(No Model.) 4 Sheets—Sheet 1.

A. ADAMS.

DIRT EXCAVATING AND CARRYING MECHANISM.

No. 549,092. Patented Nov. 5, 1895.

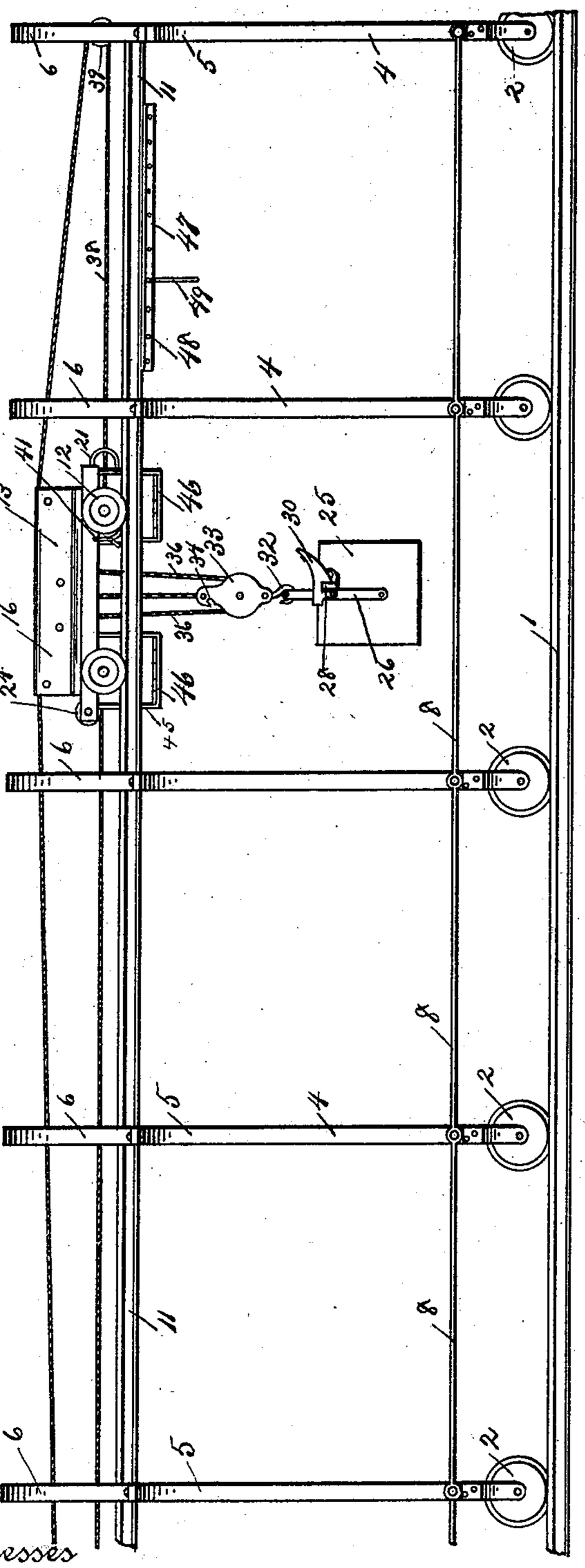

Fig. 1

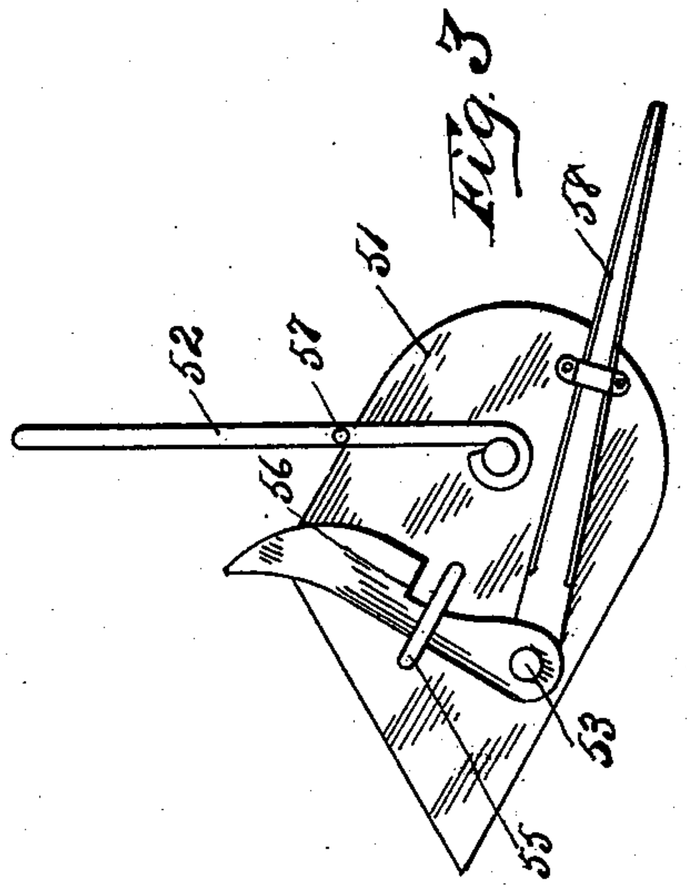

Fig. 3

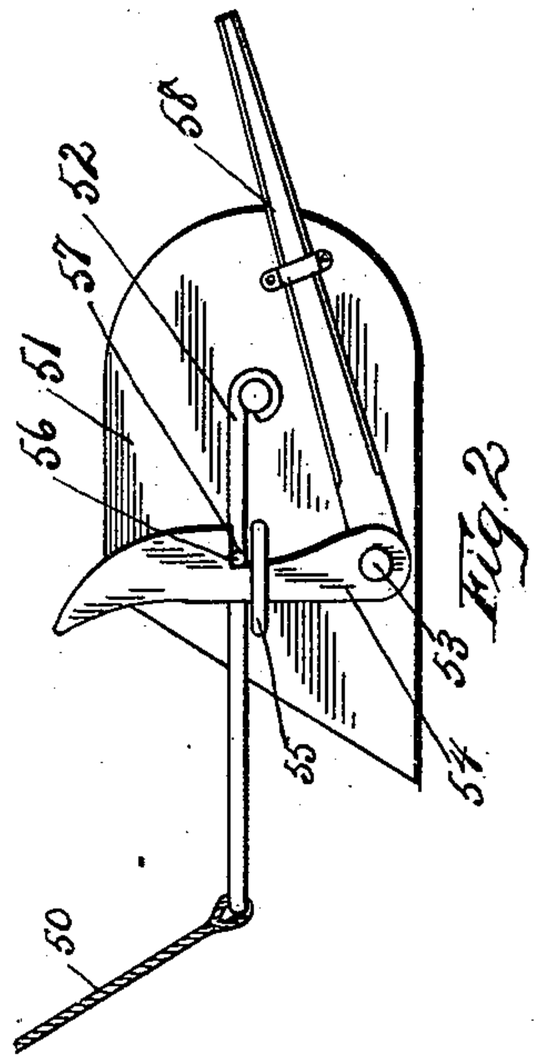

Fig. 2

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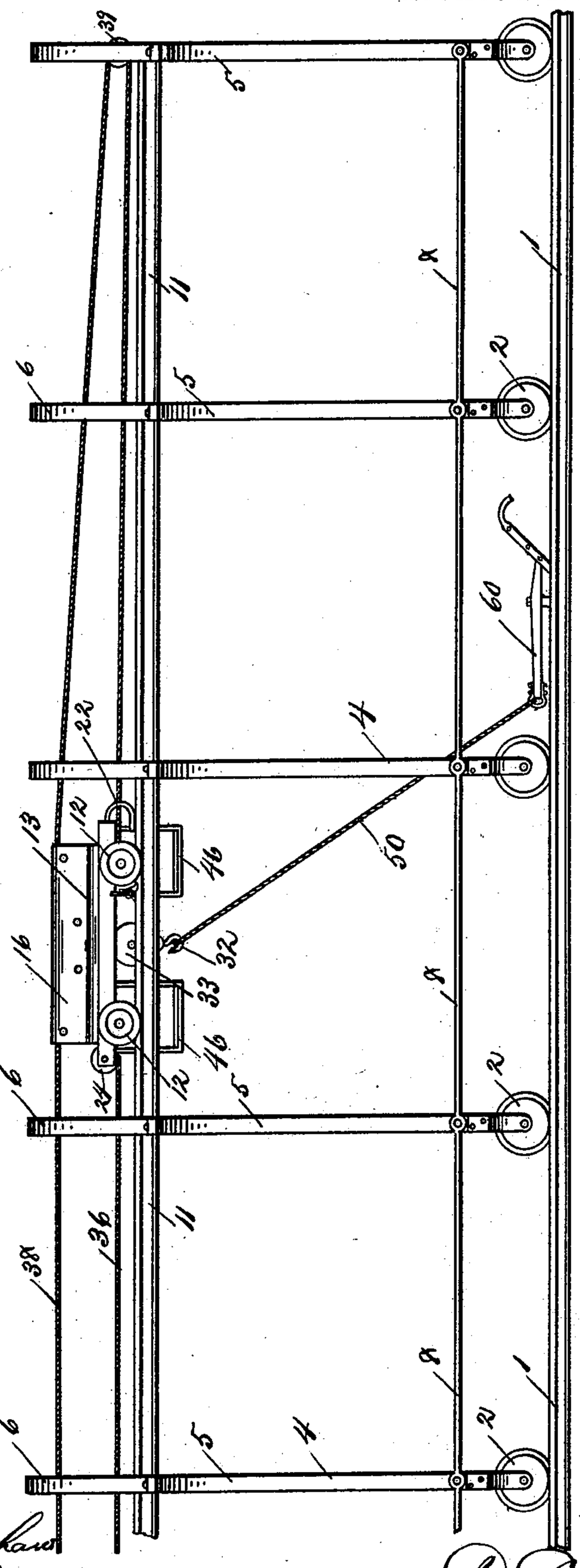

Fig. 4.

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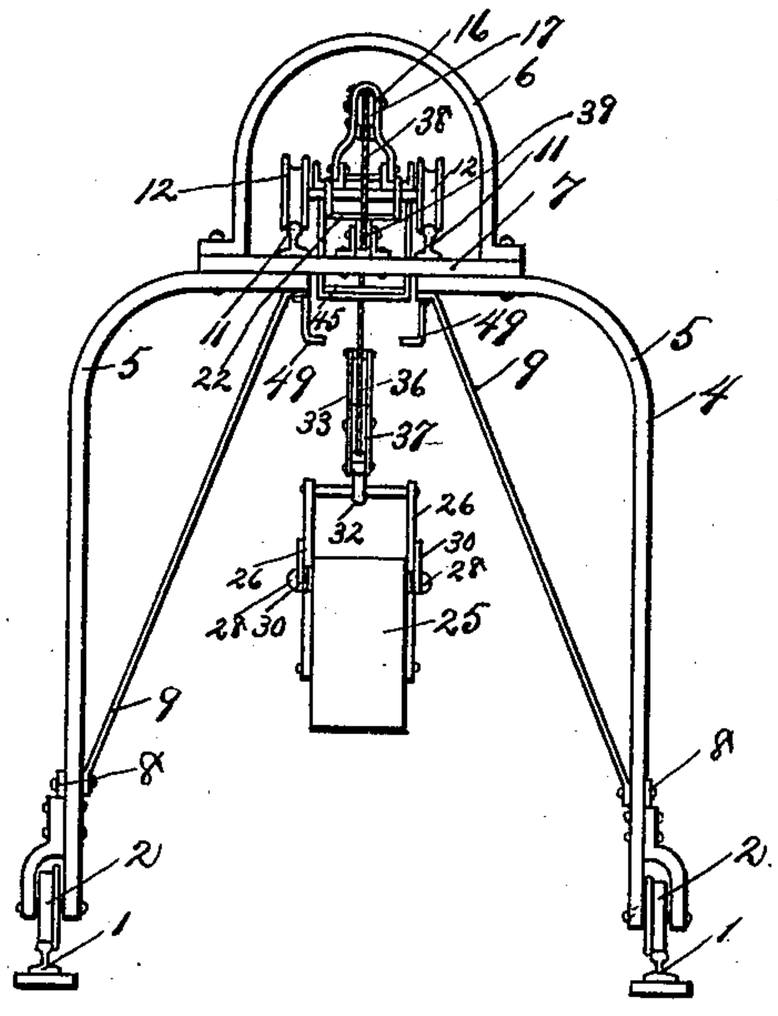

Fig. 5

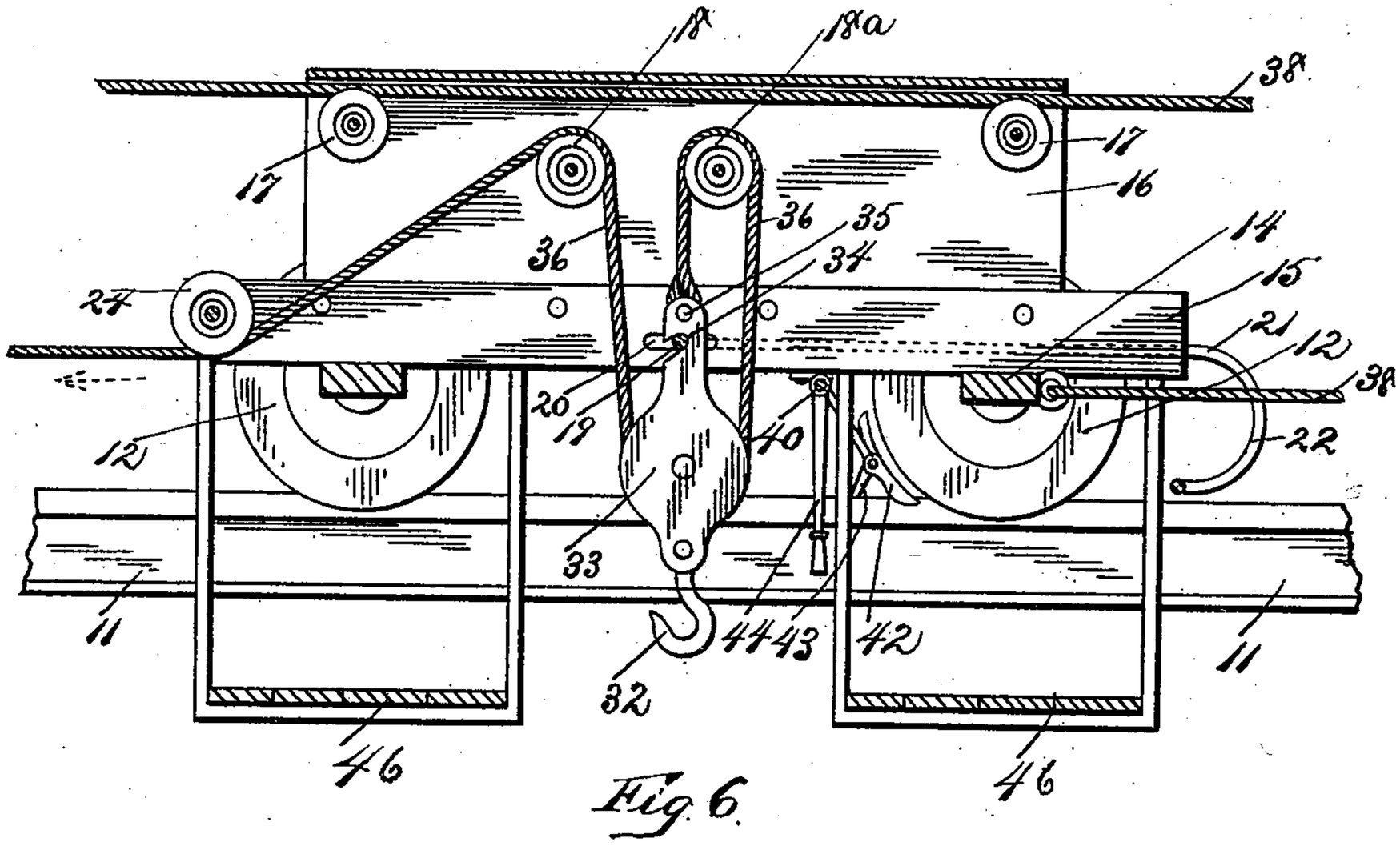

Fig. 6.

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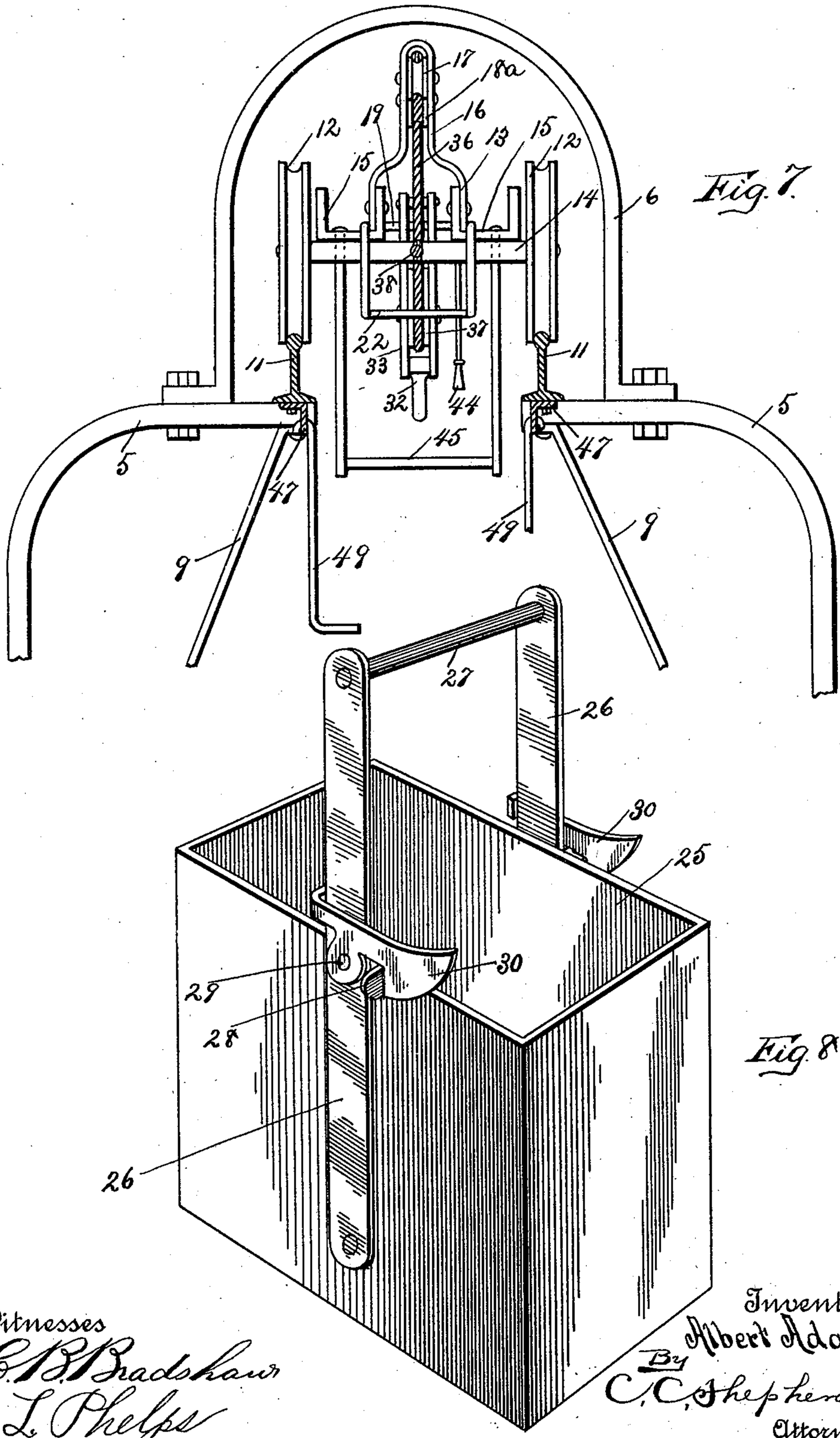

Fig. 7.

Fig. 8

Witnesses
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UNITED STATES PATENT OFFICE.

ALBERT ADAMS, OF COLUMBUS, OHIO.

DIRT EXCAVATING AND CARRYING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 549,092, dated November 5, 1895.

Application filed March 9, 1895. Serial No. 541,101. (No model.)

To all whom it may concern:

Be it known that I, ALBERT ADAMS, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Dirt Excavating and Carrying Mechanisms, of which the following is a specification.

My invention relates to that class of excavating and dirt-carrying mechanisms which are adapted for use in excavating and filling sewer-ways; and the objects of my invention are to so construct and arrange said mechanism as to provide improved means for supporting and conveying the dirt-buckets; to admit of the dirt-carrying mechanism being employed for the purpose of excavation, and to produce other improvements in details of construction, operation, and arrangement of parts, which will be more fully pointed out hereinafter. These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a portion of my improved dirt-conveying mechanism. Fig. 2 is a side elevation of one of the scrapers, showing the same in an excavating position. Fig. 3 is a similar view of a scraper, showing the same in a dumping position. Fig. 4 is a side elevation of a portion of my improved mechanism, illustrating the manner of facilitating the plowing of the ground. Fig. 5 is an end view of the main frame, showing the dirt-carrying mechanism thereon. Fig. 6 is an enlarged central longitudinal section of the car. Fig. 7 is an enlarged transverse section of the main frame and carrying mechanism; and Fig. 8 is a detail view, in perspective, of one of the dirt-buckets.

Similar numerals refer to similar parts throughout the several views.

In carrying out my invention I employ parallel track-rails 1, which are arranged on opposite sides of the line of excavation. Upon these track-rails are designed to run the supporting track-wheels 2 of a traveling frame 3. This frame 3 consists, as shown, of a series of equidistant yoke-sections or standards 4 of the inverted stirrup shape shown. Each of these standards 4 is, as shown in the drawings, constructed of two oppositely-arranged sections 5, the lower end portions of which have journaled therein the track-wheels 2, which bear and run upon the rails 1. The upper inturned ends of each pair of the sections 5 are connected and the space between the same bridged by means of upwardly-curved arch-bars 6.

As indicated in the drawings, the extreme end sections 4 of the frame are first bridged by transverse bars 7, from which the end arches 6 rise. The sides of the standards 4 are connected by longitudinal connecting-rods 8, while the upper end portion of each of the standard-sections has secured thereto a brace-rod 9, the lower end portion of which is secured to the lower portion of the same standard-section. Upon the inturned and separated ends of the standard-sections 5 and within the arch-bars 6 are supported track-rails 11. Upon these track-rails 11 are supported and adapted to run the wheels 12 of a carriage or car 13. In the construction of this car I preferably employ two pairs of said wheels mounted upon parallel axles 14, said axles being connected on opposite sides of the centers of their lengths by horizontally-arranged channel-plates 15. The inner flanges of these parallel channel-plates are connected or bridged by having connected therewith the ends of a doubled upwardly-extending pulley-bracket or housing-plate 16. Within the upper portion of the housing-plate 16 and adjacent to the ends of the latter are journaled pulleys 17, while at points near the central portion of said housing are journaled therein two pulleys 18 and 18^a.

19 represents a transverse latch-rod, which is movably supported in oppositely-located slotted openings 20, formed longitudinally in the central portion of the car-frame, the outer end portions of said latch-rod having formed therewith parallel arms 21, said arms extending through the channels 15 and being connected and bent downward at their outer ends to form a suitable handle-piece 22. In the rear end of the car, between the channel frame-pieces 15, is pivoted or journaled a pulley 24.

25 represents one of my improved dirt-buckets, to opposite sides of which are fulcrumed, at points below the centers of the heights of said sides, the lower ends of bail-arms 26, the upper ends of the latter being connected by a cross-rod 27 above the bucket-body.

28 represents catch-lugs, which, as indicated more clearly in Fig. 8 of the drawings, project from opposite sides of the bucket-body 25 adjacent to the upper edges thereof and adjacent to the corresponding edges of the bail-arms 26 when the latter are in the vertical position shown.

Pivoted, as indicated at 29, to the outer sides of each of the bail-arms 26 is a latch-plate 30, which has a hook-shaped termination. These hook-shaped terminations of the latches 30 are adapted to engage, as shown, with the catch-lugs 28 of the bucket-body and retain the latter in the upright position shown. With the bail of the bucket thus formed it is adapted to engage the depending hook 32 of a pulley-block 33. In its upper portion and on one side thereof the block 33 is provided with an upwardly-inclined recess, (indicated at 34.) The upper end of the pulley-block is connected at 35 with one end of a rope 36. This rope 36, extending upward, passes over the pulley 18ª, and thence downward to a pulley 37, pivoted within the block 33. From the pulley 37 the rope 36 is carried upward over the pulley 18, thence downward and outward against the under side of the pulley 24, from which point said rope may extend to a suitable reel.

To the forward axle of the car is secured one end of a rope 38, the latter extending forwardly and passing over a pulley 39, journaled within the forward frame-arch 6, and thence extending rearwardly, passing through the housing 16 and over the pulley 17, from which point said rope extends to a suitable reel or drum.

Beneath the car-body and adjacent to one set of the car-wheels is journaled a transverse rod 40, which is provided, as indicated at 41, with downwardly and forwardly extending end brake-arms. Each of these brake-arms 41 terminates in a brake-shoe 42, which is pivoted thereto and which is of such form as to slide upon the upper side of one of the track-rails 11 and to be made to fit and bear within the groove of one of the wheels 12. In the construction of this brake-shoe I provide the same with a rear downwardly-extending brace-arm 43, which is also adapted to travel upon the track-surface to support the brake-shoe in proper position when inoperative and also to remove obstructions on the track. The transverse brake-rod 40 is provided with a depending handle portion 44. 45 represents the vertical arms of scaffolds 46, one of which depends from the under side of each end of the car-body, said scaffold being so constructed as to admit of the support of one or more men.

In the forward portion of the frame 3 I provide longitudinal angle-plates 47, the upper flanges of which are secured to the under sides of the rails 11 and the downwardly-extending or vertical flanges of which are provided with openings arranged at equidistant points throughout their lengths, as indicated at 48. With two of the transversely-opposite openings 48 are detachably connected the upper hooked ends of depending contact-rods 49, the latter having their lower ends inturned toward each other, as shown, and said inturned rod ends lying in the path of the curved heads of the latch-plates 30 when the bucket 25 is elevated, as hereinafter described.

Although the pulley-block 33 is described as engaging with and supporting a dirt-bucket 25, said pulley-block may, through the medium of a rope 50, be connected, as indicated in Fig. 2 of the drawings, with the bail of the excavating-scraper 51. In the construction of this scraper I produce the body thereof of the usual cup form having the inclined forward end and rounded rear end, as indicated. With opposite sides of the scraper-body 51 and in the rear half thereof are pivoted the ends of a U-shaped bail 52, with which the rope 50 is adapted to be connected, as hereinbefore mentioned. On each side of the scraper-body, adjacent to the lower portion thereof, is pivoted, as indicated at 53, the lower end of a trigger 54. Each of these triggers, extending, upwardly passes through a suitable keeper 55, which projects from the outer side of the scraper-body, and above said keeper said trigger is provided with a hook or recess, (indicated at 56.) Above this recess the rear face of the trigger is rounded and inclined forwardly, as shown. On each of the bail rod-arms 52 is provided an outwardly-projecting pin 57, with which pins said trigger recesses or hooks are adapted to engage, as indicated in Fig. 2 of the drawings, and thereby retain the bail-arms in the horizontal position shown in said figure. With the lower end of each of the trigger-pieces 54 is jointedly connected a rearwardly-extending and upwardly-inclined handle-piece 58, the latter projecting, as shown, beyond the rounded rear end of the scraper-body.

In operation that portion of the frame 3 which I have heretofore referred to as the rear portion is arranged to bridge that portion of a sewer-way or similar excavation where the work of excavating is carried on.

The car being supported at a desirable point over the excavation, the bucket is lowered into the sewer-way by allowing the rope 36 to travel forward in the direction indicated by the full-line arrow in Fig. 5 of the drawings. The bucket having been filled by the workmen within the excavation, the same may be pulled upward by causing the rope 36 to travel in the direction indicated by the dotted-line arrow in Fig. 6. This upward movement of the bucket is thus continued until the pulley-block recess 34 is at the proper height to admit of the transverse catch-rod 19 being engaged therewith, as shown in said Fig. 6. The bucket having thus been suspended, the car is made to travel forwardly, or in the direction indicated by the full-line arrow in Fig. 1 of the drawings, by winding the rope 38

upon its reel or drum. In this manner the car may be made to travel the desired distance upon its track-rails 11, while the dirt-bucket is so suspended as to prevent its coming into contact with or interfering in any manner with the framework of the mechanism. When the car has traveled a sufficient distance, it is obvious that the depending contact-rods 49 will, by engagement with the upturned ends of the latch-plates 30, result in a disengagement of said latch-plates with their lugs 28, and in a consequent turning over or dumping action of the bucket. In this manner it will be seen that the dirt from the forward portion of the excavation or sewer-way may be carried back and used as a filling for the otherwise completed sewer.

In order to vary the dumping-points, it is evident that the contact-rods 49 may be engaged with the desired holes 48.

It is evident that the stopping of the car may be facilitated by a proper movement of the brake-handle 44 by an occupant of the adjacent scaffold 45.

The bucket, after dumping, having been returned to its former upright position and its latches 30 made to again engage with the lugs 28, the car may be made to travel back to the point of excavation, when the bucket may be again lowered in the manner hereinbefore described.

As indicated in Fig. 4 of the drawings, the rope 50 may be made to engage with the beam of a plow 60, the movement of the car being thus utilized as a propelling power for the plow. In case the rope 50 is connected with one of the improved scrapers 51 it is evident that when said scraper-bodies are ready for dumping the triggers 54 may be disengaged from the pins 57 and the scraper-body be allowed to dump its contents by the engagement of its forward end portion with the ground in the manner indicated in Fig. 3 of the drawings.

As the excavation or sewer-way is continued it is evident that the traveling frame 3 may be made to travel the desired distance upon the tracks 1.

From the construction and operation of my improved excavating and dirt-carrying mechism it will be seen that simple and effective means are provided for conveying a dirt-bucket from the point of excavation to a desired dumping-point.

It will also be observed that the bucket supporting and carrying mechanism may be utilized in furnishing the desired power for producing the excavation and that excavating-scrapers are provided which are simple and positive in their operation.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a dirt excavating and carrying mechanism the combination with a framework adapted to bridge a sewer-way and a track on the framework, of a car adapted to run on said track within said frame, a transverse catch rod 19 supported in elongated openings in the sides of the car, handles connected to said bar and projecting beyond one end of the car, a pulley block adjustably supported from the car and provided with a recess with which said catch rod is adapted to engage, and a dirt carrying device connected to the pulley block, substantially as described.

2. In a dirt excavating and carrying mechanism the combination with the track rails and a car provided with grooved wheels to run on said rails, of a transverse rod 40 journaled on the car adjacent to one set of wheels, downwardly and forwardly extending brake arms connected to said rod, brake shoes pivoted to said arms and adapted to slide upon the rails and fit within the grooves of the wheels, a brace arm extending rearwardly from each brake shoe and engaging the track rails, and a handle connected to the transverse rod to operate the brakes, substantially as described.

3. In a dirt excavating and carrying mechanism the combination with a traveling framework consisting of connected sections which bridge a sewer-way, a track on said framework, a car running on said track, a housing or pulley bracket supported on said car, a transverse catch rod supported in said car frame and pulleys 17, 18, 18ª and 24 arranged as described in said car housing, of a pulley block and pulley therein, a recess in said pulley block with which said catch rod is adapted to engage, a supporting rope for said pulley block which passes as described over the pulleys 18ª, 37, 18 and 24, a pulley 39 journaled in the outer end of the main frame and a rope 38 passing through said housing over said pulleys 17 and 39 and engaging with the forward end of the car, substantially as and for the purpose specified.

4. In a dirt excavating and carrying mechanism the combination with a main frame adapted to bridge a sewer-way as described, a track on said main frame, a car running on said track, means for propelling said car backward or forward, plates 47 projecting from said frame, a series of holes in each of said plates and contact rods adapted to engage with said holes and depend from said plates, of a bucket body 25, bail arms pivotally connected therewith as described, catch lugs projecting from said bucket body, latch plates pivotally connected with said bail arms and adapted to engage with said lugs, means for adjustably suspending said bucket bail from the car, said bucket latch plates being adapted to be raised by contact with the contact rods 49, substantially as and for the purpose specified.

ALBERT ADAMS.

In presence of—
H. B. BRADSHAW,
C. M. VOORHEES.