

PATENT SPECIFICATION

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(54) IMPROVEMENTS RELATING TO CONVEYOR BELTS

(71) We, U.M.E.C.-BOYDELL (BELTING) LIMITED, a British Company, of Alma Street, Heath Town, Wolverhampton, West Midlands WV10 OEY, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described in and by the following statement:-

This invention relates to conveyor belts of the honeycomb type comprising a series of parallel transverse rods, and a plurality of open-work belt sections extending between and pivoted to the transverse rods, each belt section being of cranked or wavy form comprising a series of longitudinally extending components which are spaced apart transversely of the belt, have apertures therein through which the transverse rods pass, and are joined at their ends by two rows of cross components extending transversely alongside the transverse rods, and adjacent belt sections longitudinally of the conveyor belt intermeshing with one another at the transverse rods. Such conveyor belts are herein referred to as "of the honeycomb type described".

The present invention consists in a conveyor belt of the honeycomb type described in which the cross components have at intermediate parts of their lengths lugs which project towards the transverse rods and have apertures or recesses which are engaged by the transverse rods.

The lugs and their engagement with the transverse rods help to give rigidity to the cross components to enable them to resist bending when the conveyor belt is in operation.

The belt sections may be moulded from plastics material, for example a self-lubricating material such as nylon or glass-filled nylon. The invention is also applicable to belt sections formed from the metal strip.

Where the belt is intended to travel a

straight path in use, and apertures are provided in the lugs the apertures are preferably circular of a complementary, free fit, diameter to the transverse rods. If recesses are provided instead of the apertures, they are conveniently of part-circular shape, again of a complementary, free fit, diameter to the transverse rods, and receive more than half the circumference the of rods.

It is usual for conveyor belts of the honeycomb type described to be driven by means of sprockets which engage with the belt sections at their cross components, the engagement being at the surfaces of the cross components remote from the transverse rods. Preferably the cross components of the belt sections of the conveyor belt in accordance with the present invention have convexly rounded surfaces remote from the transverse rods which enable the cross components to nestle closely between the teeth of driving sprockets. This helps to provide good positive transfer of drive to the belt. A further advantage is that where, in use, the belt delivers articles to or receives them from another belt in the same plane at one end of its run, the cross components do not present edges which might project above the plane as the components pass round the sprockets and cause the articles to be jostled or upset.

An embodiment of the invention will now be described by way of example with reference to the accompanying drawings, in which:-

Figure 1 is a plan view of part of a conveyor belt in accordance with the invention,

Figure 2 is a section on line 2-2 of *Figure 1*,

Figure 3 is a fragmentary perspective of part of a conveyor belt which includes a modification, and

Figure 4 is a fragmentary, sectioned side view of part of a conveyor belt engaged with a sprocket.

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The conveyor belt comprises a series of parallel transverse metal rods 1 and a plurality of moulded plastics belt sections 2 spanning and pivoted to the rods.

5 Each belt section 2 has two parallel rows of cross components 3 joined by a series of integral longitudinal components 4 extending lengthwise of the belt, such that the belt section is of cranked form. The longitudinal components are of oblong rectangular cross-section disposed on edge. The cross components 3 are of a narrow generally D-shaped cross-section, their rounded sides 5 facing outwards away from the other row of cross components of the belt section. At each end of each longitudinal component there is an aperture 6 positioned so that its axis is inwards of and parallel to the straight side surface 7 of the adjacent cross component which is tangential to the aperture. The transverse rods to which the belt section is pivoted pass through the apertures. The apertures are of diameters complementary to the transverse rods which are a free fit in the apertures.

Half way along its straight side surface each cross component has an integral lug 8. In the form shown in Figures 1, 2 and 4 of the drawings the lug comprises a square-section rib which extends for the full depth of the side surface. It projects inwards from the surface for a distance which is a little less than the diameter of the apertures. Extending into the lug from its inner edge is a part-circular recess 9 co-axial with and of similar diameter to the apertures adjacent to the cross component. The transverse rod which passes through those apertures also passes through the recess.

10 In the modification shown in Figure 3 of the drawings the lug 8 of each cross component is extended further inwards and has an aperture 10 in it to accommodate the transverse rod 1, the aperture being co-axial with and of similar diameter to the apertures 6 adjacent to the cross component.

The longitudinal components 4 are inclined relative to one another such that a pair of the components joined to opposite ends of a cross component 3 converge towards one another as they extend towards the cross component. Belt sections which are adjacent to one another longitudinally of the conveyor belt are arranged with their respective cross components interposed between one another and they are pivoted to the same transverse rod.

It will be seen that whilst an open belt structure is provided the structure is nevertheless strengthened by the lugs which reinforce the cross components which are subject to appreciable stress when the belt is in use, and resist bending of those components.

65 The belt is driven by sprockets 11 at

spaced positions across the width of the belt mounted on a drive shaft, not shown. The rounded sides 5 of the cross components 3 are engaged by the sprockets, as shown in Figure 4, the rounded sides nestling closely 70 between the teeth 12 of the sprockets.

If the belt is to travel a sinuous path in use the apertures 6 and lug recesses 9, or lug apertures 10, are elongated to allow the required relative movement between adjacent belt sections, and between the belt sections and transverse rods, in order to permit the belt to pass round the lateral curves.

WHAT WE CLAIM IS:-

1. A conveyor belt of the honeycomb 80 type described in which the cross components have at intermediate parts of their lengths lugs which project towards the transverse rods and have apertures or recesses which are engaged by the transverse rods. 85
2. A conveyor belt according to claim 1 wherein the lugs have recesses which are engaged by the transverse rods, the recesses being shaped to receive more than half the circumference of the rods. 90
3. A conveyor belt according to claim 1 or claim 2 wherein each lug is in the form of a rib which extends for the full depth of the surface of the cross component from which it projects. 95
4. A conveyor belt according to any preceding claim wherein the cross components have convexly rounded surfaces remote from the transverse rods.
5. A conveyor belt according to claim 4 100 wherein the cross components are of generally D-shaped cross-section, and the lugs are on the straight sides of the cross-sections.
6. A conveyor belt substantially as described herein with reference to and as illustrated by Figures 1, 2 and 4 of the accompanying drawings. 105
7. A conveyor belt substantially as described herein with reference to and as illustrated by Figures 1, 2 and 4 as modified by Figure 3 of the accompanying drawings. 110

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COMPLETE SPECIFICATION

2 SHEETS

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the Original on a reduced scale
Sheet 1

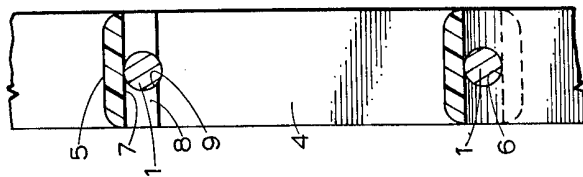


FIG. 2

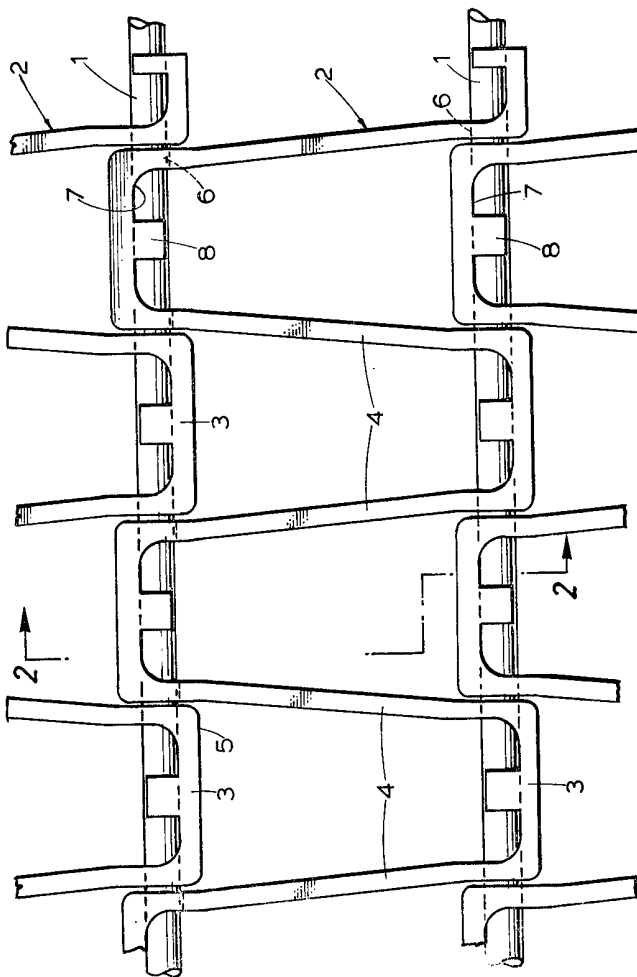


FIG. 1

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COMPLETE SPECIFICATION

2 SHEETS

*This drawing is a reproduction of
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Sheet 2

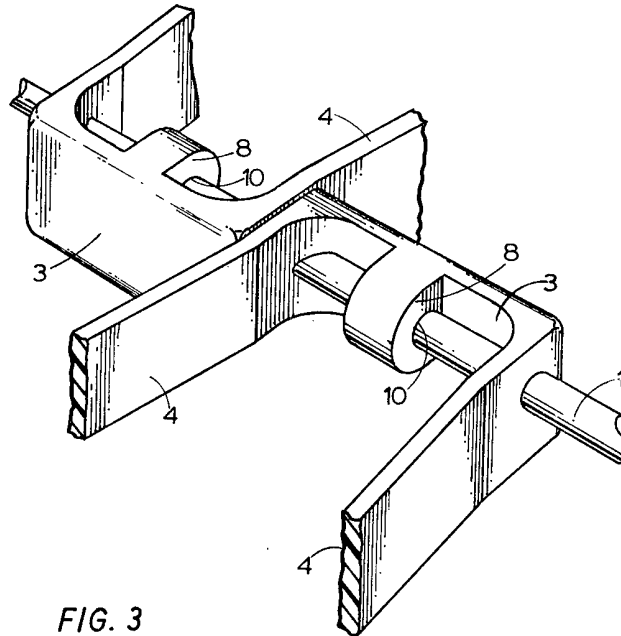


FIG. 3

FIG. 4

