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(54) **Device for transporting goods, and use thereof**

(57) A device is described for a frame-formed transporter (10) for transport of goods in connection to buildings, where the transporter comprises a transport track (29,30) to form a connection for goods transportation through an opening (17) in a wall (20) in the building, and also means (72,76;55,56;82,86) for stabilising the transporter. The framework of the transporter (10) comprises adjustable support bodies (42,106) that form a clamping system against opposite directed side surfaces (23,25) of the wall (20) to hold the framework for the transport track (29,30) a distance (A) above an upwardly facing frame side (35) in the wall opening (17). The support bodies (102) preferably comprise telescopic, extendable leg and arm parts with support feet (106) set up to form said clamping system against the wall surfaces (23) and the stabilising means comprise support bodies (72,76; 82,86;55,56) to form a stabilising clamping system against the floor and ceiling surfaces (121,122). The device can be used for transport of goods out of and in to buildings and/or internally inside buildings through openings in the building construction, to prevent that the goods transport damages part of the building.

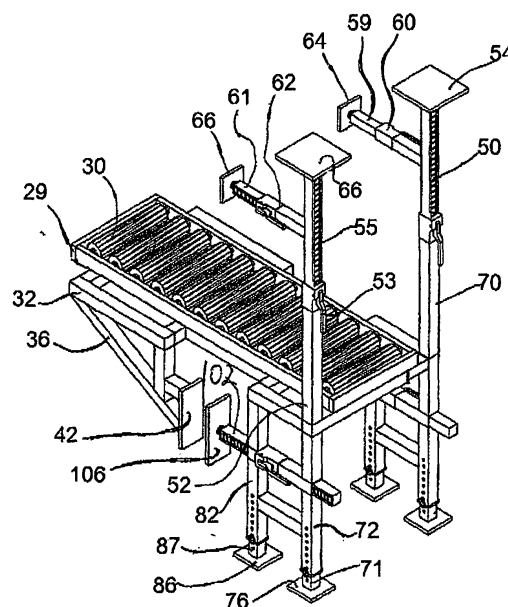


FIG. 4

Description

DEVICE FOR TRANSPORTING GOODS, AND USE THEREOF.

[0001] The present invention relates to a device for transport of goods, such as building materials, as can be seen in the introduction of the subsequent claim 1. The invention also relates to application of the device.

[0002] In more detail, the invention is related to a construction for transfer or transport of building material into and out of buildings, or which shall, for example, be transported internally inside a building complex, i.e. that goods shall be transferred between different parts of the building complex. In particular, one visualises buildings which are under construction or refurbishment. But the construction can also be used in connection with existing and older buildings where building material or other types of objects shall be transferred internally between different sections of the building.

[0003] Another relevant situation is when dwellers shall move into or out of a building and where there is then a need for transport into/out of the building, for example, of heavier furniture and different types of household goods. Household goods can often be of a size so that one cannot carry them up/down stairs, or take them into the normal lifts. The only limiting factor for what can be transported into/out of a building is the size of the opening. The invention has particular relevance for the type of transport described above, for objects that are too long or too heavy to be carried up and down staircases.

[0004] Generally meant by building material is all materials and fittings such as wall sections, doors, packs of wall plates, parquet flooring and floor plates, building frameworks, tiles, bags of cement, and other heavy materials for walls and all other equipment which are necessary for the work associated with erection of buildings. But it can also comprise internal fittings such as furniture and wall-mounted objects in connection with baths and kitchens.

[0005] It is often a challenge to transfer such building material from a goods vehicle such as a truck/articulated trailer and into a building. The challenges increase with the number of floors. During the erection of the building, the goods are brought in through a number of openings in the building which are ready for the fitting of frames for insertion of windows and doors and the like. The goods are hoisted up to the window opening with a crane and are manoeuvred and balanced in through a relevant opening in the wall.

[0006] It is also known to use different permanent crane systems to bring the goods into and out through the frames, as shown in the U.S. patent application US-2002/0084238 and the Canadian patent CA-678,782. These solutions are based on the crane comprising a boom which can be extended horizontally so that the goods get safely in through the openings in the wall. How-

ever, these can not be used to bring in the goods with a crane, other than (or limited to) what one has enough space for in the bucket/basket suspending at the end of the wire.

[0007] At all levels of the building, i.e. also in connection to floors higher up, it is common to use manual handling, i.e. the material is transported by a crane halfway into the opening and lowered down onto the frame. Therefore, for example, the carpenters must lift and carry the material and equipment in through and out of the opening by hand. This manual method is time consuming, as bundles of material must often be split up and the content, such as planks/parquet flooring plates and the like must be pulled in in smaller quantities and sometimes one plank at a time. Another important aspect is that the carpenters who shall pull the material in through the window will often get back problems, and also that damages from pinching can easily arise from working this way.

[0008] Another big disadvantage with the known solutions is that damages on window frames often occur when materials which can weigh up to 1000 kg shall be transported in.

[0009] Damage to frame parts of the building arise when one pulls the materials directly in through the windows. The crane driver often places the materials directly onto the frame and they are then pulled in. This method can even lead to damages to the whole of the outer wall as one risks pulling it lopsided as a consequence of the moment that arises during the movement of heavy packs of material.

[0010] A disadvantage with this is also that the transport vehicle must be kept longer down on the street to carry out the unloading. This increases costs for the builder which are dependent on time taken for the delivery. In addition, in narrow streets this transport operation can block traffic for an unnecessarily long time, and pedestrians must walk around the crane vehicle to get past and thus be forced out into the road.

[0011] In this connection, reference is made to EP-1700975, GB-2,285,472, US-2003 079940 and GB-2,229,757.

[0012] US-2003 079940 describes a frame construction for transport of building materials into a building which is under construction. However, only the floor dividers are completed in this building while the walls with the window and door openings are still not fitted. In such a case it is easy to place the transport frame directly on the floor surface and support it against the ceiling so that it is stationary when the goods are transported in and out. Bracing it against the floor is not necessary as the whole of the frame lies flat down against the floor.

[0013] However, this construction can not be used in connection with buildings where the walls with window and door openings are already erected, and where the window frames may also be in place. The US patent requires that the frame shall lie firmly down on the floor and the construction can consequently not be used for the bringing in of material through window openings.

[0014] EP-1700975 describes a scaffolding to hold and support a platform on the outside of the wall to be adjusted to work which shall be carried out on the outside of the building, such as cleaning windows, with the use of adjustable support feet. The scaffolding is not constructed to lead a transport track construction through an opening (window) in the wall. Parts of the scaffolding on the inside and the outside of the opening pass through the opening.

[0015] The EP patent shows in figure 3 and the text in paragraph 0088 that a support foot is placed down against the upwardly facing part of the frame. A vertical strut with a rubber cushion 30a extends downwards from the frame part 36 that connects the inner and the outer parts of the scaffolding. The cushion 30a rests against the upwardly facing frame part 56. This is a solution from which one wants to go away from with the present invention.

[0016] It is an aim of the invention to provide a new construction for the transport of building material into and out of buildings that is safer, more efficient, and not least, time saving compared to today's solutions.

[0017] It is a further particular aim of the invention to establish a transport track through an opening in a building for a window, door or the like, and which shall not touch the surface parts of the window frame and subject this to damage when heavier building parts are carried through the opening.

[0018] It is a further aim of the invention that the construction is so robust that building parts can be led through the opening in a normal "rough" way without the operator having to be worried that the window frame parts will be damaged by the transport.

[0019] Furthermore, it is an important feature that the supports are placed in such a way that they make contact with the load bearing constructions of the building in the wall at all times so that the building is not damaged. The same goes for the supports that shall make contact with floors and ceilings.

[0020] Thus, in wooden house constructions one must be prepared to check which way the load-carrying joists go. If the supports can not be placed directly onto load carrying constructions, one can put down a suitable beam of metal or wood across the beams to distribute the forces from the load.

[0021] Consequently, it is an aim of the invention that the transport device according to the invention shall not make contact with parts of the window frame.

[0022] The device according to the invention is **characterised in that** the framework of the transporter comprises adjustable support bodies that can form a clamping system against opposite directed side surfaces of the wall to hold the framework for the transport track a distance A above the upward facing window frame part in the wall opening.

[0023] The preferred embodiments of the invention are given in the dependent claims 2-12.

[0024] According to the invention the device is used

for transport of goods into and out of buildings and/or internally in buildings through openings in the building construction to prevent that the transport of the goods causes damage to any parts of the building.

[0025] It is the vertically directed support feet that are braced against the floor and the ceiling, and also the horizontally directed feet that grip the wall like a claw which ensure that the transport frame that leads through the wall opening is held at a distance A above the window frame (corresponding to the frame part 56).

[0026] Furthermore, it is an important aspect of the invention that the supports are placed so that they make contact with the load carrying construction of the wall of the building at all times such that the building is not damaged. In wooden constructions there are always load carrying uprights on each side of windows and doors.

[0027] The pairs of horizontal support feet that are used according to the invention will always lie against such load carrying uprights, and thus the whole of the opening is kept free for the passage of the transport frame with the track rollers. It is absolutely necessary as building material weighing several hundred kilo is transported on the transporter through the opening.

[0028] The invention shall be described in more detail in the following with reference to the enclosed figures, in which:

Figure 1 shows schematically a vehicle that hoists a load of materials into the second floor of a building, through a window opening where the inventive construction is fitted.

Figure 2 shows schematically a more detailed and enlarged perspective of the construction fitted to the window opening, seen from above.

Figure 3 shows a vertical section of the inventive construction fastened in a secure way to the building construction in connection to a window opening. The figure also shows an enlarged section of an essential detail.

Figure 4 shows a perspective drawing (seen from behind) of all the central parts of the construction according to the invention.

Figure 5 shows how breadth of the construction according to the invention can be adjusted to fit different openings in the building.

[0029] Initially, reference is made to figure 1, that shows a building 110, for example, which is being erected. A truck 100 with a crane 102 stands on the ground 104. The crane 102 lifts a load 106. The inventive construction 10 is fitted in connection with the opening 17 of a window in the second floor 18 of the building 110. The window openings for the ground floor 14 and first floor 16 are indicated by 13 and 15, respectively. The building

wall 20 and two of the storey dividers (the floors) 19 and 20 between the ground and first floor and between the first and second floor, respectively, are shown. Placed on the floor 21 in the second floor 18 is a work and transport table 108 that can be moved on wheels and is used to bring the materials where they are intended on the second floor of the building. The crane places the materials 106 onto the conveyor belt 30 of the construction 10 and the materials 106 are pulled along across the work table to be further handled and for release of the space on the conveyor belt 30.

[0030] The enlarged perspective in figure 2 shows clearly that the construction is placed through the opening 17 according to the details that are explained in connection with figures 3 and 4. The construction is stabilised in position with the help of support struts braced between the floor and the ceiling in the space inside the wall, and with the help of horizontally opposite directed support feet that run, internally and externally, respectively, and braces it to the wall 20.

[0031] The device according to the invention shall be explained in more detail in connection with the vertical section in figure 3 and the perspective drawing in figure 4.

[0032] The transport device according to the invention is a construction composed of a trussed frame that comprises support bodies which stabilise the construction against the surface 121 of the floor 21, the ceiling surface 121 of the ceiling 22 and the wall parts 20, and also comprises bodies that ensure stability by making supporting contact against the opposite directed outer and inner surfaces 25, 23 of the wall 20.

[0033] The construction 10 comprises an upper frame part 32 on which a frame 29 for the track rollers rests which, in a known way, is composed of a number of extended and rotating rollers 30 that are set up in parallel, mutually spaced apart. A load (106 in figure 1) which shall be brought forward is simply pushed along the roller track 30 and in through the opening 17.

[0034] The upper frame part 29 constitutes the top part of the trussed frame that comprises the rear and the leading pair of vertical floor support feet 74 and 76. The rear floor feet 74, 76 are broad plates that lie against the floor, and are fitted at the end of respective formed telescopic floor struts 69 and 71, respectively, that can be pulled telescopically out of and pushed into the rear main legs 70 and 72, respectively.

[0035] The opposite end of the rear main legs 70, 72 comprises corresponding telescopic, extendable ceiling support struts 50 and 52, respectively, the end of which comprises ceiling support feet 54 and 56, respectively, set up to lie against the ceiling/ceiling surface 122 in the storey divider/floor 22. The telescopic, extendable parts are used to secure and stabilise the framework between the ceiling and the wall.

[0036] In addition to the rear leg parts 70, 72, the frame also comprises front leg parts 80 (not shown) and 82 with corresponding, extendable telescope legs 85 (not shown) and 87 which, via two plate-formed front support

feet 84 (not shown) and 86, rest against the surface 121 of the floor 21. Thus, the frame rests on the floor 21 with its four legs 70, 72, 80 and 82.

[0037] Two mutually horizontally extending wall support arms 60 and 62, respectively, are arranged in the upper part of the vertical leg parts 70, 72 with corresponding telescopic extendable arms 59, 61, the outer ends of which comprise the plate-formed support feet 64, 66 set up to lie and support the construction against the inner wall 23 on each side of the window opening 17.

[0038] The main point with the construction is that the underside 33 of the frame part 32 shall not touch the lower, upwardly facing side of the frame 35 of the window opening. The distance A from the frame side 35 to the underside 33 of the frame 32 is ensured first of all in that the frame comprises a further two pairs of support arms which are arranged to form a bracing system against the inner wall 23 and the outer wall 25, respectively, of the wall of the building 20.

[0039] For this purpose the frame part 10 that lies to the right on the outside of the wall comprises vertical and tilted support struts 36 and 37, respectively, and which together carry a permanent, fixed, vertically oriented support foot 42 set up to be braced against the outer wall 25. There are two such sets of support feet, one on either side of the frame.

[0040] Correspondingly, on the room side in connection to the vertical leg parts 72 and 82, respectively, there are support struts arranged for a telescopic moving horizontal strut 102, the end of which comprises a vertically erected support foot 106 set up to be braced against the inner wall under, and on the side of, the opening 17 in the wall.

[0041] The horizontal, external support foot 42 and the adjustable horizontal internal support foot 106 that is fixed to the frame 10 are set up to lie level with each other on either side of the wall. When the two internal horizontal support feet, one on either side of the wall, are braced in toward the wall, in addition to all the other support feet that are mentioned above, a secure and steady stabilisation of the whole frame is formed in relation to the window frame opening.

[0042] The two support feet 106 and 42, respectively, thereby form two claws that grip the wall, one on each side. Thus, one ensures that the underside 33 of the frame 10 is held steady a safe distance up from the upwardly facing frame surface 35 (figure 3) so that one does not risk causing any damage to this.

[0043] All parts of the frame 10 according to the invention can comprise square tubes and with telescopic parts set up to glide into each other to brace the support feet against the floor, ceiling and wall surfaces, respectively.

[0044] All the telescopic, extendable supports that are used in connection with the invention are braced against floor, ceiling and wall surfaces in, in an itself known way.

[0045] As explained in connection with the support leg 52 in figure 3, this takes place in that one at first loosens the clamping handle 53 and thereafter the support 55

with the support foot 55 being pulled up/out until it lies against the ceiling 121. Then it is tightened with the help of the clamping handle 53 that grips into the grooves in the support 52 and leads the strut 55 upwards, and that further presses a strong spring together and the support 52 is thereby forced/tightened a few extra millimetres so that it is under tension.

[0046] Correspondingly, all the support struts in the construction according to the invention that can be braced are braced.

[0047] The clamping construction that is shown is only one of many ways to operate i.e., release, extend and collapse and lock the telescopic tubes.

[0048] Moreover, the framework is constructed so that it can be divided in two, so that it can be adjusted both sidewise and lengthwise, so that the device can be adjusted to buildings with different breadths and heights of the opening for windows and the like, as shown in figure 5.

[0049] As can be seen in figure 5, the construction is set up to be split vertically into two parts: A divided frame 10a,10;120A,120B which the roller-transport frame 29 can rest on. This simplifies the transport of the device when the constructions shall, for example, be moved between floors and up and down stairs.

[0050] Where the two part sections 10a and 10b, respectively; 120A and 120B, respectively, meet, different dimensions of the square tubes are used and thereby the breadth of the construction can be adjusted in that the tubes are pushed in, one into the other. More specifically, the construction is such that the division is carried out in the tube parts that form the frame for the conveyor belt, in the following way (see figure 5).

[0051] The two tube parts 10 and 10A" on the left (in the figure) of the section 10a are set up to be pushed into and out of the opposite tube parts 10b' and 10b", respectively, on the right section 10b and can, if possible, be locked with each other. This is illustrated by the arrows P in figure 5.

[0052] At the same time, the two tube parts 120A' and 120B", respectively, in the section 120A are set up to be pushed into and out of the opposite tube parts 120B' and 120B", respectively, in the section 120B and can possibly be locked to each other.

[0053] When the desired breadth has been reached, the construction is locked at this breadth in that the roller board is screwed to the frame. Thereafter, the construction according to the invention is braced against the floor, ceiling and walls of the building.

[0054] A common roller-transport frame 29 with rollers 30 can be used for most such breadth of the frame construction 10.

[0055] The framework can be manufactured in a suitable quality from steel or aluminium, or other suitable material.

Claims

1. Device for a frame-formed transporter (10) for transport of goods in connection with buildings, where the transporter comprises a transport track (29,30) to form a connection for load transportation through an opening (17) in a wall (20) in the building, and also means (72,76;55,56,82,86) for stabilising the transporter, **characterised in that** the framework of the transporter (10) comprises adjustable support bodies (42,106) that form a clamping system against opposite directed side surfaces (23,25) of the wall (20) to hold the framework for the transport track (29,30) a distance (A) above an upwardly facing side of the frame (35) in the wall opening (17).
2. Device according to claim 1, **characterised in that** the support bodies (102) comprise telescopic extendable leg and arm parts with support feet (106) set up to form said clamping system against the wall surfaces (23) and the stabilising means comprise support bodies (72,76;82,86;55,56) to form a stabilising clamping system against the floor and ceiling surfaces (121,122).
3. Device according to claim 1, **characterised in that** two support feet (106 and 42, respectively) together are level so that they function by gripping and being forced against the wall (20) with a claw effect against the opposite directed wall sides (25,23) thus to ensure that the underside (33) of the frame (10) is held permanently in said secure distance (A) from the upwardly facing window frame surface (35) (figure 3) so that this is not damaged.
4. Device according to one of the preceding claims, **characterised in that** the frame part (10) that lies on the outside of the wall defines vertical and slanting support struts (36 and 37, respectively) and which together carries a fitted, vertically erected, support foot (42) set up to be braced against the outer wall (25).
5. Device according to claim 1, **characterised in that** the transport track of the transporter comprises a frame part (32) on which rests a track roller frame (29) whereupon goods can be pushed along and in through the opening (17), preferably comprising a number of extended and rotary rollers (30) that are set up in parallel mutually spaced apart, whereby a load (106 in figure 1) can be pushed along the roller track (30) and in through the opening (17).
6. Device according to one of the preceding claims, **characterised in that** in relation to the wall of the building (20) the transport frame (10) comprises the outer (36) and inner (102) arm support parts including associated support feet (42,106) which are mu-

tually level so that they function to grip and be forced against the wall with a claw effect.

7. Device according to one of the preceding claims, **characterised in that** the one (36) of the arm support parts is stationary, while the other (102) is adjustable. 5

8. Device according to claim 1, **characterised in that** the outer arm support parts (36) are stationary while the inner arm support part (102) is adjustable. 10

9. Device according to one of the preceding claims, **characterised in that** the frame on the one side of the wall comprises two pairs (four pieces) of leg supports (70,72,80,82) arranged in a square pattern as the one leg support pair (70,72) with associated support feet (54,56) are set up to be extended to lie against a ceiling surface (122). 15
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10. Device according to one of the preceding claims, **characterised in that** each leg (70,72) in the leg support pair (70,72) comprises a horizontally directed, extendable arm (60,62,69,61) with associated support feet (64,66) set up to lie against a vertical wall part (20,23) when said leg parts in the leg support pair (70,72) are braced between the floor (21) and the roof (22). 25

11. Device according to one of the preceding claims, **characterised in that** in the cases where the support feet can not be placed to lie against the upright construction of the building directly, a suitable beam of steel or wood (a box) across the beams to distribute the forces from the load is arranged. 30
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12. Device according to one of the preceding claims, **characterised in that** for adaption to different breadths and heights of openings, the construction is in two parts vertically for horizontal displacement, **in that** the frame construction (10a'10b';10a",10b"; 120A'120B':120A",120A) is split (vertically) into two parts of mutually adjusted sliding telescopic parts. 40

13. Application of the construction for transport of goods in and out of buildings and/or internally inside buildings through openings in the building construction, to prevent that the goods transport damages parts of the building. 45
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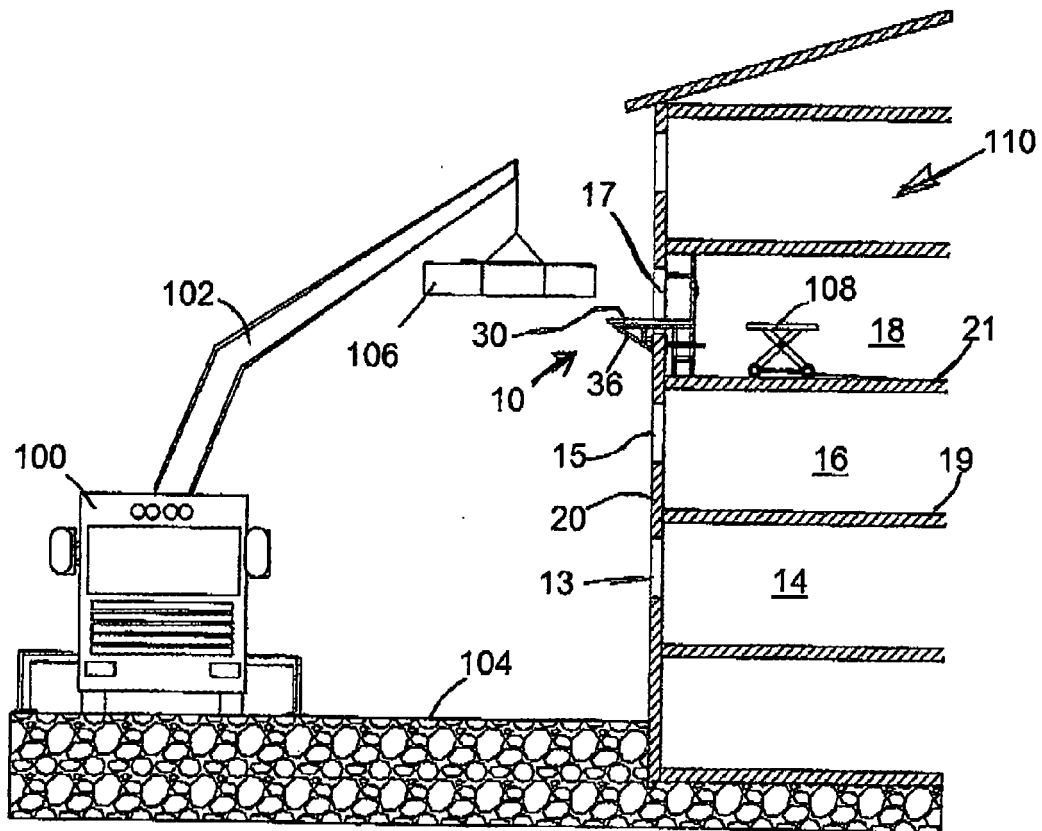


FIG. 1

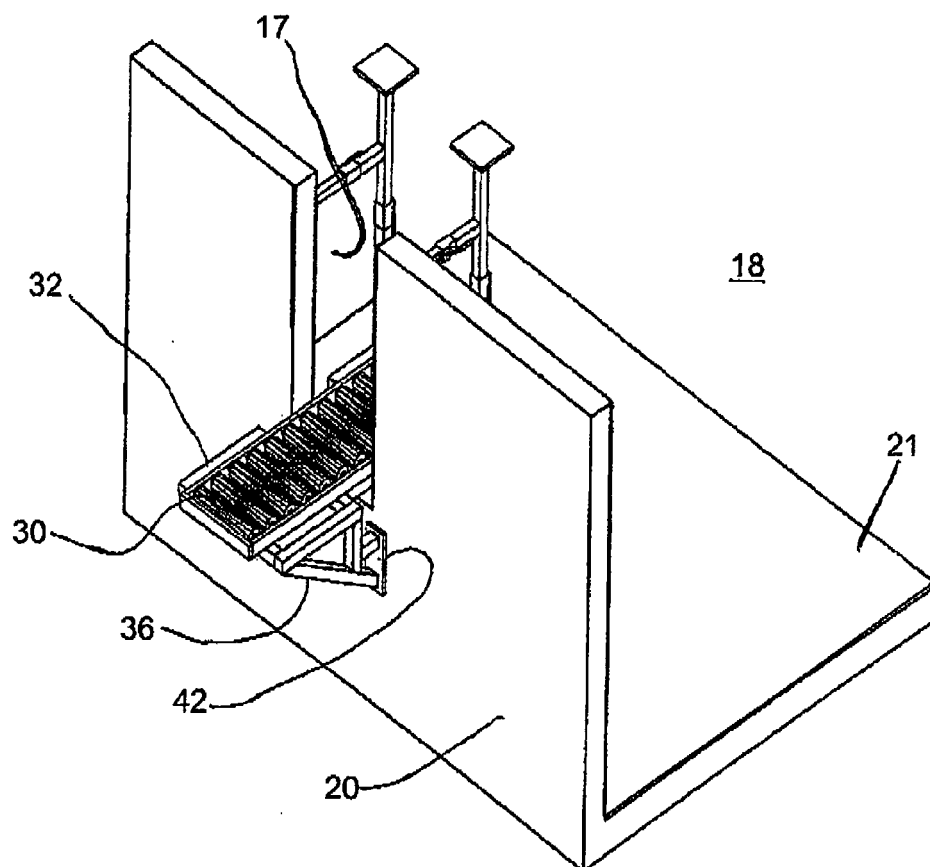


FIG. 2

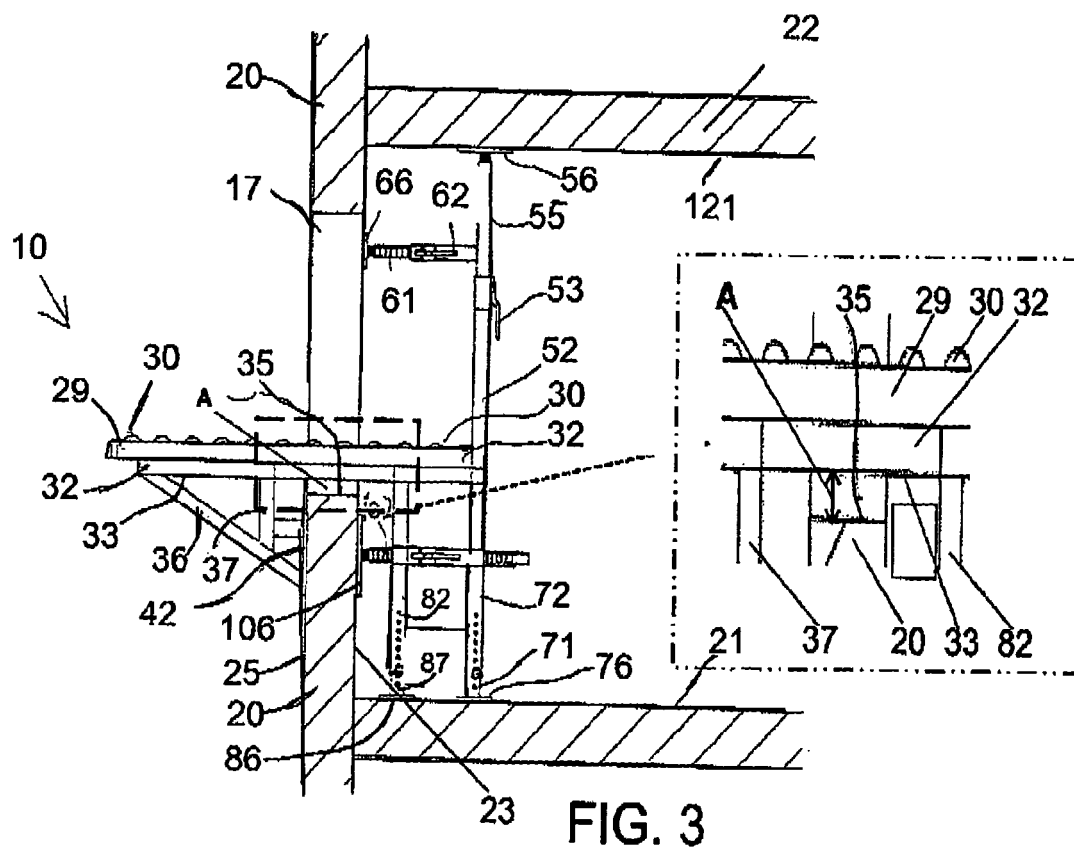


FIG. 3

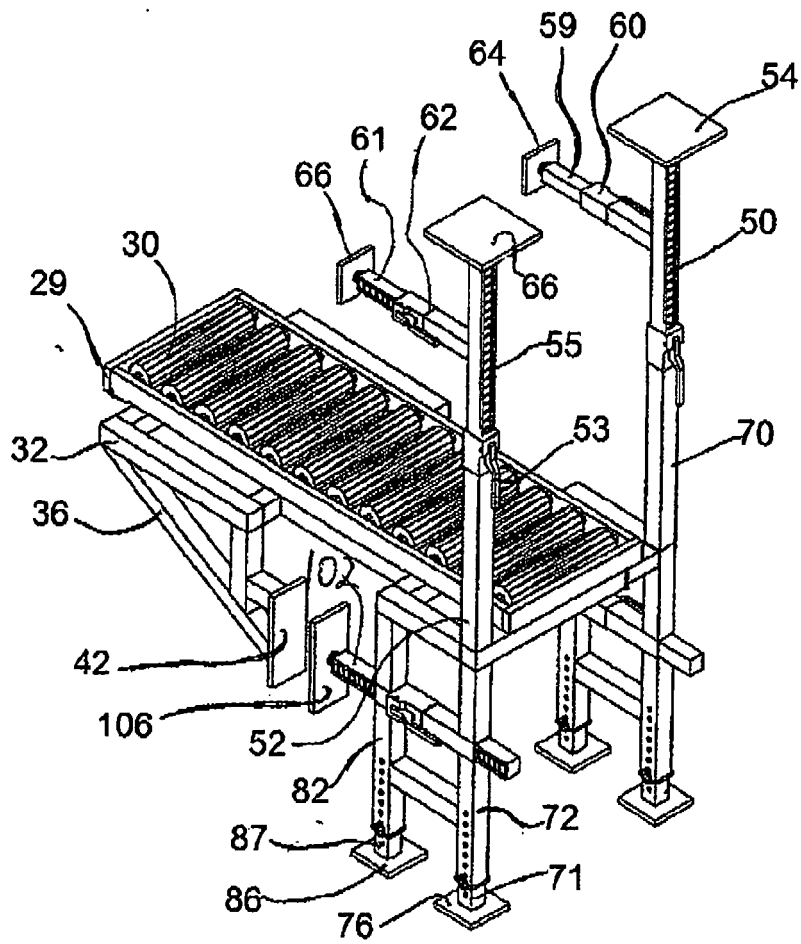


FIG. 4

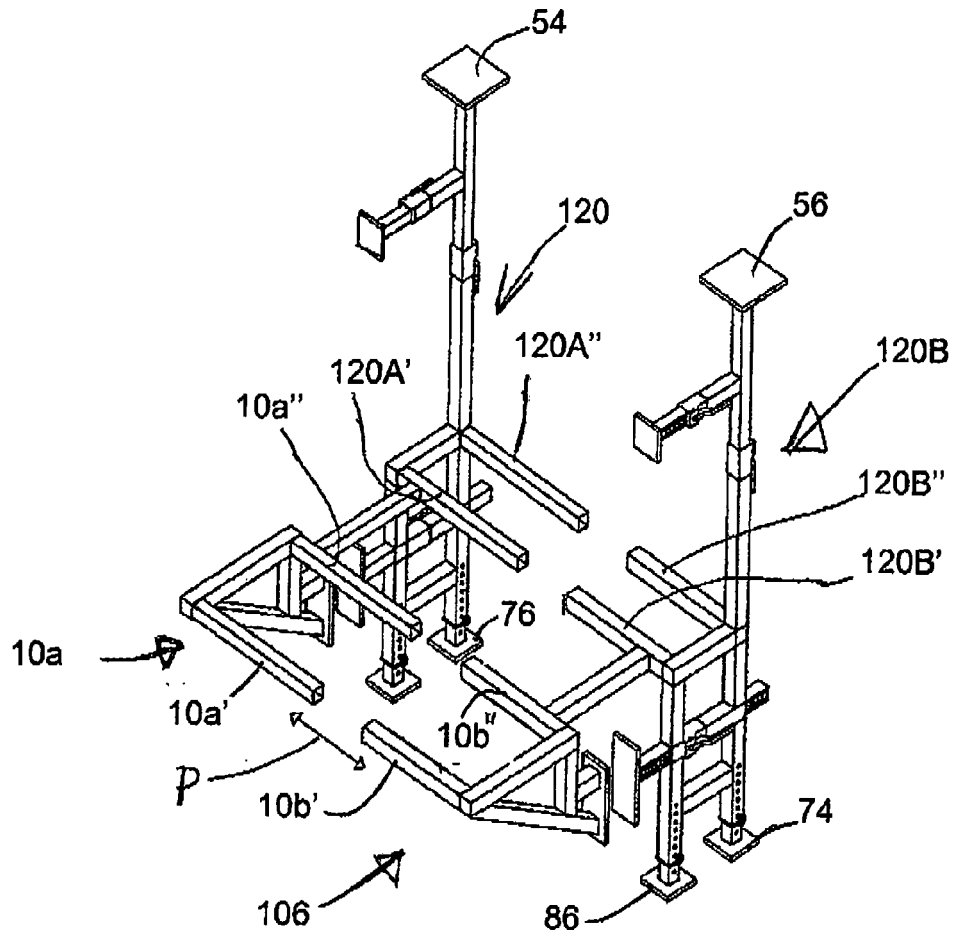


FIG. 5



EUROPEAN SEARCH REPORT

Application Number
EP 10 00 3693

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DATABASE WPI Week 199126 Thomson Scientific, London, GB; AN 1991-191544 XP002599313 -& SU 1 585 478 A1 (BANNOV YU F) 15 August 1990 (1990-08-15) * abstract * * figures * -----	1	INV. B66C23/22 E04G21/16 E04G3/18
A	CH 304 484 A (JOSEPH WORMSER SOEHNE [CH]) 15 January 1955 (1955-01-15) * the whole document * -----	1	
X	US 2002/084238 A1 (ZINGERMAN DAVID [US]) 4 July 2002 (2002-07-04) * the whole document * -----	1-4,6-9, 11-13 5	
A			
			TECHNICAL FIELDS SEARCHED (IPC) B66C E04G
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		6 September 2010	Sheppard, Bruce
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

 2
 EPO FORM 1503 (03.82 (P04C01))

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 10 00 3693

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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06-09-2010

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
SU 1585478	A1	15-08-1990	NONE	
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REFERENCES CITED IN THE DESCRIPTION

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