

UNITED STATES PATENT OFFICE.

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TIP-WAGON MECHANISM.

SPECIFICATION forming part of Letters Patent No. 746,541, dated December 8, 1903.

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To all whom it may concern:

Be it known that I, ALEXANDER MANSFIELD, a subject of the King of Great Britain and Ireland, residing at 60 Brunswick street, North Fitzroy, in the State of Victoria, Commonwealth of Australia, have invented certain new and useful Improvements in Tip-Wagon Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide improvements in tipping mechanism whereby the loaded vessel may be raised obliquely on either side of its support and tipped while being elevated to discharge the contents into or upon any suitable receptacle, traveling belt, or receiver on either side of its normal position.

The invention is more particularly applicable to wagons, in which connection I will describe the same; but it is obvious that it may well be adapted for cars and analogous means of transportation.

To more fully understand the same, reference is had to the accompanying drawings, in which like characters designate like parts in the several views, and in which—

Figure 1 represents an end elevation of a part of a wagon containing my improvements; Fig. 2, a reversed side elevation of the tipping mechanism and its support looking from the inside; Fig. 3, a detail fragmentary plan view, and Fig. 4 a detail view of the trunnion-bearing and slide.

As each end of the wagon is provided with similar mechanism, I will for brevity only describe the mechanism at one end thereof.

a indicates the tilting receptacle, b a bracket on the end thereof, and c a trunnion-bearing on said bracket.

x is a suitable fixed frame having the downwardly-converging top faces o and the central curved cut-away clearance-space y . Supported by this fixed frame x is an adjustable frame comprising the rounded base portion h , the arms h' , and the upper cross-piece h^2 , suitably bolted to the arms h' . These arms h' are provided at their upper ends with ears

h^3 , slotted, as at u , to aline when in position with corresponding slots u' in the frame x . The outer face of the arms h' and the base portion h are flanged, as at w , to form the channel h^0 therearound, adapted to seat on the inclined faces o of the frame x , and are recessed at h^4 h^5 to engage the pins s s' on the frame x , respectively, when the adjustable frame is shifted from one side to the other and hold the base portion h against rising from its seat. The other end of the adjustable frame is held down on its seat by the pins t , passing through the slots u u' .

e is a slide having its side faces channeled, as at f , adapted to engage the inner faces g of the arms h' and be guided thereby longitudinally of the adjustable frame.

The inner face of this slide-block e is provided with an elongated slot d , forming a journal for the trunnion pin or bearing c , and is internally screw-threaded centrally to receive an elongated screw i , rotatably journaled at one end in the cross-piece h^2 and carrying at its other end the fixed bevel-gear j . Suitably journaled in the adjustable frame is the gear-wheel l , and alongside the same is located the bevel-gear k , meshing with the bevel-gear j .

m is a pinion meshing with a large gear-wheel l , the shaft of which is provided with a crank n or other suitable driving means.

r represents bearers provided with the abutment-surfaces q , by means of which the loaded receptacle is tilted and rests at different points on the curved surface as the receptacle a is being elevated obliquely, the abutments q being located sufficiently inside the plane 5 (parallel to screw 6) and acting as an obstruction to the rise of the interposed receptacle on that plane. As the raising proceeds the angular displacement of the receptacle continues, and the load is gradually discharged during the course of elevation. By this arrangement the operator is relieved of much of the weight of the load, and it reduces the strain on the construction and the slide-block e , the bearers receiving the bulk of the weight.

Any known construction bears the weight when the body is not raised and any suitable

stops prevent displacement of the body during haulage. These are not shown or claimed.

In operating this invention power applied to drive pinion *m* is multiplied by spur-wheel 5 *l* and conveyed by bevel-wheels *k j* (where the power is again multiplied when desired) to screw *i*, which is thus turned in its bearings, by which it is fixed in frame *h*, the screw thereby leading along its length slide-block 10 *e*, (a worm through which the screw engages,) having trunnion-bearing *d*. The operator at one end may work faster than that at the other, or one may work both body ends alternately, the trunnion-bearing *d* being made 15 large enough to permit of one end of the body standing higher than the other. Means (not shown or claimed) may be provided to secure body *a* temporarily at any desired inclination, and abutments *q* may be adjustable or movable instead of fixed. Any suitable means 20 are provided to temporarily lock frame *h* in its inclined position on either of the converging faces *o*. Preferably there are at the base and at each side projecting flanges *w*, between 25 which the sides *o* and frame *x* fit. Also stops *s s'* and slots *u'* are provided at each side. Stops *s s'* serve to restrain the lower end *h* of the adjustable frame from being lifted out upward, and when any suitable pins *t* are 30 passed through slots *u* into frame *x* they prevent that end of the frame moving.

It will be observed that apertures *u, u'*, and *d* are elongated and that in Fig. 1 the upper ends of the slots are engaged by the pin *t* and 35 trunnion *c*, respectively, and in Fig. 2 the lower ends. This is to allow the frame *h* to be lifted a little or made to slide upward (by a few turns of the handle *n*) off its seat on frame *x* at such times as said frame *h* is to be 40 swung on its pivot *c*. Thus friction is reduced. The frame *x* is cut away at *y* to allow this clearance. When, however, the handle is turned for the raising of the body, the first effect is to lower frame *h* till it sits solidly on 45 frame *x*. This construction limits the strain of the body *a* on the slide-blocks to such times as the raising is proceeding. The angle of the slot and the pitch of the screw within it, the sizes and number of teeth in the respective gear-wheels, and like details will 50 depend upon local circumstances.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

55 1. In unloading mechanism, the combination with the receptacle and a suitable support therefor, of means for obliquely elevating said receptacle, and means for tipping the receptacle, while being elevated, transversely of said support and supporting the 60 same while being elevated and tipped, comprising curved abutments adapted to engage the lower side faces of said receptacle.

2. In unloading mechanism, the combination with suitable supports provided with inclined faces extending upwardly from the 65 central portion of said supports, of blocks

movably mounted on said inclined faces, a receptacle journaled on said blocks, means for operating said blocks along said inclined 70 faces for obliquely elevating the receptacle, and means for tipping said receptacle.

3. In unloading mechanism, the combination with a pair of longitudinally-slotted frames obliquely mounted on a suitable support, of blocks movably mounted in the slots 75 of said frames, a receptacle journaled on said blocks, means for moving said blocks along said slots for obliquely elevating the receptacle, and means for tipping said receptacle. 80

4. In unloading mechanism, the combination with upwardly-inclined supports, of blocks provided with elongated slots movably mounted on said inclined supports, a receptacle provided with trunnion-pins journaled 85 in said slotted blocks, means for operating said blocks for obliquely elevating said receptacle, and means for tipping said receptacle.

5. In unloading mechanism, the combination with suitable supports having upwardly-inclined faces, of feed-screws rotatably 90 mounted parallel to said inclined faces, movable blocks mounted on said inclined faces and operatively engaging said screws, a receptacle journaled on said blocks, means for 95 rotating said screw for obliquely elevating said receptacle, and means for tipping said receptacle.

6. In unloading mechanism, the combination with a pair of fixed supports having downwardly-converging upper faces, of adjustable frames adapted to be seated on either pair of 100 said converging faces, blocks carried by and longitudinally movable along said frames, a receptacle journaled on said blocks, means 105 for operating said blocks for elevating said receptacle obliquely, and means for tipping said receptacle.

7. In unloading mechanism, the combination with a pair of fixed supports having downwardly-converging upper faces, of adjustable longitudinally-slotted frames adapted to be 110 seated on either pair of said converging faces, rotatably-mounted feed-screws extending longitudinally within said slotted frames, 115 movable blocks operatively engaging said feed-screws within said slotted frame, a receptacle journaled on said blocks, means for rotating said screws for obliquely elevating said receptacle and means for tipping said 120 receptacle.

8. In unloading mechanism, the combination with a pair of fixed supports having downwardly-converging upper faces and a clearance-space formed at the base of said converging faces, of adjustable frames adapted 125 to be seated on either pair of said converging faces with their lower ends extending in said clearance-spaces, blocks carried by and movable longitudinally along said frames, a 130 receptacle journaled on said blocks, means for operating said blocks for elevating said receptacle obliquely and means for tipping said receptacle.

9. In unloading mechanism, the combination with suitable supports provided with inclined faces extending upwardly from the central portion of said supports, of blocks 5 movably mounted on said inclined faces, a receptacle journaled on said blocks, means for operating said blocks along said inclined faces for obliquely elevating the receptacle, and means for tipping said receptacle while 10 being elevated.

10. In unloading mechanism, the combination with a pair of longitudinally-slotted frames obliquely mounted on a suitable support, of blocks movably mounted in the slots 15 of said frames, a receptacle journaled on said blocks, means for moving said blocks along said slots for obliquely elevating the receptacle, and means for tipping the receptacle while being elevated.

20 11. In unloading mechanism, the combination with suitable supports having upwardly-inclined faces, of feed-screws rotatably mounted parallel to said inclined faces, mov-

able blocks mounted on said inclined faces and operatively engaging said feed-screws, 25 a receptacle journaled on said blocks, means for rotating said feed-screw for obliquely elevating said receptacle, and means for tipping said receptacle while being raised.

12. In unloading mechanism, the combination with a pair of fixed supports having downwardly-converging upper faces, of adjustable frames adapted to be seated on either pair of said converging faces, blocks carried by and 30 longitudinally movable along said frames, a receptacle journaled on said blocks, means for operating said blocks for elevating said receptacle obliquely, and means for tipping 35 said receptacle while being elevated.

In testimony whereof I affix my signature 40 in presence of two witnesses.

ALEXANDER MANSFIELD.

Witnesses:

G. G. TURRI,
B. M. LOWE.