FORM 1

600151

REGULATION 9

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

APPLICATION FOR A STANDARD PATENT

We, DANIELI & C. OFFICINE MECCANICHE SpA and ITI/CLM IMPIANTI TECNICI INDUSTRIALI SpA, of Via Nazionale, 33042 Buttrio (UD), Italy, and Via Nazionale 69, 33042 Buttrio (UD), Italy, respectively, hereby apply for the grant of a Standard Patent for an invention entitled:-

"MACHINE TO FORM AND REHABILITATE RAILWAY BALLAST AND RAILWAY ROAD BEDS"

which is described in the accompanying Complete Specification.

Details of basic application:-

Number: 83409 A/87

Country: Italy

Date: 22nd July, 1987

Our address for service is: SHELSTON WATERS
55 Clarence Street
SYDNEY, N.S.W. 2000.

DATED this 15th Day of July, 1988
DANIELI & C. OFFICINE MECCANICHE SpA, and
ITI/CLM IMPIANTI TECNICI INDUSTRIALI SpA

by W Phillips

Fellow Institute of Patent Attorneys of Australia
of SHELSTON WATERS

5001063 18/07/88

To: The Commissioner of Patents
WODEN A.C.T. 2606

File: D2

Fee: $145.00

APPLICATION ACCEPTED AND AMENDMENTS ALLOWED 29-5-90

(CONVENTION – Company) FORM 8 – REGULATION 12 (2)

COMMONWEALTH OF AUSTRALIA PATENTS ACT, 1952-1973

DECLARATION IN SUPPORT OF A CONVENTION APPLICATION FOR A PATENT

In support of the Convention Application No. ..... made by (a) DANIELI & C. OFFICINE MECCANICHE SpA, and ITI/CIM IMPIANTI TECNICI INDUSTRIALI SpA

(hereinafter referred to as "Applicant") for a patent for an invention entitled:

(b) "MACHINE TO FORM AND REHABILITATE RAILWAY BALLAST AND RAILWAY ROAD BEDS"

I, (c) FLAVIO MANCINI and GIOVANNI COASSIN

of (d) Via Amba D'Oro 3 -25100 BRESCIA, ITALY and Via Dal Maglio 4, 33170 PORDENONE, ITALY

do solemnly and sincerely declare as follows:

1. I am authorised by Applicant to make this declaration on its behalf.

2. The basic Application(s) as defined by section 141 of the Act was ~~were~~ made in (e) ITALY on the 22nd day of July, 1987

.....on the .....day of .....19...

by (f) DANIELI & C. OFFICINE MECCANICHE SpA, AND ITI/CIM IMPIANTI TECNICI INDUSTRIALI SpA

3. (g) FLAVIO MANCINI

of Via Amba D'Oro 3 -25100 BRESCIA, ITALY

is ~~are~~ the actual Inventor(s) of the invention and the facts upon which Applicant is entitled to make the Application are as follows:

Applicant is the Assignee of the said Inventor(s).

4. The basic Application(s) referred to in paragraph 2 of this Declaration was ~~were~~ the first Application(s) made in a Convention country in respect of the invention, the subject of the Application.

DECLARED at Italy

this 27th day of June, 19 88.

Off. Mec. c. SpA

Giovanni COASSIN

DANIELI & C.

(h) ITI/CIM S.p.A.

Flavio MANCINI

(Signature of Declarant)

BUTTRIO (Udine)

To THE COMMISSIONER OF PATENTS.

(a) Here Insert (in full) Name of Company.

(b) Here Insert Title of Invention.

(c) and (d) Here Insert Full Name and Address of Company Official authorised to make declaration.

(e) Here Insert Basic Country or Countries followed by date or dates of Basic Application(s).

(f) Here Insert Full Name(s) of Applicant(s) in Basic Country.

(g) Here Insert (In full) Name and Address of actual Inventor or Inventors.

(h) Personal Signature of Declarant (c) (no seal, witness or legalisation).

SHELSTON WATERS
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(12) PATENT ABRIDGMENT (11) Document No. AU-B-19194/88
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 600151

(54) Title
MACHINE TO FORM AND REHABILITATE RAILWAY BALLAST AND RAILWAY ROAD BEDS

International Patent Classification(s)
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ITI/CLM IMPIANTI TECNICI INDUSTRIALI SPA; DANIELI & C. OFFICINE MECCANICHE SPA

(72) Inventor(s)
FLAVIO MANCINI

(74) Attorney or Agent
SHELSTON WATERS

(56) Prior Art Documents
AU 529291 42616/78 E01B 27/10

(57) Claim

1. Machine to form and rehabilitate railway ballast and railway road beds, which comprises a framework rested on a front bogie and rear bogie, cabs to drive the machine during its travels, an excavating means cooperating with means to elevate and transfer materials to form an excavation, a riddle cooperating with means to transfer and discharge materials and means to recirculate and distribute materials for re-use, the machine being characterized in that it comprises additional means suitable for the rehabilitation operations and including:
- first and second transfer conveyors for backfill material and metalling respectively,
- a distributor chute cooperating with the first transfer conveyor, and discharge chutes cooperating with the second transfer conveyor,
- an intermediate conveyor cooperating with the distributor chute,
- discharge means to discharge the backfill material onto

.../2

the bottom of said excavation, such means cooperating with a rear conveyor,

- an assembly to compact the bottom of the excavation, such assembly cooperating with the excavation means,
- means to level the backfill material discharged onto the bottom of the excavation,
- means to compact the backfill material discharged onto the bottom of the excavation, and
- means to spread evenly the metalling discharged onto the backfill material.

COMMONWEALTH OF AUSTRALIA 600151

FORM 10

PATENTS ACT 1952

COMPLETE SPECIFICATION

FOR OFFICE USE:

Class Int.Class

Application Number:
Lodged:

Complete Specification Lodged:
Accepted:
Published:

This document contains the amendments made under Section 49 and is correct for printing.

Priority:

Related Art:

Name of Applicant: DANIELI & C. OFFICINE MECCANICHE SpA, and ITI/CLM IMPIANTI TECNICI INDUSTRIALI SpA

Address of Applicant: Via Nazionale, 33042 Buttrio (UD), Italy, and Via Nazionale 69, 33042 Buttrio (UD), Italy, respectively.

Actual Inventor: Flavio Mancini

Address for Service: SHELSTON WATERS, 55 Clarence Street, Sydney

Complete Specification for the Invention entitled:

"MACHINE TO FORM AND REHABILITATE RAILWAY BALLAST AND RAILWAY ROAD BEDS"

The following statement is a full description of this invention, including the best method of performing it known to us:-

"MACHINE TO FORM AND REHABILITATE RAILWAY BALLAST AND RAILWAY ROAD BEDS"

****

This invention concerns a machine to form and rehabilitate railway ballast and railway road beds. To be more exact, the invention concerns a formation machine which is known in itself and can also perform rehabilitation operations on the railway road bed when necessary in ground having special characteristics.

Such rehabilitation operations are carried out with known and already existing devices on the formation machine in conjunction with additional devices suitable for the purpose; such additional devices may be always comprised on the machine or be only included momentarily for rehabilitation work.

Machines for the formation of railway ballast of the type, for instance, disclosed in Italian patent application No.83440 A/84 of the present applicant are known.

Machines are also known which rehabilitate continuously the railway road bed in ground having a particular composition, for instance, of a clayey type. Such rehabilitation consists in excavating a channel in the upper part of the railway road bed and backfilling suitable material, normally a mixture of sand and gravel, in the channel.

The material excavated together with the metalling of the previous ballast is removed.

The ballast is renewed with new metalling after the backfill material has been deposited in the excavation.

The machines of the prior art are intended for only one type of operation and can perform either the formation alone or the rehabilitation alone.

The present applicants have studied, tested and embodied a machine able to carry out both formation and rehabilitation work.

The basic machine is a formation machine of a known type which cooperates functionally with additional means suitable to rehabilitate the railway road bed. Such additional means may be always comprised on the machine and may cooperate momentarily with the means of the formation machine in rehabilitation operations alone.

According to a variant the additional means are comprised only during rehabilitation work.

Such additional means consist of elements for the delivery to the machine of backfill material for the road bed and of metalling received from storage waggons connected to the machine.

Means are included to distribute the materials delivered to the machine and to pass such materials to differentiated usage sites.

The means to distribute and pass the backfill material ccoperate with distribution means already comprised in the known formation machine, such latter distribution means moving during rehabilitation in a direction opposite to that carried out during formation work alone.

A compaction assembly cooperates with an excavation device in the excavation made.

Differentiated assemblies are also included for the even distribution and levelling of the backfill material deposited in the excavation in the road bed and of the metalling

deposited on the road bed.

The invention is therefore embodied according to the contents of Claim 1 and the dependent claims.

The attached figures, which are given as a non-restrictive example, show the following:-

Fig.1 shows diagrammatically a formation machine of a known type;

Fig.2 shows diagrammatically an embodiment of a formation and rehabilitation machine according to the invention;

Fig.3 gives a diagrammatic side view of an embodiment of the means distributing the materials fed to the formation and rehabilitation machine according to the invention;

Fig.4 is a view of the distribution means of Fig.3 from above;

Fig.5 is a front view of the distribution means of Fig.3.

Fig.1 shows diagrammatically a formation machine 10 of a known type for railway ballast. This machine 10 comprises a framework 11 rested in this example on a front bogie 12 and a rear bogie 13.

Two cabs 14-15 to drive the machine during travelling are provided at the ends of the machine. The figure shows a railway line 16 with rails 17 and sleepers 18.

The machine 10 comprises an excavation chain 19 cooperating with a first hopper 20 in transferring the excavated material on a first elevator 21 to a riddle 22, which in this example is a continuous endless conveyor riddle.

Means to discharge material, such as a discharge hopper 23, discharge conveyor 24 and a second elevator 25, are included in cooperation with the riddle 22.

The references 26, 27, 28 and 29 indicate respectively a terminal chute or funnel, a distributor hopper, a rear orientable conveyor and a lateral discharge outlet for metalling which is recycled during the formation operations as

being re-usable.

Means (not shown in Fig.1) to distribute metalling on the ballast cooperate with the rear conveyor 28.

Fig.2 shows an embodiment of the formation machine of Fig.1 with preferred embodiments applied of devices suitable for rehabilitation of the railway road bed.

The backfill material and metalling coming from storage waggons connected to the formation and rehabilitation machine 110 arrive separately at such machine 110 by means of feed conveyors 30. These materials are fed into transfer conveyors 31 and 32 integrally fixed to the machine 110 for the transfer of backfill material and metalling respectively.

A distributor chute 33 cooperating with the first transfer conveyor 31 releases backfill material 37 onto an intermediate conveyor 35, which in turn transfers the material onto the rear conveyor 28.

The rear conveyor 28 comprises means 36, chutes for instance, located at the two sides of the rear conveyor 28 for discharge of material.

In the event of rehabilitation work the rear conveyor 28 is made to move in the opposite direction to that of formation work.

In this way the backfill material 37, as shown in Fig.2, is spread continuously on the bottom of an excavation 38 also shown in Fig.2.

A compaction assembly 39 consisting of at least one roller to level the bottom of the excavation 38 is connected to the excavation chain 19; the roller may be provided with a vibration system of the type, for instance, having out-of-balance bodies or the like.

In rehabilitation operations the excavation chain 19 performs the excavation and transfer of the excavated material and metalling on the first elevator 21 to the second elevator

25, the riddle 22 remaining excluded from work.

The material is passed from the second elevator 25 to the discharge hopper 23 and thence to the discharge conveyor 24.

The formation and rehabilitation machine 110 comprises integrally means 40 to perform even spreading or levelling, such as a plough or the like, which operate on the backfill material 37 deposited on the bottom of the excavation.

Compaction means 41, advantageously of a vibration type, cooperate with the levelling means 40 and work in succession thereto in compacting the levelled backfill material 37.

Discharge chutes 34 and 134 cooperating with the second transfer conveyor 32 release their respective material, in this case metalling 42 as shown in Fig.2, directly onto the compacted backfill material 37.

Means 43 to spread the metalling 42 evenly are fixed integrally to the machine 110 and may consist, for instance, of one or more elements arranged crosswise to the bed of metalling 42 discharged by the discharge chute 34.

Figs.3, 4 and 5 give different diagrammatic views of a possible embodiment of the means which distribute the backfill material 37 and metalling 42; the figures show in particular the arrangement of the distributor chute 33 and discharge chutes 34-134 in relation to the first hopper 20.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. Machine to form and rehabilitate railway ballast and railway road beds, which comprises a framework rested on a front bogie and rear bogie, cabs to drive the machine during its travels, an excavating means cooperating with means to elevate and transfer materials to form an excavation, a riddle cooperating with means to transfer and discharge materials and means to recirculate and distribute materials for re-use, the machine being characterized in that it comprises additional means suitable for the rehabilitation operations and including:
- first and second transfer conveyors for backfill material and metalling respectively,
- a distributor chute cooperating with the first transfer conveyor, and discharge chutes cooperating with the second transfer conveyor,
- an intermediate conveyor cooperating with the distributor chute,
- discharge means to discharge the backfill material onto the bottom of said excavation, such means cooperating with a rear conveyor,
- an assembly to compact the bottom of the excavation, such assembly cooperating with the excavation means,
- means to level the backfill material discharged onto the bottom of the excavation,
- means to compact the backfill material discharged onto the bottom of the excavation, and
- means to spread evenly the metalling discharged onto the backfill material.

2. Machine as claimed in Claim 1, in which the additional means suitable for the rehabilitation operations are comprised in and fixed to the machine.

3. Machine as claimed in Claim 1, in which the additional means suitable for the rehabilitation operations are comprised momentarily in the machine during rehabilitation operations alone.

4. Machine as claimed in any claim hereinbefore, in which the distributor chute and intermediate conveyor for the backfill material cooperate with the rear conveyor of the machine in the discharge of the backfill material, such rear conveyor moving in a direction opposite to that of its movement during formation operations alone.

5. Machine as claimed in any claim hereinbefore, in which the first and second transfer conveyors cooperate with feed conveyors that feed backfill material and metalling taken from storage waggons coupled to the formation and rehabilitation machine.

6. A machine substantially as herein described with reference to Figures 2 to 5 of the accompanying drawings.

DATED this 15th Day of July, 1988

DANIELI & C. OFFICINE MECCANICHE SpA, and

ITI/CLM IMPIANTI TECNICI INDUSTRIALI Spa

Attorney: WILLIAM S. LLOYD

Fellow Institute of Patent Attorneys of Australia

of SHELSTON WATERS

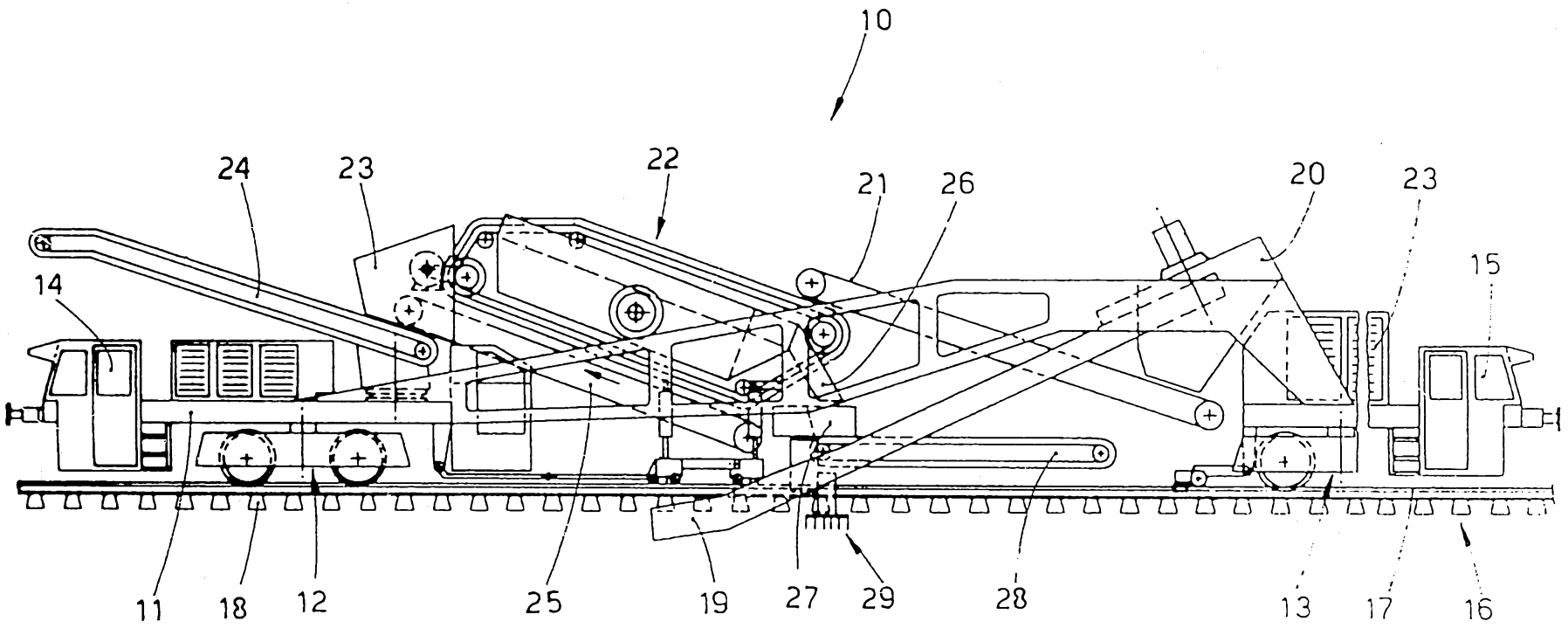

fig. 1

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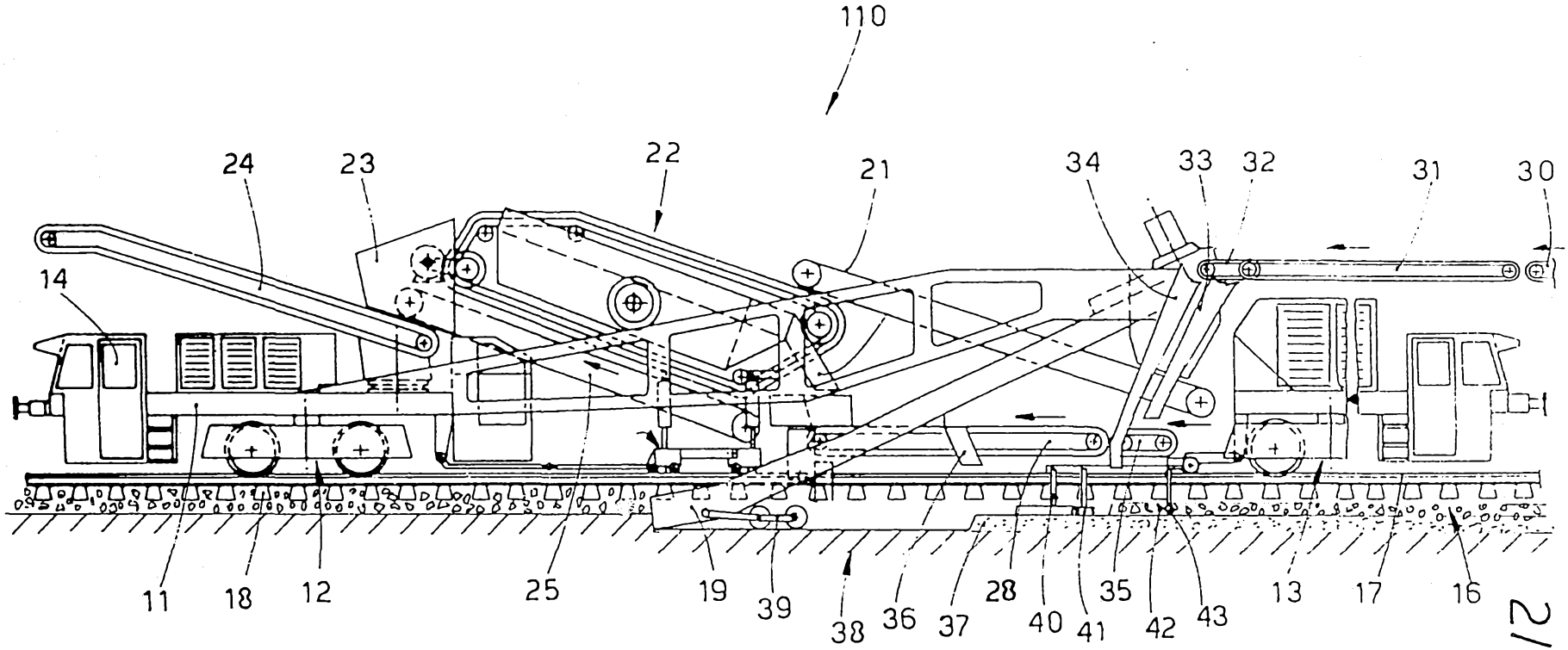
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fig. 2

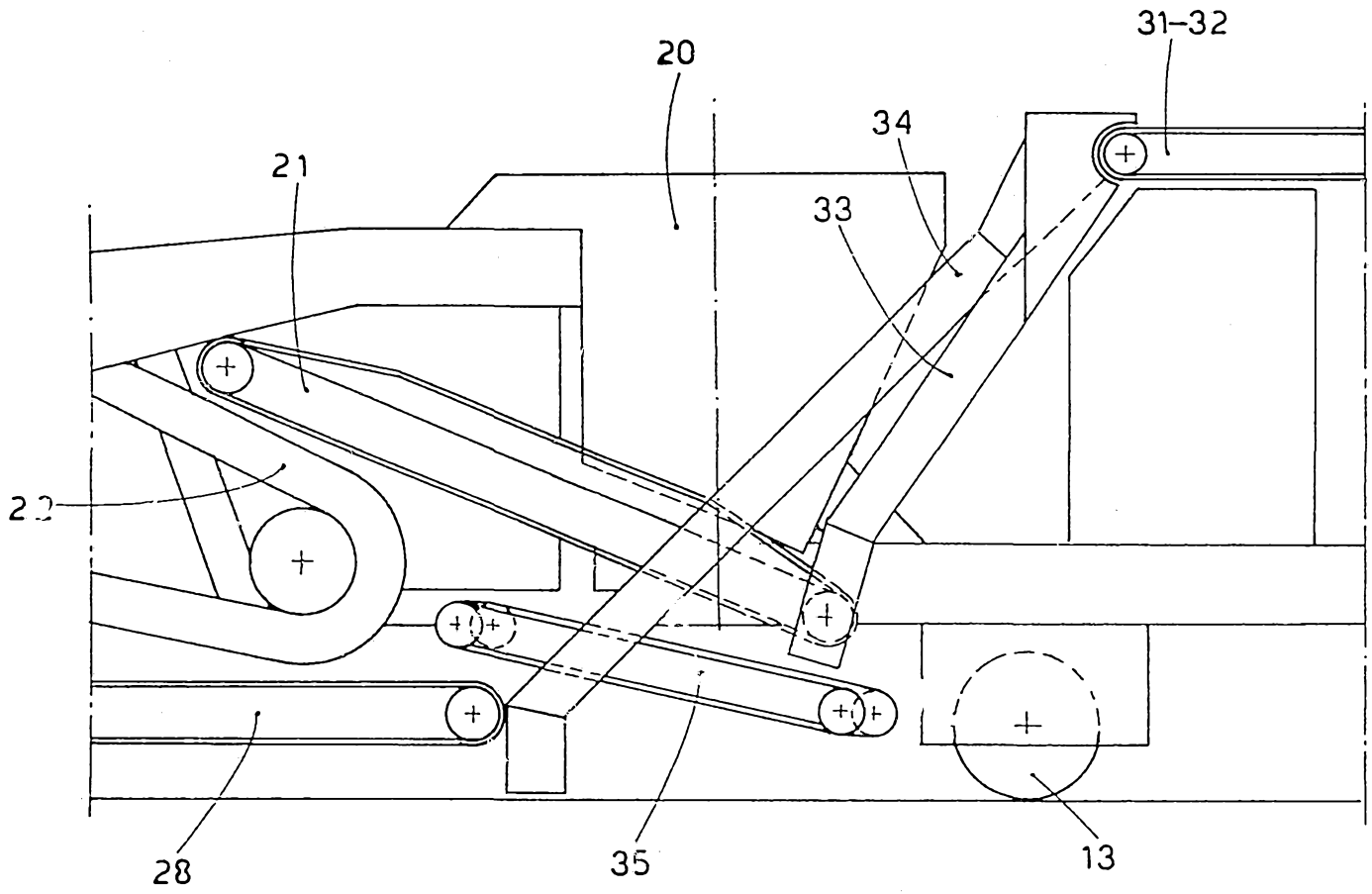

fig. 3

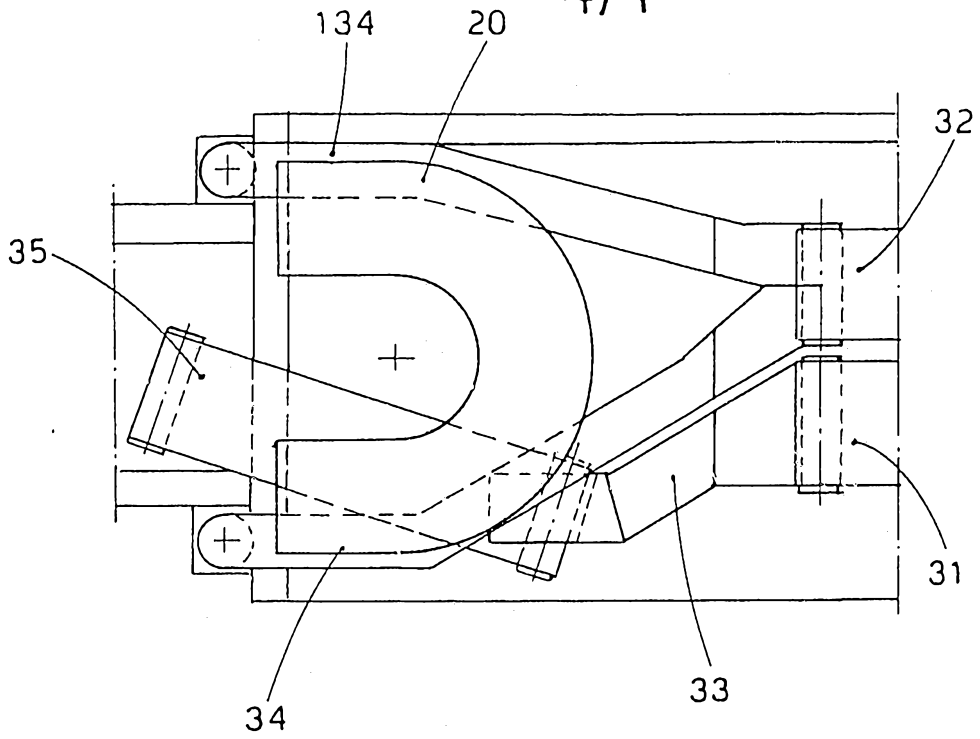

fig. 4

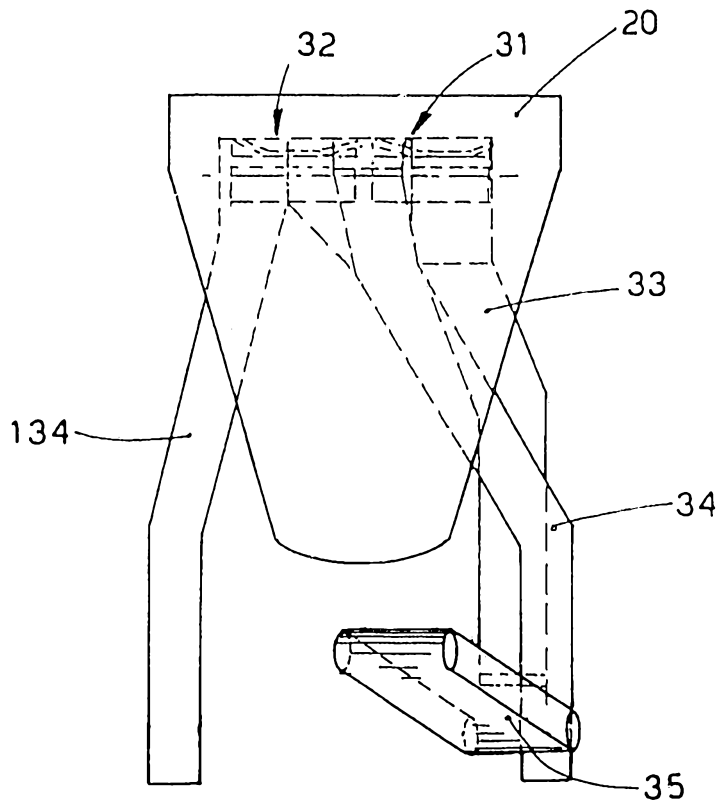

fig. 5