

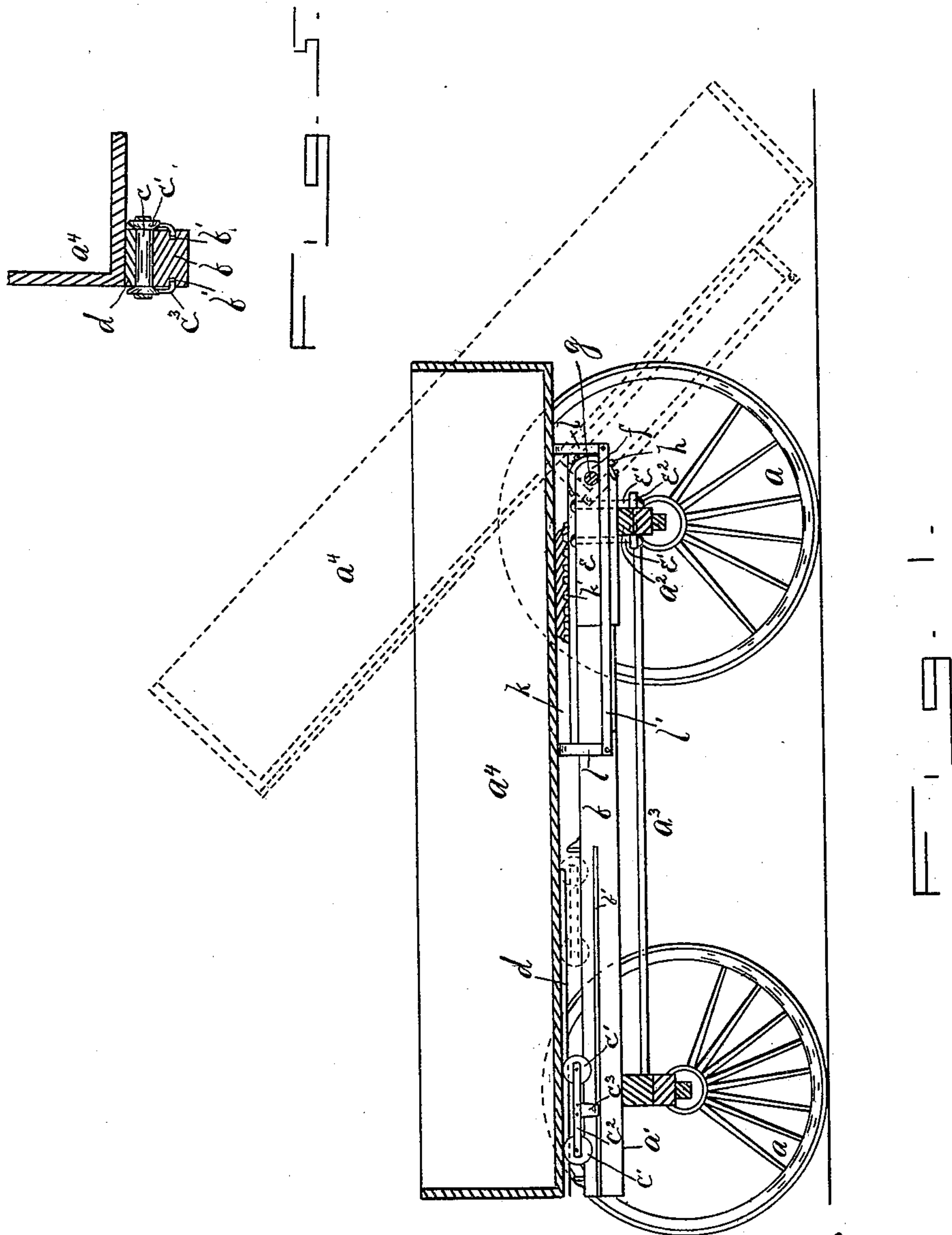
(No Model.)

3 Sheets—Sheet 1.

J. M. BLAKE.  
DUMPING WAGON.

No. 365,233.

Patented June 21, 1887.



*Witnesses:*

Otto Hoddick..

Albert C. Schaaf.

Inventor.

By Joseph M Blake  
W T Miller  
Attorney.

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Attorney.

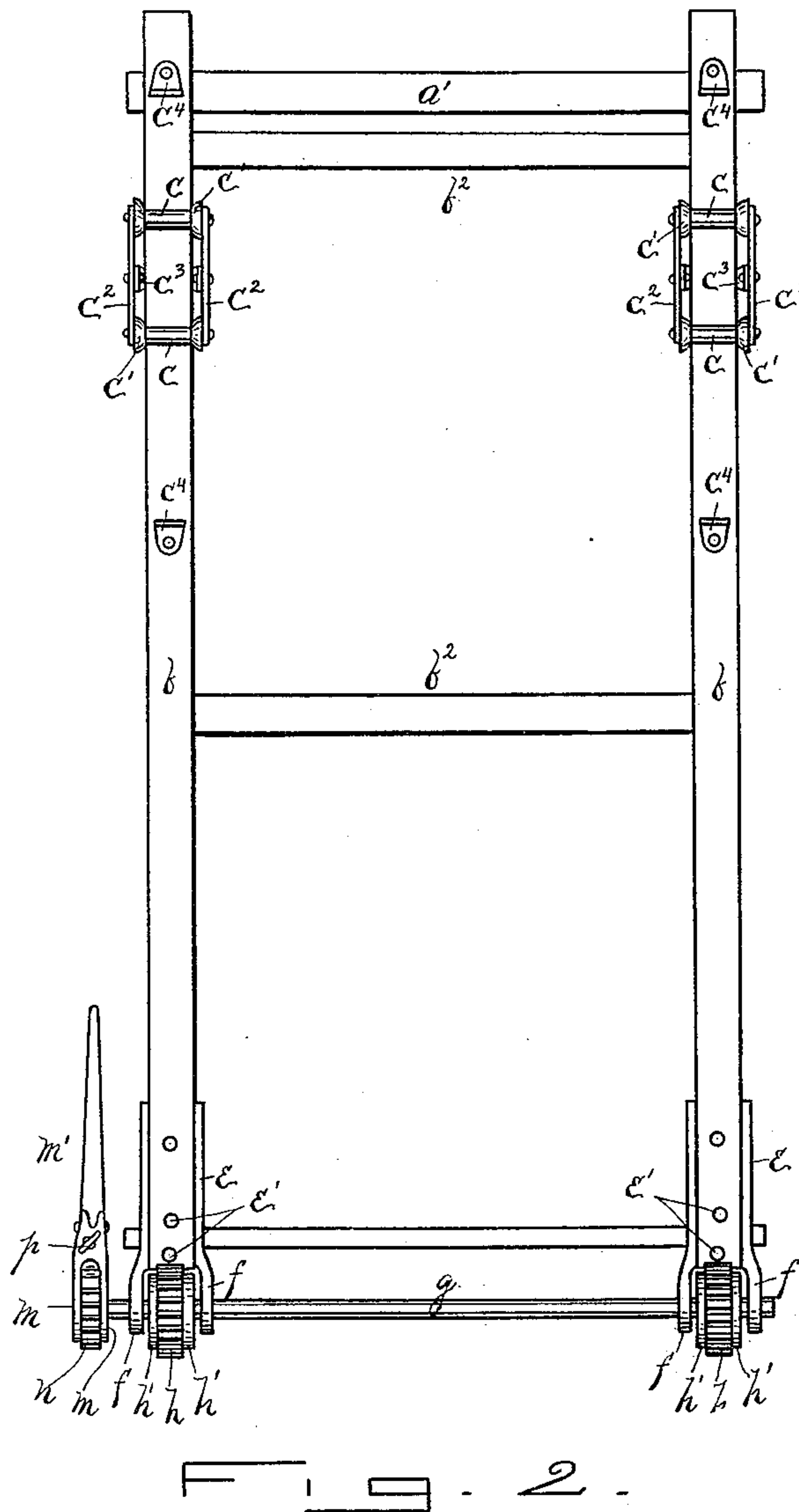
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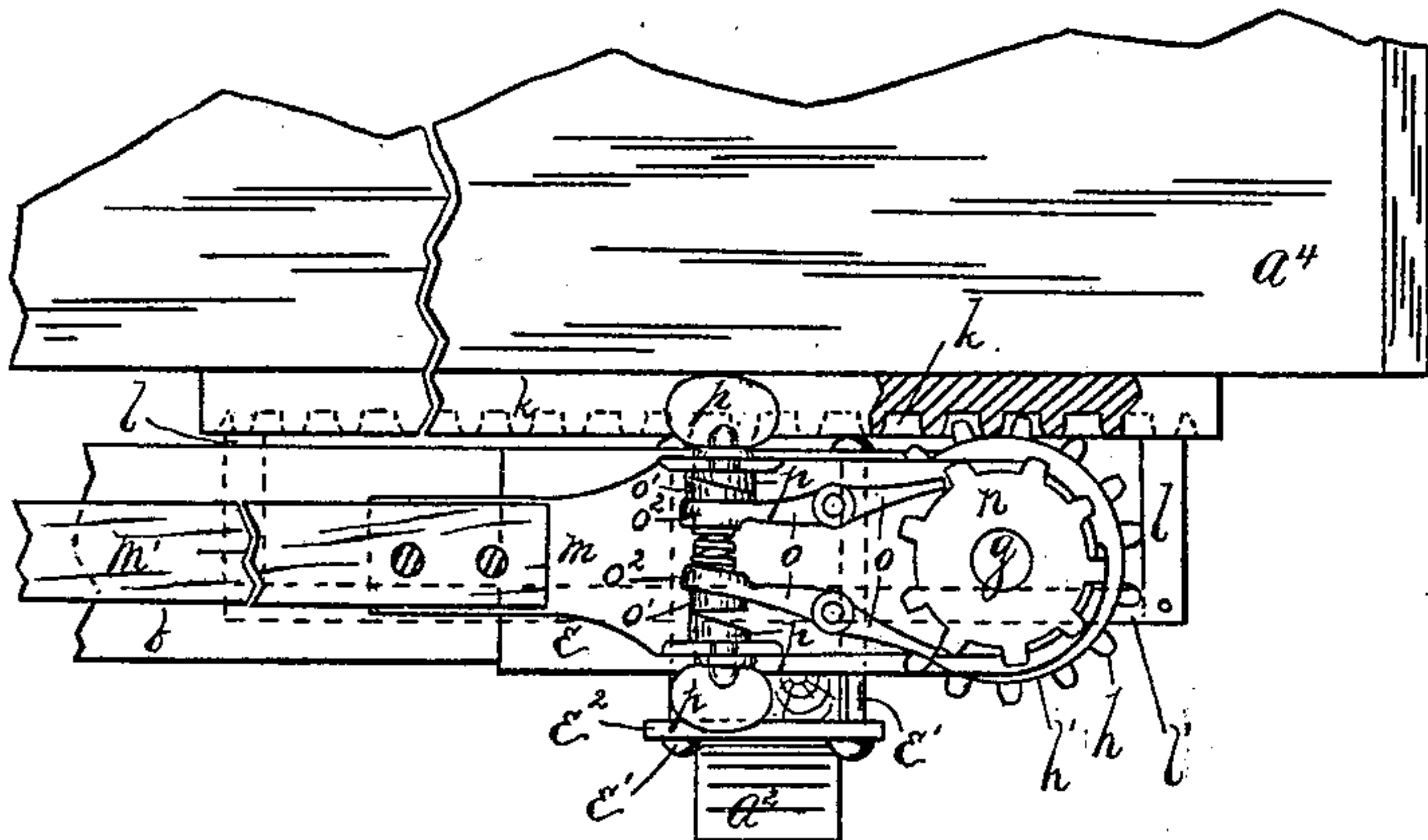


FIG. 4.

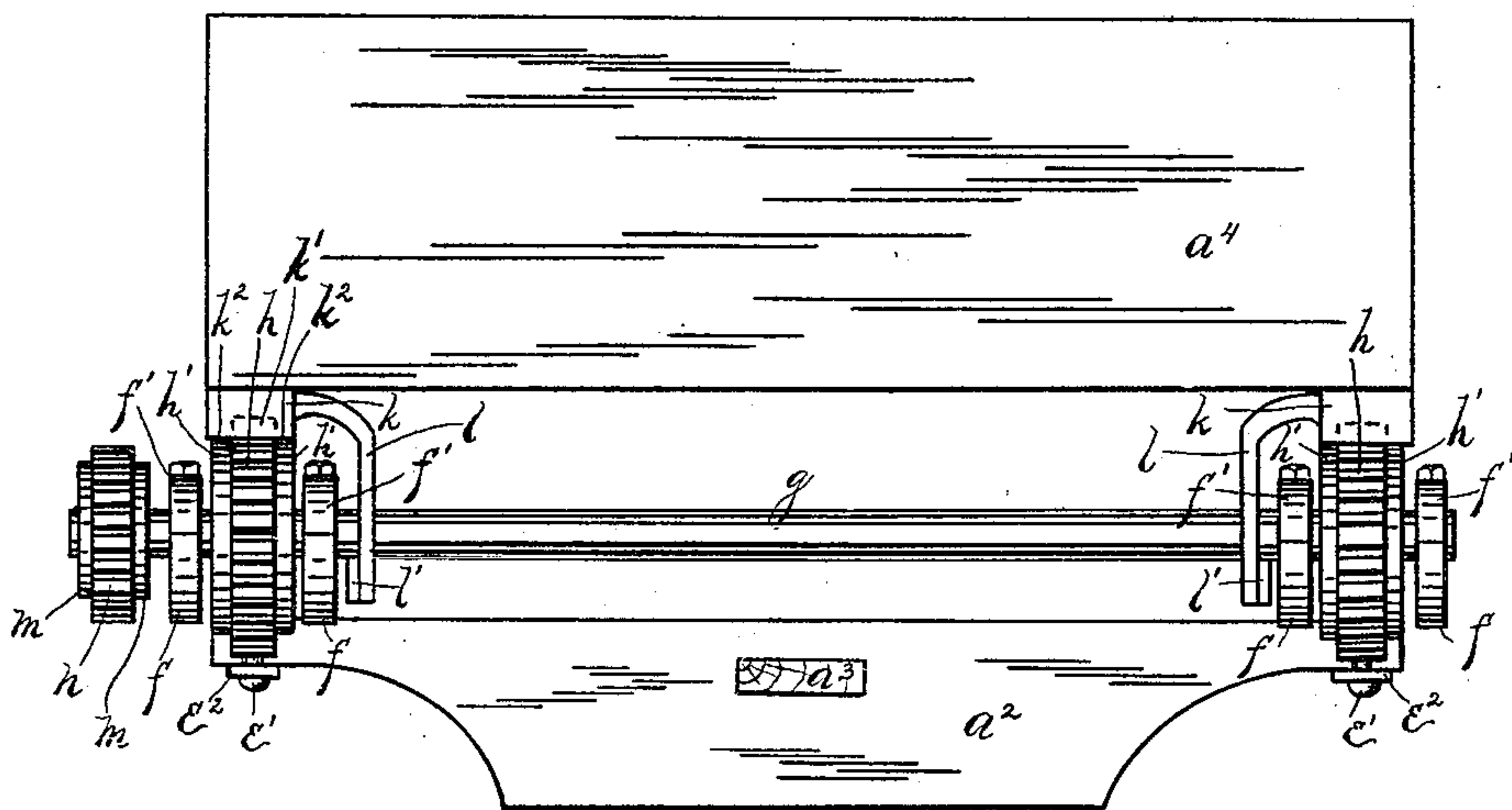


FIG. 3.

Witnesses:

Otto Hoddick  
Albert E. Schaaf

Inventor.  
Joseph M. Blake  
By W T Miller  
Attorney.



# UNITED STATES PATENT OFFICE.

JOSEPH M. BLAKE, OF BUFFALO, NEW YORK.

## DUMPING-WAGON.

SPECIFICATION forming part of Letters Patent No. 365,233, dated June 21, 1887.

Application filed October 27, 1886. Serial No. 217,302. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH M. BLAKE, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Dumping-Wagons for Coal, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates, particularly, to that class of dumping-wagons which are adapted for carrying coal, sand, garbage, and, in fact, any similar material of a broken nature requiring a box; and the object of my invention is not only to provide an improved construction which will be simple, inexpensive, and effective, but to adapt it as well for direct application to any style of wagon now in use for the purposes above outlined; and to that end my invention consists, substantially, of a frame adapted for direct application to the bolsters of a wagon, such frame having connected and arranged therewith the operative parts for manipulating the box arranged upon the frame in the operation of dumping its contents.

I will now proceed to definitely describe, with the aid of the drawings, the manner in which I propose to carry out my invention.

In the drawings, Figure 1 represents a side elevation, partly in section, of a wagon to which my improvement is applied. Fig. 2 is a top plan view of the frame and its operative parts, shown independent of the wagon. Fig. 3 is a back view of Fig. 1 with the wheels removed, and Figs. 4 and 5 are detached detail views.

Referring to the drawings,  $a$   $a$  are the wheels,  $a'$  the front bolster,  $a''$  the rear bolster,  $a'''$  the reach, and  $a^t$  the box, of a wagon of ordinary construction to which my invention is to be applied. It will be remembered that while I have herein shown this ordinary construction of wagon to illustrate the application of my invention, I do not wish to thereby confine myself to such restricted application, as it will

be seen later on that the adaptability of my improved apparatus is susceptible of a very wide range.

I will now describe the frame and its attached operative parts, which is to be secured directly to the bolsters of the wagon, the box of the wagon being provided with suitable attachments to co-operate therewith. Of this frame,  $b$   $b$  are the side sills, the front ends of which are to be directly secured to the front bolster,  $a'$ , and  $b^2$   $b^2$  are the cross-pieces employed for strengthening the frame.

$c$   $c$  are a pair of friction-rollers placed upon each of the sills  $b$   $b$ . These rollers have flanged ends  $c'$ , and are pivoted a certain distance apart in the side pieces,  $c''$   $c''$ , and from the center of each of these side pieces and extending downwardly and inwardly are the keepers  $c^3$   $c^3$ , the inner ends of which enter the side grooves,  $b'$   $b'$ , of the sill  $b$ . By reason of this arrangement these friction-rollers  $c$   $c$  are permitted to roll upon the top surface of the sills  $b$   $b$  without strain upon their frames  $c''$   $c''$ , and are confined to their operative position by such frame and their flanged ends, and their length of travel is governed by the stops  $c^t$   $c^t$ , secured to the top faces of the sills  $b$   $b$ .

The box  $a^t$  is provided upon its under surface on either side of its front end with the bearing-cleats  $d$ , which rest upon the friction-rollers  $c$   $c$  between their flanged or flaring ends. The power required to move the box and its load backwardly in order that it may be dumped is thus materially lessened.

The rear ends of the sills  $b$   $b$  are each incased in the metallic bearing-plates  $e$   $e$ , which cover the bottom and side surfaces only of the sills, and to which they are securely bolted. These bearing-plates, with the inclosed sills, are securely fastened to the rear bolster,  $a''$ , by the bolts  $e'$   $e'$ , which pass through the bearing-plates  $e$   $e$ , the sills  $b$   $b$ , and the metallic plates  $e^2$   $e^2$ , extending across the under side of the bolster  $a''$ . Upon the outer ends of the bearing-plates  $e$   $e$ , and upon each side thereof, are the projecting journal-boxes  $f$ , provided with the removable caps  $f'$ . (See Fig. 3.)

$g$  is a shaft extending across the frame and seated within the journal-boxes  $f$   $f$  of the bearing-plates  $e$   $e$ . It is loosely secured in such posi-



tion by bolting down the caps  $f'$ . Between the projections  $f$  at either end of the shaft  $g$ , and rigidly secured thereon, are wheels, each having the raised central row of teeth or cogs,  $h$ , and the smooth bearing-surfaces  $h'$   $h'$  on either side of the teeth  $h$ .

Upon either side of the lower surface of the box, at its rear end, are secured the rack-bars  $k$   $k$ , having the central rows of sockets,  $k'$ , and the flat bearing-surfaces  $k^2$   $k^2$  on either side. (See Fig. 3.) The teeth and sockets may be reversed in position without altering their respective functions. When the box  $a^4$  is in position, the teeth or cogs  $h$  intermesh with the sockets  $k'$  of the rack-bar, and the surfaces  $k^2$   $k^2$  rest upon bearing-surfaces  $h'$   $h'$  of the wheel, these surfaces being intended to bear all the weight as the box  $a^4$  is moved, the upper edges of the teeth not coming in contact with the upper walls of the sockets in the rack-bar plate. Extending from the ends of the rack-bar inwardly and downwardly on each side of the box are the arms  $l$ , their ends being joined by the cross pieces or bars  $l'$ . The shaft  $g$  extends between these cross-bars  $l'$  and the box and between the arms  $l$  on either side, the cross-bars serving as guides and the arms as keepers for the box in the operation of dumping, as well as at all other times. The device which I employ to turn the shaft  $g$  in order to move the box  $a^4$  upon its bearings is preferably a double ratchet and pawl lever.

Referring more particularly to Fig. 4, it will be seen that the operative parts of the lever are confined within two plates, of which  $m$  is the inside plate, the similar outside plate,  $m$ , (shown in Fig. 2,) being removed to show the arrangement of parts. Between the forward ends of these inclosing-plates is secured the handle  $m'$ , the outer ends of these plates surrounding and working loosely upon the shaft  $g$ . Rigidly secured to the shaft  $g$ , between the plates  $m$   $m$ , is the ratchet-wheel  $n$ . Two dogs or pawls,  $o$   $o$ , are pivoted between the plates, their rear ends being adapted for engagement with the ratchet-wheel  $n$ , and their forward ends having at their outer sides the cam-surfaces  $o'$   $o'$  and at their inner sides the sockets  $o^2$   $o^2$ , adapted for the reception of the spiral spring  $o^3$ , placed between them.

$p$   $p$  are thumb-pieces pivoted in the plates  $m$   $m$ , their inner ends having the cam-surfaces  $p'$   $p'$ , for engagement with the cam-surfaces  $o'$   $o'$ . The thumb-pieces  $p$ , operating with their cam-surfaces against the cam-surfaces of the pawls, throw them in or out of engagement with the ratchet-wheel.

As seen in Fig. 4, the upper pawl is in engagement with the ratchet-wheel, and by throwing the lever-handle  $m'$  up the shaft  $g$  is revolved in a direction which causes the box  $a^4$  to be moved backward. By throwing the lower pawl into engagement with the ratchet-wheel  $n$  and the upper pawl out of engagement therewith, the box can be moved in the opposite direction, and by throwing both pawls

into engagement with the ratchet-wheel  $n$  and fastening the lever  $m'$  in a rigid position the box  $a^4$  is held in its proper place.

As will be seen from the foregoing description, the forward end of the box, with its load, rests upon the friction-rollers  $c$   $c$ , and the rack-bars  $k$  upon the rear end of the box rest upon and are operated by the gear-wheels  $h$   $h'$   $h'$  through the medium of the hand-lever  $m'$  and intervening mechanism, the lever operating, as described, to move the box in either direction.

The movement of the box upon the frame is limited by the keepers  $l$   $l$  and guide-bars  $l'$   $l'$ . When the operating-lever  $m'$  has moved the box  $a^4$  backward until the forward keepers,  $l$   $l$ , strike against the inclosed shaft  $g$ , the box, with its load, tips up into the position shown by dotted lines in Fig. 1, and the load slides out by its own gravity, after which the empty box is easily thrown into a horizontal position and moved back to its normal position by the lever  $m'$ , as has been already explained.

I am aware that a box has before been arranged in various ways so that it could be moved horizontally upon its bearings over the wheels and tipped so as to discharge its load; but in each instance a special construction of wagon was necessary, involving more or less additional expense outside of the cost of the dumping apparatus. In my improved construction this is avoided, as my improved apparatus can be directly applied to any wagon without any material increase over the initial cost of the special apparatus for dumping.

I claim—

1. A dumping-wagon having a box, a frame secured to the bolsters, anti-friction devices adapted to support the front of the box in its reciprocatory movements and while at rest, rack-bars secured to the rear of the bottom of the box, vertical bars extending downwardly from the end of each rack-bar, cross-bars connecting the lower ends of said vertical bars, metallic bearing-plates secured to the bottom and sides of the sills and extending rearwardly thereof to form journal-boxes for the operative shafts, the operative shaft having toothed wheels thereon to engage the rack-bars on the wagon-box, and extending in a transverse direction between the vertical and cross bars and beyond the axle, and serving as the fulcrum or pivot upon which the box tilts, and devices for rotating said shaft, substantially as and for the purposes set forth.

2. A dumping-wagon having a box, a frame secured to the bolsters, anti-friction devices resting upon said frame with freedom of reciprocation thereon, metallic plates embracing the bottom and sides of and attached to the sills, the side plates extending rearwardly and outwardly and forming journal boxes or bearings for the operating-shaft, rack-bars attached to the under face of the wagon-box, guides and keepers to regulate and limit the travel of the box and hold the racks thereon in engagement with the toothed wheels on the operating-shaft,



an operating-shaft extending transversely beyond and between the guides and keepers, and having toothed wheels thereon to engage the racks on the box, said shaft also constituting  
 5 the pivot or fulcrum upon which the box tilts when slid rearwardly, and suitable mechanism connected with said shaft for rotating the same and reciprocating the box, substantially as set forth.

10 3. In a dumping-wagon, a box having at its rear end rack-bars and guides and keepers to regulate and limit the travel of the box, a frame and front supports for the box, metal plates secured to the sills and extending rearwardly  
 15 thereof to form journal boxes or bearings for the operative shaft, an operative shaft having toothed wheels to engage the rack-bars on the box, said shaft serving as the pivot or fulcrum upon which the box tilts, and devices, substantially as described, for actuating said shaft.

20 4. In a dumping-wagon, a box having rack-bars on its rear, a frame adapted to be secured directly to the front and rear bolsters of a wagon, and provided at its front end with anti-friction devices adapted for operation with the  
 25 front of the box and at its rear end with metal plates secured to the sills and projecting therefrom to form bearings for the operative shaft, an operative shaft turned by suitable means in  
 30 either direction, and provided with gear-wheels adapted for engagement at all times with the rack-bars upon the rear end of the box to move such box back and forth upon the frame, the box being provided with guides and keepers  
 35 to regulate and limit the travel of the box upon the frame, substantially as and for the purpose stated.

5. In a dumping-wagon, the combination, with the sills *b b*, provided with the side grooves, *b' b'*, of the friction-rollers *c c*, loosely pivoted  
 40 to the side pieces, *c<sup>2</sup> c<sup>2</sup>*, and the keepers *c<sup>3</sup> c<sup>3</sup>*, engaging with the grooves *b' b'*, the friction-rollers being adapted for engagement with cleats upon the bottom of the box, substantially as shown and described. 45

6. A dumping-wagon having a box, a frame secured to the bolsters, anti-friction devices resting upon said frame with freedom of reciprocation thereon, metallic plates embracing the  
 50 bottom and sides of and attached to the sills, the side plates extending rearwardly and outwardly and forming journal boxes or bearings for the operating-shaft, rack-bars attached to the under face of the wagon-box, guides and  
 55 keepers to regulate and limit the travel of the box and hold the racks thereon in constant engagement with the toothed wheels on the operating-shaft, an operating-shaft extending transversely beyond and between the guides  
 60 and keepers and having toothed wheels thereon to engage the racks on the box, and a ratchet, said shaft also constituting the pivot or fulcrum upon which the box tilts when slid rearwardly, and a double-acting ratchet-lever  
 65 adapted to engage said ratchet and turn the shaft in either direction, substantially as shown and described, and for the purpose stated.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH M. BLAKE.

Witnesses:

JAMES STEWART, Jr.,  
 W. T. MILLER.