

Nov. 11, 1930.

L. L. KELLY

1,781,644

MATERIAL HANDLING APPARATUS

Filed May 4, 1928

2 Sheets-Sheet 1

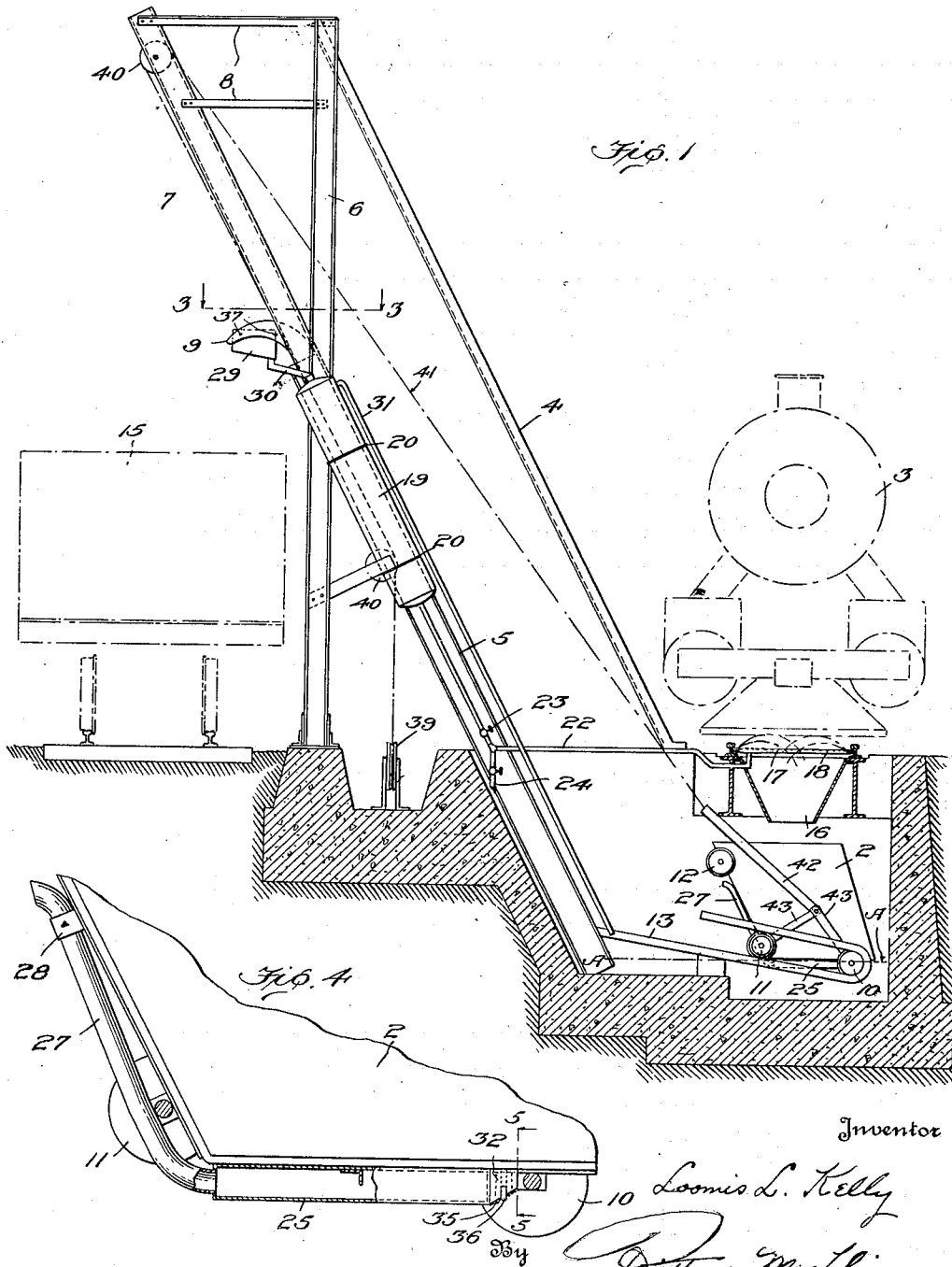


Fig. 4

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2 Sheets-Sheet 2

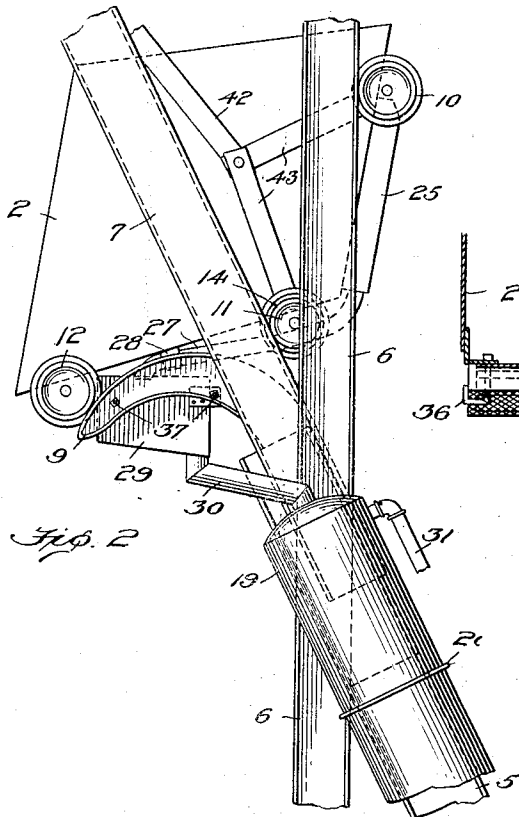


Fig. 2

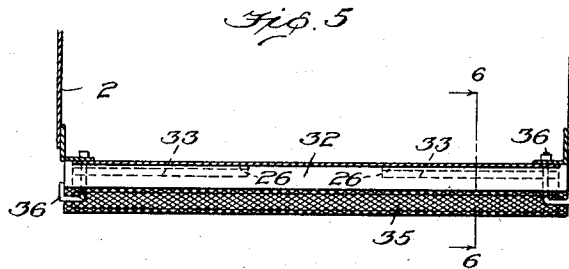


Fig. 5

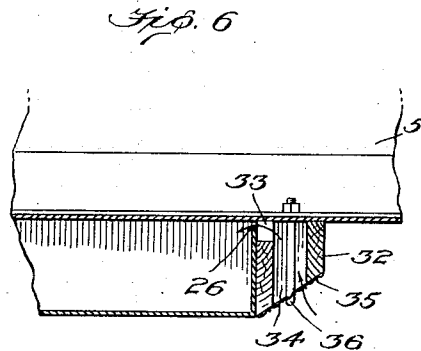


Fig. 6

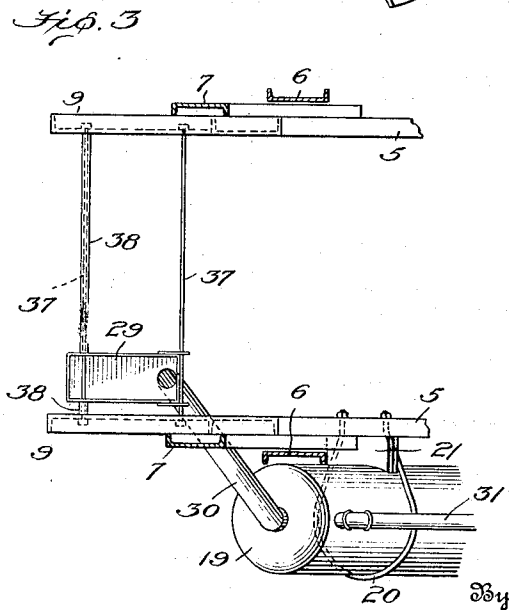


Fig. 3

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MATERIAL-HANDLING APPARATUS

Application filed May 4, 1928. Serial No. 275,194.

My invention relates to material handling apparatus and more particularly to apparatus for receiving and conveying away cinders and the like discharged from locomotives.

5 In apparatus of this character, the locomotive is usually run over a pit and the cinders and ashes are discharged into a container or bucket disposed below the locomotive, water being sprayed on to the cinders as they are collected in the container. The water employed for this purpose frequently discharges into the pit and the principal object of my invention is to provide means for conducting this excess water from the pit.

15 Another object of the invention is to provide means for permitting the water employed for spraying the cinders to be used over and over again.

A primary feature of the invention resides in constructing a container or bucket, adapted to be lowered into a pit, to receive material such as cinders and ashes, and to be thereafter elevated to discharge the material outside of the pit, with means for automatically bailing excess water collected in the pit.

25 A further feature of the invention resides in providing an ash hoist or the like having a pit with a container adapted to be lowered into the pit to receive ashes from the locomotive and to be thereafter elevated to discharge the ashes outside of the pit, said container having a compartment for receiving excess water collected in the pit, the compartment having means permitting the discharge of the water therefrom when the ashes are discharged from the container.

35 A still further feature of the invention consists in providing an ash hoist with a reservoir for supplying water to the ashes as they are discharged from a locomotive into a container; the container having means for automatically bailing excess water collected in the pit, means being employed for receiving said water from the container to return it to the reservoir. Other and more specific features residing in advantageous forms and construction and relation of parts will hereinafter appear and be pointed out in the claims.

In the drawings:

Figure 1 is a side elevational view, partly in section, of the apparatus and its associated appliances.

Figure 2 is an enlarged fragmentary view of the upper portion of the hoist, the container being shown in tilted position.

Figure 3 is a fragmentary sectional view taken on line 3—3, Figure 1.

Figure 4 is a fragmentary view of the lower portion of the container, parts of the bailing attachment being in section.

Figure 5 is a sectional view taken on line 5—5, Fig. 4.

Figure 6 is an enlarged fragmentary view taken on line 6—6, Figure 5.

In the drawings, 1 indicates a pit and 2 designates a wheeled container or bucket, the latter being adapted to receive material such as cinders, ashes and the like from a locomotive diagrammatically shown at 3, and to be thereafter elevated to discharge the material outside of the pit. Any suitable hoist mechanism and hoist frame may be employed for raising and lowering the container 2. In the present instance, the frame consists of a plurality of inclined structural members 4 and 5 which are respectively rigidly connected to substantially vertical members 6. Attached to the outer sides of the inclined members 5, adjacent their upper ends, are auxiliary structural members 7, the latter being respectively connected by braces or struts 8 to the upper portion of the vertical members 6. Connected to the auxiliary members 7, adjacent their points of attachment to the inclined members 5, are curved arms or members 9 in alinement with the members 5 and, in effect, constituting continuations thereof.

The mechanism for raising and lowering the container 2 is diagrammatically represented by the drum 39, sheaves 40 and the cooperating hoist chain 41, the latter being attached to the bail 42 of the container. This bail is preferably pivotally connected to arms 43 which are rigid with the container.

The container is provided adjacent three of its corners with pairs of wheels 10, 11 and 12, wheels 10 and 11 cooperating with trackways 13 disposed in the pit 1, the latter

serving to guide the container substantially horizontally. Upon operating the hoist device, the container is moved along the tracks 13 until wheels 11 and 12 engage with the inclined members 5 on which they are adapted to ride. The wheels 11 are fashioned with outwardly extending auxiliary tread portions 14 adapted to cooperate with the auxiliary inclined members 7 which are disposed outwardly of members 5.

As the container moves upwardly the wheels 12 pass from the inclined members 5 and roll along the curved arms 9 and the auxiliary tread portions 14 of wheels 11 coast with members 7, thereby causing the bucket to tilt and discharge any material contained therein. As shown, the discharged load may be advantageously deposited in a railway car diagrammatically illustrated at 15.

A hopper 16 is preferably employed for receiving the cinders, ashes and the like from the locomotive to guide or conduct them into the container or bucket 2. Adjacent the upper peripheral edge of the hopper is a coil 17 having a plurality of openings 18 for permitting water to be sprayed on the cinders as they are deposited in the container. After the container has been filled, it is operated in the manner heretofore described to discharge the cinders outside of the pit.

A water reservoir or storage tank 19 is secured by any suitable means such as straps 20, to one of the members 5, blocks being preferably interposed between the member 5 and the storage tank for spacing the latter outwardly therefrom. The reservoir is connected to the coil 17 by pipes or conduits 22 provided with a valve 23 for regulating the flow of water. Pipes 22 may be conveniently connected to a valved supply pipe 24 for replenishing the water in the reservoir.

In devices of this character employing water to quench the cinders and ashes considerable trouble has been experienced in disposing of the excess water which flows into the pit. Expensive installations involving drain pipes have been employed for conducting this water away but, due to the fine particles of cinder and the like, the pipes quickly become clogged. Other devices, such as pumps, steam jets, etc., have also been used to dispose of this excess water but without success. To overcome these difficulties the bucket or container 2 is provided with an attachment permitting excess water to be bailed from the pit and discharged outside thereof. This attachment consists of a pan or compartment 25 which is rigidly secured on the underside or bottom of the container as by welding. One side of the pan adjacent its upper edge is formed with a plurality of openings 26 for permitting the excess water collected in the pit to enter the compartment. It will, of course, be appreciated that should the level of the water be below the openings

in the pan or compartment 25, as indicated by the line A—A in Figure 1, when the container is in the pit, water will not enter the compartment but, on the other hand, if water is above the level of the openings in the container it will readily flow therein.

Communicating with the side of the pan, opposite openings 26, is an upwardly extending discharge pipe or conduit 27, the upper portion of the conduit being secured to the container by a strap 28. It will be seen that since the car is maintained in the same relative position when being moved along the trackways 13 and the member 5 as when it is receiving cinders, the water contained in the compartment 25 is prevented from discharging therefrom. When the bucket is tilted to discharge its load into the car 15, the water in the compartment 25 is also discharged.

The water, instead of flowing into the car, is deposited into a receiving hopper 29, the hopper being supported by rods 37 and is so positioned and proportioned that the water will discharge thereinto irrespective of the tilted position assumed by the container. The outer rod 37 is provided with sleeves 38 for preventing movement of the hopper 29 longitudinally thereof. A pipe or conduit 30 connects the hopper 29 with the storage tank or reservoir 19, thus enabling the water to be used over and over again. As some of the water is carried away by the cinders or ashes the supply of water in the reservoir may be replenished by properly operating valves 24 and 23. An overflow pipe 31 may be advantageously connected to the upper end of the storage tank for discharging back into the pit water in excess of the capacity of the tank. An elongated member 32 is preferably employed for preventing fine particles of cinders from clogging openings 26 of the pan 25 and thus also preventing clogging of other parts of the water system. The member 32 is fashioned with slots 33 registering with the openings 26, the slots 33 communicating with a passage 34. A screen or any suitably perforated member 35 is secured by bolts or clips 36 to the member 32 to prevent particles of cinders from entering the passage 34, the bolts 36 also serving to connect the member 32 to the bottom of the pan as clearly shown in Figures 5 and 6.

The method herein disclosed for disposing of the excess water in the pit is particularly advantageous as the one operation of hoisting the container enables simultaneous disposal of the cinders and water.

Another advantageous feature of this construction resides in the fact that the bottom of the container is usually submerged in the water in the pit, thus effectively preventing the hot ashes from warping it and its adjacent parts.

I claim:

1. In a material handling apparatus, the combination with a pit, of a movable container, mechanism for lowering said container into said pit to receive material and for thereafter elevating and tilting said container to discharge the material outside of the pit, means for watering said material delivered to the container, and means carried by the container for bailing excess water collected in the pit, said last named means involving a compartment provided with an opening adjacent the bottom of the container for receiving the water and with a discharge pipe extending upwardly above the bottom of the container for permitting the water to flow from the compartment when the container is tilted to discharge the material.
2. In a material handling apparatus, the combination with a pit, of a movable container, mechanism for lowering said container into said pit to receive material and for thereafter elevating said container to discharge the material outside of the pit, a reservoir for supplying water to the material delivered to the container, means carried by the container for bailing excess water collected in the pit, and means for returning said water to the reservoir.
3. In a material handling apparatus, the combination with a pit, of a movable container, mechanism for lowering said container into said pit to receive material and for thereafter elevating said container to discharge the material outside of the pit, a reservoir for supplying water to the material delivered to the container, said container being provided with a compartment for receiving excess water collected in the pit, means permitting the water to discharge from said compartment after the container has been elevated, and means for returning said discharged water to the reservoir.
4. In a material handling apparatus, the combination with a pit, of a movable container, mechanism for lowering said container into said pit to receive material and for thereafter elevating and tilting said container to discharge the material outside of the pit, a reservoir for supplying water to the material delivered to the container, means carried by the container for bailing excess water collected in the pit, said means involving a compartment provided with an opening for receiving the water and with means permitting the said water to discharge therefrom when the container is tilted to discharge the material, and means for receiving said discharge water and returning it to the supply reservoir.
5. In a material handling apparatus, the combination with a pit, of a movable container, mechanism for lowering said container into said pit to receive material and for thereafter elevating and tilting said container to discharge the material outside of the pit, a reservoir for supplying water to the material delivered to the container, means carried by the container for bailing excess water collected in the pit, said means involving a compartment provided with an opening for receiving the water and with discharge means for permitting the water to flow therefrom, said material and said water being discharged from the container and compartment respectively when the container is tilted and being deposited into separate devices, and means for returning the said water to the supply reservoir.
6. In a material handling apparatus, the combination with a pit, of a movable container, mechanism for lowering said container into said pit to receive material and for thereafter elevating said container to discharge the material outside of the pit, a reservoir for supplying water to the material delivered to the pit, means carried by the container for bailing excess water collected in the pit, said water being adapted to be discharged from said means upon the discharge of material from the container, and means for returning said discharge water to the reservoir, the latter being provided with overflow means permitting water in excess of the capacity of said reservoir to return to the pit.
7. A container for a material handling apparatus employing means for lowering the container into a pit to receive material and for thereafter elevating the container to discharge the material therefrom; said container being provided with a compartment having an inlet opening for receiving excess water collected in the pit, said compartment also having an outlet opening permitting the water to discharge therefrom after the container has been raised from the pit, said openings respectively being on opposite sides of the compartment and said inlet opening being disposed adjacent the top of the compartment.
8. A container for a material handling apparatus employing means for lowering the container into a pit to receive material and for thereafter elevating the container to discharge the material therefrom, said container being provided on its under side with a compartment having an opening adjacent its upper edge for receiving excess water collected in the pit, and an upwardly extending discharge pipe communicating with said compartment to permit the water to flow therefrom after the container has been raised from the pit.
9. A container for a material handling apparatus employing means for lowering the container into a pit to receive material and for thereafter elevating the container to discharge the material therefrom, said container being provided with a compartment having

an opening for receiving the excess water collected in the pit, a member associated with said compartment having an opening registering with the opening in the latter, the opening of said member being provided with perforated means preventing the entrance of granular substances into said compartment, and discharge means communicating with said compartment to permit the water to flow therefrom after the container has been raised from the pit.

10. In a material handling apparatus, the combination with a pit, of a movable container, mechanism for lowering said container into said pit to receive material and for thereafter elevating said container to discharge the material outside of the pit, means for watering the material delivered to the container, and means for returning to said watering means excess water discharged into the pit.

11. In a material handling apparatus, the combination with a pit, of a movable container, mechanism for lowering said container into said pit to receive material and for elevating said container to discharge the material outside of the pit, means for watering the material delivered to the container, means for withdrawing water from the pit above a predetermined level, and means for receiving the water withdrawn, said last named means communicating with said watering means.

In testimony whereof I affix my signature.

LOOMIS L. KELLY.