C. W. ANDREWS.

LOADING MACHINERY.

APPLICATION FILED APR. 11, 1907.

910,038. Patented Jan. 19, 1909.

2 SHEETS—SHEET 1.

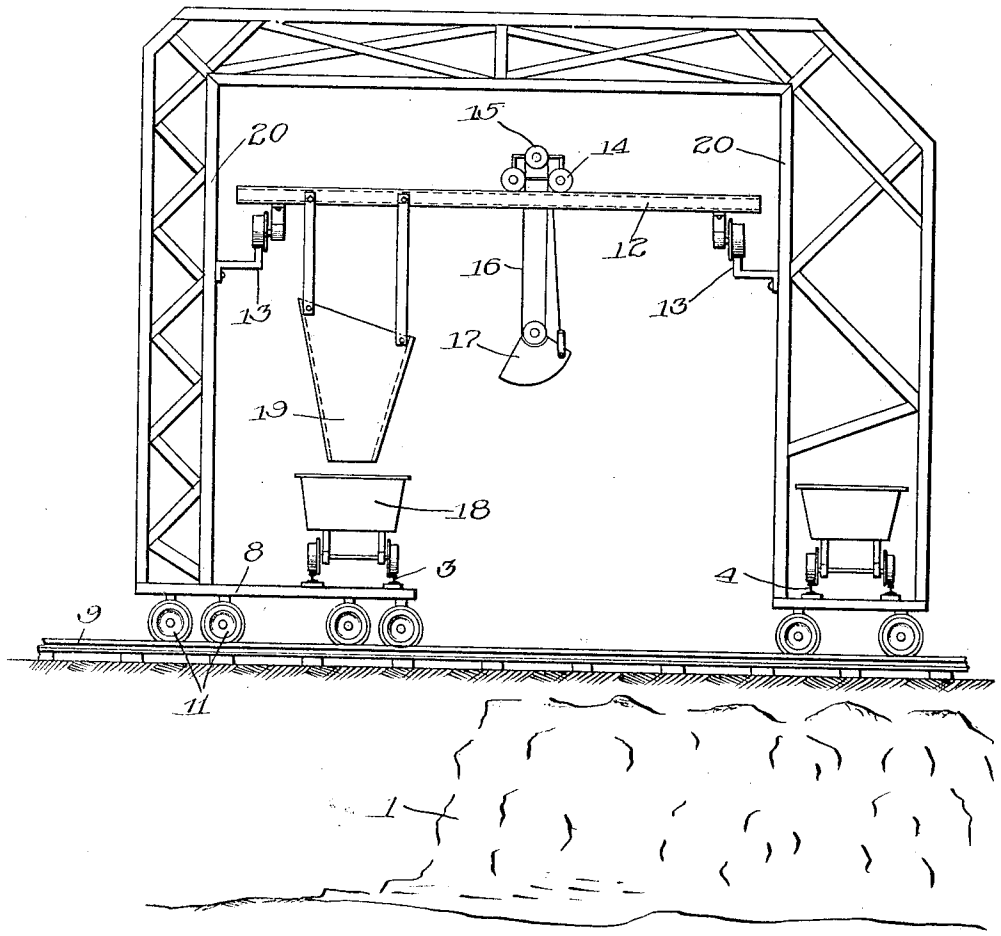

Fig. 1.

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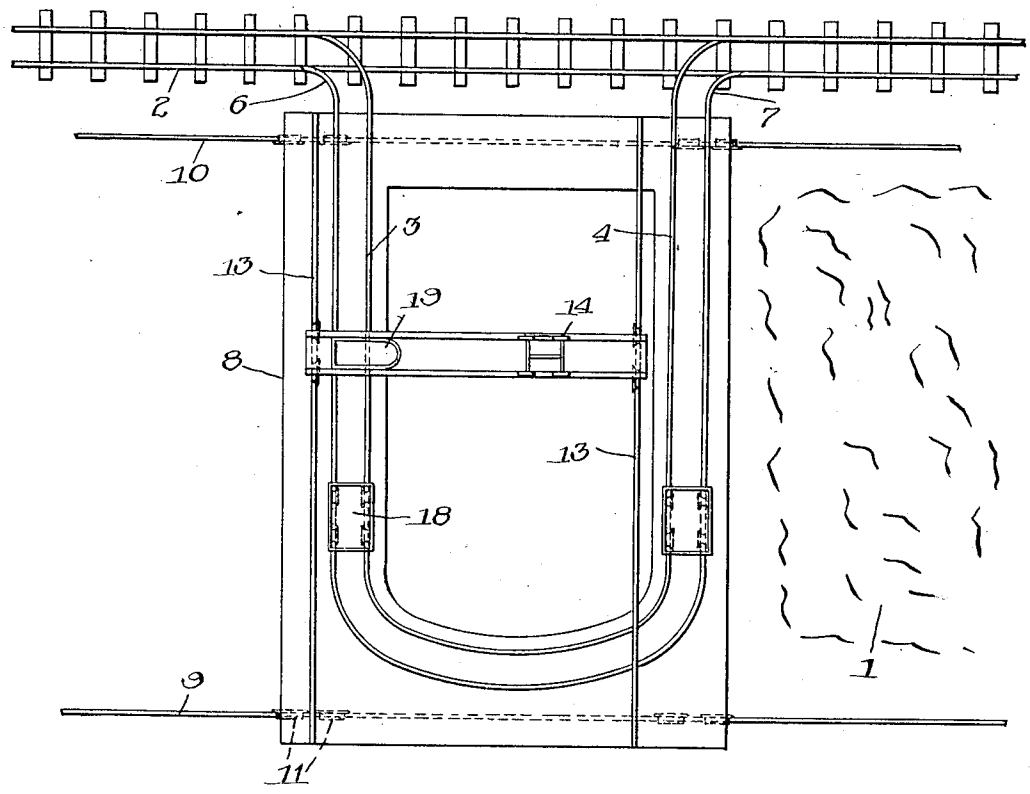
2 SHEETS—SHEET 2.

Fig. 2.



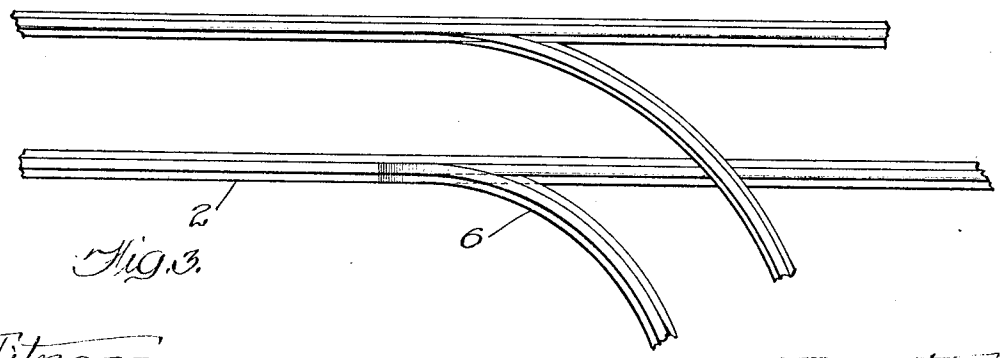


Fig. 3.

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UNITED STATES PATENT OFFICE.

CHARLES W. ANDREWS, OF DULUTH, MINNESOTA.

LOADING MACHINERY.

No. 910,038. Specification of Letters Patent. Patented Jan. 19, 1909.

Application filed April 11, 1907. Serial No. 367,508.

To all whom it may concern:

Be it known that I, CHARLES W. ANDREWS, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Loading Machinery, of which the following is a full, clear, and exact specification.

This invention relates more particularly to machines for loading cars with coal or other like material from a pile.

It is customary in this art to store the coal in piles of great width and length, and in order to load cars therefrom economically it is important that the car be adapted to traverse the entire width of the pile at various lines throughout the length of the pile, as it is not feasible to convey the coal or material from different points in the length and width of the pile to the car.

My invention therefore has for its object to provide an improved, simple and efficient means whereby the car may traverse the pile along any line throughout the length or width of the pile and the coal or other material in the pile may be readily lifted therefrom and deposited into the car.

Another object of the invention is to provide the cars with a loop track capable of being extended across the pile from a main track and projected bodily lengthwise of the pile parallel with the main track, in conjunction with means traveling with the loop track for elevating the coal or material from the pile and depositing it into the car at various points on the loop track.

A further object of the invention is to provide the car or cars with a track extending across the pile and movable bodily lengthwise of the pile in a direction parallel with and as a switch from a main track, and in combination with the track thus movable a crane or hoist which moves bodily with the track and also independently thereof in a direction lengthwise of the movement of a movable track so that the crane or hoist may pick up the coal at various points in the length of the pile without moving the track to conduct the same to the car at one point on the track, and as the pile is diminished along that line it may be moved transversely of the pile to load the car or cars therefrom along another line lengthwise of the pile.

With a view to the attainment of these ends and the accomplishment of certain other objects which will hereinafter appear, the invention consists in the features of novelty in the construction, combination and arrangement of elements which will now be described with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings—Figure 1 is a diagrammatic end view of a loading device embodying this invention, showing its relation to the pile to be loaded. Fig. 2 is a diagrammatic plan thereof; and Fig. 3 is a detail of a part of one of the switches.

1 represents the pile of coal or other material to be loaded into the cars or vehicles, and which as before mentioned is usually stored in a pile of great width and still greater length.

2 is a railway track, which extends parallel with the pile and on which the cars to be loaded are arranged; it being customary in practice to switch the cars from this main track 2 on to a switch which extends transversely of the pile, and after the cars are loaded to again conduct them back onto the main track, whence they are conducted away. According to this invention this switch track which extends transversely of the pile 1 is made in the form of a loop or return bend having two branches 3, 4, each of which is provided with a portable switch at its end adapted to connect with the main track 2, one of the switches being shown at 6 and the other at 7, so that the cars may pass over the switch 6 onto the branch 3 and continue along the branch 4 back again onto the track 2. This loop track 3 is portable lengthwise of the coal pile, so that as the pile is diminished the track may be advanced and the cars run from the main track as a continuous operation without having to back the cars off the switch track or portable track after they have been loaded. In fact, it is obvious that a number of cars made up into a train may, if desired, be run from the main track onto the portable switch track and there loaded either simultaneously or successively, and after being loaded continued on their journey over the branch 4 and back onto the main track. This portable track is mounted upon a bridge 8, which extends across the pile 1 and runs on rails 9, 10 at the sides of the pile parallel with the main track 2, the bridge being provided with any suitable trucks 11 to ease its travel,

and its central portion between the branches 3, 4 of the portable track being of course open to expose the pile below.

Mounted upon the bridge in an overhead position is a traveling crane which in details of construction and general arrangement need not be different from traveling cranes of ordinary design. In this exemplification of the invention it is shown as being composed of a cross track 12 mounted upon longitudinal tracks 13, and a truck or trolley 14 mounted upon the cross track 12 and provided with suitable hoisting mechanism 15 and cable 16 supporting a bucket 17 or other device capable of picking up the material from the pile 1 and conducting it to the cars as they stand upon the branch 3, one of these cars being shown at 18. The cross track 12 of the crane is provided with a chute 19, which is permanently suspended therefrom and travels with the cross truck lengthwise of the longitudinal tracks 13, so that wherever it may be necessary to situate the cross track 12 of the crane the chute 19 will always be thereunder and at one end thereof in readiness to receive the material from the bucket 17 and direct it into the car below, it being of course understood that the chute 19 is mounted directly over the branch 3 of the portable switch track so that no matter where the car may be situated in the length of branch 3 or the crane may be operating in the width of the pile, the chute will always be in position to deposit in the car. The particular means for supporting the tracks 13 of the crane is, of course, immaterial. In this illustration of the invention the bridge 8 is shown with a superstructure of proper design to afford the requisite rigidity, embodying stanchions 20 upon which the tracks or rails 13 are supported.

With the apparatus thus constructed it will be seen that the hoist bucket 17 is capable of being moved rapidly back and forth lengthwise of the pile without advancing or moving the main bridge 8, and it is also capable of progressing transversely of the pile as the pile is eaten away. In practice, therefore, the loading will be started at the end of the bridge contiguous to the main track 2, with the crane at that end and the trolley or truck 14 of the crane at the end of the track 12 removed from the branch 3, the car to be loaded being then on the branch 3 and directly below the hopper 19. The material elevated by the bucket 17 will then be conducted the length of the track 12 and deposited in a chute 19, thus passing back and forth until the car 18 is loaded or until all of the pile is removed directly under the line of travel of the trolley 14, when the track 12 will be moved or advanced transversely of the pile until it comes over a part thereof which has not been removed, the car 18 being correspondingly advanced or a new car run into place under chute 19, when the loading operation as before will be repeated. This operation will be repeated until all of the pile throughout the length of travel of the truck 14 on its track 12 and the length of travel of the track 12 on its ways or rails 13 has been entirely removed, whereupon the track 12 will be returned to its starting position at the other end of the bridge 8, and the entire bridge carrying the loop track 3, 4 will be advanced over the pile a distance equal to the travel of the truck 14 on its track 12, the loading operation being then carried on as before. The cars as they are loaded are advanced around the loop onto the branch 4 and thence back onto the main line and out of the way.

In order that the invention may be understood by those skilled in the art the details of an embodiment thereof have been thus specifically described, but

What I claim as new therein and desire to secure by Letters Patent, is:

1. In a device for the purpose described, the combination of a main track, a portable loop track having both terminals arranged to connect with the main track, said portable loop track being adapted to extend over a pile of material to be removed, and a car adapted to pass in a continuous direction from the main track onto the loop track and over again onto the main track.

2. In a device for the purpose described, the combination of a main track, a portable loop track having both its terminals switch on to the main track so as to permit cars to run from the main track onto the loop track and off again in a continuous direction, said loop track being adapted to extend over a pile of material to be removed, and means movable with the loop track for elevating the material into cars while standing on the loop track.

3. In a device for the purpose described, the combination of a main track, a bridge movable lengthwise of the main track at the side thereof, a loop track carried by the bridge and having switches at its terminals extending onto the main track whereby cars may be run from the main track onto the loop track and off again in a continuous direction, means movable bodily with the loop track for elevating material from the bridge and depositing it in cars standing on the loop track, said means being also movable independently of the loop track in a direction transversely thereof.

4. In a device for the purpose described, the combination of a portable bridge adapted to extend over a pile of material to be removed, a track or way carried by the bridge and extending transversely of its line of travel for guiding vehicles to be loaded across the bridge, means mounted upon and

movable with the bridge for elevating material from below the bridge and depositing the same in such vehicles, said means being also movable independently of the bridge in directions lengthwise of and transverse to the said track or way.

5. In a device for the purpose described, the combination of a portable bridge adapted to extend over a pile of material to be removed, a track or way carried by the bridge and extending transversely of its line of travel, for guiding a vehicle to be loaded on the bridge, means mounted upon and movable with the bridge for elevating the material from below the bridge, said means being movable independently of the bridge, and a chute movable with said means in a direction lengthwise of said way or track and situated thereover, and adapted to receive the material from said elevating means.

6. In a device for the purpose described, the combination of a portable bridge adapted to extend over a pile of material to be removed, a track mounted upon and movable with the bridge for guiding a car to be loaded, a chute mounted upon the bridge over said track and movable independently of the bridge lengthwise of the track, means movable back and forth with relation to the chute for elevating the material to be removed into the chute, and means whereby cars may be run onto said track at one end and run from said track at its other end.

7. In a device for the purpose described, the combination of a main track, a portable bridge arranged at the side thereof and movable parallel therewith, a loop track mounted upon said bridge and having switching means at both its terminals for connecting with the main track, a traveling crane mounted upon the bridge above the loop track and embodying means for elevating material from below the bridge, movable independently of the bridge in directions both lengthwise and transversely of the loop track, said bridge having a central opening and the said crane operating over said opening and movable lengthwise thereof in a direction transversely to the line of travel of the bridge.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 14th day of March A. D. 1907.

CHARLES W. ANDREWS.

Witnesses:

FRANCIS A. HOPKINS,

CHARLES H. SEEM.