

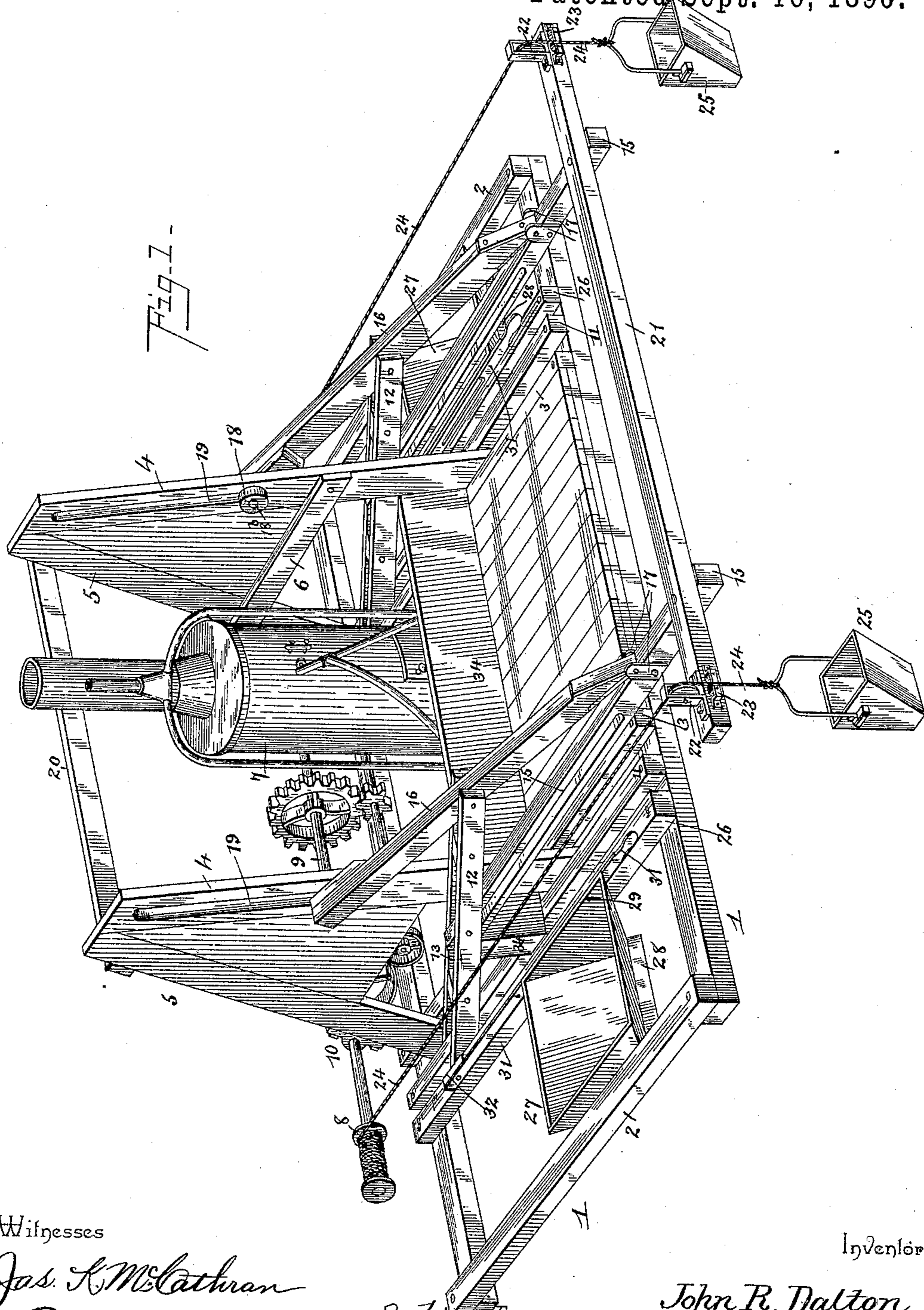
(No Model.)

2 Sheets—Sheet 1.

J. R. DALTON.
HOISTING AND LOADING APPARATUS.

No. 436,732.

Patented Sept. 16, 1890.



Witnesses

Jas. L. McLathran
Wm. Bagger.

Inventor

John R. Dalton

By his Attorneys,

C. A. Snow & Co.

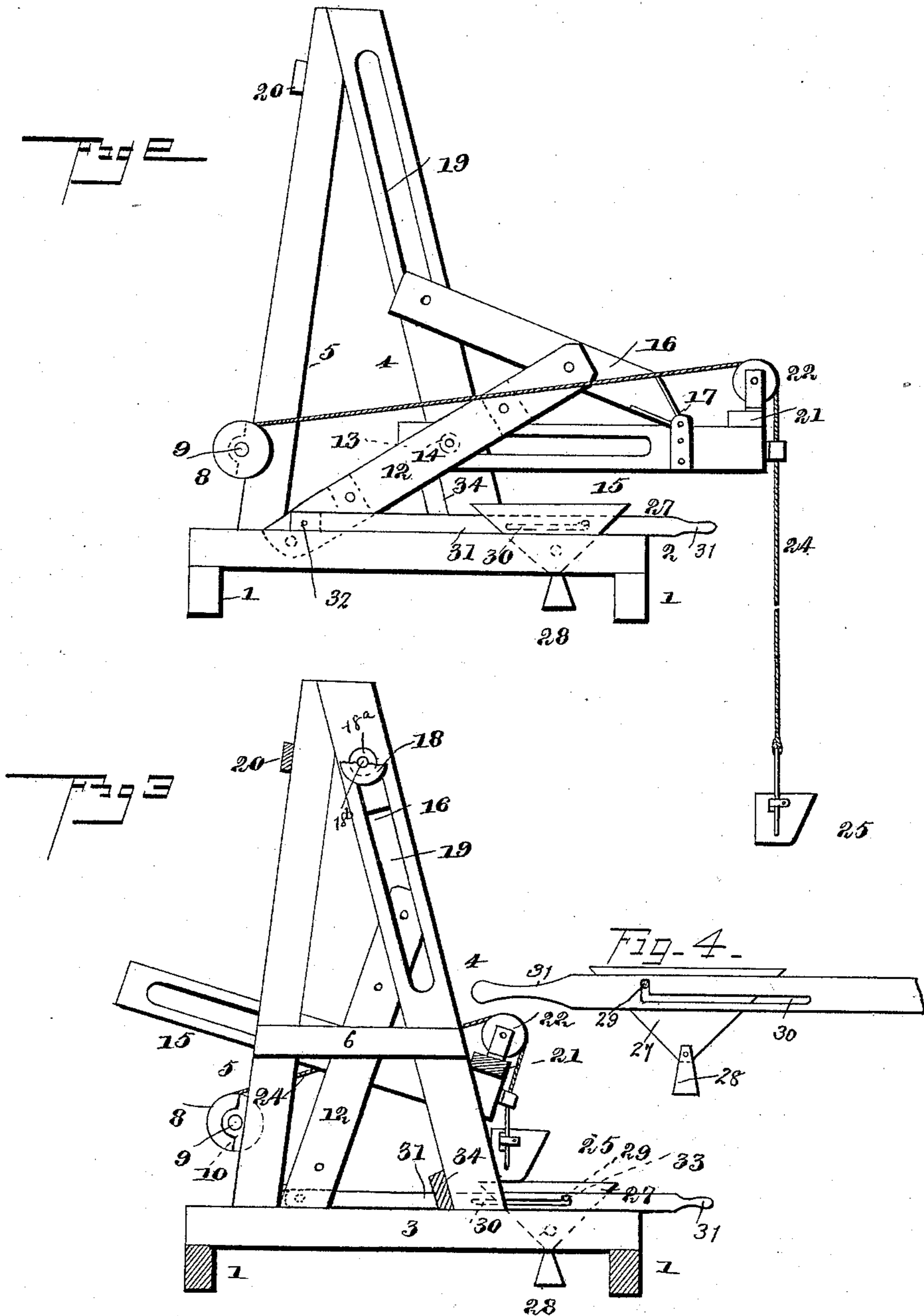
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UNITED STATES PATENT OFFICE.

JOHN R. DALTON, OF HAMMOND, WISCONSIN, ASSIGNOR TO ALBERT R. STARKEY, OF ST. PAUL, MINNESOTA.

HOISTING AND LOADING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 436,732, dated September 16, 1890.

Application filed March 5, 1890. Serial No. 342,756. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. DALTON, a citizen of the United States, residing at Hammond, in the county of St. Croix and State of Wisconsin, have invented a new and useful Hoisting and Loading Apparatus, of which the following is a specification.

This invention relates to hoisting and loading apparatus of that class which is used principally for hoisting buckets containing the dirt that is loosened in the progress of making excavations for sewers and the like and for dumping the contents of said buckets into dumping-boxes and from thence into vehicles or any suitable conveyance arranged to receive and to carry the same away.

My invention has for its object to construct a device of this class which shall be simple in construction, durable, and in which the parts are so arranged as to avoid excessive wear and friction upon the ropes or cables used for hoisting.

The invention consists in the construction, arrangement, and combination of parts which will hereinafter be fully described, and be particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a perspective view of my improved hoisting and loading apparatus. Fig. 2 is a side elevation showing the apparatus in position for hoisting. Fig. 3 is a vertical sectional view showing the apparatus in position for dumping. Fig. 4 is a detail view of one of the dumping-hoppers and the slotted operating-lever.

Like numerals of reference indicate like parts in all the figures.

The main frame or supporting-frame of my improved apparatus is composed of the sills 1 1, connected at their ends by cross-pieces 2 2. This frame is intended in practice to be mounted upon wheels that will support it at such an elevation as to enable vehicles or cars of suitable construction to be driven under the said frame for the purpose of being loaded.

The base-frame is provided with suitable cross-bars 3 3, to which are attached the inclined uprights 4 4, the upper ends of which are supported by means of similar inclined uprights or braces 5 5. Cross-braces 6 also

connect the front and rear uprights 4 and 5. The motive power, which may consist of a steam-engine of ordinary construction, is supported upon the base-frame between the pairs of inclined uprights. From said engine, which may be of any suitable construction and which is designated by 7, motion may be transmitted in any suitable manner to the drums 8 8, that are mounted upon the ends of a shaft 9, which is supported in blocks or bearings 10 upon the rear sides of the inclined uprights 5.

The base-frame is provided with a pair of transverse beams or cross-pieces 11, located adjacent to the cross-pieces 3. To the said cross-pieces 11, near their rear ends, are pivoted the bifurcated arms 12, having central slots 13, in which rollers 14 are journaled.

15 15 designate a pair of longitudinally-slotted arms extending through the slots 13 in the bifurcated arms 12 and working over the rollers 14 in said slots. In the upper or outer ends of the bifurcated arms 12 are pivoted a pair of arms 16, the front ends of which are connected with the arms 15 by means of suitably-constructed hinges 17. The upper or rear ends of the arms 16 have rollers 18 journaled upon their inner sides, and said rollers work in slots 19 formed in the upper ends of the inclined uprights 4. Washers 18^a are employed to prevent the rollers 18, which are mounted upon pins 18^b, from slipping out of the slots 19. A cross bar or brace 20, which connects the upper ends of the uprights 5, adds strength and stability to the machine.

Upon the front ends of the arms 15 is mounted a bar or beam 21, the ends of which are provided with boxes or bearings for the vertically-arranged pulleys 22. The beam 21 is also provided on its front side near its ends with boxes or bearings for the guide-pulleys 23, a pair of which is arranged in front of each of the pulleys 22. The hoisting-ropes 24, to which the buckets 25 are attached, pass between the guide-pulleys 23, over the pulleys 22, and thence direct to the drums 8, to which they are suitably attached.

The frame is provided with cross-pieces 26, arranged adjacent to the cross-pieces 11, and between the said cross-pieces and the end pieces 2 are pivoted the hoppers 27, which are

triangular in form and which are provided with counter-weights or counterpoises 28, whereby they are caused to normally assume an upright position. The buckets 27 are provided near their front ends with laterally-extending pins 29, extending through slots 30 in the levers 31, which are pivoted to lugs 32 near the rear ends of the cross-bars 26. The slots 30 are provided near their front ends with notches 33, to engage the pins 29, and thereby to retain the hoppers normally in an upright position.

It will be seen from the foregoing that the arms 15 and beam 21 constitute a frame which is movable laterally with relation to the base-frame of the machine. The normal position of said frame, which is shown in Figs. 1 and 2 of the drawings, places the beam 21 longitudinally above the ditch or trench alongside of which the machine has been placed for operation. The position of the engineer upon the front part of the base-frame enables him to watch the progress of operations in the trench and to determine the proper moment of hoisting the buckets. When motion is conveyed to the drums 8, the hoisting ropes or cable will be wound upon the said drums and the buckets be hoisted until they strike the beam 21. The draft will now be exerted directly upon the latter, and the frame of which the said beam is a part will now be moved laterally in an inward direction over the base-frame of the machine until the buckets are ranged directly above the hoppers 27, into which the contents of said buckets are now dumped by the attendants. The motion is then reversed and the frame will by its own weight be carried back to its normal position and the buckets lowered into the trench to be refilled. The attendants now lift the front ends of the slotted levers 31, thus releasing the pins 29 of the hoppers from the notches 33 and causing said pins to travel through the slots 30 of the levers, thereby canting the hoppers 27 and dumping the contents of said hoppers into cars or vehicles which have been previously drawn into position under the frame of the machine.

A beam 34, placed across the cross-beams 3 and 11, serves to engage the under sides of the slotted and bifurcated arms 12 and thereby to brace the hoisting-frame in its normal position.

It is preferred in practice to mount the frame of the machine upon traction-wheels and to provide gearing by means of which motion may be communicated to the said traction-wheels from the engine mounted upon the frame of the machine.

An important advantage of my improved hoisting and loading apparatus lies in the fact that the draft or pull upon the hoisting-ropes is straight and direct, only one angle being turned over the pulley 22. The latter, owing to the arrangement as herein described, may be of considerable size, and wear upon the hoisting-ropes is accordingly greatly re-

duced. The construction of the machine is exceedingly simple, and the strain during operation is entirely in the direction of the base, and the machine is therefore free from the objection of top-heaviness, which is common to this class of devices.

Having thus described my invention, what I claim is—

1. In a hoisting and loading apparatus, the combination, with the base-frame or supporting-frame, of the hoisting-frame comprising a pair of arms arranged to slide transversely through slots in a pair of arms hinged to the base-frame, and a longitudinal beam supported upon the outer ends of the said sliding arms, substantially as and for the purpose set forth.

2. In a hoisting and loading apparatus, the combination of the base-frame, the hinged transversely-slotted arms having rollers journaled in the said slots, the laterally-sliding arms having slots working over the said rollers, the longitudinal beam mounted upon the said sliding arms and having guide-pulleys at its outer ends, the winding-drums, the hoisting ropes and buckets, and suitable operating mechanism, substantially as set forth.

3. The combination of the base or supporting frame, the inclined uprights having slots at their upper ends, the hinged arms having slots and rollers journaled in said slots, the sliding longitudinally-slotted arms working over the said rollers, the supporting-arms pivoted at the outer ends of the hinged arms hinged to the sliding arms near the front ends of the latter and provided with rollers working in the slots in the inclined uprights, the longitudinal beam mounted upon the sliding arms, the guide-pulleys, the winding-drums, the hoisting ropes and buckets, and suitable operating mechanism, substantially as and for the purpose set forth.

4. The combination of the hinged arms, the supporting-arms pivoted at the outer ends of the same and having rollers working in inclined slots, the hoisting-frame comprising the slotted arms working over rollers journaled to the hinged arms and connected by hinges with the front ends of the supporting-arms and the longitudinal beam supported upon the front ends of said sliding arms, and the longitudinally-arranged beam extending under and serving to support the hinged arms, substantially as set forth.

5. The combination, with the pivoted counter-weighted hoppers having the laterally-extending pins, of the levers having slots working over the said pins, and notches to engage the latter, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JOHN R. DALTON.

Witnesses:

G. L. FRANCIS,
A. P. THAYER.