J. A. ALVEY.

SWITCH FOR GRAVITY CONVEYERS.

APPLICATION FILED FEB. 14, 1917.

Patented July 10, 1917.

2 SHEETS—SHEET 1.

1,232,882.

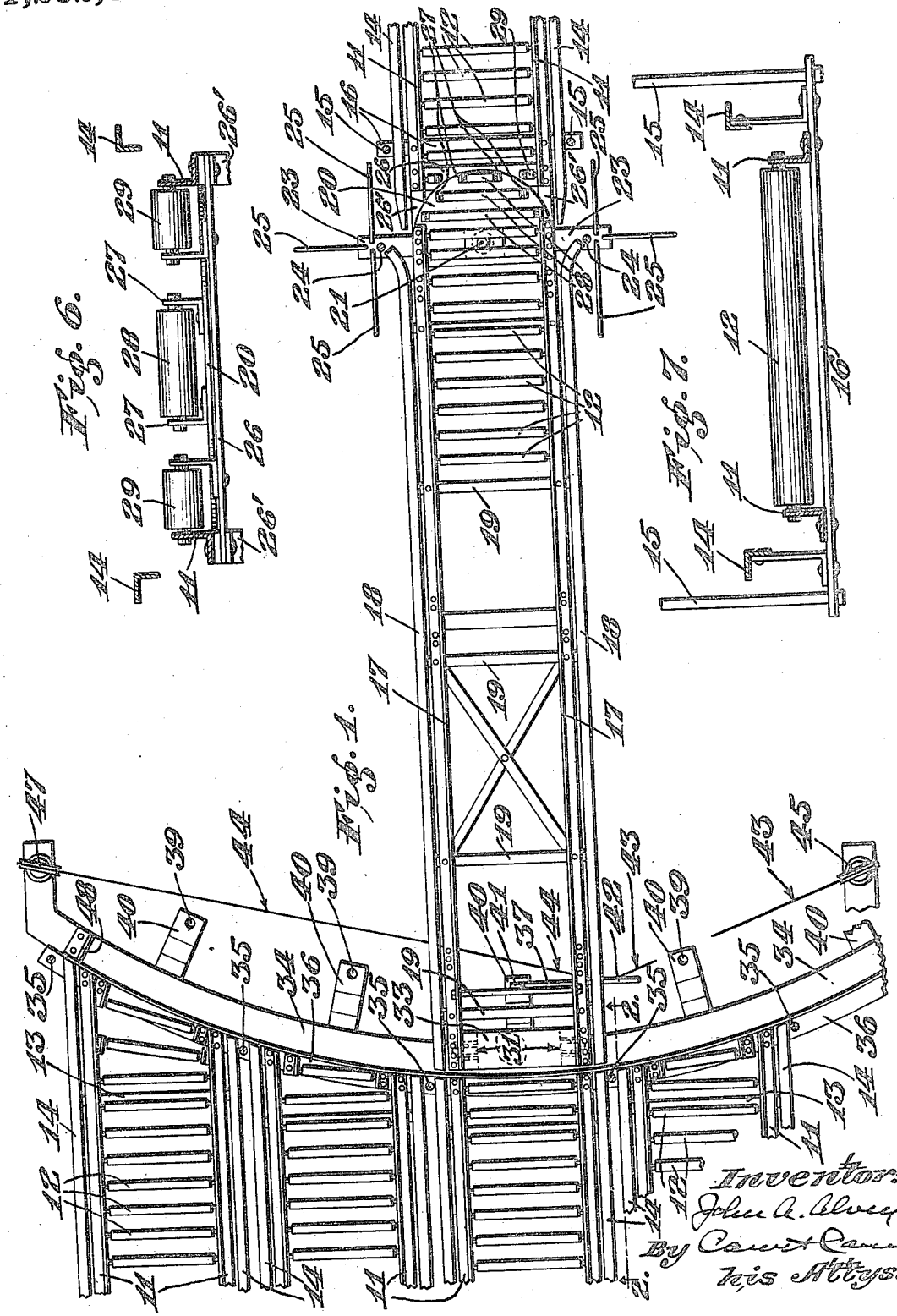


Fig. 1.

Fig. 6.

Fig. 7.

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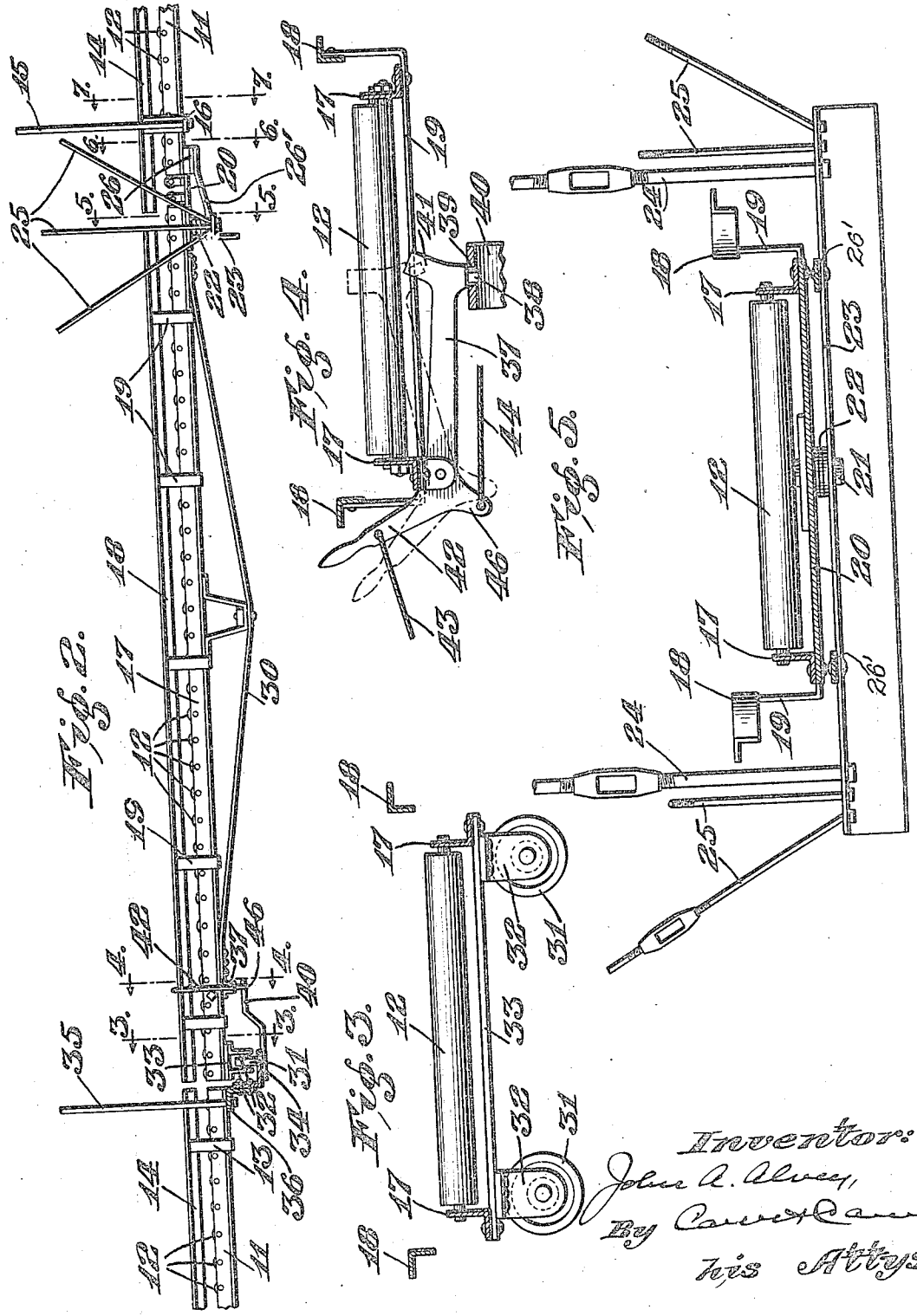
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UNITED STATES PATENT OFFICE.

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SWITCH FOR GRAVITY-CONVEYERS.

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To all whom it may concern:

Be it known that I, JOHN A. ALVEY, a citizen of the United States, and a resident of the city of St. Louis and State of Missouri, have invented a new and useful Improvement in Switches for Gravity-Conveyers, of which the following is a specification.

This invention relates to inclined track conveyers comprising roller-ways along which articles roll under the action of gravity or by their own momentum. The object of the invention is to provide for switching articles from the delivery track to any one of three or more receiving tracks by means of a movable track section.

Further objects of the invention are to hold the movable track section in proper alinement with the stationary track sections, to provide for the ready shifting of the movable track section into alinement with the desired receiving track section, to check the passage of articles across the movable track section while it is being shifted, and to insure the free passage of articles along the conveyer in all operating positions of the device.

The invention consists in the arrangement of the several parts of the device and in the details of construction hereinafter described and claimed, reference being made to the accompanying drawings which illustrate a preferred form of the invention.

In the drawings wherein the same reference numbers designate the same parts in the several views,

Figure 1 is a plan view of a portion of a conveyer system, showing a switch track arrangement having five receiving tracks, only four of which are shown, however, and parts of the system being broken away or removed for convenience of illustration.

Fig. 2 is a side view of the alining track sections in Fig. 1, the arcuate support or track for the free end of the movable track section being shown in cross-section on the line 2—2 in Fig. 1;

Figs. 3, 4 and 5 are cross-sections of the movable track section, drawn to a larger scale than Figs. 1 and 2, on the lines 3—3, 4—4 and 5—5 in Fig. 2, respectively, looking in the direction of the arrows; and

Figs. 6 and 7 are similar cross-sections of the delivery track sections, taken on the lines 6—6 and 7—7 in Fig. 2, respectively.

Roller-way conveyers of the type to which the invention relates are frequently suspended from the ceiling to get them out of the way; hence they must be readily operated and inspected from below as well as from above. In the construction illustrated in the drawings, the stationary track sections consist of angle side bars 11 which support the rollers 12. The angle side bars are arranged in pairs parallel to each other and connected at intervals by cross bars 13 secured beneath them for maintaining them at the proper distance apart. The ends of the cross bars 13 are bent up and support the guide bars 14 which keep the moving articles from running off of the rollers at the sides. The side bars 11, cross bars 13 and guide bars 14 constitute a rigid frame, and are suspended at suitable intervals by means of hangers 15 secured to the ends of cross supports 16 which are arranged beneath them for the purpose (see Figs. 2 and 7).

The movable track section has side bars 17 and guide bars 18 connected by cross bars 19 like the stationary track sections, and is provided with rollers likewise, as shown in Fig. 2. One end of the movable track section, which adjoins the delivery track, has a pivoted plate 20 secured across it beneath the side bars. This pivot plate has a vertical pivot 21 through it at its middle, and is supported on anti-friction rollers or balls arranged in an annular thrust bearing 22 which surrounds the pivot and rests on an angle cross piece 23. The cross piece 23 is suspended from the ceiling by vertical hangers 24 and is braced laterally by inclined hangers 25 at its ends.

The angle cross piece 23 which supports the movable track section is connected to the end cross bar 26 of the delivery track section by two braces 26′ which maintain the two track sections in longitudinal alinement. The pivot 21 is rigidly secured to the angle cross piece 23 and thereby maintains the pivoted end of the movable track section in alinement with the end of the delivery track section. The ends of the guide bars 18 are curved outwardly away from the ends of the guide bars 14 of the delivery track section to avoid interfering with the articles on the roller-way in the extreme angular positions of the movable track section.

The pivot plate 20 is semi-circular, and is

arranged with its curved edge next to the stationary track section and concentric with the pivot so as to turn around it and bridge the space between the ends of the track sections. This pivot plate carries sets of brackets 27 for mounting special rollers 28 in the gap between the ends of the roller supporting bars 11 and 17. The end cross bar 26 of the delivery track section also is provided with brackets for mounting short rollers 29 near its ends adjacent to the pivot plate and rollers 28. These special rollers maintain the continuity of the roller way in all positions of the movable track section.

The movable track section is provided with truss rods 30 for stiffening it across the middle and is supported at its free end on rollers 31, thus constituting a swinging bridge between the stationary track sections. The rollers 31 are mounted in pedestals 32 which are secured to the under side of the end cross piece 33 of the movable track section. The rollers run on the inner flange of a curved track 34 made of two angle bars oppositely arranged back to back with their vertical flanges riveted together to form a Z shape. The track 34 is curved to an arc of a circle having the pivot 21 as its center, and is suspended from the ceiling by means of hangers 35. The ends of the side rails 11 of the receiving track sections are supported from the outer flange 36 of the track 34. There are five receiving tracks, and the free end of the movable track section can be swung to aline with any one of them, as desired.

The movable track section is held in alining position for delivering articles to the respective receiving tracks by means of a latch 37 which is pivoted beneath one of the side bars 17 to swing up and down crosswise of the runway. The latch has a downturned finger 38 which is adapted to hook into the hole 39 in each of the locking plates 40 which are secured to the curved track 34 one opposite the middle of each receiving track section. The latch 37 has an upwardly projecting stop 41 which is adapted to stick up above the rollers 12 when the latch is raised to prevent articles from moving off of the end of the movable track section. In Fig. 4 the latch for locking the movable track section is shown in normal locking position in full lines, the dotted lines showing it in raised position to permit the track section to be moved.

The latch 37 is operated by a handle 42, or by means of the cables 43, 44, which lead away to any convenient operating point. The cable 43 is attached to the handle 42 and passes over the guide roller 45 at the adjacent end of the curved track; and the cable 44 is attached to an arm 46, which projects down from the latch at its pivot, and passes over the guide roller 47 at the opposite end of the curved track. Pulling on either of the cables raises the latch and swings the end of the movable track section toward one end or the other end of the curved track. Stops 48 at the ends of the curved track prevent the movable track section from swinging too far in either direction.

It is evident that changes in the construction and arrangement of the parts of the device can be made to suit special conditions of use, and the invention is not restricted to the specific form of the device shown and described.

I claim the following as my invention:

1. A roller-way comprising a plurality of stationary roller track sections and a movable roller track section, a pivot at one end of said movable track section and supporting rollers at its free end, a curved angle bar having a downwardly projecting flange concentric with said pivot and an outwardly projecting flange upon which the ends of the adjacent stationary track sections are supported, and a curved angle bar forming a way having an inwardly projecting flange upon which said rollers run to support the free end of said movable track section in horizontal alinement with the ends of said stationary track sections, the vertical flanges of said angle bars being secured together to form a stiffening web.

2. A roller-way comprising a plurality of stationary roller track sections and a movable roller track section pivoted at one end to swing around a fixed point, rollers at its free end, a fixed way upon which said rollers run, and means operated from a distance for swinging said movable roller track section, said means normally holding said movable roller track section in longitudinal alinement with one of said stationary track sections.

3. A roller-way comprising a plurality of stationary roller track sections and a movable roller track section pivoted at one end to swing around a fixed point and having supporting rollers at its free end, a curved way connected to the ends of said stationary track sections for said rollers to run on, a latch for holding said movable track section in alinement with any one of said stationary sections, and cables for shifting said movable track section angularly into longitudinal alinement with any one of said stationary sections, said cables also operating said latch.

4. A roller-way comprising a plurality of stationary roller track sections and a movable roller track section pivoted at one end to swing around a fixed point in either direction, rollers at its free end, a fixed way upon which said rollers run to support it in horizontal alinement with the ends of said stationary roller track sections, and means for holding said movable roller track section in longitudinal alinement with any

one of said stationary track sections, said means consisting of a latch having a portion adapted to interfere with the movement of articles on said runway when moved to unlatched position.

5. A roller-way comprising a stationary track section and a pivoted track section both provided with rollers, the pivoted track section having a semi-circular end concentric with the pivot and provided with short rollers arranged as chords.

6. A roller-way comprising a stationary track section and a pivoted track section both provided with rollers, the pivoted track section having a semi-circular end concentric with the pivot and provided with short rollers arranged as chords, and the stationary track section having a pair of short rollers near its sides in the space on each side of the semi-circular end of the pivoted track section.

7. A roller-way comprising a stationary track section and a pivoted track section both provided with rollers, the pivoted track section having a semi-circular plate with its curved edge concentric with the pivot and carrying brackets for supporting short rollers arranged as chords.

8. A roller-way comprising a pivoted section having side guide rails for keeping articles on the rollers, a support, a stationary pivot having a ring bearing surrounding it and mounted on said support for pivotally supporting said pivoted section, a stationary section having alining side guides, and braces between said stationary section and pivot support for maintaining the longitudinal and transverse alinement of said sections in all angular positions thereof.

9. A roller-way comprising a pivoted section having side guide rails for keeping articles on the rollers, a support and a stationary pivot supported thereby for supporting said pivoted section, a stationary section having alining side guides, and braces between said stationary section and pivot support for maintaining the longitudinal and transverse alinement of said sections in all angular positions thereof, the ends of the side guides of said pivoted section being curved outwardly to aline with the ends of the guides of the stationary sections in extreme positions of said pivoted section.

Signed at St. Louis, Missouri, this 12th day of February, 1917.

JOHN A. ALVEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."