W. A. UNDERHILL.

DUMP BOX.

APPLICATION FILED OCT. 12, 1911.

1,044,949. Patented Nov. 19, 1912.

Fig. 1.

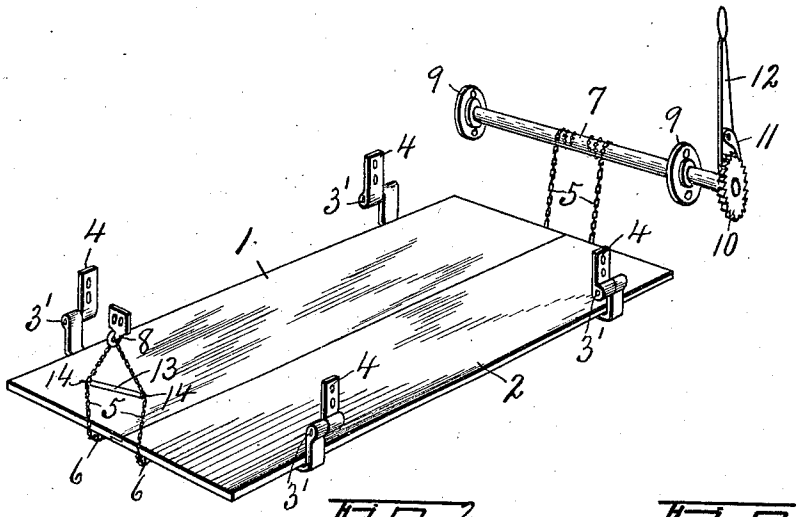


Fig. 2.

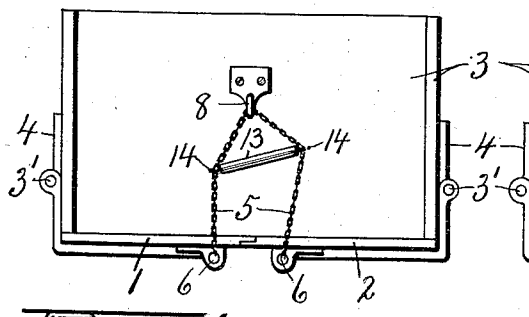


Fig. 3.

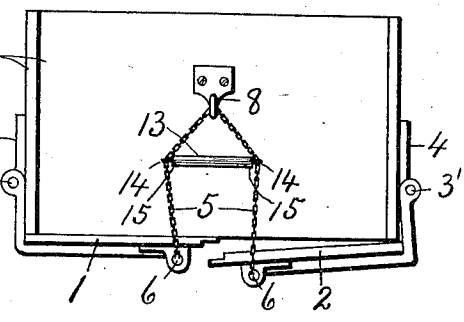
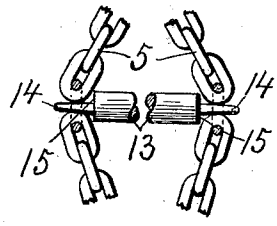


Fig. 4.



Witnesses
E. J. Staub,
H. E. Chase

Inventor
W. A. Underhill

By Howard P. Denison
Attorney

UNITED STATES PATENT OFFICE.

WALTER A. UNDERHILL, OF AUBURN, NEW YORK.

DUMP-BOX.

1,044,949. Specification of Letters Patent. Patented Nov. 19, 1912.

Application filed October 12, 1911. Serial No. 654,325.

To all whom it may concern:

Be it known that I, WALTER A. UNDERHILL, of Auburn, in the county of Cayuga, in the State of New York, have invented new and useful Improvements in Dump-Boxes, 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 dump boxes for dump wagons and other apparatus having bottom doors overlapping at their meeting edges to produce a tight joint and thereby prevent leakage of the material carried in the box, and refers more particularly to the door controlling mechanism involving the use of chains or cables passing under the meeting edges of the doors and having their front ends attached to a rotary winding drum or shaft and their rear ends attached to a suitable anchor or anchors on the rear of the box together with mechanism for rotating and releasing the drum.

The main object is to provide simple means for causing one door to close slightly in advance of the other as the cables are wound upon the drum and to also close the other door by the continued rotation of the drum after the first named door is closed. In other words I have sought to provide a comparatively inexpensive equalizer or compensating device for causing the doors to close tightly one in advance of the other and still permit them to swing to their open positions through substantially equal arcs.

Other objects and uses relating to specific parts of the device will be brought out in the following description.

In the drawings—Figure 1 is a perspective view of a pair of overlapping bottom doors of a dump box showing the underrunning cables and winding means therefor for closing the doors together with one form of my improved equalizer in operative connection with the cables. Figs. 2 and 3 are rear end views of a dump box showing the same equalizer in different positions assumed when the doors are closed as in Fig. 2 and as the doors begin to open in Fig. 3. Fig. 4 is an enlarged detail elevation partly broken away of the equalizer shown in Figs. 1, 2 and 3.

In order that my invention may be clearly understood I have shown a pair of bottom doors —1— and —2— of a dump box —3— adapted to be mounted upon a suitable running gear to constitute a dump wagon.

The doors —1— and —2— extend lengthwise and form the bottom of the box and are of substantially uniform width slightly greater than half the width of the box so as to overlap at their meeting edges near the longitudinal center thereof, the outer longitudinal edges being hinged at —3'— to brackets —4— on the sides of said box some distance above the plane of the doors so as to cause said doors to swing outwardly and upwardly clear of the ground when released.

A pair of cables —5— are passed under the meeting edges of the door through suitable guides —6— thereon, the front ends of said cables being attached to a rotary drum —7—, while the rear ends are fastened to a suitable anchorage —8— on the rear end of the box in such manner as to hold the cables against movement relative to the anchorage.

The drum —7— may be mounted in any suitable manner upon the front end of the box, as, for example, in bearings —9— which are secured to the sides thereof, one end of said drum, usually the right end, being provided with a ratchet wheel —10— rigid thereon and adapted to be engaged by a pawl —11— on a hand lever —12— which is loosely journaled on the adjacent end of the drum so that by moving the handle in one direction the drum will be rotated to wind the cables thereon in the operation of closing the doors and at the same time by releasing the pawl —11— the drum will be free to be rotated in the opposite direction by the opening of the doors in discharging the load.

The equalizer forming the subject matter of my invention as shown in Figs. 1, 2, 3 and 4 preferably consists of a floating cross connection —13— between the upright portion of the cables —5— near one end, in this instance, the rear end thereof between the anchorage —8— and bottom of the box. This cross connection —13— preferably consists of a rigid bar of greater length than the normal distance between the chains or cables where they pass under the doors when the latter are closed and are provided with reduced ends —14— passing through the adjacent links of the chains, said reduced ends forming shoulders —15— of greater cross sectional area than the openings in the

links through which the reduced portions —14— pass so as to engage and hold these portions of the chains a greater distance apart than the guides on the undersides of the doors through which the cables pass when the doors are closed. These portions of the cables are therefore always tensioned against the shoulders —15—, thereby holding the cross connection —13— in operative position even when the doors are opened to the position indicated by dotted lines in Fig. 3.

The object of the equalizer is to cause one door, as, for example, the door —1— to close slightly in advance of the other door so as to allow them to overlap at their meeting edges without liability of abutting said meeting edges during the operation of closing the doors. In adjusting this equalizer to accomplish this purpose, the rear upright portion of the chains are attached to the anchorage —8— by locking one of its links thereon in such manner as to relatively shorten one of the rear upright portions of the chains, thereby elongating the upright portion of the other chain. In other words by winding the chain upon the drum so as to nearly but not quite close the doors, leaving them both open to about the position indicated by the right hand door in Fig. 3, the rear portion of the chain may be removed from the anchorage —8— and readjusted thereon so as to close one of the doors, as, for instance, the left hand door, thereby leaving the other door slightly open, in which position both of the upright portions of the rear ends of the cables will be deflected by the angular bar —13— from direct lines between their respective guides —6— and anchoring hook —8—, and it therefore follows that by continued winding of the cables upon the drum after the door —1— has been closed, the rear upright portions of the left hand chain will tend to straighten, thereby shifting the bar —13— to the right and tensioning the rear upright portion of the right hand cable until the corresponding door is closed, under which conditions the bar —13 —assumes the position indicated in Figs. 1 and 2 some distance to the right of the central position which it assumes when the doors are released or partially released as shown in Fig. 3.

It will be apparent from the foregoing description that the feature of the invention lies in providing means for deflecting the upright portions of the chains or cables at one end from the direct lines between their respective guides on the door and their points of securement to the anchorage —8— and in adjusting the chains or cables to said anchorage in such manner that their relative lengths from their points of connection with the anchorage —8— to their points of attachment to the drum will be more or less unequal, thereby causing one door to close slightly in advance of the other, the equalizer bar serving to compensate for the difference in closing of the doors in the manner described.

It will be observed that one feature of the invention is to enable the chains or cables to be adjusted so that the working length of one is slightly shorter than the other to cause the corresponding door to close slightly in advance of the other door, while another feature of the invention consists in providing means for deflecting the upright portions of the cables at one end to one side of a direct line between their connections with the door and drum so that the increased tension of the cable for the first closing door will take up the lag in the other cable and thereby cause the closing of its corresponding door.

What I claim is:

1. A dump box having laterally swinging bottom doors, a winding drum at one end of the box, cables running under the doors and having one end attached to the drum and their opposite ends attached to one and the same point on the opposite end of the box, and a floating spreader bar engaging the cables between said point and doors.

2. A dump box having laterally swinging bottom doors meeting and overlapping near the longitudinal center of the box when closed, a winding drum at one end of the box, cables running lengthwise under the meeting edges of the doors and having one end attached to the drum and their opposite ends attached to the opposite end of the box, and a spreader bar supported solely by the cables and spreading portions thereof apart a greater distance than those portions which run under the doors.

3. In combination with a dump box having laterally swinging bottom doors, cables running lengthwise under the doors and having their rear ends attached at one and the same point on the rear end of the box, a winding drum attached to the front ends of the cable, and a spreader bar connected across and supported wholly by the cables.

In witness whereof I have hereunto set my hand on this 4th day of October 1911.

WALTER A. UNDERHILL.

Witnesses:

HERBERT PRICE,

A. S. BAKER.