

(No Model.)

3 Sheets—Sheet 1.

G. E. BLAINE.
DUMPING CAR.

No. 315,892.

Patented Apr. 14, 1885.

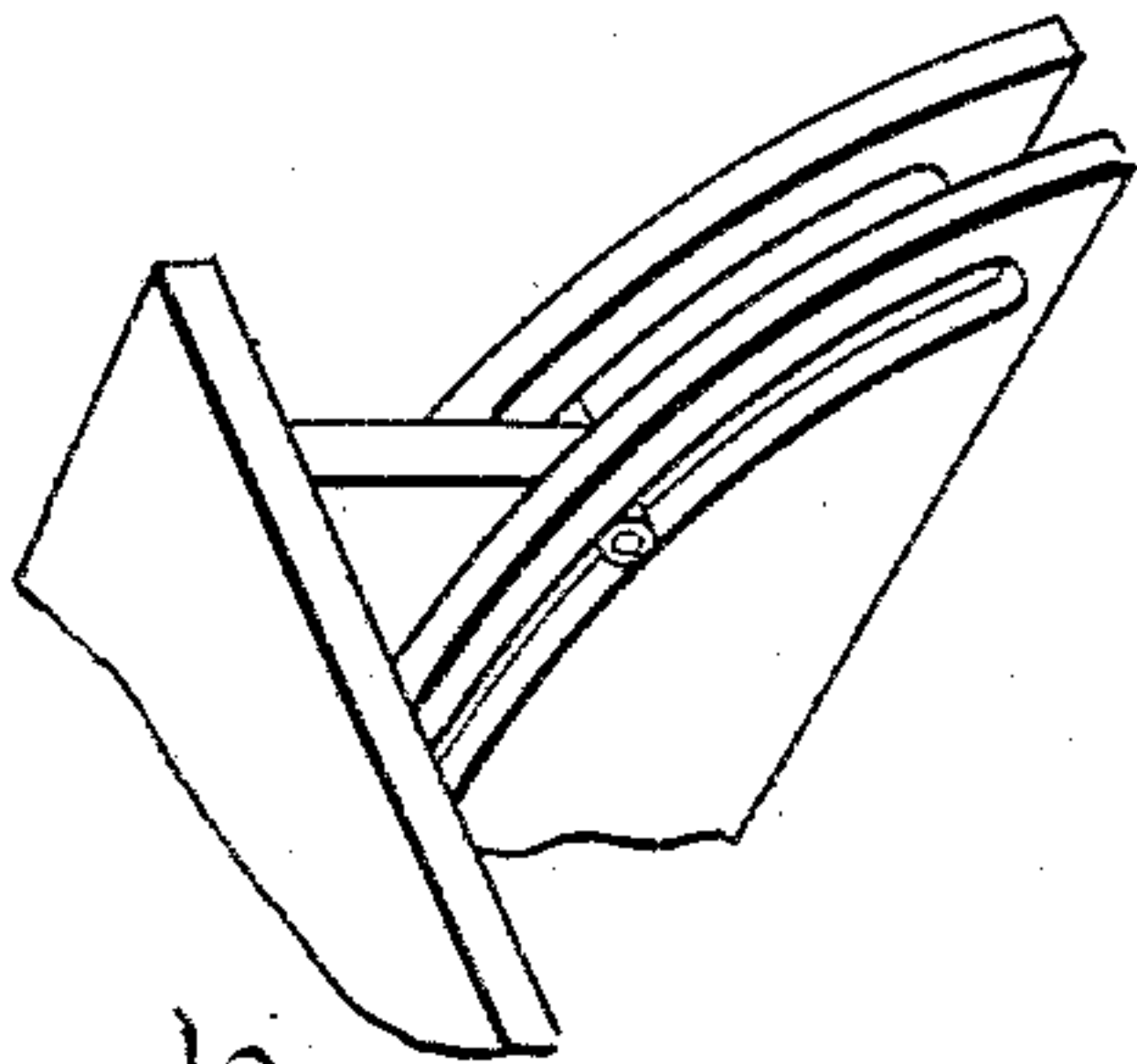
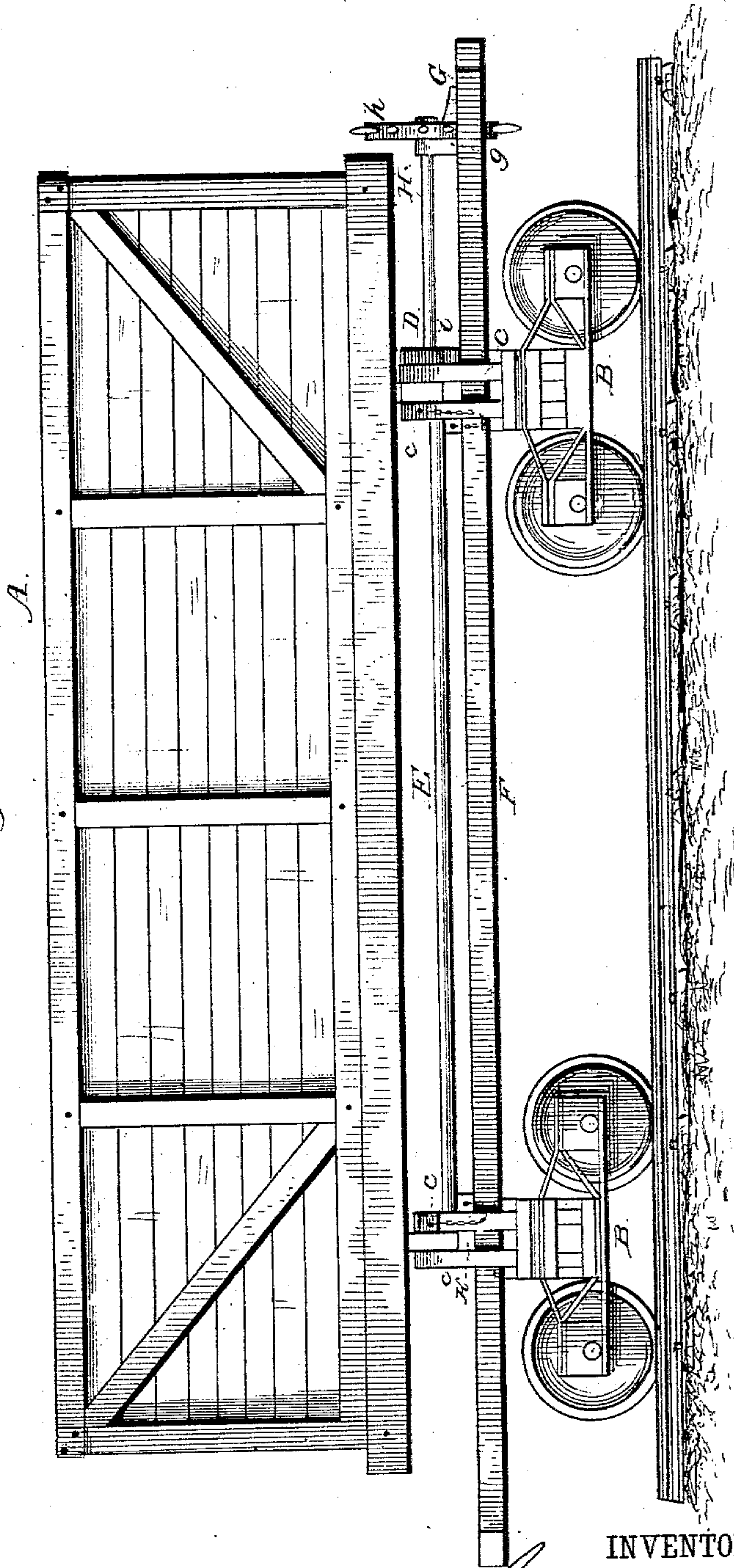


Fig. 5.

Fig. 1



WITNESSES:

M. Reynolds
E. C. Ellis

INVENTOR

George E. Blaine
BY *O. E. Duffy*
ATTORNEY

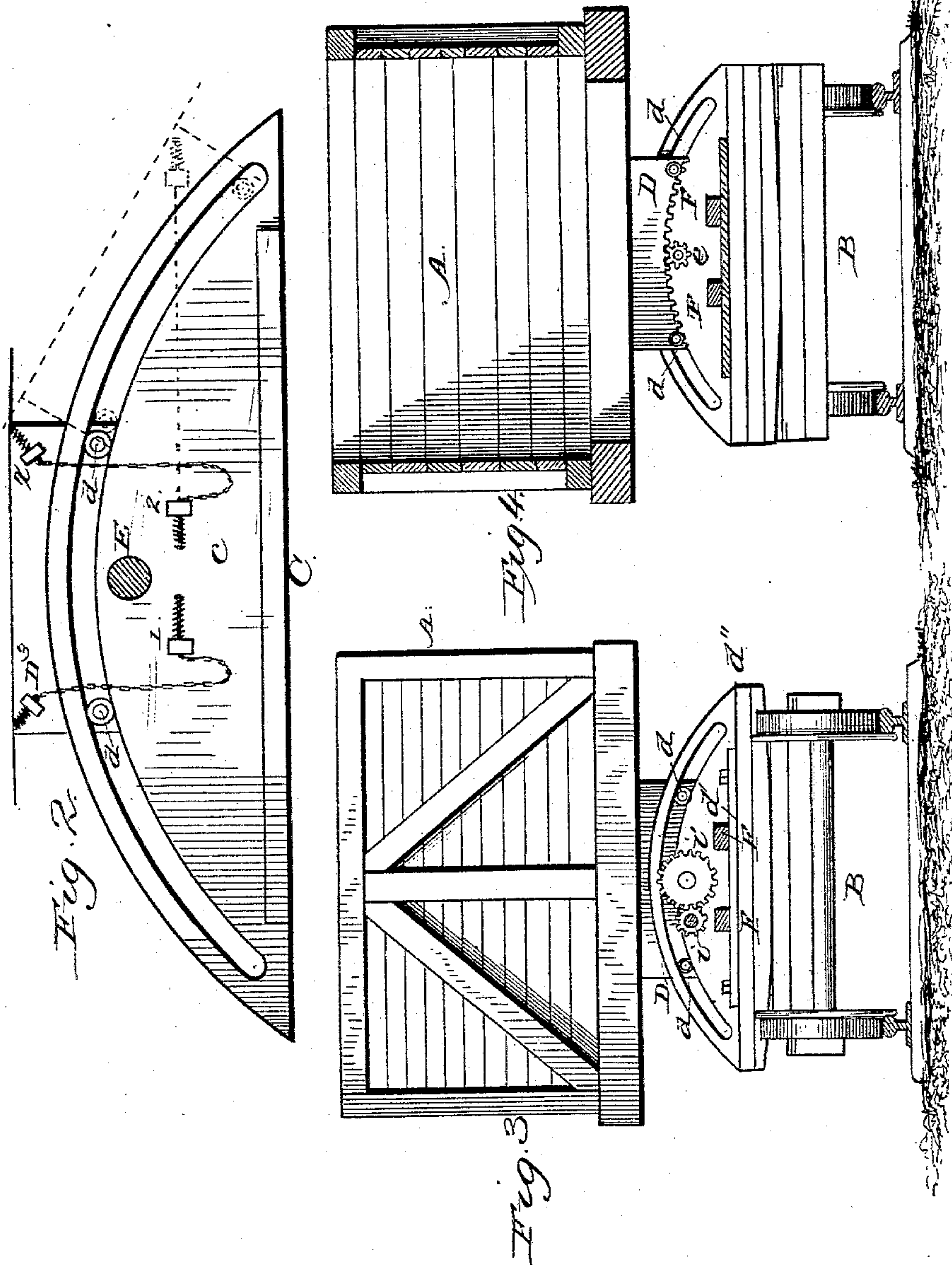
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J. Reynolds
E. Ervitt Ellis

INVENTOR

George E. Blaine
BY *O. E. Duff*
ATTORNEY

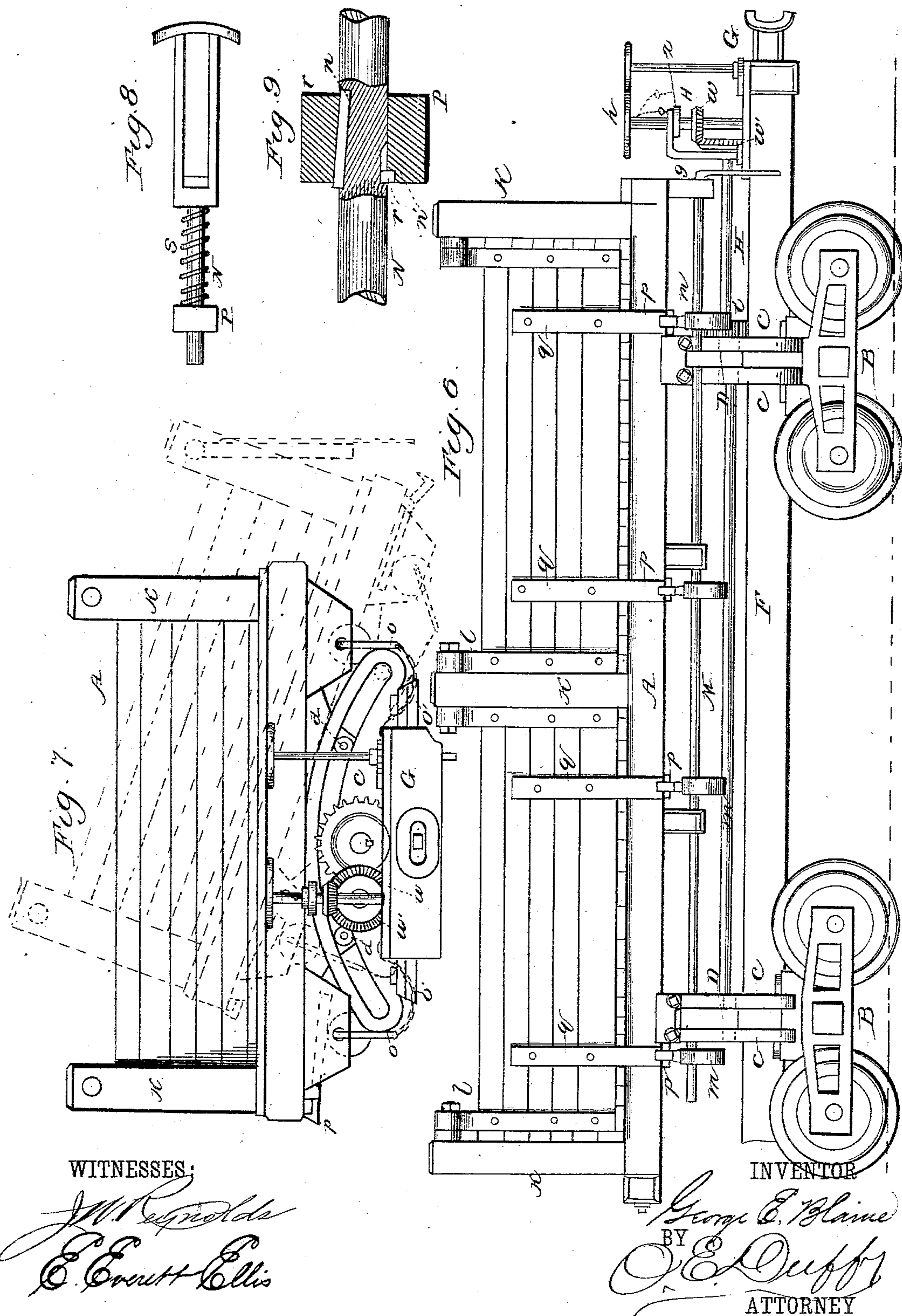
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WITNESSES:

J. M. Reynolds
E. Everett Ellis

INVENTOR

George E. Blaine
BY
J. E. Duff
ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE E. BLAINE, OF CHATTANOOGA, TENNESSEE.

DUMPING-CAR.

SPECIFICATION forming part of Letters Patent No. 315,892, dated April 14, 1885.

Application filed December 1, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. BLAINE, of Chattanooga, in the county of Hamilton and State of Tennessee, have invented certain new and useful Improvements in Car Dumping or Tilting Mechanism; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 the letters of reference marked thereon, which form part of this specification.

My present invention relates to novel mechanism which I have devised for the purpose of dumping the contents of cars in such a rapid and effectual manner as to aggregate a great saving both in the time and labor attendant upon such operations, as well as in the expense or cost.

The mechanism by which the main body or bed of the car is made to tilt sidewise for discharging its contents is situated upon the trucks, to which it is suitably fastened or secured, and it is so arranged as to be entirely under the control of a single operator.

The invention consists, substantially, in the parts as constructed, and in their particular combinations one with the other, as will hereinafter be distinctly described, and pointed out in the claims. I have also contemplated using my invention on a smaller scale as a means of throwing mail-bags from postal cars while the trains are in motion. In this application of my invention, however, it should be a portable structure which can be moved into and out of place as its use may or may not be required.

Referring to the annexed sheets of drawings, in which like letters indicate like parts, Figure 1 represents a side elevation of a car in which my improvements are embodied. Fig. 2 represents a view in elevation of the inner side of one of the semicircular arc-slotted sub-bolsters, in order to show the disposition of the cords and springs by which a reactionary effect is obtained to lend relief to the parts when operated, the said figure representing in dotted lines the movement of said parts. Fig. 3 is an end elevation, partly in section, of one end of a car embodying my invention, and Fig. 4 is a sectional view of the opposite end

thereof. Fig. 5 is an enlarged view to more clearly indicate construction of parts. Fig. 6 is a side elevation to indicate the mechanism by which the pivoted sides of the car are operated to swing open when the car-body is dumped or caused to tilt to one side. Fig. 7 is an end elevation thereof, representing in dotted lines the position of the car-body and its pivoted sides as when dumped or tilted to one side; and Figs. 8 and 9 are views in detail, respectively, of the bumper-head and spring and the draw bolt or bar.

A represents an ordinary grain, coal, or gravel car, preferably having removable or sliding sides, by the removal of which the operation of discharging or dumping the contents is in some instances facilitated.

B B represent the ordinary trucks of a car, on which the main body is carried or supported. Secured to each truck is a semicircular arc-slotted sub-bolster, C, constructed of two counterpart sides, *c c*, having a space, *k*, between sufficient for the passage and free movement of depending racks and guide-pieces D on the under side of the car-body, as shown. Journaled in each end of these racks are anti-friction rolls *d d*, which move between the walls of the arc-slots in the sub-bolsters C, and which serve to facilitate operation in lessening the amount of power required. The under side of the guide-pieces or racks is concave, conforming to the direction of the arc-slot, and is toothed, as shown, by which it meshes with a pinion, *e*, carried at the end of the main operating rod or shaft E, which extends from the sub-bolsters on one truck to that on the other. The pinion *e* is located between the two sides *c c* of each sub-bolster. As an illustration of the manner in which the sub-bolsters are mounted upon the trucks, I have shown them as provided with flanges *d'*, by which they are secured to the bolster *d''* by bolts, as shown.

F F represent two stringers, which support the bumpers and coupling devices at each end, and which are also draw-bars. They pass through the sub-bolsters C, serving to maintain them in place and to strengthen them. The shaft E has its bearing at each end in the upper portion of the sub-bolster centrally of the car. The bars F F are made to project sufficiently beyond one end of the car to

support a platform, G, on which the operator stands. On this platform a standard, *g*, is supported, in which a counter or supplemental shaft, H, has its bearing, as has also the hand-wheel shaft H, by which the counter-shaft is operated to turn the main shaft E. This hand-wheel shaft carries a beveled pinion, *w*, that enjoins with a beveled gear, *w'*, carried by the outer end of the counter-shaft, as shown. Carried by the inner end of said shaft is a rigid cog, *i*, with a smaller wheel, *i'*, carried by the corresponding end of the shaft E. The hand-wheel shaft carries a disk, *x*, which is provided in its top at near its edge or circumference with perforations, in which is placed a pin or bolt that is suspended from the hand-wheel by a chain or cord, as shown. By this means the counter-shaft is prevented from turning, and thus the car-body is prevented from being accidentally thrown to one side. The pin has to be taken out when desired to dump the car.

Extending from the inner side of the inner parts, *c*, of the sub-bolsters are small projections 1 2, while to the corresponding sides of the rack D are similar projections, 3 4. These projections each bear a small sliding pin, on which is borne a spring, the pins in the projections on the brackets being connected to the corresponding ones on the sub-bolsters by a cord or chain, as shown. (See Fig. 2.) These springs serve to lend a slight reactionary effect as the car-body is caused to tilt to one side, and thus saves the parts from wear and breakage caused by sudden shocks. The cord or chain connecting one spring with the other is preferably of length just sufficient to bring the springs into action before the rollers *d* have struck or reached the extremity of the arc-slots, thereby forming a buffer, by which the said rolls will be prevented from breakage when the car-body is thrown to one side or the other.

Borne by the depending racks D and the cross-beams at the bottom of the car, to each side thereof, is a rod or shaft, M, carrying at intervals of its length rigid eccentrics or cams *m*. These shafts M are each formed at one end with cranks *o*, to the end of which is attached a chain, *o'*, secured to the platform G. (See Fig. 9.) The said cams bear slightly against the under side of pivoted gravitating latches *p*, which catch upon the ends of metal strips *q*, secured to the pivoted sides of the car-body, and serve to maintain such sides properly in place. When the car-body is dumped to one side or the other, the chain attached to the crank of the shaft M, on the respective side, is drawn taut, thereby turning said shaft, and causing its cams *m* to operate the latches *p* in releasing the car's sides, thus permitting the latter to swing outwardly, as shown in dotted lines, Fig. 7, and allow the contents to be emptied. The latches *p* are pivoted in small hangers attached to the under side of the car, their inner arms or portions being the longer and heavier, thereby normally throwing their outer ends upward to

engage the strips *q*. The sides of the car are pivoted to uprights *k* of the frame by metal hinges or straps *i*, as shown.

In Fig. 9 I have represented the construction of draw-pin employed by me at each end of the car in rear of the bumper. This consists of a pin or bolt, N, preferably headed, having at diametrically-opposite sides an inclined slot, *n* and *n'*, in which are placed wedges or blocks *r r'*, as shown. Over these is slipped a nut, P, having slots in the walls around its opening which are similar to and correspond with those in the bolt. It will be observed that the more firmly the nut is drawn against the wedges the tighter will it become, and an immense amount of draft or strain may be borne thereby. Fig. 8 shows the location of the said bolt with respect to the bumper, a buffer-spring, *s*, being placed thereon to lend relief to the shock or concussion produced by the two cars coming together in coupling, this latter-described construction, however, not being claimed herein, as it forms the subject-matter of another application to be filed by me.

The operation is as follows: When it is desired to dump or discharge the contents of the car to either side, the operator turns the shaft H through the medium of the wheel *h*, thereby revolving the shaft E. The cogs *e* at near each end of this shaft, between the counterpart sections of the sub-bolsters, operate to tilt the car-body to one side through the medium of the depending guides or racks D, having their under surfaces concave, and provided with teeth or serrations, which mesh with said cog-wheels. On this described movement of the parts the springs act in the manner explained in lending relief to shock, and also to give to the body a sudden retrograde or jerk backward, thereby causing the contents of the car to be thrown out. The car-body will be brought to the position shown in dotted lines Fig. 7, according to which side the body is dumped. The rod E is operated to turn in a reverse direction in restoring the car-body to its upright position, and by placing the pin suspended from the hand-wheel in the perforations of the disk H' the parts will be prevented from accidental operation. The rod M and its cams will act in the manner described to release the sides and allow the contents to be emptied.

Having thus described my invention, what I claim is—

1. In car-dumping mechanism, the combination of sub-bolsters supported on the trucks, consisting of two sides divided by a space, *k*, and provided with corresponding arc-slots, the car-body having depending racks serrated on their under surfaces and moving in space *k*, friction-rolls borne by said brackets and working in the arc-slots, a main operating-shaft carrying cogs which mesh with the racks, and a counter-shaft for communicating motion to the main shaft, substantially as described.

2. In car-dumping mechanism, the combination, with the arc-slotted sub-bolsters, the car - body having depending concave and toothed racks, and the devices for operating
5 said car-body, all as herein described, of the buffer-springs borne in projections on the racks and standards, and cords or chains connecting the springs of one with those of the other, as described.

10 3. The combination of slotted sub-bolsters movably supporting the car-bed, racks depending from the under side of the latter, a main shaft extending between the standards for operating the bed, and carrying cogs which
15 mesh with the racks, and a counter-shaft for communicating motion to the main shaft, substantially as described.

4. The combination, with the slotted sub-bolsters movably supporting the car-body, of
20 chains and springs, whereby a yielding retrograde is given to the bed when dumped or tilted, as described.

5. The combination, with the car-body having pivoted sides provided with spring-strips
25 *q*, of the pivoted and weighted gravitating latches attached beneath the body, and the eccentric cam-shaft and its cams, substantially as described.

6. The combination, with the car-body and its pivoted sides, of the pivoted weighted and
30 gravitating latches *p*, and the cam-bearing rods *M*, formed at one end with a crank, and chains secured to the platform and attached to the cranks, substantially as and for the purpose described.

35 In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

GEORGE E. BLAINE.

Witnesses:

A. H. KERSHNER,
CHARLES H. DYER.