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C. J. HANDEL.

DUMPING WAGON.

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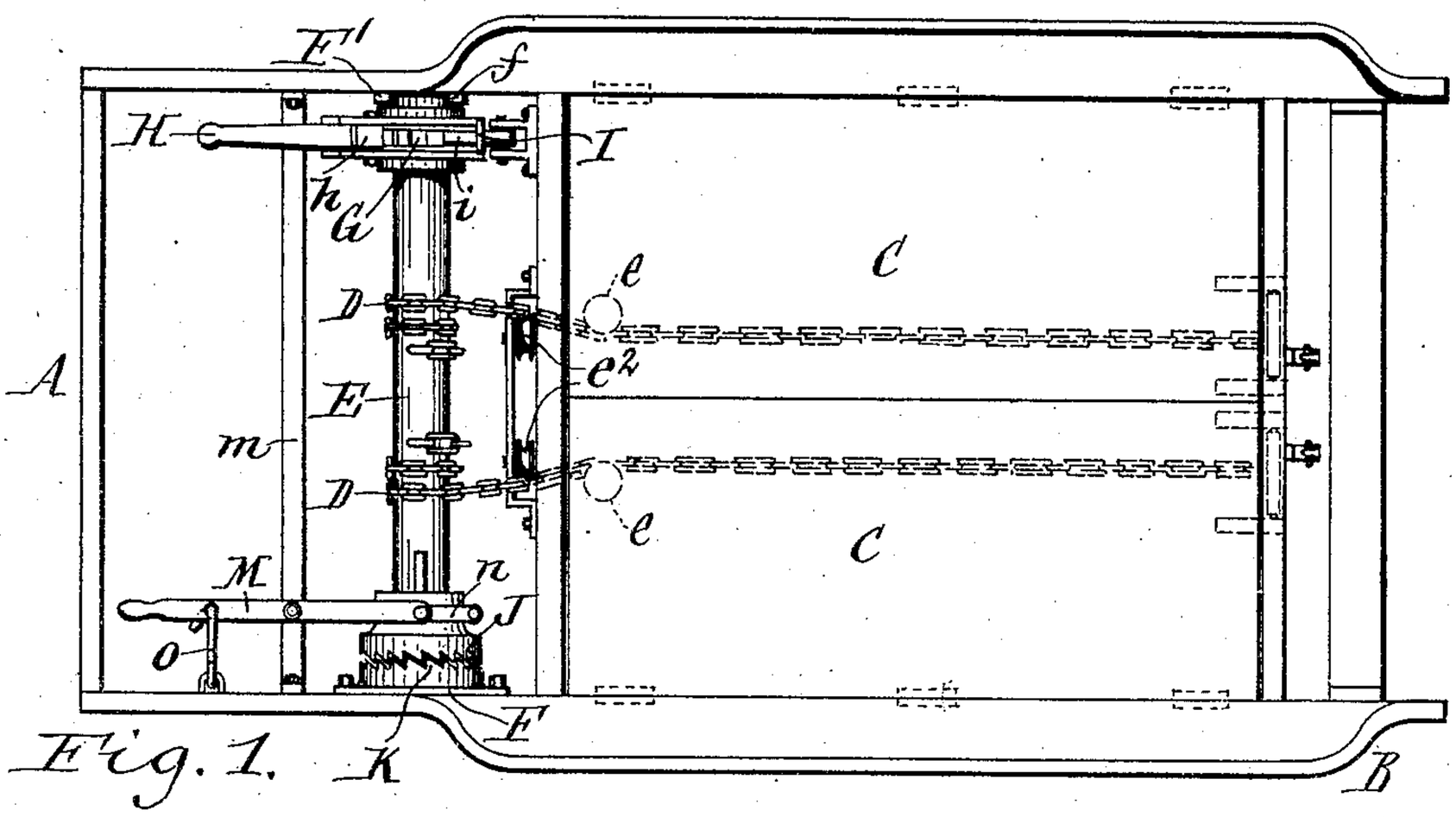

Fig. 1.

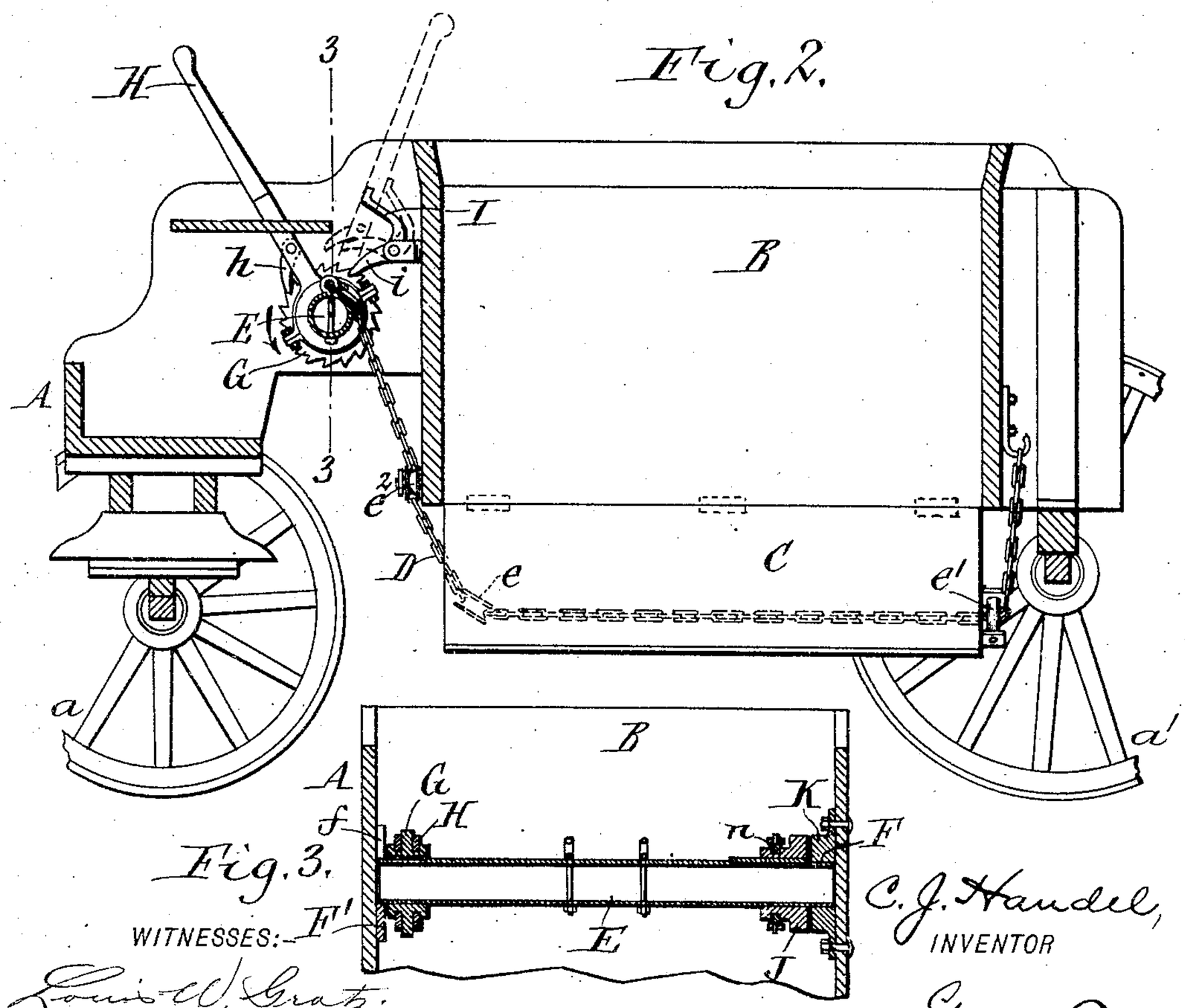

Fig. 2.

Fig. 3.

WITNESSES:-

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No. 785,947. Patented March 28, 1905.

UNITED STATES PATENT OFFICE.

CHRISTOPHAR J. HANDEL, OF BUFFALO, NEW YORK.

DUMPING-WAGON.

SPECIFICATION forming part of Letters Patent No. 785,947, dated March 28, 1905.

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To all whom it may concern:

Be it known that I, CHRISTOPHAR J. HANDEL, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Dumping-Wagons, of which the following is a specification.

This invention relates more particularly to that class of dumping-wagons in which the bottom moves vertically toward and from the lower end of the box. In dumping-wagons of this character as heretofore constructed the bottom has been raised and held in its closed position by a lifting mechanism comprising a drum connected with the bottom, a rock-lever having a vertically-swinging actuating-pawl engaging with a ratchet-wheel on the drum, and a vertically-swinging detent-pawl also engaging with the ratchet-wheel. This construction of bottom-lifting mechanism is objectionable inasmuch as the jolt of the wagon upon dropping into a hole or running against an obstruction is liable to throw the pawls out of engagement from the ratchet-wheel, and thereby accidentally dump the load. For the purpose of preventing release of the bottom by vertical jolting of the wagon an auxiliary locking or holding device is provided for the hoisting-drum, which is separate from the ratchet mechanism and which has its movable part operating in a horizontal direction, so that the same is unaffected by the vertical vibration or jolting to which the wagon is subjected.

A further object of my invention is to improve the means of mounting the drum on the wagon-body and provide simple means for throwing the actuating and detent pawls of the lifting mechanism simultaneously out of operation.

In the accompanying drawings, Figure 1 is a top plan view of a dumping-wagon equipped with my improvements. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a cross-section in line 3 3, Fig. 2.

Similar letters of reference indicate corresponding parts throughout the several views.

A represents the body of the wagon, which is mounted at its front and rear ends on wheels *a a'*; B, the box or receptacle arranged on the rear part of the body, and C the movable bottom which closes the lower end of the box. This bottom is preferably constructed in a manner common to this style of wagons and consists of two vertically-swinging doors hinged at their outer longitudinal edges to the lower edges of the box side walls, while their inner opposing edges meet in the raised position of the doors and form a closure for the lower side of the box.

The doors are raised by means of chains D D, each of which is secured at its rear end to the rear wall of the box and at its front end to a drum E, arranged in front of the box, while its intermediate portion engages movably with the under or outer side of one of the doors. Upon turning the drum forwardly, or in the direction of the arrow indicated in Fig. 2, the doors are raised, during which movement the chains are guided on the latter by means of rollers or guides *e e'*, arranged at opposite ends of the doors, and also pass around guide-rollers e^2, arranged on the front wall of the box, as shown in Figs. 1 and 2. The drum is arranged horizontally and transversely relatively to the box and is journaled at its ends in bearings F F', arranged on the inner sides of the wagon-body, which form practically forward extensions of the longitudinal sides of the box. One of these bearings, preferably F, is circular and completely incloses the adjacent end of the drum, while the other bearing, F', opens upwardly at *f*, as shown in Figs. 1 and 3, thereby permitting of conveniently inserting the drum in said bearings or removing the same therefrom when this is necessary for repairs or for other purposes.

G represents a ratchet-wheel which is rigidly secured to the drum near one end thereof and provided with an annular row of teeth.

H represents a vertically-swinging ratchet or pawl lever having its lower bifurcated end turning loosely on opposite ends of the ratchet-wheel hub and provided with a vertically-swinging actuating-pawl *h*, which is pivoted on the lever and adapted to engage with the teeth of the ratchet-wheel.

In rear of the actuating-pawl is mounted a vertically-swinging detent-pawl *i*, which is pivoted at its rear end on the adjacent front

wall of the box and adapted to engage its front end with the adjacent rear teeth of the ratchet-wheel. Projecting upwardly from the rear part of the detent-pawl is a tail or tappet I, arranged in rear of the ratchet-lever. During the ordinary operation of turning the drum, so as to raise the bottom of the box, the ratchet-lever during its rearward movement is stopped short of engaging said tail or carrying the actuating-pawl against the detent-pawl, thereby causing both pawls to remain in operative engagement with the ratchet-wheel. When it is desired to disengage the drum from the ratchet mechanism, the pawl-lever is moved backwardly into its rearmost position, whereby the same is caused to engage the tail I and turn the same so as to lift the detent-pawl out of engagement from the ratchet-wheel, and the actuating-pawl at the same time is engaged with the detent-pawl and also lifted out of engagement with said wheel, as shown by dotted lines in Fig. 2.

When the wagon drops suddenly into a hole or runs against an obstruction, the vertical jar or jolt which the wagon receives at this time is liable to lift the actuating and detent pawls out of engagement from the ratchet-wheel. When this occurs, the drum would be free to turn backwardly and open the bottom of the box if other means were not provided to prevent backward movement of the drum at this time. In order to guard against this result, an auxiliary locking device is provided for holding the drum against backward movement, which is unaffected by any vertical jars or vibrations of the wagon. This auxiliary locking device comprises a clutch-collar J, splined or keyed on the drum so as to be capable of sliding horizontally lengthwise thereon, but compelled to turn therewith, and a clutch-head K, formed on the closed bearing of the drum, said collar and head having teeth arranged on their opposing faces, which are constructed to coöperate for preventing backward movement of the drum. The clutch-collar is moved lengthwise on the drum by means of a horizontal shifting-lever M, which is pivoted on a cross-bar *m* of the body and pivotally connected with a ring *n*, arranged in the grooved hub of the clutch-collar.

In the use of the dumping mechanism of the wagon the bottom is raised for closing the box by oscillating the ratchet-lever a sufficient number of times for this purpose. After the drum has been moved forwardly the required extent for closing the bottom the clutch-collar is moved lengthwise of the drum by means of the shifting-lever for engaging its teeth with those of the clutch-head. The drum is now held against backward rotation by the detent-pawl of the hoisting mechanism and also the clutch of the auxiliary locking mechanism, which devices have their movable members constructed and arranged to operate in a direction at right angles to one another. By this means the drum is securely held against backward rotation, and accidental dropping of the box-bottom is therefore prevented. In order to further guard against accidental release of the clutch, a hasp or catch *o* is employed for detachably connecting the shifting-lever with the adjacent part of the wagon-body, as shown in Fig. 1.

When it is desired to dump the load, the ratchet-lever is first swung into its rearmost position for releasing the actuating and detent pawls from the ratchet-wheel, as shown by dotted lines in Fig. 2, and then the clutch-collar is withdrawn from the clutch-head, thereby releasing the drum and permitting the same to be turned backward by the box-bottom as the same is pressed downwardly by the discharging load.

If desired, the ratchet mechanism may be relieved from wear by throwing the same out of operation after the bottom has been closed and the clutch members have been engaged for holding the drum against backward movement.

My improved bottom-operating mechanism for dumping-wagons is very simple in construction and not liable to get out of order and effectually prevents accidental dumping of the load, which frequently occurs in wagons of this kind as heretofore constructed.

I claim as my invention—

1. In a dumping-wagon, the combination of a box having a vertically-swinging bottom, a horizontal drum connected by a chain with said bottom, a ratchet mechanism for operating said drum forwardly, and means for preventing backward movement of the drum comprising a locking member which is movable in a direction parallel with the drum, substantially as set forth.

2. In a dumping-wagon, the combination of a box having a vertically-swinging bottom, a horizontal drum connected by a chain with said bottom, a ratchet mechanism for operating said drum forwardly comprising a ratchet-wheel on the drum, a lever having an actuating-pawl engaging with said ratchet-wheel, and a detent-pawl mounted on a stationary support and engaging with said ratchet-wheel, and separate means for preventing backward movement of the drum comprising a locking member which is movable lengthwise of the drum into engagement with a stationary shoulder, substantially as set forth.

3. In a dumping-wagon, the combination of a box having a vertically-swinging bottom, a horizontal drum, a chain connecting said bottom and drum, a ratchet-wheel rigid on said drum, a lever having a vertically-swinging pawl engaging with said ratchet-wheel for moving the drum forward, and means for preventing backward movement of said drum comprising a fixed member, and a horizontally-movable locking member splined on said drum

and adapted to engage with said fixed member, substantially as set forth.

4. In a dumping-wagon, the combination of a box having a vertically-swinging bottom, a horizontal drum, a chain connecting said bottom and drum, a ratchet-wheel rigid on said drum, a lever having a vertically-swinging pawl engaging with said ratchet-wheel for moving the drum forward, and means for preventing backward movement of said drum comprising a fixed clutch-head arranged at one end of the drum and provided with an annular series of teeth, and a horizontally-movable clutch-collar splined on the drum and having an annular series of teeth adapted to engage with the teeth of said head, substantially as set forth.

5. In a dumping-wagon, the combination of a box having a vertically-swinging bottom, a horizontal drum, a chain connecting said bottom and drum, a ratchet-wheel rigid on said drum, a lever having a vertically-swinging pawl engaging with said ratchet-wheel for moving the drum forward, and means for preventing backward movement of said drum comprising a fixed clutch-head arranged at one end of the drum and provided with an annular series of teeth, a horizontally-movable clutch-collar splined on the drum and having an annular series of teeth adapted to engage with the teeth of said head, a shifting-lever connected with said collar, and a catch for holding said shifting-lever in its operative position, substantially as set forth.

6. In a dumping-wagon, the combination of a box having a vertically-swinging bottom, a drum connected by a chain with said bottom, a ratchet-wheel connected with the drum, a lever, an actuating-pawl pivoted on the lever and normally engaging with said ratchet-wheel, a detent-pawl normally engaging said ratchet-wheel and provided with a tail, said tail being arranged in the path of said lever and adapted to be turned thereby for lifting said detent-pawl out of engagement with the ratchet-wheel and said detent-pawl being arranged in the path of the actuating-pawl and adapted to lift the same out of engagement with the ratchet-wheel, substantially as set forth.

Witness my hand this 6th day of December, 1904.

CHRISTOPHAR J. HANDEL.

Witnesses:

THEO. L. POPP,

EMMA M. GRAHAM.