first revolver (**21**), second means arranged to transfer said product (**10**) in its longitudinally sealed configuration and comprising the end folds (**14**, **15**) into the second revolver (**23**), at least two pairs of heat-sealing stations (**40**, **41**, **42**) placed at the a periphery of said second revolver (**23**), third means arranged, at the exit (**24**) of said second revolver (**23**), to fold down the end folds (**14**, **15**) and the longitudinal flap (**16**), and fourth means arranged for discharging the packaged product in a sealed manner while keeping said longitudinal flap (**16**) pressing on the packaging of said product (**10**).

10. The facility as claimed in claim **9**, characterized in that said second revolver (**23**) is associated with three heat-sealing stations (**40**, **41**, **42**) placed after one another and arranged so that each carries out a partial sealing of the end folds (**14**, **15**) of one and the same product (**10**).

11. The facility as claimed in claim **9**, characterized in that said folding box (**31**) is interposed between said first revolver (**21**) and said second revolver (**23**), the exit (**22**) of said first revolver (**21**) corresponding to the entrance into the folding box (**31**) and the exit of the folding box (**31**) corresponding to the entrance into the second revolver (**23**).

12. The facility as claimed in claim **9**, characterized in that said first revolver (**21**) comprises first, second, third, fourth, fifth and sixth sets of pincers (**21***a*) separated angularly by an angle of 60°, the first set of pincers corresponding to an entrance zone of the revolver (**21**), the second set to a waiting and holding zone of the product (**10**) with said thermoformable sheet (**11**), the third set to a heat-sealing station (**30**) along the longitudinal edge of the product, the fourth set to an exit zone (**22**) of this first revolver (**21**) and the fifth and sixth sets of pincers corresponding to positions of return on empty to said entrance zone.

13. The facility as claimed in claim **9**, characterized in that said second revolver (**23**) comprises first, second, third, fourth, fifth, sixth, seventh and eighth cavities (**23***a*) separated angularly by an angle of 45°, the first cavity corresponding to an entrance zone (**22**) of the revolver, the second cavity to a waiting and holding zone of the product (**10**), the third, fourth and fifth cavities to the three successive heat-sealing stations (**40**, **41**, **42**) arranged to seal said end folds (**14**, **15**), the sixth cavity to an exit zone (**24**) of this second revolver (**23**) and the seventh and eighth cavities to positions of return on empty to said entrance zone (**22**).

14. The facility as claimed in claim **9**, characterized in that the exit station (**50**) comprises an axial motion pusher (**50***g*) of which the function consists in ejecting the product (**10**) onto a discharge conveyor band (**60**).

15. The facility as claimed in claim **14**, characterized in that the exit station (**50**) also comprises a pressure belt (**60***a*) which interacts with said conveyor band (**60**) to press on the product and its packaging and allow the time for a sealing adhesive to take in order to ensure the closure of said packaging.

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