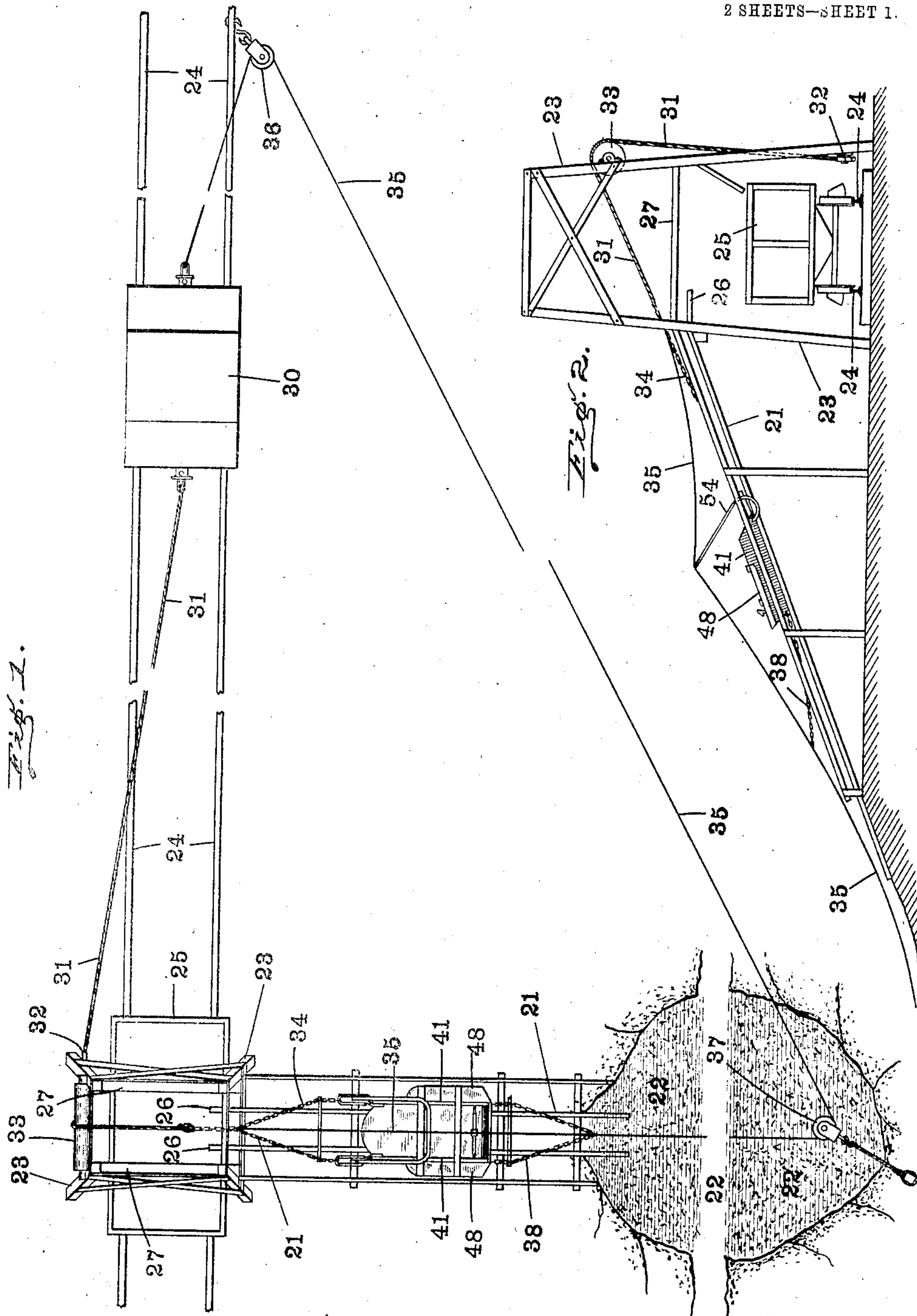


No. 821,271.

PATENTED MAY 22, 1906.

P. H. WHITE.
EXCAVATING APPARATUS.
APPLICATION FILED JULY 10, 1905.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 3.

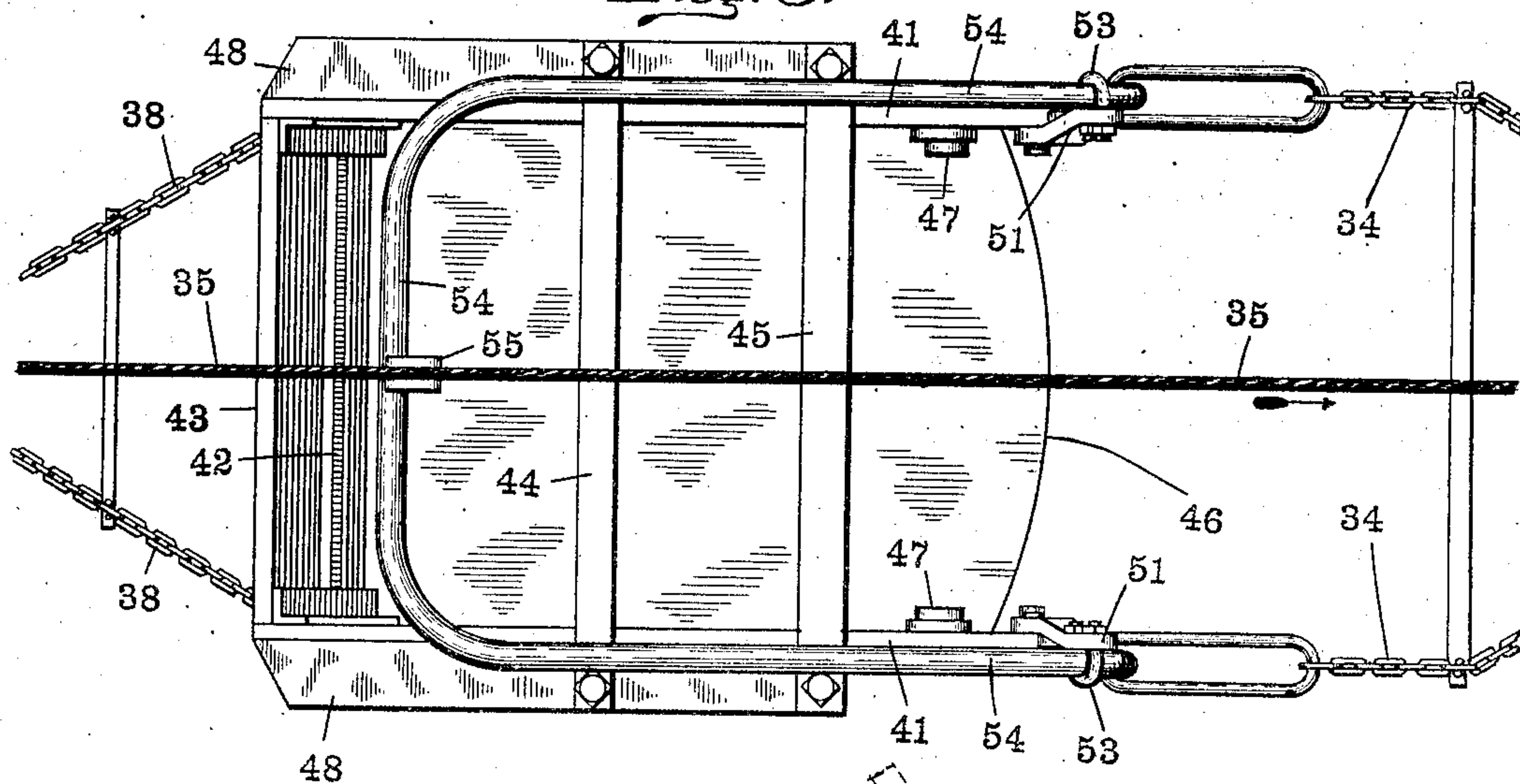


Fig. 4.

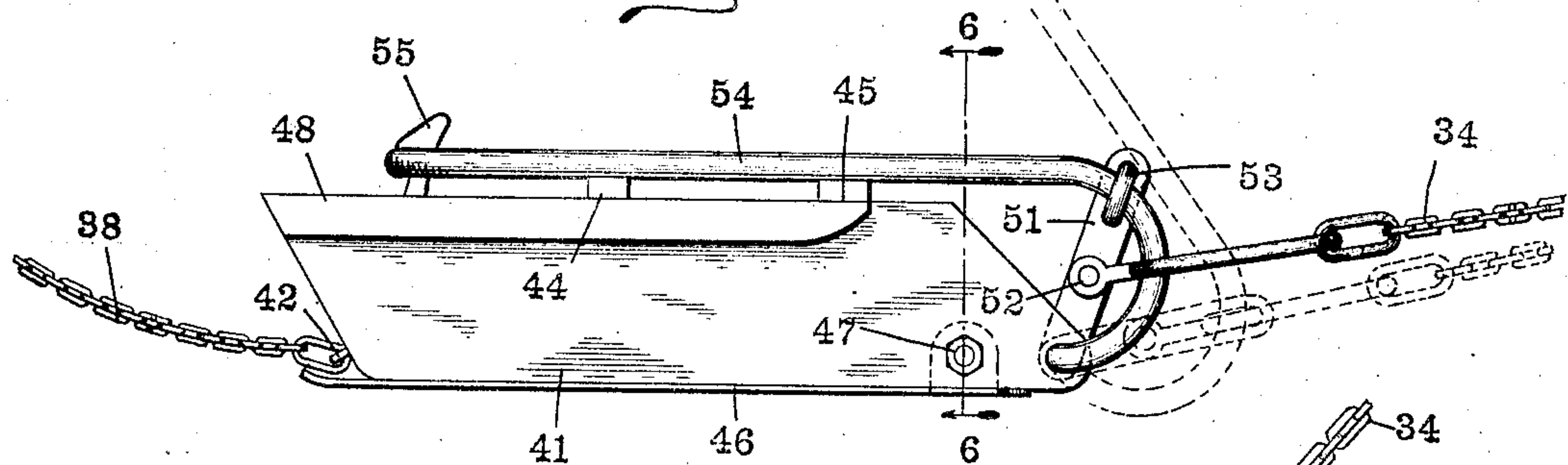


Fig. 5.

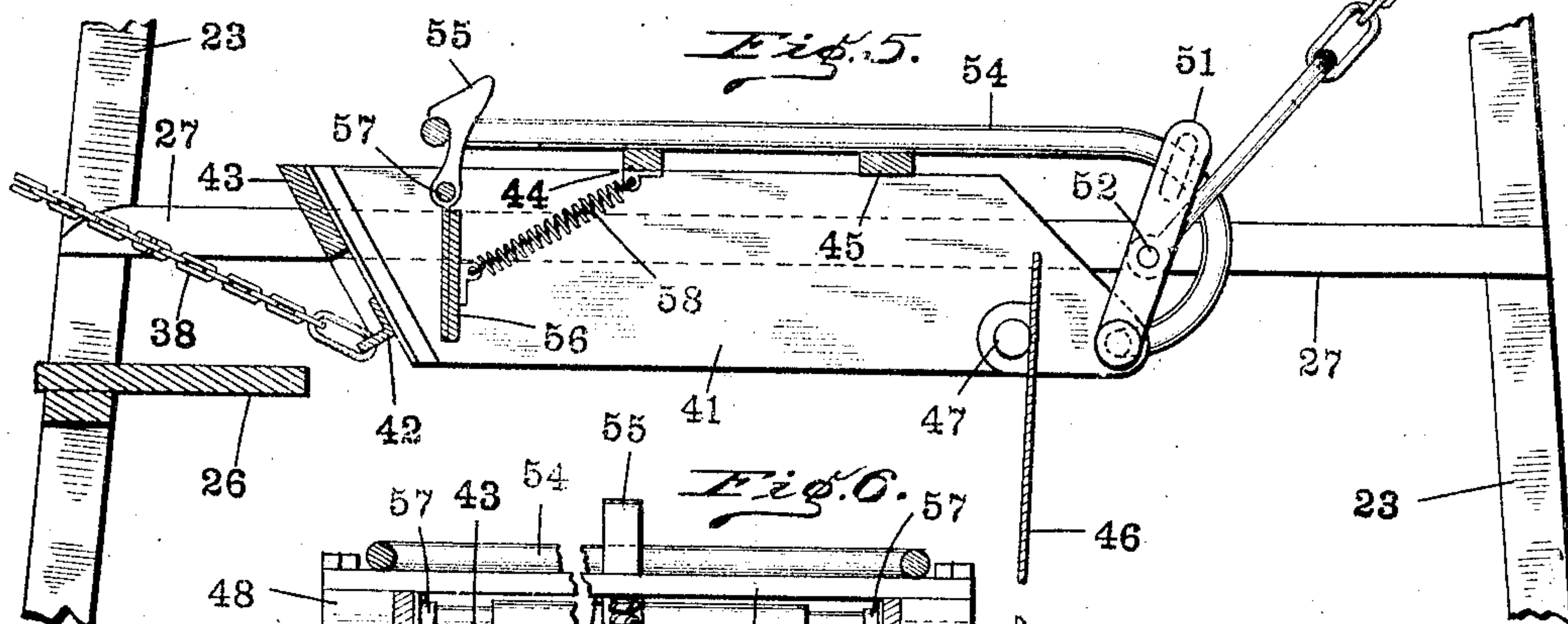
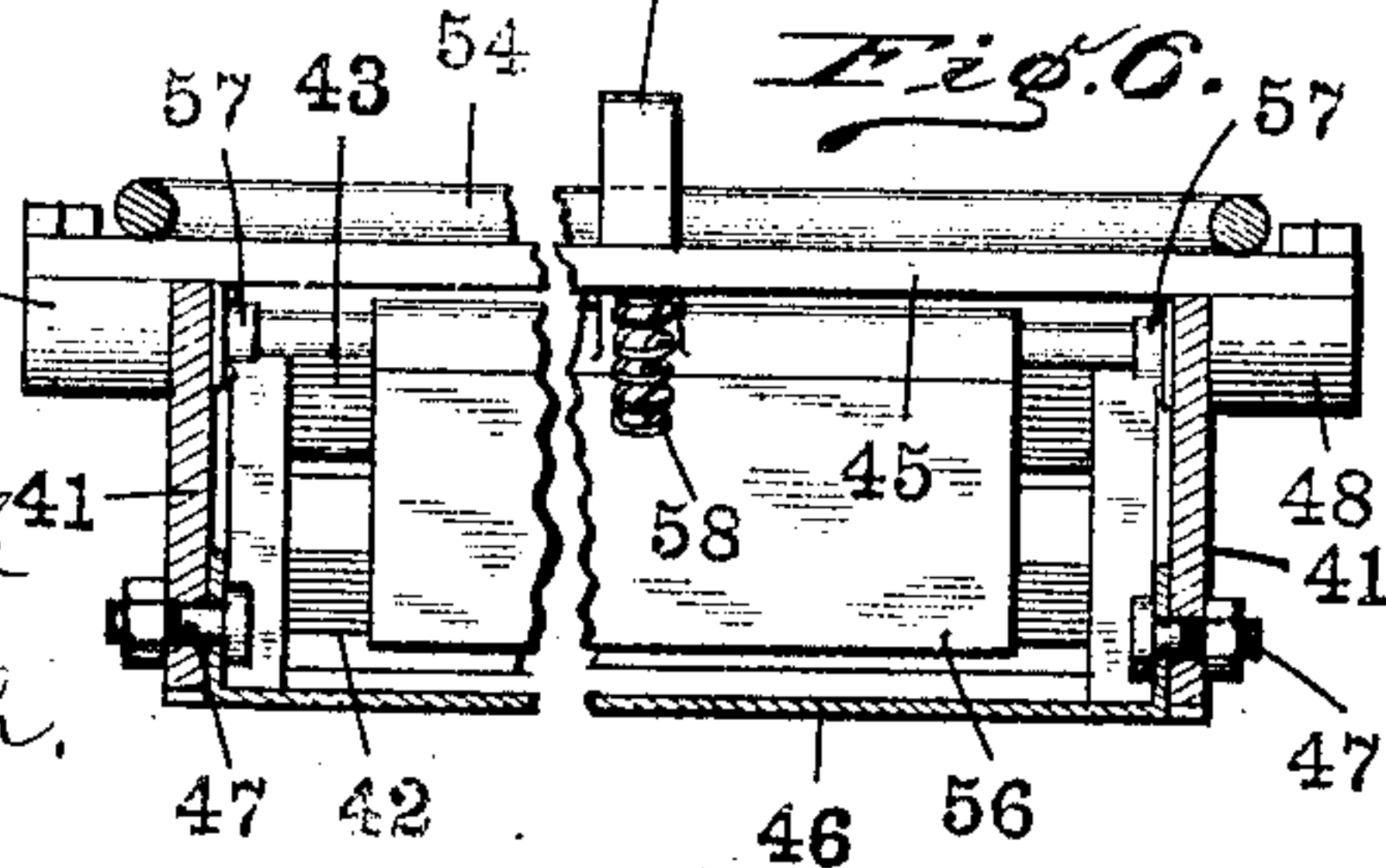


Fig. 6.



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PAUL H. WHITE, OF INDIANAPOLIS, INDIANA.

EXCAVATING APPARATUS.

No. 821,271.

Specification of Letters Patent.

Patented May 22, 1906.

Application filed July 10, 1905. Serial No. 269,046.

To all whom it may concern:

Be it known that I, PAUL H. WHITE, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Excavating Apparatus, of which the following is a specification.

The principal object of my present invention is to provide a simple and inexpensive apparatus by means of which material, as sand or gravel, may be excavated from a "gravel-pit" or other suitable source of supply and drawn therefrom and loaded onto cars with a minimum of manual labor. A further object of said invention is to utilize the locomotive by means of which the cars are handled as the motor for operating the apparatus.

The accompanying drawings illustrate an apparatus embodying my said invention.

Figure 1 is a diagrammatic plan view of such an apparatus, showing a railway-track, a gravel-pit alongside said track, and an excavating and car-loading apparatus arranged to be operated by a locomotive running on said track; Fig. 2, a side elevation of the incline and excavating and car-loading apparatus, taken transversely of the railway-track; Fig. 3, a top or plan view of the excavator and carrier which I employ in carrying out my invention, the parts being in the position they occupy just before it has taken on its load; Fig. 4, a side elevation of the same, the position of the parts after the load has been taken on being indicated by means of dotted lines; Fig. 5, a central longitudinal sectional view with the floor in the position it occupies just after the load has been discharged and the other parts being in the position they occupy after the device has started on its return trip to the pit and the bail and catch have become reengaged, and Fig. 6 a transverse vertical sectional view as seen when looking in the direction indicated by the arrows from the dotted line 6 6 in Fig. 4.

An inclined track 21 leads from the gravel-pit 22 up to a trestle 23, erected over the railway-track 24. Said trestle-work is of such a size and character that a gravel-car 25 may pass through under it on the track 24, and the inclined track 21 terminates in said trestle-work at a sufficient elevation to enable the excavator and carrier to be discharged onto said car when it reaches the end of its travel. This inclined track 21 should have horizontal ends or terminals 26 extend-

ing into the trestle-work a short distance, both so that the excavator and carrier may reach a horizontal position before being caused to discharge its load and also arrive to the correct position relatively to the car. The trestle has a second set of track members 27, which support the excavator and carrier during the load-discharging operation.

The locomotive 30 runs back and forth along the railway-track 24 and pulls the excavator and carrier up and down the incline as the work progresses. The locomotive may of course be of any type, and any suitable engine may be substituted therefor which is adapted to pull the propelling-ropes back and forth. I have therefore not attempted to show this feature in detail, but have shown simply a conventional illustration of an electric locomotive.

A suitable connection, as a rope or wire cable 31, connects one end of the locomotive or engine to the excavator and carrier, said rope running over suitable sheaves and pulleys or drums 32 and 33, which are preferably carried upon the trestle 23. 32 is preferably a sheave, and 33 is preferably a drum extending entirely across the trestle-work at one side. This rope is connected to the excavator and carrier by suitable connecting devices, as chains 34. A second rope 35 is connected to the other end of the locomotive and passes thence around a sheave 36, thence off to the far side of the gravel-pit, where it passes around a sheave 37, and thence to the first-mentioned rope 31, to which it is connected preferably at the same point at which the chains 34 are connected thereto. This rope is also connected directly to the opposite or rear end of the excavator and carrier by suitable connections, as chains 38. The connections are so adjusted that the chains of one set are slack when those of the other set are tight.

The excavator and carrier proper is composed of a rigidly-constructed body portion consisting of the sides 41 and transverse connecting members, as 42, 43, 44, and 45, of such number, character, and arrangement as to connect and support the sides rigidly and strongly. This excavator and carrier also embodies a bottom 46, preferably formed of a plate of metal, and which is pivoted to the sides 41, near their front ends, by pivots 47, upon which it is adapted to swing freely. When the excavator and carrier is loaded and during the time it is being pulled from

the point of loading to the point of discharge, this bottom rests on the rails 21 of the incline, and is thus kept closed. As before stated, the trestle is provided with short independent track members 27 at a level above that of the terminals of the track 21, and to the sides of the excavator and carrier I secure bearing members 48, and these run onto said independent track members 27 just before the bottom 46 passes off the terminals 26 of the main tracks 21. The consequence is that the structure is supported by these parts 27 and 48 during the discharging or dumping operation. Said operation takes place at the instant the bottom escapes from the terminals 26, at which instant said bottom swings down to the position shown in Fig. 5, permitting the load to fall into the car, as will be clearly understood. As this excavator and carrier operates automatically, it is capable of taking its load below the water-line in the gravel-pit, and consequently I am enabled to excavate to a much greater depth than is possible where the gravel is taken by ordinary shoveling. It can also be used to take gravel from the bed of a river or other natural or artificial body of water.

In order to provide for the automatic loading of this excavator and the termination of said loading when it is fully loaded, I have designed a peculiar draft apparatus. The chains 34 are attached to swinging links 51, which are pivoted to the lower front ends of the sides 41 of the excavator, the point of attachment being some distance above said pivotal point, as at 52. These links continue beyond the attachment-points 52 and are connected (as by loops 53) to the swinging bail 54. This bail extends back to near the rear end of the excavator and is adapted to be held down during the loading operation by a catch 55. Said catch is normally held into engagement with said bail by the weight of a trip-board 56, which hangs down below the pivot 57 on which said catch is mounted, this being also preferably reinforced by a tension-spring 58. The bail holds the draft devices up into the relation illustrated by Fig. 4 until the loading is completed, when the material coming against the trip-board 56 forces the catch 55 out of engagement with said bail, permitting said bail to fly up into the position shown by the dotted lines in Fig. 4 and bringing the draft devices also into the relation shown by said dotted lines. During the time the draft devices occupy the position shown by the full lines in Fig. 4 the tendency is to cause the front edge of the bottom 46 to incline downwardly and make it dig into the material to be loaded; but when the draft devices are in the relation indicated by the dotted lines in Fig. 4 the tendency is to draw the excavator up onto the top of the material, so that it will take on no more load. This change takes place of

course immediately the excavator and carrier is filled, and the apparatus remains in this condition until it has reached the termination of its travel in the trestle-work, where its load is discharged, as before described. This movement is accomplished while the locomotive is traveling away from the car or the engine (of any character) is winding up or pulling upon the rope 31. That portion of the bail 54 near where it is pivoted to the sides 41 is curved, and the curved portions serve as runners in passing over obstructions. As they project below the bottom 46 they also serve as guides when in contact with the sides of the rails 21.

When the discharging of the load of the excavator has taken place, the locomotive or engine is reversed, slacking the rope 31 and pulling upon the rope 35. This pulls the excavator and loader back into the pit as near as is desired to the sheave 37. The travel of the locomotive or engine is at this point again reversed. The first operation is that the pivoted bottom 46 catches in the bottom of the gravel-pit, and the remainder of the structure is pulled up over it, so that said bottom is shut. During the rearward travel the rope 35 has pulled bail 54 down into engagement with the catch 55. The apparatus is again ready for loading in the way before described, and these operations are repeated over and over again until the desired amount of work has been accomplished.

As will be readily understood, I am enabled by the use of this apparatus to excavate material to a much greater depth, and consequently in much larger quantities, from an ordinary gravel-pit than has been possible by the ordinary means of loading cars by shoveling. I am also enabled to do it much more economically, as the amount of manual labor required is very small, an engineman to operate the locomotive or engine and a signalman at the pit being all that is practically necessary. The signalman of course can be the same individual who performs the duties of trainman in hauling off the cars.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An excavating apparatus comprising a railway-track, a locomotive adapted to travel reciprocally along said track, a trestle arranged over said track, a track leading from said trestle to the place whence the material is obtained, an excavator and carrier adapted to travel reciprocally over said last-named track, flexible connections connected to said excavator and carrier and running thence over suitable pulleys to said locomotive, and said pulleys.

2. The combination, in an excavator and carrier, of a frame, a bottom pivotally mounted on said frame, and a draft apparatus, said draft apparatus comprising a swinging bail, a

catch for holding said bail, a member set in the path of the incoming load for disengaging said catch, and a link forming the immediate means of draft connected to said bail, whereby when the bail is held by the catch the excavator is caused to draw into the material and thus become loaded, and when detached from said catch the excavator is caused to draw up out of said material.

10 3. The combination, in an excavator and carrier, of a body, a pivoted bottom, a curved bail, a draft-link governed by said bail, a catch for said bail, and a member connected to said catch positioned in the path of the incoming load and thereby adapted to be operated to release the catch.

15 4. The combination, in an excavating apparatus, of an excavator and carrier having a

pivoted bottom, a track over which said excavator and carrier travels whereby the bottom is normally held shut, which said track terminates at the point of discharge or dumping, and a second track onto which said excavator and carrier will pass as it is leaving said first-named track and whereby it will be suspended during the discharging operation.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 6th day of July, A. D. 1905.

PAUL H. WHITE. [L. s.]

Witnesses:

CHESTER BRADFORD,
JAMES A. WALSH.