J. H. GILMAN.

WAGON DUMP.

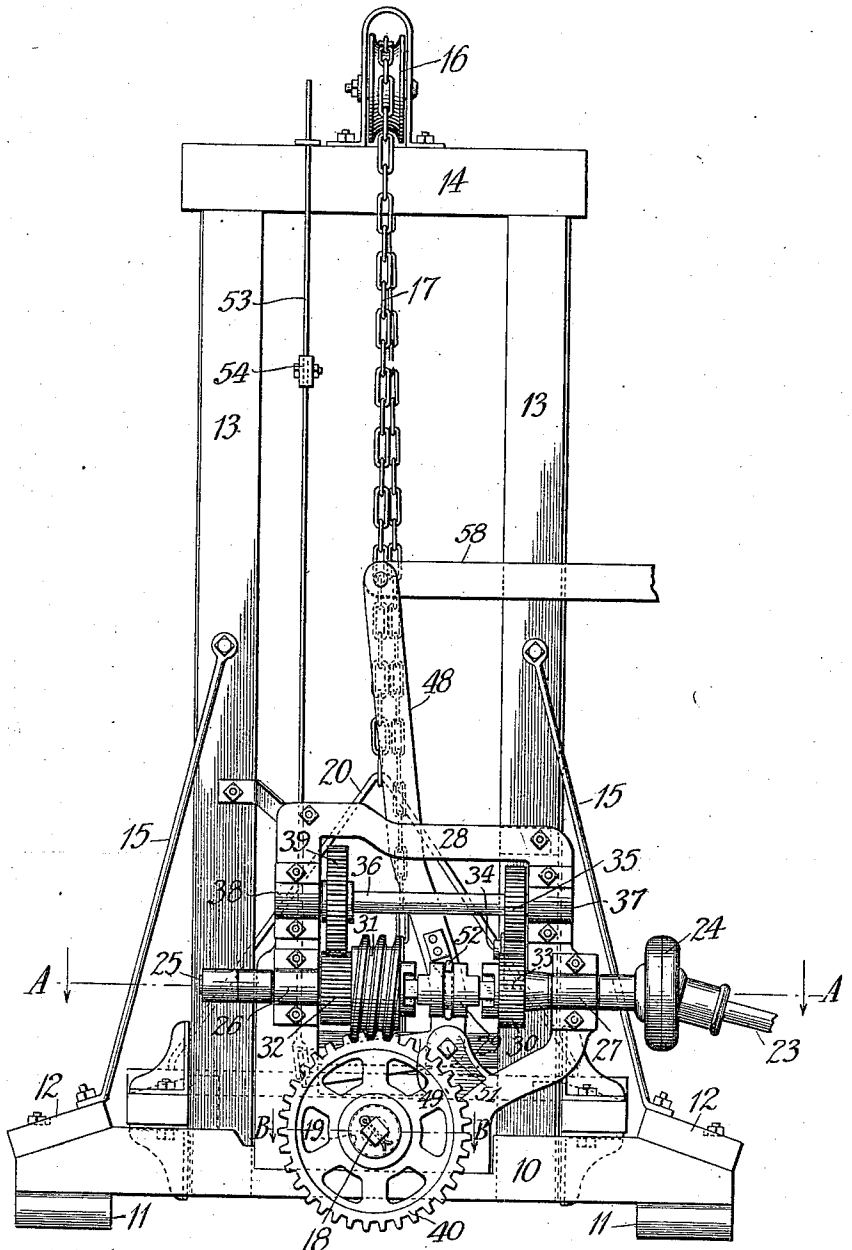
APPLICATION FILED MAR. 7, 1910.

989,961.

Patented Apr. 18, 1911.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

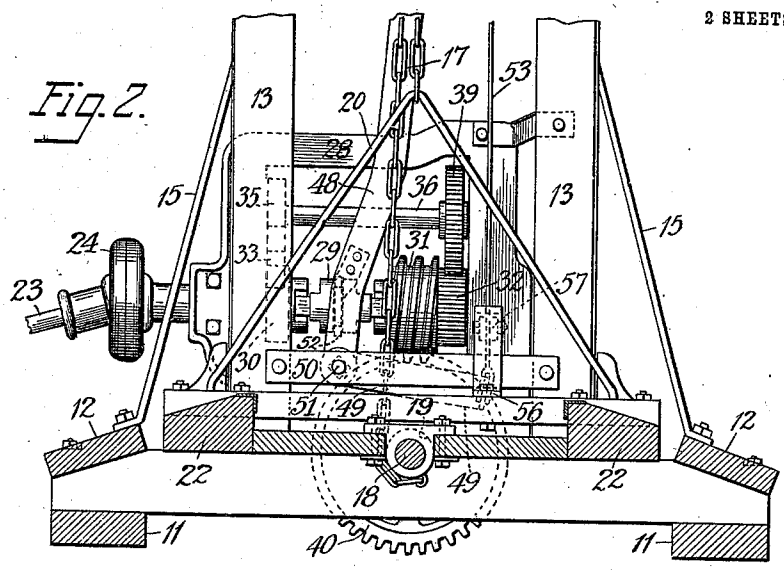


Fig. 3.

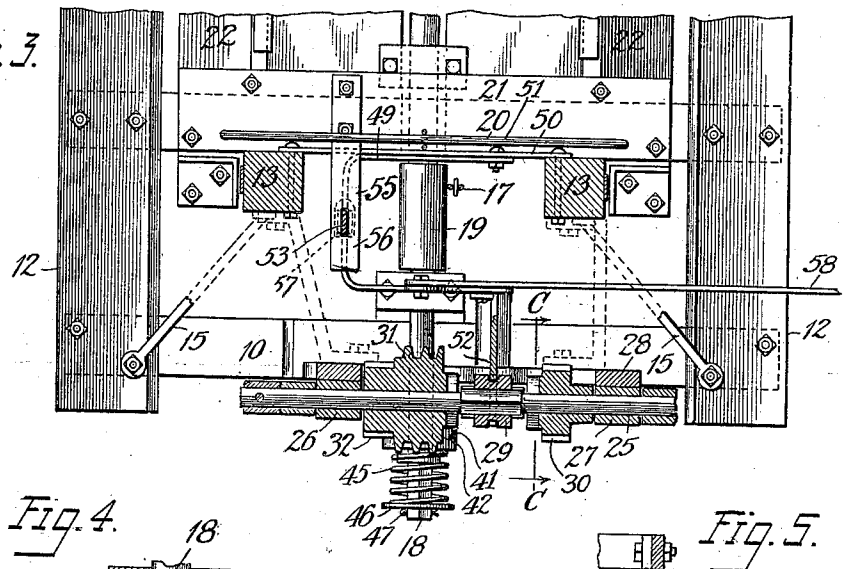


Fig. 4.

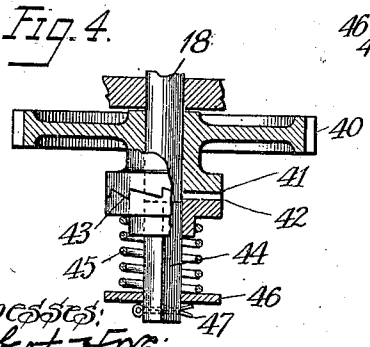
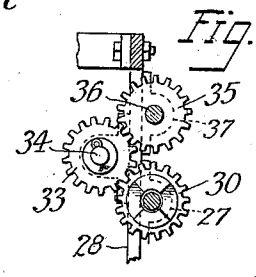


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN H. GILMAN, OF OTTAWA, ILLINOIS, ASSIGNOR TO KING & HAMILTON COMPANY, OF OTTAWA, ILLINOIS, A CORPORATION OF ILLINOIS.

WAGON-DUMP.

989,961. Specification of Letters Patent. Patented Apr. 18, 1911.

Application filed March 7, 1910. Serial No. 547,901.

To all whom it may concern:

Be it known that I, JOHN H. GILMAN, a citizen of the United States, and a resident of Ottawa, in the county of Lasalle and State of Illinois, have invented certain new and useful Improvements in Wagon-Dumps, of which the following is a full, clear, and exact specification.

My invention is concerned with wagon dumps of that class in which the elevating platform or support in its downward movement operates the tripping mechanism for stopping the gearing, and is designed to produce a device of the class described in which if the platform, through any accidental obstruction fails to descend far enough to operate the tripping mechanism, no harm will result from the continued operation of the gearing.

To this end, my invention is embodied in a novel combination of elements which I will describe in detail in the specification proper and point out particularly in the claims.

To illustrate my invention, I ánnex hereto two sheets of drawings, in which the same reference characters are used to designate identical parts in all the figures, of which,—

Figure 1 is a side elevation of the gearing end of the dump; Fig. 2 is a detail in central, vertical section looking toward the gearing end of the dump; Fig. 3 is a plan view in section on the line A—A of Fig. 1, through the gearing end of the dump; Fig. 4 is a detail in section on the line B—B of Fig. 1; and Fig. 5 is a detail in section on the line C—C of Fig. 3.

In the general construction of these devices, a base is formed of the end pieces 10, the lower longitudinal pieces 11, and the upper longitudinal pieces 12 secured thereto. Extending upward from each end of the base is a side frame composed of the upright standards 13, the top cross-piece 14, and these side frames are preferably braced by the rods 15 secured thereto and to the pieces 12. On the top of each of the side frames is suitably journaled a sheave 16, over which passes the chain 17, one end of which is secured to the shaft 18, preferably so as to be wound up upon a drum 19 secured to each end of the shaft, the other end of the chain being secured to the bail 20, which has its ends fastened to the end cross-pieces 21, which together with the longitudinal pieces 22 make up the customary frame upon which the front wheels of the wagon rest when the dump is in operation. With the connections thus far described, it will be obvious that if the shaft 18 is rotated in one direction, the chains 17 will be wound up upon the drums 19, thereby lifting the frame, with the front wheels of the wagon thereon; and when the shaft is rotated in the other direction, the chains will be unwound, allowing the front of the wagon to descend.

The power is applied to a shaft 23, which is connected by a universal joint 24 with a shaft 25, best seen in Fig. 3, which shaft is journaled in suitable bearings 26 and 27 formed in and secured to the frame casting 28. The shaft 25 has splined thereon a clutch member 29 having two clutch faces adapted to coöperate alternately with similar clutch faces on the pinion 30 and the worm 31, which has secured thereto or formed integrally therewith the spur gear wheel 32. The pinion 30 meshes with an idle pinion 33 journaled on the bearing stud 34, and this idle pinion in turn meshes with a pinion 35 secured on the shaft 36, as best seen in Fig. 5. This shaft 36 is journaled in suitable bearings 37 and 38 formed on and secured to the frame casting 28, and it has at its other end the gear wheel 39, which meshes directly with the spur gear wheel or pinion 32, so that it will be apparent that if the clutch 29 engages with the pinion 30 (it and the worm gear 31 being loosely journaled on the shaft 25), the shaft 23 will rotate the worm 31 at a comparatively high speed to lower the frame, while if the clutch 29 is engaged with the worm 31, the latter will be rotated directly at a lower speed to raise the frame. In the first case, the drive from the shaft 25 to the worm 31 is through the clutch member 29, pinion 30, idler 33, pinion 35, shaft 36, spur gear wheel 39, and spur gear pinion 32 secured to the worm 31. In the second case, the drive is directly from the shaft 25 through the clutch member 29 to the worm 31, which rotates in the opposite direction, with the wheels and pinions 39, 35, 34 and 30 rotating idly. The worm 31 meshes with the worm wheel 40 loosely mounted on the shaft 18, which has slip clutch teeth 41 on its hub meshing with similar slip clutch teeth 42 on the clutch member 43, which has the square aperture

coöperating with the squared end 44 of the shaft 18. A helically-coiled expanding-spring 45 is interposed between the clutch member 43 and a washer 46 held on the end of the shaft 18 in any suitable manner, as by the cotter pin 47. When the shaft 18 is rotated by the worm in the proper direction to raise the load, the square faces of the clutch teeth 41 and 42 are in engagement, so that the load is lifted positively without any chance of slipping. When the shaft is rotated in the opposite direction to lower the wagon, the inclined faces of the clutch teeth 41 and 42 are held in engagement by the spring 43, and it will be obvious that if there is any obstruction to the rotation of the shaft 18, the inclined faces of the teeth 41 coöperating with the inclined faces of the teeth 42 will simply force the clutch member 43 outward against the tension of the spring 45, permitting the shaft to rest despite the continued rotation of the wheel 40.

The tripping mechanism for operating the clutch member 29 consists of a bell crank lever having the vertical arm 48 and the horizontal arm 49, the lever being pivoted to the cross piece 50 secured to the uprights 13 at 51. The vertical arm 48 is provided with the fork 52, which engages with the annular groove in the clutch member 29 in the customary manner, so that when the lever 48 is in either one of its three positions, the clutch member will be free, or engaged with either the pinion 30 or the worm 31, as the case may be. The arm 49 has secured to its outer end the rod or bar 53, which extends upward and is provided with an adjustable sleeve or collar 54 thereon, with which the horizontal arm 55 of the angular piece 56 bolted to the frame 22 engages to automatically rock the bell crank 48, 49 in the proper direction to unclutch the member 29 from the worm 31 and stop the upward movement of the frame. When the frame descends, the arm 55, through which the bar 53 passes by means of a slot, as seen in Fig. 3, engages the adjustable collar 57, 57, seen in dotted lines in Figs. 2 and 3, and rocks the bell crank 48, 49 in the opposite direction to disengage the clutch member 29 from the pinion 30 and stop the downward movement of the frame. The bell crank 48, 49 is shifted manually by means of the bar 58 pivoted thereto and extending to the other end of the wagon, so as to be convenient for manipulation by the driver.

The operation of the complete apparatus will be readily understood from the foregoing description, and it will be obvious that if for any reason the platform should fail to descend to the full distance sufficiently for the arm 55 to engage the stop 57 and uncouple the driving gearing, no damage will be done by the continued movement of the gearing, for the reason that the shaft 18 will stop, and the continued rotation of the wheel 40 will simply force the clutch member 43 outward against the tension of the spring 45, causing the teeth 41 and 42 to slip idly over each other.

While I have shown and described my invention as embodied in the form which I at present consider best adapted to carry out its purposes, it will be understood that it is capable of modifications, and that I do not desire to be limited in the interpretation of the following claims except as may be necessitated by the state of the prior art.

What I claim as new, and desire to secure by Letters Patent of the United States, is:

1. In a wagon dump, the combination with a vertically movable wagon-support, of a reversible driven shaft, connections between the support and the shaft by which as the shaft is rotated in one direction the support is raised and as it is rotated in the other direction the support is lowered, a driving shaft adapted to rotate continuously in one direction, and reversible driving connections between said shafts, said driving connections operating to drive by a direct engagement in one direction and by a frictional engagement in the other.

2. In a wagon dump, the combination with a vertically movable wagon-support, of a reversible driven shaft, connections between the support and the shaft by which as the shaft is rotated in one direction the support is raised and as it is rotated in the other direction the support is lowered, a driving shaft adapted to rotate continuously in one direction, and reversible driving connections between said shafts, said driving connections including a pair of ratchet-toothed clutch members, and a spring pressing said members together.

3. In a wagon dump, the combination with a vertically movable wagon-support, of a reversible driven shaft, connections between the support and the shaft by which as the shaft is rotated in one direction the support is raised and as it is rotated in the other direction the support is lowered, a driving shaft adapted to rotate continuously in one direction, reversible driving connections between said shafts, and tripping mechanism combined with said driving connections and adapted to be operated by the support in its downward movement to disengage said driving connections and stop the movement of the driven shaft, said driving connections operating to drive by a direct engagement as the support is raised and by a frictional engagement as it is lowered.

4. In a wagon dump, the combination with a vertically movable wagon-support, of a reversible driven shaft, connections between the support and the shaft by which as the shaft is rotated in one direction the

support is raised and as it is rotated in the other direction the support is lowered, a driving shaft adapted to rotate continuously in one direction, reversible driving connections between said shafts, and tripping mechanism combined with said driving connections and adapted to be operated by the support in its downward movement to disengage said driving connections and stop the movement of the driven shaft, said driving connections including a pair of ratchet-toothed clutch members and a spring pressing said members together, the teeth of said clutch members being directed so that the driven shaft is driven by a direct engagement as the support is raised and by a frictional engagement as it is lowered.

In witness whereof, I have hereunto set my hand and affixed my seal, this 3rd day of March, A. D. 1910.

JOHN H. GILMAN. [L. S.]

Witnesses:

AUGUST LEDRICH,

EDWARD R. CLAUS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."