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54 **Device for the transport of cross seated cigarettes.**

57 The device transports cross seated cigarettes (C), disposed in several layers one above the other, by means of transporters (A, B), which connect a cigarette producing line to a cigarette packing line. The transporters are made of a row of carrying links (1) fixed onto the central links of a three-row roller chain (2). The transporters are guided over driving chain wheels (11), guide chain wheels (10) and fixed guides (12-15). In a part of their length the transporters are oppositely parallel to define a space for carrying layer of cigarettes.

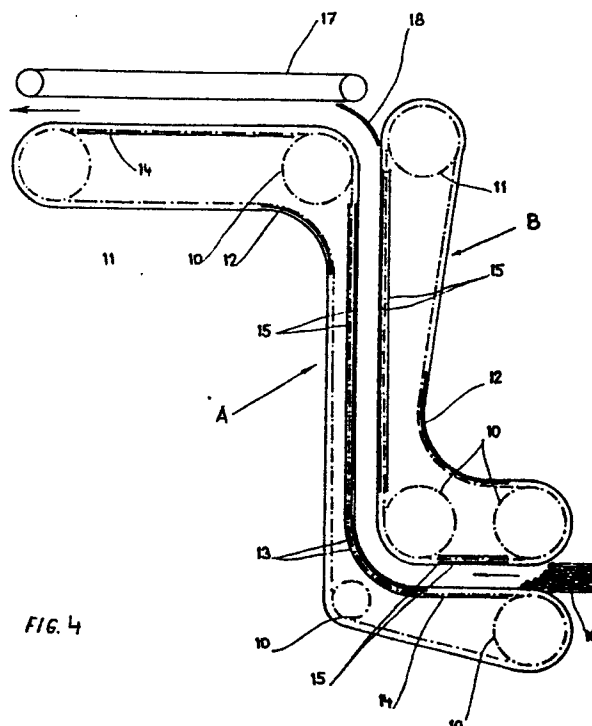


FIG. 4

DEVICE FOR THE TRANSPORT OF CROSS SEATED CIGARETTES

5 The invention relates to a device for the transport of cross seated cigarettes, disposed in several layers one above the other, by means of a transporter connecting the cigarette production line to the cigarette packing line.

10 Known transporters operate on the principle of continuous belts made of diverse materials, or adapted in various ways. Originally transporters were designed as smooth belts made of a relatively soft material, e.g. rubber coated. Also known are smooth belts, the surface of which is covered with a foam material, which protects the cigarettes and improves their transport. Another group form transport belts, 15 on the surface of which are made various projections either of a constant shape or of a variable shape, obtained e.g. by inflating. For the transport of cigarettes for a shorter distance, the transporter or the belt is perforated and cigarettes are held on it 20 by means of vacuum.

The device according to the invention solves the problem of transport of cigarettes in several layers one above the other while the 25 production line and packing line are directly interconnected by means of transporters consisting of a row of carrying links, fixed on the central links of a three-row roller chain, where the carrying link consists of a holding-down part fixed onto the roller chain, of a supporting part including a 30 central part, from which protrude to both sides in the direction away from the chain axis, surfaces for carrying cigarettes, and of a tightening screw, while the lateral rows of the three-row chain either engage with driving and guiding chain wheels, or are in 35 contact with fixed guides, the carrying sides of the

transporters being, at least along a part of their length, oppositely parallel for carrying a layer of cigarettes. Surfaces for carrying cigarettes, protruding from the supporting part, are divided by several claws such that adjacent carrying links mesh one with the other, while on the supporting surface of the central supporting part is made a cross projection for carrying cigarettes. Between two claws situated nearer one to the other is created a gap for the passage of a fixed element for feeding or removal of cigarettes from the supporting surface of transporters. The transporters are guided in limit positions over driving chain wheels and guiding chain wheels, and in parts between these wheels they are guided by fixed guides, while in vertical sections, where they carry away a layer of cigarettes, they are guided in a two-sided fixed guide, and in horizontal sections they are supported by a fixed guide and in bends they are guided in a two-sided curved guide. In parts between the driving and guiding chain wheels in sections outside carrying of cigarettes they are guided in bends over fixed curved guides.

The mentioned example of a design arrangement of transporters is not a single and limited embodiment, but only one of possible variants of arrangements which may be made of the mentioned parts.

The transporter according to the invention has advantages, viz. an easy changing of its length, as the links may be added or taken off as desired. Also the guide of the transporter may be easily adapted according to requirements as to the direction of its motion. By creating a linked transporter, its service life was increased compared with hitherto used solid belts.

The invention will now be described, by way of example, with reference to the accompanying diagrammatic drawings, in which:

5 Figure 1 shows a side elevation of a part of the transporter;

Figure 2 shows a cross-section along the axis of one link of the transporter, a dash and dot line showing the two-sided guide;

10 Figure 3 shows a plan of a part of the transporter; and

Figure 4 shows an example of an arrangement of transporters and guide bars.

As is apparent from the drawings, the device for transporting cross seated cigarettes  
15 comprises a transporter composed of carrying links 1 (Figure 1), which are fixed onto the central row of a three-row roller chain 2. Each link 1 (Figure 2) has a supporting part 3 and a holding-down part 4, which are joined together by a tightening screw 5 and are  
20 fixed onto the chain always in every second pitch. A projection 6 is made on the upper part of the supporting part 3 in a direction substantially perpendicular to the direction of the transporter motion. Each carrying link 1 is on its supporting  
25 part 3 provided with claws 7 (Figure 3), which are so shaped that the carrying links 1, following one after the other, mesh with each other and in this way form a continuous surface for carrying a layer of cigarettes.

30 In Figure 4, is shown an example of arrangement of transporters and their guides. The transporter, providing a closed circuit, is guided over a driving chain wheel 11 and guide chain wheels 10, and in the space between these wheels the  
35 transporter is guided either by a fixed curved guide

12, two-sided curved guide 13, two-sided fixed guide 15 and in the zone of horizontal motion is supported by a fixed guide 14.

5 The transporting device operates as follows: cigarettes arrive from the production line to a transition bridge 16 and from there into the area between transporters, which make it possible to transport cigarettes in several layers one above the other. Cigarettes lie, or are closed between  
10 supporting parts 3 of the carrying links 1 of the transporters. When cigarettes are transported in a horizontal direction, the projection 6 of the carrying link 1 facilitates the transport of cigarettes in that it prevents the cigarettes from  
15 sinking in the area between the transporters, while the cigarettes are not pressed together more than is necessary, and in this way no squeezing takes place. Where the direction of transport is changed, i.e. in the bends of the transporter, the carrying links 1  
20 bend together with the three-row chain 2, to which they are fixed. The claws 7 of the carrying link 1, which mesh with each other, provide a continuous surface even in the bend with a constant distance between the internal and external bends of the  
25 transporters. The transporters are driven synchronously by the driving chain wheels 11 and are guided in the bends either over the guide chain wheels 10, or over the fixed guides, namely in the bend, where the transporter does not come into  
30 contact with the transported cigarettes, it is guided over the single-sided fixed curved guide 12 and in bends, where it comes into contact with the transported cigarettes, it is guided by a two-sided curved guide 13. In the horizontal sections the  
35 transporter is guided over the fixed guide 14,

situated as a support of the chain 2, which prevents the cross-section of the space from transporting cigarettes from changing as a consequence of the sagging of the chain by its own weight. In the vertical sections the transporter is guided in the two-sided fixed guide 15, preventing again the cross-section from changing because of possible vibration of the chain in the horizontal direction. At the outlet part of the transporters there is situated over the horizontal part an auxiliary belt, which arranges the transported and transferred layer of cigarettes. A fixed cover 18 limits the space for the transport of cigarettes from outside.

Although the invention is illustrated and described with reference to one preferred embodiment thereof, it is to be expressly understood that it is in no way limited to the disclosure of such a preferred embodiment, but it is capable of numerous modifications within the scope of the appended claims.

CLAIMS

1. A device for the transport of cross seated cigarettes, disposed in several layers one above the other, including at least two transporters, wherein  
5 at least one of the transporters is composed of a row of carrying links fixed on the central links of a three-row roller chain, where each carrying link comprises a holding-down part, fixed in the roller chain, a supporting part including a central part,  
10 from which protrude, to both sides in the direction away from the chain axis, surfaces for carrying cigarettes, and a tightening screw, wherein side rows of the three-row chain either engage with driving and guide chain wheels, or are in contact with guides,  
15 carrying sides of the transporters being, at least along a part of their length, oppositely parallel for carrying a layer of cigarettes.
2. A device according to Claim 1 wherein the surface for carrying cigarettes, protruding from the  
20 supporting part, are divided by several claws such that adjacent carrying links mesh with each other, and on the supporting surface of the central supporting part is made a projection for carrying cigarettes.
- 25 3. A device according to Claim 1 or 2 wherein between two claws, situated nearer one to the other, a gap is created for a passage of a fixed element for supplying or taking off cigarettes from the supporting surfaces of the transporters.
- 30 4. A device according to any one of the preceding claims wherein the transporters are guided in limit positions over the driving chain wheels and in parts between these wheels they are guided by fixed guides, in vertical sections, where they carry  
35 the layer of cigarettes, they are guided in a two-

sided fixed guide, in horizontal zones they are supported by a fixed guide and in bends they are guided in a two-sided curved guide.

5. A device according to any one of the
- 5 preceding claims wherein the transporters are guided in parts between the driving and guide chain wheels in sections without carrying cigarettes, in bends, over fixed curved guides.



FIG. 1

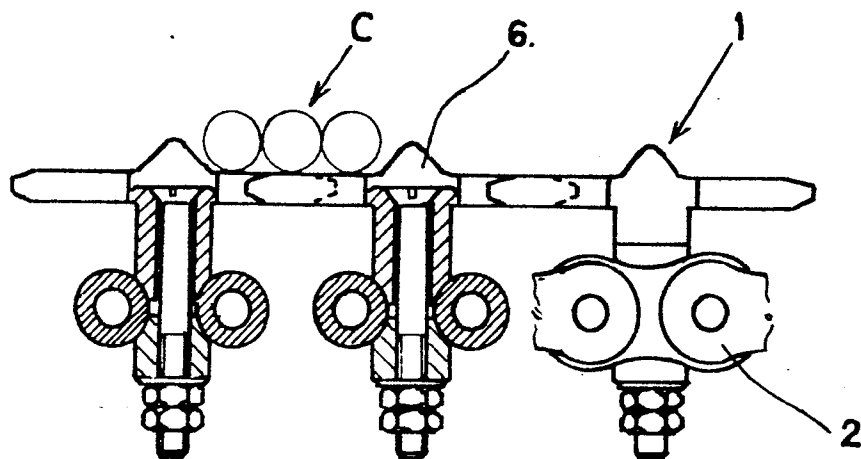


FIG. 3

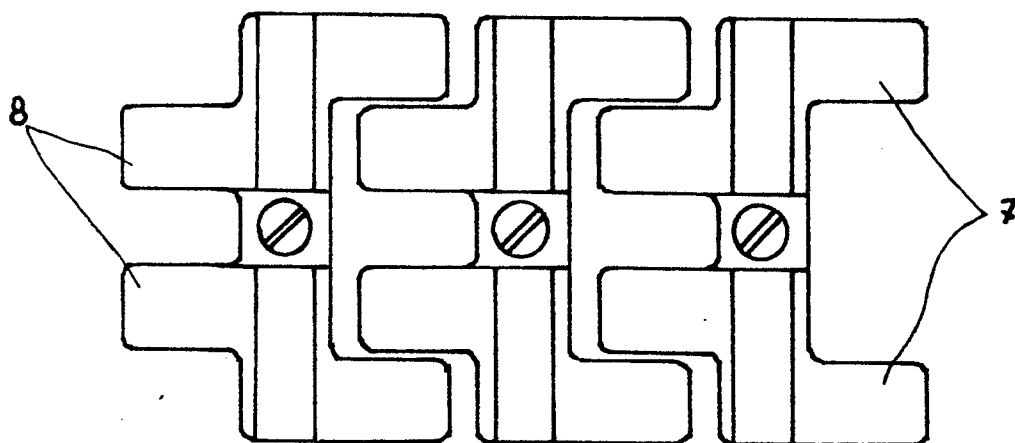
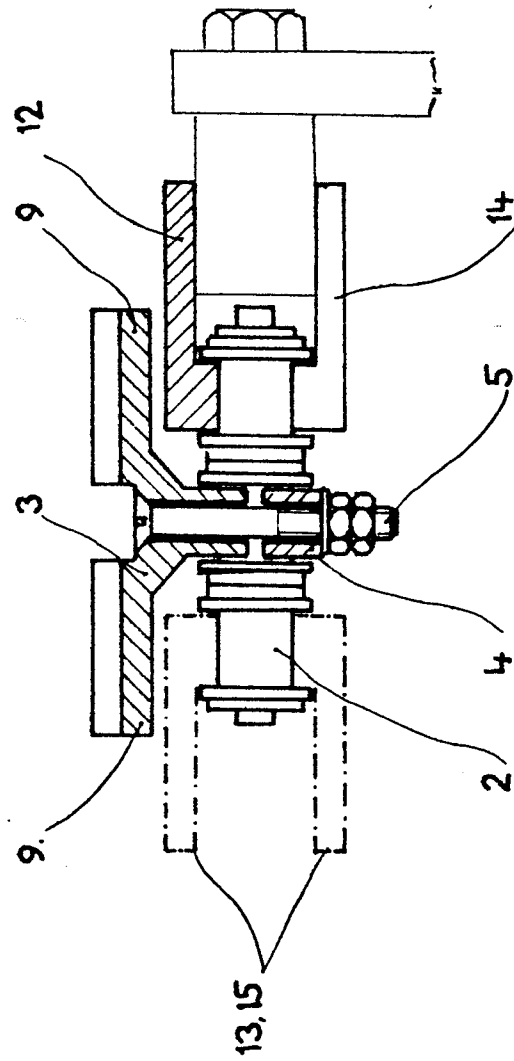


FIG. 2



**FIG. 4**

