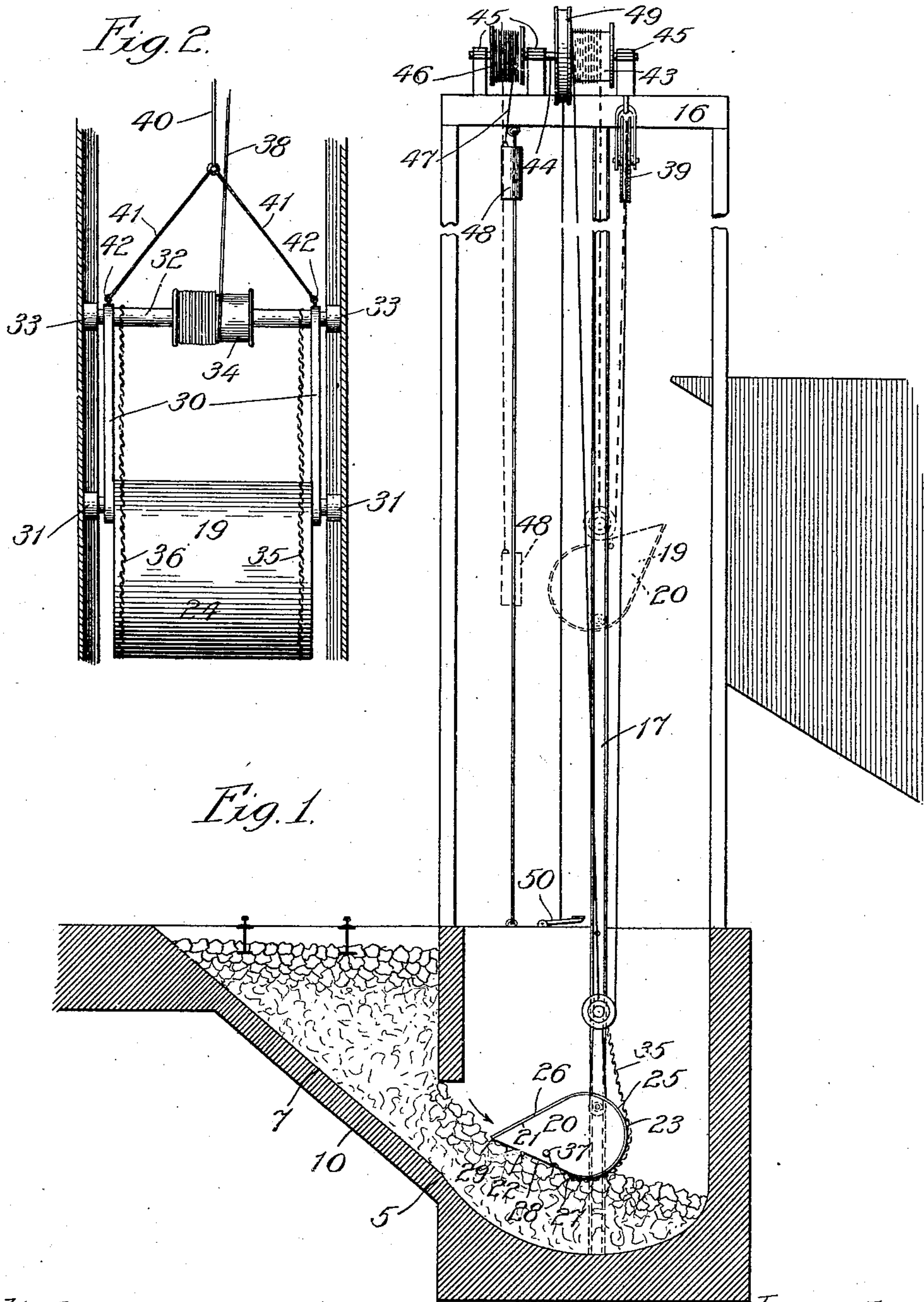


H. B. & J. A. SAUERMAN.
CONVEYER APPARATUS.
APPLICATION FILED MAR. 28, 1908.

914,755.

Patented Mar. 9, 1909

2 SHEETS—SHEET 1.



Witnesses:
John Enders
Chas. H. Buell

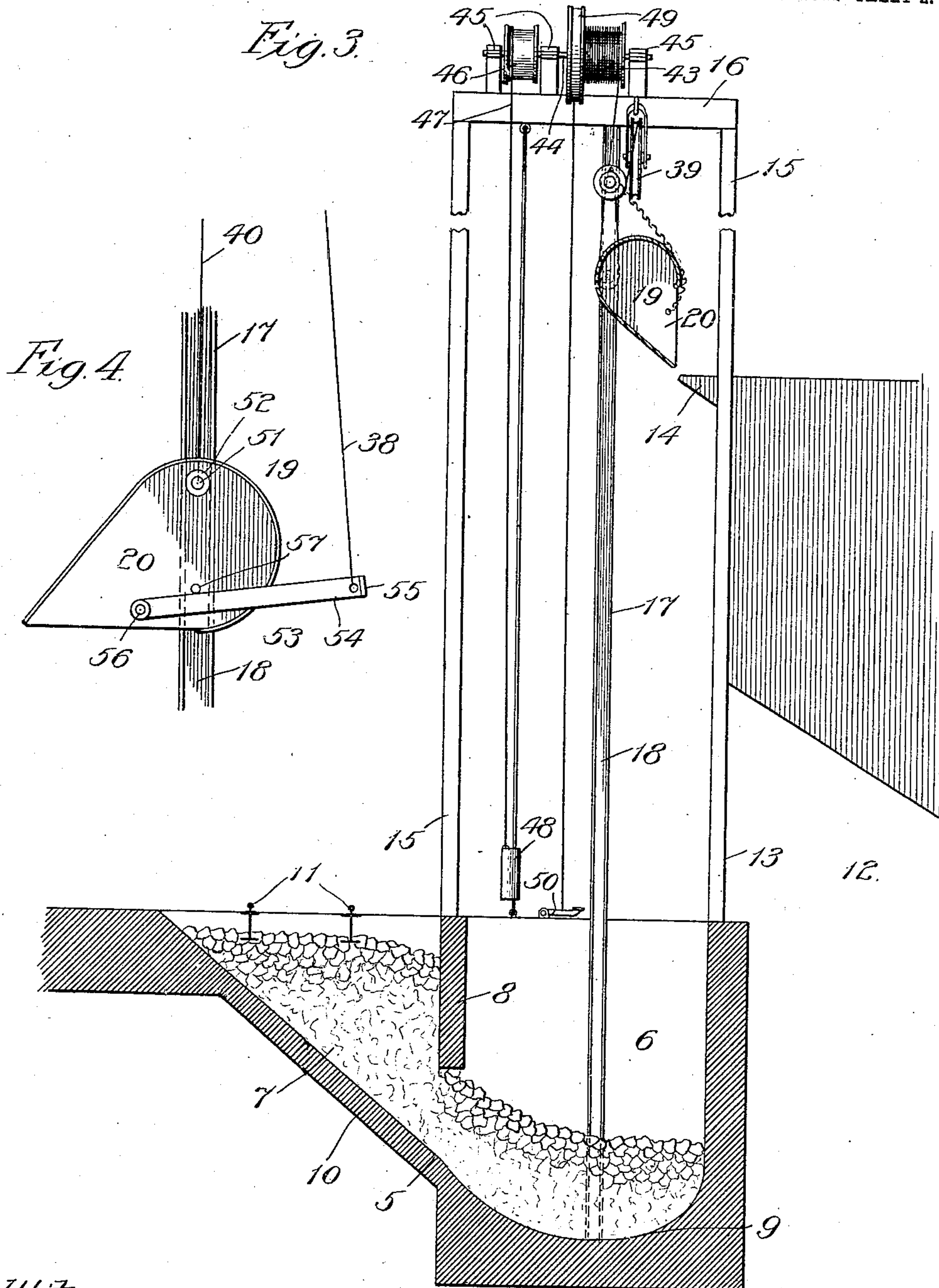
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UNITED STATES PATENT OFFICE.

HENRY B. SAUERMAN AND JOHN A. SAUERMAN, OF CHICAGO, ILLINOIS.

CONVEYER APPARATUS.

No. 914,755.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed March 28, 1908. Serial No. 423,945.

To all whom it may concern:

Be it known that we, HENRY B. SAUERMAN and JOHN A. SAUERMAN, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Conveyer Apparatus, of which the following is a specification.

The use for which our invention is more particularly adapted is that of elevating material such as coal, crushed stone, gravel, sand or other materials, from a receiving bin or boot to a storage bin; and our primary object is to provide a simple construction of apparatus capable of performing the transferring operation quickly and positively.

Referring to the accompanying drawings—Figure 1 is a view in elevation of a receiving-boot, a storage-bin and elevating apparatus therefor constructed in accordance with our invention, the boot being shown in section. In this figure the position of the bucket as it rests upon the material to be elevated is represented in full lines, and a position it assumes intermediate its filling and dumping is represented in dotted lines. Fig. 2 is an enlarged view in elevation of the bucket and its operating mechanism shown in Fig. 1. Fig. 3 is a view like that of Fig. 1 showing the bucket in the dumping position; and Fig. 4 is a view in elevation of a bucket showing another way of mounting it on its guides and another means for turning the bucket, this construction constituting a modification of that shown in the preceding figures.

In the construction illustrated in the drawings a receiving-boot is represented at 5. This boot, as shown, is divided into a receiving-chamber 6 and a chute 7, by a depending wall 8 reaching short of the bottom of the boot to render the chamber 6 constantly open to the chute 7. The chamber 6 has a rounded portion 9 for the purpose hereinafter explained, and the chute 7 has an inclined bottom 10 for directing material dumped into the chute from cars (not shown) which run upon tracks 11, into the chamber 6. The boot is located at one side of a storage-bin 12, on the wall 13 of which is a chute 14 communicating with its interior for receiving material elevated from the boot by bucket mechanism hereinafter described.

The frame of the elevating apparatus comprises uprights 15 forming a rectangular

structure surmounted at its upper end by a platform 16, with two opposed beams 17 extending longitudinally of the uprights 15 from the platform 16 to the bottom of the boot. The beams 17 are provided with opposed channels 18 which open toward each other as represented and form guide-ways for a purpose hereinafter explained.

The elevating bucket which is represented at 19 is of general scoop-shape with its opposite sides 20 having straight converging edge- portions 21 and 22 and a rounded portion 23, between which sides the inclosing wall 24 for joining the sides together extends. The wall thus presents a rounded portion 25 and two converging straight portions 26 and 27, one of which is cut away as represented in the drawings to afford an opening 28 and an open penetrating edge 29 for engaging with the material to be scooped in a manner hereinafter described. The bucket is pivoted at its sides to the lower ends of links 30 disposed on opposite sides of the bucket and carrying at their lower ends rollers 31 which are confined in the guide-channels 18 to be movable up and down therein. The upper ends of the links 30 form bearings in which is journaled a shaft 32 carrying rollers 33 on its opposed ends slidably confined in the channels 18 above the rollers 31, the shaft being also provided intermediate its ends with a fixed drum 34. Chains 35 and 36 are secured at their upper ends to the shaft 32 on opposite sides of the drum 34 and normally extend about the rounded portion 25 of the bucket to their points of connection therewith at lugs 37 on the inner surfaces of its sides 20. A hauling cable 38 is connected with the drum 34 and is wound upon it as represented in Fig. 2 when the bucket is in its normal position as hereinafter explained, this cable extending upward to a sheave 39 over which it passes to the point of its connection with a power device (not shown) for operating it. A holding cable 40 connects at its extensions 41 with the upper ends of the links 30 as indicated at 42 and extends upward to a drum 43, upon which it is wound, fixed on a shaft 44 journaled in bearings 45 on the platform 16. The shaft also carries a drum 46 upon which is wound a cable 47 to the free end of which a counter-weight 48 is connected for a purpose hereinafter explained. Fixed to the drum 43 is a larger drum 49 over which an ordinary fixed

belt extends in a well known way for arresting the movement of the shaft 44 when the treadle 50 is depressed.

The normal position of the parts of the apparatus is that illustrated in Fig. 1 in which the bucket rests at its open portion upon the bed of material, such as coal X, to be scooped, the cable 38 is wound upon the drum 34, the weight 48 is in raised position, and the shaft 44 is freely rotated.

To operate the apparatus, assuming it to be in normal position, the cable 38 is drawn upon thus causing it to unwind from the drum 34 and in so doing rotate the shaft 32 with the result of causing the chains 35 and 36 to wind upon the latter. By winding the chains on the shaft as described, the bucket is caused to be turned in the direction indicated by the arrow in Fig. 1, the penetrating edge 29 of the bucket engaging with the material X and sinking deeper and deeper into it as the turning of the bucket continues. By the time the bucket has been turned to the inverted position as represented by dotted lines in Fig. 1, it will have penetrated the material sufficiently far to scoop up a full load, whereupon the bucket may be raised to the desired height for dumping it by continuing to draw on the cable 38. As the bucket is raised by the cable 38, the cable 40 is caused to wind up on the drum 43 by the action of the weight 48 in unwinding the cable 47 from the drum 46, the weight being preferably heavy enough to prevent any slack being produced in the holding cable 40 during the bucket elevating operation, but too light to raise the bucket and the parts movable with it.

The dumping of the bucket is effected by depressing the treadle 50 to apply the brake to the shaft and thus hold the cable 40 against movement, and thereupon slacking the hauling cable 38, with the result of permitting the bucket to turn by gravity on its journals to the dumping position illustrated in Fig. 3. The bucket may then be lowered and caused to return to its normal position by slacking both cables 38 and 40, the bucket by reason of its pivotal connection to one side of the center of gravity as represented in Fig. 3, causing it to automatically swing to a position in which it will lie upon the material as represented in Fig. 4.

It is manifest that when the cable 38 is slackened and the bucket turns on its journals, as described, to normal position the chains 35 and 36 will unwind from the shaft 32 and the cable 38 will wind upon the drum 34, and thus the cable 38 and chains are automatically returned to normal positions in which they are ready to be again operated for scooping up another load in a manner hereinbefore described.

The combination of the boot with the rounded portion 9 and the scoop guided in its

up and down movements, and constructed and arranged to be turned to inverted position while in engagement with the material in the boot is very desirable, as the scoop acting at its penetrating edge against the curved bottom of the boot by successive operations may be caused to scoop up from the boot all the material dumped into it. Furthermore, by providing the construction as set forth no valves or gate between the chute and chamber 6 are required.

In the construction represented in Fig. 4, the links 30, shaft 32 and drum 34 are omitted, the bucket 19 being journaled directly to shafts 51, each carrying a roller movable in the guide-ways 18. The chains 35 and 36 are also omitted, though this is not necessary in this construction, and in their place a bail 53 formed of two arms 54 and a cross-bar 55, is substituted. The bail is pivoted at the ends of its arms 54 to stub-shafts 56 extending beyond the bucket-sides 18 to cause the bail to extend preferably from a point at one side of the center of gravity of the bucket to the opposite side thereof and beyond the curved portion 25 of the bucket, lugs 57 being provided on the bucket-sides for engaging with the upper edges of the arms 54, for a purpose hereinafter explained. When the shaft 32 and drum 34 are omitted, the hauling line 38 as attached directly to the bail 53 and the holding-line 40 is secured to the stub-shafts 51, or if the drum 34 only is omitted, the holding-line 40 may be secured to the shaft 32.

The operation of the construction illustrated in Fig. 4 is as follows: The bucket 19 is turned to invert it while in engagement with the material X to be elevated, by pulling on the line 38, which causes the arms 54 to engage with the lugs 57 and with the leverage thus obtained turn the bucket. The bucket is raised to the desired height by continuing the pull on the cable 38, the bucket being guided in its upward movement by the rollers 52. To dump the bucket the cable 40 is held fast and the line 38 is slackened to permit the bucket to be turned by gravity to the dumping position, as in the case of the construction of the preceding figures.

It is manifest that in place of the chains 35 and 36 of the construction illustrated in Fig. 1, a bail and engaging lugs such as those represented at 53 and 57 in Fig. 4 may be used; and that in the construction illustrated in Fig. 4 the chains 35 and 36 as shown in Fig. 1, may be used in place of the bail 53.

It will be noted that by employing a guide such as that represented at 18 for guiding the bucket in its travel from the point from which the material is scooped up to the place of discharge, the direction of movement of the bucket is positive, and thus this character of construction presents great advantages where it is desired that material be taken

from a fixed location such as from the receiving-boot and discharged at another fixed location as, for example, the chute leading into the storage-bin.

5 What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a guide, a pivoted scoop guided by said guide and containing an opening and a cutting edge adjacent thereto, 10 and means having eccentric connection with the scoop and operating when actuated to swing the scoop to upright position and in so swinging the same to first lower and then raise the said cutter-portion, as and for the 15 purpose set forth.

2. The combination of a guide, a member movable in said guide, a scoop pivoted to said member and containing an opening and a cutting edge adjacent thereto, and means 20 having eccentric connection with the scoop and operating when actuated to swing the scoop to upright position and in so swinging the same to first lower and then raise the said cutter-portion, as and for the purpose 25 set forth.

3. The combination of a guide, roller-means movable in said guide, a scoop pivoted to said roller-means and containing an opening and a cutting edge adjacent thereto, and 30 means having eccentric connection with the scoop and operating when actuated to swing the scoop to upright position and in so swinging the same to first lower and then raise the said cutter-portion, as and for the purpose 35 set forth.

4. The combination of a shaft carrying a drum, a scoop, a hauling-line connected with the drum, and means connected with said shaft and scoop for turning the scoop upon 40 its journals to invert it when the hauling-line is operated to rotate the drum.

5. The combination of a shaft carrying a drum, depending members connected with the shaft, a scoop journaled below said shaft 45 in the depending members, a hauling-line connected with the drum, and means connected with said shaft and scoop for turning the scoop upon its journals to invert it when the hauling-line is operated to rotate the 50 drum.

6. The combination of a guide, a shaft movably supported in the guide and carrying a drum rotatable with it, a scoop, a hauling-line connected with the drum, and means 55 connected with said shaft and scoop for turning the scoop upon its journals to invert it when the hauling-line is operated to rotate the drum.

7. The combination of a guide, a shaft 60 movably supported in the guide and carrying a drum, arms depending from said shaft and

having guiding connection with the guide near their lower ends, a scoop journaled to the lower ends of the arms, a hauling-line 65 connected with the drum, and means connected with said shaft and scoop for turning the scoop upon its journals to invert it when the hauling-line is operated to rotate the drum.

8. The combination of a drum, a cable con- 70 nected with the drum, a bucket connected with the cable, means for operating the bucket to cause it to become loaded with material to be conveyed, means for raising the bucket, a second drum movable with said 75 first-named drum, a cable wound on said second drum in a direction opposite to that in which the cable is wound on said first-named drum, and means for unwinding the cable from said second-named drum during 80 the operation of raising the bucket, for the purpose set forth.

9. The combination of a receiving-boot, a guide extending upward from the boot, a pivoted scoop operating in said guide and 85 containing an opening and a cutting edge adjacent thereto at which opening the scoop normally rests on the material in the boot, and means having eccentric connection with the scoop and operating when actuated to 90 swing the scoop upon its pivot to inverted position and in so swinging the same to cause it to first lower and then raise the cutter-portion of the scoop while in engagement with the material. 95

10. The combination of a receiving-boot having a curved bottom, a guide extending upward from the boot, a member movable in said guide longitudinally thereof, a scoop pivotally connected with the member and 100 containing an opening and a cutting edge adjacent thereto, and means having eccentric connection with the scoop and operating when actuated to swing the scoop to upright position and in so swinging the same to cause 105 it to sweep against the curved bottom of the boot by first lowering and then raising the cutter-portion of the scoop, for the purpose set forth.

11. The combination of a boot divided into 110 a receiving-chamber and a chute-section by a depending wall, the receiving-chamber having a curved bottom, a scoop, and means for turning the scoop in the material in the boot to cause the scoop to engage with and traverse the curved bottom of the boot, for the 115 purpose set forth.

HENRY B. SAUERMAN.

JOHN A. SAUERMAN.

In presence of:

A. U. THORIEN,

R. A. SCHAEFER.