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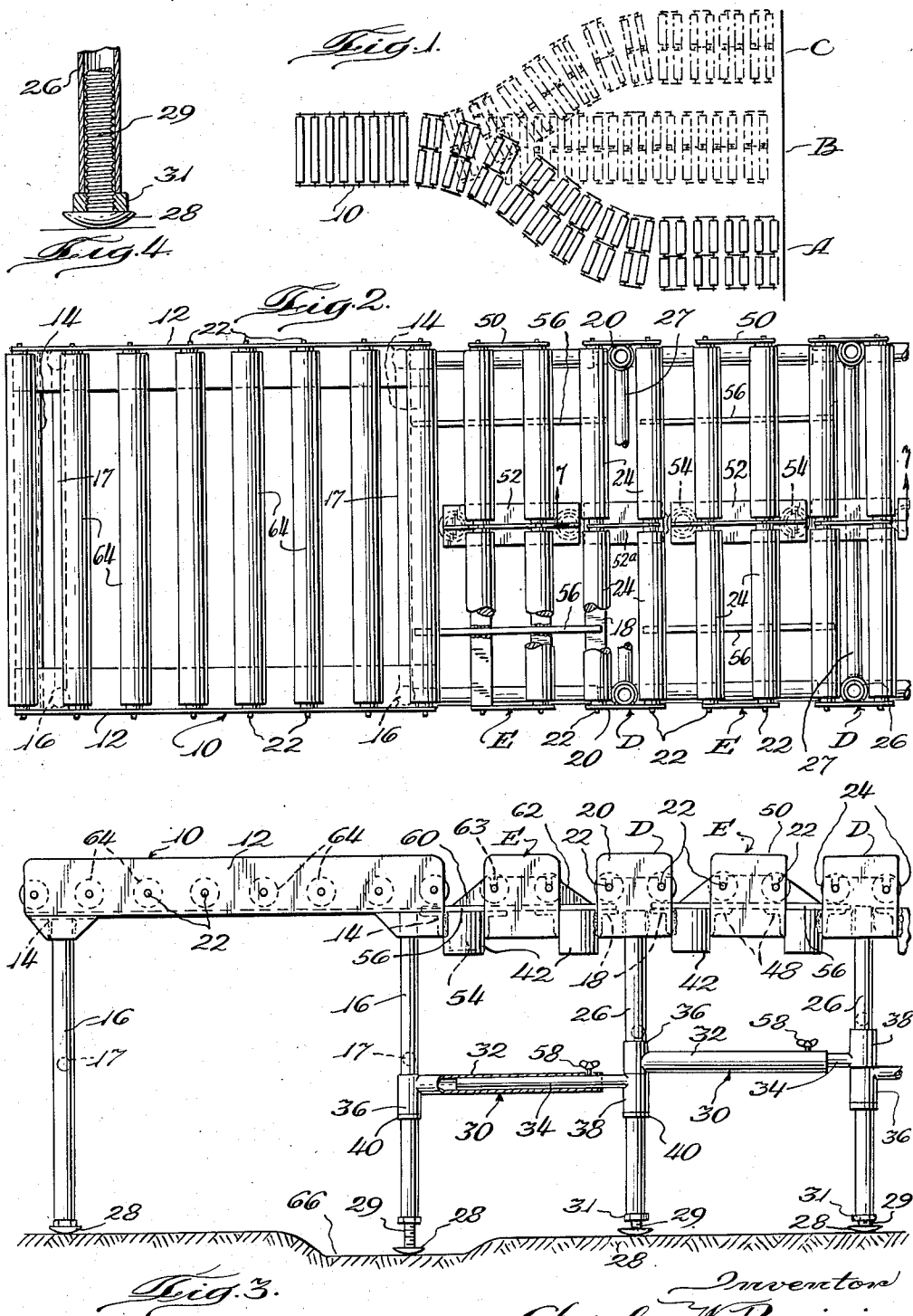
C. W. PARISI

2,550,201

ARTICULATED ROLLER CONVEYER

Filed Nov. 18, 1946

2 Sheets-Sheet 1.



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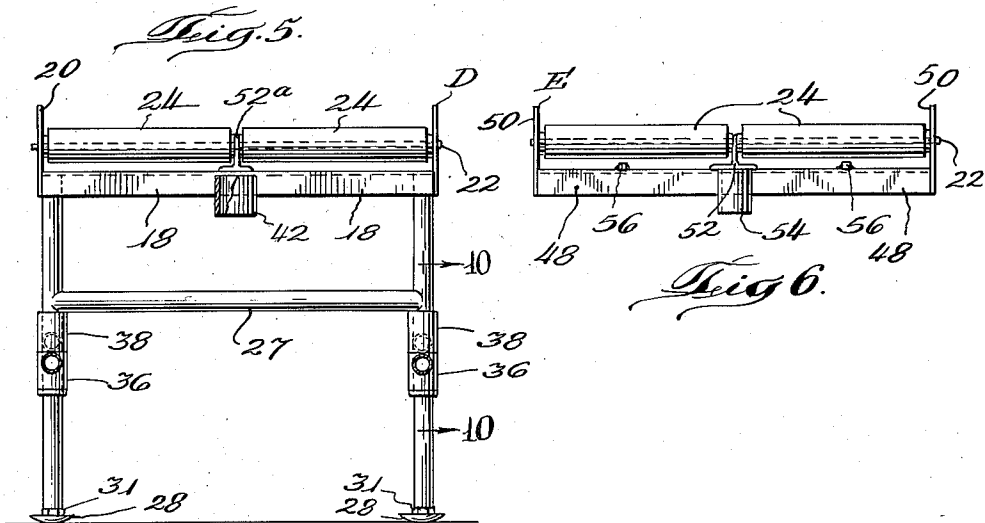
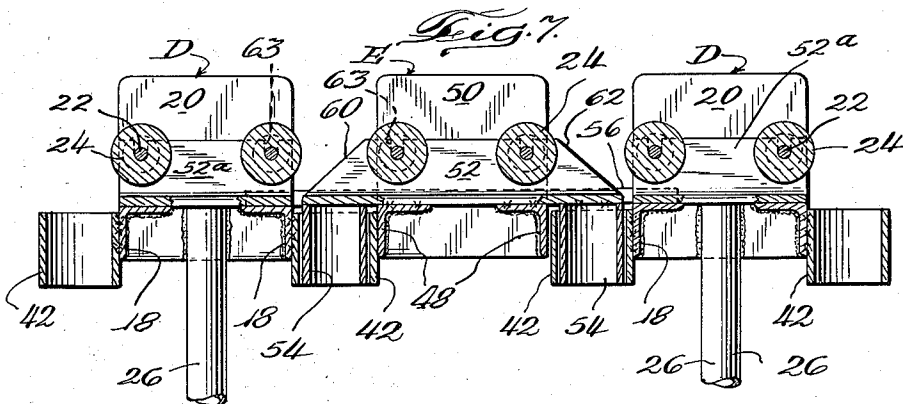
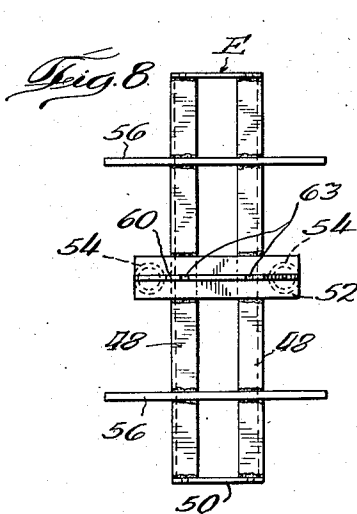
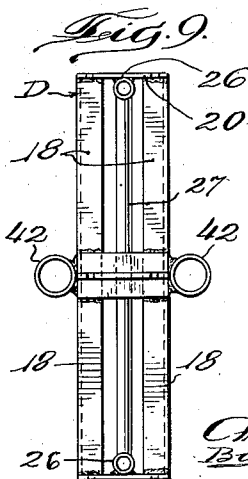
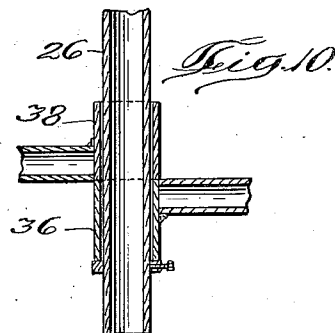
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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ARTICULATED ROLLER CONVEYER

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5 Claims. (Cl. 193—35)

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This invention relates to conveyors of the gravity roller type and it is concerned primarily with a novel supporting structure for the rollers.

The primary object of the invention is to provide a conveyor of the gravity roller type having an articulated supporting frame for the rollers which permits the rollers to be variously arranged in angular relation to each other so that the conveyor forms variously curved paths for the loads which travel upon it.

Another object of the invention is to provide supporting framework for a gravity roller conveyor consisting of frame units pivotally connected together to form an articulated structure adapted to follow various contours in accordance with changing requirements.

More specifically, the invention relates to an articulated frame structure for gravity roller conveyors in which alternate roller supporting units are provided with supporting legs or equivalent means while interposed roller supporting units serve to pivotally couple the first mentioned units into a continuous articulated series.

A further object of the invention is to provide a relatively simple and economical frame structure for a gravity roller conveyor consisting of a plurality of consecutive units pivotally connected together for angular adjustment relative to each other.

Other objects and advantages of the invention will appear from the following description taken in connection with the drawings in which:

Fig. 1 is a diagrammatic plan view on a relatively small scale showing in full lines a gravity roller conveyor of articulated construction arranged to form a curved path for the loads thereon, and showing, in dotted lines, two possible arrangements of the articulated sections of the conveyor.

Fig. 2 is a top plan view on a much larger scale than Fig. 1, showing several consecutive sections of a conveyor embodying this invention.

Fig. 3 is a side elevation of the structure shown in Fig. 2.

Fig. 4 is a fragmentary sectional view showing the lower portion of a supporting leg of adjustable construction.

Fig. 5 is a front elevation of one of the leg-supported sections of the conveyor.

Fig. 6 is a front elevation of one of the coupling sections of the conveyor.

Fig. 7 is a detail sectional view taken substantially as indicated at line 7—7 on Fig. 2.

Fig. 8 is a top plan view of the coupling section shown in Fig. 6, with the rollers omitted.

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Fig. 9 is a top plan view of the supported section shown in Fig. 5, with the rollers omitted.

Fig. 10 is a fragmentary detail section taken as indicated at line 10—10 on Fig. 5.

The roller conveyor illustrated in Fig. 1 as an embodiment of the invention includes the section 10 comprising several rollers carried in side frame plates 12, said plates being connected by cross members 14, 14 and supported on legs 16, 16, said legs being connected in pairs by tie members 17. This section may be considered as the terminal portion of a longer gravity conveyor extending from a factory production line or serving as a part thereof, or installed in a shipping room for delivering the finished product. The present invention is primarily concerned with additional short sections which are pivotally connected to constitute an articulated portion of the conveyor adapted to be variously arranged. Fig. 1 suggests that the additional sections may follow a contour curving first to the right and then to the left, so as to terminate at a point A, laterally offset from the center line of the section 10. In dotted outline, Fig. 1 shows an arrangement of the same articulated sections in direct line with the section 10 so as to terminate at B, while a third arrangement is shown in dotted outline, terminating at point C, offset to the left of the center line of the section 10. It may be assumed, for example, that the points A, B, and C represent separate loading stations or platforms to which the product traveling from the conveyor section 10 is to be delivered, to be loaded onto trucks or cars, and that when the truck at A has been filled, the articulated conveyor can be shifted to deliver to the platform B and eventually to the platform C, as required. From a consideration of the following description of the structure it will be evident that various other arrangements could be made; for example, the conveyor might terminate along a direction at right angles to the center line of the section 10 from which loads are passed along to the articulated sections of the conveyor.

To provide for these various possibilities, the articulated portion of the conveyor consists of a number of short sections of the type designated by the letter D in Figs. 2 and 3, and interposed coupling sections, each designated by the letter E in said views. Each of the type D sections consists of a pair of angular bars which serve as cross members 18, connected at their ends, as by welding, to side plates 20 which serve to support rods or axles 22 on which conveyor rollers 24 are rotatably mounted. A leg mem-

ber 26 is welded or otherwise secured at its upper end to each of the side plates 20, and at its lower end is provided with an adjustable foot 28. Cross ties 27 rigidly connect the legs 26. The rods or axles 22 may be removably secured in the plates 20 by any convenient means. As shown in Fig. 2, the type D sections alternate with the type E sections, and the legs 26 of the type D sections are maintained in vertical position by means of horizontal bracing members 30, each comprising a larger tube 32 and a smaller tube 34 telescoped within it, said tubes being rigidly attached to terminal sleeves 36 and 38, respectively, which fit snugly but rotatably over the legs 26. Each leg 26 is provided with a collar 40 or other means forming a shoulder on which the sleeves 36 and 38 rest, as shown in Fig. 3. The legs of the first movable supporting section D may be connected to the forward legs 16 of the stationary conveyor section 10 by horizontal bracing 30 similar to that just described as shown in Fig. 3. Each of the type D sections includes a pair of upwardly open coupling sockets 42 secured respectively in rigid relation to the cross bars 18 at the middle of their length, so that one of said coupling sockets is presented at the front of section D and the other is presented at the rear thereof.

Interposed between each pair of type D sections is a coupling section E consisting of a pair of angular bars serving as cross members 48 and connected at their ends by side plates 50 which support axle rods 22 and rollers 24 carried thereon. Midway between the side plates 50 there is secured to the upper surfaces of the cross bars 48 a longitudinally extending T-bar 52 with its ends projecting beyond the cross members 48 at the front and rear of the section. Cylindrical coupling pivots 54, in the form of short sections of tubing, are welded or otherwise rigidly secured to the projecting end portions of the T-bar 52 so as to depend therefrom in spaced relation to the cross members 48. This arrangement permits the coupling pivots 54 to engage in the sockets 42 so that a type E section connects two type D sections, as shown in Fig. 7, and said type D sections support the coupling section E between them, with the end portions of its T-bar 52 resting upon the upper ends of the sockets 42, and with the legs 26 of the type D sections supporting the entire assembly. To stabilize the coupling section E, it may be provided with rigidly attached bars 56 disposed intermediate the bar 52 and the side plates 50, and projecting forwardly and rearwardly of the section E far enough so that their end portions rest upon the cross members 18 of the adjacent type D sections. Thus the rollers 24 of each section are maintained in substantially horizontal alignment with the rollers 24 of the next section. However, by reason of the pivotal couplings between the sections, they may be arranged with the rollers of each section disposed in angular relation to the rollers of the next section, as shown in full lines in Fig. 1.

When the rollers 24 are thus angularly arranged, the ties between the legs 26 must accommodate themselves accordingly, and this is permitted by the telescopic relation of the parts 32 and 34. If desired, each of the outer tubes 32 may be provided with a set screw, as indicated at 58, or with any other convenient clamping expedient, for holding the ties at adjusted position so as to maintain the desired contour of the runway formed by the rollers 24.

When the runway includes curved portions, as shown in Fig. 1, leading to the delivery points A and C, it is desirable that the rollers 24 be made in short sections so as to accommodate their speed more accurately to that of the two sides of the box or other load as it travels over them; accordingly, Fig. 2 shows these rollers extending only about half way across the conveyor. The axle rods 22 of the type E sections are supported at the middle by the upstanding webs of the T-bars 52, and the T-bars 52^a similarly support the axles 22 in the type D sections; upwardly open notches 63 are formed in the webs of the T-bars to receive the axle rods 22. The webs of the T-bars 52 are shown with inclined end portions at 60 and 62 which serve to reinforce the flanges of said bars which project beyond the cross-members 48 and transmit loads from the rollers 24 of the type E coupling sections onto the upper ends of the sockets 42 and thence through the cross-members 18 of the type D sections to the side plates 20 and legs 26 thereof.

Preferably, the side plates 20 and 50 of the leg-supported sections and coupling sections, respectively, extend somewhat above the upper surfaces of the rollers 24 so as to act as guard flanges to prevent loads or packages from rolling off the conveyor, and, as shown, the initial section 10 has side plates 12 of the same height as the side plates 20 and 50, and serving a similar purpose. In a conveyor section which is always straight, there is no occasion for employing short length rollers, and the rollers 64 of the section 10 are therefore unitary from end to end.

For most purposes it will be desirable that the load-carrying surface formed by the rollers 24 and 64 be slightly inclined downwardly toward the delivery points A, B or C, and if the supporting floor is practically level, the inclination of the conveyor can be effected by adjusting the foot-pieces 28 of the several legs 26 at different positions. As shown in Fig. 4, each foot-piece includes a threaded stem or shank 29 on which a nut 31 is adjustable to serve as a shoulder for engagement by the lower end of the tubular leg 26. If the floor should have irregularities or depressions, as suggested at 66 in Fig. 3, the adjustable foot-piece 28, which, in this particular instance, is shown associated with the leg 16, may be extended into the depression to keep the adjacent portion of the conveyor at the desired level. To permit the slight tilting of any of the short sections with respect to adjacent sections, the tubular coupling pivots 54 have outside diameters which are slightly smaller than the inside diameters of the sockets 42, thus permitting slight axial misalignment of these parts in coupled relation, when necessary.

Preferably, as indicated in the drawings, most of the parts of this structure may be joined by means of simple welds. For example, the side plates 20 and 50 can be welded directly to the ends of the angular cross members 18 and 48. The coupling pivots and sockets, as well as the legs 16 and 26, may be lengths of standard tubing, the sockets 42 being each welded at one side to the adjacent cross member 18 and the pivot members 54, having their upper ends welded to the under surfaces of the tie plates 52.

While there is shown and described herein certain specific structure embodying the invention and illustrative thereof, it may be understood that the invention is not limited thereto or thereby, but includes all modifications and alternative forms which may occur to those skilled in

the art, and which come within the scope of the appended claims.

I claim:

1. In a conveyor of the gravity roller type, a plurality of longitudinally spaced roller-carrying frames having transversely extending cross members with roller supporting means secured thereto, interposed frames between said spaced frames each having transversely extending cross members with roller supporting means secured thereto, pivotal means disposed midway between the ends of said cross members and connecting the interposed frames to said spaced frames for articulation about vertical axes, and stabilizing bars attached to alternate frames between said pivotal means and the ends of the rollers of said frames and lapping the cross members of adjacent frames.

2. In a conveyor of the gravity roller type, the combination of longitudinally spaced supporting roller units each including supporting legs therefor, and supported roller units alternating with said supporting units, cooperating means connecting said units for relative pivotal movement in a horizontal plane, bracing structure for the legs in said conveyor including longitudinal bracing structure connecting the legs of adjacent supporting units, each longitudinal bracing structure comprising members adapted to be telescopically connected to each other, one of said members being pivotally secured to a leg on one of the supporting units and the other being pivotally secured to a leg of the supporting unit adjacent said first mentioned unit, and means for releasably locking said units against telescopic movement.

3. In a conveyor of the gravity roller type, the combination of supporting units spaced along the conveyor path and having rollers thereon, supported units alternating with the supporting units and pivotally connected thereto to provide relative pivotal movement in a horizontal plane, the supporting units having legs, and rigid bracing members pivotally secured to the legs and adapted cooperatively to engage one another between supporting units substantially parallel with said path, whereby said conveyor may readily be formed into any desired path.

4. In a conveyor of the gravity roller type, the combination of longitudinally spaced supporting

units each including a generally horizontal rigid frame with roller supporting means thereon and supporting legs therefor, and supported units alternating with said supporting units, said supported units comprising a generally horizontal frame with roller supporting means thereon, cooperating means connecting said units for relative pivotal movement in a horizontal plane, bracing structure for the legs in said conveyor including rigid transverse members connecting the legs on each supporting unit, and longitudinally extending members connecting the legs of adjacent supporting units, said bracing members comprising telescoping tubular rods having means for releasably clamping same into any adjusted position when telescopically engaged.

5. A substantially portable conveyor adapted for ready variation of the length and curvature thereof which comprises a plurality of supporting and supported roller units, all having free rollers thereon, the supporting and supported units being arranged alternately, the supporting units having central upwardly open pivot sockets and the supported members having central depending male pivot members, carried in said sockets whereby to retain the supported members in coupled, pivotal, readily disassembled condition between the supporting units by virtue of gravity alone, the supporting units having legs, and there being separable, adjustable, rigid bracing means extending between legs of the supporting units and pivotally secured to said legs.

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