Oct. 9, 1945. T. R. TAGGART 2,386,410

SCOOP LOADER

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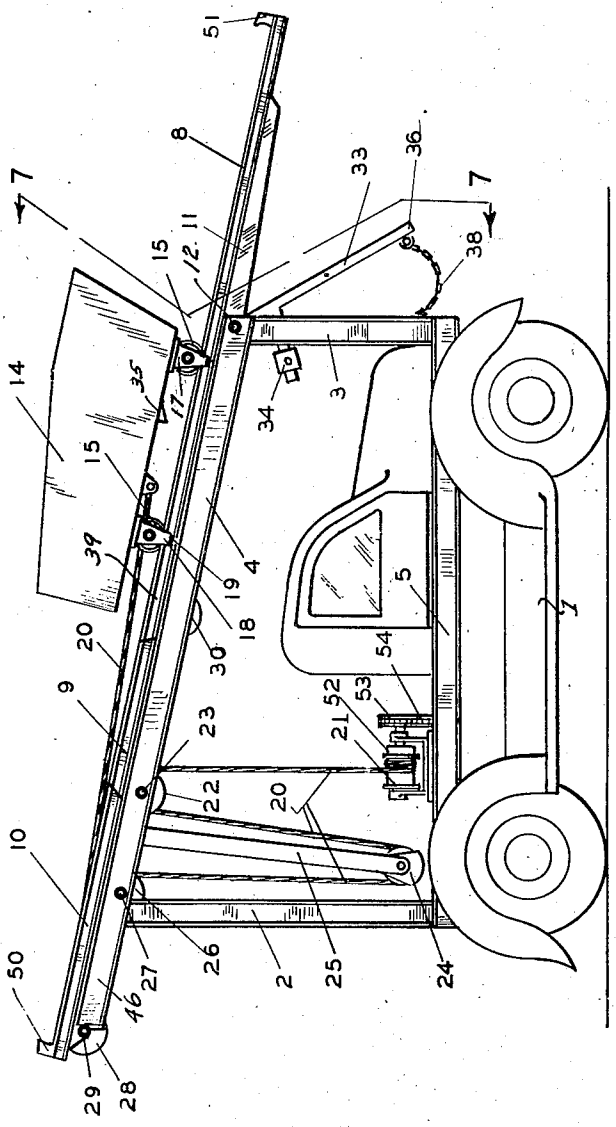


Fig-1

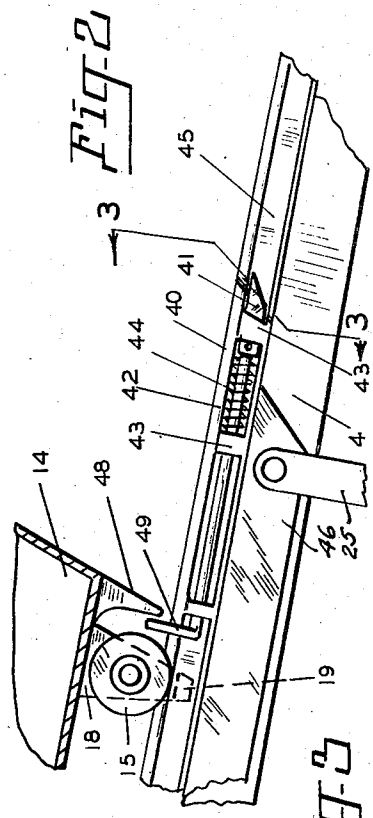


Fig-2

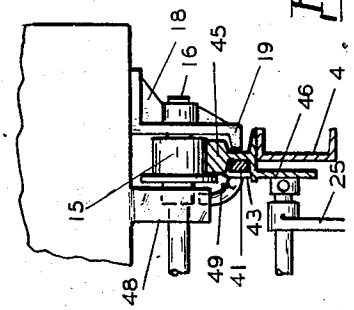


Fig-3

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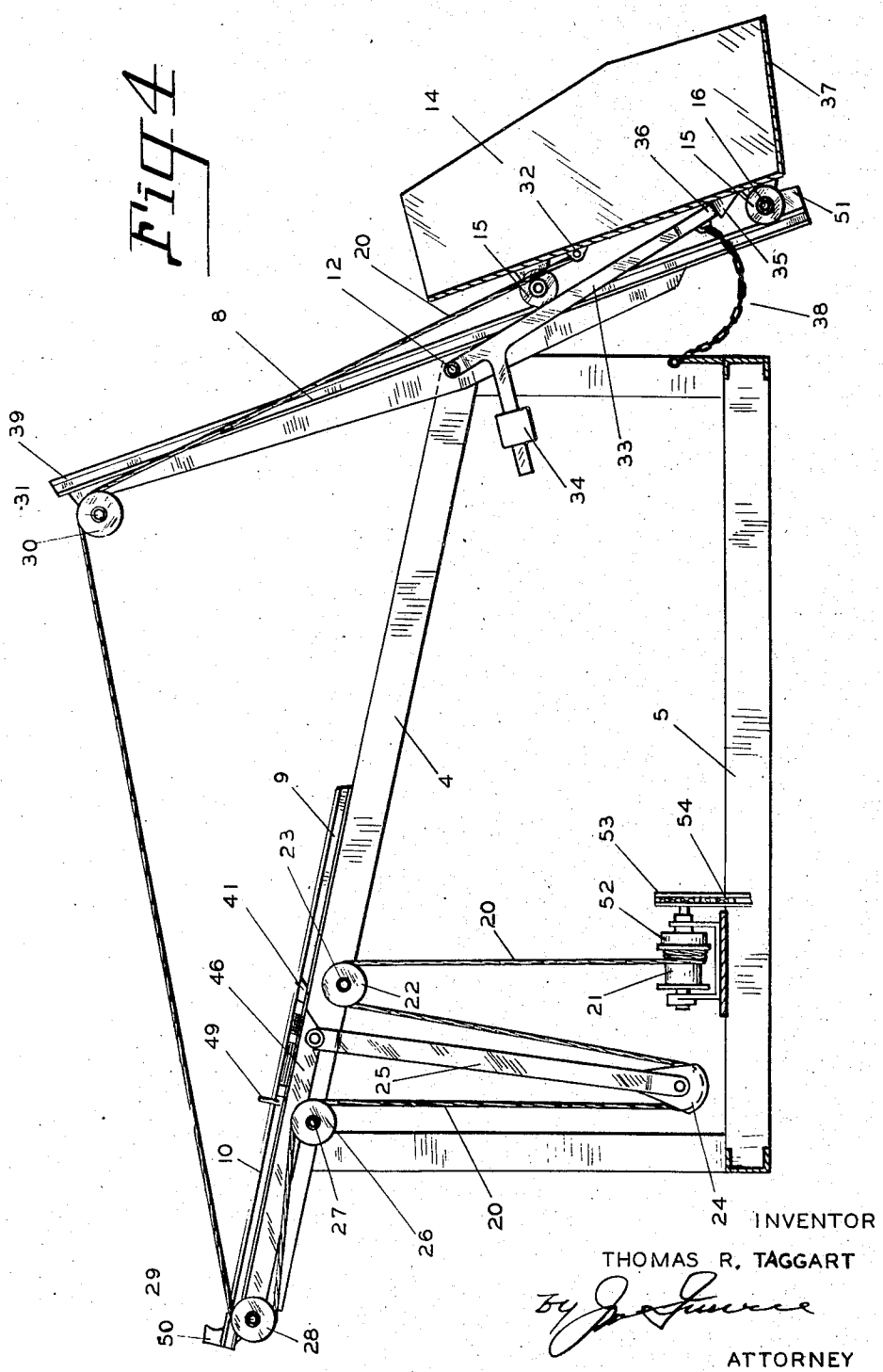
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SCOOP LOADER

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Fig 4



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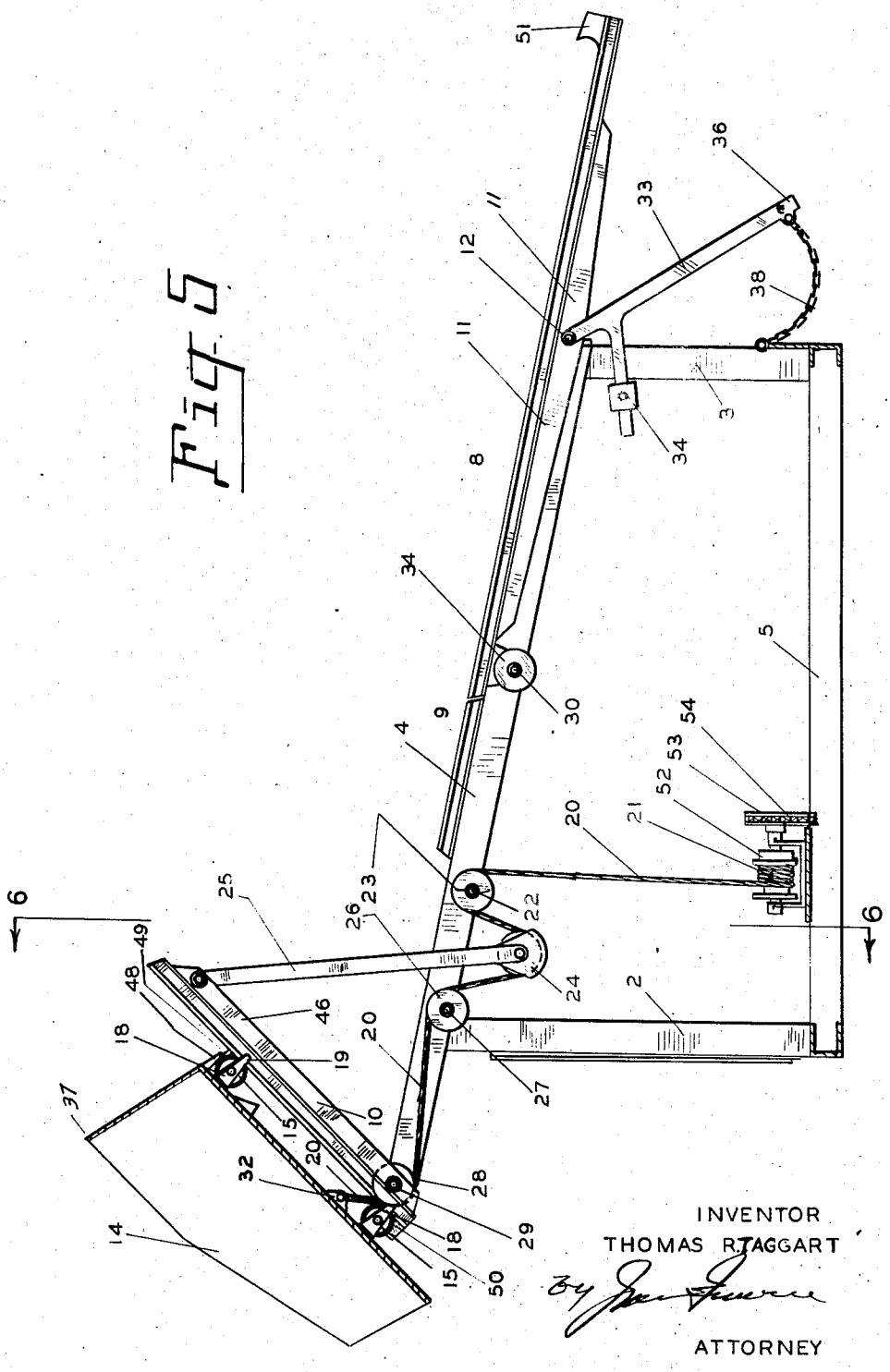
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Fig 5



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SCOOP LOADER

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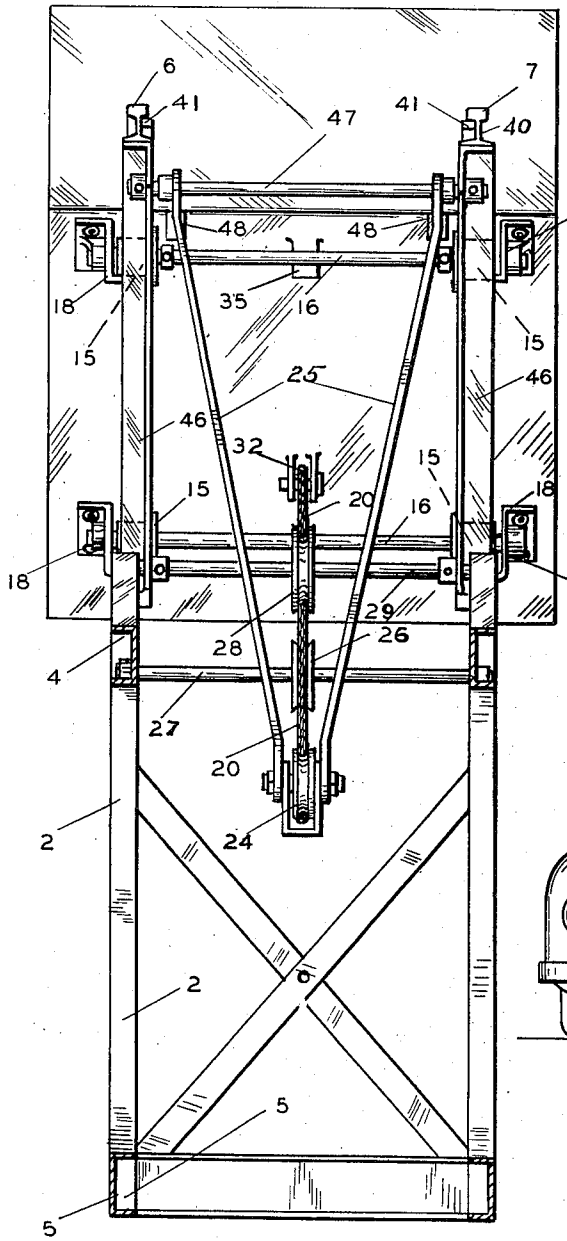


Fig 6

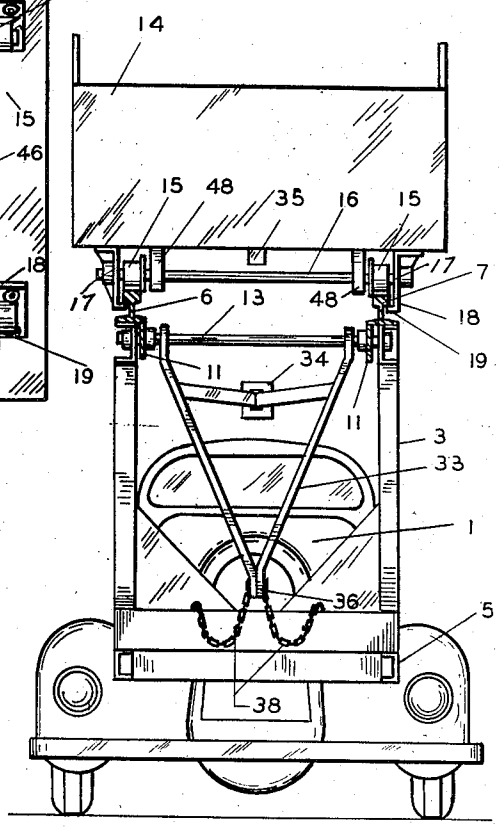


Fig 7

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UNITED STATES PATENT OFFICE

2,386,410

SCOOP LOADER

Thomas R. Taggart, Salem, Oreg.

Application October 3, 1944, Serial No. 556,971

20 Claims. (Cl. 214—104)

This invention relates to scoop loaders and is particularly adapted to the handling of gravel and the like.

The primary object of the invention is to load gravel and the like from storage piles, pits and so forth into trucks.

A further object of the invention is to provide a scoop loader that can be transported from place to place and completely operated and powered within itself.

Another object of the invention is to operate the scoop with a single cable from a hoisting device which is located on the truck upon which the scoop loaded assembly is mounted.

These and other incidental objects will be apparent in the drawings, specifications and claims.

Referring to the drawings:

Figure 1 illustrates my new and improved scoop loader mounted upon a truck.

Figure 2 illustrates a fragmentary sectional detailed view of a locking mechanism, which will be more fully described in the specification.

Figure 3 is an end sectional view, taken on line 3—3 of Figure 2, looking in the direction indicated.

Figure 4 is a sectional side view of the scoop loader mechanism in position for picking up the materials from a stock pile. In this view the truck has been removed in order to show the mechanism of the loader on as large a scale as possible.

Figure 5 is a side sectional view, similar to Figure 4, but illustrating the scoop in dumping position.

Figure 6 is an end sectional view of Figure 5, taken on line 6—6 illustrating the scoop in dumping position.

Figure 7 is an end sectional view, taken on line 7—7 of Figure 1, illustrating the scoop mounted upon the truck and the locking bar for holding the scoop in dumping or loading position.

In the drawings:

I have illustrated my new and improved scoop loader as being mounted upon the truck 1. The loader consists of upright end frames 2 and 3, being connected on their upper ends to the inclined frames 4 and mounted upon the base frame 5.

Rails 6 and 7 are mounted upon the inclined frames 4. These rails are divided into three sections 8, 9 and 10. The section 9 is fixedly secured to the frames 4, and may be of any desired length, depending on the length of the machine. The rails in section 8 are fixedly mounted to a sub-frame 11 by any suitable means. The sub-frame 11 is pivotally mounted at 12 to the cross shaft 13, and may assume a position as shown in Figure 4, or that shown in Figure 5. A scoop 14 is supported on the rails by the flanged wheels 15, which are mounted to the cross shaft 16, the shaft 16 is mounted to the scoop 14 by the brackets 17. The brackets 17 have extensions 18, having right angle shoes 19 for running underneath the ball of the rail. The shoes 19 form part of the brackets 17, and prevent the scoop from leaving the rails.

I will now describe the loading operation of the loader. When the scoop is located at the extreme lower end of the rail section 8, as illustrated in Figure 4, the weight of the scoop will tilt this section to a vertical position. A cable 20 is unreeled from the hoisting device 21, through the sheave 22, which is journaled to the cross shaft 23, mounted within the inclined frame 4. The cable then passes through the sheave 24, which is journaled within the end of the A-frame 25, thence over the sheave 26 which is journaled to the cross shaft 27 mounted within the frame 4. The cable then runs through the sheave 28, which is journaled to the cross shaft 29, also mounted to the frame 4. From the sheave 28 the cable passes through the sheave 30 mounted to the cross shaft 31 within the inner end of the sub-frame 11 of the rail section 8. After the cable passes through the sheave 30, it is fixedly secured to the scoop 14 at 32. When the cable 20 is slacked off from the hoisting device 21, it will permit the rail section 8 and its sub-frame 11 to pivot about the cross shaft 12 by the weight of the scoop 14, bringing the scoop to loading position. An A-frame 33 is pivotally mounted to the cross shaft 12 at its upper end and is held slightly at an incline to the vertical by a counterweight 34. As the scoop 14 is lowered a stop 35, forming part of the scoop, engages the end 36 of the A-frame 33.

When the truck 1 is backed up to the pile of material to be scooped into the scoop 14, and the hoisting device 21 is caused to pull the cable 20 over the sheaves above described, it will pivot the rail section 8 about the shaft 12, bringing the lip 37 of the scoop 14 into engagement with the material to be scooped. The A-frame 33 will maintain the scoop at the outer end of the rail section 8 until the scoop has been filled, at which time the trip chain 38 will disengage the end 36 of the A-frame from the stop 35, allowing the cable 20 to pull the scoop along the rail section 8 until it passes the pivot point 12 of the rail section, at which time it will lower the end 39 into alignment with the rail section 9, best

illustrated in Figure 1. The scoop continues to be pulled over the rail section 9 and on to the rail section 10. The rail section 10 is pivotally mounted to the inclined frame 4 upon the cross shaft 29. The end 40 of the rail section 10 is held down by the locking bolt 41 which is slidably mounted along the edge of the rail 42 within suitable guideways 43. A spring 44 maintains the locking bolt 41 under the ball of the rail 45.

The reason for locking this section down will now be described. The A-frame 25 is pivotally mounted to the sub-frame 46 of the rail section 10 by the cross shaft 47. This frame 25 receives an end thrust from the cable 20 through the sheave 24 when the scoop is being moved along the rails, but when the scoop arrives on the rail section 10 it is then desirable to tilt the scoop as illustrated in Figure 5.

Referring to Figure 2, when the scoop has arrived at a given position upon the rail section 10, a stop 48, forming part of the scoop engages the turned up arm 49, forming part of the locking bolt 41. This engagement will cause the locking bolt 41 to be disengaged from under the ball of the rail 45, therefore when the wheels 15 engage the stop 50, which is fixedly mounted to the rail section 10, the cable 20 will raise the A-frame 25 to the position shown in Figure 5 thereby dumping the scoop. When the scoop has been dumped the cable 20 will then be slacked off allowing the A-frame 25 to lower the frame section 10, which will then be locked by the locking bolt 41 to the rail 45. The weight of the scoop will then cause the scoop to move to the loading position by gravity along the inclined rail sections as heretofore described. The scoop is prevented from travelling beyond the end of the section 8 by the stop 51 engaging the wheels 15.

The hoisting device 21 may be of any suitable design, having the usual braking mechanism 52 and clutch mechanism 53 for controlling the same, and a driving connection 54 driving from any suitable power take off relative to the truck.

I do not wish to be limited to the exact mechanism herein shown and described, as other mechanical equivalents may be employed still coming within the scope of my claims.

I claim:

1. A loading scoop including a frame, rails mounted on the frame and each including a fixed section, a relatively movable loading section and a relatively movable dumping section, a scoop mounted for travel on the rails, means to permit lowering of the scoop when in a predetermined position on the loading section of the rails, said means being operative to move the scoop at will to the dumping section and a cooperative element to be engaged by said means following positioning of the scoop on the dumping section to tilt such dumping sections to simultaneously tilt the scoop for the discharge of its contents.

2. A construction as defined in claim 1 wherein means are provided for holding the scoop against return movement on the loading sections of the rails during loading operation of the scoop.

3. A construction as defined in claim 1 wherein a tilting frame is supported to carry the loading section to the rails, said tilting frame moving by gravity when the scoop is in predetermined position on the loading sections of the rails to lower the scoop into a loading position.

4. A construction as defined in claim 1 wherein a tilting frame is supported to carry the loading section to the rails, said tilting frame moving by gravity when the scoop is in predetermined position on the loading sections of the rails to lower the scoop into a loading position, and a locking member movably supported on the tilting frame and automatically operating with the scoop when the latter is in loading position to prevent movement of the scoop in one direction.

5. A construction as defined in claim 1 wherein a tilting frame is mounted to carry the loading sections of the rails and wherein said frame is tilted when the scoop is at one end of the loading sections of the rails and wherein a cable is provided to move the scoop lengthwise the loading sections of the rails to restore the titling frame to a position to align the independent sections of the respective rails.

6. A loading scoop including a main frame having upper inclined frame bars, spaced parallel rails mounted on and in corresponding inclination to the upper frame bars, each of the rails including a section fixed with respect to the upper frame bars, a loading section movable with respect to the upper frame bars and a dumping section movable with respect to the upper frame bars, means for supporting the loading sections of the rails for tilting movement with respect to the upper frame bars, a scoop movable on the rails, and a single means connecting the scoop and frame to permit the scoop to move down the inclined frame bars to a position to permit the weight of the scoop to tilt the loading sections of such rails and move the scoop into a position for loading.

7. A construction as defined in claim 6 wherein a locking member is pivotally supported on the frame with the free end of said member engaging a stop on the scoop when the latter is in loading position.

8. A construction as defined in claim 6 wherein a locking member is pivotally supported on the frame with the free end of said member engaging a stop on the scoop when the latter is in loading position, and means connecting the locking member and frame to disconnect the locking member and stop in the relative upward movement of the scoop from loading position.

9. A loading scoop including an inclined relatively elevated frame, spaced parallel rails on the frame and each including a section fixed with respect to the frame, a loading section movable with respect to the frame and a dumping section movable with respect to the frame, a tilting frame movably supported on the inclined frame near the lower end of the latter and supporting the loading sections of the rails, the dumping sections of the rails being movably supported at the upper end of the inclined frame, and a cable connected to the scoop to permit gravital movement of the scoop down the incline of the rails and to a position to finally tilt the loading sections of the rails, and means operated by the cable when moved in one direction to tilt the dumping sections following movement of the cable to place the scoop on said dumping sections to move the scoop into dumping position with respect to the frame.

10. A construction as defined in claim 9 wherein means are provided for locking the dumping sections of the rails to the fixed sections and wherein means are provided on the scoop to release the locking means when the scoop is positioned on the dumping sections.

11. A construction as defined in claim 9 wherein the dumping sections are pivotally connected to the inclined frame at the upper ends of said

sections and wherein a frame bar is connected to the lower ends of the dumping sections and subjected to elevation to move the lower ends of said dumping sections upwardly in the movement of the cable in one direction.

12. A loading scoop including a wheel-supported platform, a main frame rising from the platform, an inclined frame carried by the upper end of the main frame, spaced parallel rails supported on the inclined frame and inclined in correspondence therewith, each of the rails including a section fixed to the inclined frame, a loading section pivotally supported on and extended beyond the lower end of the inclined frame and a dumping section pivotally connected at its upper end to the upper end of the inclined frame, a scoop movable on the rails, a tilting frame movably supported on the lower end of the inclined frame and carrying the loading sections of the rails, a rigid frame movably connected to the lower ends of the dumping sections and depending below the inclined frame and a manually controllable cable leading over the lower end of the rigid frame, over the pivoted ends of the dumping frame, over the upper end of the tilting frame, and connected to the scoop, whereby on slackening the cable the scoop will travel down the inclined rails to a position beyond the end of the inclined frame for tilting the loading sections of the rails and on tightening said cable the inclined sections of the rails are returned to the tilting frame and the scoop drawn lengthwise said rails and onto the dumping frame, the further tightening of the cable moving the rigid frame and thereby the lower ends of the dumping sections of the rails upwardly to tilt the scoop into a dumping position.

13. A construction as defined in claim 12 including a stop member on the bottom of the scoop, a locking member pivotally supported on the tilting frame with its free end in the path of movement of the scoop, means for automatically causing the free end of the locking member to engage in rear of the stop on the scoop when the latter is in loading position.

14. A construction as defined in claim 12 including a stop member on the bottom of the scoop, a locking member pivotally supported on the tilting frame with its free end in the path of movement of the scoop, means for automatically causing the free end of the locking member to engage in rear of the stop on the scoop when the latter is in loading position, and means to limit movement of the locking member toward the scoop to thereby permit the scoop to move free of the locking influence of the locking frame when moving from its loading position.

15. A construction as defined in claim 12 wherein the lower or free end of the dumping sections of the rails is provided with a locking element to engage the fixed sections of the rails when said rails are aligned longitudinally of the inclined frame, and cooperating means on the locking means and on the scoop to withdraw the locking means from cooperation with the fixed sections of the rails when the scoop is moved onto the dumping sections of the rails.

16. A construction as defined in claim 12 wherein the scoop is provided with wheels to ride on the rails and wherein the scoop is further provided with means to engage beneath the rails in opposition to the wheels to prevent separation of the scoop in any position on the rails.

17. A construction as defined in claim 12 wherein the lower ends of the loading sections of the rails and the upper ends of the dumping sections of the rails are provided with stops to define a final limit position of the scoop in any direction of its travel.

18. A construction as defined in claim 12 wherein the tilting frame overlies and supports the loading ends of the rails substantially throughout the full length of the latter.

19. A construction as defined in claim 12 wherein the locking member comprises a V-frame connected at its base to the tilting frame and having a flexible limiting connection at its apex with the main frame, the V-frame having a laterally extending arm carrying an adjustable weight.

20. A loading scoop, consisting of inclined rail sections mounted upon a vehicle, a wheeled scoop mounted upon the rail sections, a hoisting cable fixedly secured to the scoop and running through a system of sheaves to a hoisting device, a pivotally mounted rail section at the lower end of the inclined rails for bringing the scoop into scooping position when lowered by the cable, a pivotally mounted dumping rail section at the upper end of the inclined rails for bringing the scoop into dumping position and means operated by the cable when the cable has brought the scoop over said pivotally mounted dumping rail section, for moving the dumping rail section to dumping position.

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