Dec. 7, 1937. C. N. BEBINGER 2,101,017

CONVEYER SECTION CONNECTION

Filed Sept. 12, 1935 2 Sheets-Sheet 1

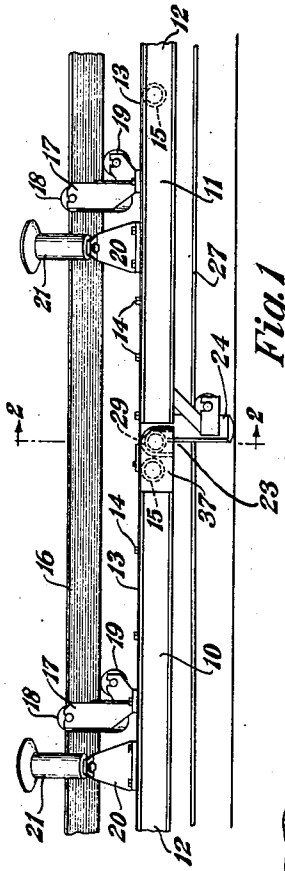

Fig. 1

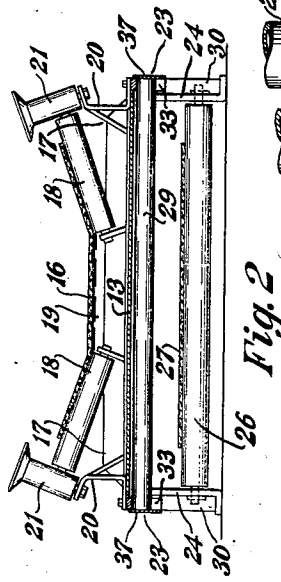

Fig. 2

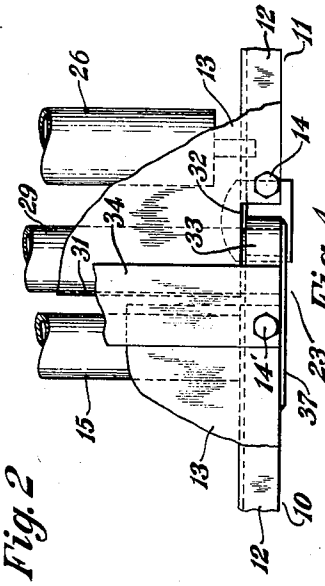

Fig. 4

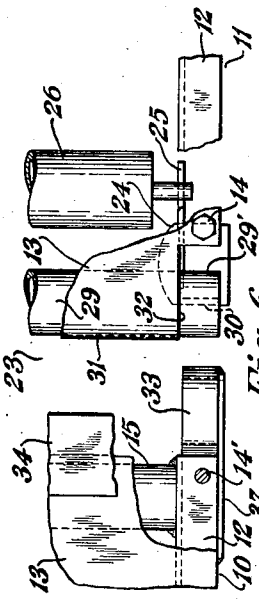

Fig. 6

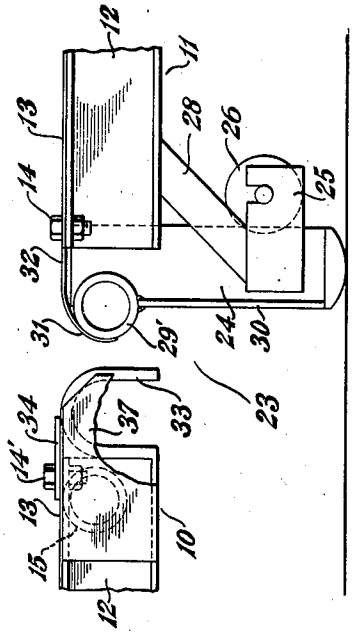

Fig. 5

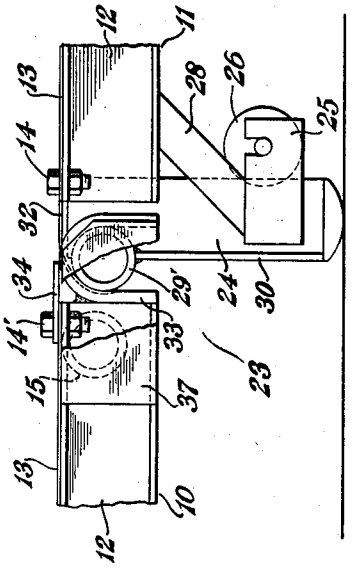

Fig. 3

Inventor

C. N. Bebinger

By Frease and Bishop

Attorneys

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CONVEYER SECTION CONNECTION

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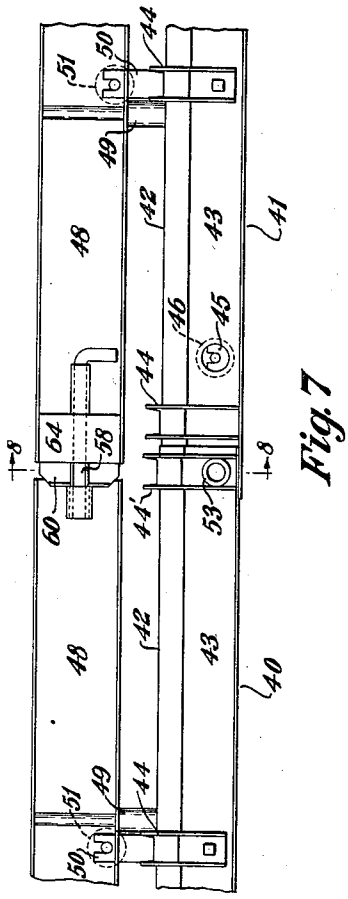

Fig. 7

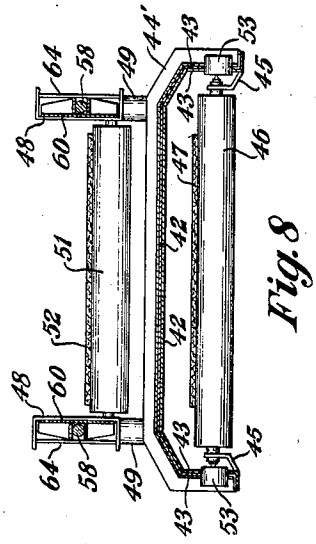

Fig. 8

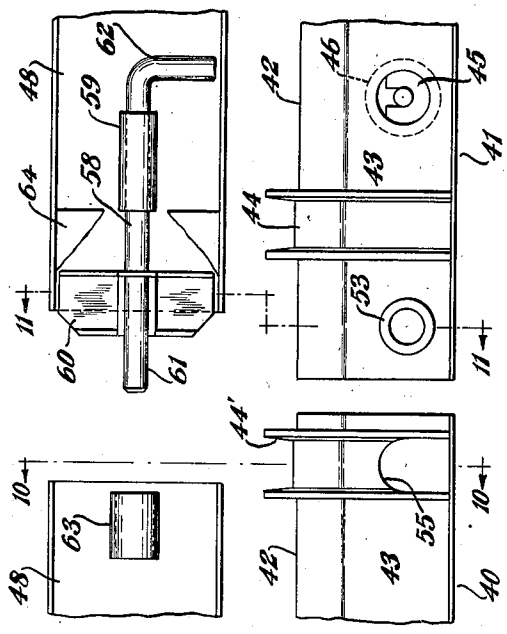

Fig. 9

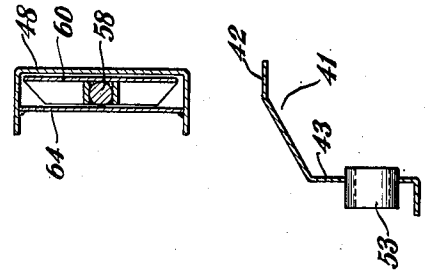

Fig. 11

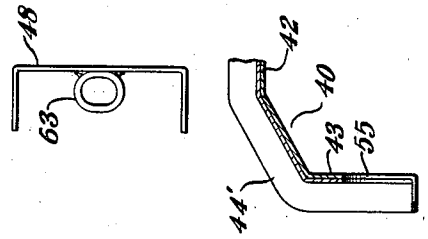

Fig. 10

Inventor

C. N. Bebinger

By Frease and Bishop

Attorneys

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2,101,017

UNITED STATES PATENT OFFICE

2,101,017

CONVEYER SECTION CONNECTION

Charles N. Bebinger, New Philadelphia, Ohio, assignor to La-Del Conveyor & Mfg. Co., New Philadelphia, Ohio, a corporation of Ohio

Application September 12, 1935, Serial No. 40,293

2 Claims. (Cl. 198—204)

The invention relates generally to conveyers, especially underground belt conveyers for use in mines; and more particularly to connections for detachably connecting the sections supporting the conveyer.

The carrying part of the conveyer, may be a continuous belt, and the support therefor is made up of comparatively short sections because of the restricted dimensions in the mine, and because of the necessity of being easily handled and transported around curves therein.

Certain prior constructions for detachably connecting the sections together have required the use of loose parts, such as bolts or pins, but it is a slow and tedious operation to apply such loose parts, and the darkness of a mine makes the operation difficult, and provides an increased tendency to lose or misplace the loose parts.

Other prior constructions provide a rigid connection between the sections, or at least do not permit sufficient vertical flexibility between the sections to allow them to become accommodated to the dips and grades and other irregularities in the mine floor.

It is accordingly an object of the present invention to provide an improved connection for conveyer-supporting sections, which connection will overcome the disadvantages of prior constructions.

A further object is to provide an improved connection by which conveyer sections may be quickly connected or disconnected without the use of any loose parts whatsoever.

Another object is to provide an improved section connection which permits connected sections to swing vertically relative to each other, so that all sections may rest on a mine floor regardless of irregularities therein.

Another object is to provide an improved section connection which will maintain connected sections in longitudinal alignment so as to keep the conveyer belt in a straight line.

And finally, it is an object of the present invention to provide an extremely simple and inexpensive connection construction which can easily be applied to standard types of conveyer sections.

These and other objects are attained by the improvements comprising the present invention which is shown in the accompanying drawings, and which is hereinafter described in detail and defined in the appended claims.

In general terms, the invention includes the provision of lateral preferably cylindric projections at the end of one section, and inverted U-shaped slots at opposite sides of the end of an adjoining section for fitting over and pivotally engaging said projections.

In the drawings forming part hereof

Figure 1 is a fragmentary side elevation of one type of belt conveyer, showing a preferred embodiment of my improved section connection construction;

Fig. 2 is a transverse sectional view thereof, as on line 2—2, Fig. 1;

Fig. 3 is an enlarged side elevation of the improved section connection of Fig. 1, showing fragmentarily the ends of adjoining sections connected thereby;

Fig. 4 is a fragmentary plan view thereof;

Fig. 5 is a side elevation similar to Fig. 3, showing the ends of adjoining sections in disconnected position;

Fig. 6 is a plan view thereof;

Fig. 7 is a side elevation of another type of belt conveyer having supporting sections of somewhat different construction, and showing another embodiment of the improved section connection;

Fig. 8 is a transverse sectional view thereof as on line 8—8, Fig. 7;

Fig. 9 is an enlarged side elevation of the section connection of Fig. 7, showing the ends of adjoining sections in disconnected position;

Fig. 10 is a fragmentary transverse sectional view as on line 10—10, Fig. 9, with distant parts removed; and

Fig. 11 is a fragmentary transverse sectional view as on line 11—11, Fig. 9 with distant parts removed.

Similar numerals refer to similar parts throughout the drawings.

The belt conveyer shown in Figs. 1 and 2 preferably includes a plurality of identical sections 10 and 11 arranged longitudinally end to end to make up the supporting means for the conveyer belt.

Preferably, each section includes a longitudinally extending channel 12 at each side thereof, and a cover plate 13 extending between and over the channels and being secured to the upper legs thereof by means of bolts 14 and the like. Thus, the channels 12 and cover plate 13 form an inverted trough-like section.

Preferably, the channels 12 are placed with their legs directed laterally outward so that the webs of the channels face each other, and bars or pipes indicated at 15 extend between the channels at longitudinal intervals and have their ends secured to the webs of the channels as by

welding, to provide means for rigidly connecting the channels of each section together.

The roller brackets for carrying the upper run 16 of the belt conveyer are preferably mounted on the cover plates 13 over the channels 12, and where the upper run of the belt is carried in trough-like form, as shown in Figs. 1 and 2, the roller brackets may include brackets 17 carrying the belt supporting rollers 18 and 19, and brackets 20 carrying edge rollers 21 for maintaining alignment of the belt.

The improved section connection means indicated generally at 23, preferably includes depending legs 24 secured one to the end of each channel 12 at one end of a section for resting on the floor of a mine to support the section above the floor. In Figs. 1 to 6 inclusive, the legs 24 are shown secured to one end of section 11.

Preferably, a bracket arm 25 is secured to each leg 24 below the channel 12 to which the leg is connected, for mounting the ends of a roller 26 carrying the return run 27 of the belt conveyer.

The legs 24 are preferably welded to the insides of the webs of the channels 12, and may be braced by means of strips 28 welded or otherwise connected at one end to the channel and at the other end to the leg.

As shown, the legs 24 project somewhat longitudinally of the channels 12 to which they are connected, and a laterally disposed pivot member 29, which may be a cylindric member such as a bar or pipe, extends transversely of the section and preferably through the legs 24, the end portions 29' of the pipe projecting laterally beyond the webs of channels 12 and substantially flush with the outer edges of the channel legs.

The transverse pivot member 29 is spaced longitudinally beyond the ends of the channel members 12, to which the legs are attached, and a strengthening rib 30 may be provided under the end portions 29', being preferably welded to the underside thereof and welded to or integral with the leg 24.

The cover plate 13 is preferably extended beyond the ends of the channels 12 and bent downwardly as shown at 31 to cover the intermediate portion of the transverse pivot member 29, the plate being cut out or notched at opposite sides of the end of the section as shown at 32 so as to expose the end portions 29' of the pivot member for a purpose to be described.

The adjoining end of section 10 is identical with the other end of section 11, and is provided at the ends of channels 12 with inverted U-shaped members 33 secured one to the end of each channel 12, as by welding. The cover plate 13 is secured to the tops of the channels 12 and a transverse stiffening bar 34 may be bolted on top the cover plate by bolts 14', and projects longitudinally beyond the end of the channels 12 and the end of the cover plate 13.

Preferably, a plate 37 is secured as by welding to the legs of the ends of channels 12 and extends longitudinally beyond the channels across the outer sides of the U-shaped members 33, being preferably welded thereto.

Thus, the inverted U-shaped members 33 at the end of one section 10 may be placed downwardly over the end portions 29' of the pivot member 29 of an adjoining section 11, the members 33 being entered in the cut-out portions 32 of the cover plate 13 of section 11. The U-shaped members 33 provide downwardly open U-shaped slots which may be dropped downwardly over the pivots of the other section and journalled detachably thereon to provide means for detachably and pivotally connecting adjoining sections.

The plates 37 provide means for abutting the outer ends of the pivot members so that the adjoining sections are maintained in longitudinal alignment.

The belt conveyer shown in Figs. 7 and 8, preferably includes a plurality of identical sections 40 and 41, arranged longitudinally end to end to make up the supporting means for the conveyer belt.

Preferably, each section includes a top wall 42 and side walls 43 forming inverted trough sections for resting on the floor of a mine. Ribbed members 44 may be provided on the sections at longitudinal intervals to strengthen the same.

Brackets 45 may be secured to the inner side walls of the sections at laterally opposite positions for mounting the ends of rollers 46, which carry the return run 47 of the belt conveyer, so that the return run of the conveyer and the rollers therefor are housed within the sections.

The means for carrying and enclosing the upper run of the belt conveyer may include longitudinally extending channels 48 mounted on and above the sections, one to each section, by means of posts 49 and the like, and the channels are adapted to be longitudinally aligned when the sections are connected together end to end. Roller bracket arms 50 may be conveniently supported on the rib members 44 and project upwardly through the lower legs of channels 48, being preferably welded or otherwise secured to the channels and carrying the ends of rollers 51, which carry the upper run 52 of the conveyer belt between the channels in a substantially flat form.

As best shown in Figs. 9 and 11, the improved connection means in this embodiment preferably includes laterally disposed pivot members at one end of a section, which members may be in the form of cylindric members or short lengths of pipe 53 secured in the side walls of section 41 and projecting outwardly therefrom.

The adjoining end of section 40 is identical with the other end of section 41, and is provided with inverted U-shaped downwardly open slots 55 in its side walls adapted for fitting over and being journalled on the projections 53 of section 41, when the end of section 40 is lapped over the adjoining end of section 41.

Preferably, a rib member 44' is located at the slot end of each section, and the slots 55 are extended through the rib member for strengthening the walls of the slot.

When the slots 55 of one section are lapped over and journalled on the projecting pivots 53, as shown in Figs. 7 and 8, to provide means for detachably and pivotally connecting adjoining sections, the overlapping side walls 43 of the connected sections provide means for maintaining the sections in longitudinal alignment.

When the upper run of the belt conveyer is carried flat, as shown in Fig. 8, the material on the belt is kept from falling off the sides by means of the longitudinally extending channels 48. However, since it is impractical to construct the channels so that their ends abut or overlap to a nicety, gate means are provided at adjacent ends of the channels 48 for closing the gap therebetween. The gate means preferably includes a latch rod 58 slidably mounted in a sleeve 59 on one end of each channel 48, the rod 58 having a gate plate 60 secured thereon adjacent the end of the channel and the end of the rod projecting longitudinally beyond the plate 60, as shown

at 61. The other end of the rod may have a handle portion 62 for manually sliding the gate longitudinally of the channel. A plate 64 may be secured to the legs of the channel 48 adjacent the sleeve 59 for guiding the gate 60 as it is moved longitudinally.

The other end of each channel is provided with a keeper sleeve 63 for receiving the projecting end 61 of the latch rod when the gate 60 is moved to close the gap between longitudinally adjacent channels 48.

The keeper 63 is preferably enlarged vertically to provide for the overlap of the sections 40 and 41 and for other variations, and the gate means provides for keeping the material on a flat belt regardless of gaps between the longitudinal members at the sides thereof.

Obviously, the means for supporting and enclosing the upper run of a flat belt, as shown in Figs. 7 to 11, inclusive, may be used on supporting sections constructed according to Figs. 1 to 5, inclusive; and likewise, the brackets and rollers for carrying the upper run of a trough belt, as shown in Figs. 1 and 2, may be mounted on supporting sections constructed as shown in Figs. 7 to 11, inclusive; without departing from the scope of the invention, as defined in the appended claims.

Both embodiments of my improved section connection construction provide for detachably connecting the sections together without the use of any loose parts, so that the sections may be quickly connected or disconnected in the darkness of a mine with great facility and without occasioning the loss of any necessary parts; all of the sections are pivotally connected so that they may swing vertically and accommodate themselves to irregularities in a mine floor; and the sections are maintained in longitudinal alignment so as to keep the conveyer belts in a straight line.

I claim:

1. In a conveyer having longitudinally extending belt roller enclosing members arranged end to end, a gate slidably mounted on the end of one longitudinal member and having a longitudinal projection, and a tubular member on the adjacent end of another longitudinal member for receiving said projection when the gate is moved to close the gap between the longitudinal members.

2. In a conveyer having longitudinally extending belt roller mounting members arranged end to end, a gate mounted for longitudinal movement on the end of one longitudinal member and having a longitudinally projecting latch bar, means for manually moving said gate beyond said end of said member, and means on the adjacent end of another longitudinal member for receiving said latch bar when the gate is moved to close the gap between the members.

CHARLES N. BEBINGER.