(No Model.)

G. CREHORE.

ENDLESS TRAIN CONVEYER.

No. 282,959. Patented Aug. 14, 1883.

Fig. 1.

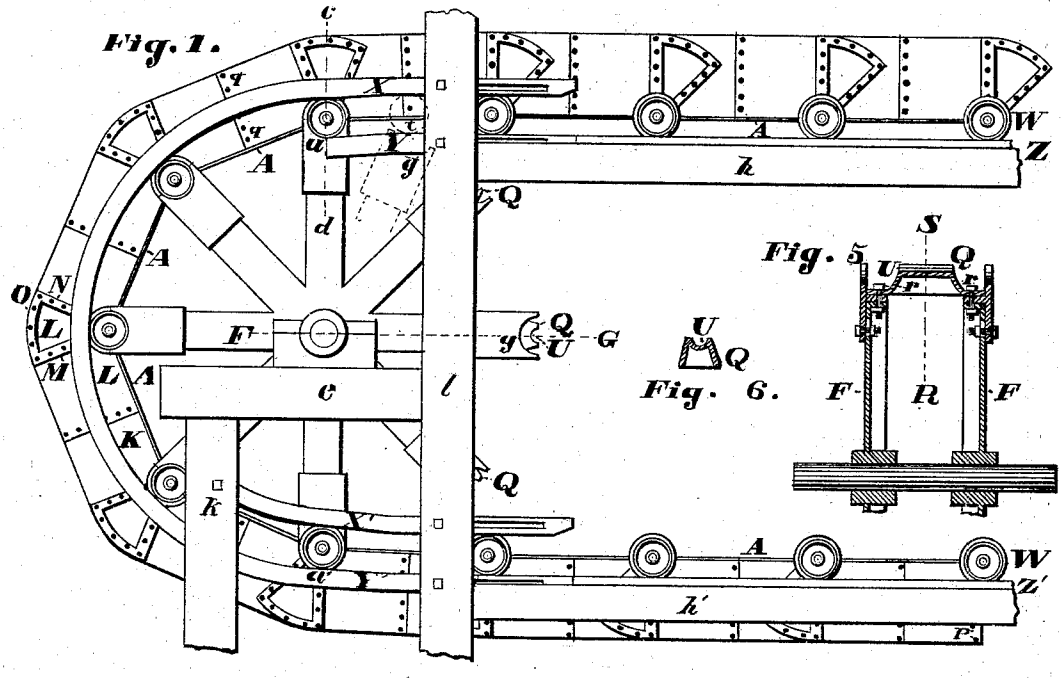


Fig. 5.

Fig. 6.

Fig. 2.

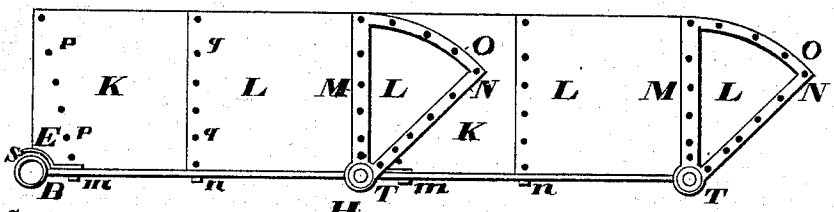
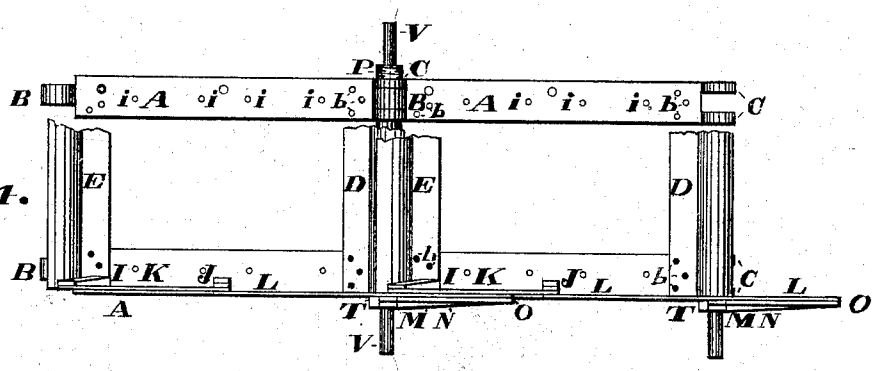


Fig. 3.



Fig. 4.



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UNITED STATES PATENT OFFICE.

GEORGE CREHORE, OF ST. LOUIS, MISSOURI.

ENDLESS TRAIN-CONVEYER.

SPECIFICATION forming part of Letters Patent No. 282,959, dated August 14, 1883.

Application filed October 5, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE CREHORE, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Endless Train-Conveyers, of which the following is a specification.

My invention relates to improvements in my conveyer for which Letters Patent were issued August 8, 1882; and the objects of my improvements are, first, to reduce the weight and increase the efficiency of the cars without impairing their strength, and, second, to give the wheel a deeper hold in the scallop of the spider arm or drum. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of one end of the improved conveyer wherein the sides and bottom of the cars lap by or "telescope" into each other; Fig. 2, a side elevation of two telescoping cars coupled together with their axle; Fig. 3, a side elevation of two coupling-bars having telescoping parts of bottom attached and being coupled together with an axle; Fig. 4, a plan of the coupling-bars of two cars coupled together with an axle, and having the telescoping parts of the bottoms and one side attached, one side and one end of telescoping parts of the bottom being removed to expose the construction of the coupling-bars; Fig. 5, a cross-section through the line F G, Fig. 1, of two spider-arms sustaining an axle-support, Q, in working position; and Fig. 6, a cross-section of the axle-support Q through the line S R.

The opposite end of the conveyer is made precisely like the end shown in Fig. 1, and hence is omitted from the drawings.

The corresponding parts of all the cars in this endless train-conveyer are made exactly alike, and similar letters refer to similar parts in all the views.

The spider-arms F and their sustaining frame-work of timbers *e l k* and all other parts of this conveyer, except as herein specified, are constructed the same as my original conveyer, which was patented August 8, 1882.

The bodies of the cars have no ends, and consist only of bottoms and sides, which lap by or telescope into each other. To cause them to range in a line, the coupling-bars A A have their eye C in two parts, about one-half the breadth of the eye C having been cut from its central part, while the eye B of the opposite end of the coupling-bar corresponds to and will just fit into the place of the part cut out of the eye C, as shown at B C, Fig. 4, where the sleeve P and axle V pass through them both, making a hinge-like joint, thus getting more room for the support Q, Fig. 5.

The telescoping parts D and E of the bottom of the cars are made to come flush with the outside of that part of the side of the car marked K, and are fastened to the coupling-bars A A with bolts or rivets *b b*. They (D and E) are partly flat and partly circular, the circular part of D being fitted tightly down to the eyes C C of the coupling-bars A A. The part E of the bottom, at the end B of the coupling-bars A A, has its curved part concentric with the eyes B B at a distance equal to the space *s* from them, (B B.) The space *s* is made just large enough to receive the curved part of D of the adjoining car when the cars are coupled together. The part E of car-bottom is thus made to overlap the part D of adjoining car. The distance that the part E must overlap the part D is governed by the number of arms in the spiders around which the train swings in passing from upper to lower track, and vice versa. For instance, if the spiders have six arms each, the lap must cover a space of a little more than sixty degrees on the arc of the curved part, while eight arms require a little more than forty-five degrees. As the eyes B and C and the sleeve or axle wear away by use the cars pull apart a little. Now, if the part E overlapped the part D no farther than the line H perpendicular to the axis of the axles, the joint between the two parts D and E would open as the wear just mentioned progresses, and perhaps allow conveyed material to escape. For the especial purpose of remedying this evil, I extend the part E of the bottom past the line H to *f*, which will cause the concave part of E, that lies between the line H and point *f*, to draw toward the convex part of D, which lies between the same point and line, causing the two parts of the bottom, E and D, to come tighter together at these points as the wear just alluded to progresses. All the bottom of the car in-

termediate between the parts D and E may be made of either wood or metal and be fastened to the coupling-bars A A with bolts or rivets reaching through the holes *i i*, &c.

The studs I and J at the side of the cars are set a distance equal to twice the thickness of the siding K L from the outer edge of the coupling-bars A A, which they pierce, and to which they are made fast by the nuts *m n*. The stud I may stand inclined from the nut *m* to the top corner of the car-side, as is indicated by the line of rivets *p p*. The stud J may stand perpendicular to the coupling-bars A A, as is indicated by the line of rivets *q q*.

M N O is a double stud, having an eye, T, at its lower end, in which eye a thread is cut to fit a corresponding thread on the sleeve P, or on the axle V, without the sleeve P. The two branches M N diverge from the eye T, and are of a length equal to the height of the car-side. They are connected together at the top by the circular piece O. Their divergence should be about equal to the angle between the spider-arms. The branch M should be perpendicular, and the branch N be so placed that in passing over the spider-arms (see Fig. 1, N) it will be parallel with and lap at least its own breadth by the end of the adjoining car-side. The pieces D and E having been riveted to the coupling-bars A A, two car-bottoms are connected together by the sleeve P or the axle V, as seen in Fig. 4, when the stud M N O is screwed to its place tight against the outer edge of the coupling-bars A A.

The part K of the side of the car has its ends perpendicular, its top horizontal, and its bottom edge fitted to the telescoping part E of the bottom of car and to the coupling-bar A, and is made fast to the studs I and J with bolts or rivets *p p q q*.

The part L of the side of car has one end perpendicular, its other end being flush with the outer edge of the branch N of double stud, while its top edge is horizontal from stud J to the part M of double stud, thence flush with upper edge of circular part O to outer edge of N. The bottom edge of L fits tightly to the top of the coupling-bar A and its eye C. The outside of L is flush with the out edge of the coupling-bar A, while its inside is flush with the outside of the part K of side. The part L of side laps over the part K on stud J, one set of rivets or bolts *q q* securing both parts K and L. The part L of side is also bolted or riveted to M N and the circular part O of the double stud.

The object of making the stud M N double and attaching it to the sleeve or axle with a screw-thread is to prevent the possibility of the part L of side from spreading away from the part K of adjoining car under any conditions. The opposite side of the car is made similar to the side just described. The telescoping of the cars, as described, greatly improves the conveyer as a mineral carrier, renders it capable of carrying grain in bags as well as in bulk, and makes the cars lighter.

For the purpose of reducing the weight of the axles and sleeves to the lowest point, and at the same time be able to transmit power as through a belt, I attach to the arms of the spiders, by means of the bolts *r r*, an axle-support, Q, which has a groove, U, in which (while passing around the spiders) that part of the axle or sleeve which is between the coupling-bars of the two opposite sides of the car rests. This central support, Q, for the axle may be made in a variety of ways, and be attached to the spider-arms as already described; or it could be attached to a drum or pulley which could be introduced between the spider-arms for the purpose. In the present instance it is supposed to be made of cast-iron and shaped as shown by its longitudinal section in Fig. 5 and its cross-section, Fig. 6, through the line S R. The groove U of this axle-support Q may be made to come in contact with the sleeve or axle along the whole space between two opposite coupling-bars; or it may come in contact with sleeve or axle near each coupling-bar and be cut away at its center; or it may support the axle or sleeve at a central point and be cut away any desired space near the coupling-bars. The circumstances under which it is used in any particular conveyer will determine the part or parts of the sleeve or axle with which it must come in contact. The main point in the construction of the axle-support Q is to so adjust the groove U that it will have come fairly in contact with the axle or sleeve the instant the car-wheel leaves the track at the point *a*.

By using an axle-support, Q, no necessary force passing through the coupling-bars A can bend the axles downward in the center while the cars are swinging around the spiders, whereby I am enabled to greatly reduce the weight and cost of the cars by using much lighter axles, sleeves, and wheels than heretofore.

If the line of the top of the track Y Z were straight and perpendicular to the line *c d* at the point *a*, and if at the same time the scallop *g* in the spider-arm were of a depth equal to one-half the diameter of the car-wheel, then at or near the point Y the end of the spider-arm would strike the tread of the car-wheel and prevent it from entering the scallop. I therefore raise the upper track above the level of the point *a* enough to let the spider-arms pass under the tread of the car-wheel at the point Y, and slope down the end of the track from Y to *a*.

The relative positions of the car-wheel and scalloped spider-arm at the point Y are shown by the dotted lines, wherein *t* is the former and *g'* the latter. The lower track is depressed below the level of the bottom of the scallop in the spider-arms as much as the upper track is raised above the same.

That part of the curved guard-iron X Y' which lies over the part of track *a* Y is made parallel with *a* Y. An extra guard, X', attached to the posts *k l*, is placed above the

wheels at their approach to the lower track, to cause the wheels to leave the scallops at the proper instant.

By the arrangement of tracks and guard-irons just described I am enabled to have the car-wheels sink deeper into the scallops than heretofore—an object of much importance when the conveyer is used to transmit power.

I claim as my invention and desire to secure by Letters Patent—

1. In an endless train-conveyer, the arrangement of the sides and bottoms of the cars so that they lap by or telescope into each other, whereby I am enabled to wholly discard the ends of the cars, for the purposes and in a manner substantially as set forth.

2. In an endless train-conveyer where the bottoms and sides of the cars lap by or telescope into each other, the arrangement of the lapping or telescoping parts of the bottoms in curves, in which the upper curved part, E, over the lower curved part, D, extends past the axis of the axle in the manner specified, and for the especial purpose of causing the joint between them to tighten as the axles or sleeves wear away, as is fully set forth.

3. In a telescoping car of an endless train-conveyer, in the stud M N, the eye T, having a screw-thread for fastening to the axle or sleeve, as set forth.

4. In an endless train-conveyer, the groove U in an axle-support, Q, arranged substantially as and for the purposes specified.

5. In an endless train-conveyer, the guard-iron X′ and the arrangement of the tracks whereby a slope is produced from Y to *a* in the upper track and from *a′* to Y′ in the lower track, all for the purposes specified.

6. In the cars of an endless train-conveyer, the specified construction of the eyes B and C of the coupling-bars A A, in combination with the sleeve P and axle V, for the purposes set forth.

GEORGE CREHORE.

Witnesses:
PETER BERGER,
PATRICK MCCANN.