No. 835,574. PATENTED NOV. 13, 1906.

E. E. STOUFFER & G. W. TIDRICK.

TIPPLE.

APPLICATION FILED MAR. 5, 1906.

2 SHEETS—SHEET 1.

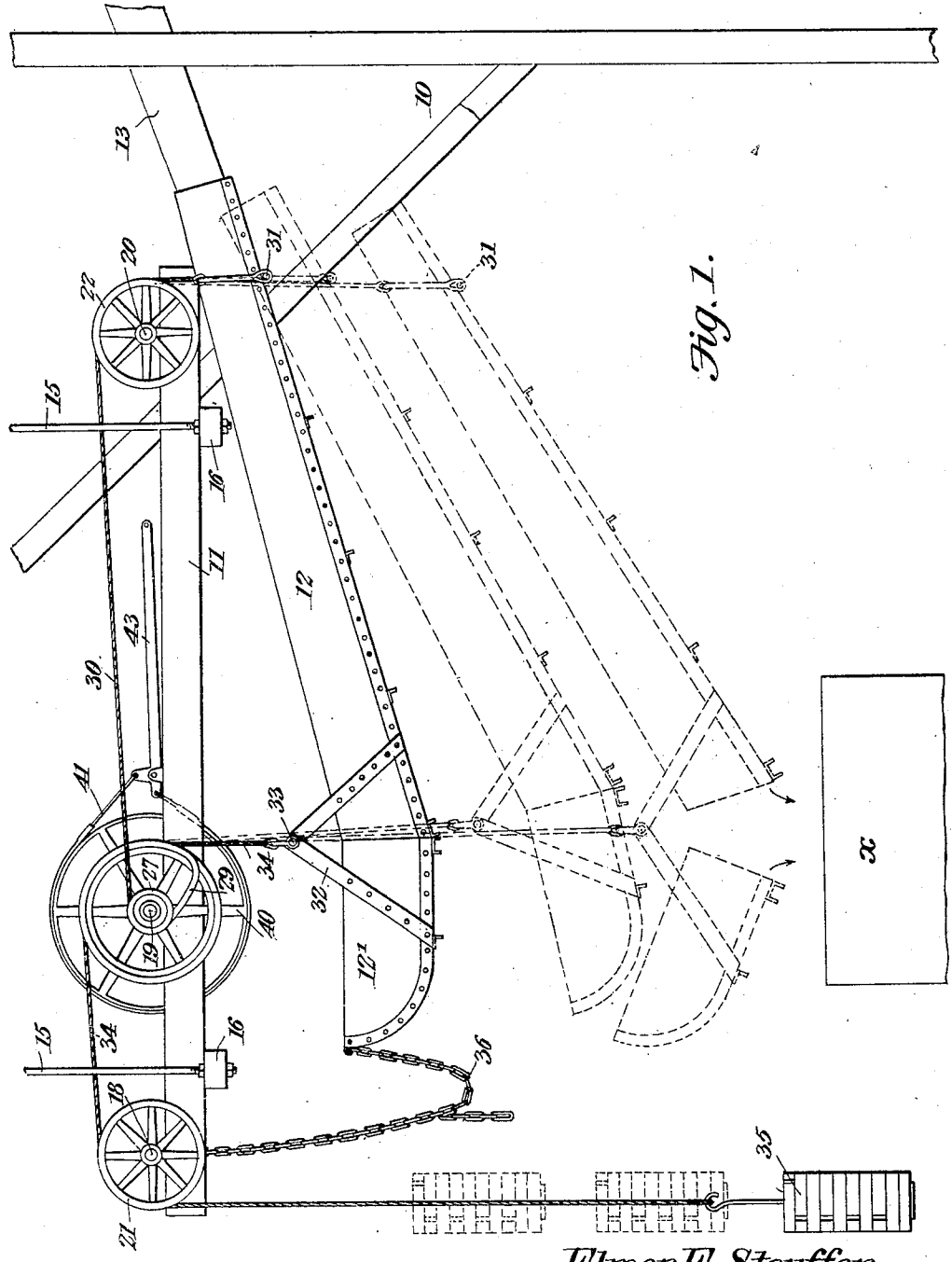

Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

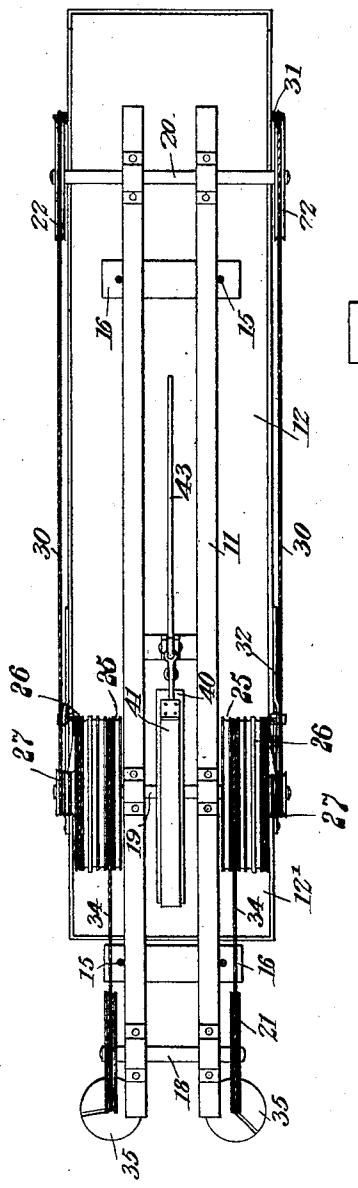


Fig. 4.

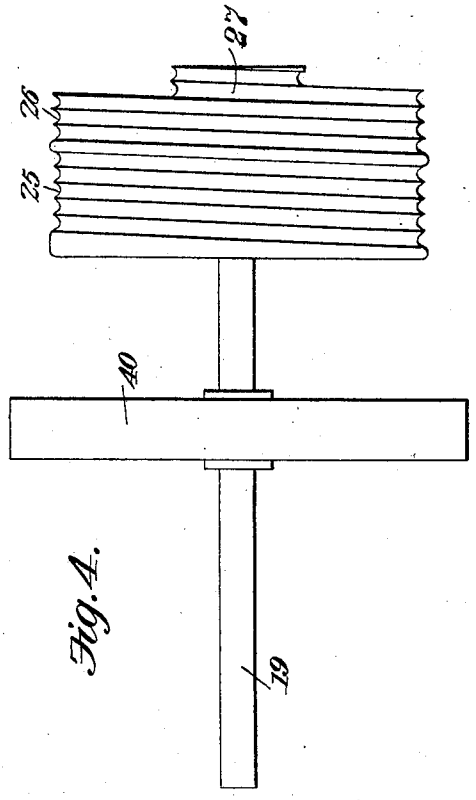
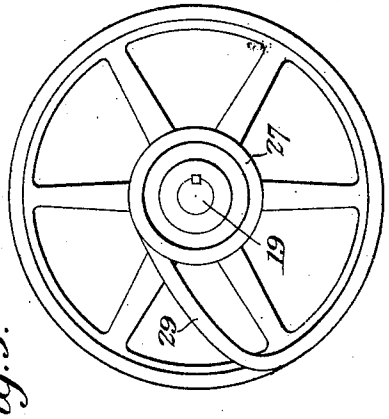


Fig. 3.



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TIPPLE.

No. 835,574. Specification of Letters Patent. Patented Nov. 13, 1906.

Application filed March 5, 1906. Serial No. 304,389.

To all whom it may concern:

Be it known that we, ELMER E. STOUFFER, residing at Mineral Ridge, in the county of Trumbull, and GEORGE W. TIDRICK, residing at Dillonvale, in the county of Jefferson, State of Ohio, citizens of the United States, have invented a new and useful Tipple, of which the following is a specification.

This invention relates to tipples and similar apparatus employed for loading cars and vessels with coal or other material.

One of the principal objects of the invention is to provide a novel form of discharge-chute that is movable between a receiving-point and a discharge-point, the chute being elevated and receiving a predetermined load, after which it is lowered until the discharge end is immediately over the car or other receptacle, so that the coal or similar material may be loaded without breakage and at the same time may be directed to the central portion of the car or to any given point in the hatchway of the vessel.

A further object of the invention is to provide a loading-chute and loading-chute support of such nature that in moving from the elevated receiving position to the discharge position the discharge end of the chute will first move downward before the receiving end and then having assumed a predetermined angle the chute will descend vertically, both the receiving and the discharging ends traveling precisely the same distance.

A still further object of the invention is to provide a chute raising and lowering means by which the desired movement of the chute may be secured automatically.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a side elevation of a coal-loading device constructed and arranged in accordance with the invention. Fig. 2 is a plan view of the mechanism, the main frame being omitted. Fig. 3 is an end elevation, on an enlarged scale, of the winding-drum by which the raising and lowering of the chute is automatically controlled. Fig. 4 is an edge view of one of the drums and illustrates also the brake-wheel carried by the shaft of the winding-drum.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The working parts of the apparatus are supported on a suitable frame, portions of which are shown at 10 and 11, the major portion of the frame being omitted in order to avoid confusion.

In the illustration of the present case a chute 12 is designed to receive coal or other material from a chute 13 while in the elevated position shown in full lines in Fig. 1 and then to be lowered to a discharge position immediately above a car or other receptacle *x*. In order to accomplish the best results, it is essential that the discharge end of the chute be allowed to move down in advance of the receiving end, so that the angle of the chute will be altered and the coal or other material allowed to freely flow by gravity toward said discharge end. After this adjustment the chute travels in a vertical path, both ends lowering to precisely the same extent, so that when the chute arrives at dumping position it will discharge the load directly at the center of the car or other receptacle or at any predetermined point in the hatchway of a vessel. The extent of vertical movement is not important and will vary with surrounding conditions. Thus in the loading of cars the chute may travel but a few feet; but in the loading of vessels from a pier the chute may travel a much greater distance, in some cases seventy-five or eighty feet.

The frame 11 is shown as supported by hangers 15 and cross-bars 16, and these may, if necessary, be connected to a weighing system in order to effect the automatic movement of the chute when the latter has received a predetermined load, or the frame may be stationary, if desired. The frame is

provided with bearings for the reception and support of three shafts 18, 19, and 20, the shafts 18 and 20 carrying grooved sheaves 21 and 22, respectively.

On the shaft 19 is arranged two multiple-winding drums, each having a spirally-grooved winding-surface 25 and a second winding-surface 26, the diameter of which is equal to that of the winding-surface 25. At the outer end of the winding-surface 26 is arranged a spirally-grooved winding-surface in the form of a drum 27, the periphery of which is connected to the winding-surface 26 by a curved bar 29, that is used for the reception of a cable 30, said cable being arranged to pass around both the winding-surfaces 26 and 27 and the width of said winding-surfaces being proportioned to the extent of vertical movement of the discharge-chute 12.

One end of each cable 30 is rigidly secured to the portion 26 of the winding-drum and thence after taking, say, two turns around the drum, is bent over the bar 29 and thence winds around the smaller drum 27 and from thence passes over one of the guiding-sheaves 22 and is connected at its opposite end to a cross bar or pintle 31, secured to the chute at a point near the receiving end of the latter.

The chute 12 is formed of two sections 12 12′, to each of which is secured bars 32, arranged approximately at a right angle to each other and pivotally connected by a cross-bar 33. To this cross-bar 33 is connected the lower ends of a pair of cables 34, that pass around the winding-drum 25, any desired number of turns being taken, and thence pass over the sheaves 21 and are connected at their opposite ends to counterbalance-weights 35, which are sufficient to raise and maintain the chute in elevated position when empty, but which move upward under the added weight of the coal or other material in the chute.

To the outer end of the outer chute-section 12′ is connected a stop-chain 36, the upper end of which is connected to the frame 11, this chain serving to limit the downward movement of the discharge end of the chute and serving as the active member in moving the chute to the open position. (Shown in dotted lines in Fig. 1.)

The shaft 19 is further provided with a brake-wheel 40, around which passes a band-brake 41, that is connected to a controlling-lever 43.

In operation the coal or other material flows from the chute 13 or other source of supply into the chute 12 while the latter is in the elevated full-line position. (Shown in Fig. 1.) At this time the brake is held firmly on the brake-wheel, so that the shaft 11 cannot rotate, and the chute may be held in elevated position until a full load is received. The brake is then moved to release position, and the chute descends by gravity. It will be observed that the chute-connected ends of both cables 30 and 34 will descend; but as the cable 34 is unwinding from the surface 25 and the cable 30 is unwinding from the much smaller surface 27 the discharge end of the chute will move downward much faster than the receiving end until the parts assume practically the mid-position shown by dotted lines in Fig. 1, it being observed that the receiving end of the chute has been lowered but a comparatively small distance. When the parts have arrived at this position, the drums have rotated to such an extent that on further movement the cables 30 will pass over the bridging-bar 29 from the smaller drums 27 to the larger drums 26, and thereafter the descending movement at both ends of the chute will be precisely the same. The downward movement continues until the chain 36 becomes taut and holds the end of the section 12′ from further movement. This causes the chute to open in the manner shown in the lowest dotted-line position 31, the opening being directly above the center of the car x, and the coal or other material flowing from both chute-sections, so as to fall in a single vertical stream into the car, and thus prevent the piling of the coal against one side of the car and the resultant overflow and loss of a portion of the load. This device is found of value in that it renders all subsequent trimming unnecessary, this being of especial value in the loading of vessels.

As soon as the coal or other material has been discharged from the chute, the latter is raised by the counterweights 35, and the chute is again restored to receiving position in alinement with the supply-chute 13.

We claim—

1. In mechanism of the class described, a chute movable between an elevated load-receiving position and a depressed load-discharging position, and means for controlling the descent of the chute to effect first a change in its angular position, and then uniform movement of both ends of the chute during the remainder of the descent.

2. In mechanism of the class described, the combination with a chute movable between an elevated load-receiving position and a depressed load-discharging position, flexible raising and lowering members carrying the chute, and mechanism controlling the speed of movement of such flexible members and serving to permit change of the angular position of the chute during the first portion of its descent, and uniform movement of both ends of the chute during the remaining portion of the descent.

3. In mechanism of the class described, a chute movable between an elevated load-receiving position and a depressed load-discharging position, a winding-drum having a winding-surface of uniform diameter, a cable extending around such winding-surface and

connected to the discharge end of the chute, a pair of winding drums or surfaces of different diameter, respectively, a bridging-bar connecting them, and a winding-cable extending from the receiving end of the chute and passing around both winding-surfaces, and the bridging-bar, to permit variable movement of the receiving end of the chute during the descent.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

ELMER E. STOUFFER.
GEORGE W. TIDRICK.

Witnesses:
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H. M. CATTELL.