

(No Model.)

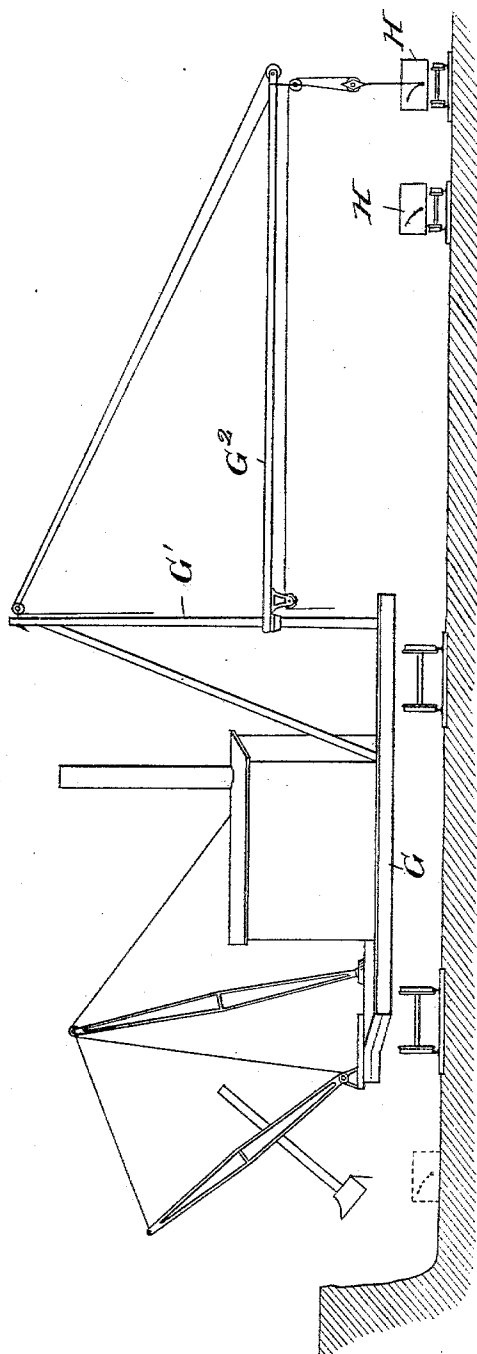
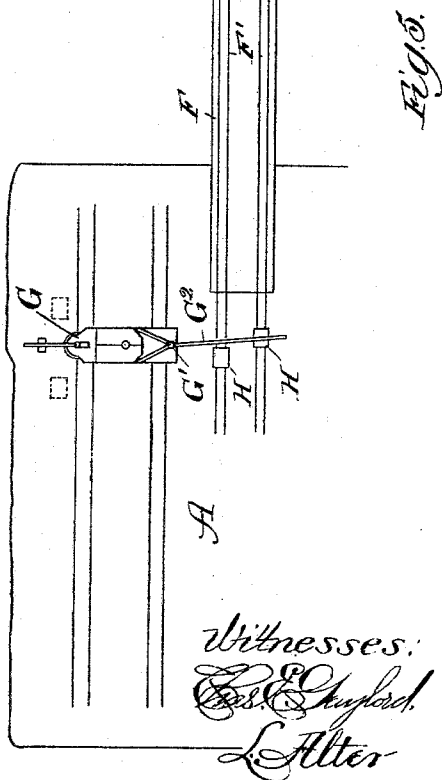
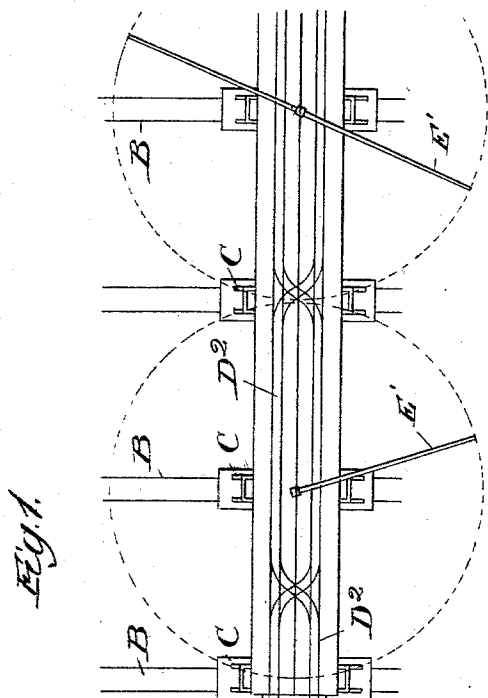
4 Sheets—Sheet 1.

C. L. GOULD.

APPARATUS FOR HANDLING AND DISPOSING OF EXCAVATED MATERIAL.

No. 562,820.

Patented June 30, 1896.



Witnesses:
Chas. E. Chas. E. Chas. E.
L. Alter

Inventor:
Charles L. Gould.
By Benjamin B. Benjamin B. Benjamin B.
Attys.

(No Model.)

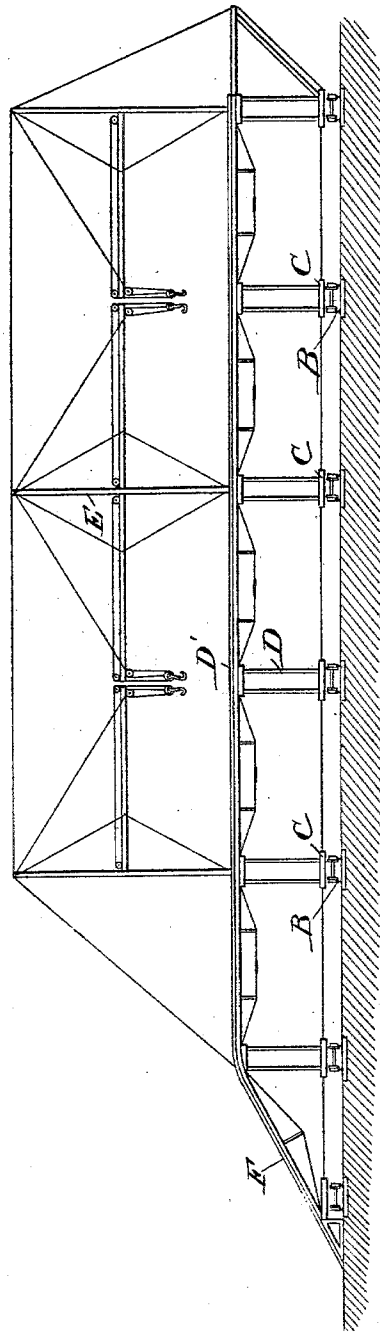
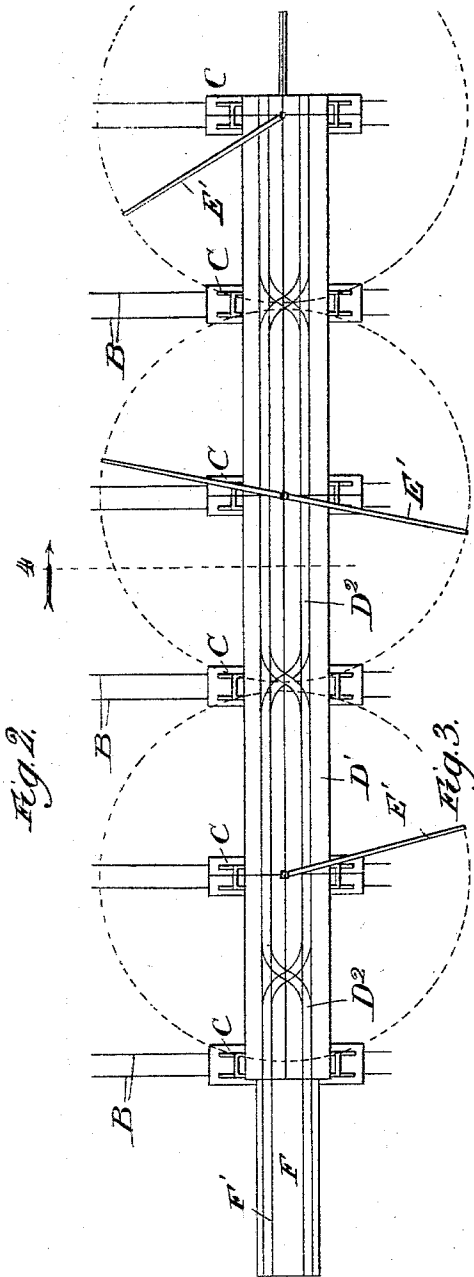
4 Sheets—Sheet 2.

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Witnesses:
Ed. Chyford
L. Alter

Inventor:
Charles L. Gould,
By Manning & Manning Payson
Attys.

(No Model.)

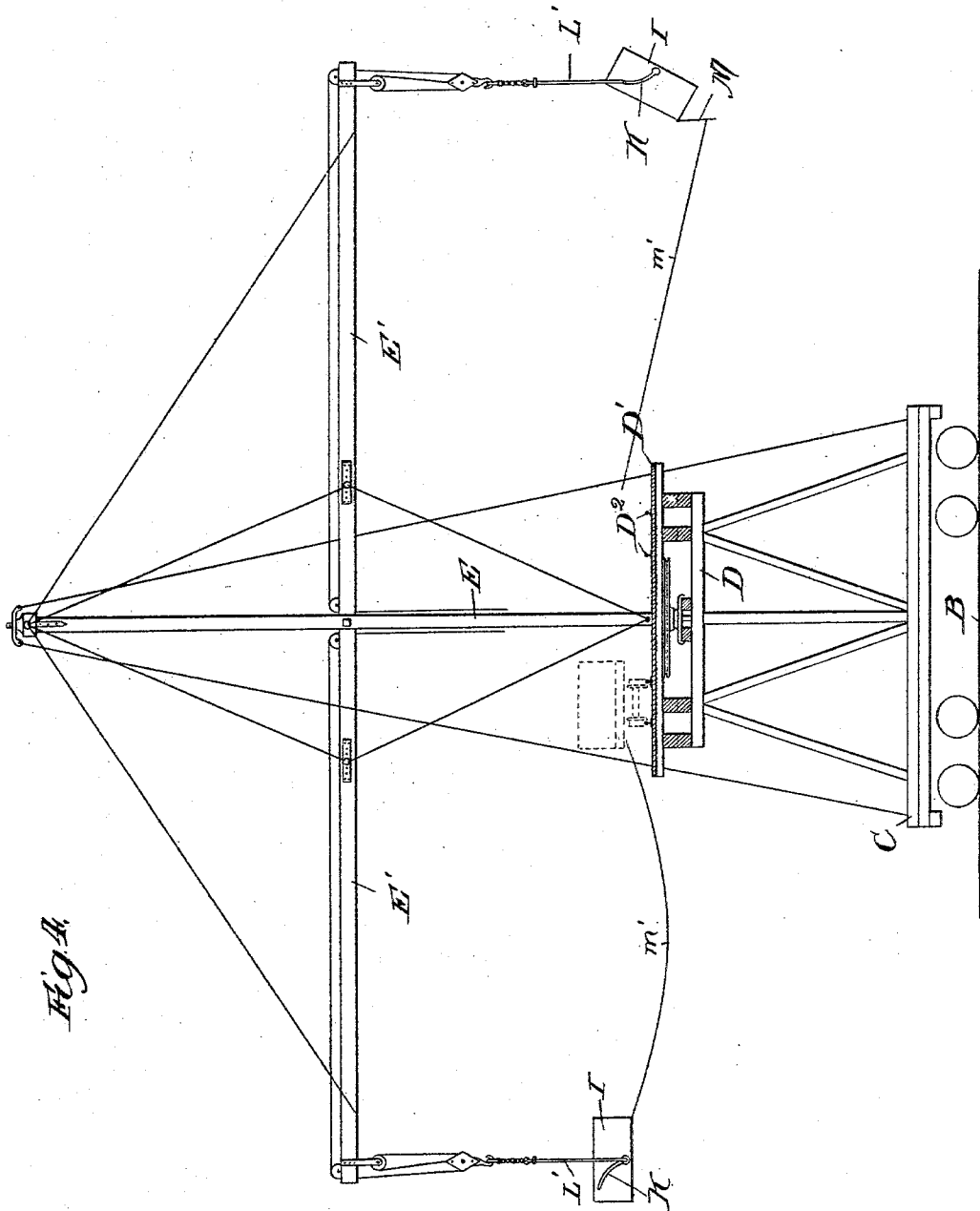
4 Sheets—Sheet 3.

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Patented June 30, 1896.



Witnesses:
Edw. J. Hughes
L. Alter

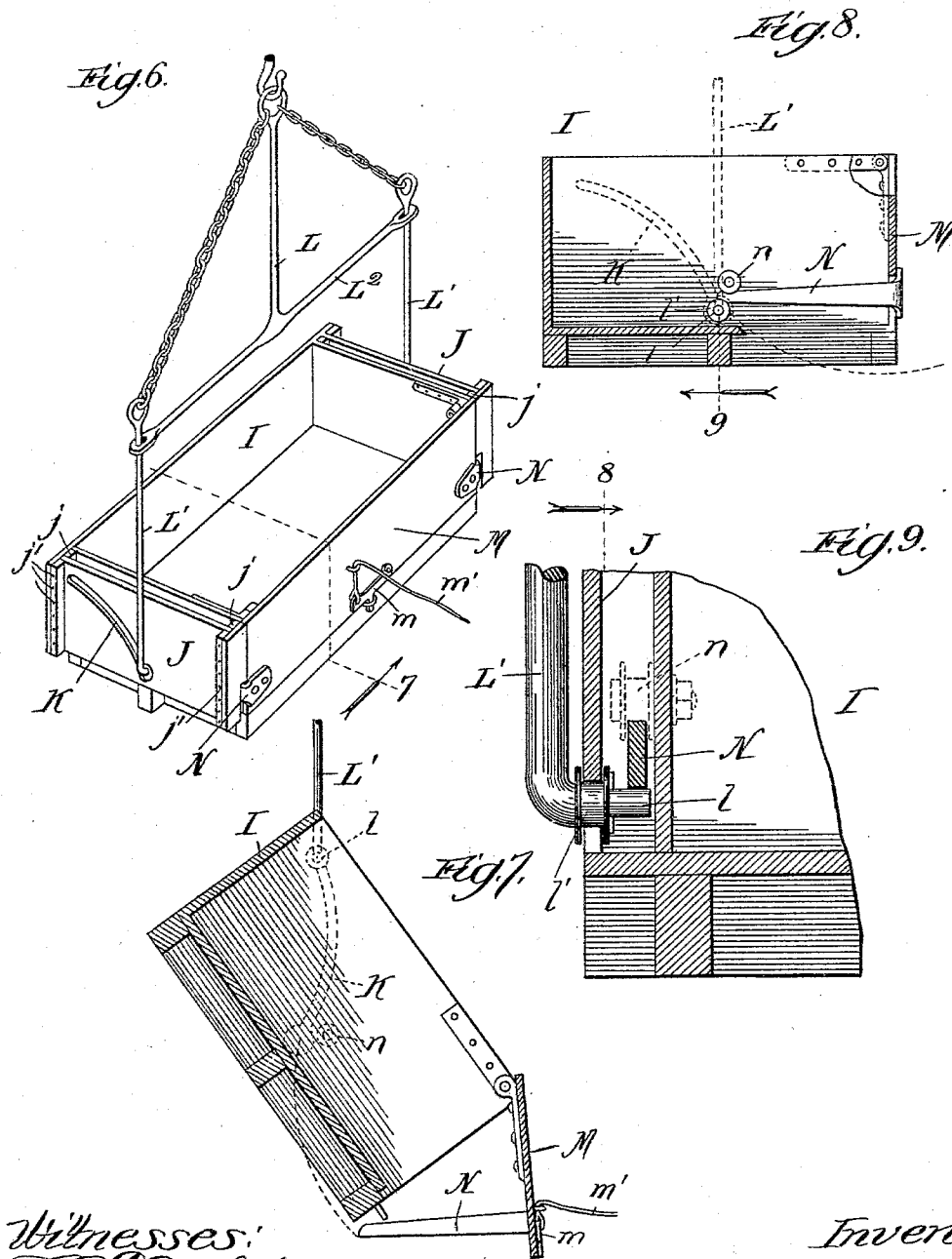
Inventor:
Charles L. Gould
By *Running & Running*
Attys—

C. L. GOULD.

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Patented June 30, 1896.



Witnesses:
E. S. Chyford,
L. Alter

Inventor:
Charles L. Gould,
By Pennington Pennington & Pennington,
Attorneys

UNITED STATES PATENT OFFICE.

CHARLES L. GOULD, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE GOULD
CONTRACTING AND SUPPLY COMPANY, OF SAME PLACE.

APPARATUS FOR HANDLING AND DISPOSING OF EXCAVATED MATERIAL.

SPECIFICATION forming part of Letters Patent No. 562,820, dated June 30, 1896.

Original application filed February 28, 1893, Serial No. 464,069. Divided and this application filed October 16, 1893. Serial
No. 488,245. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. GOULD, a citizen of the United States, residing at Chicago, Illinois, have invented an Improved Apparatus for Handling and Disposing of Excavated Materials, of which the following is a specification.

In my application, Serial No. 464,069, filed February 28, 1893, and allowed September 8, 1893, (of which the present application is a division,) I have described an apparatus for the above purposes traveling alongside the cut, and having its sides projecting in such manner that when the excavated material is dumped therefrom its slope will not interfere with the tracks upon which the structure stands, nor with the structure itself.

My present invention is to provide an apparatus which may be substituted for or used for a time instead of the aforesaid apparatus in cases where, in addition to excavated material—whether earth, loose or rubble stone, or debris—any structural material, such as dimension-stone, requiring care in handling or to be piled up regularly, has to be disposed of, and which also from its lighter construction, and possibly for other reasons, may in certain cases be preferred to the aforesaid apparatus, even when the only object is to place excavated material into spoil or other banks.

My invention consists in the apparatus and appliances for these and other purposes, as hereinafter more particularly described and claimed.

In the drawings, Figure 1 is a general plan view of the appliances within the cut, a traveling structure without the cut, and the incline, &c., connecting the two; Fig. 2, a plan view, more in detail, of a structure traveling without the cut and an incline; Fig. 3, a side elevation of the devices shown in Fig. 2; Fig. 4, a section on line 4 of Fig. 2, looking in the direction of the arrow; Fig. 5, a side elevation of an excavator with the derrick attachment; Fig. 6, a perspective view of a car-body, box, bucket, or skip; Fig. 7, a section on line 7 of Fig. 6; Fig. 8, a section on line 8 of Fig. 9, and Fig. 9 a section on line 9 of Fig. 8, all these sections being taken in the direction indicated by the respective arrows, and the

last eight figures of the drawings being on a larger scale than Fig. 1.

In the first four figures of the drawings, I have illustrated my approved apparatus traveling upon tracks without the cut, and provided with an incline which, as shown in Fig. 1, extends down into the cut, but as shown in Figs. 2 and 3 merely extends to the surface of the ground without the cut. I lay without and to one side of the cut A (shown in the drawings at the right-hand side) any desired number of tracks B B, upon which travel cars, platforms, or other similar constructions C C. Upon these I build a structure D, preferably of the form shown particularly in the figures above referred to, which structure supports a platform or deck D', upon which are placed any desired number of tracks D². For convenience of illustration I have in the drawings shown two of these tracks; but, as already indicated, any other number may be used that prove desirable. These tracks may be connected by crossovers or in any desirable manner, and may have spur-tracks extending from them. This deck and the tracks upon it may be level, or may have any inclination desired for shifting cars, overhauling rope, or for any other purpose; or, if desired, the deck may be made level and the inclination given to the tracks only.

The present form of apparatus is not necessarily projected out at the sides, as is the apparatus shown in my application above referred to, but instead of such projection is provided with derricks E, of any desired character, fitted with booms E', one or more booms to each derrick, as may be required, by means of which the excavated or other material is swung out and deposited far enough out for the bank or pile of such material to clear the structure. In the drawings I have shown crane-derricks mounted upon this structure; but this is merely for convenience in illustration, since any other form of derrick or crane can be used as desirable or necessary. From one end of this structure (shown in the drawings as the left-hand end) extends an incline toward the cut. This incline may, as shown in Figs. 2 and 3, terminate on reaching the ground, or, as shown in Fig. 1, may be extended

any distance down into the cut, as may be desirable under the conditions existing at any time during the operation of the apparatus. This incline is provided with one or more tracks F' , connecting with those upon the traveling structure.

Within the cut is an excavator G , suitably mounted and provided at its rearward end with a crane or derrick G' , having one or more booms G^2 , as may be desired. This crane or derrick is intended to provide for the transfer of the material to the structure traveling without the cut and to handle other material within the cut, as may be desired.

H H are cars standing upon the tracks F' , or continuations thereof, so situated with reference to the crane or derrick carried by the excavator that the car-bodies, which may be removable from the under frames of the car, can be lifted by such crane or derrick and placed in position convenient for loading. The preferred construction of these car-bodies is shown more particularly in Figs. 6 to 9, inclusive. When constructed as shown in these figures, the car-body I , in addition to the ordinary containing-box, is provided with supplemental ends J , preferably of iron or steel, supported between cleats j , and held in place by a pin j' , or other suitable means. These supplemental ends are provided with slots K , so formed as to control the action of the car-body in discharging the materials contained therein—that is to say, these slots may be curved as shown in the drawings, or they may be only curved throughout a portion of their length, or they may be composed of right lines, or formed in any other manner which will enable them to properly control the action of the box in dumping.

Suspended from the boom of the crane or derrick is a grapple-frame L , (shown more particularly in Fig. 6,) the side arms L' of which are connected near their upper extremities by means of a bar L^2 , which may be supported as shown, this bar being so connected to the side arms as to control their movements in both directions within the desired limits. The lower ends of the side arms enter and engage with the slots K , as shown at l , and preferably, though not necessarily, carry flanged wheels or friction-rollers l' to guide the travel in the slot and diminish the resistance thereto. When the flanged roller is used, the lower end of the slot should be enlarged to permit of the ready insertion of the roller. Instead of inserting the ends of the side arms within the slots these arms may carry pins or lugs adapted to engage with such slots.

The door M , which is a part of the inclosing box, is hinged thereto, either at its upper side, as shown, or in any other desired manner. It is secured in place when closed by a suitable latch m , preferably provided with an operating-cord m' . Attached to this door, preferably at the ends thereof, are arms N , extending, as shown, into the space between

the supplemental ends J and the ends of the inclosing box a distance sufficient to engage with the ends of the side arms L or the pins or lugs carried thereby, as shown more particularly in Figs. 8 and 9. In this manner the strain due to the weight of the body and the contained material, when such body is raised from the under frame, will be transmitted through the side arms to these arms N , and to take the strain off these arms I preferably provide friction-rollers n , which also serve to facilitate the withdrawal of the arms in operation. The operation of this portion of my invention is as follows: Supposing the inclosing box to have received material and to have been brought into a position to be reached by the derrick, the side arms L' are spread apart and their ends inserted into the slots, as shown in the drawings, thereby bringing them into engagement with the arms N . These ends are prevented from entering sufficiently far to impinge upon the inclosing box by means of the flanges on the rollers l' , or, when these rollers are not used, by other means, as the bar L^2 . The car-body is then raised from its under frame and swung into the desired position for unloading. The latch is then withdrawn, and the pull on the rope for this purpose, together with the weight of the contained material, will open the door M sufficiently to withdraw the arms N from their engagement with the ends l of the side arms, allowing the entire car-body to descend. As already stated, the ends of the side arms travel in slots K , and as the car-body descends the curved or other form of these slots will compel the car-body to tilt or incline into the position shown in Fig. 7, discharging the contained material.

The car-body may be caused to tilt or incline in one direction or the other, either by providing the supplemental ends with double slots extending in each direction, or by removing these ends before they are engaged by the grapple-frame, and either substituting other ends with slots extending in the other direction or reversing the position of the ends originally used.

I will now proceed to a description of the manner in which this apparatus is operated.

Suppose the car H within the cut to be empty and within reach of the boom of the crane or derrick attached to the frame of the excavator flat or car. Its body is first lifted by the crane or derrick from off its under frame and placed in position for loading. When loaded, it is replaced on its under frame, and is drawn up the incline onto the deck of the traveling structure to a point where the crane or derrick, mounted upon the structure, may engage with it. It is next lifted by the crane or derrick from off its under frame and swung into position for unloading, which latter operation is effected as before described. The car-body being replaced upon its under frame, which meantime has been standing upon the deck of the traveling structure, the entire car

will now be returned by any chosen route along the deck and down the incline for re-loading. When the incline extends only to the surface of the ground, and not down into the cut, the operation is the same, except that the traveling of the car from the cut to the foot of the incline is by any route adapted to the purpose. It is evident that the material disposed of will be placed forward of or behind the traveling structure relative to the direction of its travel. In forming banks or piles, their relative position, and that of the traveling structure as to the cut and to each other, is the same as described in the application above referred to, and consequently involves all the advantages therein recited.

Under some circumstances—as, for instance, in removing pieces of rock—I may desire to use in connection with these cranes or derricks ordinary grappling-hooks; and in such case ordinary cars may be employed in place of those above described.

I claim—

1. In an excavating apparatus, a structure traveling upon suitable tracks alongside of and without the cut, such structure being provided with one or more derricks and with an incline extending into the cut, and with one or more tracks upon such structure and incline, substantially as described.

2. In an apparatus of this class, the combination of an excavator, a derrick or crane mounted thereon, a car traveling in proximity thereto, and having a removable and dumping body, said body being engaged, hoisted, swung and lowered by the derrick or crane, all operating substantially as and for the purposes described.

3. In an apparatus of this class, a car with removable body that when removed and suspended is compelled by a pin-and-slot mechanism connected with and forming part of it and of the frame or other support from which it is suspended, to revolve when by gravity it is descending relatively to the frame or other support, substantially as described.

4. In a carrying and dumping apparatus, a box, bucket, skip or other receptacle having suitable guides engaging a suspending mechanism, and normally depending therefrom, said guides before tilting begins, extending upward from the point of support and de-

flecting from a vertical direction, whereby when by a suitable tripping or withdrawing device the suspending connection between said mechanism and the receptacle is terminated, gravity causes a downward-traveling movement and a tilting of the receptacle, the path and extent of said movement, and the angle of tilting being controlled by the form, location and operation of said guides and their sliding or rolling contact, during descent, with the relatively-fixed suspending mechanism until suspending connection is reestablished between said mechanism and the receptacle, substantially as described.

5. In an apparatus of this class, a box, or a car-body, having an arm or arms attached to the door thereof, their free ends forming the points of support between the box or the car-body and the frame or other construction from which it is suspended, whereby opening the door releases the box or the car-body from said points of support and permits it to descend relatively to the frame or other construction from which it is suspended, substantially as described.

6. In an apparatus of the class described, the combination of an excavator with derrick or crane attachment, a traveling structure carrying derricks or cranes and one or more tracks, and a car traveling upon the tracks, the removable and dumping car-body operating as herein set forth, substantially as described.

7. In an apparatus of this class the combination of an excavator traveling within the cut and provided with a derrick or crane attachment, a structure traveling without the cut and provided with one or more derricks or cranes and an incline, one or more tracks upon such structure and incline, cars traveling upon such tracks, and provided with removable bodies constructed as set forth, whereby said bodies can be moved by the crane or derrick attachment into position for loading by the excavator, then replaced by the said attachment upon their trucks, hauled up on to the structure and their contained material discharged, substantially as described.

CHARLES L. GOULD.

Witnesses:

GEORGE S. PAYSON,
SAMUEL E. HIBBEN.