Feb. 8, 1927. 1,616,466

E. PEDERSON

SELF LOADING DUMPING SKIP OR HOPPER

Filed Oct. 19, 1925 2 Sheets-Sheet 1

Fig. 1.

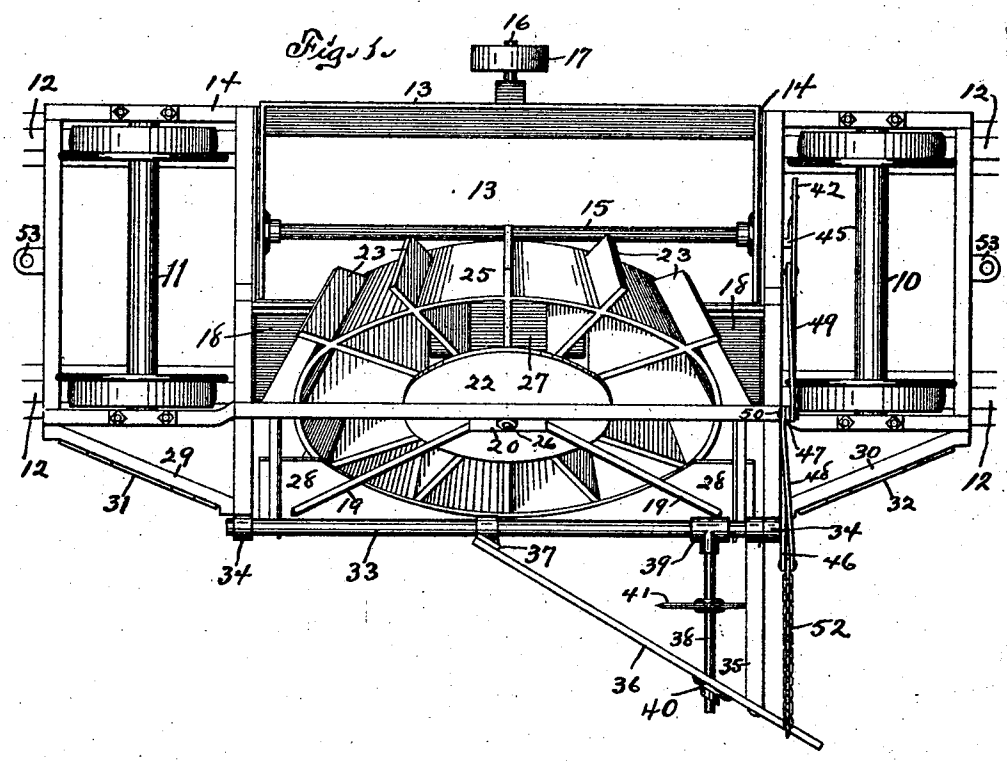
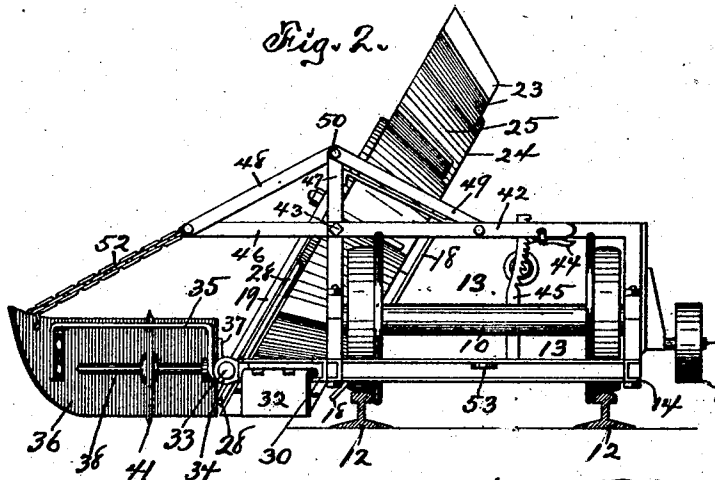


Fig. 2.



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Filed Oct. 19, 1925 2 Sheets-Sheet 2

Fig. 3.

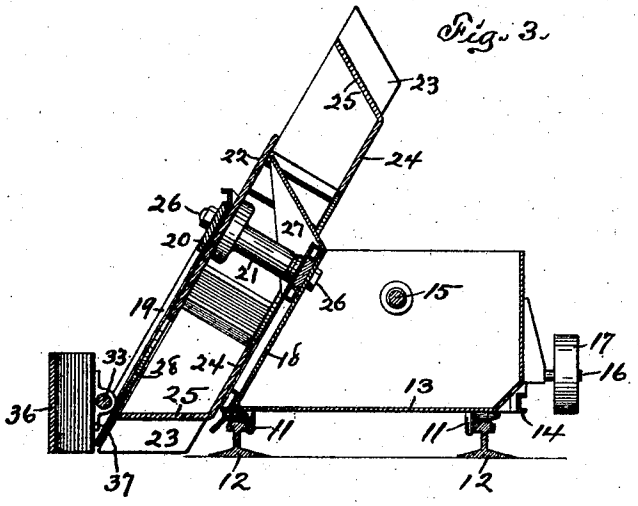
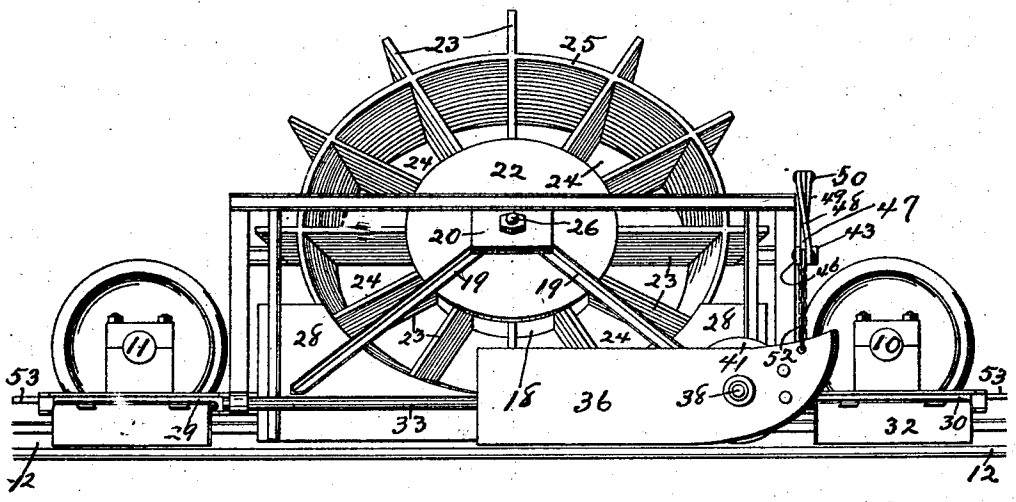


Fig. 4.



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Patented Feb. 8, 1927. 1,616,466

UNITED STATES PATENT OFFICE.

ELLING PEDERSON, OF LEADVILLE, COLORADO.

SELF-LOADING DUMPING SKIP OR HOPPER.

Application filed October 19, 1925. Serial No. 63,333.

An object of this invention is to provide an improved construction for a self-loading dumping skip or hopper adapted for travel and for loading at one point and dumping at another point.

A further object of this invention is to provide improved means for filling a skip or hopper.

A further object of this invention is to provide improved means for gathering substance into a filling device.

A further object of this invention is to provide improved means for moving substance into the range of gathering means.

A further object of this invention is to provide improved means for breaking up impacted substance auxiliary to a gathering means.

A further object of this invention is to provide improved means for dumping a skip.

My invention consists in the construction, arrangement and combination of elements hereinafter set forth, pointed out in the claims and illustrated by the accompanying drawing, in which—

Figure 1 is a plan of the complete machine. Figure 2 is an end elevation of the same. Figure 3 is a cross-section substantially centrally of the machine. Figure 4 is a side elevation of the machine.

In the construction of the machine as shown a suitable frame is built up of skeleton form of beams, bars, standards and braces and comprises generally a base or draft frame and a superstructure carried thereby, which frame is supported on trucks 10, 11 adapted for travel on track rails 12. The track rails 12 are suitably supported and are adapted to be moved conjunctively laterally relative to a pile or rick of substance to be gathered, elevated, loaded and transported by the machine. The general frame of the superstructure is formed with an opening in its side farthest from the substance to be moved, which opening extends across the center of the frame. A skip or hopper 13 is mounted in the central portion of the superstructure frame, rests at one side on a side beam 14 of the base frame and projects slightly through the side space above mentioned. The skip 13 is formed with an outer side wall at the side thereof farthest from the substance to be moved, end walls at right angles thereto and a bottom, but is open on the side thereof nearest the substance. The skip or hopper 13 is pivoted in the superstructure frame by means of a shaft 15 extending horizontally through its end walls and journaled for oscillation in suitable bearings in the frame, said shaft also extending longitudinally of the skip and frame. A stub axle 16 is fixed to and extends laterally from the center of the lower portion of the side wall of the skip 13 and a dumping wheel 17 is carried thereby and is adapted to travel on an inclined track elevated relative to the rails 12 and oscillate the skip for dumping the contents thereof between the rails 12 at times. The inner ends of the end walls of the skip 13 are inclined and a plate 18 is mounted on the superstructure frame and extends at its ends across the inclined ends of the end walls of the skip and serves as a side wall for said skip in normal loading position, said plate being inclined and extending at its lower margin outside and across the tread plane of the inner rail 12. Braces 19, 19 are mounted in an inclined plane substantially parallel with the plate 18, are supported at their lower ends by the base frame and are connected at their upper ends to and support a block 20, which block also is connected to one side-bar of the superstructure frame. A wheel, formed as the frustum of a cone, is mounted between the plate 18 and braces 19 and is formed of a hub 21, a disc 22 of greater diameter than and fixed to one end of said hub, a series of spokes 23 fixed to and radiating from said disc and having their outer ends defining and adapted for travel in an orbit of frusto-conical shape, a ring 24 fixed to the rear margins of the spokes and of less width than the length of said margins, and a rim 25 of frusto-conical shape intersecting said spokes and integral at its rear margin with the outer margin of said ring. The spokes 23 extend radially across and beyond the rim 25. The spokes 23, ring 24, and rim 25 from the pockets in the wheel, which pockets are open in front between the rim 25 and disc 22, are closed at one end by the rim, are closed on the back by the ring 24 and are open at their radially-inner ends between the disc and ring. The hub 21 is substantially at right angles to the plane of the plate 18 and is journaled on an axle 26 extending through the plate and through the block, 20, thus suspending the wheel in an inclined plane substantially

parallel with that of the plate, the outer ends of the spokes 23 being adapted successively to engage the ground surface outside and adjacent the inner rail 12. It is to be assumed that the ground surface adjacent the rails 12 is slightly higher than the base planes of the rails. An apron 27 is formed on and extends at an obtuse angle from the upper end of the plate 18 and centrally thereof into the open portion of the wheel between the hub 21 and the inner ends of the upper spokes 23, thus forming a shelf adapted to receive substance from the uppermost pockets of the wheel and deliver it laterally into the skip 13. A shield 28 is fixed to the frame and normally overlies the lower portion of the wheel except the open fronts of the pockets therein. Brace arms 29, 30 are fixed to the forward inner corners of the base frame and drags 31, 32 are pivotally suspended from said arms and have their lower margins substantially coincident with the ground surface. The drags 31, 32 are adapted to swing outwardly freely, but not inwardly, so that, in the travel of the machine in either direction, one drag will engage and move substance on the ground surface away from the inner rail 12 while the following drag will pass freely over such substance as may lie in its path. A shaft 33 is mounted for oscillation in bearings 34, 34 on the main frame and extends between the drags 31, 32 in a horizontal position. A yoke 35 is pivoted at one end to one end portion of the shaft 33 and extends, as a square arch, laterally therefrom away from the base frame. A gathering blade or scraper 36 is arranged normally horizontally at an oblique angle to the base frame and is fixed, near its forward runner end, to the outer arm of the yoke 35 and said blade is fixed at its rear end to a collar 37 on the central portion of the shaft 33. The blade or scraper 36 extends rearwardly across the transverse center of the machine and into proximity with the lower open face of the wheel. A shaft 38 is mounted parallel with, at the rear of and in a lower plane than the yoke 35. The shaft 38 is journaled at one end in a bearing collar 39 fixed to the shaft 33 and is journaled at its outer end in a bearing 40 carried by the scraper or blade 36. A disc wheel or rolling coulter 41 is fixed to the shaft 38 between the scraper or blade 36 and the shaft 33 and is adapted to engage the substance to be moved and cut, agitate and loosen said substance for action thereon of the scraper. A hand lever 42 is pivoted at one end on a fulcrum 43 mounted in the superstructure frame and normally extends partially across said frame in a horizontal position. The hand lever 42 is provided with a detent 44 adapted for engagement with a rack-bar 45 carried by the superstructure frame and hold said lever in any position in which it may be placed manually. An extension bar 46 is pivoted at one end on the fulcrum 43 and extends in alinement with the hand lever 42. A strut 47 is pivoted at one end on the fulcrum 43 and rises therefrom. Braces 48, 49 are connected at their inner ends by a bolt 50 to the upper end of the strut 47 and extend laterally and downwardly therefrom and are connected at their outer ends to the extension bar 46 and hand lever 42 respectively. Thus is the hand lever 42 trussed. A chain 52 is arranged obliquely and connects the outer end of the extension bar 46 to the forward end portion of the scraper or blade 36. Thus the scraper or blade 36 may be raised and lowered, together with the coulter 41, by means of the hand lever 42. Such movement of the scraper or blade 36 results in oscillation of the shaft 33 which articulates about its axis in the bearings 34. Eyes or clevises 53 are fixed to the central portions of the end bars of the base frame and draft means, such as a cable or coupling of a pulling machine, may be attached thereto selectively. The machine may be drawn along the rails 12 by cable, animal power or in any suitable way, rearwardly to position the machine relative to the substance to be moved and forwardly to engage and move said substance. After a rearward movement of the machine to initial position, the track rails 12 are adjusted laterally relative to the pile or rick of substance. Then the scraper or blade 36 is lowered, by the hand lever 42, so that its runner margin is on the ground or floor surface and the coulter 41 is engaged with the ground. Then the machine is moved forwardly and the scraper or blade 36 engages and gathers a quantity of the substance toward and into the outer openings of the pockets of the elevating wheel, said wheel revolving by engagement of its spokes with the ground or floor surface and raising the substance in its pockets and delivering the same over the apron 27 into the skip 13. The machine is advanced until the skip is loaded and, during such advance, the drag 32 pushes loose substance outwardly toward the path of advance of the scraper or blade 36. During the reverse movement of the machine the drag 31 pushes loose material into position to be engaged by the drag 32 in its next advance. After the skip is loaded, the scraper or blade 36 and coulter 41 are raised by the lever 42 and the machine is further advanced up an incline or over a pit not shown to a position or place where it is desired to deliver the substance such as over a wagon, car or fill, and, then, the skip 13 is dumped, preferably by the elevation of the dumping wheel 17 by an inclined or arched dumping track, not

shown. The contents of the skip are dumped between the track rails 12. Thereafter, the skip is allowed to assume a normal horizontal position by gravity when the dumping wheel 17 is withdrawn from engagement with the dumping track. The machine is primarily designed for handling coal and also may be utilized in handling sand, grain, loose earth and other granular substances.

I claim as my invention—

1. A self-loading dumping skip comprising a truck adapted for travel on a track, a container mounted for oscillation on a shaft longitudinally of said truck, a bucket wheel mounted for rotation on an inclined axis at one side of said container, a plate mounted between the lower portion of said wheel and the container, said wheel being formed with an opening around its axis adjacent said container, an apron rising from said plate and extending within said opening, the buckets of said wheel being open at their axially-inner ends toward said apron, a scraper arranged obliquely to the path of travel of and carried by said truck and adapted to move said substance into the lower buckets of said wheel, said buckets being open on the side thereof adjacent said scraper, and operating mechanism for raising and lowering said scraper.

2. A self-loading dumping skip comprising a truck, a shaft longitudinally of said truck, a container mounted for oscillation on said shaft, a loading bucket wheel mounted for rotation on said truck and adapted to discharge across its axis into said container, a scraper carried adjustably on said truck and adapted to load said wheel, and a drag carried by said truck and adapted to move substance into the path of travel of said scraper.

3. A self-loading dumping skip comprising a truck, a shaft longitudinally of said truck, a container mounted for oscillation on said shaft, a loading bucket wheel mounted for rotation on said truck and adapted to discharge across its axis into said container, a scraper adjustably mounted on said truck and adapted to move substance into and load said wheel, a drag carried by said truck and adapted to move substance into the zone of operation of said scraper and another drag carried by said truck and adapted to move substance into the zone of operation of the first mentioned drag, said drags being alternately inoperative in respect of direction of travel of the truck.

4. The combination of a truck, a container and loading wheel thereon, a scraper arranged obliquely to and carried by said truck, a yoke pivotally connecting said scraper and truck, a shaft journaled in said scraper and a bearing carried by a shaft journaled longitudinally of said truck, and a coulter mounted for rotation on said first-named shaft.

5. The combination of a truck, a shaft mounted for rotation longitudinally of said truck, a scraper fixed and arranged obliquely to said shaft, a lever fulcrumed on said truck and flexible connections between said lever and scraper.

6. The combination of a truck, a shaft journaled on said truck, a scraper arranged obliquely and fixed at one end to said shaft, a yoke pivoted at one end to said shaft and fixed at its outer end to said scraper, a shaft journaled at one end in said scraper and at the other end in a bearing fixed on said first named shaft, a coulter journaled on said shaft, between said scraper and truck, a hand lever fulcrumed on said truck and flexible connections between the lever and the outer end of said scraper.

7. in a machine of the class described, a truck, a drag hingedly suspended from and arranged obliquely to the truck and another drag hingedly suspended from and arranged obliquely, at a different angle from the first drag, to the truck, said drags having a freedom of movement from a vertical plane outwardly but not inwardly relative to the truck.

Signed at Leadville, in the county of Lake and State of Colorado, this 18th day of September, 1925.

ELLING PEDERSON.