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(71) Applicants:
• **Lear Automotive (EEDS) Spain, S.L.**
43800 Valls, Tarragona (ES)
• **Construcciones Mecanicas Jose Lazpiur, S.A.**
20570 Vergara, Guipuzcoa (ES)

(72) Inventors:
• **Casas Aligue, Jordi**
43800 Valls, Tarragona (ES)
• **Mestre Guasch, Jordi**
43800 Valls, Tarragona (ES)
• **Lazpiur Lamariano, Miguel**
20570 Vergara, Guipuzcoa (ES)

(74) Representative:
Morgades Manonelles, Juan Antonio
Calle Valencia, 300 - entresuelo 1a
08009 Barcelona (ES)

(54) **Cable joining station**

(57) The station of the present invention is provided with gripping members having grips and being driven in a circular movement combined with the vertical movement of a head where said gripping members are fitted allowing the folding operation consisting in positioning the ends of a cable parallel to one another in such a way that subsequently in another station of said machine, such ends can be supplied with terminals.

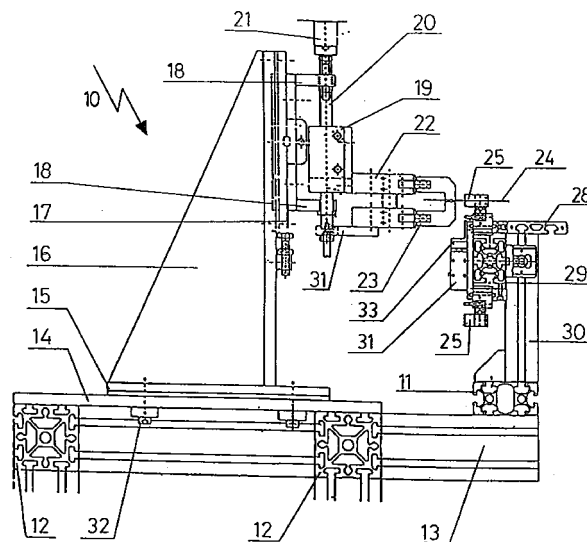


FIG. 1

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Description

[0001] The present patent application relates, as stated in its title, to a "CABLE JOINING STATION FOR A CABLE PACKET PROCESSING MACHINE WITH MANUAL LOADING", which novel manufacturing, conformation and design features fulfil the purpose to which they have been specifically conceived, with a maximum safety and effectiveness.

[0002] More particularly, the present invention refers to a cable joining station arranged next to other stations in a cable packet processing machine. Among its functions, such machine comprises a cable storage station with sequence security of loading, a manual loading station, a station for cutting cable ends and for peel the cable liners, an ink jet marking station, a rubber insertion station, a crimping station, a connector mounting station, and a station for loading connectors and for unloading mounted assemblies, which functions are carried out for a highly reduced cycle of time. The whole machine is provided with a closed transport flow chain with repetitive command of sequence.

[0003] The station of the present invention is provided with gripping members having grips and being driven in a circular movement combined with the vertical movement of a head where said gripping members are fitted. Such gripping members together with further gripping members provided in a cable feeding belt allow the folding operation consisting in positioning the ends of a cable parallel to one another. Subsequently, in another station of said machine, such ends are supplied with terminals by holding an end of the cable from the cable feeding belt by means of one of said gripping members and then it is withdrawn therefrom, raised up and left in a stand-by state until it has been arrived at the end of the cable which has been supplied by such belt and its gripping member. The cable end is held by a second gripping member, and a feeding gripping member opens the grips thereof thus receiving the first end of the cable and returning it to the conveying chain in the same conditions, positioned in parallel and disposed to receive the rest of the above mentioned operations.

[0004] To carry out such operation, the grips and the gripping members provided in the station undergo an ascent and descent vertical movement as said gripping members are fixed to a cylinder which allow sliding movement thereof through the corresponding guide. The guide is mounted to the frame of the machine by means of the corresponding support and the frame comprises a number of horizontal and vertical section members which are fixed thereto by conventional means and reinforced by corresponding sideplates.

[0005] Further details and features of the present patent application will be apparent from the following description, which refers to the accompanying drawings that schematically represent the preferred details. These details are given by way of example, which refer to a possible case of practical embodiment, but it is not

limited to the details disclosed herein; therefore this description must be considered from a illustrating point of view and without any type of limitations.

[0006] A detailed list of the different parts cited in the description mentioned according to the accompanying figures is given hereinbelow: (10) cable joining station, (11) section members, (12) section members, (13) handrails, (14) frame, (15) support, (16) sideplate, (17) plate, (18) wings, (19) pneumatic cylinder, (20) guide, (21) cylinder, (22) gripping members, (23) grips of the gripping member, (24) cable, (25) gripping member, (26) rotating shaft of the grips, (27) screws, (28) tray, (29) endless belt, (30) stand, (31) cylinder, (32) tightening means, (33) support, (34) brackets.

Figure n° 1 is a part-way section end elevational view of the cable joining station (10) where the main parts thereof are shown.

The figure n° 2 is a top plan view of the station (10) wherein the end of a cable (24) is held by the grips (23) of the gripping member (22).

[0007] In one of the preferred embodiments of what is the object of the present invention and as it can be seen from figure n° 1, the station (10) comprises a frame having a number of section members and handrails (11, 12, 13) forming a strong base on which a support (15) rests. Said support has a substantially angular configuration, the vertical and the horizontal part of which are reinforced by a sideplate (16) fastening the support (15) and the frame (14) that rests on the chassis of the cable processing machine.

[0008] On the vertical part of the support (15), a plate (17) having a substantially U-shaped configuration is mounted by means off corresponding screws. Said plate (17) is provided with wings (18) serving as a support member of a guide (20) that is vertically mounted. On such guide (20) a pneumatic cylinder (19) can slide allowing ascent or descent of the gripping members (22) along said guide (20).

[0009] The gripping member (22), see figures n° 1 and 2, comprise said grips (23) rotating around the shaft (26) which allow, on closing, holding of the corresponding cables (24) collected from the conveying gripping members (25).

[0010] A stand (30) is fitted in the cable packet processing machine as a general feeding system thereof, such stand (30) not being part of the present invention. A tray (28) and an endless belt (29) are mounted on said stand (30) and said endless belt (29) is provided with gripping members (25) attached at regular distances to one another which serve to convey the cables or cable portions (24) through the different stations in the machine.

[0011] Operation of the cable joining station starts on arrival of an end of a cable or a cable portion (24) held by the gripping member (25) and the grips thereof located in front of the station (10) when the endless belt

(29) stops and the pneumatic cylinder (19) is actuated causing the grips (23) to rotate around the shaft (26) swooping down on the cable or cable portion (24). The cable (24) is held at the same time the corresponding grips of the gripping members (25) are releasing the cable (24) which has been already held by the gripping members (22). The path is thus left free so that the cable joining station (10) receives the other end of the cable (24) and holds the other end of the cable (24) again as in the above mentioned operation. This is carried out by means of a further gripping member (22) as the gripping member (25) opens receiving the first end which has been released from the gripping member (22). The gripping member (25) is closed again trapping both ends of the cable (24) between the grips. The endless belt (29) then conveys the cable (24) to a new station whereby the cable packet processing machine can work either in one of the ends of a new cable or cable portion (24) or in more than one cable end arranged in parallel to perform the corresponding operations.

[0012] Movements carried out by the station (10) helped by the parts therein are as follows:

- Rotation of the grips (23) in the gripping members (22) swooping down on one of the ends of the cable (24) that has been released by the gripping member (25) on stopping in front of the station (10).
- Ascent of the gripping member (22) and the cable (24) by means of a piston (19).
- Entering the station (10) of a new gripping member (25) with another end of the cable (24).
- Rotation of the grips (23) of the gripping member (22) swooping down on another end of the cable (24) and holding it. At the same time the gripping member (25) is opening, the first gripping member (22) descends and places the first end of the cable (24) and then closes, trapping both ends of the cable (24), and said gripping member (25) follows the path to the next station.

[0013] Once the invention has been sufficiently described in accordance to the enclosed drawings, it is understood that any modification can be introduced as appropriate, provided that variations may alter the essence of the invention as summarised in the appended claims.

Claims

1. "CABLE JOINING STATION FOR A CABLE PACKET PROCESSING MACHINE WITH MANUAL LOADING", said station (10) being fed by means of an endless belt (29) provided with gripping members (25) arranged at regular distances to one another, conveying cables or cable portions (24) to said station (10), characterised in that the cable joining station (10) comprises a support (15) reinforced by sideplates (16), said support (15)

being mounted on a frame (14) which, in turn, is mounted on a chassis of the cable packet processing machine by tightening means (32), a plate (17) being attached on the vertical part of the support (15) having wings (18) provided at the ends thereof and said wings (18) being provided with corresponding bores where a guide (20) is mounted allowing sliding movement of a pneumatic cylinder (19) having corresponding gripping members (22) provided with grips (23).

2. "CABLE JOINING STATION FOR A CABLE PACKET PROCESSING MACHINE WITH MANUAL LOADING" as claimed in claim 1, characterised in that the gripping members (22) are provided with grips (23) undergoing a semicircular movement through half-shafts (26) fitted into the body of the gripping members (22).

3. "CABLE JOINING STATION FOR A CABLE PACKET PROCESSING MACHINE WITH MANUAL LOADING" as claimed in claim 1, characterised in that the combination of the movements in the station (10) to join the ends of a cable or a cable portion (24) in the grips of the gripping members (25) is the following:

- Rotation of the grips (23) in the gripping members (22) swooping down on one of the ends of the cable (24) that has been released by the gripping member (25) which is attached to the endless belt (29) on stopping in front of the station (10).
- Ascent of the gripping member (22) and the cable (24) by means of a piston (19).
- Entering the station (10) of a new gripping member (25) with other end of the cable (24).
- Rotation of the grips (23) in the gripping member (22) swooping down on the other end of the cable (24) and holding it. At the same time the gripping member (25) is opening, the first gripping member (22) descends and places the first end of the cable (24) as grips (23) opens, the grips of the gripping member (25) then closes trapping both ends of the cable (24) and said gripping member (25) follows the path to the next station.

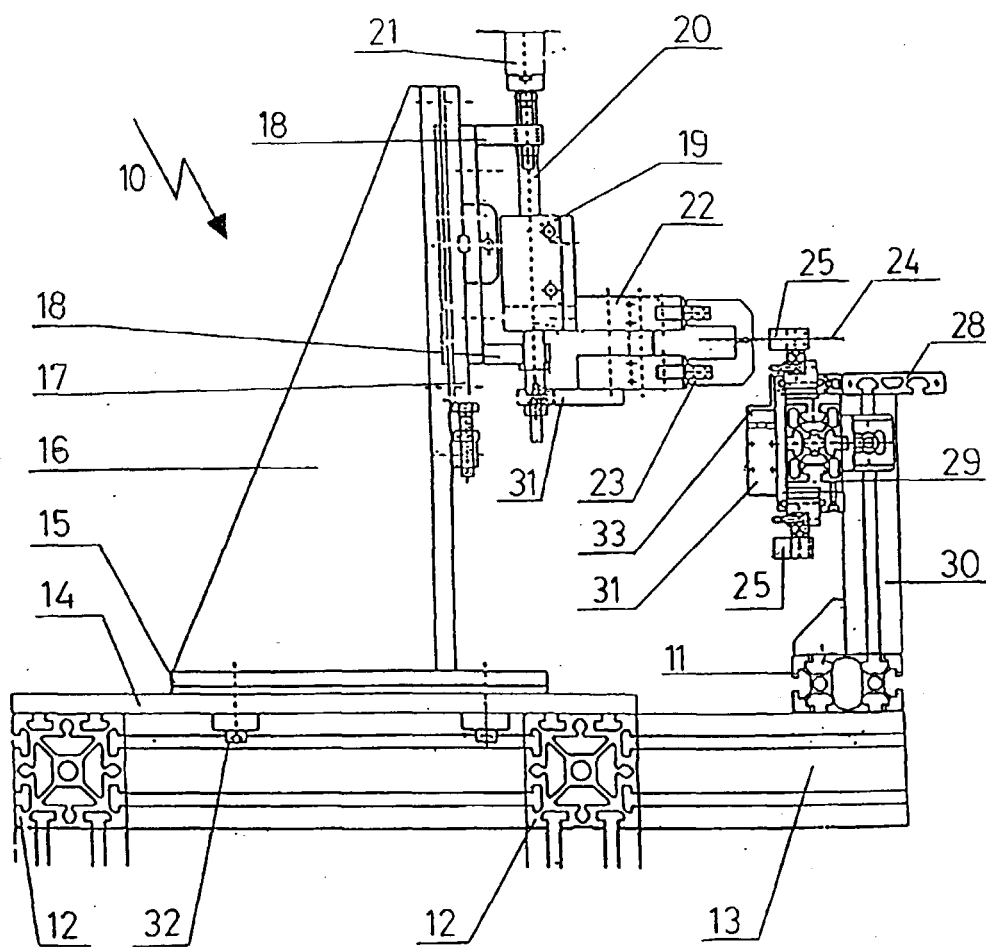


FIG. 1

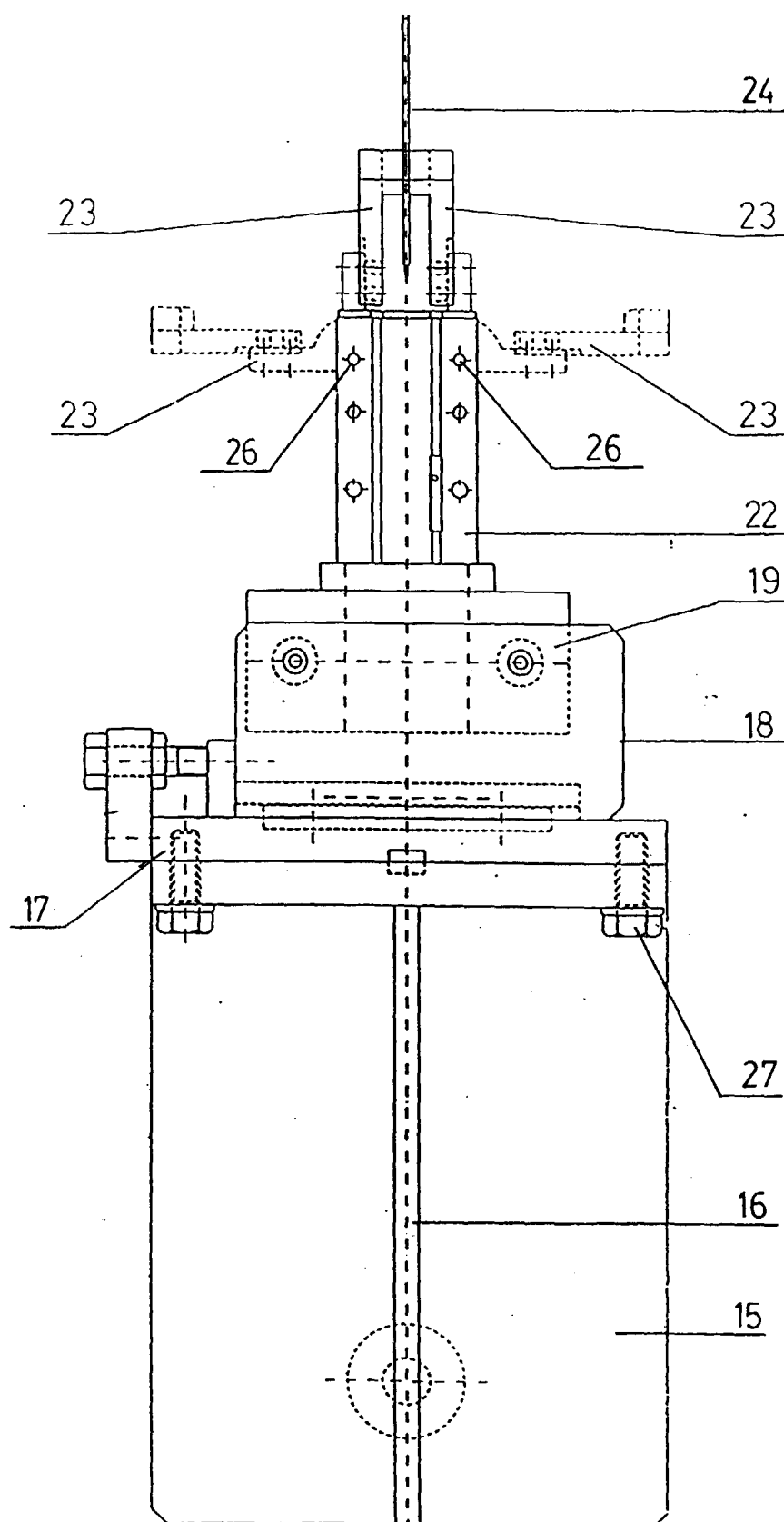


FIG. 2