

[54] GUIDE MEANS FOR TRAVELING GRATE CONVEYOR

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[51] Int. Cl. B65g 15/62

[58] Field of Search 198/202, 196, 201

[56] References Cited

UNITED STATES PATENTS

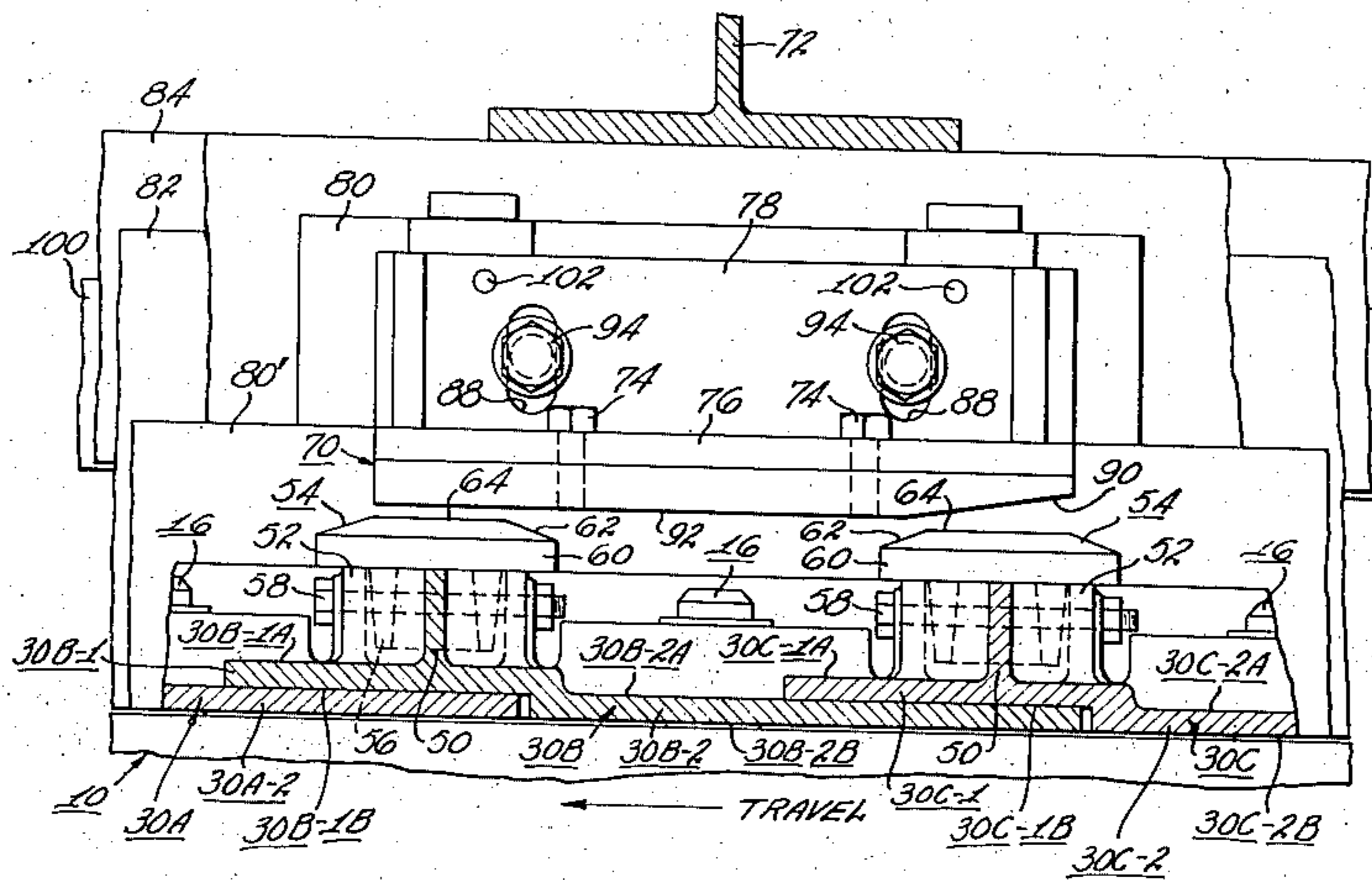
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 Assistant Examiner—Richard K. Thomson
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[57] ABSTRACT

There is provided in accordance with an embodiment of the invention a guide means for a traveling grate conveyor strand or the like including detachable thrust buttons carried by the side plates of the grate conveyor (one thrust button per side plate). The thrust buttons cooperate with stationary thrust plates or thrust shoes positioned along the path of travel of both the upper and lower runs of the grate conveyor strand. Normally, there is a predetermined clearance between the thrust surface of the thrust buttons and the cooperating facing thrust surface of the stationary thrust plate or shoe. However, if a condition of drift or misalignment of the conveyor strand prevails, the thrust buttons will engage the thrust shoes to limit the drift or misalignment of the moving conveyor strand, with the wear upon the cooperating thrust buttons and thrust shoes providing an indication of the drift or misalignment of the traveling grate conveyor strand.

13 Claims, 7 Drawing Figures



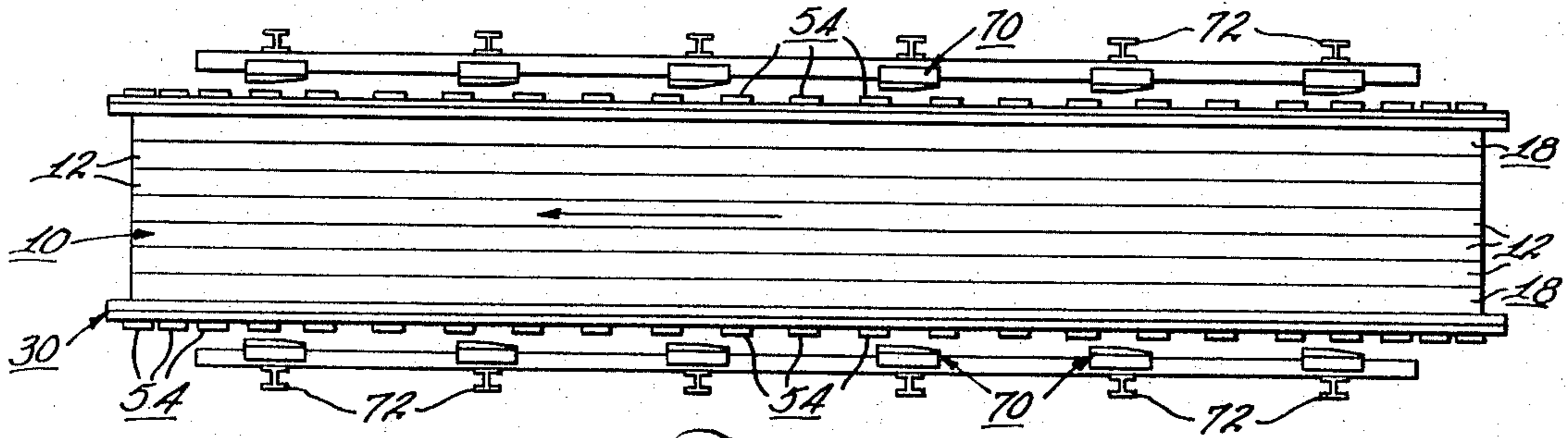


Fig. 1

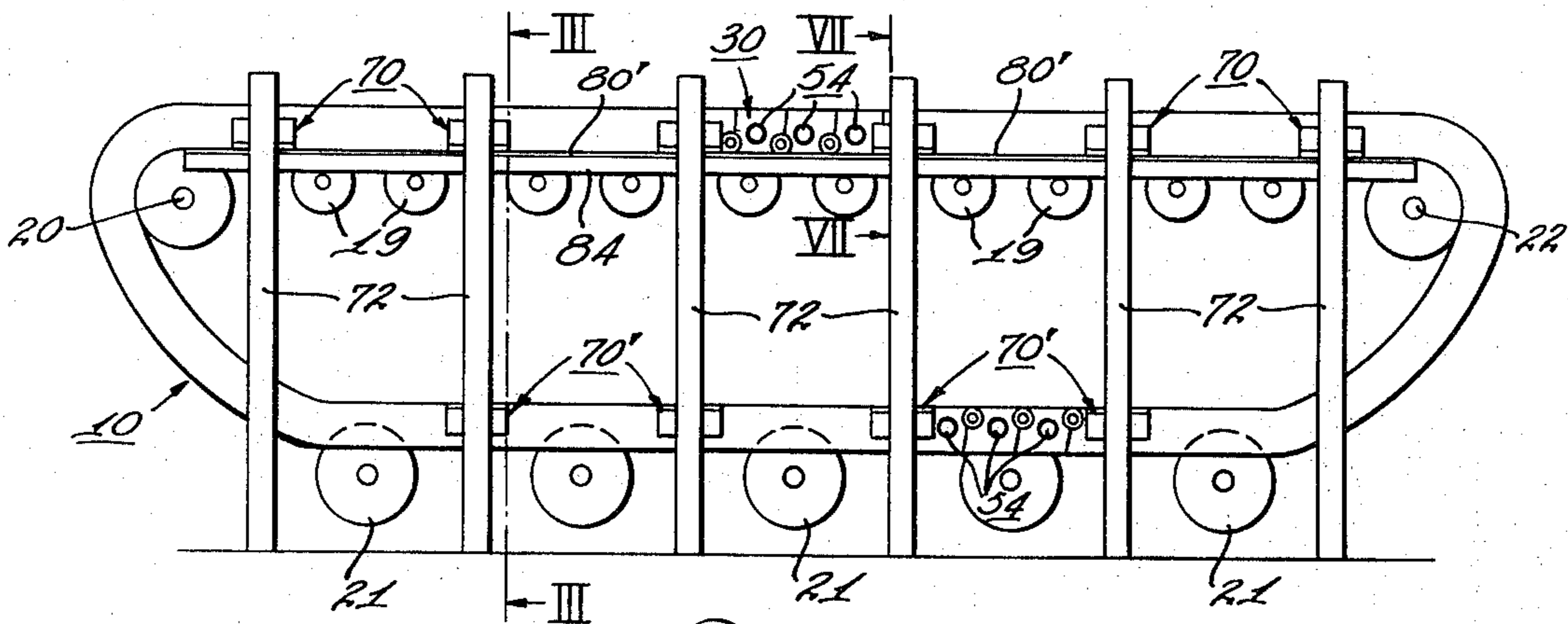


Fig. 2

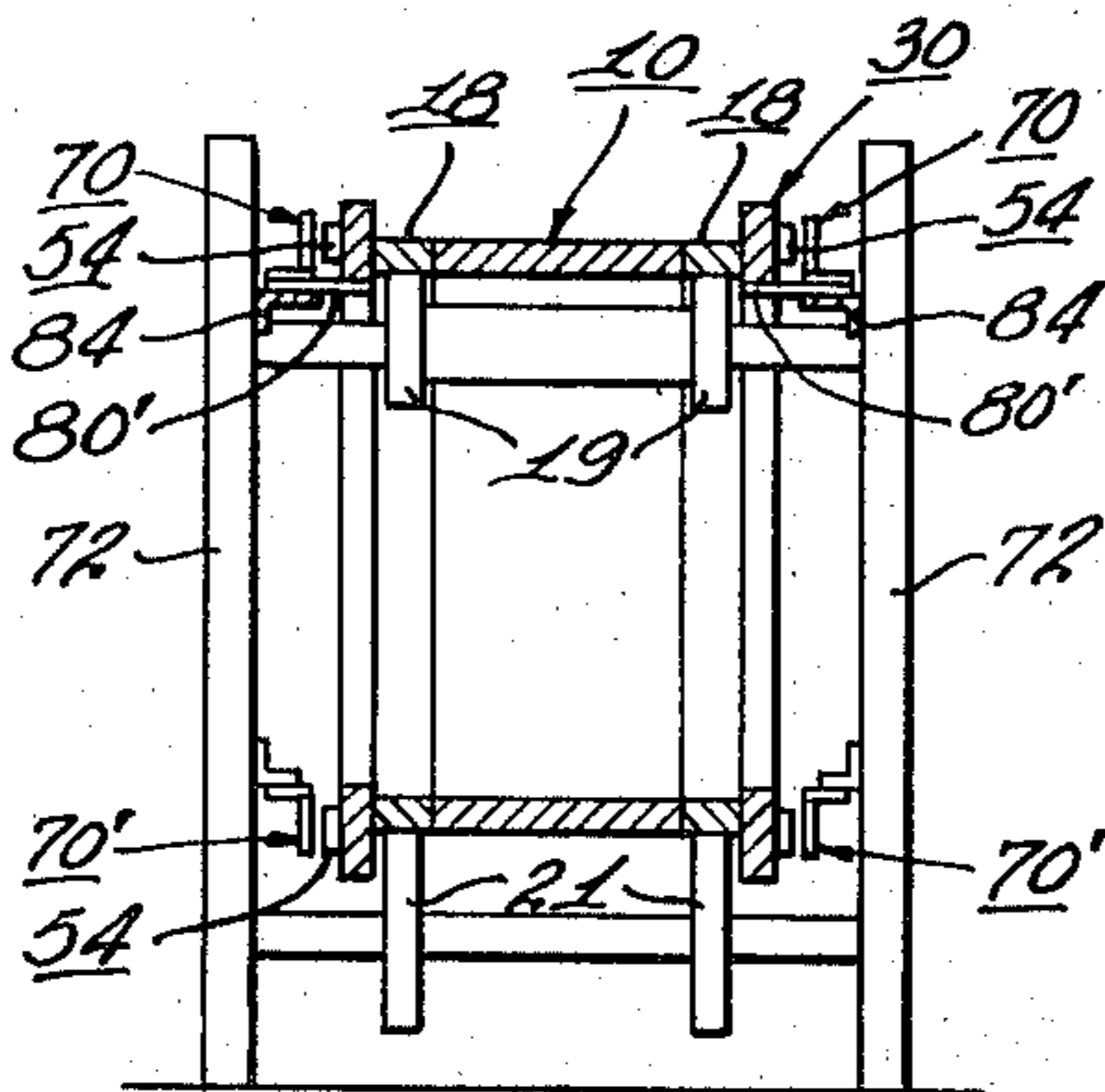


Fig. 3

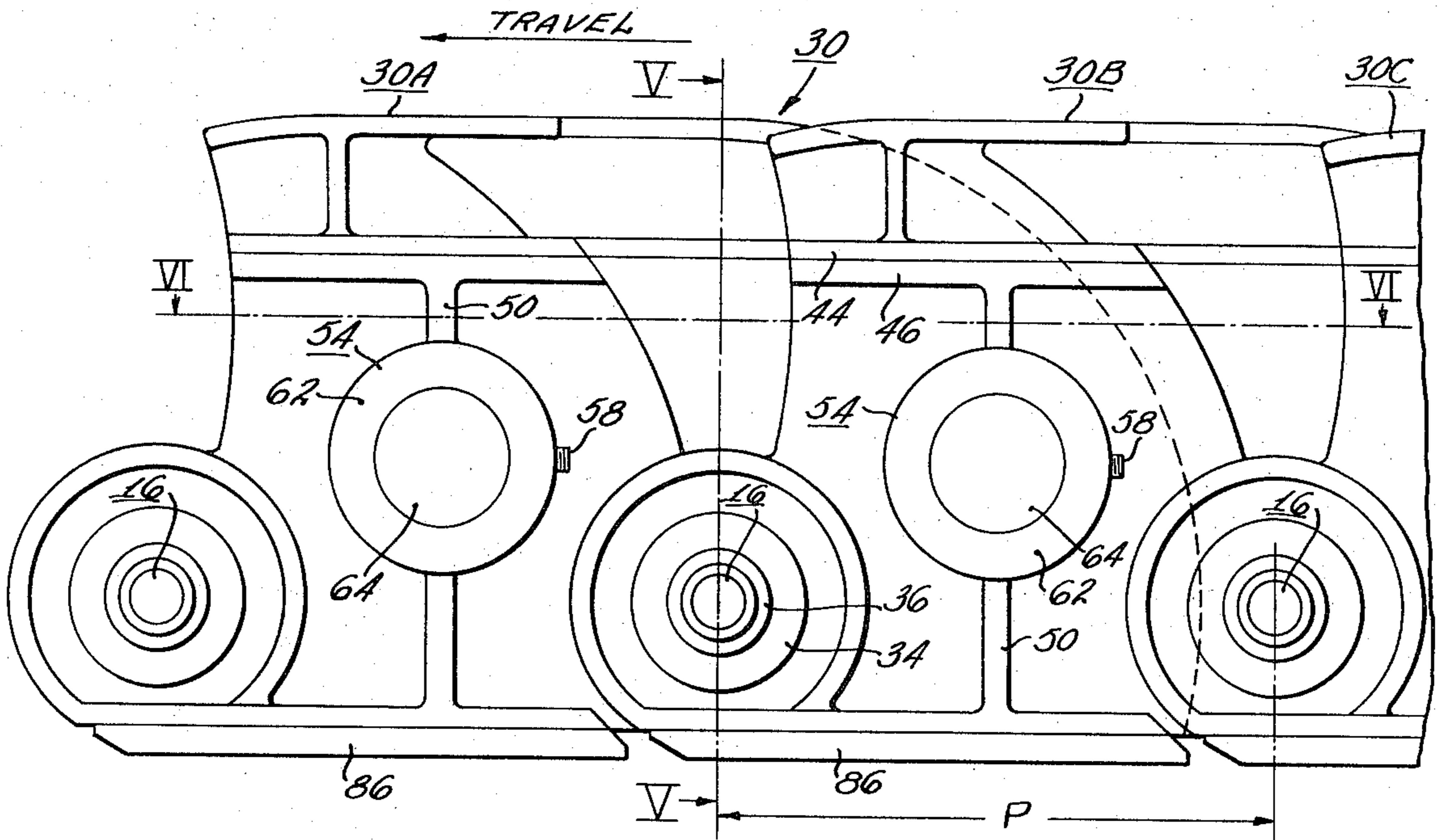


Fig. 4

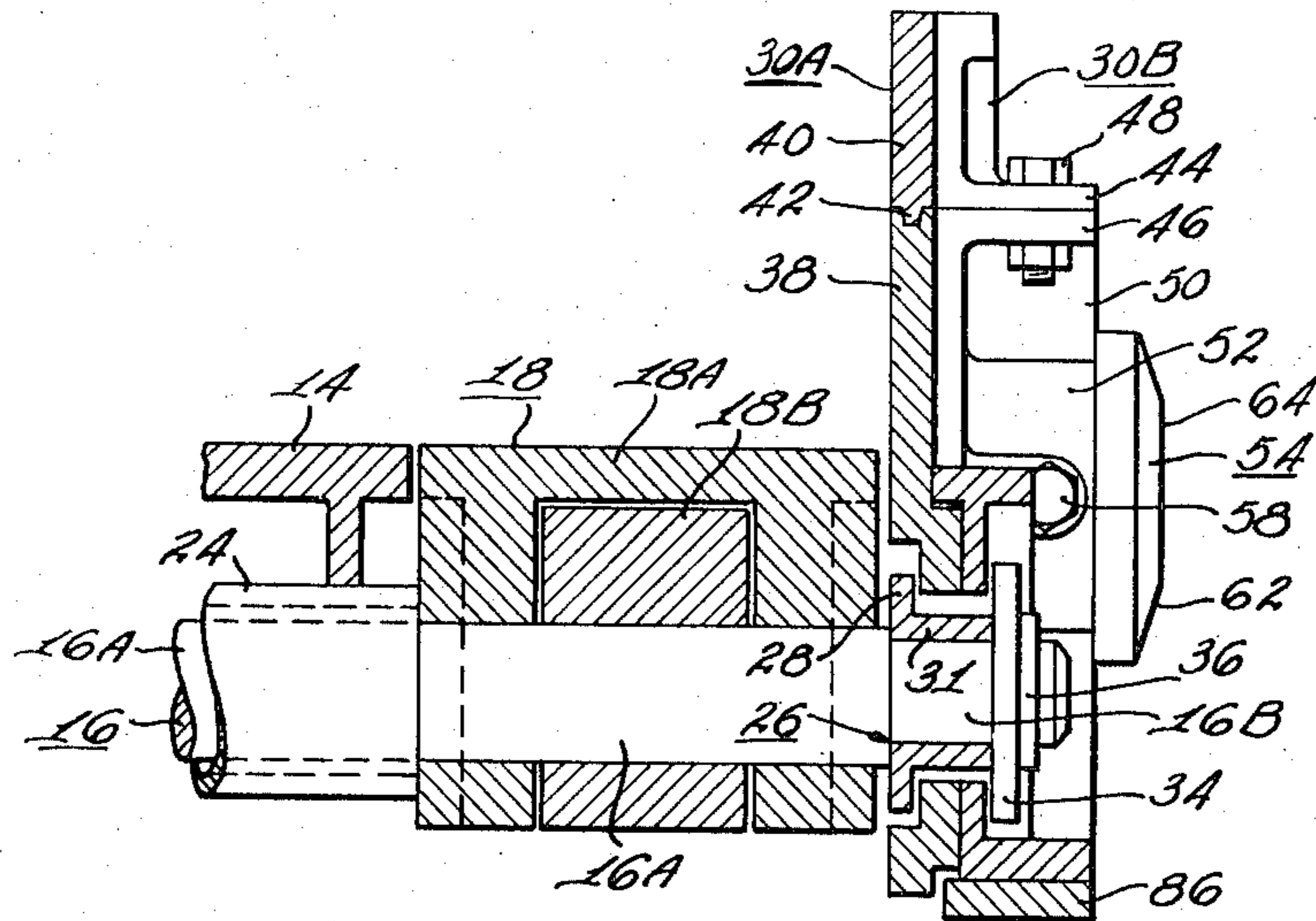


Fig. 5

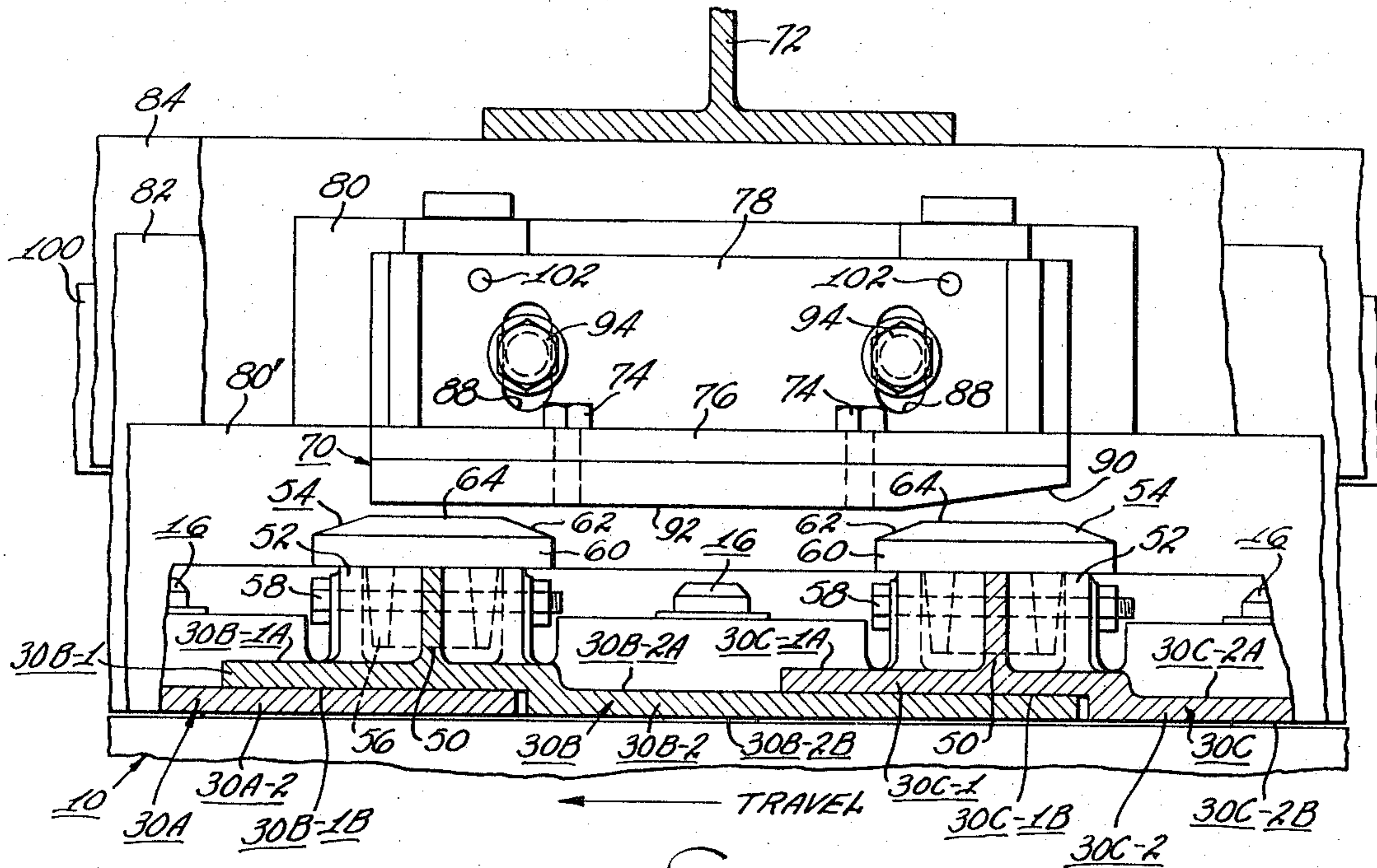


Fig. 6

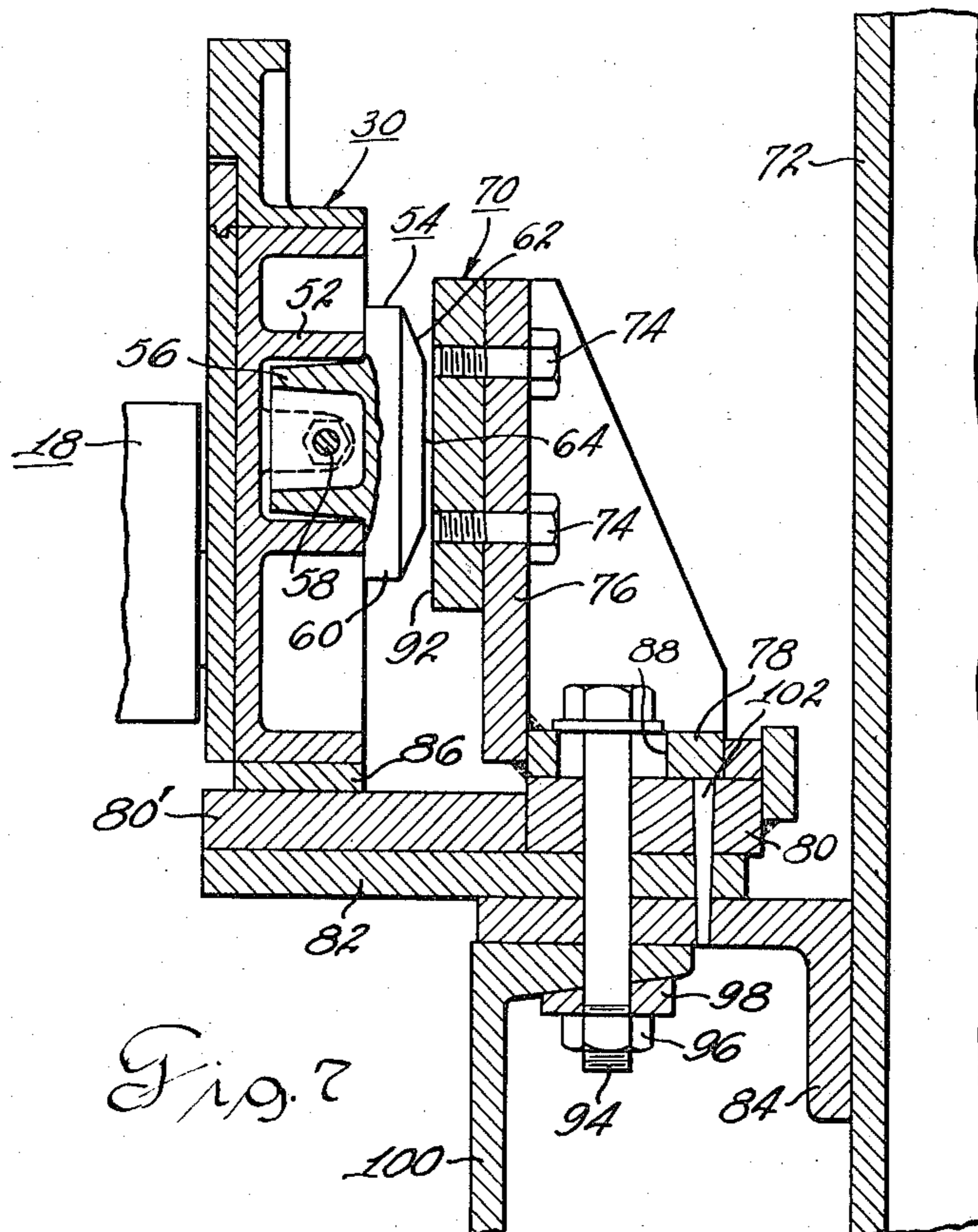


Fig. 7

GUIDE MEANS FOR TRAVELING GRATE CONVEYOR

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to traveling grates of the type used to convey material through a dryer, a furnace, a cooler, or the like, and more particularly to means for guiding the traveling grate conveyor strand along a pre-

2. Description of the Prior Art

Grate conveyors of the type used to convey pelletized ore or the like typically may extend for a length of about 150 to 200 feet from the head shaft sprocket to the tail shaft sprocket thereof. Such a conveyor typically may have a lateral width of about 15 feet to 18 feet. Even assuming that the head and tail shafts at the opposite ends of the conveyor are properly positioned in parallel relation to each other, various other factors may cause drift of the moving grate conveyor strand to one side or the other. Possible factors which may cause a drift or misalignment of the conveyor strand include variations in the circumferential length of the conveyor strand side-to-side (right to left), misaligned slide bases or misaligned carrying idlers underlying the conveyor chains, and also variation in dragging friction side-to-side of the conveyor can also cause a drifting of the conveyor to either side.

In an effort to correct drift or misalignment, it has been known in the prior art to utilize toothed guide rollers engaging transversely spaced conveyor chains which form part of the conveyor strand. However, the use of a toothed guide roller engaging a conveyor chain to restrict drift of the conveyor strand is not always satisfactory.

The term "conveyor strand" as used herein is intended to collectively include the entire movable part of the conveyor assembly including the conveyor grates, chains, side plates and supports which move therewith, such as thru rods and tie rods.

STATEMENT OF THE INVENTION

Accordingly, it is an object of the present invention to provide an improved means for guiding a grate conveyor strand along a predetermined path of travel.

It is another object of the invention to provide a guide means adapted to be mounted on the side plates of a grate conveyor strand or the like and adapted to cooperate with stationary thrust plates or thrust shoes positioned at spaced locations along the path of travel of both the upper and lower runs of the traveling grate conveyor strand.

It is another object of the invention to provide a guide means for a traveling grate conveyor strand or the like including thrust button members or the like carried by the conveyor strand and adapted to engage cooperating stationary thrust plates or shoes only when the conveyor strand is in a condition of "drift" or misalignment, whereby to serve as means for limiting the drift of the conveyor strand and also to serve as an indicator that a condition of "drift" or misalignment prevails.

In achievement of these objectives, there is provided in accordance with an embodiment of the invention a guide means for a traveling grate conveyor strand or the like including detachable thrust buttons carried by

the side plate of the grate conveyor (one thrust button per side plate). The thrust buttons cooperate with stationary thrust plates or thrust shoes positioned along the path of travel of both the upper and lower runs of the grate conveyor strand. Normally, there is a predetermined clearance between the thrust surface of the thrust buttons and the cooperating facing thrust surface of the stationary thrust plate or shoe. However, if a condition of drift or misalignment of the conveyor strand prevails, the thrust buttons will engage the thrust shoes to limit the drift or misalignment of the moving conveyor strand, with the wear upon the cooperating thrust buttons and thrust shoes providing an indication of the drift or misalignment of the traveling grate conveyor strand.

Further objects and advantages of the invention will become apparent from the following description taken in conjunction with the accompanying drawings in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic top plan view of a grate conveyor incorporating the guide means of the invention;

FIG. 2 is a schematic view in side elevation showing the upper and lower runs of the grate conveyor of FIG. 1 cooperating with thrust shoes positioned along the path of movement of the upper and lower runs of the conveyor strand;

FIG. 3 is a view in transverse section taken substantially along section line III—III of FIG. 2;

FIG. 4 is a view in side elevation of a pair of side plates of a grate conveyor showing the thrust buttons mounted on the side plates;

FIG. 5 is a view in transverse section taken substantially along section line V—V of FIG. 4, showing the relation of the side plates of a grate conveyor to the conveyor chain and to the conveyor grates, in a typical installation;

FIG. 6 is a top plan view partially in section (substantially along the line VI—VI of FIG. 4), showing details of the cooperative relation of the thrust buttons of the side plates of the moving conveyor with one of the stationary thrust plates; and

FIG. 7 is a view in vertical section taken substantially along section line VII—VII of FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIGS. 1, 2, 3 and 5, there is schematically indicated a traveling grate conveyor strand generally indicated at 10 of the type, for example, used in a Grate-Kiln system and comprising a plurality of rows 12 each comprising a plurality of pivotally mounted grate members 14 (FIG. 5) mounted on transversely extending thru rods 16 or alternatively on transversely extending tie rods (not shown) which in turn are suitably supported by conveyor chains 18 which extend lengthwise along the opposite lateral edges of the grate conveyor. The grate conveyor strand passes around a head shaft generally indicated at 20 at one end of the conveyor structure and around a tail shaft 22 located at the opposite end of the conveyor structure. The opposite laterally spaced conveyor chains 18 pass around toothed sprockets on the respective head and tail shafts 20 and 22.

Along the path of travel of the upper run of the conveyor strand, the chains 18 are supported by guide rollers 19; while along the path of travel of the lower run of the conveyor, the chains are supported by guide rollers 21.

Referring now to the more detailed views of FIGS. 4 and 5, there is shown a portion of the upper run of the grate conveyor strand, including a plurality of conveyor grates 14 supported by corresponding pipe spacers 24 which are respectively coaxially mounted about a corresponding support means in the form of a thru rod generally indicated at 16 which extends for the entire transverse width of the conveyor strand. Thru rod 16 includes a larger diameter portion 16A and a reduced diameter end portion 16B. Pipe spacer 24 is shown mounted coaxially about the thru rod portion 16A, and a grate 14 is shown pivotally mounted on the pipe spacer 24. A pair of pivotally connected conventional one-piece chain castings 18A and 18B are pivotally connected to each other on the thru rod portion 16A next to and laterally outwardly of the grate 14. chain castings 18A and 18B constituting two links in the chain 18.

A spool member generally indicated as 26 is journaled for pivotal movement on the reduced diameter end portion 16B of the thru rod 16. The spool member 26 includes an integral flange 28 which is loosely keyed to side plate 30A.

The plurality of pivotally connected similar side plates generally indicated at 30 and specifically designated at 30A, 30B, 30C, etc., contiguous each laterally outer edge of the grate conveyor strand collectively define a side wall along the entire length of each respective lateral edge of the conveyor strand, which plates move with the conveyor strand. Thus, as best seen in FIGS. 4 and 5 each side wall comprises a plurality of pivotally interconnected similar plate members each generally indicated at 30 and specifically including the pivotally connected plate members designated at 30A, 30B and 30C in FIGS. 4 and 5 which are similar to each other and which together form part of one of the side walls of the grate conveyor strand.

The spool 26 and the side plate 30A are capable of pivotal movement together as a unit relative to the reduced diameter end portion 16B of thru rod 16.

Spool 26 also includes a cylindrical body portion 31. A washer 34 which seats on the peripheral surface of reduced diameter portion 16B through rod 16 is secured in place by snap ring retainer 36 in an abutting relation to the laterally outer end (right-hand end in FIG. 5) of cylindrical body portion 31 of spool 26. Washer 34 in effect serves as the opposite flange of the spool 26. Washer 34 is preferably of 360° extent. Snap ring 36 is received in a groove in the peripheral surface of the reduced diameter extension 16B of thru rod 16 to retain washer 34 at a fixed lateral spacing from flange 28 of spool 26. Plate 30B is pivotally movable relative to plate 30A about the axis of the cylindrical shoulder 31 of the spool 26.

As best seen in FIGS. 4 and 5, a single side plate member 30 comprises a lower plate portion generally indicated at 38 and an upper plate portion generally indicated at 40. Lower plate portion 38 may be made of a material such as cast iron, for example, while upper plate portion 40 may be of a material such as stainless steel which can withstand higher temperatures than the material of lower plate portion 38. The reason for pro-

viding a two-piece construction including the plate portions 38 and 40 as just described is that the upper portion 40 of the plate 30 is frequently exposed to substantially higher temperatures than the lower portion 38 of plate 30. That is, the upper portion of plate 30 including the portion thereof where the upper plate portion 40 is located may at times be exposed to temperatures of the order of magnitude of 2,000° Fahrenheit when the grate conveyor is being used, for example, to convey pelletized ore or the like through drying or preheating zones, whereas the lower portion of the plate member 30 where the lower plate portion 38 is located may only be exposed to temperatures, for example, of the order of magnitude of 1,200° Fahrenheit. The upper and lower plate portions 40 and 38 are connected to each other by a tongue-in-groove connection indicated at 42 which extends for a portion of the length of the respective facing edges of the upper and lower members 40 and 38, respectively. The remaining portion of the length of the upper and lower members 40 and 38 are provided with cooperating flanges 44 and 46, respectively, which are secured together by bolts 48.

As best seen in the view of FIG. 6, the side plates 30B, 30C, etc., are so contoured as to interfit in an overlapped or nested relation with respect to each other. Thus, the laterally outwardly facing surface of side plate 30B has a surface portion 30B-1A and a surface portion 30B-2A which is countersunk with respect to the surface portion 30B-1A; while the laterally inwardly facing surface of side plate 30B has a surface portion 30B-1B lying generally laterally opposite surface portion 30B-1A and a surface portion 30B-2B which lies generally laterally opposite surface portion 30B-2A. Viewed from the laterally inner side of the side plates, surface portion 30B-1B is countersunk relative to surface portion 30B-2B. The generally opposite surface portions 30B-1A and 30B-1B bound the plate portion indicated at 30B-1; while the generally opposite surface portions 30B-2A and 30B-2B bound the plate portion 30B-2. Plate portions 30B-1 and 30B-2 lie substantially in laterally offset planes.

Similarly, the laterally outwardly facing surface of the side plate 30C includes a surface portion 30C-1A and a surface portion 30C-2A which is countersunk with respect to the surface portion 30C-1A; while the laterally inwardly facing surface of side plate 30C has a surface portion 30C-1B lying substantially laterally opposite surface portion 30C-1A and a surface portion 30C-2B which lies substantially laterally opposite the surface portion 30C-2A. Viewed from the laterally inner side of the side plates, surface portion 30C-1B is countersunk relative to surface portion 30C-2B.

The substantially laterally opposite surface portions 30C-1A and 30C-1B bound the plate portion indicated at 30C-1; while the substantially laterally opposite surface portions 30C-2A and 30C-2B bound the plate portion indicated at 30C-2. Plate portions 30C-1 and 30C-2 lie in laterally offset planes.

The contiguous pivotally connected side plates such as 30B and 30C are in overlapped nested relation to each other in such manner that when viewed from the laterally outer side of the conveyor, portion 30B-2 of plate 30B lies laterally behind portion 30C-1 of plate 30C and plate portion 30B-1 lies laterally forwardly of portion 30A-2 of side plate 30A.

Each side plate is provided with a pair of pivot apertures in longitudinally spaced relation to each other,

one of which lies laterally forwardly of a pivot aperture of one pivotally connected side plate, and the other of which lies laterally behind a pivot aperture of another pivotally connected side plate.

The thrust buttons 54 are mounted on and extend laterally outwardly from the laterally outer portion of each respective side plate such as the plate portion 30B-1 of plate 30B, plate portion 30C-1 of plate 30C, etc.

For a more detailed description of the pivoted connection between contiguous side plates such as 30A, 30B, etc., and of the construction of the side plates, reference is made to my co-pending U.S. Pat. application Ser. No. 290,634, filed Sept. 20, 1972, and entitled "Stabilized Side Plate Construction For Grate Conveyor."

The outer face of each side plate member 30 is provided intermediate the length of the respective plate member with a vertical reinforcing rib 50 and intermediate the height thereof, each rib 50 is contoured to define a hollow cylindrical socket-like member 52 for receiving a thrust member in the form of the thrust button generally indicated at 54. The vertical axis of rib 50 and hence of socket member 52 is preferably located substantially at the mid-point of the pitch distance P (FIG. 4) between the longitudinally opposite pivotal connections of a given plate member 30.

Also, the horizontal center line of the socket member 52 and hence of the thrust button 54 received therein is located a significant distance below the upper edge of the side plates 30 to exert proper thrust action and to prevent tilting of the side plates under the influence of the thrust reaction forces between the thrust buttons 54 and the stationary thrust plates 70 to be described.

The horizontal center line of the thrust button 54 should preferably lie in a horizontal plane slightly below the horizontal plane in which the upper surface of grates 14 and chains 18 lie, as best seen in FIG. 5.

As best seen in FIGS. 6 and 7, the thrust button 54 includes a hollow shank portion 56 adapted to be received in the socket 52 formed on the outer surface of each respective conveyor side plate. The thrust button 54 is detachably secured in fixed position in the socket 52 by suitable fastening means such as a bolt 58 or the like. The thrust button 54 also includes what might be termed a base portion 60 of generally cylindrical shape extending from shank portion 56 and lying laterally outwardly of socket 52, and a bevelled or chamfered outer portion 62 extending from cylindrical base portion 60 and which terminates in a flat outer end portion or thrust surface 64. The thrust button generally indicated at 54 is preferably made of a bearing material such as commercially available bearing iron having a high graphite content. Alternatively, thrust button 54 may be made of bronze, also a bearing material. If thrust button 54 is made of a bearing material such as bearing iron or bronze, the thrust plates 70 (to be described) with which the thrust buttons 54 cooperate should be of a hard metal such as steel.

Instead of making the thrust buttons 54 of a bearing metal and the cooperating thrust plates 70 of a hard metal, the materials used may be reversed. That is, the thrust buttons 54 may be made of a hard metal such as steel and the thrust plate 70 may be made of a bearing metal such as bearing iron having a high graphite con-

tent, or bronze. Thus, one of the cooperating thrust members (either the thrust buttons 54 or the thrust plate 70) should be of a bearing material or metal, while the other thrust member (either the thrust buttons or the thrust plate) should be of a hard metal.

Preferably, each side plate 30 on each side of the moving conveyor strand is provided with a thrust button 54 suitably secured thereto in the manner just described. The distance between centers of the thrust buttons of contiguous side plates on the same side of a typical conveyor installation is 10 inches to 12 inches.

The thrust means or thrust plates which cooperate with the thrust buttons 54, hereinbefore described, are generally indicated at 70 and are supported at spaced intervals such as 8 to 10 foot intervals along the longitudinal path of movement of the conveyor by vertical posts or columns 72 as will now be described. Each thrust plate 70 is detachably secured by bolts 74 to an upright member 76 which is welded or otherwise suitably secured to a horizontal plate member 78. The horizontal plate 78 is adapted to be bolted to plates 80 and 82, which, in turn, rest upon an angle member 84 which is suitably secured to the vertical post or column 72. The plate or "pressure bar" 80' which lies in the same horizontal plane as the plate 80 and is supported by plate 82 underlies the wear shoe 86 carried by the lower end of the side plate 30. Pressure bar 80' is secured to plate 82 by suitable bolts (not shown). Thus, the plate or "pressure bar" 80' serves as a support rail or the like for the conveyor side plates 30 and thus for the conveyor strand as it moves along the upper run of the path of travel of the conveyor strand since the pressure bar 80' extends for all or a substantial part of the length of the upper run of the conveyor strand in underlying relation to the wear shoes 86 on side plates 30 as seen in FIG. 7. The horizontal plate 78 to which the vertical upright support 76 for the thrust plate 70 is attached is provided with enlarged apertures 88 therein (FIGS. 6 and 7) to permit lateral adjustment of the position of the connected plates 76-78 relative to thrust buttons 54 and thus to permit adjustment of the clearance between the vertical thrust surface 92 of thrust plate 70 and the facing thrust surface 64 of the thrust button 54.

The support plates 76 and 78 which support each respective thrust plate 70 are rigidly but adjustably secured in position by bolts 94 which pass through the oversized apertures 88 of the plate 78 and through aligned apertures in the plates 80, 82 and also through an aperture in the angle member 84, which is secured to the support column 72. The lower end of each bolt 94 is tightened in position by a suitable nut 96 which engages a washer 98 interposed between the under surface of the support 100 and the nut 96. Dowel pins 102 when in place maintain the plates 80, 82 and the angle member 84 in assembled relation with respect to each other independently of bolts 94, thereby permitting bolts 94 to be loosened to permit adjustment of the position of the connected members 76-78.

The members 80', 82, 84 and 100 extend for substantially the full length of the upper run of the conveyor. The subassembly comprising members 70, 76, 78, 80 is located contiguous one of the respective vertical posts or columns 72, a plurality of each subassemblies being provided for the plurality of posts 72.

It will be noted that the end of a respective thrust plate 70 first engaged by any given thrust button 54 is

chamfered or bevelled as indicated at 90 (FIG. 6). The chamfered surface 90 on the thrust plate cooperates with the chamfered or bevelled surface 62 on the respective thrust buttons to provide an easy "lead-in" of the thrust button 54 relative to the thrust plate 90, assuming there is a drift or misalignment of the conveyor strand. After a given thrust button 54 has reached the end of the chamfered or bevelled surface 90 of the thrust plate, the main flat thrust surface 64 of the button then is in a position to engage the main flat vertical thrust surface 92 of the thrust plate. As previously explained, however, if the conveyor is properly aligned and is not subjected to any factors which cause a drift of the conveyor strand, there will normally be an operating clearance of, for example, one-fourth inch between the cooperating thrust surfaces 64 and 92 of the thrust buttons 54 and thrust plates 70, respectively.

If the conveyor strand 10 is misaligned or has a drift toward one side in its movement, there will be a wear on the corresponding thrust buttons and on the corresponding thrust shoes which will indicate the undesirable condition. Upon noting such wear, the causes of the conveyor strand drift or misalignment may be corrected, if desired; or, alternatively, the drift or misalignment may be accepted or tolerated and the thrust buttons and/or thrust plates 70 may be replaced as required. The cooperative relation between the thrust buttons 54 and the thrust plates 70 also serves to limit the "drift" movement of the conveyor strand 10.

Along the lower run of the conveyor strand, the thrust buttons 54 carried by the side plates of the conveyor strand cooperate with thrust plates 70' mounted on posts 72 at a vertical level corresponding to the path of movement of the thrust buttons moving along the lower run of the conveyor strand. Thrust plates 70' are similar to and are mounted in a manner generally similar to the thrust plates 70 previously described, although the supporting members do not span the space between adjacent posts 72, as in the case of the arrangement for the upper run, previously described, but instead are mounted on each individual post 72. If the conveyor strand is properly aligned and there is no "drift" of the conveyor strand, then there will be a normal operating clearance such as one-fourth inch between the facing thrust surfaces of the thrust buttons 54 and of the thrust plates 70'. However, a condition of misalignment or drift of the conveyor strand will cause the thrust buttons 54 to engage the thrust plates 70' in the same manner as previously described in connection with the upper run of the conveyor strand. It might be noted that the lower run of the conveyor strand will drift in an opposite direction to the drift of the upper run of the conveyor strand. That is, if conditions are such as to cause a drift of the upper run of the conveyor strand laterally to the left relative to the normal and correct path of travel of the conveyor strand, then the lower run of the conveyor strand will drift laterally to the right, and vice-versa.

From the foregoing detailed description of the invention, it has been shown how the objects of the invention have been obtained in a preferred manner. However, modifications and equivalents of the disclosed concepts such as readily occur to those skilled in the art are intended to be included within the scope of this invention.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A grate conveyor comprising a movable conveyor strand including grate members forming part of and movable with said strand, side plates forming part of and movable with the conveyor strand and extending in a vertical plane contiguous a lateral edge of said strand along the entire length of said strand whereby to collectively define a side wall for the conveyor strand, means carried by the respective side plates for receiving and supporting a corresponding thrust member, a separate detachable thrust member received by and supported by said means carried by the individual respective side plates and extending laterally outwardly from the respective side plates, the detachable thrust members defining the laterally outermost boundary along a corresponding edge of the moving conveyor strand, support means forming part of said movable strand and pivotally mounting said grate members and said side plates, the respective detachable thrust members having a substantially greater laterally outermost thrust surface area than the area of the laterally outermost surface of any given support means, and a plurality of rigid thrust means stationarily positioned along the path of travel of a given edge of said conveyor strand, said plurality of thrust means being positioned in spaced relation to each other lengthwise of the path of travel of said given edge, each thrust means being in normally laterally spaced relation to the respective thrust members and adapted to be engaged by the respective thrust members if a condition of conveyor strand misalignment or drift prevails, the respective rigid thrust means being individually laterally adjustable relative to the conveyor strand.

2. A grate conveyor as defined in claim 1 in which each side plate which carries a thrust member is provided with a socket, and said thrust member is detachably secured in said socket, said thrust member including a portion thereof lying laterally outwardly of said socket and directed laterally toward said thrust means.

3. A grate conveyor as defined in claim 2 in which said thrust member includes a shank portion received in and detachably secured to said socket, said portion of said thrust member lying outwardly of said socket including a chamfered surface, each respective thrust means including a chamfered surface at the end of said thrust means first approached by a given thrust member, said chamfered surface on said thrust member being adapted to cooperate with said chamfered surface on said thrust means whereby to provide a "lead-in" of said thrust member relative to said thrust means upon a condition of misalignment or drift of said conveyor strand, and a flat thrust surface at the laterally outermost end of said thrust member, said flat surface being adapted to engage a corresponding flat thrust surface on a cooperating thrust means upon completion of the "lead-in" movement of the respective thrust member upon a condition of misalignment or drift of said conveyor strand.

4. A grate conveyor as defined in claim 1 comprising side plates contiguous each of the opposite lateral edges of the conveyor strand, the respective side plates contiguous each of said lateral edges being provided with a corresponding detachable thrust member, and a plurality of individually laterally adjustable thrust

means stationarily positioned along the path of travel of said conveyor strand contiguous each of said opposite lateral edges and adapted to be engaged by the respective thrust members if a condition prevails which causes a drift toward the thrust means contiguous a given lateral side of the conveyor.

5 5. A grate conveyor as defined in claim 1 in which said movable conveyor strand moves through an upper run and a lower run, and said thrust means are positioned to be engaged by the respective thrust members on both the upper and lower runs of the conveyor strand.

6. A grate conveyor as defined in claim 4 in which said movable conveyor strand moves through an upper run and a lower run and a plurality of individually laterally adjustable thrust means are stationarily positioned along the path of travel of said conveyor strand contiguous each of said opposite lateral edges of both the upper and lower runs of the conveyor strand.

7. A grate conveyor as defined in claim 1 in which cooperating thrust elements comprise said thrust member and said thrust means, and in which one of said cooperating thrust elements is made of bearing material, while the other of said cooperating thrust elements is made of hard metal.

8. A grate conveyor as defined in claim 1 in which substantially each side plate carries a thrust member.

9. A side plate for use with a conveyor apparatus of the type in which said apparatus comprises a movably mounted grate conveyor strand of which said side plate constitutes a part, and in which said apparatus additionally comprises a plurality of rigid thrust means stationarily but individually laterally adjustably positioned along the path of travel of a given edge of said conveyor strand, and in which said conveyor strand includes support means forming part of the movable strand and pivotally mounting said side plate, said side plate being adapted to be mounted on said conveyor strand contiguous a lateral edge of said strand and movable with said conveyor strand whereby a plurality of said side plates

collectively define a side wall for said conveyor strand, wherein the improvement comprises means carried by said side plate for receiving a detachable thrust member, and a thrust member detachably secured to and extending laterally outwardly from said side plate in normally laterally spaced relation to said thrust means but adapted to engage said thrust means if a condition of misalignment or drift of the conveyor strand occurs, said thrust member lying along the laterally outermost boundary of a given edge of said conveyor strand and having a substantially greater thrust surface area laterally outermost of said thrust member than the area of the laterally outermost surface of any given support means.

10. A side plate as defined in claim 9 in which said side plate includes a socket, and said thrust member is detachably secured in said socket, said thrust member including a portion thereof lying laterally outwardly of said socket and directed laterally toward said thrust means.

11. A side plate as defined in claim 9 in which said thrust member includes a shank portion received in and detachably secured to said socket, said portion of said thrust member lying outwardly of said socket including a chamfered surface adapted to cooperate with a chamfered surface on said thrust means, whereby to provide a "lead-in" of said thrust member relative to said thrust means upon a condition of misalignment or drift of said conveyor strand, and a flat thrust surface at the laterally outermost end of said thrust member, said flat thrust surface being adapted to engage a corresponding flat thrust surface on said thrust means upon a condition of misalignment or drift of said conveyor strand.

12. A side plate as defined in claim 9 in which said thrust member is made of a bearing material and said thrust means is made of a hard metal.

13. A side plate as defined in claim 9 in which said thrust member is made of a hard metal and said thrust means is made of a bearing material.

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