

(No Model.)

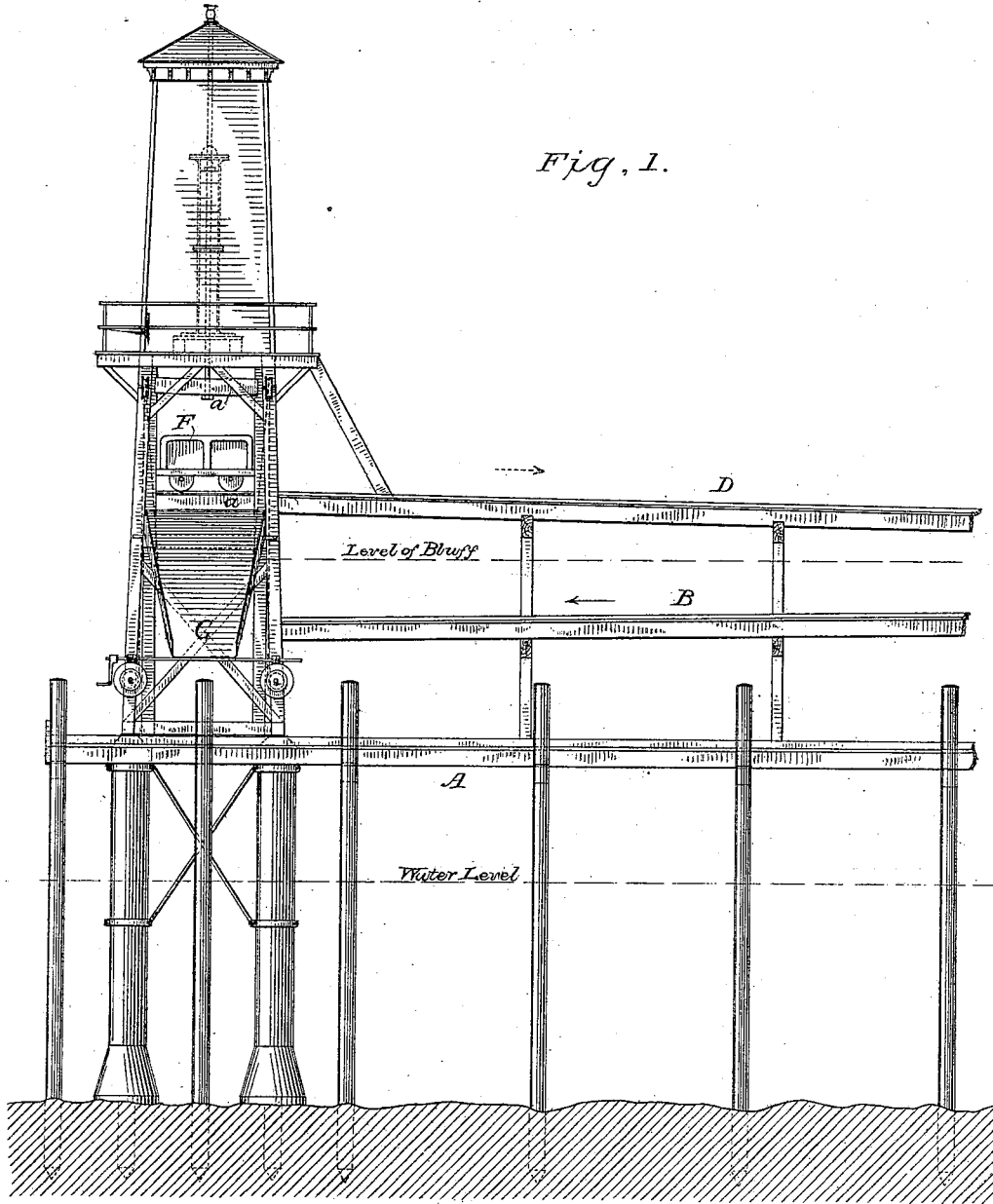
4 Sheets—Sheet 1.

F. BROTHERHOOD.

MEANS FOR LOADING VESSELS WITH PHOSPHATE ROCK, &c.

No. 298,444.

Patented May 13, 1884.



WITNESSES

Wm A. Skinkley
Geo W. Young

INVENTOR

Fred Brotherhood.

By his Attorneys

Spalderson, Hopkins & Heyden.

(No Model.)

4 Sheets—Sheet 2.

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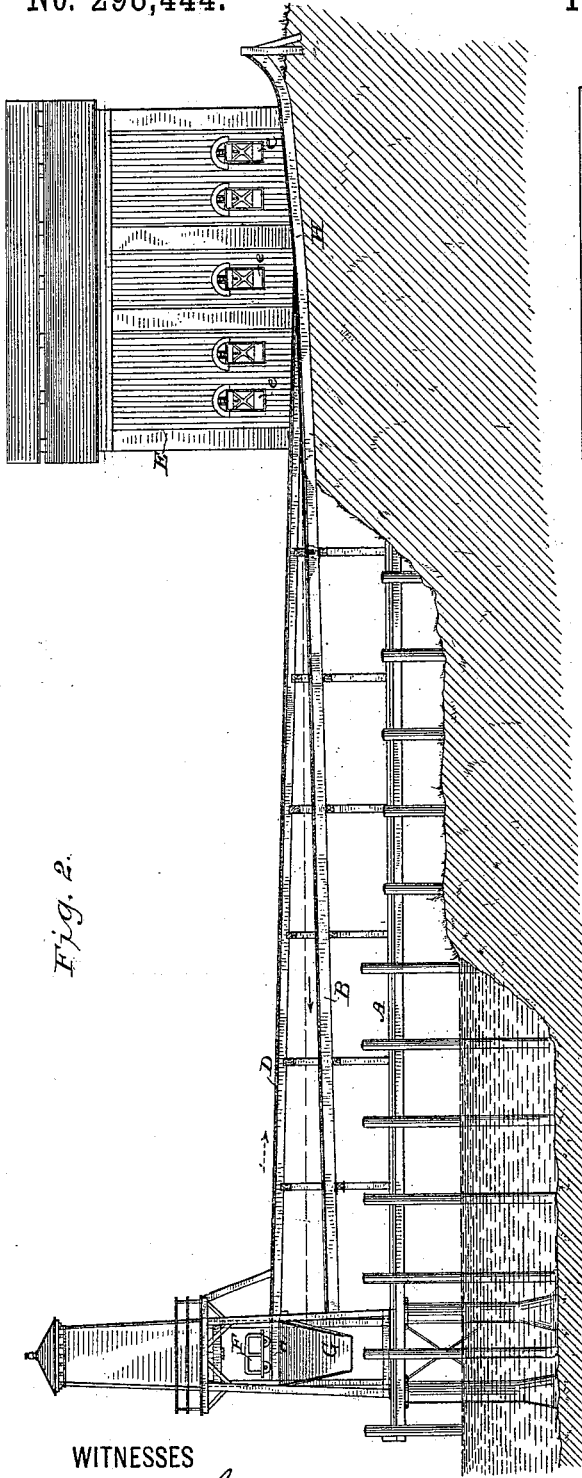


Fig. 2.

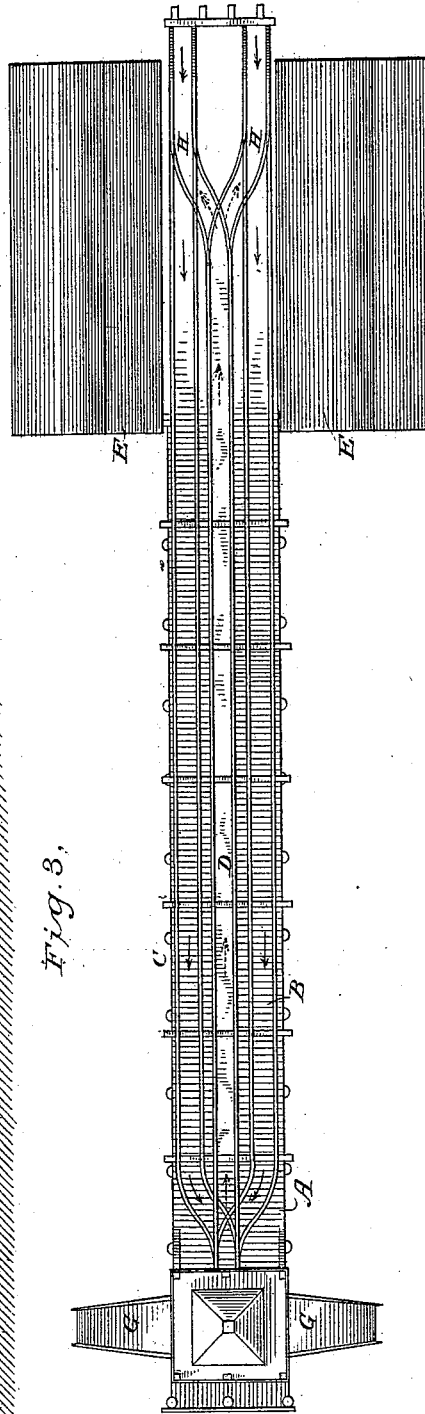


Fig. 3.

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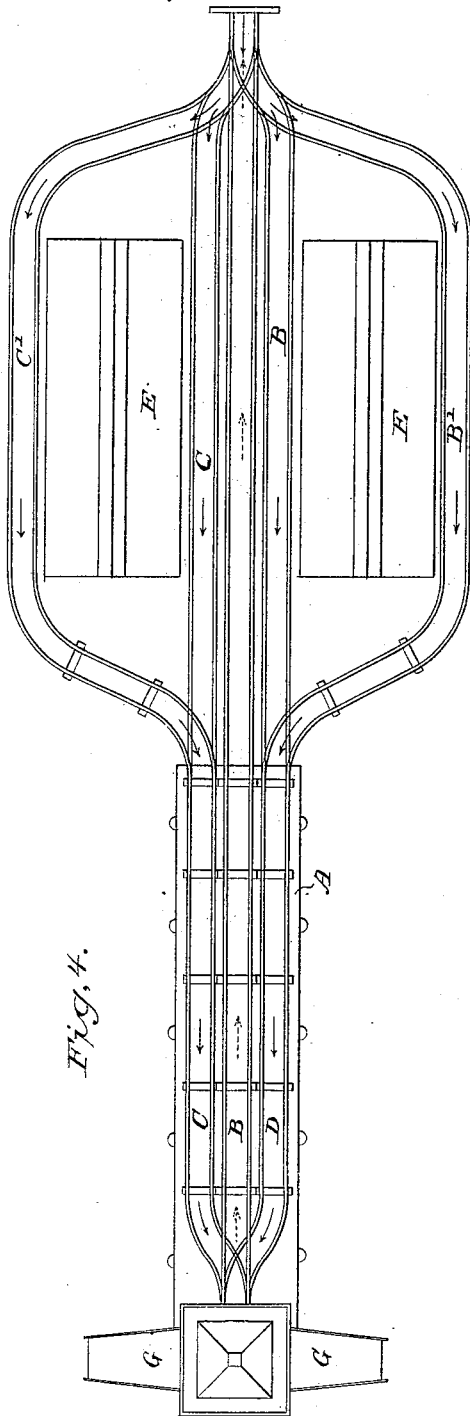


Fig. 4.

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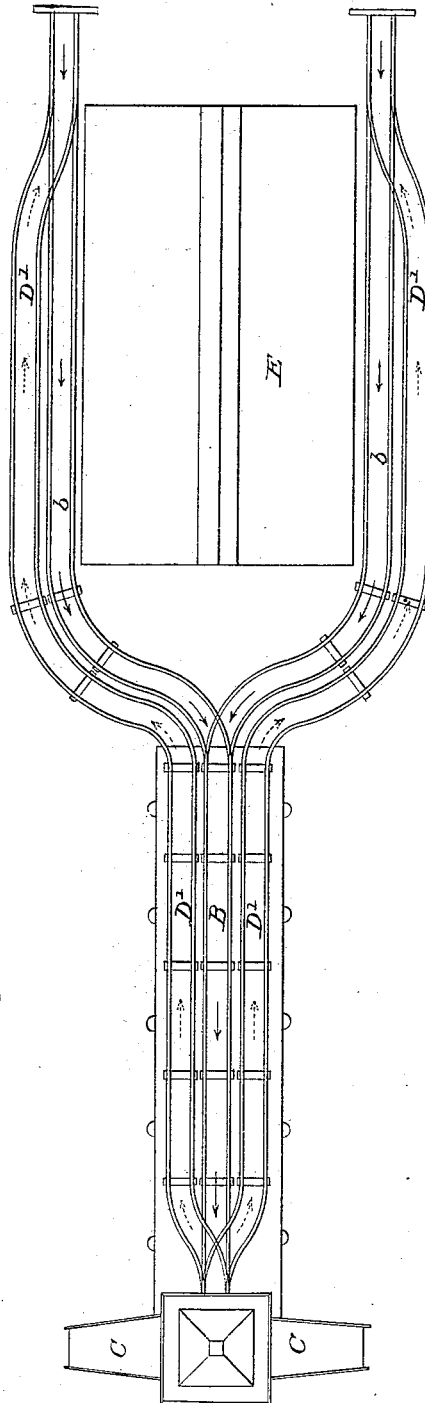


Fig. 5.

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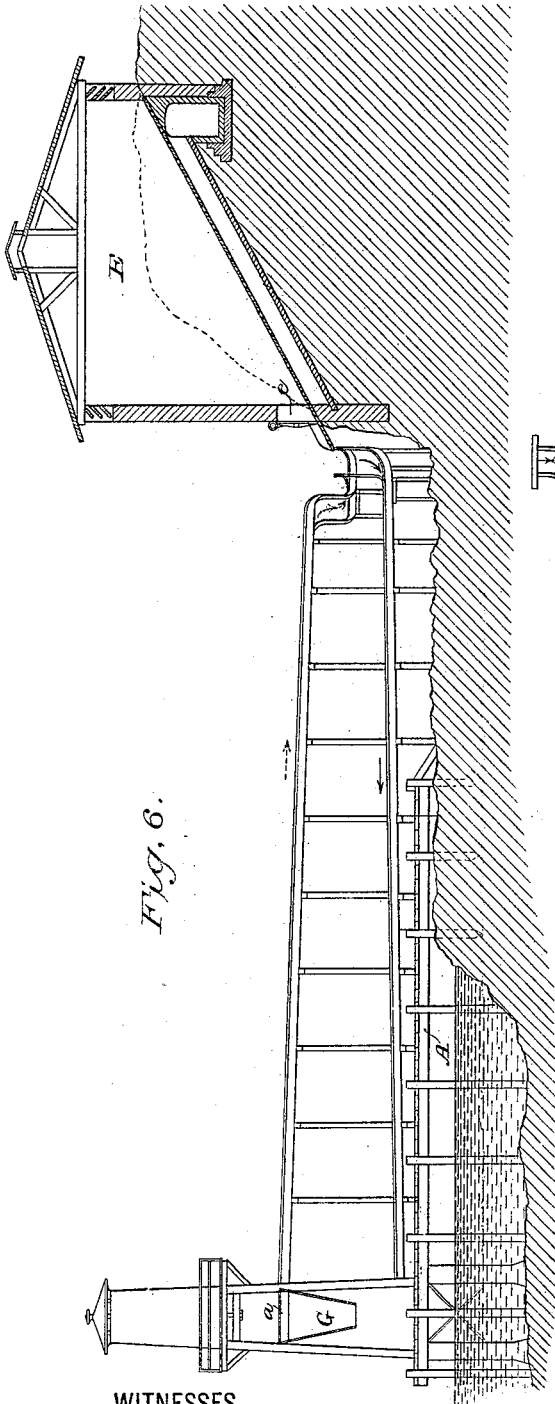


Fig. 6.

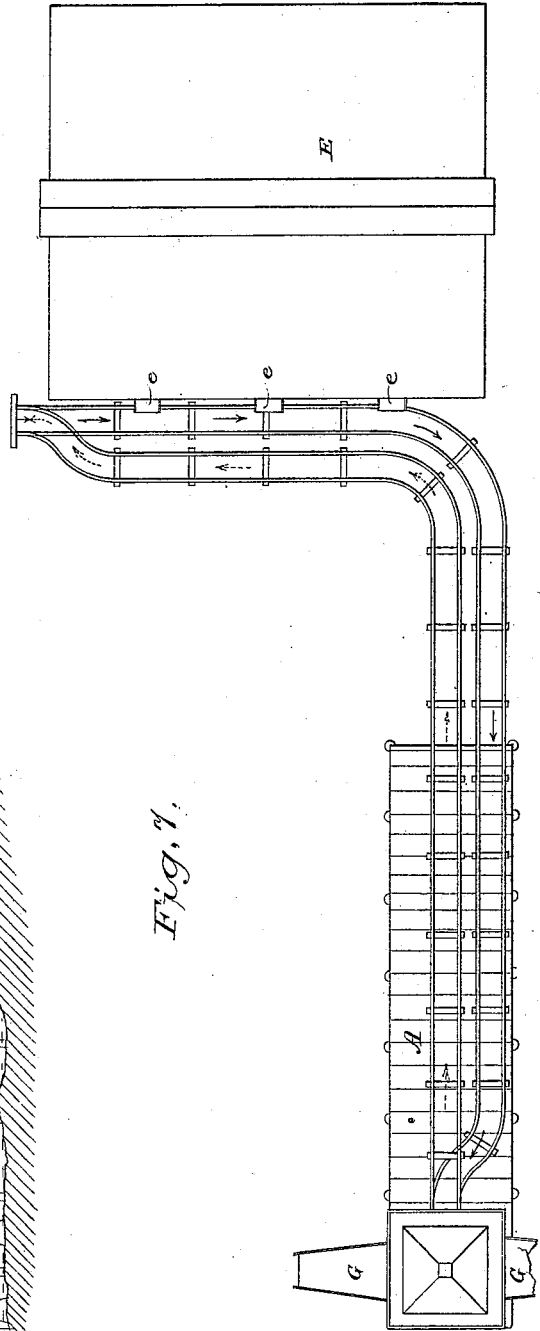


Fig. 7.

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UNITED STATES PATENT OFFICE.

FRED BROTHERHOOD, OF CHARLESTON, SOUTH CAROLINA.

MEANS FOR LOADING VESSELS WITH PHOSPHATE-ROCK, &c.

SPECIFICATION forming part of Letters Patent No. 298,444, dated May 13, 1884.

Application filed January 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, FRED BROTHERHOOD, of Charleston, South Carolina, have invented certain new and useful Improvements in Means for Loading Vessels with Phosphate-Rock, &c., of which the following is a specification.

My invention relates to improvements in means for loading vessels, cars, &c., involving the employment of oppositely-inclined tracks, automatic switches, and elevating apparatus, my object chiefly being to convey phosphate-rock from the structures in which it has been dried to wharfs from which it is loaded upon vessels in an expeditious and economical manner.

The means employed for carrying out my improvements—hereinafter particularly pointed out by the claims—are shown sufficiently in detail in the accompanying drawings, in which—

Figure 1 is a side elevation of the wharf-end portions of the tracks and the elevating apparatus. Fig. 2 is a side elevation, partly in section, with one of the drying structures omitted. Fig. 3 is a plan view showing the entire length of the tracks, the drying-sheds, the wharf, and the elevator apparatus. Fig. 4 is a plan view showing my improvements as adapted for use in connection with two drying-sheds in such manner that each shed may be unloaded from both sides, and the contents of the sheds be transferred to and loaded into vessels, &c. Fig. 5 is a plan view showing my improvements as adapted for use in connection with a single shed which is to be unloaded at its opposite sides. Fig. 6 is a view partly in elevation and partly in section, and Fig. 7 a plan view of a modification of my improvements.

A wharf, A, preferably such as to provide for the loading of a vessel at each side at the same time, is provided with suitable elevating apparatus, to and from the platform *a* of which cars may pass by way of oppositely-inclined railway-tracks extending from one or more storage-sheds or drying structures to this platform. The elevator may be actuated by any suitable well-known means, detailed description of which is not needed here, it being

only necessary that the actuating mechanism of the elevator shall be such as to raise the platform *a* with a car, F, upon it to the desired height, and then lower the platform, for a purpose to be explained.

As shown in Figs. 1, 2, and 3, there are three tracks, B C D, extending from between two storage-sheds or drying structures, E E, to the elevating apparatus at the outer end of the wharf. The tracks B C (hereinafter termed "outgoing tracks") are inclined, so that the cars run outward, or from the drying structures to the elevating apparatus; and the track D (hereinafter termed the "return track") is inclined in the opposite direction, so that the cars run inward, or from the elevating apparatus to the drying structures. The outgoing tracks connect at their outer ends with a short section of track on the elevator-platform, so that when the platform is down loaded cars passing down these tracks will be conducted to this platform, preparatory to being lifted to discharge their contents into suitable conveyers, (shown as consisting of inclined chutes G G,) from which the transferred material is ejected into vessels at the sides of the wharf. Side-dumping cars are employed, so that the material may be dumped into either conveyer-chute. The cars, when emptied, are at the level of the outer end of the return-track, and are conducted by it toward the inner ends of the outgoing tracks. The return-track D is connected by suitable automatic switches at its inner end with the outgoing tracks, so that empty cars traveling from the elevator down the return-track may pass to their respective outgoing tracks, each of which is inclined upwardly at its extreme inner end, so that after cars have been run upon them from the return-track the cars will be arrested by these inclines H H and started toward the outer ends of the tracks, being stopped either by the employment of brakes or by temporarily-placed obstructions upon the tracks. The cars are thus stopped in position to be loaded from the drying structures, from the doors *e* of which the material is discharged directly into them.

Throughout the drawings, the outgoing tracks and the direction of travel of the cars

upon them are indicated by black or full line arrows, and the return-tracks by dotted arrows. The drying structures from which the phosphate-rock is transferred and loaded upon vessels are preferably such as elsewhere described and claimed by me, (see my application No. 118,432 for United States Letters Patent for improvements in means for drying phosphate-rock, &c., filed simultaneously herewith,) provision being made for discharging the material from the opposite sides of the structures into the cars by gravity.

Fig. 4 shows an arrangement such that outgoing tracks B B' C C' in connection with the single return-track D and suitable automatic switches, are provided for receiving the material from both sides of the two drying-sheds E E, and transferring and loading it. By this arrangement cars pass from the upwardly-inclined inner end, *a*, of the return-track D to their respective outgoing tracks B C B' C', and are temporarily arrested to be loaded.

Fig. 5 shows an arrangement of tracks adapted for loading the cars from the opposite sides of a single drying structure. The are two return-tracks, D' D', and an outgoing track, B, dividing into two branches, *b b*, to pass outside of the structure E.

Figs. 6 and 7 show an arrangement of drying structure and tracks by which natural advantages of location may be availed of. The drying structure E (not herein claimed) is erected upon the side of a cliff sloping toward the wharf A, and so as to discharge its contents at one side only—that next the wharf. The single outgoing track and the single return-track are connected by a suitable switch at their inner ends, and for portions of their length run at right angles with the wharf, as plainly shown. The chutes G G are preferably rendered vertically adjustable, so that their arrangement may be altered to best suit them for performing their functions regardless of variations of the tides, the differences in the sizes of vessels, &c.

It is obvious that instead of having the elevator apparatus at the outer or wharf ends of the track it may be arranged at the opposite or inner ends, and in such event the automatic-switch apparatus will be located in the place of the elevating apparatus—that is to say, at the wharf end of the tracks.

It is further obvious that instead of the wharf an elevated structure suitable for loading trains of cars at its sides may be employed, so that the material may be loaded into cars instead of vessels.

By my improvements it will be seen that there is considerable economy both in time and labor, as compared with the ordinary method of loading phosphate-rock upon vessels which are to transfer it from drying or storage sheds into carts, hand-barrows, &c., to the vessels.

I am well aware that it is not new, broadly considered, to use elevating apparatus at the ends of oppositely-inclined tracks for the purpose of transferring cars from one track to another; and I am also aware that it is not new to employ automatic switches in connection with a series of tracks to transfer cars from one track to another, and therefore I do not broadly claim either the combination of oppositely-inclined tracks and elevating apparatus for transferring the cars from one level to another and receiving them from one track and returning them upon another, or the combination, with a series of tracks, of automatic switches.

I claim as of my own invention—

1. The hereinbefore - described improved means for transferring and loading phosphate-rock, &c., consisting of the inclined outgoing track or tracks, the storage or drying shed or sheds from which the material is discharged into the cars on the outgoing track or tracks, the incline return track or tracks, the switch or switches, elevating apparatus for transferring the cars from the level of the outgoing track or tracks to that of the return track or tracks, and the conveyer or conveyers, all substantially as and for the purpose hereinbefore set forth.

2. The hereinbefore - described improved means for transferring and loading phosphate-rock, &c., consisting of the inclined outgoing tracks having additional inclines at their inner ends, the inclined return track or tracks having automatic-switch connection with the outgoing tracks, the elevating apparatus at the outer ends of the tracks, and means for conducting the material as discharged from the cars into vessels at the sides of the wharf upon which the elevating apparatus is located, as and for the purpose hereinbefore set forth.

In testimony whereof I have hereunto subscribed my name this 5th day of January, A. D. 1884.

FRED BROTHERHOOD.

Witnesses:

W. C. DUVALL,
EUGENE V. BROWN.