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(54) **STRETCH HOOD MACHINE WITH SYSTEM FOR EASY MAINTENANCE**

(57) Stretch hood machine 1 for packaging pallets 200, comprising a frame 10 with four uprights 11, a film positioning cart 4 movable according to a vertical direction Y parallel to the uprights 11, adapted for grasping a stretch of tubular film 100 at one end and for fitting said stretch of film 100 on the pallet 200, a film preparation cart 3 adapted to be moved according to the vertical direction Y comprising a feeding head 5 arranged to take a portion of the tubular film 100 from a warehouse 2, characterized in that the film preparation cart 3 further comprises a translation structure 6 for moving the feeding head 5 according to a direction X orthogonal to the uprights 11, from a working position C inside the frame 10 to a maintenance position D outside the frame 10 and facing towards the same side of the warehouse 2.

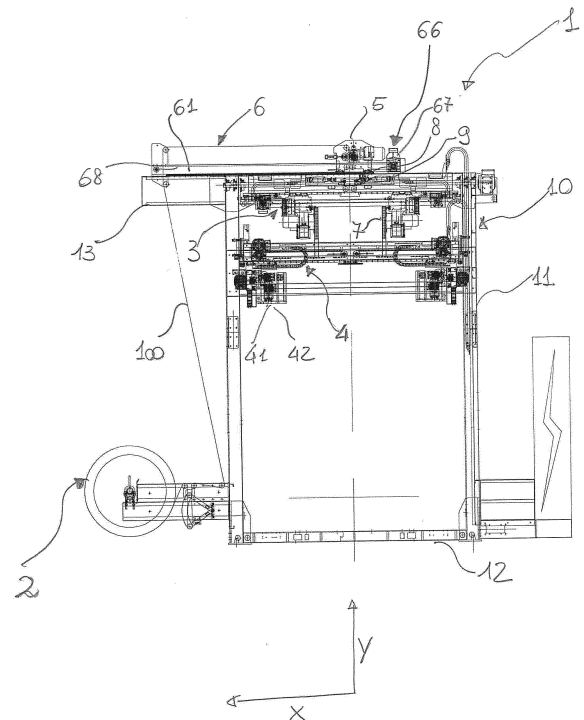


Fig. 1

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**Description**

## FIELD OF APPLICATION OF THE INVENTION

**[0001]** The present invention relates to the field of machines for packaging pallets. In particular, it relates to a machine, which is referred to as stretch hood machine, i.e., configured to cover a stack of articles arranged on pallets with a hood of stretchable tubular film adapted to protect and stabilize said articles.

## STATE OF THE ART

**[0002]** Stretch hood machines for packaging pallets by a hood of stretchable tubular film are known from the state of the art.

**[0003]** Said film is fitted on products arranged on pallets in order to stabilize the pallet, making it transportable, and in order to protect the products against external agents, especially during the transport and storage steps.

**[0004]** The products can be of different types, from food or beverage products, both in bulk and packaged in cardboard boxes or in packs, to cement bags, bags of food products, bricks, or, again, household appliances, buckets, cans of paints, etc.

**[0005]** The action of the machine is based on the use of an elastic stretchable tubular film configured in coils, where the film exhibits a planar surface on its two long sides, and a bellowslike packed part on its short sides.

**[0006]** The machines currently available for packaging pallets by a hood of stretchable tubular film comprise a frame, having a prevailing vertical development, on which:

- a device for feeding the film,
- a device for cutting and welding the film,
- a suctioning device for opening the film,
- a positioning device adapted for grasping the tubular film at one end and for fitting it on the stack of articles are generally installed.

**[0007]** The film is taken by unwinding it from a warehouse that can be integrated in the frame or independent, and which generally comprises at least a coil of stretchable film.

**[0008]** The film feeding device provides for taking a stretch of stretchable tubular film from said warehouse.

**[0009]** Below the feeding device, the cutting and welding device is positioned, which is arranged to cut and weld the film, so as to obtain a hood that is closed at one end; for some applications, the upper welding is not carries out, in fact generating a tubular hood open at the two ends.

**[0010]** The suctioning device, located below the cutting and welding device, is configured to open the lower flaps of the stretchable tubular film so as to allow the insertion of the positioning device, which in turn grasps said lower flaps stretches them apart beyond the size of the pallet

and lowers the same hood, fitting it on the underlying stack of material to be protected.

**[0011]** The film positioning device must be able to adjust to the height of the stack of products to be packaged and must be able to carry out the insertion of the hood along the whole stack of products to be packaged, therefore it is movable in vertical direction along the frame by a suitable motor control.

**[0012]** As regards the feeding device and the cutting, welding and suctioning devices, a very widespread solution provides for that said devices are installed on a non-movable structure associated to the upper part of the frame.

**[0013]** This solution involves the need to arrange stairs and access boardwalks to the upper part of the frame in order to allow the maintenance operations to the same devices, in addition to allow the machine managing operations required for the regular operation thereof, such as, for example, during the film coil change steps.

**[0014]** In fact, especially on the feeding device, it is necessary to intervene not only for the possible maintenance, but also for the normal management of the operative cycle of the machine; in particular, at every coil change, it is necessary to position and couple the new film flap in the feeding device.

**[0015]** A second solution aims to reduce these maintenance and managing difficulties, allowing the operator a more functional, rapid and safe intervention.

**[0016]** Said second solution provides for that the feeding, cutting, welding and suctioning devices, or only part of them, are contained in a cart that is vertically movable along the frame.

**[0017]** For example, the documents US 7,913,476 and US 9,440,756 disclose devices falling within this second type of solution.

**[0018]** In particular, the former, US 7,913,476 provides for a winding device for articles stored on a pallet or the like, with a tubular film, where a feeding device and a positioning device are arranged inside a frame with four uprights.

**[0019]** The positioning device is configured to grasp the tubular film and to fit it onto the articles located in the lower part of the frame and it moves vertically upwardly and downwardly inside said frame.

**[0020]** The feeding device installed on a cart that further comprises a cutting, welding and suctioning device to generate and feed the hood inside the frame with four uprights;

**[0021]** Said feeding device operates in association with the positioning device. In fact, the movement of the cart is preferably passive, i.e., it is moved by the aid of the positioning device.

**[0022]** In alternative, it is also possible to provide for a motor directly connected with the cart in order to move it vertically inside the frame with four uprights independently from the positioning device.

**[0023]** In this first document, while bringing said cart to a height suitable to the operator, the presence of a

frame with four uprights limits the accessibility to the components during maintenance. In fact in order to intervene, for example, on the feeding device, it is necessary to enter the frame with 4 uprights and to operate in a closed, not very accessible area where many components of both the feeding device and the positioning device are present, which make the operation intervention difficult. The substantially central position, with respect to the frame, of the feeding rolls limits the access thereto, which instead is important to make the coil change operations straightforward and rapid.

**[0024]** The second document US 9,440,756 provides for a device for hooding a stack of objects with a tubular film comprising a warehouse of the tubular film, a frame with two vertical uprights adjacent to the film warehouse and placed side by side to the stack of objects to be hooded; it further provides for a positioning device film, vertically movable along the frame with two uprights, and a feeding device film arranged to be moved vertically along the two uprights, by the aid of the film positioning device.

**[0025]** The film taken from the warehouse passes through the feeding device film and arrives to the film positioning device to hood the stack of objects.

**[0026]** The film feeding device is installed on a cart, which further comprises cutting, welding and suctioning means, but it does not comprise movement means of its own; in fact, it can be moved only with the aid of the motorized means that move the film positioning device. In such a manner, the film feeding device and the film positioning device move together.

**[0027]** When the feeding device moves vertically, a film collecting device arranged between the warehouse and the same feeding device is configured to collect a variable length of film by compensating the length of the film that unwinds following this movement.

**[0028]** The solution described in this second document surely features higher accessibility characteristics, since the frame has only two vertical uprights; however, the structure with two uprights does not ensure the characteristics of rigidity and solidity of the structure with 4 uprights, especially for machines with considerable heights.

#### DISCLOSURE AND ADVANTAGES OF THE INVENTION

**[0029]** An object of the present invention is to provide to the art an improved stretch hood machine for packaging pallets structurally and functionally devised to overcome one or more of the limitations set forth above with reference to the mentioned prior art.

**[0030]** Within the scope of the above-mentioned problem, a main object of the invention is to develop a stretch hood machine that allows simplifying the work of the operator engaged in control, management and maintenance activities, allowing to access to the main parts the machine in a safer, easier, and more rapid manner, both for those activities necessary to a normal operative cycle, and for the maintenance operations.

**[0031]** It is also an object of the present invention to provide a solution that allows to make the parts of the machine more accessible, while maintaining a structurally very stable and robust stretch hood machine.

5 **[0032]** A further object of the invention is also to provide to the art a machine for packaging pallets within the scope of a flexible and quite inexpensive solution.

**[0033]** Such and other objects are achieved by virtue of the features of the invention set forth in the independent claim 1. The dependent claims set forth preferred and/or particularly advantageous aspects of the invention.

10 **[0034]** In particular, an implementation of the present invention provides a machine for packaging pallets comprising a frame with four uprights, a film positioning cart movable according to a vertical direction parallel to the uprights, adapted for grasping a stretch of tubular film at one end and for fitting said stretch of film on the pallet; it further comprises a film preparation cart adapted to be moved according to the vertical direction, in turn comprising a feeding device suitable to take a portion of the tubular film from a warehouse and a translation structure for moving the feeding device according to a direction orthogonal to the uprights, from a working position inside the frame to a maintenance position outside the frame and facing towards the same side of the warehouse.

20 **[0035]** By virtue of the possibility to vertically translate the whole film preparation cart up to a height that is convenient to the operator, together with the possibility to translate the feeding device outside the four uprights, make so that said feeding device is very accessible.

25 **[0036]** To access it, the operator needs not to stick out inside the structure and he/she is not hindered by a number of other components that are present inside the frame.

30 **[0037]** In fact, the accessibility to the feeding device is very important not only in the maintenance steps, but especially during the normal management of the machine duty cycle. In fact, every time the film coil ends, it is necessary to insert the film flap of the new coil in the feeding device so that said flap is held in the proper working position. For this reason, the translation towards the film warehouse is particularly advantageous.

35 **[0038]** A further advantage is given by the fact that important parts of the machine are made accessible, while keeping a solid and robust structure with four uprights, which allows working even with very high pallets.

40 **[0039]** Another aspect of the invention is to provide a solution where the film preparation cart is preferably moved vertically on the frame by the film positioning cart, the latter being provided with movement elements.

**[0040]** In fact, the film preparation cart comprises at least a coupling device configured to mechanically and operatively associate it to the film positioning cart.

45 **[0041]** Since the film preparation cart remains always stationary during the entire duty cycle of the stretch hood machine, it is not necessary to provide said film preparation cart with its own movement means, since said

means would be actuated only at the coil change and maintenance times, thus involving a solution that is expensive both in terms of construction and of machine management.

**[0042]** Said object and advantages are all achieved by the machine for packaging pallets, which is the subject matter of the present invention, which is characterized by what is provided for in the claims set forth herein below.

#### BRIEF DESCRIPTION OF THE FIGURES

**[0043]** This and other features will be more clearly understood from the following description of some embodiments illustrated, by way of non-limiting example, in the attached drawing figures.

- Fig. 1: illustrates a side view of the machine for packaging pallets.
- Fig. 2: illustrates a top view of the machine for packaging pallets.
- Fig. 3: illustrates in detail the translation structure of the feeding device.
- Fig. 4: illustrates in side view the positioning steps of the feeding device, from the working position to the maintenance position.

#### DESCRIPTION OF THE INVENTION

**[0044]** With particular reference to Fig. 1, a stretch hood machine 1 for packaging pallets 200, not shown in the figure, is represented, which provides for a frame 10 on which all the devices necessary for the operativity of the machine are installed.

**[0045]** Function of the machine is to generate a hood by the use of the elastic tubular film 100 and to fit it on the pallet 200, together with the products to be packaged in order to ensure the stability thereof for the transport and protection against external agents.

**[0046]** The frame 10 comprises four uprights 11 which develop vertically according to a vertical direction Y orthogonal to the ground.

**[0047]** The four uprights 11 are connected to the ground by a pedestal 12 on which a conveyor 14 rests, which is configured to receive and transfer according to a forward direction Z a stack of articles to be packaged (not shown) and simply referred to as pallet 200 herein below.

**[0048]** In a preferred embodiment, said four uprights 11 are further connected in the upper end part thereof by a ring 13 configured to stiffen the structure of the frame 10 in order to promote the transport thereof and in order to decrease the vibrations during operation.

**[0049]** The stretch hood machine 1 is fed by a warehouse 2 configured to hold at least a coil of tubular film 100.

**[0050]** The tubular film 100 is wound in the coil in a flattened configuration. In such flattened configuration, the tubular film 100 is substantially arranged in two layers

that are overlapping and joined laterally by a bellowslike-folded stretch of film.

**[0051]** The dimensions of the film perimeter vary as a function of the perimeter to be packaged, as well as the film thickness may vary generally from 25 to 180 microns as a function of the packaging/stability characteristics that are sought.

**[0052]** According an aspect of the invention, the stretch hood machine 1 comprises two carts, i.e. a film positioning cart 4 and a film preparation cart 3.

**[0053]** In particular, the film positioning cart 4 is adapted for grasping the stretch of tubular film 100 at one end and for fitting said stretch of film 100 on a stack of articles; on the other hand, the film preparation cart 3 is arranged to take a portion of tubular film 100 from the warehouse 2, to cut and weld it at a predetermined section of said tubular film 100, beside being arranged to open the lower flaps thereof.

**[0054]** The film preparation cart 3 is always located above the film positioning cart 4.

**[0055]** According to an aspect of the invention, the uprights 11 of the frame 10 are configured to allow the sliding of the two film preparation 3 and film positioning 4 carts.

**[0056]** The film preparation cart 3 comprises a feeding head 5, welding elements 8, cutting elements 9, and suctioning devices 7.

**[0057]** In a formulation of the present invention, the feeding head 5 provides for taking a stretch of stretchable tubular film 100 by unwinding from the warehouse 2.

**[0058]** Said feeding head 5 preferably comprises a pair of rubber rolls 51 that, by rotating about their axis, perform the function of pulling the tubular film 100 concordant with the rotation direction of the same rolls, unwinding the amount of film 100 required to package the stack of articles.

**[0059]** The welding elements 8 are arranged below the feeding head 5.

**[0060]** The welding elements 8 have the function of closing at one end a stretch of tubular film 100, so as to obtain a hood shape and act on the tubular film 100, which is still in the flattened configuration in two overlapping layers.

**[0061]** Preferably, the welding elements 8 comprise a pair of welding bars, at least one of which can be heated to a melting temperature of the tubular film.

**[0062]** The pair of welding bars is movable between an operative position, in which they are approached each other to clamp a section of the tubular film, and a release position, in which they are moved away from each other.

**[0063]** In accordance with possible embodiments, the cutting elements 9 that cooperate with the welding elements 8 to cut the portion of tubular film 100 above the welding separating it from the rest of the coil are located between the feeding head 5 and the welding elements 8.

**[0064]** In accordance with an aspect of the invention, the film preparation cart 3 provides for, below the welding means 8, the suctioning devices 7.

**[0065]** Such suctioning devices 7 are arranged oppo-

site, in order to be able to come into contact with the two sides of the tubular film 100 and are configured to grasp the lower flaps of said tubular film 100.

**[0066]** Said suctioning devices 7 carry out a first approaching to the tubular film 100, followed by a moving away; said moving away has the aim to open the lower flaps of tubular film 100, due to its special lateral bellows-like configuration.

**[0067]** The film positioning cart 4 vertically movable in the direction Y, during the operation of the stretch hood machine 1 is positioned below the film preparation cart 3.

**[0068]** Said film positioning cart 4 comprises grasping pliers 41, preferably four of them, and film collecting elements 42. The pliers 41 approach each other moving according to two directions; the direction Z and a direction X, orthogonal to the above-defined vertical Y and forward Z directions.

**[0069]** According to an embodiment, the film positioning cart 4 provides for its lifting in direction Y, approaching the film preparation cart 3, so that said pliers 41 can insert inside the lower flaps of the tubular film 100, kept open by the suctioning devices 7.

**[0070]** The film collecting elements 42 come into contact with the tubular film 100 to recover all the hood taken by the feeding head 5 and already cut and welded in the film preparation cart 3.

**[0071]** Then an extension step begins, in which the pliers 41 stretch apart moving according to the directions X and Z so as to extend the hood to be able to fit it onto the underlying products.

**[0072]** The extension step continues until obtaining a film having a larger size than the perimeter of the pallet 200 to be treated. Subsequently, the descent of the film positioning cart 4 begins, during which the film collecting elements 42 release the hood on the pallet 200.

**[0073]** At the end of its vertical stroke, the hood is completely released from the pliers 41 and fitted on the stack of articles.

**[0074]** The lower cart 4 rises vertically to allow the exit of the hooded pallet 200 and to be able to carry out a subsequent duty cycle.

**[0075]** During the normal duty cycle of the stretch hood machine 1, the film positioning cart 4 vertically translates according to the direction Y, while the film preparation cart 3 remains in a fixed position, preferably in the upper part of the frame 10, which will be referred to as fixed position A.

**[0076]** In the stretch hood machine 1 for packaging pallets 200 according to the present invention, the film preparation cart 3 is configured to be able to translate in vertical direction Y by sliding along the uprights 11.

**[0077]** The movement of the film preparation cart 3 is preferably passive, i.e., it is not provided with its own movement means, instead it translates by the aid of the film positioning cart 4.

**[0078]** According to a possible embodiment, the working position A is not univocal, i.e., the film preparation cart 3 can be positioned in a fixed manner, at different

heights along the uprights 11, in order to improve the productivity of the stretch hood machine 1.

**[0079]** In fact, especially in the case of a pallet 200 having a low height, the movement of the film from the film preparation cart 3 to the film positioning cart 4 can be carried out at a height that is near to that of the pallet 200, thus reducing the overall stroke that the film positioning cart 4 has to carry out.

**[0080]** In a formulation of the present invention the movement of the film preparation cart 3 along the uprights 11 preferably occurs until reaching a preferably completely low position, which will be referred to as the maintenance position B.

**[0081]** Said maintenance position B is reached both during the maintenance steps and especially during the normal management of the machine.

**[0082]** In fact, the normal management of the stretch hood machine 1 provides for inserting in the warehouse 2 a new coil every time that, after a number of duty cycles, the film coil ends; to carry out such coil change operation, it is necessary to insert the film flap of the new coil in the feeding head 5 so that said flap is held in the proper working position.

**[0083]** To this aim, the present invention provides for lowering in the vertical direction Y the film preparation cart 3 and consequently the feeding head 5 mechanically connected thereto, preferably up to the maintenance position B.

**[0084]** Said maintenance position B allows to bring the feeding head 5 to a height that is more accessible by the operator, thus facilitating the carrying out of the coil change or maintenance operations.

**[0085]** According to an aspect of the invention the film preparation cart 3 comprises a coupling device 31 configured to mechanically and operationally associate said film preparation cart 3 to the film positioning cart 4. In this manner, by moving the film positioning cart 4 in the vertical direction Y, the film preparation cart 3 which has been made integral thereto by the coupling device 31 is also translated.

**[0086]** The coupling device 31 preferably provides for two positions:

- insertion/fitting position in at least one of the uprights 11 for keeping the film preparation cart 3 fixed in the working position A,
- insertion/ fitting position in the film positioning cart 4, for moving the film preparation cart 3 together with said film positioning cart 4 between the working position A and the maintenance position B.

**[0087]** Object of the present invention is to allow an optimal access to the feeding head 5 by the operator; for this reason, the stretch hood machine 1, in addition to the lowering of the feeding head 5 to a suitable height for the operator, provides for translating the feeding head 5 according to the direction X and preferably towards the warehouse 2.

**[0088]** In a preferred embodiment the film preparation cart 3 comprises a translation structure 6 configured to move the feeding head 5 according to the direction X, from a working position C inside the frame 10 to a maintenance position D outside the frame 10 and facing towards the same side of the warehouse 2.

**[0089]** To further facilitate the access by the operator to the feeding head 5, the insertion of a platform arranged in the proximity of the warehouse 2 could be necessary.

**[0090]** In fact, especially in the case that the conveyor 16 on which the pallet 200 passes is particularly high, the completely low position that the film preparation cart 3 may reach is limited, and thus the accessibility by the operator is limited.

**[0091]** According to an aspect of the invention, the translation structure 6 comprises at least one beam 61 mechanically secured to the film preparation cart 3 which develops inside the frame 10 according to the direction X and having such a length as to protrude outside said frame 10 on the side of the warehouse 2.

**[0092]** Said at least one beam 61 is arranged to accommodate sliding elements 62 for the translation of the feeding head 5.

**[0093]** As represented in Fig. 2 the translation structure 6 provides for two beams 61 arranged side-by-side and parallel on which sliding elements 62 are mounted.

**[0094]** In Fig. 3, said sliding elements 62 provide for, for example, linear guides 64 and relative ball shoes 65. In a preferred embodiment the linear guides 64 are installed on the beams 61, while the ball shoes 65 are installed on the feeding head 5.

**[0095]** However, it is intended that what has been described above is of a non-limiting, exemplary value; therefore, possible detail variations, such as for example sliding elements 62 such as rubber wheels that directly roll on the beam 61, or other possible mechanical solutions, are as of now considered to fall within the same protecting scope defined by the claims set forth herein below.

**[0096]** In accordance with a possible embodiment, the translation structure 6 comprises movement elements 66 adapted to translate the feeding head 5 along the beam 61.

**[0097]** In particular the movement elements 66 comprise at least a gearmotor 67 and a transmission element 68 preferably of the flexible type for the translation of the feeding head 5.

**[0098]** In Fig. 3 a possible embodiment of the movement elements 66 is represented, in which the transmission element 68 is of the toothed belt and relative pulleys type, among which at least one drive mechanically associated to the gearmotor 67; in this case also, possible variations such as transmission elements 68 of the chain and sprockets, or rack gear type, or other possible solutions for the transmission of motion, are to be intended within the same protection scope of the invention.

**[0099]** In Fig. 3, the gearmotor 67 is integral to the translation structure 6 and thus it is in a fixed position

with respect to the feeding head 5; possible variations in which the gearmotor is movable, since it is mechanically associated to the feeding head 5, are to be intended as a part of the invention.

**[0100]** In a preferred embodiment represented in Fig. 2, the ring 13 configured to stiffen the frame 10 in the upper part thereof protrudes from the uprights 11 in the direction X and towards the film warehouse 2, so as to contain the outer perimeter of the film preparation cart 3, and in particular to contain the translation structure 6. In such a manner, the film preparation cart 3 can exploit the entire height of the uprights 11 for the positioning thereof in the working position A.

**[0101]** In Fig. 4, the working and maintenance step provided for the stretch hood machine 1 that is the subject matter of the present invention are represented.

**[0102]** In particular, the positioning steps of the film preparation cart 3 and related feeding head 5 are represented:

Step 1: it illustrates the operative step of the stretch hood machine 1 where the film preparation cart 3 is in working position A and the feeding head 5 is in working position C;

Step 2: it illustrates an intermediate step between the operative and the maintenance steps of the stretch hood machine 1 where the film preparation cart 3 is in the working position A and the feeding head 5 is in the maintenance position D, i.e., positioned outside the frame 10;

Step 3: it illustrates the step of maintenance of the stretch hood machine 1 where the film preparation cart 3 is in the maintenance position B and the feeding head 5 is in the maintenance position D.

**[0103]** When, during maintenance, going from step 1 to step 3, the tubular film 100 held by the feeding head 5 unwinds from the coil, thus generating an excess of tubular film 100, the moment when one gets back from step 3 to step 1.

**[0104]** Therefore, the stretch hood machine 1 that is the subject matter of the present invention could provide for the presence of a film retrieval device, which intervenes to collect the stretch of film 100 extended between the warehouse 2 and the feeding head 5 every time said feeding head 5 is lowered.

**[0105]** However, it is intended that what has been described above is of a non-limiting, exemplary value; therefore, any detail variations that would be necessary due to technical and/or functional reasons are as of now considered to fall within the same protection scope defined by the claims set forth herein below.

## 55 Claims

1. Stretch hood machine (1) for packaging pallets (200), comprising a frame (10) with four uprights

- (11), a film positioning cart (4) movable according to a vertical direction (Y) parallel to the uprights (11), adapted for grasping a stretch of tubular film (100) at one end and for fitting said stretch of film (100) on the pallet (200), a film preparation cart (3) adapted to be moved according to the vertical direction (Y) comprising a feeding head (5) arranged to take, a portion of the tubular film (100) from a warehouse (2), **characterized in that** the film preparation cart (3) further comprises a translation structure (6) for moving the feeding head (5) according to a direction (X) orthogonal to the uprights (11), from a working position (C) inside the frame (10) to a maintenance position (D) outside the frame (10) and facing towards the same side of the warehouse (2).
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2. Stretch hood machine (1) according to claim 1, wherein the translation structure (6) comprises at least one beam (61) which develops inside the frame (10) according to the direction (X) having such a length as to protrude outside said frame (10) on the side of the warehouse (2), said at least one beam being arranged to accommodate sliding elements (62) for the translation of the feeding head (5).
- 20
- 25
3. Stretch hood machine (1) according to claim 2, wherein the translation structure (6) comprises movement elements (66) configured to move the feeding head (5) along the beam (61).
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4. Stretch hood machine (1) according to claim 3, wherein the movement elements (66) comprise at least one gearmotor (67) and at least one transmission element (68) for the translation of the feeding head (5).
- 35
5. Stretch hood machine (1) according to one of the preceding claims, wherein the translation structure (6) is placed on the film preparation cart (3) above the welding (8) and cutting (9) elements, adapted to cut and weld a predetermined section of the tubular film (100) taken from the feeding head (5).
- 40
6. Stretch hood machine (1) according to one of the preceding claims, wherein the film preparation cart (3) further comprises a coupling device (31) configured to mechanically and operationally associate the film preparation cart (3) to the film positioning cart (4).
- 45
7. Stretch hood machine (1) according to one of the preceding claims, wherein the coupling device (31) provides for two positions, one of which is fitting in at least one of the uprights (11) for keeping the film preparation cart (3) in a fixed working position (A) and one of fitting in the film positioning cart (4), for moving the film preparation cart (3) together with said film positioning cart (4), between the working position (A) and a maintenance position (B), located in the lower part of the uprights (11).
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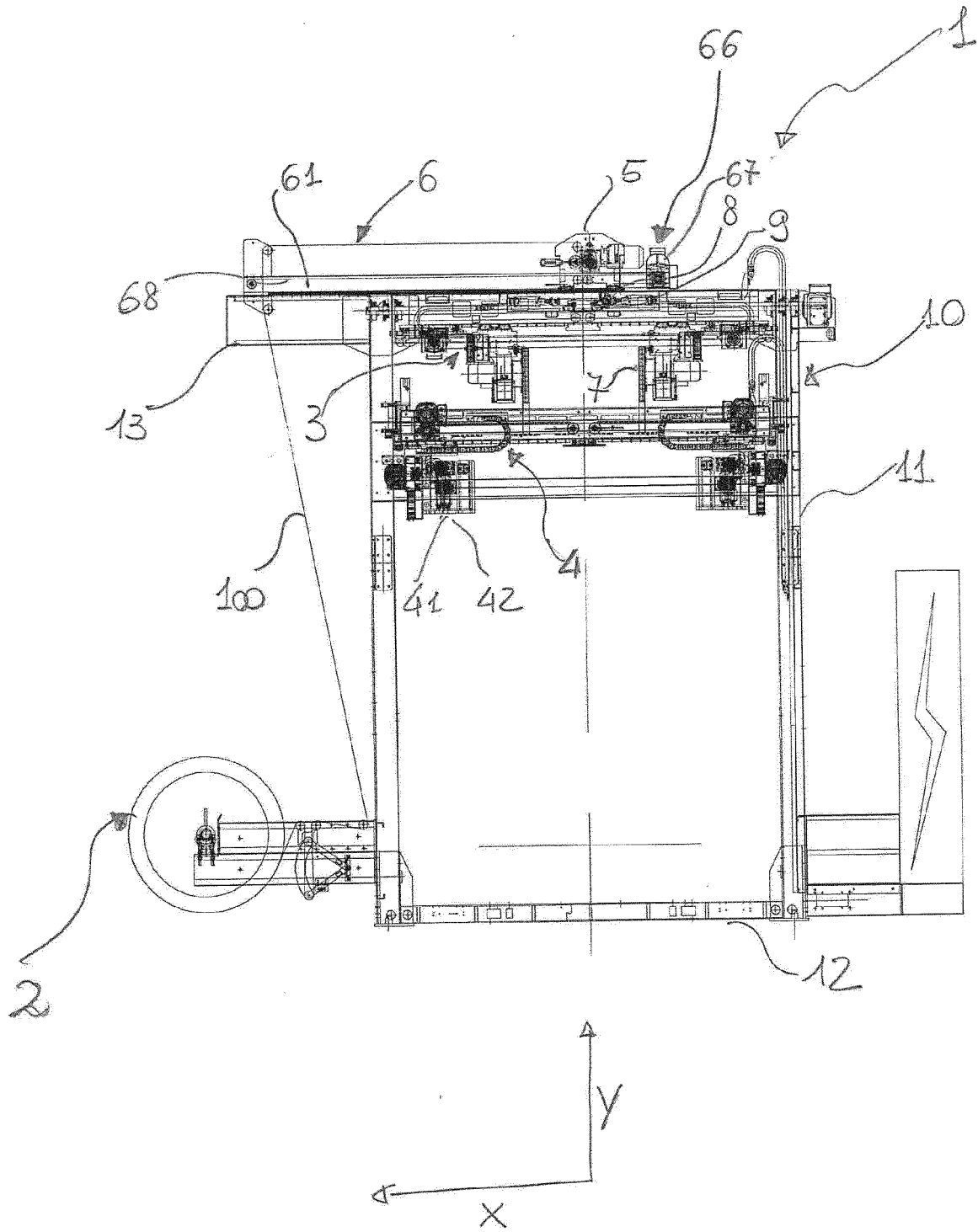


Fig. 1



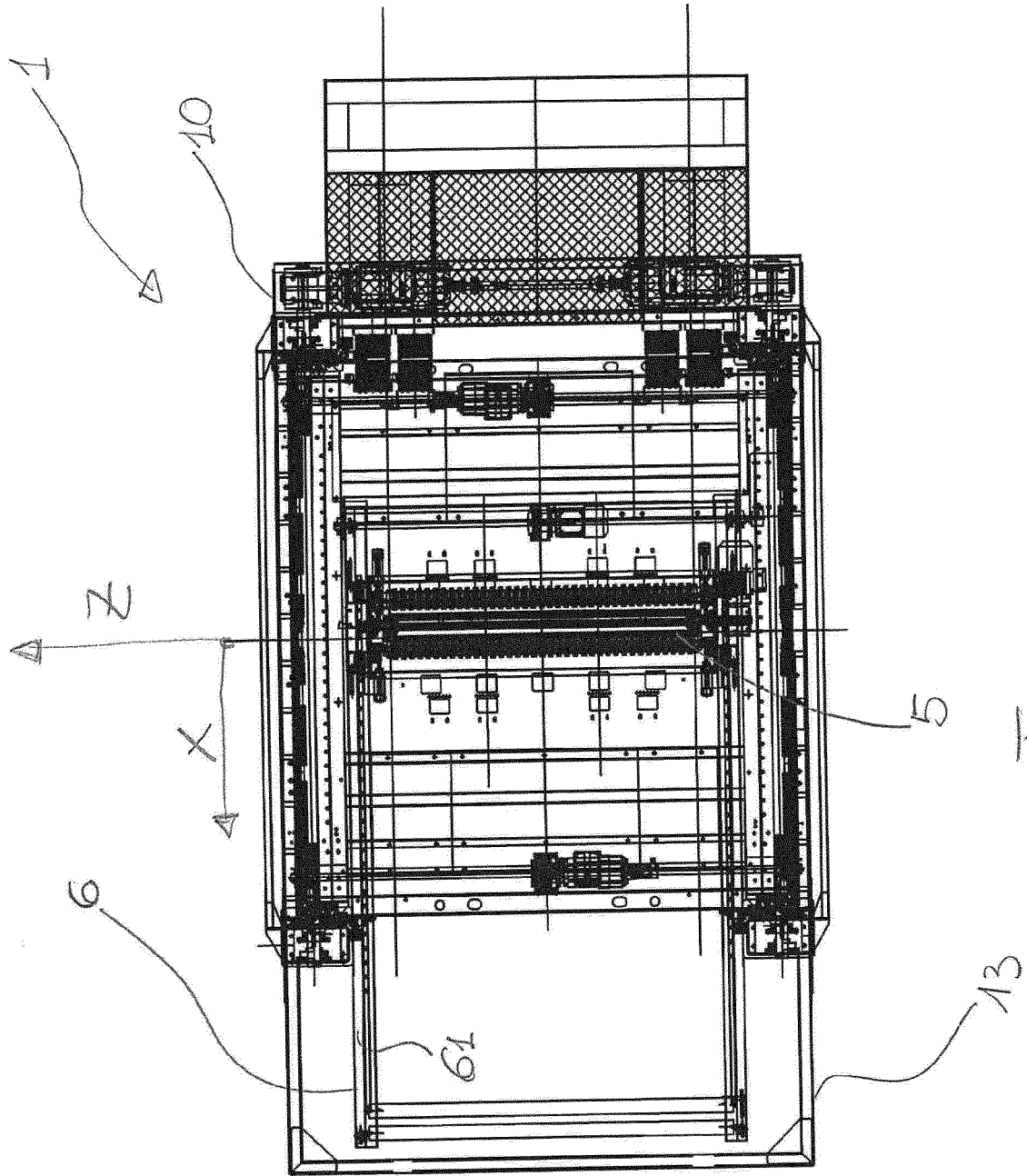


FIG 2

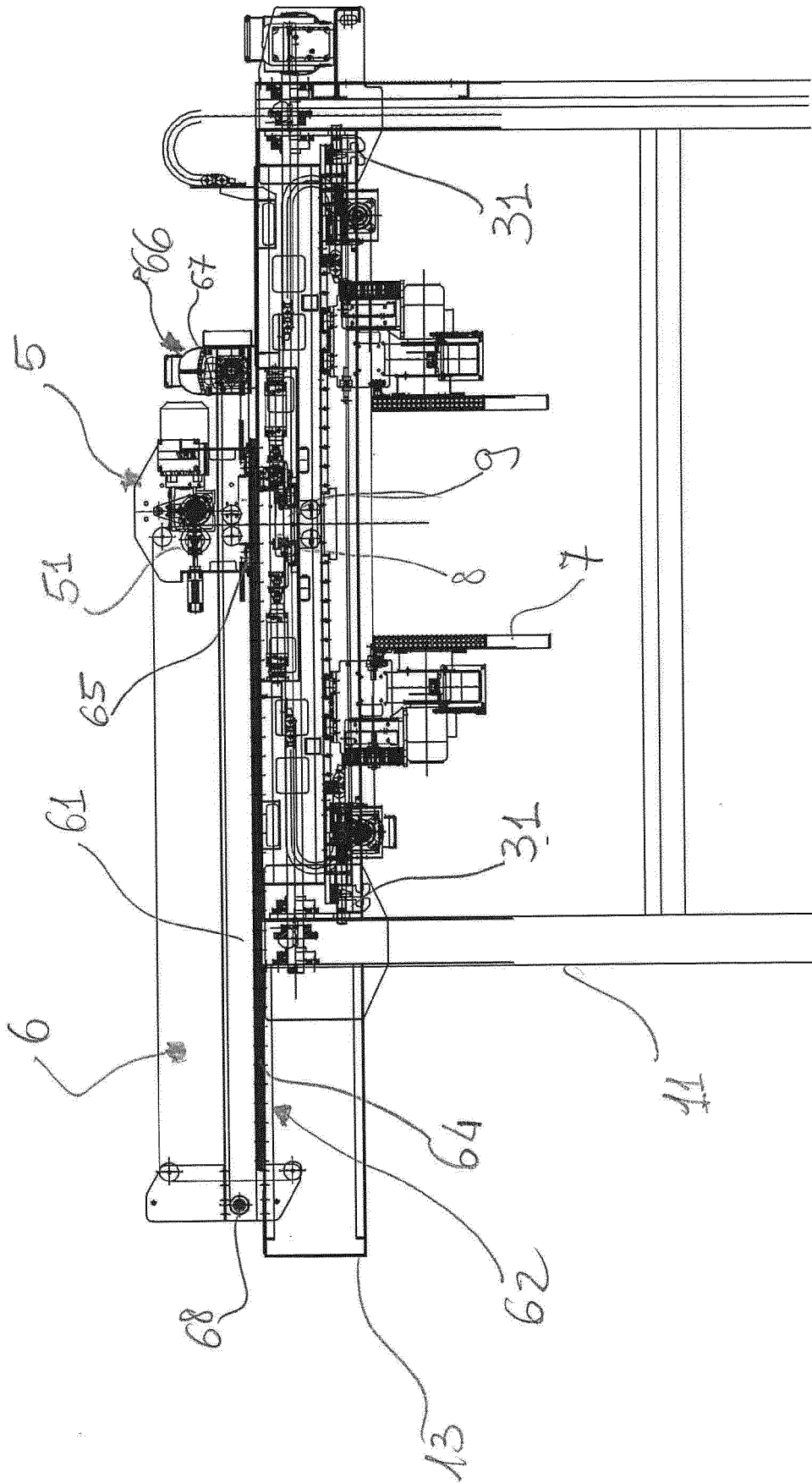


Fig 3

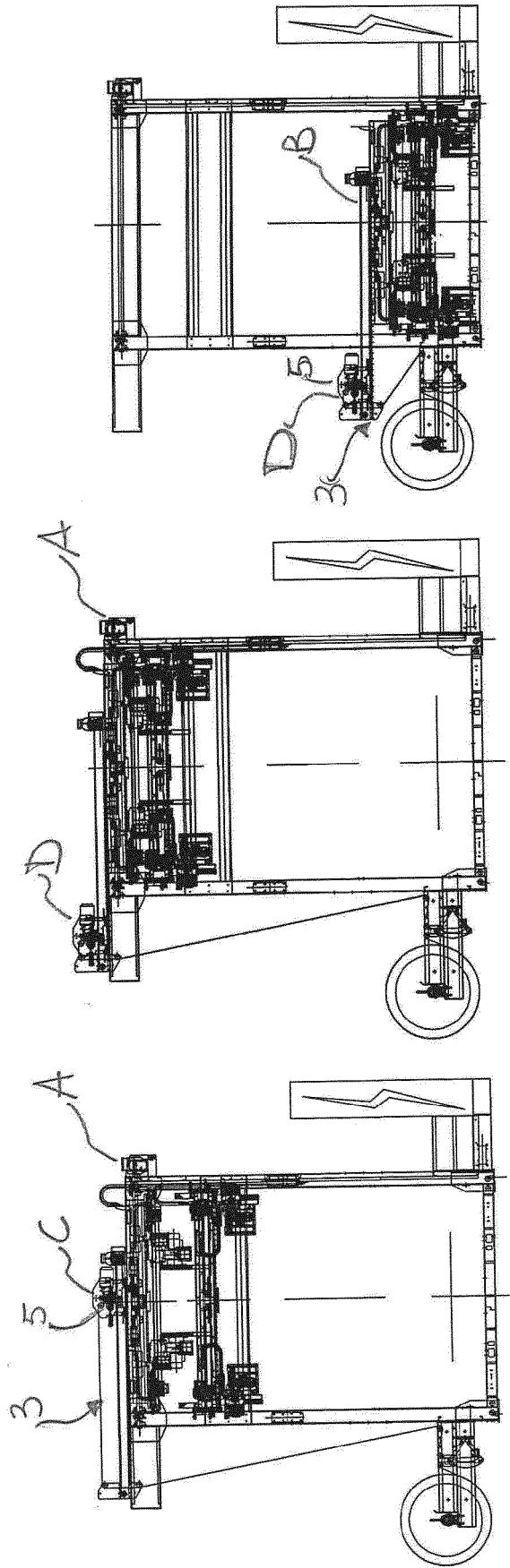


Fig 4



EUROPEAN SEARCH REPORT

Application Number  
EP 18 19 6033

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 3 144 233 A1 (OFFICINA BOCEDI S R L [IT]) 22 March 2017 (2017-03-22)	1-5	INV. B65B59/00 B65B59/04 B65B9/13
Y	* abstract * * figures 1-2 * * paragraph [0018] *	6,7	
Y	----- US 7 913 476 B2 (ILLINOIS TOOL WORKS [US]) 29 March 2011 (2011-03-29)	6,7	
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