To all whom it may concern:

Be it known that I, WILLIAM ATKINS, of Auburn, in the county of Cayuga, in the State of New York, have invented new and useful Improvements in Door-Operating Mechanism for Dump-Wagons, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in operating mechanism for dump wagons of the class set forth in my Patent No. 871,771, issued on the 26th day of November, 1907, and constitutes a division of my co-pending application No. 616,137, filed on the 22nd day of March, 1911, and resulting in Patent No. 1,025,359 issued on the 7th day of May, 1912, in which a rotary drum mounted upon the front end of the dump box is connected by suitable chains or cables to the bottom doors of the box in a manner similar to that shown in my co-pending application No. 582,678, filed September 19, 1910, although it is to be understood that I do not limit myself to any particular manner of connecting the chains to the doors.

The primary object is to provide a simple and comparatively inexpensive door-operating and release mechanism for dump wagons involving the use of a lever, ratchet and pawl for rotating the drum to wind the cable thereon for the purpose of closing the doors, together with a holding pawl or detent cooperating with the ratchet wheel to hold the drum and doors connected thereto in their adjusted positions, and a releasing lever connected to the holding pawl for tripping the same when desired.

The drum and allow the doors to open under their own gravity or load supported thereby.

Another object is to provide means for automatically tripping the winding pawl and thereby releasing the lever upon which it is mounted in case the drum should be released without first throwing the winding lever to its inoperative position.

A further object is to provide means for holding the releasing lever in either of three of its adjusted positions, so that when it is in its intermediate position it will allow the holding pawl to vibrate as the teeth of the ratchet wheel are operated thereagainst without transmitting such vibratory movement to said lever, or by shifting the lever 55 rearwardly to lock the holding pawl in its holding position against vibration, or to trip the holding pawl by throwing the lever to its extreme forward position.

A still further object is to provide a 60 spring for holding the release lever in either of its adjusted positions.

Other objects and uses will be brought out in the following descriptions.

In the drawings—Figure 1 is a longitudinal vertical sectional view through a portion of the front end of a dump box showing my improved door-controlling means, the drum supporting shaft and a portion of the holding pawl being shown in section. Fig. 2 is a top plan of the door-operating means shown in Fig. 1. Fig. 3 is a horizontal sectional view of the same mechanism taken on line 8—8 of Fig. 1.

In carrying out the objects stated, a drum 75—17— is rigidly secured by a bolt or key —16— to one end of a rotary tubular shaft —18—, which latter is journaled in a suitable bearing in the forwardly projecting extensions —a— of a drum box —A—, said 80 drum being preferably located at the outside of the box (usually on the right hand side) with one end abutting against the adjacent side —a— and its outer end locked to the tubular shaft —18— by a pin —16—. This 85 pin or bolt —16— extends diametrically through the drum and shaft and is provided with a suitable eye for receiving one end of a chain or cable —15— which may be connected to the doors in any suitable manner, not necessary to herein illustrate or describe.

A metal plate —a— is bolted to the inner side of the extensions —a— and is also provided with a bearing in which the adjacent portion of the shaft —18— is journaled.

A ratchet wheel —21— having an inwardly projecting hub —21— is rigidly secured by a pin or key —21— to the shaft —18— just at the inner side of the metal plate —a—. Loosely journaled upon the hub of the ratchet wheel —21— is a handle —19— carrying a pivoted pawl —20— normally gravitating into engagement with the teeth of the ratchet wheel —21— for the purpose of rotating the shaft —18—, and 105 drum —17— in the direction indicated by arrow —2—. Fig. 1, and thereby winding the cable —16— on said drum to close the
doors. Rigidly secured to the outer face of the pawl —20— is a lug —22— adapted to ride against a cooperating lug —23— on the inner face of the plate —24— to trip the pawl —20— out of engagement with the teeth of the ratchet wheel when the lever —19— is drawn back to the position shown by dotted lines in Fig. 1. The lever —19— and pawl —20— cooperating with the ratchet wheel —21— and cable —16—, constitute what may be termed means for closing the doors.

A holding pawl or deft —24— is pivoted at —28— to the lower rear corner of the plate —24— and its lower end is weighted for yieldingly holding said pawl in operative engagement with the teeth of the ratchet wheel.

An upright release lever —26— is pivoted at its lower end at —27— to the adjacent portion of a triangular frame —28— which in turn is bolted to the inner side of the adjacent extensions —29— of the dump box, the intermediate portion of said lever being connected with a lost motion by a link —30— to a pin —32— on the lower weighted end of the pawl —24—, said weighted end being bifurcated for receiving the adjacent end of the link —29—. The triangular frame —28— is preferably arranged in a plane below that of the ratchet wheel —21— with its apex at the bottom and constituting a bearing for the lever —26— so that the upper side of the frame is disposed in a more or less horizontal position and is provided with a bar —31— having its intermediate portion spaced apart from the outer portion of the frame and provided with a series of notches —32— and —33— forming shoulders for receiving and retaining the lever —26— in either of its adjusted positions for purposes hereinafter described, said lever —26— being held in the notches by a flat spring —34—, having its front end secured to the front end of the upper portion of the frame —28— as shown more clearly in Figs. 2 and 3. The aperture in the rear end of the link —29— for receiving the pin —30— is elongated in the direction of the link to form a slot —35—, normally extending forward from the pin when the lever —26— is in its intermediate position and the pawl —24— in operative engagement with the teeth of the ratchet wheel, thus permitting said pawl to be oscillated by the teeth of the ratchet wheel —21— when the latter is rotated, without transmitting said oscillatory movement to the link —29— or lever —26—. This lever —26— may be operated by the foot or by the hand of the attendant sitting upon the seat of the wagon, and is held in its intermediate position in the notch —32— by the spring —34—.

Assuming now that the parts are shown in their position assumed when the doors are closed, and it is desired to dump the load, the lever —19— is then drawn rearwardly to the dotted position shown in Fig. 1, where it will rest by its own gravity, thereby forcing the pawl —20— out of engagement with the teeth of the ratchet wheel —21— through the engagement of the lug —22— with the lug —23—, whereupon the lever —26— may be drawn inwardly out of the notch —32— against the action of the spring —34— and then forced forwardly to the forward dotted position shown in Fig. 1, thereby withdrawing the pawl —24— from its holding position and allowing the drum to rotate under the weight of the doors and load thereon. Assuming again that the parts are in the position shown in Figs. 1, 2 and 3, and it is desired to lock the holding pawl —24— firmly in its holding position, as for example in long hauls, to prevent any liability of accidentally dumping the load, the lever —26— may be rocked to the rear dotted position shown in Fig. 1, thereby forcing the front end of the slot —35— against the pin —30— in which position the lever —26— will be locked in the notch —32— by the spring —34— and when the vehicle has reached its destination or position for dumping, the operation previously described may be repeated for dumping the load.

In case the operator should inadvertently omit to return the lever —19— to its rearward position, shown by dotted lines, when the pawl —24— is thrown from its holding position, it is evident that said lever —19— would be carried forwardly and rearwardly and the pawl —20— automatically tripped by the cooperative engagement of the lugs —22— and —23—, thus freeing the drum and allowing the continued unwinding of the frame and opening of the doors under the load.

What I claim is:

1. A door-controlling mechanism for dump wagons comprising a drum, a ratchet wheel secured to the drum, a winding lever loosely journalled coaxial with the drum, in proximity to the ratchet wheel, a pawl on the winding lever gravitating into engagement with the teeth of the ratchet wheel, a lug on the pawl, a stationary lug in the path of the lug on the pawl as the latter is moved rearwardly for tripping said pawl, a holding pawl having a weighted end for yieldingly forcing it into engagement with the teeth of the ratchet wheel, a pin on the weighted end of the pawl, a link having its rear end provided with an elongated slot receiving said pin, a release lever connected to the front end of the link to operate the same and thereby trip the pawl, said slot normally extending forwardly from the pin to allow the pawl to oscillate independently of the link as the ratchet wheel is rotated by
the first named lever to wind a cable thereon, and a door-operating cable attached to the drum.

2. In a door-operating mechanism for dump wagons, a dump box having a forward extension, a drum journaled in said extension, a door-operating cable attached to the drum, a ratchet wheel secured to the drum and provided with an axially extending hub, a winding lever loosely journaled on said hub, a pawl on said lever normally gravitating into engagement with the teeth of the ratchet wheel, a lug on the pawl, an additional lug on the extension cooperating with the lug on the pawl to trip said pawl as the winding lever is moved rearwardly from an upright position, a frame secured to an extension in a plane below that of the ratchet wheel and provided with a forwardly and rearwardly extending slot in its upper side, the portion of the frame at one side of the slot being provided with notches, a release lever pivoted to the frame some distance below the slotted portion thereof and extending upwardly through said slot and movable into and out of engagement with said notches and along the slot, a spring for holding the lever in said notches, a holding pawl pivoted to the extension and gravitating into engagement with the teeth of the ratchet wheel, and a link pivoted to the intermediate portion of the lever between its pivot and the slotted portion of the frame and having its rear end connected with a lost motion to the holding pawl to permit said pawl to oscillate independently of the link and release lever.

In witness whereof I have hereunto set my hand this 4th day of May 1912.

WILLIAM ATKINS.

Witnesses:

H. E. CHASE,
E. A. THOMPSON.

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