

(12) UK Patent Application (19) GB (11) 2 318 776 (13) A

(43) Date of A Publication 06.05.1998

(21) Application No 9622543.8

(22) Date of Filing 30.10.1996

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(51) INT CL⁶
B65G 13/06

(52) UK CL (Edition P)
B8A A4JB A4JH

(56) Documents Cited
GB 1601910 A **GB 1370769 A**

(58) Field of Search
UK CL (Edition O) **B8A A4AB A4HB A4JB A4JF A4JH
A4JJ A4JX**
INT CL⁶ **B65G 13/00 13/02 13/04 13/06 13/07 39/00
39/02 39/10 39/12**
ONLINE:WPI

(54) **Roller conveyor**

(57) A roller conveyor includes two conveying tracks 3 bilaterally disposed at the top of a base frame and driven by a power drive to convey articles. Each conveying track includes an aluminum profile track 4, a chain 5 mounted inside the aluminum profile track 4, and a plurality of roller assemblies 6 coupled to the chain 5 and turned with it to convey articles. Each roller assembly 6 includes two roller holders 71,72 fixed to the aluminum profile track 4 to hold an axle 77, and a hub 75 and a tubular roller bearing member 76 mounted around the axle. A sprocket wheel 751 is meshed with the chain 5 and a roller 61 is mounted around the hub 75 and the tubular roller bearing member 76.

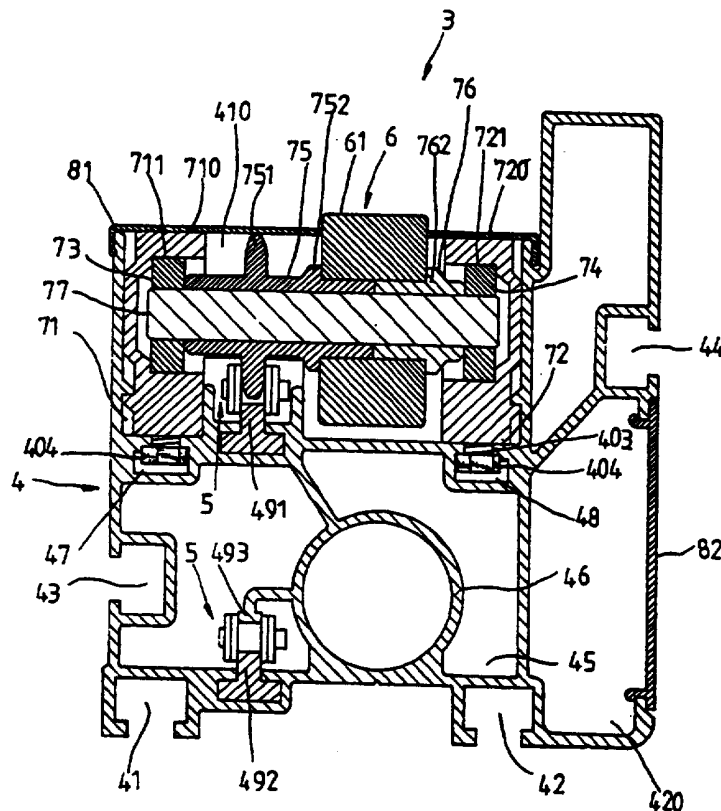


Fig. 4

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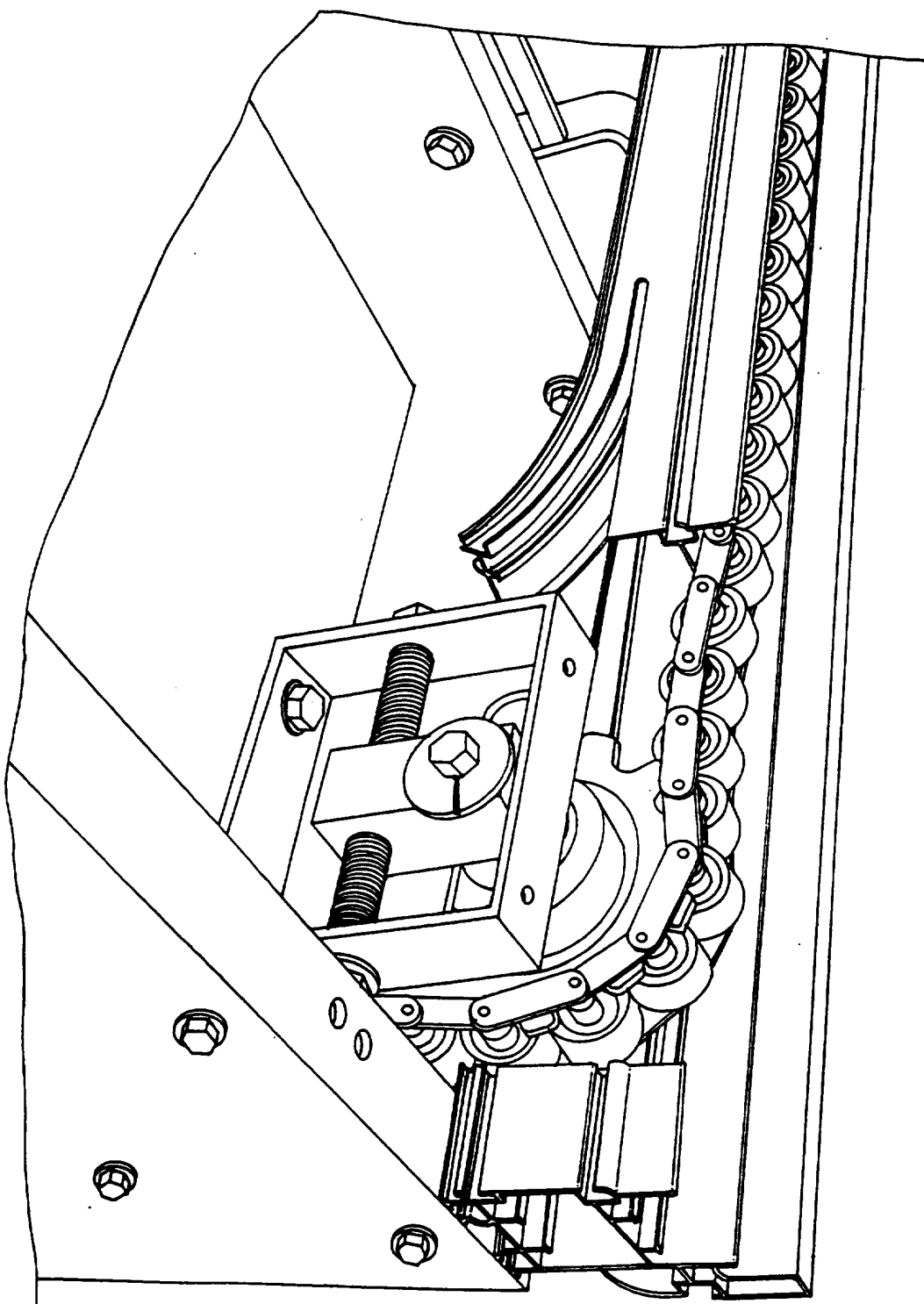
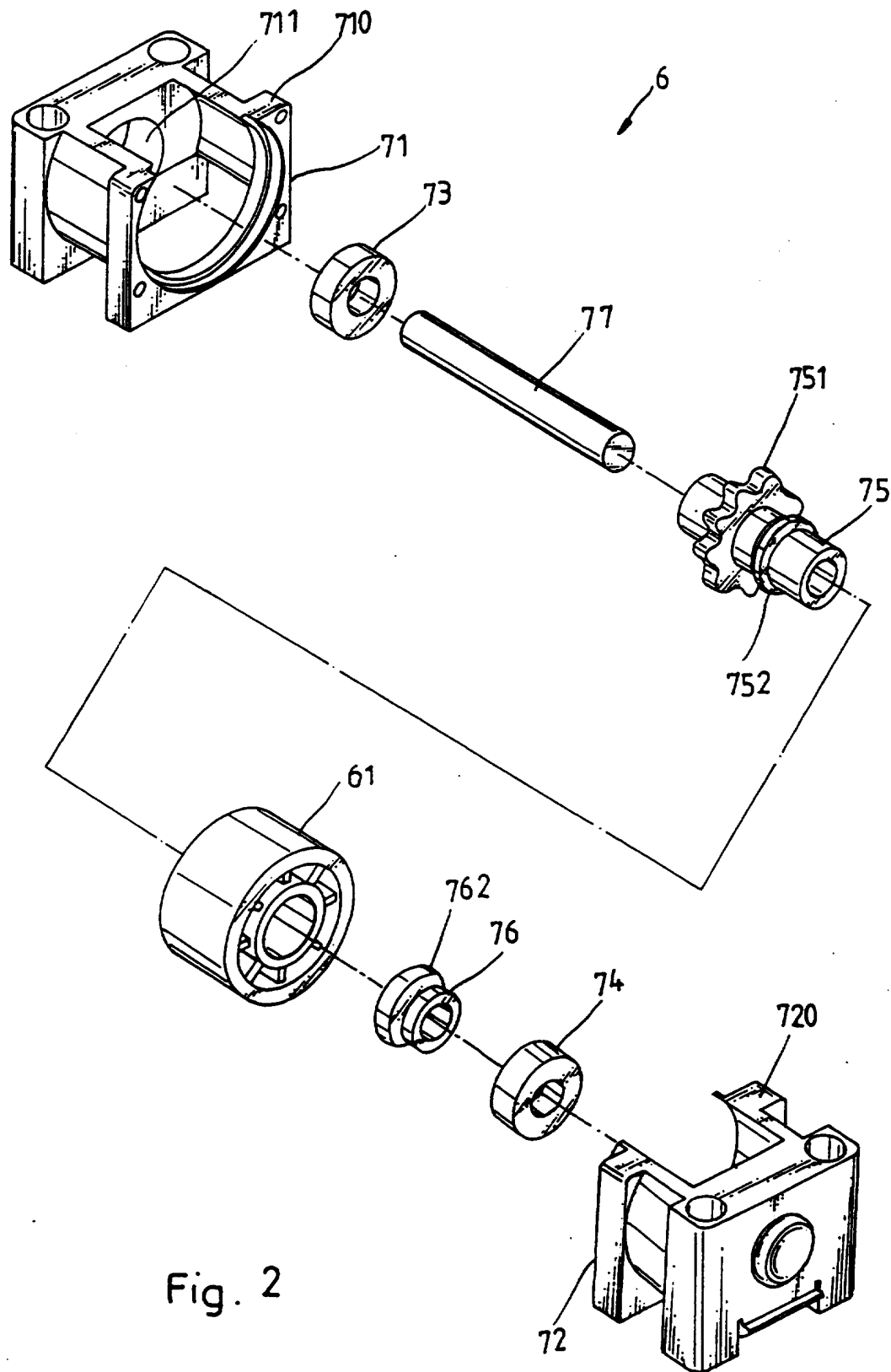


Fig. 1 PRIOR ART



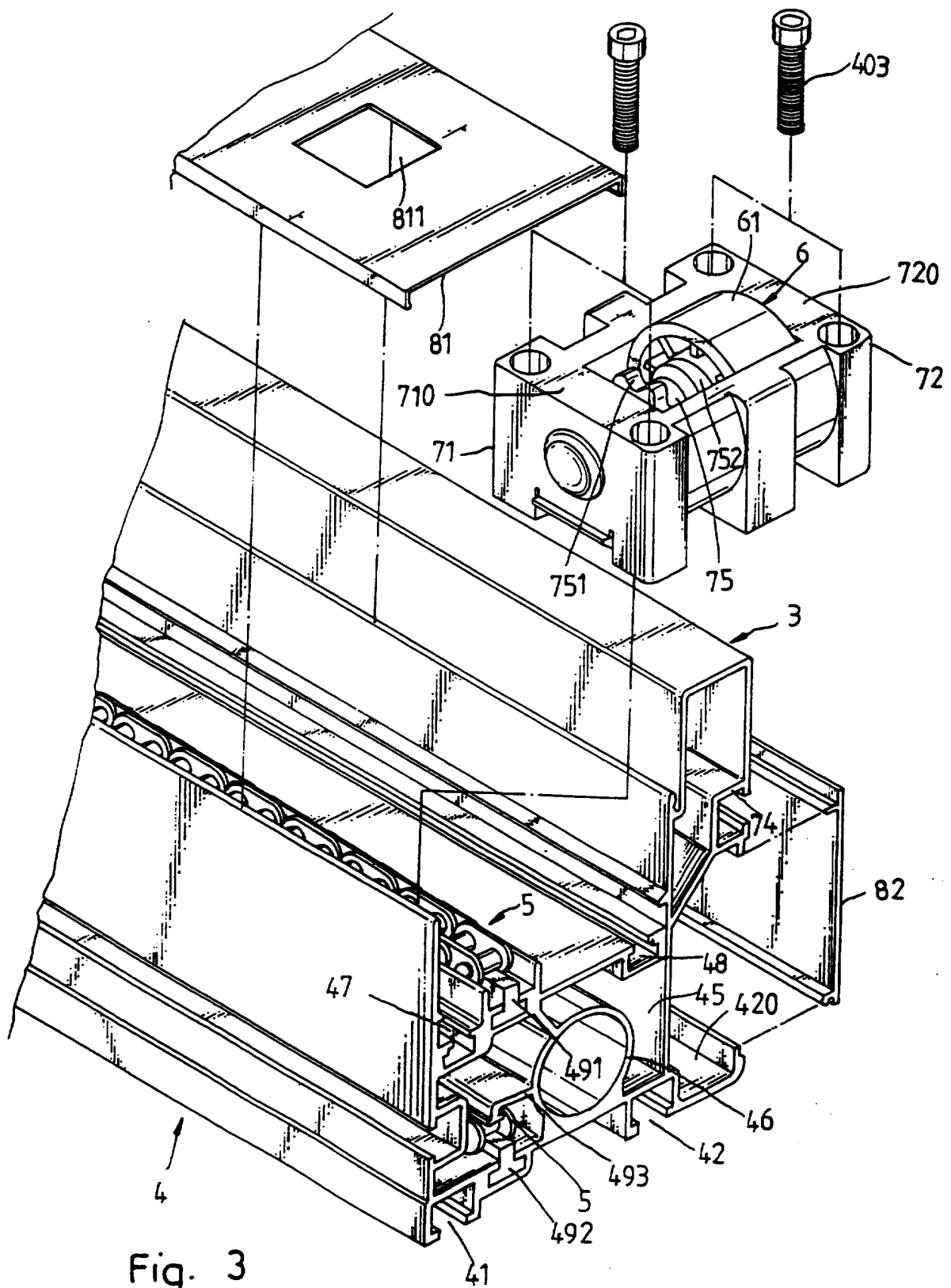


Fig. 3

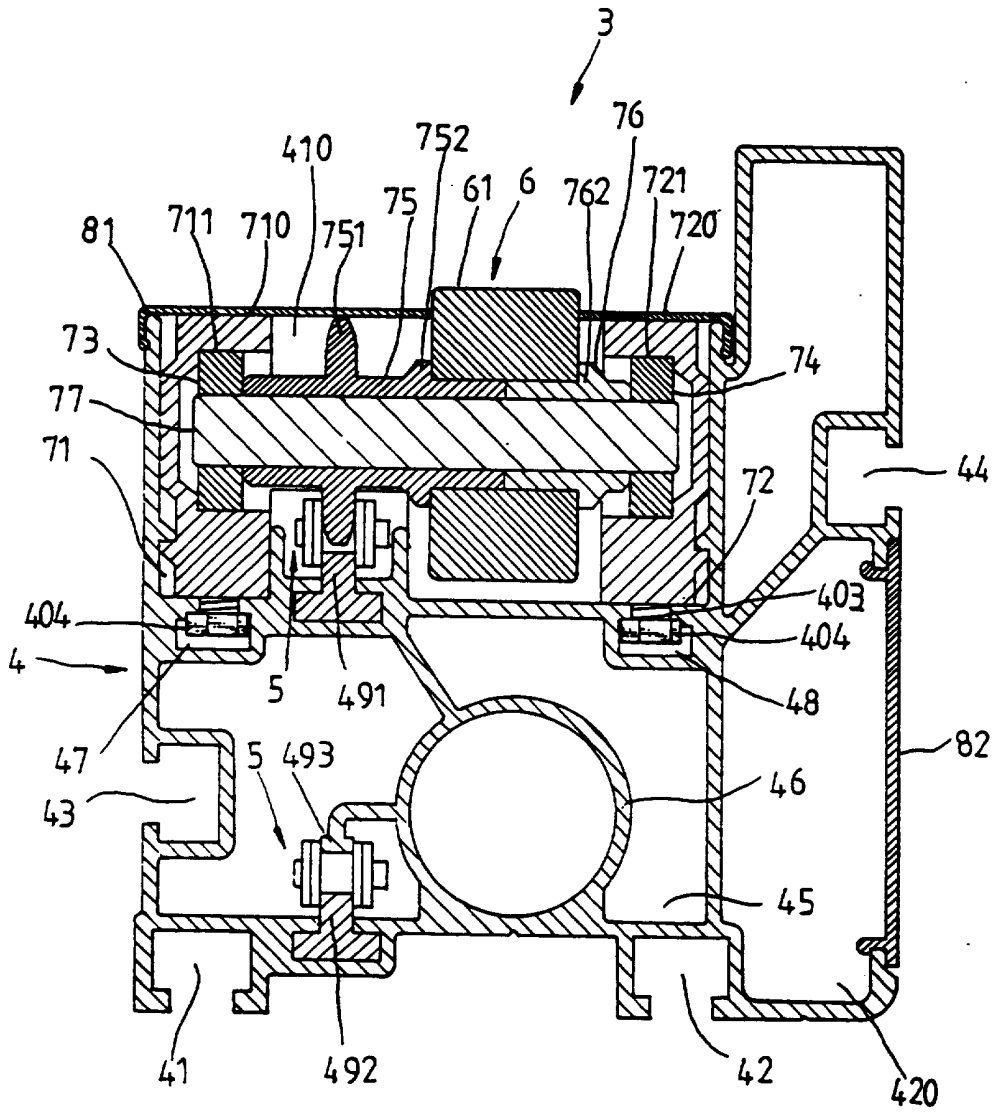


Fig. 4

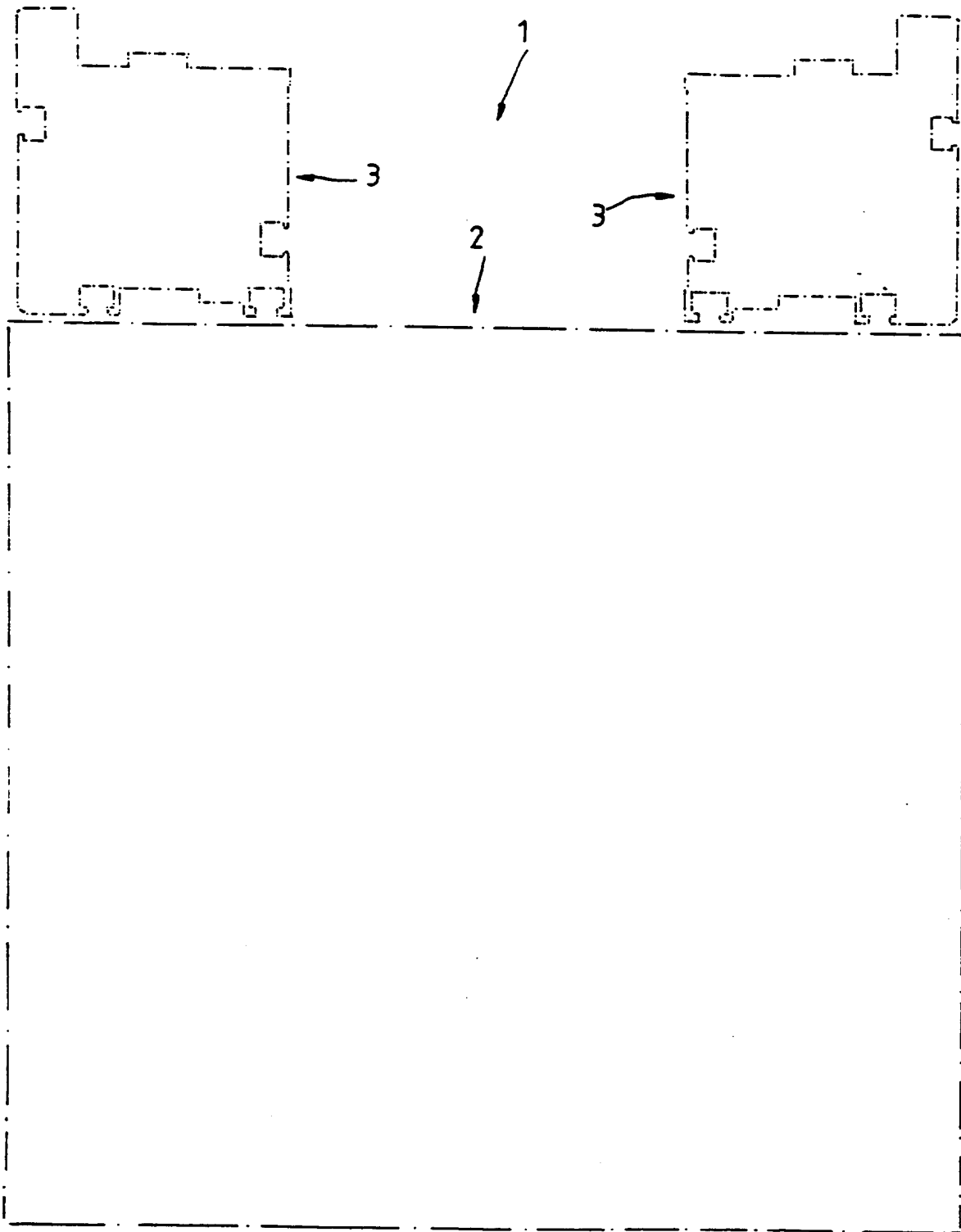


Fig. 5

ROLLER CONVEYOR

This invention relates to a roller conveyor, and relates more particularly to an improved structure of roller conveyor which make low noise during its operation and, which has guard means to stop dust and other small items from falling to the internal mechanical mechanism.

Figure 1 shows a roller conveyor according to the prior art, which comprises a base frame, two conveying tracks bilaterally disposed at the top of the base frame and driven to convey articles. This prior art structure of roller conveyors is still not satisfactory in function because of the following drawbacks:

1. Because the rollers are pivotably connected in the chain between side-plates and disposed in direct contact with the articles to be delivered, much noise will be produced during conveying.

2. Because the rollers are pivotably connected in the chain between side-plates, the pitch of the rollers are not adjustable subject to the weight of the articles to be delivered.

3. Because the conveying tracks are not protected by top or side cover means, dust or other objects may fall to the inside of the conveying tracks.

The present invention has been accomplished to provide a roller conveyor which eliminates the aforesaid drawbacks. It is one object of the present invention to provide a roller conveyor which does not

make much noise during its operation. It is another object of the present invention to provide a roller conveyor which can be conveniently adjusted to change the pitch of the rollers subject to the weight of the articles to be delivered. It is still another object of the present invention to provide a roller conveyor which is well guarded against dust. It is still another object of the present invention to provide a roller conveyor which is inexpensive to manufacture. According to one aspect of the present invention, the roller conveyor comprises two conveying tracks bilaterally disposed at the top of a base frame and driven by a power drive to convey articles, each conveying track comprising an aluminum profile track, a chain mounted inside the aluminum profile track, and a plurality of roller assemblies coupled to the chain and turned with it to conveying articles, each roller assembly comprising two roller holders bilaterally fixed to the aluminum profile track to hold an axle, a hub and a tubular roller bearing member mounted around the axle, a sprocket wheel fixedly mounted around the tubular roller bearing member and meshed with the chain, and a roller mounted around the hub and the tubular roller bearing member and turned with the tubular roller bearing member to convey articles carried thereon. According to another aspect of the present invention, a top cover board plate is covered on the top open chamber of the aluminum profile track to protect the roller assemblies, having a plurality of openings through which the rollers of the roller assemblies partially project to the outside. According to still another aspect of the present invention, the left roller holder, right roller holder, first axle bearing, second axle bearing, hub, tubular roller bearing member and roller of each of the roller assemblies can be respectively injection-molded from engineering plastics

so that the manufacturing cost of the roller conveyor can be greatly reduced.

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

10 Fig. 1 is a perspective view of a part of a roller conveyor according to the prior art;

Fig. 2 is an exploded view of a roller unit according to the present invention;

15 Fig. 3 is an exploded view of a conveying track for a roller conveyor according to the present invention;

20 Fig. 4 is a sectional assembly view of a conveying track in an enlarged scale of the present invention;

Fig. 5 is a plain view showing two conveying tracks bilaterally installed in a base frame according to the present invention;

25 Referring to the various drawings attached herewith, a detailed description of the structural features of a roller conveyor of the present invention is as follows:-

30 Referring to Figs. from 2 to 5, a roller conveyor 1 in accordance with the present invention comprises a base frame 2, two conveying tracks 3 bilaterally disposed at the top of the base frame 2 and driven to convey articles (see Fig. 5).

35 Each of the conveying tracks 3 comprises an

aluminum profile track 4, a chain 5, and a plurality of roller assemblies 6 (see Figs. 3 and 4). The profile track 4 comprises two longitudinal bottom mounting channels 41, 42 adapted for fastening to the base frame 2, two longitudinal lateral locating channels 43, 44 at two opposite sides for the connection of other objects, a longitudinal cable hole 45 adapted for receiving an electrical cable, and a center air pipe 46. The base frame 2 holds a power drive (not shown) comprised of a motor, a reducing gear, and a chain transmission mechanism, and controlled to turn the chains 5 of the conveying tracks 3. The aluminum profile track 4 further comprises longitudinal two roller assembly mounting channels 47, 48 bilaterally disposed at the top, a longitudinal top rail 491 and a longitudinal bottom rail 492 for the mounting of the chain 5. The roller assemblies 6 are mounted in the roller assembly mounting channels 47, 48 by screws 403 and nuts 404. The chain 5 is mounted on the longitudinal top rail 491 and the longitudinal bottom rail 492, and driven to turn the roller assemblies 6. Each of the roller assemblies 6 (see Figs. 2 and 4) comprises a left roller holder 71 having an axle hole 711, a right roller holder 72 having an axle hole 721, a first axle bearing 73 mounted in the axle hole 711 of the left roller holder 71, a second axle bearing 74 mounted in the axle hole 721 of the right roller holder 72, an axle 77 mounted in the axle holes 711, 721 of the roller holders 71, 72, a hub 75 mounted around the axle 77 and having an outward flange 752 raised around the periphery, a sprocket wheel 751 fixedly mounted around the hub 75 and meshed with the chain 5, a tubular roller bearing member 76 mounted around the axle 77 and abutted against one end of the hub 75 in a flush manner and having an outward flange 762 raised around the periphery, a roller 61 mounted around the tubular

roller bearing member 76 and the hub 75 and retained between the outward flange 752 of the hub 75 and the outward flange 762 of the tubular roller bearing member 76 and turned with the sprocket wheel 751 and the hub 75. When assembled and installed, the periphery of the roller 61 at the top side is disposed at a higher elevation than the top sides 710, 720 of the roller holders 71, 72 for direct contact with the articles to be delivered.

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The aluminum profile track 4 further comprises a longitudinal guide rail 493 spaced above the bottom rail 492 to stop the chain 5 from escaping out of the bottom rails 492 and to guide its movement. A top cover plate 81 is covered on the top open chamber 410 of the aluminum profile track 4 over the roller assemblies 6 for protection, having a longitudinal row of openings 811 through which the rollers 61 of the roller assemblies 6 project respectively and partially (see Figs. 3 and 4). A side guard 82 is covered on the channeled outer side 420 of the aluminum profile track 4 for protection.

Furthermore, the aforesaid axle bearings 73, 74 can be ball bearings, or injection-molded from engineering plastics; the hub 75, the tubular roller bearing member 76 and the roller 61 of each roller assembly 6 can be made from metal, or respectively injection-molded from engineering plastics.

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As indicated above, the present invention achieves various advantages. Because the roller 61 of the roller assemblies 6 are not directly driven by the chain 5, less noise will be produced during the operation of the roller conveyor. Because the roller assemblies 6 are separately fastened to the aluminum profile track 4,

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their pitch can be set as desired. The installation of the top cover plate 81 and the side guard 82 improves the sense of beauty of the roller conveyor, and simultaneously prohibits dust and small items from falling to the inside of the roller conveyor. The top cover plate 81 and the side guard 82 are detachable, therefore they can be detached from the aluminum profile track 4 for performance of a maintenance work. Furthermore, because the roller holders 71, 72, bearings 73, 74, hub 75, roller 61 and tubular roller bearing member 76 of each roller assembly 6 can be made from engineering plastics, the manufacturing cost of the roller conveyor can be greatly reduced.

CLAIMS:-

1. A roller conveyor comprising a base frame, two
conveying tracks bilaterally disposed at a top of said
base frame and driven by a power drive to convey
5 articles, each of said conveying tracks comprising a
track, a chain, and a plurality of roller assemblies, said track
comprising two longitudinal bottom mounting channels
fastened to said base frame, two roller assembly
mounting channels bilaterally disposed at a top side in
10 a top open chamber thereof, a longitudinal top rail and
a longitudinal bottom rail for the mounting of said
chain, said roller assemblies being mounted in said
roller assembly mounting channels
said chain being mounted on said longitudinal top rail
15 and said longitudinal bottom rail and driven to turn
said roller assemblies, wherein;

each of said roller assemblies comprises a left
roller holder having an axle hole, a right roller
20 holder having an axle hole, a first axle bearing
mounted in the axle hole of said left roller holder, a
second axle bearing mounted in the axle hole of said
right roller holder, an axle mounted in the axle holes
of said left roller holder and said right roller holder,
25 a hub mounted around said axle and having an outward
flange raised around the periphery, a sprocket wheel
fixedly mounted around said hub and meshed with said
chain, a tubular roller bearing member mounted around
said axle and abutted against one end of said hub in a
30 flush manner and having an outward flange raised around
the periphery. a roller mounted around said tubular
roller bearing member and said hub and retained between
the outward flange of said hub and the outward flange
of said tubular roller bearing member and turned with

said sprocket wheel and said hub, said roller projecting over the elevation of the topmost side of said left roller holder and the topmost side of said right roller holder for direct contact with the articles to be conveyed.

2. The roller conveyor of claim 1, wherein the track is an aluminum profile track comprising a longitudinal guide rail spaced above said bottom rail to stop said chain from escaping out of said bottom rail.

3. The roller conveyor of claim 2, wherein each of said aluminum profile track further comprises a top cover plate covered on said top open chamber to protect said roller assemblies, having a plurality of openings through which the rollers of said roller assemblies partially project to the outside.

4. The roller conveyor of claim 1, 2 or 3, wherein the left roller holder, right roller holder, first axle bearing, second axle bearing, hub, tubular roller bearing member and roller of each of said roller assemblies are respectively injection-molded from engineering plastics.

5. The roller conveyor of claim 1, 2, 3 or 4, wherein said aluminum profile track further comprises a side guard covered on a channeled outer side thereof for protection against dust.

6. A roller conveyor substantially as hereinbefore described with reference to, and as illustrated in Figs. 2 to 5 of the accompanying drawings.



Application No: GB 9622543.8
Claims searched: 1 to 6

Examiner: Mike Henderson
Date of search: 7 February 1997

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK CI (Ed.O): B8A (A4AB A4HB A4JB A4JF A4JH A4JJ A4JX)

Int CI (Ed.6): B65G 13/00 13/02 13/04 13/06 13/07 39/00 39/02 39/10 39/12

Other: ONLINE:WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 1601910 (TRANSPORTTEKNIK GUNNAR EKSTRAND AB) (See particularly the drawing)	1 to 6
A	GB 1370769 (KARL LEIBFRIED GmbH) (See particularly the drawing)	1 to 6

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.