

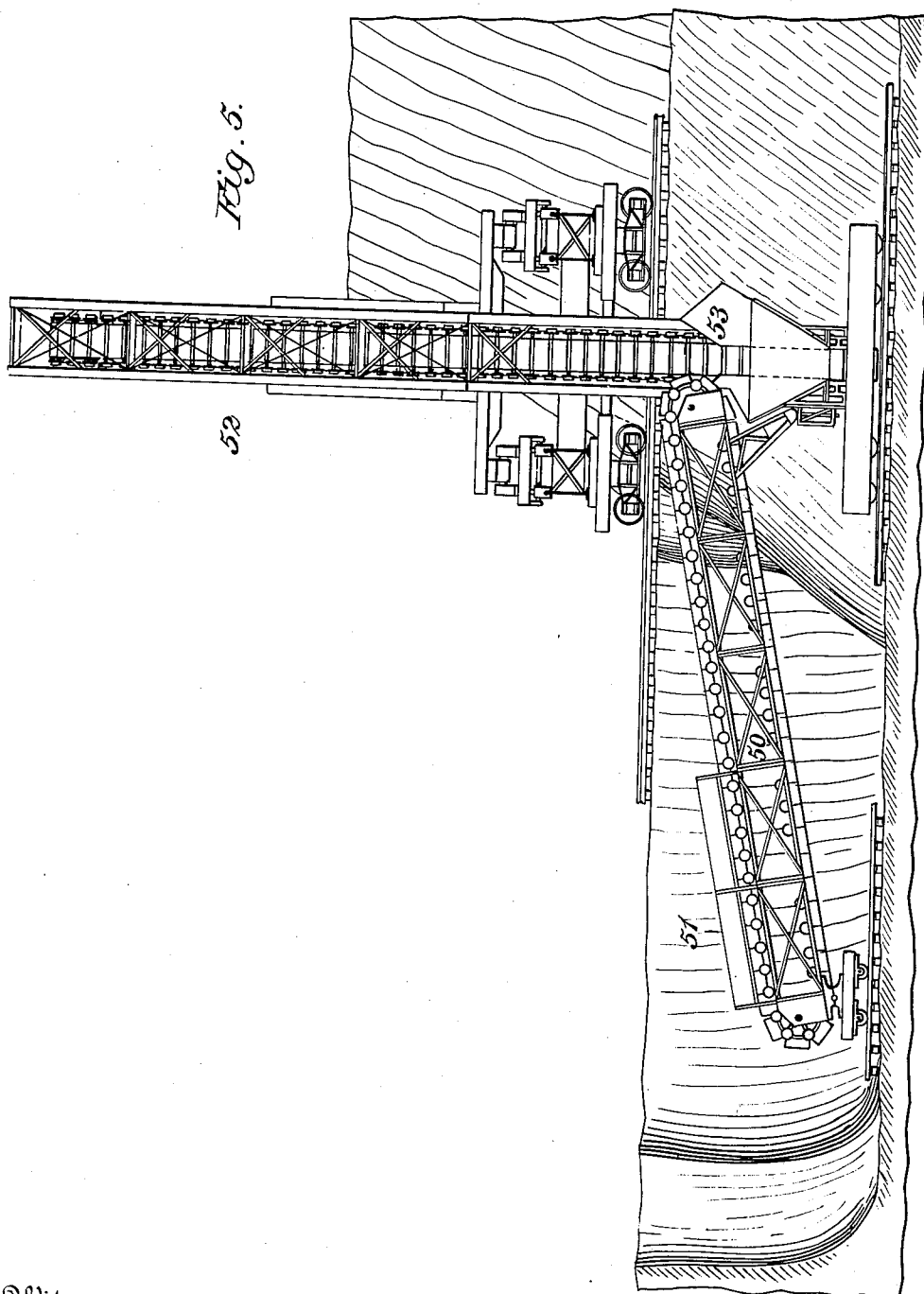
No. 855,425.

H. B. ARDEN.
CONVEYER.

PATENTED MAY 28, 1907.

APPLICATION FILED MAY 18, 1906.

3 SHEETS—SHEET 2.



Witnesses
Edward B. Boulton,
at Marie J. J.

Inventor
Harry Barden
By his attorney
C. Allen Edwards Jun.

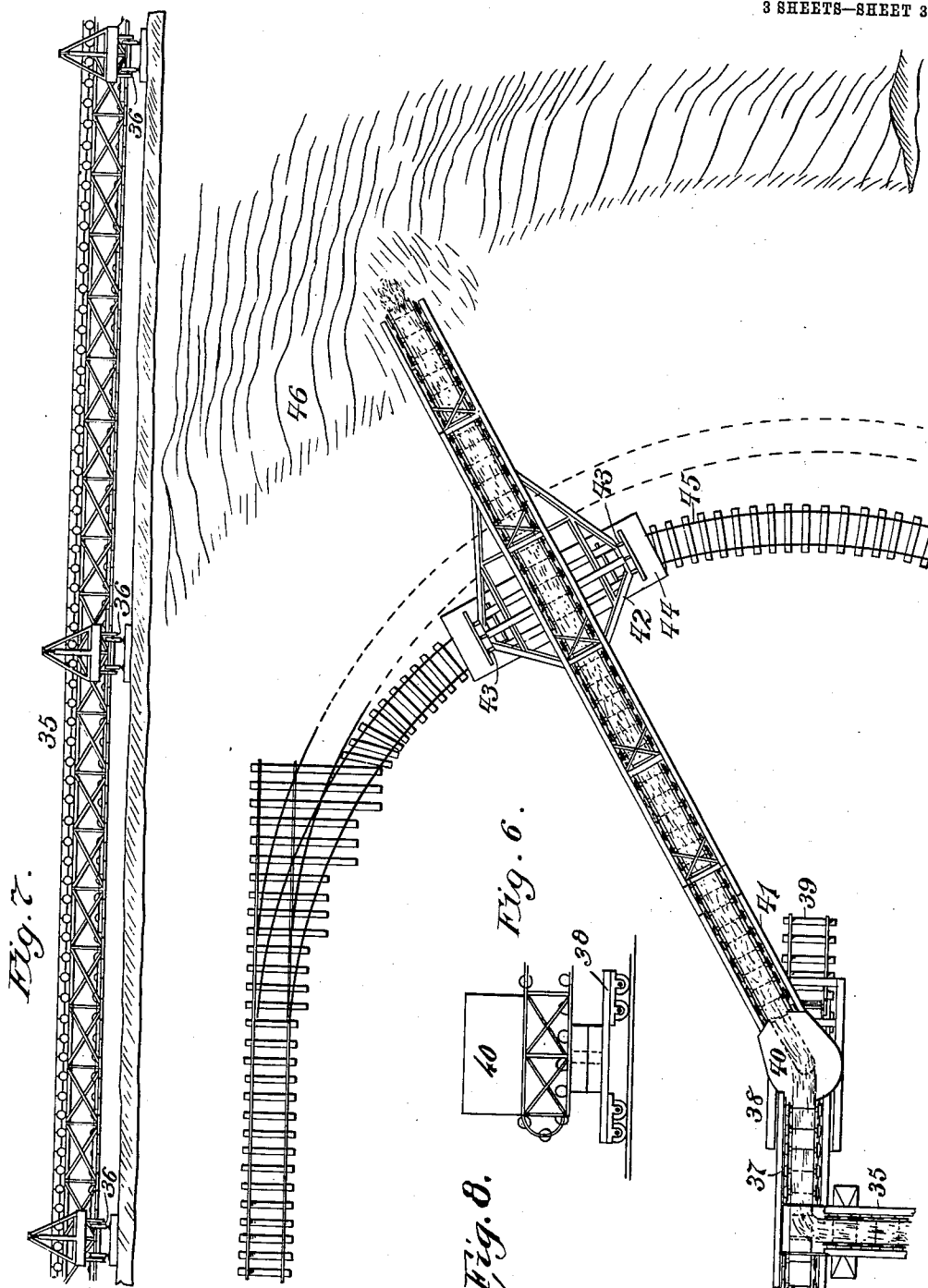
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UNITED STATES PATENT OFFICE.

HARRY B. ARDEN, OF NEW YORK, N. Y.

CONVEYER.

No. 855,425.

Specification of Letters Patent.

Patented May 28, 1907.

Original application filed February 3, 1906, Serial No. 299,242. Divided and this application filed May 18, 1906. Serial No. 317,510.

To all whom it may concern:

Be it known that I, HARRY B. ARDEN, a citizen of the United States, and a resident of the city, county, and State of New York, have invented a new and useful Improvement in Conveyers, of which the following is a specification.

This is a division of my application No. 299,242, filed February 3, 1906.

The object of my invention is to provide an apparatus of this class which will always carry away and dispose of all earth or dirt disturbed by an excavator and do this regardless of the speed with which the excavator is operated or the particular part of the cut wherein it is located.

In the embodiment of my invention which accomplishes this object, the shovel or excavator is suitably mounted and connected with a conveyer of a peculiar type as will hereinafter appear. There are also certain improvements in details of construction incidental to the main invention as will also hereinafter appear.

For a more particular description of my invention reference is to be had to the accompanying drawings forming a part hereof in which:

Figure 1 is a side elevation of one form of my apparatus. Fig. 2 is a section through the conveyer showing the manner of supporting and connecting the buckets. Fig. 3 is a plan view of the hopper. Fig. 4 is a perspective view of one bucket. Fig. 5 is a side elevation of a different arrangement of conveyers. Fig. 6 is yet another modification of my improved conveyer. Fig. 7 is a portion of a more or less horizontal conveyer mounted on trucks to move laterally. Fig. 8 is an elevation of the pivotal portion of the structure shown in Fig. 6.

Throughout the various views of the drawings similar reference characters designate similar parts. The various features of my invention may be embodied in many forms, differing somewhat in details, but all having features in common.

In the modification shown in Figs. 1 to 4 inclusive, the steamshovel 1 is shown mounted on a frame 2 which is connected with a conveyer 3, all of which move as a unit, being carried by suitable trucks 1^a, on a transverse frame 4 carried by trucks on the longitudinal tracks 5 and 6, the other end of the conveyer 3 being supported, by a pier 7

mounted on a truck 8 which runs on a transverse frame 9 supported by two trucks 10 and 11 which in turn run on tracks 12 and 13 placed parallel to the tracks 5 and 6, but on the bank instead of in the cut 14. The conveyer 3 and frame 2 are flexibly connected by any suitable means, as a slot and pin connection 65. The soil or earth excavated by the shovel 1 is carried by the conveyer to its upper end and there dumped on the spoil pile A. As the conveyer 3 and shovel 1 are directly connected, they always have the same relative positions with regard to transverse and longitudinal movements, with the result that each is always ready to co-operate with the other.

From the foregoing a general idea of my invention will be readily had. The details are for the most part of the conventional type and so only the novel features need be particularly pointed out.

Conveniently located at the lower end of the conveyer 3 is a hopper or trough 15 which is situated so that the shovel 1 may dump into it. This hopper 15 has flaring sides 16, 17 and 18 and is open at its bottom and upper end and slightly narrower through this bottom than the cars or buckets 19 which pass beneath it. This hopper 15 is suitably and rigidly supported from the frame of the conveyer 3 and has sufficient clearance over the buckets 19, but not sufficient to allow the dirt excavated to drop through. The buckets 19 have a bottom with a rear vertical wall 21 and two side walls 22 and 23, but no front wall. Each bucket has also three spindle lugs, the rear lower edge having the lugs 24 and 25 and the front edge having the lug 26. These spindle lugs are so proportioned and arranged that the lug 26 of each bucket fits between the lugs 24 and 25 of the bucket immediately in front and a common spindle unites the three. At each end of each spindle are loose flanged wheels 27 that run on tracks 28 and 29 above and below the axis of conveyer 3. By this means the buckets 19 are united into an endless chain with flanged wheels supporting the same at each end of each link so that the chain may always move without delay or friction. As the buckets have no front wall they may be easily dumped. Motion is imparted to this endless chain by means of sprocket wheels 30 and 31 at each end of the conveyer which are rotated by any suitable

means (not shown.) The vertical walls of the buckets 19 come sufficiently close together to form practically continuous side walls until the chain is bent at one of the
5 pairs of sprocket wheels at either end of the conveyer.

The bracing given to the conveyer depends upon its size, length and shape. It may be given any suitable form and is not
10 necessarily straight, but as such details are well within the skill of an engineer, it is not necessary to consider them here. Generally it is better to place horizontally disposed
15 pivot 32 between the pier 7 and truck 8 to allow for inequalities in the tracks 12 and 13. If these tracks are nearly or perfectly true this pivot 32 may be dispensed with.

From the foregoing the operation of this embodiment of my invention will be readily
20 understood. The shovel 1 from time to time and as rapidly as possible empties into the hopper 15 and the spoil passes into the buckets 19 which run along the conveyer 3 and these buckets 19 are dumped when the bucket
25 passes over the sprocket wheel 31. At all times the conveyer is ready to receive spoil from the shovel 1, and no matter how rapidly this shovel 1 is operated, the same condition remains, so that the shovel is never delayed
30 by the conveyer. Nor is it necessary that the buckets 19 should empty onto a spoil pile, they may empty upon a conveyer 35 as shown in Fig. 7 which is carried by trucks 36 and this conveyer 35 may dump on a waste pile not shown, or it may be carried to a third
35 conveyer 37 shown in Fig. 6, which is in turn carried by car 38 on a track 39 which car 38 also carries a pivoted hopper 40 fixed to a conveyer frame 41 and which turns under the
40 conveyer 47. The conveyer frame 41 is pivoted at one end and rests on a pier 42 supported on rollers 43 which run laterally on a car 44 which moves on a track 45 bent on the arc of a circle struck from the pivot of the car
45 38. The conveyer frame 41 is carried far and high enough to dump on a spoil pile 46 which may be greatly removed from the steam shovel 1. As this shovel 1 advances the car 44 is moved slowly on its tracks back
50 and forth and from time to time the track 45 is relaid to compensate for the forward movement of the shovel 1. The buckets are all identical with the buckets 19 above described and are carried the same way on their
55 respective conveyer frames. Whenever one conveyer dumps on another, a hopper should be employed similar to the hopper 15 and which acts in the same way. This applies to all conveyers shown in this application.

60 In Fig. 5 is shown a slightly different arrangement of conveyers adapted for more than one shovel. In this instance a conveyer 50 runs longitudinally of the cut and is fed by two or more shovels, not shown, the usual
65 hopper 51 being employed. The conveyer

50 dumps into the conveyer 52 through the hopper 53. The conveyer 52 may or may not have the transverse movement of the conveyer 3 first above described. The structure shown in Fig. 5 being suitable for large
70 cuts where more than one shovel is employed.

In the foregoing has been shown and described a means for handling, without manual labor, save that necessary to supervise the machines, an indefinite amount of spoil
75 excavated are carried down hill by a conveyer, that particular conveyer may be made to run itself and then brakes may be needed, or it may be geared to some other conveyer which
80 is not downwardly inclined so that the conveyers may be operated with a minimum power.

For some purposes it is essential to use the precise form of conveyer herein described. 85 For others, different forms may be employed so that my invention in its broadest aspects is not to be considered as limited to the precise disclosure herein, but as broad enough to cover all structures that come within the
90 scope of the annexed claims.

Having thus described my invention what I claim is:—

1. A series of conveyers, each adapted to receive excavated material from the preceding
95 conveyer or other source of supply, one of said conveyers being pivoted at one end on a pivot supported on a movable base and supported at its other end from a car on a curved track independent of said movable base
100 whereby the last mentioned conveyer may be dumped on a curved spoil pile.

2. In a device of the class described, a conveyer, longitudinal tracks, trucks carrying frames with transverse tracks on said frames,
105 means for carrying the conveyer from said transverse tracks whereby it may have either a longitudinal or a transverse movement, and a horizontal pivotal connection between one of said carrying means and said conveyer. 110

3. In a device of the class described, a conveyer, longitudinal tracks, trucks carrying frames with transverse tracks on said frames,
115 means for carrying the conveyer from said transverse tracks whereby it may have either a longitudinal or a transverse movement, said conveyer carrying means having horizontal pivotal connections at both ends.

4. In a device of the class described, a conveyer, means for supporting said conveyer so
120 as to permit both longitudinal and transverse movements and a hopper supported above said conveyer, said hopper having an open bottom narrower than the buckets of said conveyer. 125

5. In a device of the class described, a curved track, a second track extending through the center of curvature of the curved track but separate from the same, a conveyer, means for supporting one end of said
130

conveyer from said curved track, and movable means for pivotally supporting the other end of said conveyer from the other track.

6. In a device of the class described, a curved track, a straight track, trucks on each of said tracks, a conveyer, means for pivotally supporting one end of said conveyer from the truck on said straight track, means for supporting the other end of the conveyer from the truck on said curved track, a second curved track and a straight extension of said curved tracks parallel with the first mentioned straight track so that the conveyer may be moved so as to be supported by the trucks on both of said straight tracks, then moved longitudinally of said straight tracks,

then have its free end moved over said second curved track.

7. In a device of the class described, a curved track, a second track extending through the center of curvature of the curved track, a conveyer, a car on said curved track, rollers adapted to run laterally on said car, a pier mounted on said rollers which supports one end of the conveyer, a car on said straight track and pivotal means for supporting the other end of said conveyer from said car.

Signed this 17th day of May, 1906.

HARRY B. ARDEN.

Witnesses:

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