

No. 753,282.

PATENTED MAR. 1, 1904.

D. H. MAHONEY.  
EXCAVATING AND LOADING MACHINE.

APPLICATION FILED SEPT. 12, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

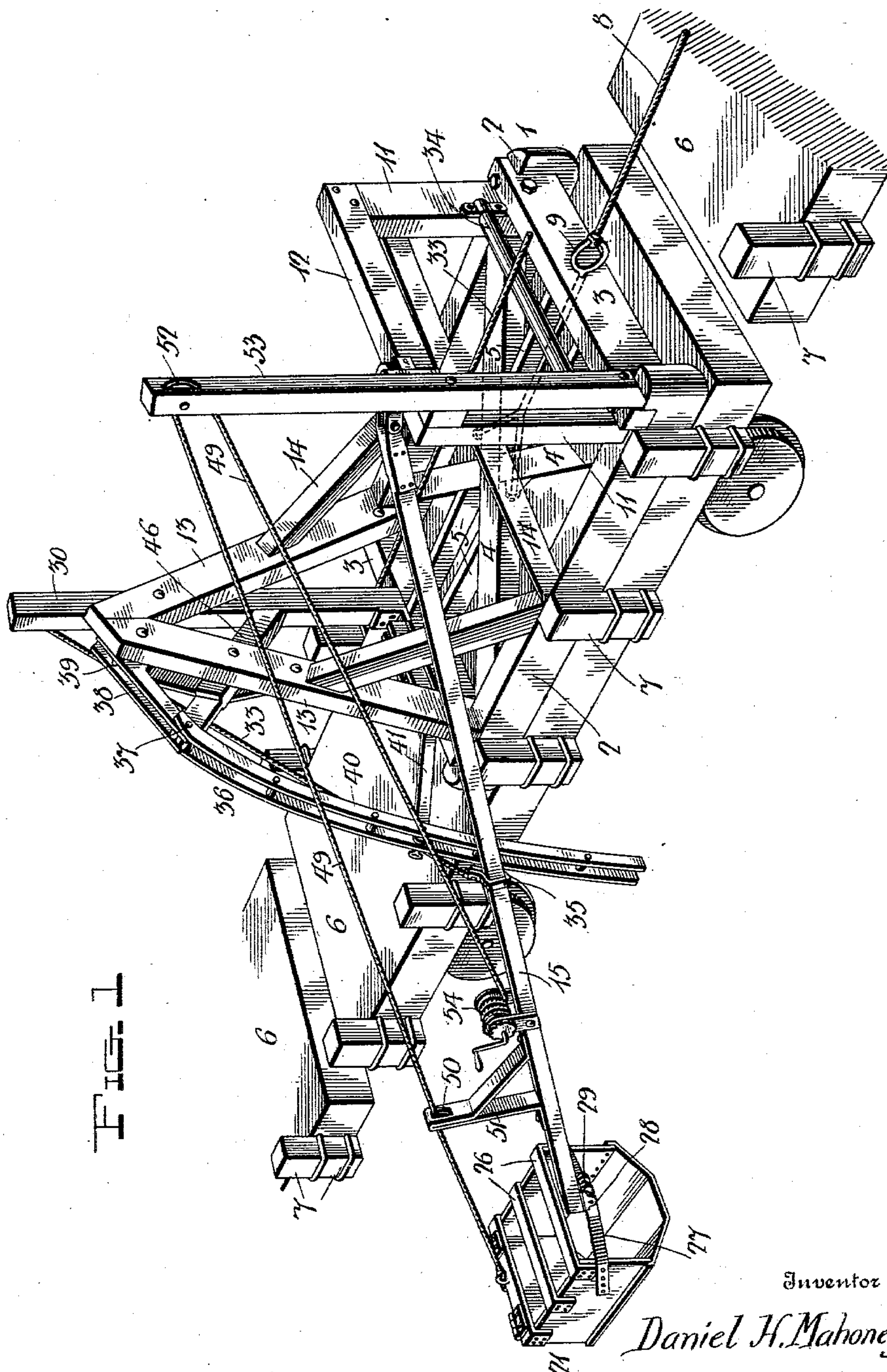


FIG. 1

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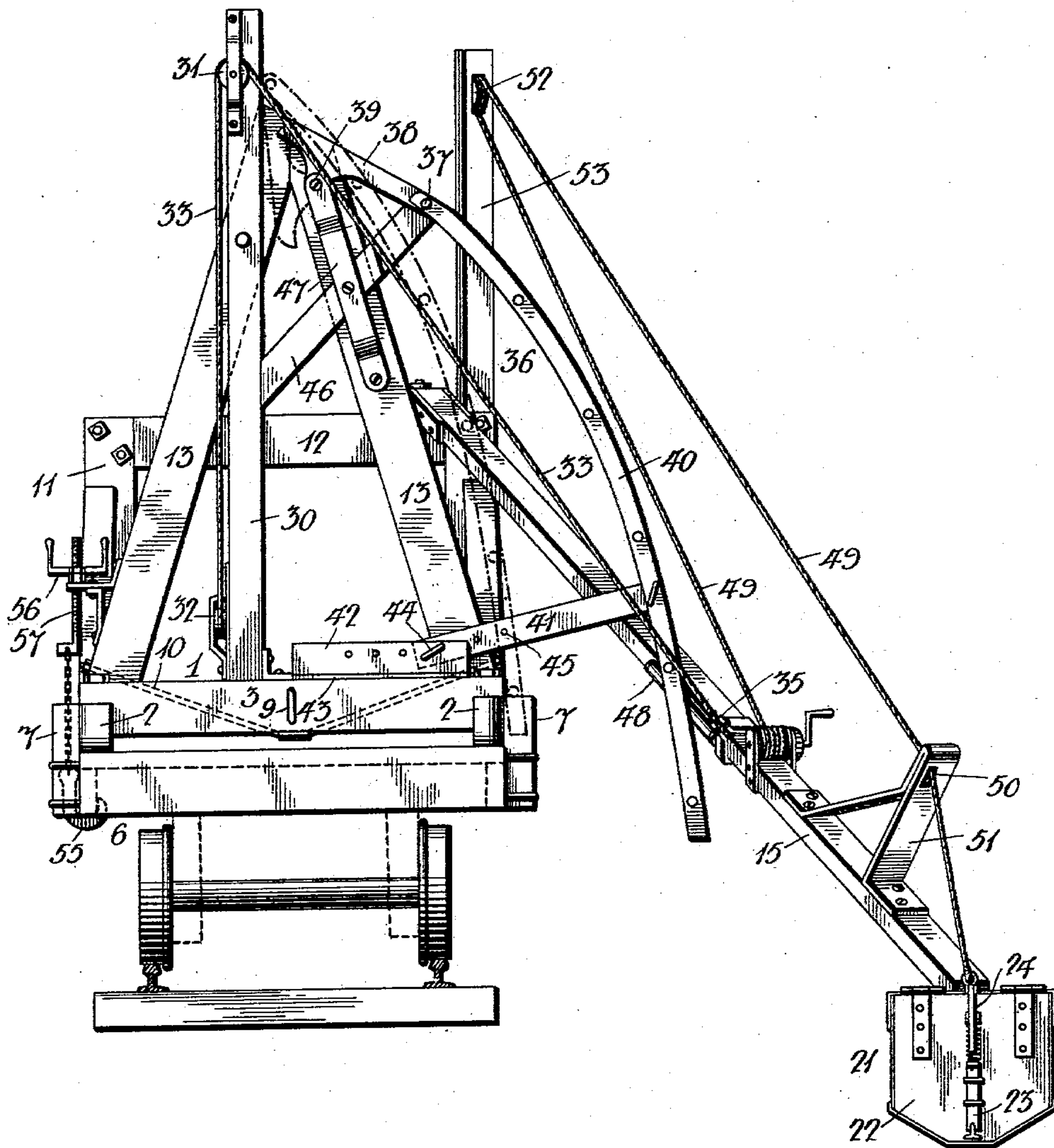
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3 SHEETS—SHEET 2.

FIG. 2



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No. 753,282.

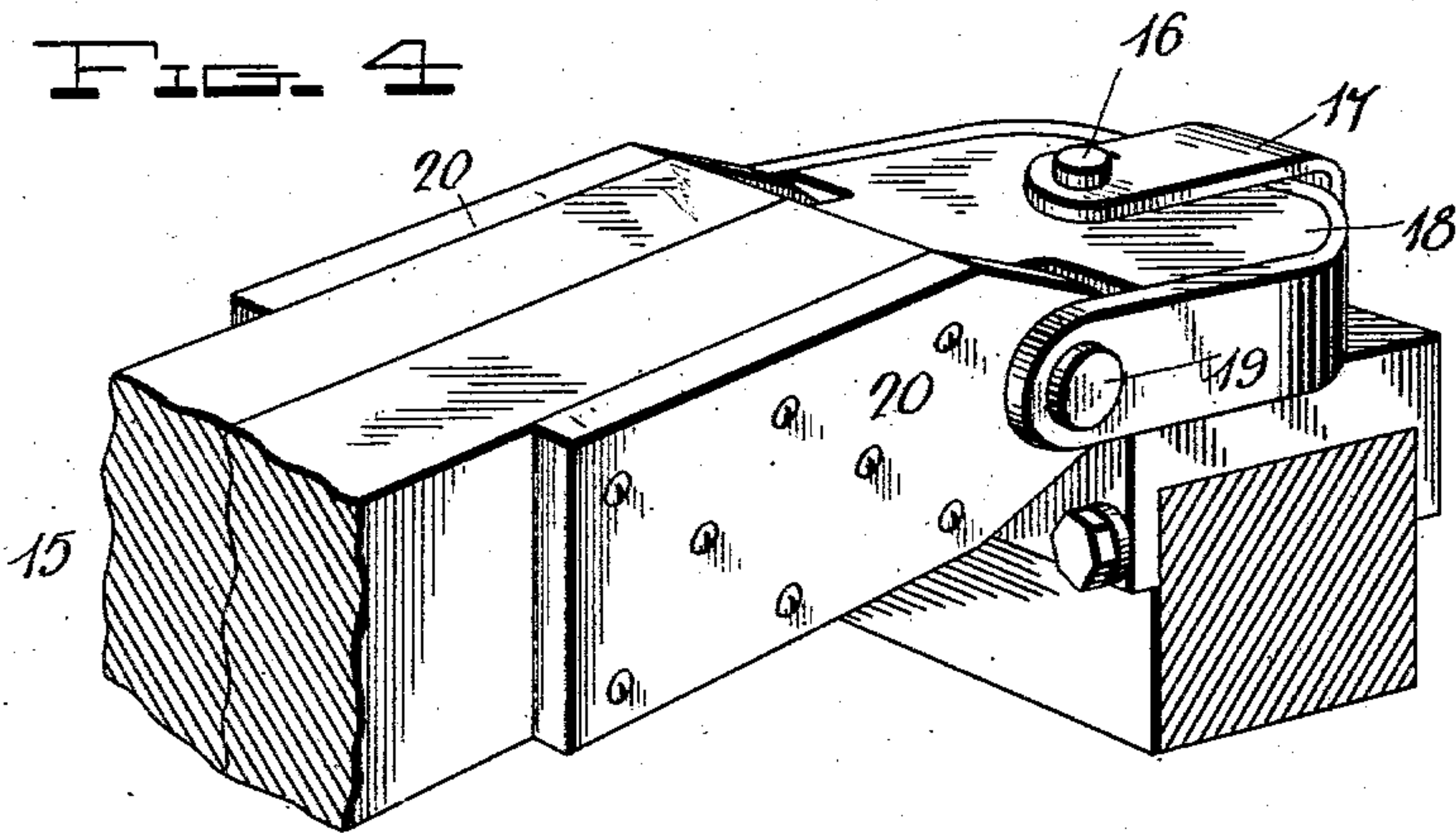
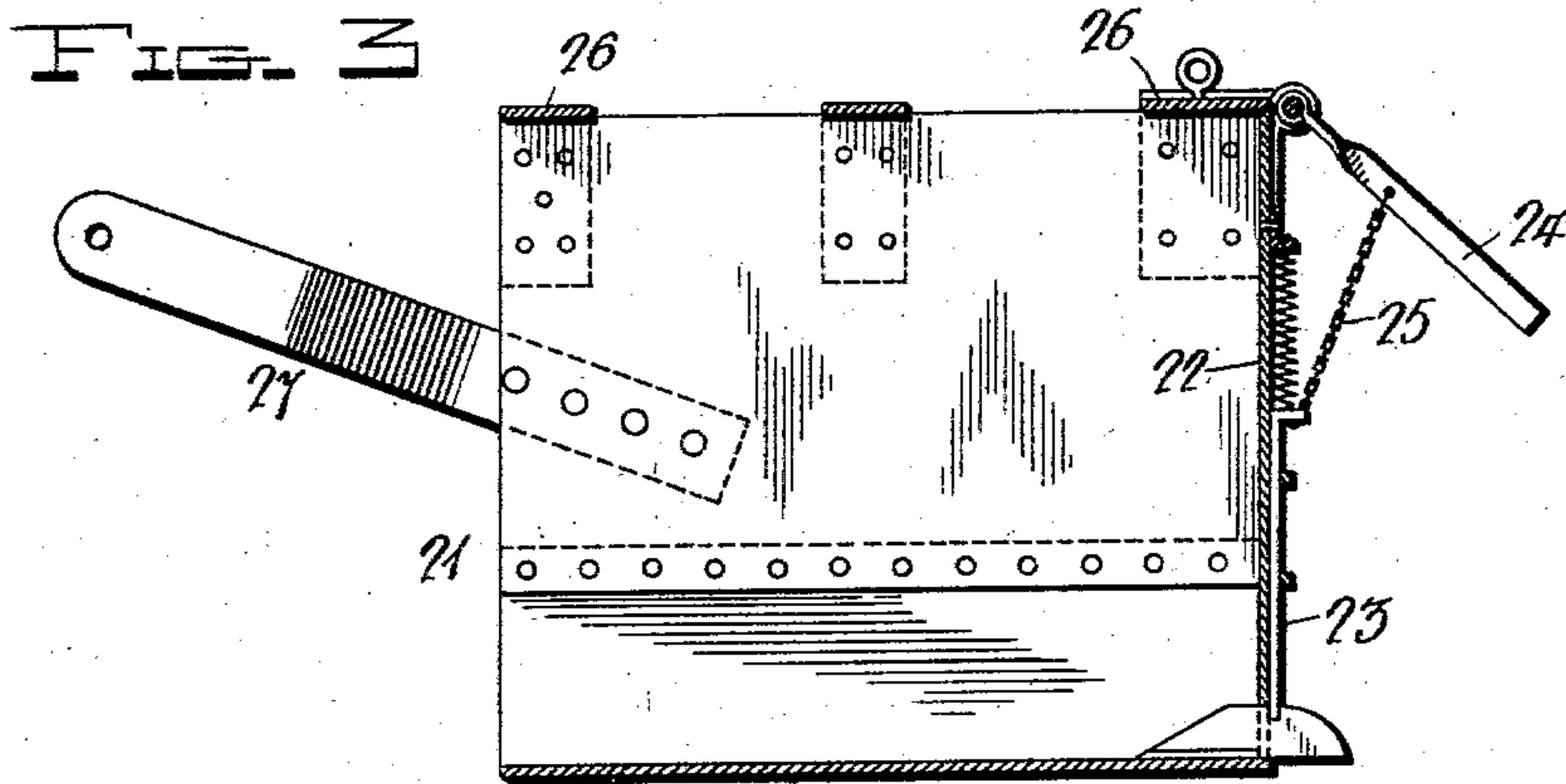
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3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

DANIEL H. MAHONEY, OF VINCENNES, INDIANA.

## EXCAVATING AND LOADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 753,282, dated March 1, 1904.

Application filed September 12, 1903. Serial No. 172,913. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL H. MAHONEY, a citizen of the United States, residing at Vincennes, in the county of Knox and State of Indiana, have invented certain new and useful Improvements in Excavating and Loading Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to excavating and loading machines designed more especially for use in connection with railroad construction-trains for the excavation and transportation of earth along the line of road, and is an improvement on the machine for which Letters Patent No. 701,593 were issued to me June 3, 1902.

The nature of the present improvements will be readily comprehended, reference being had to the following detailed description and to the accompanying drawings, illustrating the invention in its preferred form of embodiment, it being understood that various modifications may be made therein without departing from the spirit of invention defined by the concluding claims.

In the drawings, Figure 1 is a perspective view of an excavating and loading machine embodying the present improvements, the machine being shown movably supported on a train of railway flat-cars. Fig. 2 is a rear elevation of the same. Fig. 3 is a sectional view of the scoop. Fig. 4 is a perspective view of the universal hinge-joint for the scoop-boom.

Referring to the drawings by numerals, 1 designates a carrier-frame comprising side members 2 2 and end members 3 3, which members are firmly bolted or otherwise secured together and are braced by cross-pieces 4 4 and longitudinal pieces 5 5. The machine is capable of utilization in general excavating; but, as above stated, it is more especially designed for use in railroad-work. As shown, the frame rests on and is movable along a train composed of flat-cars 6 6, and the side members, which are beveled or rounded at their ends, serve as runners, being guided by the stakes 7 7. To propel the machine over

the cars, a suitable hoisting-engine is provided, having a drum to which is attached a cable 8, the other end of the cable being attached to an eye 9 on a draw-bar, which preferably is fastened at its two inner ends to the cross-braces 4 4, or such propulsion may be accomplished by the locomotive of the train. The rear end member is provided with a truss 10 for strength. Erected from the corners of the frame are four posts, the forward two of which, 11 11, are connected at their upper ends by a cross-bar 12, and the other two, 13 13, are inclined toward each other and directly connected together. Inclined pieces 14 14 are employed to brace these posts.

15 denotes a boom the inner end of which is universally hinged to the cross-bar 12. The hinge connection, which is shown in detail in Fig. 4, consists of a vertically-disposed pin 16 on the cross-bar 12, which pin is steadied at its upper end by a strap-bracket 17 and forms the pivot for a horizontally-swinging block 18, hinged by a horizontal pin 19 to ears 20 20 on the boom, whereby the latter is permitted both a vertical and a horizontal movement at its outer end. Attached to the outer end of the boom is a scoop or dipper 21 of rectangular form, but having its lower portion conforming, preferably, to the shape of the ditch or other excavation to be made. The scoop is open at its front end, and its rear end is normally closed by a dumping-door 22, hinged at its upper end to the scoop-body and having a spring-pressed self-locking latch 23, which is raised by hand to release the gate through the medium of a pivoted lever 24 and chain 25. In practice the scoop is elevated by the boom to a point above and centrally of the car, and in such position the door end is lowermost. The door, being released, opens by gravity, and to allow of the complete discharge of the contents the top of the scoop is open, except where cross-bands 25 26 are employed for strength. By this provision the tendency of the earth to cling to the inner sides of the scoop is overcome and the step of loading is greatly facilitated. Extending from the front of the scoop is a bail 27, which is pivoted by a bolt 28 to a block 29, secured to the end of the boom at



the under side thereof. The block is pivotally attached to the boom, whereby the scoop is permitted a horizontally-swinging movement in its lowered position for self-adjustment parallel with the line of traverse.

Erected from the rear frame member and secured to one of the posts 13 is a post 30, having at its upper end a sheave 31 and at its base a sheave 32. A rope or cable 33, connected with the drum of the engine, previously referred to, passes over a roller 34, journaled in bearings on the front posts 11 11, and around sheaves 31 32 and is attached to the boom at 35.

36 is a guide or fender consisting, preferably, of two outwardly-curved bars secured together in separated relation. The guide or fender is formed of two sections hinged together by a bolt 37, the upper section 38 being pivoted to one of the posts 13 by a bolt 39 passed through ears on said section. Pivoted to the lower guide-section 40 is a brace-link 41, having its inner end slidably confined between vertical flanges 42 on a plate 43, secured to the rear frame member 3. A pin 44 is passed through holes in the flanges and also through one of a series of holes 45 in the brace-link 41. The guide or fender is supported at its hinge-joint by an arm 46, extending at an inclination from the post 30, the arm having in its outer end a recess which receives the hinge-bolt 37. 47 is a strap extending from one of the posts 13 over the arm and to the bolt 39. The guide or fender is normally positioned as shown in full lines in Figs. 1 and 2, and its sectional construction permits of its being folded when not in use to the position shown by dotted lines in Fig. 2. In practice the guide or fender serves to guide the movement of the boom, and consequently of the scoop, from the lowered position of the boom and scoop to the raised position, and vice versa. The boom intermediately of its length slidably contacts with the guide or fender, and to lessen friction a roller 48 is provided at the inner side of the boom. The boom and scoop are elevated and lowered through the medium of the rope or cable 33, the guide or fender operating in such movements to position the elevated scoop centrally over the car behind the machine and to position the lowered scoop at the side of the train. The provision of the adjustable brace-link enables the lower end of the guide or fender to be adjusted to and from the car, whereby the position of the scoop may be shifted as desired, the adjustment being maintained by the pin 44. The pivotal attachment of the block 29, to which the scoop is connected, enables the scoop to assume a position parallel with the line of traverse regardless of the shifted position of the scoop. The scoop, as before stated, has its door end lowermost in its elevated position. To right the scoop in its lowered position, I employ a rope or cable 49,

which is secured at one end to the top of the scoop and is passed over a sheave 50 in a bracket 51 on the boom and around a sheave 52 at the upper end of a post 53, erected at the front of the carrier. The other end of the rope or cable is passed around a drum 54, which is rotated by a hand-crank to regulate the length of rope to effect proper righting of the scoop, the drum being locked by suitable pawl-and-ratchet mechanism.

The scoop being lowered, the train is set in motion to draw the scoop, and the hoisting-engine drum is then rotated to elevate the boom and scoop, after which the scoop-door is released to load the contents in the car. As the cars become filled the machine is drawn forwardly either by the locomotive or by the smaller engine, as before stated. The machine during operation is locked at its side opposite to the scoop side by a hook 55, which engages the car-sill, and by a nut 56, which is screwed onto a threaded rod 57, movable in a bracket on one of the posts 13 and which has chain connection with the hook 55. The provision of this locking means prevents tilting and longitudinal movement of the machine during excavating and loading operations.

I claim as my invention—

1. An excavating and loading machine consisting of a carrier, a boom, a scoop carried by the boom, means for raising and lowering the boom, and an inclined guide for the movement of the boom said guide being formed of foldable sections.

2. An excavating and loading machine consisting of a carrier, a boom, a scoop carried by the boom, means for raising and lowering the boom, an inclined foldable guide for the movement of the boom said guide being composed of two sections hinged together, the upper section being pivoted, and an adjustable brace-link for supporting the lower end of the lower guide-section in different positions.

3. An excavating and loading machine consisting of a carrier, a boom, a scoop carried by the boom, a vertical post, a sheave at the upper end of the post, a sheave at the lower end of the post, a cable attached to the boom intermediately of the ends of the latter and passed directly around the upper sheave and thence around the lower sheave, and an adjustable guide for the movement of the boom.

4. An excavating and loading machine consisting of a carrier, a boom, a scoop pivoted to the free end of the boom, means for raising and lowering the boom, an inclined guide for the movement of the boom, and a righting-cable for the scoop said cable being attached at one end to the scoop and at its other end to an adjusting means on the boom and intermediately passed about a sheave above the inner end of the boom.

5. An excavating and loading machine consisting of a carrier, a boom, a scoop carried by



the boom, said scoop having openings in its top, a door for the discharge end of the scoop, a hand-released spring-pressed locking means for the door, and means for raising and lowering the beam in an inclined plane.

6. An excavating and loading machine consisting of a carrier, a boom, a scoop carried by the boom, a cable attached directly to the boom for raising and lowering it, and a righting-

cord attached at its ends respectively to the scoop and boom and intermediately passed around a sheave on the carrier.

In testimony whereof I affix my signature in presence of two witnesses.

DANIEL H. MAHONEY.

Witnesses:

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