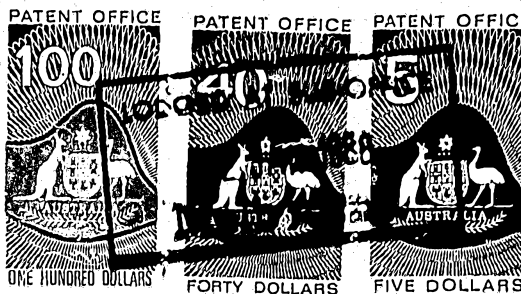


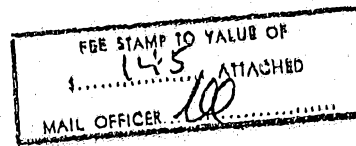
(CONVENTION. By one or more persons :

60 10 1 2 COMMONWEALTH

Pate:



CONVENTION APPLICATION FOR A PATENT



(1) Here
Insert (in
full) Name
or Names of
Applicant or
Applicants,
followed by
Address (es).

xxx AKTIEBOLAGET PROFOR
We
of Box 61, 221 00 Lund, Sweden

APPLICATION ACCEPTED AND ANTICIPATED

19.6.90

hereby apply for the grant of a Patent for an invention entitled: (2)

CONVEYOR ASSEMBLY

(3) Here insert
number(s)
of basic
application(s)

which is described in the accompanying complete specification. This application is a
Convention application and is based on the application numbered (3)
8700242-4

(4) Here insert
Name of basic
Country or
Countries, and
basic date or
dates

for a patent or similar protection made in (4) Sweden
on 22nd January 1987

My
Our address for service is Messrs. Edwd. Waters & Sons, Patent Attorneys,
50 Queen Street, Melbourne, Victoria, Australia.

DATED this 21st day of January 19 88

LODGED AT SUB-OFFICE

2 2 JAN 1988
Melbourne

(5) Signa-
ture (s) of
Applicant (s)
or
Seal of
Company and
Signatures of
its Officers as
prescribed by
its Articles of
Association.

(5)

AKTIEBOLAGET PROFOR

by

Stephen K. Plymin

Registered Patent Attorney

To:

THE COMMISSIONER OF PATENTS.

COMMONWEALTH OF AUSTRALIA

Patents Act 1952-1969

DECLARATION IN SUPPORT OF A CONVENTION
APPLICATION FOR A PATENT OR PATENT OF ADDITION(1) Here
insert (in
full) Name of
Company.In support of the Convention Application made by⁽¹⁾.....
AKTIEBOLAGET PROFOR(2) Here
insert title
of invention.(hereinafter referred to as the applicant) for a Patent
for an invention entitled:⁽²⁾.....
CONVEYOR ASSEMBLY(3) Here
insert full Name
and Address,
of Company
official
authorized
to make
declaration.I,⁽³⁾..... GOSTA SEVRELL
of..... Box 61 221 00 Lund, Sweden

do solemnly and sincerely declare as follows:

1. I am authorised by the applicant for the patent
to make this declaration on its behalf.2. The basic application as defined by Section 141 of the Act was
..... made in⁽⁴⁾..... Sweden
on the..... 22nd..... day of..... January..... 19.87....., by.....
AB PROFOR
on..... XXXXXX..... XXXXXX..... XXXXXXXXXX(4) Here
insert basic
Country or
Countries
followed by
date or dates
and basic
Applicant or
Applicants.(5) Here
insert (in
full) Name
and Address
of Actual
Inventor or
Inventors.3.⁽⁵⁾..... LNO SJOSTRAND, Tulpanvagen 16, S-240 32 Flyinge, Swedenis/are the actual inventor of the invention and the facts upon which the applicant
is entitled to make the application are as follow:

The applicant is the assignee of..... the said actual inventor

4. The basic application referred to in paragraph 2 of this Declaration
was..... the first application made in a Convention country in
respect of the invention the subject of the application.DECLARED at..... Lund, Sweden
this..... 5th..... day of..... December..... 19 87

(6) Signature.

(6)

AKTIEBOLAGET PROFOR

Gösta Sevrell

(12) PATENT ABRIDGMENT **(11) Document No. AU-B-10714/88**
(19) AUSTRALIAN PATENT OFFICE **(10) Acceptance No. 601012**

(54) Title
CONVEYOR ASSEMBLY

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(21) Application No. : **10714/88**

(22) Application Date : **22.01.88**

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8700242	22.01.87	SE SWEDEN

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(71) Applicant(s)
AKTIEBOLAGET PROFOR

(72) Inventor(s)
UNO SJOSTRAND

(74) Attorney or Agent
WATERMARK MELBOURNE

(56) Prior Art Documents
US 2837203
FR 2446783
SE 423523

(57) Claim

1. A conveyor assembly with supporting parts able to be joined together to a required length which comprise two supporting sides which between them have a slideway for an endless chain, the slideway serving as a spacer element between the supporting sides so that these are fixed at a predetermined distance from one another, characterised in that longitudinal edges of the slideway engage in grooves in fastening devices which serves as joint pieces in the joining of supporting parts to one another.

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FORM 10

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952-69

COMPLETE SPECIFICATION

(ORIGINAL)

Class

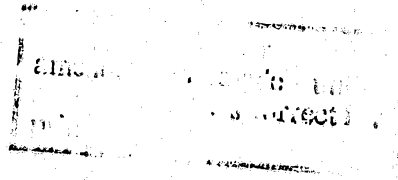
Int. Class

Application Number:
Lodged:

Complete Specification Lodged:
Accepted:
Published:

Priority:

Related Art:



Name of Applicant: AKTIEBOLAGET PROFOR

Address of Applicant: Box 61, 221 00 Lund, Sweden

Actual Inventor: UNO SJOSTRAND

Address for Service: EDWD. WATERS & SONS,
50 QUEEN STREET, MELBOURNE, AUSTRALIA, 3000.

Complete Specification for the invention entitled:
CONVEYOR ASSEMBLY

The following statement is a full description of this invention, including the best method of performing it known to the inventor.

CONVEYOR ASSEMBLY

The present invention relates to a conveyor assembly with supporting parts able to be joined together to the required

5 length, which comprises two supporting sides which between them have a slideway for an endless chain .

Conveyor assemblies of the type which by means of a motor-driven endless belt, or an endless chain move goods between different positions have a wide range of applications. Within e.g.
10 the dairy industry chain conveyors are made use of for the transport of, among others, packing containers for milk between, or from, different packaging or processing machines. Up to now conveyor assemblies for this purpose generally were "tailor-made" with the help of a very great number of more or less specially
15 manufactured components. The result frequently has been an expensive and complicated design, which owing to the large number of components was difficult to fit up, and which owing to the great number of joints tended to become unstable after prolonged usage. Since pockets and recesses are unavoidable at the points of joining
20 the cleaning is made considerably more difficult, which is a major disadvantage in the foodstuff industry. A frequently defective guidance of the conveying chain also entails unnecessary wear on the chain as well as on the packages and consequent fouling of the system.

25 It is an object of the present invention to provide a conveyor assembly with a well thought-out design which makes it possible to avoid the abovementioned disadvantages and provide a conveyor assembly which is stable and easy to fit up.

It is a further object of the present invention to provide a
30 conveyor assembly which reduces the problems of fouling and dirt-collecting pockets existing up to now .

It is a further object of the present invention to provide a conveyor assembly which in spite of comprising a relatively small number of components nevertheless is easy to fit up and to
35 adapt to different localities and fields of application.

The abovementioned objects and others have been achieved in

that a conveyor assembly of the type mentioned in the introduction has been given the characteristic that the slideway serves as a spacer element between the supporting sides so that these are fixed at a predetermined distance from one another.

5 Preferred embodiments of the arrangement in accordance with the invention have been given, moreover, the characteristics which are evident from the subsidiary claims.

By making use of the slideway as a spacer element between the supporting sides, the latter after fitting-up will be fixed at a
10 predetermined distance from one another and in a very steady and immovable manner which is not impaired during prolonged operation. The modular system ensures that the conveyor assembly will be easy to fit-up and to adjust and simple to adapt to local conditions, at the same time as the relatively small number of joints and other
15 difficultly accessible recesses makes for a satisfactory cleaning effect. The effective stretching and the guiding of the conveying chain and the goods transported on the same minimize wear and ensure good function even after usage over a long period.

A preferred embodiment of the conveyor assembly in accordance
20 with the invention will now be described in more detail with special reference to the attached schematic drawings which only show the details indispensable for an understanding of the invention.

Fig.1 shows in perspective a part of the conveyor assembly in
25 accordance with the invention during fitting-up.

Fig.2 shows partly in section the conveyor assembly in accordance with Fig.1.

Fig.3 shows a portion of a supporting part from the top, the guides and brackets mounted on the supporting part having been
30 removed for the sake of clarity.

Fig.4 shows from the side and partly in section a portion of a supporting part with a chain stretching arrangement in accordance with the invention.

Fig.5 is a section of a part of the chain stretching
35 arrangement in accordance with Fig.4

The conveyor assembly according to the invention comprises

a number of supporting parts 1 of different predetermined lengths which can be joined together to the desired length. Each supporting part 1 comprises two mirror-symmetrical supporting sides 2 between which run the upper and lower portion respectively of a conveying chain 3. The distance between the supporting sides is determined by slideways 4,5 located between the supporting sides, on which run the two portions of the chain 3. In other words, the slideways 4,5 serve as spacer elements between the supporting sides 2 so that these are fixed at a predetermined distance from one another. More particularly, longitudinal edges of the slideways 4,5 engage in grooves in fastening devices 6 which are located at uniform intervals on the inside of the supporting sides 2. The said grooves in the fastening devices 6 are adapted so that the slideways 4,5 assume a position at a substantially right angle to the vertical surfaces of the supporting sides 2 which means that the supporting sides 2 together with the fastening devices 6 and the slideways 4,5 form a unit of substantially square cross-section (Fig.2), which makes the supporting parts 1 particularly firm and stiff against torsion. The supporting sides 2 and the fastening devices 6 are pressed together against the slideways 4,5 with the help of screws 7 and internally threaded sockets 8 which are located directly underneath the respective slideways 4,5 and extend through through-holes in the fixing devices 6 as well as the supporting sides 2.

The V-shape of the grooves present in the fastening devices 6 entails that even a relatively loose tightening of the screws 7 causes a firm wedging of the slideways 4,5 in correct position, thus contributing effectively to the good precision and stability of the construction. In the fastening devices 6, moreover, a number of guide pieces 9 are present, which are manufactured from any suitable plastic material and are located directly above the upper surfaces of the slideways 4,5 so as to serve as lateral guides for the conveying chain 3 moving on the slideways 4,5.

The upper, active portion of the conveying chain 3, when resting against the slideway 4, as is evident from Fig.2, is located with its upper surface above the two top edges of the supporting

sides 2. To provide lateral guidance of the packing containers transported on the conveying chain 3, the conveyor assembly in accordance with the invention comprises a number of parallel guides 10 extending at a distance above the supporting sides 2

5 which are supported by means of vertical brackets 11 situated at uniform intervals along the supporting parts, which are provided with snap-on mountings for the guides 10. The brackets 11 are provided at their bottom ends with fastening holes, by means of which the brackets are joined to the supporting sides 2 and the
10 fastening devices 6 with the help of the screws 7 mentioned earlier. The brackets 11 may be of varying design to allow adapting to the packing containers which are to be transported on the conveyor in question, and instead of the design shown the brackets 11 may be straight or bent outwards so that the distance
15 between the guides 10 becomes greater and permits the passage of wider packing container on the conveyor.

As mentioned earlier, each bracket 11 is situated at a pre-determined point along the supporting side 2, which is pre-drilled. To make possible the attachment of the bracket 11, a

20 fastening device 6 inside the supporting side is required, and at each bracket, therefore, the supporting sides 2 will be fixed at a certain distance from one another with the help of the screws 7 and the spacer sockets 8. The fastening devices 6 here are of a width which coincides with, or exceeds, the width of the brackets
25 11, but at the points where two supporting parts 1 are to be joined together another type of fastening device 6 occurs which is of appreciably greater width and, besides allowing the attachment of the brackets 11, also serves as a joint piece for the joining of two supporting parts to one another (Fig. 1). The fastening device 6
30 or the joint piece here has been provided with four screw holes for joining the supporting sides 2 to one another and two further screw holes to make possible the attachment of brackets 11. The fastening devices 6 intended for bracket attachment as well as the fastening devices serving as joint pieces are of identical section
35 which makes it possible to manufacture them in a simple manner from extruded aluminium. The brackets 11 too are manufactured in

a manner which makes it possible to produce the parts with high precision and at relatively low cost.

As is evident from the above, the conveying chain 3 during operation is located on the slideways 4,5 which are manufactured from extruded aluminium and provided with an upper surface or

slideway of suitable low-friction material, e.g. thermoplastics. The thermoplastic material engages mechanically in the top surface of the aluminium section which is provided with an uneven profile, e.g. of dovetail-type (Fig.2). The lateral guidance of the chain 3

is provided by the guide pieces 9, which likewise are manufactured from low-friction material and are arranged at uniform intervals along the length of the supporting part, more particularly at the points where the fastening devices 6 are situated. The chain 3 thus rests under its own weight on the underlying slideway 4,5,

which functions well except in the cases where the chain passes a lower lying portion of the conveyor, that is to say where the support parts are bent in vertical direction and form a "valley". At such points during operation of the conveyor the chain 3 will be stretched owing to the tensile force in the chain so that it

tends to lift off the underlying slideway 4. The conveyor assembly in accordance with the invention has been provided, therefore, with elements adapted to prevent lifting of the chain, these elements (Fig.3) comprising a projection 12 for the lateral guidance of the chain underneath a slide rail 13 co-operating with the top surface

of the chain. The projection 12 is of a width which substantially amounts to a third of the free space between two guide pieces 9 situated opposite one another and of a height which is equal to, or slightly less than, the height of the chain 3. The projection 12 is of an elongated convex shape and is situated along the inside of

one supporting side 2 where it replaces a guide piece 9 so that the chain 3 when it passes the projection 12 is forced to move sideways underneath the slide rail 13 located at a recess in the upper part of the opposite supporting side 2, whose lower surface is a little above the top surface of the chain 3, and as a result

of resting against the same prevents the chain 3 from being lifted when the chain is stretched. Packages transported on the chain 3

can continue unhindered straight on past the particular portion of the supporting part, since they are guided during the passage by the slide rail 13 and the guides not shown in Fig.3, so that they slide partly on the chain 3, partly on the top surface of the projection 12. The chain 3 is of known design which is hinged in vertical as well as in horizontal direction.

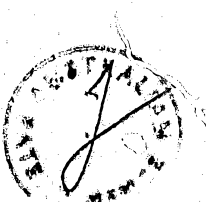
As mentioned earlier, it is of the greatest importance for optimizing the function of the conveyor assembly and for minimizing wear and thereby any instability arising, that the chain should be kept stretched with constant force during the whole time. This is ensured in the conveyor assembly in accordance with the invention with the help of a chain-stretching arrangement 14 (Fig.4, 5) which is located at a suitable place along the conveyor assembly. There is an interruption in the lower slideway 5 at the location of the chain-stretching arrangement 14, where the support sides 2 are extended downwards by means of guide panels 15, 16. The chain 3 runs down between the guide panels 15, 16 and around a freely suspended wheel 17, which by its weight is adapted to produce the required stretching of the chain. The wheel 17 which is illustrated in more detail in Fig.5 is made of a material of appropriate weight, e.g. stainless steel, and comprises around its periphery a friction-enhancing arrangement, e.g. two rubber rings 18 on which rests the conveying chain 3. In the centre hole of the wheel 17 are two guide pins 19 which with the help of a helical compression spring 20 located between them are pressed against the two guide panels 15, 16 with a predetermined force, so that on movement of the wheel 17 the friction produced between surfaces of the guide pins 19 and the guide panels 15, 16 facing one another produces braking of the movement of the wheel 17 and prevents unnecessary pivoting, above all in vertical direction, thus imparting to the return portion of the conveying chain 3 a steady movement and even progress. The weight of the wheel 17 can be adapted to the length of the chain which the chain-stretching arrangement 14 is intended to work with, so that optimum function is achieved. The chain 3 is conducted to the wheel 17 via wheels 21 located at the end parts of the slideway 5, which may be sus-

pended so that they can rotate freely in the chain-stretching arrangement 14 or they may comprise a driving wheel which is connected to an electric motor, not shown, and adapted to propel the conveying chain along at a predetermined speed. Naturally the driving may be arranged also at some other, arbitrary point along the length of the conveyor assembly. Such an arrangement, however, is well-known and therefore does not have to be described in greater detail in this context

The conveyor assembly in accordance with the invention with the help of the design described is made into a very flexible and easily installed system which may be adapted to a great number of different operational situations. With the help of conventional points arrangements and track curves of known type (e.g. of the type as described in the Swedish patent application 8502231-7) and other accessories known in themselves the conveyor assembly is particularly well suited for the handling of packing containers in the dairy industry.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A conveyor assembly with supporting parts able to be joined together to a required length which comprise two supporting sides which between them have a slideway for an endless chain, the slideway serving as a spacer element between the supporting sides so that these are fixed at a predetermined distance from one another, characterised in that longitudinal edges of the slideway engage in grooves in fastening devices which serves as joint pieces in the joining of supporting parts to one another.
2. A conveyor assembly as claimed in claim 1, characterised in that it comprises a further slideway which is arranged at some distance underneath the firstnamed slideway.
3. A conveyor assembly as claimed in any one of the preceding claims, characterised in that the supporting sides have brackets placed at intervals which carry guides for guiding of goods transported by means of the conveyor assembly.
4. A conveyor assembly as claimed in claim 3, characterised in that the brackets have varying sections so as to allow adapting of the distance between the guides to different width of the goods transported.
5. A conveyor assembly as claimed in claim 3 or 4, characterised in that the brackets are provided with snap-on mountings for the guides.
6. A conveyor assembly as claimed in any one of the preceding claims characterised in that it is provided with elements adapted to prevent lifting off of the chain, these



elements comprising a projection for the lateral guidance of the chain underneath a slide rail co-operating with the top surface of the chain.

7. A conveyor assembly as claimed in any one of claims 2 to 7 inclusive, characterised in that the further slideway is provided with an interruption, whereat the supporting sides are extended downwards by means of guide panels between which is located a wheel freely suspended in the chain adapted so that by its weight the required stretching of the chain is produced.

8. A conveyor assembly as claimed in claim 7, characterised in that the wheel is guided by means of a guide pin which is located in a centre hole and adapted so that it is pressed outwards against the guide panels by means of a spring.

DATED this 20th day of April, 1990

AKTIEBOLAGET PROFOR

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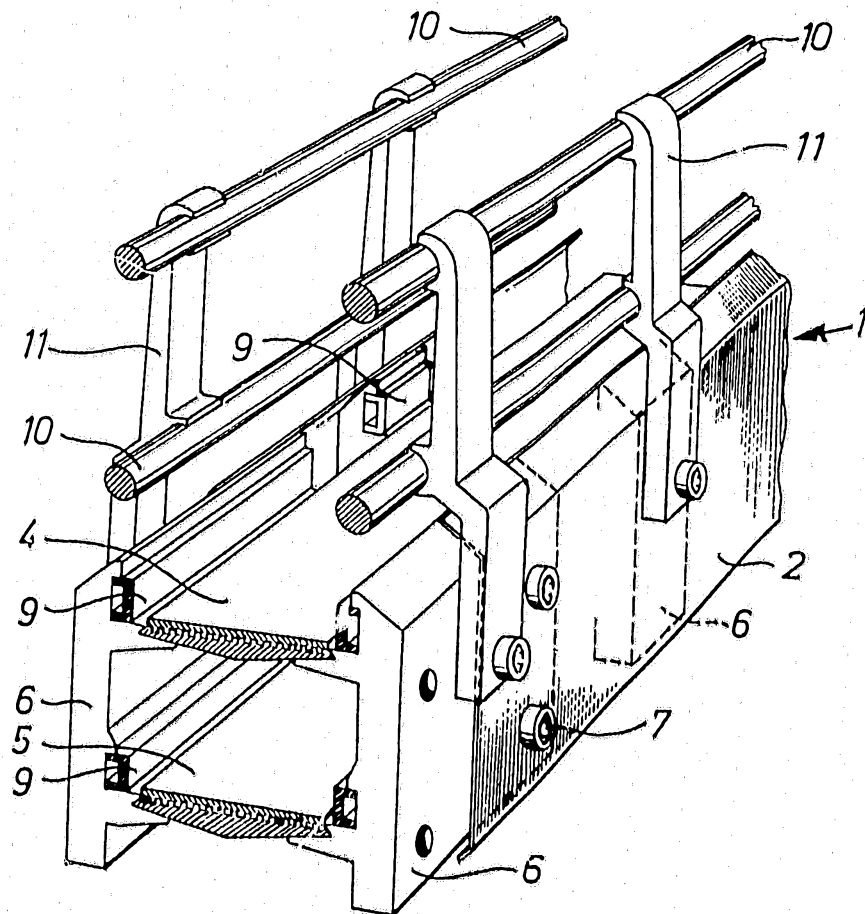
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Fig.1



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Fig. 2

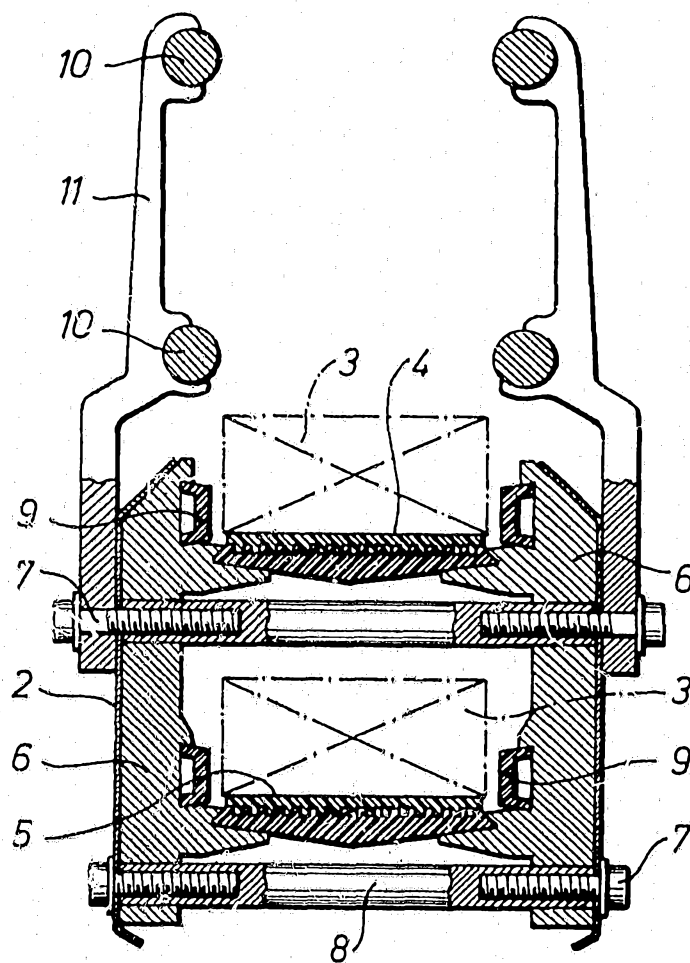


Fig. 3

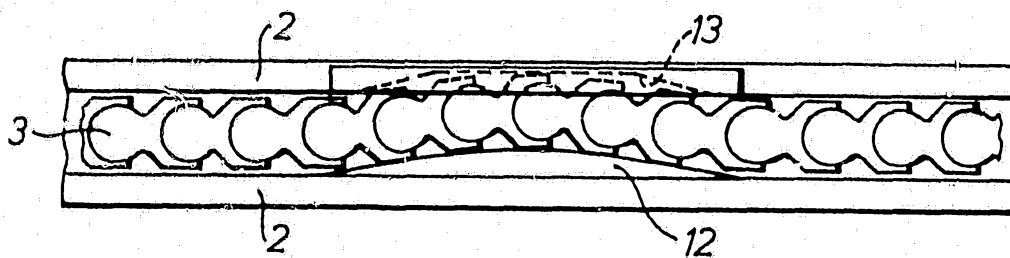


Fig. 4

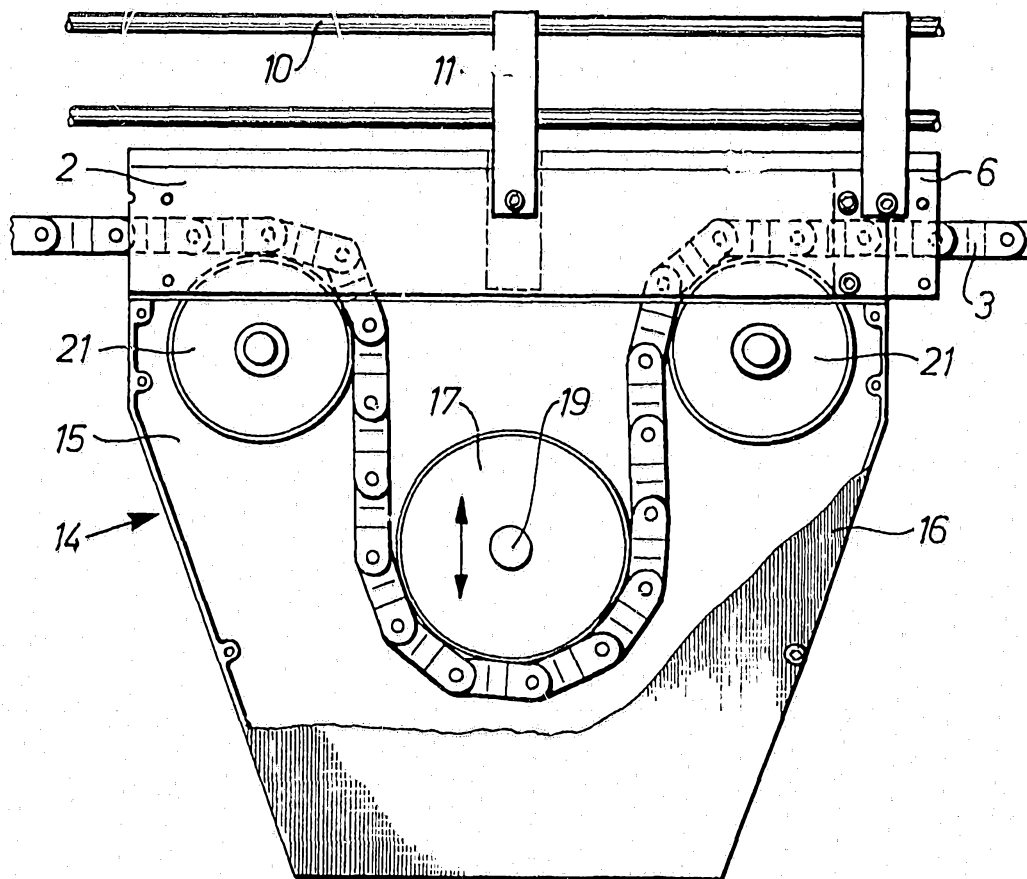


Fig. 5

