(No Model.) 2 Sheets—Sheet 1.

D. S. WATSON.

DUMPING WAGON.

No. 378,272. Patented Feb. 21, 1888.

Fig. 1.

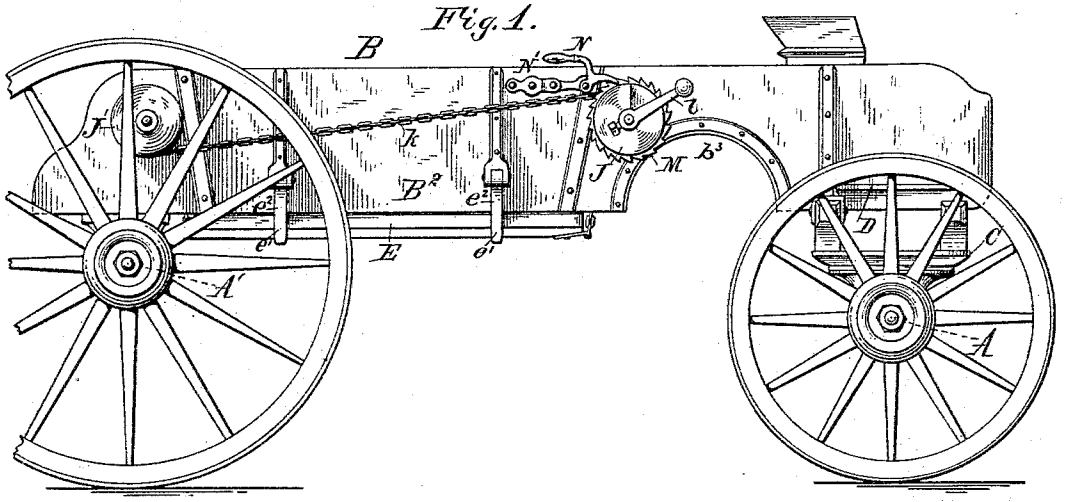


Fig. 2.

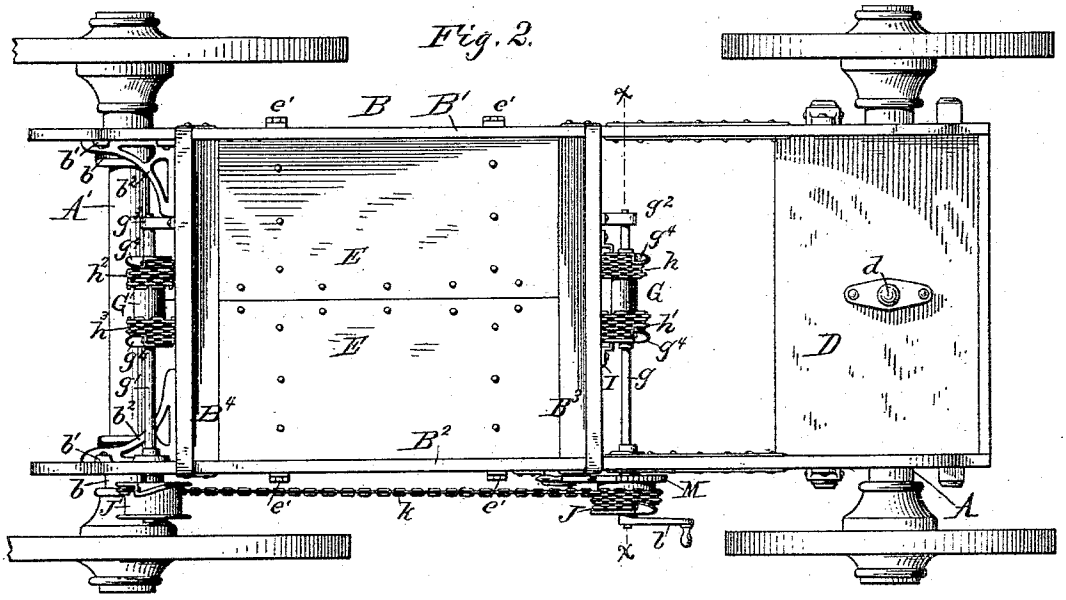
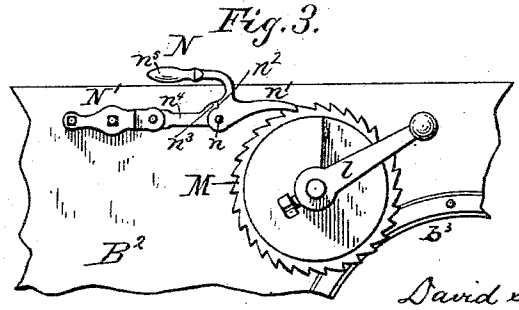


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

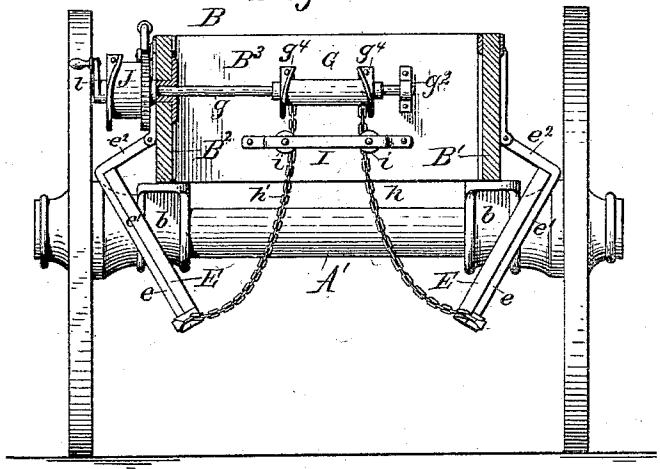


Fig. 5.

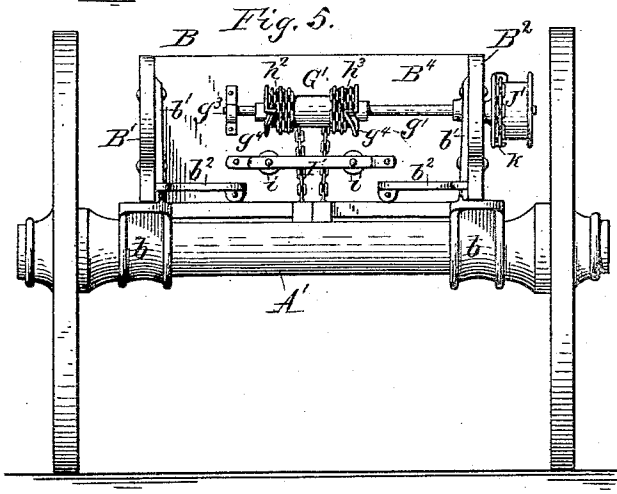


Fig. 6.

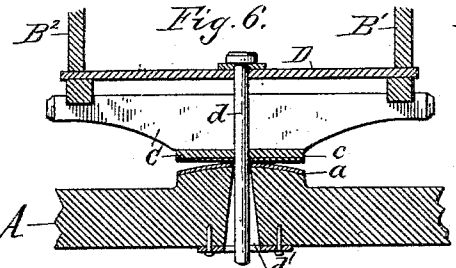


Fig. 8.

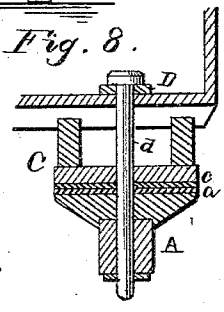
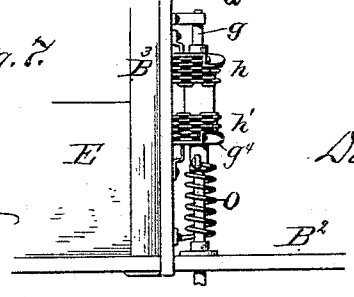


Fig. 7.



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UNITED STATES PATENT OFFICE.

DAVID S. WATSON, OF STRATFORD, NEW YORK.

DUMPING-WAGON.

SPECIFICATION forming part of Letters Patent No. 378,272, dated February 21, 1888.

Application filed May 18, 1887. Serial No. 238,574. (No model.)

To all whom it may concern:

Be it known that I, DAVID S. WATSON, of Stratford, in the county of Fulton and State of New York, have invented new and useful Improvements in Dumping-Wagons, of which the following is a specification.

This invention relates to improvements in that class of dumping-wagons in which the bottom of the box or body is divided lengthwise through the center, and the two parts thereof are hinged to the wagon-box so that the same can be swung downwardly to discharge the load.

The object of my invention is to improve the construction of this class of wagons and provide simple and convenient means for opening and closing the hinged bottom.

My invention consists of the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 represents a side elevation of my improved dumping-wagon. Fig. 2 is a top plan view thereof, showing the bottom closed. Fig. 3 represents a side elevation, on an enlarged scale, of the ratchet-and-pawl mechanism whereby the hinged bottom is held in a closed position. Fig. 4 represents a vertical section in line *x x*, Fig. 2, showing the hinged bottom open. Fig. 5 is a rear elevation of the wagon. Fig. 6 is a fragmentary vertical section taken through the front axle and the bolster or platform resting on the same. Fig. 7 is a fragmentary top plan view of the front portion of the body. Fig. 8 is a longitudinal central section through the front axle and connecting parts.

Like letters of reference refer to like parts in the several figures.

A represents the front axle, A′ the rear axle, and B the body or box, composed of side pieces, B′ B^2, and end pieces, B^3 B^4, which are secured together by metallic straps in a well-known manner. The rear ends of the side pieces, B′ B^2, rest upon tubular supports or sleeves *b*, which surround the rear axle, A′, and to which the side pieces are secured by straps *b*′, which are bolted at their lower ends to the sleeves *b*.

b^2 represents brackets or corner braces which connect the side pieces, B′ B^2, to the rear end piece, B^4, and form a rigid connection between the same. The front ends of the side pieces, B′ B^2, extend forwardly beyond the front cross-piece, B^3, and are secured to a platform or bolster, C, which rests upon the front axle, A. The front portions of the side pieces, B′ B^2, are recessed in their under sides, as shown at b^3, to permit the front wheels to pass under the same in making short turns. By constructing the side pieces, B′ B^2, in this manner the usual reach for connecting the front and rear axles is dispensed with.

The front axle, A, is provided on its upper side with a circular plate, *a*, as shown in Fig. 6, and the platform C is provided in its under side with a similar plate, *c*, which rests upon the plate *a*.

d represents the king-bolt whereby the platform C is connected with the front axle, A, and which passes through central openings in the plates *a* and *c* and a vertical opening, *d*′, formed in the front axle. The king-bolt *d* rests loosely in the opening *d*′, and is secured at its upper end to a cross piece or board, D, which connects the front ends of the side pieces, B′ B^2, and is secured to the upper side of the platform C. The opening *d*′ is made flaring downwardly and laterally, so as to permit of a limited lateral movement of the lower end of the king-bolt in the opening and allow the front axle to oscillate, and laterally on the king-bolt when the front wheels pass over obstructions or uneven ground, thereby preventing the king-bolt from binding in the opening or becoming bent.

The upper surface of the lower plate, *a*, is made convex transversely and straight longitudinally, and the opening *d*′ is made flaring laterally and straight longitudinally of the wagon, as represented in Figs. 1, 7, and 8, so that the front axle can incline freely to one side or the other, but is held rigidly in the longitudinal direction of the wagon, in pulling and backing, by the flat platform C resting on the entire length of the lower plate, *a*, as represented in Fig. 8. This construction permits the necessary freedom of movement of the axle and relieves the king-bolt of the greater portion of the strain which is applied to it when the axle can incline in every direction.

I am aware that it has been proposed to con-

nect the wagon-body with the front axle by a king-bolt passing loosely through a hole which is laterally elongated in a bearing-plate of the axle; but constructions of this kind are essentially different from the construction herein described and claimed, because they locate the center of oscillation above or below the bearing-surfaces in the center of the curvature of one or both of the bearing-plates, whereby the axle is permitted considerable lateral movement before it strikes the king-bolt, while in my construction the bearing ports of the body and front axle are snugly fitted around the king-bolt, whereby the center of oscillation is located practically at the contact-point of these parts, thereby reducing the lateral strains on the king-bolt and producing a safer connection with a lighter king-bolt than heretofore.

E E represent the two parts of the bottom of the box B, which is divided longitudinally in the center, the two parts being hinged at their outer sides to the side pieces, B' B^2, of the body, so that they can be swung downwardly. The parts E are secured to the lower horizontal portions, *e*, of elbow-shaped arms *e'*, which are pivoted with their upper ends to the outer sides of the side pieces, B' B^2. The upright portions e^2 of the arms *e'* are bent at right angles to the lower portions, *e*, so that when the hinged bottom sections are in an open or depending position, as shown in Fig. 4, their outer ends will project laterally beyond the side pieces, B' B^2, and clear the lower edges thereof, thereby preventing dirt, &c., from lodging between the hinged bottom sections and the side pieces, B' B^2. In opening the bottom on its hinges the bottom sections are raised, as indicated in Fig. 4, whereby more space is obtained to close the bottom sections over the load, which is especially desirable when the wheels of the wagon have settled in soft ground. The hinged sections E are secured by rivets or bolts to the lower portions, *e*, of the arms *e'*, and the portions *e* extend across the entire width of the sections E and serve as cleats for stiffening the sections.

G G' represent two horizontal drums or cylinders arranged at opposite ends of the body B, and mounted respectively upon horizontal shafts *g g'*. The latter are journaled in suitable bearings, g^2 g^3, secured to the end pieces, B^3 B^4, and project through one of the side pieces, B' B^2.

h h' h² h³ represent chains, ropes, or cables, which are wound with their upper ends upon the drums G G', and are secured with their lower ends to the inner ends or corners of the hinged sections E, so that by turning the drums G G' in one or the other direction the hinged sections E will be raised or lowered. The drums G G' are provided with marginal flanges g^4, which are preferably arranged spirally, so as to guide the chains *h h' h² h³* toward the center of the drums and prevent the chains from overlapping each other. *i* represents guide wheels or rollers arranged below each drum G G', and against which the connecting-chains *h h' h² h³* bear. The rollers *i* are mounted in suitable frames, I I', secured to the end pieces, B^3 B^4.

J J' represent horizontal drums secured respectively to the outer ends of the shafts *g g'*.

k represents a chain or rope which is secured with its front end to the drum J and with its rear end to the drum J'. The ends of the chain *k* are wound upon the drums J J' in opposite directions, so that by turning the front shaft *g* the rear drum, J', and shaft *g'* will be rotated in an opposite direction. In this manner the drums G G' are rotated simultaneously in the proper direction to wind or unwind the chains *h h' h² h³* and open or close the hinged sections E. The front shaft, *g*, is provided with a suitable crank, *l*, whereby it can be turned.

M represents a ratchet-wheel secured to the front shaft, *g*, on the inner side of the drum J, and N is a pawl which engages with the ratchet-wheel M and holds the shaft *g* against backward movement. The pawl N is pivoted at its rear end to a frame or bracket, N', secured to the side piece, B^2, and is jointed between its pivoted and free ends, as shown at *n*. The front arm, *n'*, of the pawl N is formed with a shoulder or offset, n^2, which abuts against a similar shoulder, n^3, formed on the rear arm, n^4, of the pawl, the relative arrangement of the shoulders n^2 n^3 being such that the pawl will be rigid when the arms *n' n⁴* lie in a horizontal plane, and so that the pawl can be easily disengaged from the ratchet-wheel M by pulling upwardly on its jointed portion *n*. The pawl is provided with a suitable handle, n^5, above the joint *n* for this purpose. This construction permits the pawl to be readily disengaged from the wheel M without turning the shaft *g* forwardly.

When it is desired to discharge the load, the pawl N is raised by means of the handle n^5, thereby releasing the ratchet-wheel M and allowing the hinged sections E to be swung downwardly by the weight of the load. This movement of the hinged sections unwinds the chains *h h' h² h³* from the drums G G' and the front end of the chain *k* from the drum J, and winds the rear end of the chain *k* upon the drum J'. Upon turning the shaft *g* forwardly the chains *h h' h² h³* are wound upon the drums G G', thereby raising the hinged sections E and closing the bottom of the wagon.

If desired, the shafts *g g'* may be surrounded with a spiral spring, O, which is secured with one end to the shaft, and with its other end to the end pieces, B^3 B^4, as shown in Fig. 7, so as to be strained when the hinged sections are swung downwardly and aid by their reaction in closing the bottom sections when the wagon has been unloaded.

My improved dumping-wagon is simple and durable in construction and permits the hinged bottom to be readily opened and closed.

The recessed side-boards B' B^2 permit the wagon to be turned short and dispense with

the use of a reach, which would be liable to catch against the deposited load and interfere with the free movements of the hinged bottom sections.

I claim as my invention—

1. The combination, with the front and rear axles, A A′, and bolster C, of the body B, composed of the side pieces, B′ B^2, secured to the bolster C and rear axle, A′, and provided in their under sides with recesses b^3, in rear of the front axle, a front cross-piece, B^3, connecting the side pieces, B′ B^2, in rear of the recesses b^3, a rear cross-piece, B^4, and hinged bottom sections, E E, substantially as set forth.

2. The combination, with the wagon-body provided with a plane front plate, *c*, and a king-bolt fitted snugly in said front plate, of the front axle provided with a bearing-plate, *a*, having its upper surface made convex laterally and straight longitudinally, the axle and plate *a* being formed with an opening, *d*′, which fits snugly around the king-bolt at its upper end and which flares downwardly and laterally, substantially as set forth.

3. In a dumping-wagon, the combination, with the body B and bottom sections, E, of elbow-shaped arms *e*′, whereby the bottom sections are hinged to the body, said arms being each composed of a lower horizontal portion, *e*, to which the bottom section is secured, and an upright portion, e^2, pivoted to the side of the body, substantially as set forth.

4. In a dumping-wagon, the combination, with the body B, provided with bottom sections, E, hinged at their sides to the body, of the horizontal drums G G′, arranged at the front and rear ends of the body B, chains or ropes whereby said drums are connected with the hinged front and rear ends of the bottom sections, and means whereby the drums G G′ are rotated simultaneously to open and close the hinged bottom, substantially as set forth.

5. In a dumping-wagon, the combination, with the body B, provided with hinged bottom sections, E, of drums G G′, arranged at the front and rear ends of the body and mounted upon horizontal shafts *g g*′, chains or ropes *h* *h*′ h^2 h^3, connecting the front and rear ends of the sections E with the drums G G′, and drums or pulleys J J′, mounted on the outer ends of the shafts *g g*′, and connected by a chain, *k*, substantially as set forth.

6. The combination, with the shaft *g*, provided with a ratchet-wheel, M, of the stop-pawl N, engaging with said ratchet-wheel and composed of two jointed arms, *n*′ n^4, substantially as set forth.

7. The combination, with the body, of the hinged bottom, a windlass whereby the bottom is closed, a ratchet-wheel secured to the shaft of said windlass, and a stop-pawl jointed between its pivoted and its free ends, whereby the bottom can be released by turning the parts of the stop-pawl on their connecting-joint, substantially as set forth.

Witness my hand this 6th day of May, 1887.

DAVID S. WATSON.

Witnesses:

BLISS KIBBE,

J. C. LIVINGSTON.