

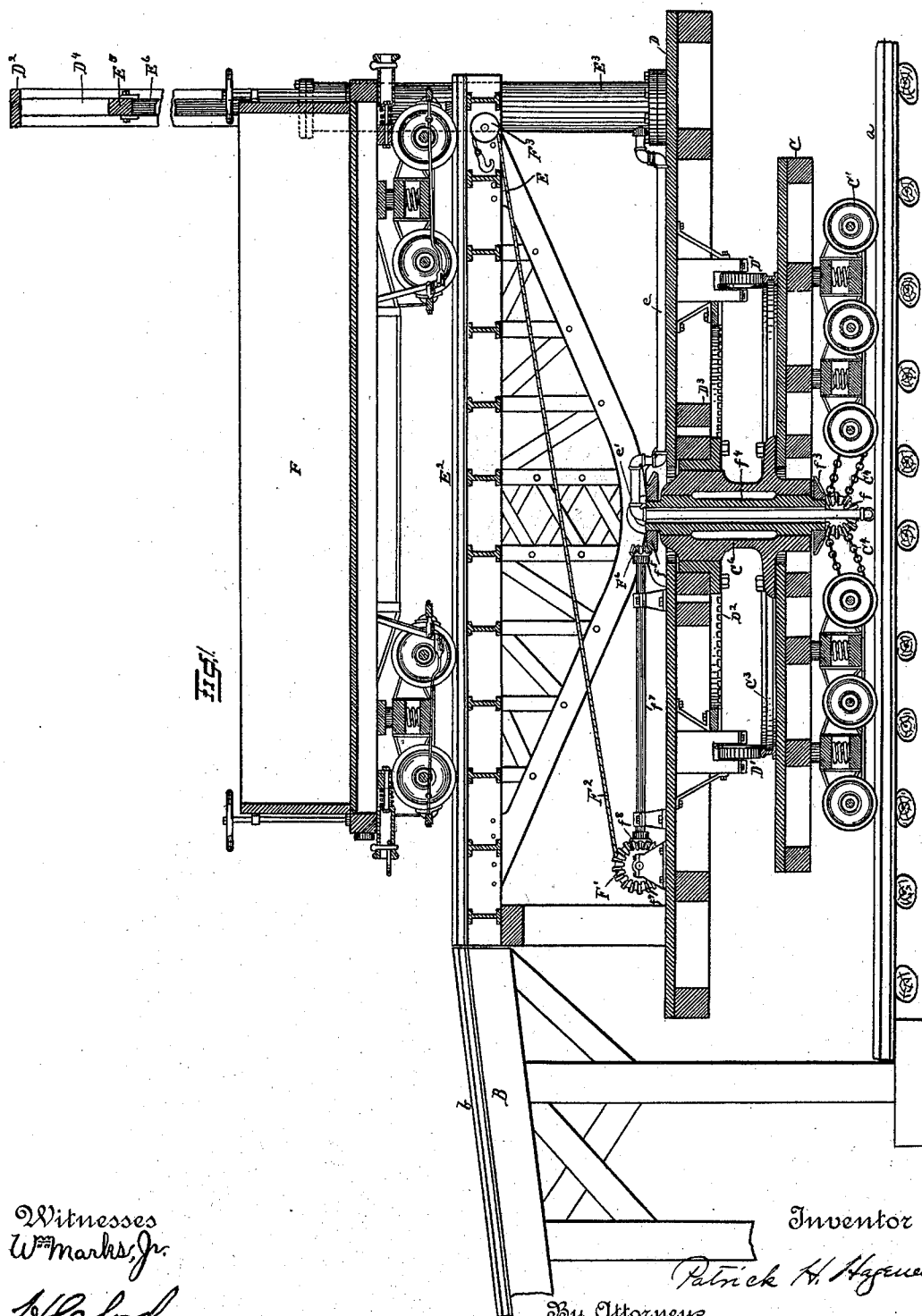
(No Model.)

3 Sheets—Sheet 1.

P. H. HAGENEY.
APPARATUS FOR DUMPING CARS.

No. 519,257.

Patented May 1, 1894.



Witnesses
W^m Marks, Jr.
H. Lord.

Inventor
Patrick H. Hagney.
By Attorneys
Hallock & Hallock

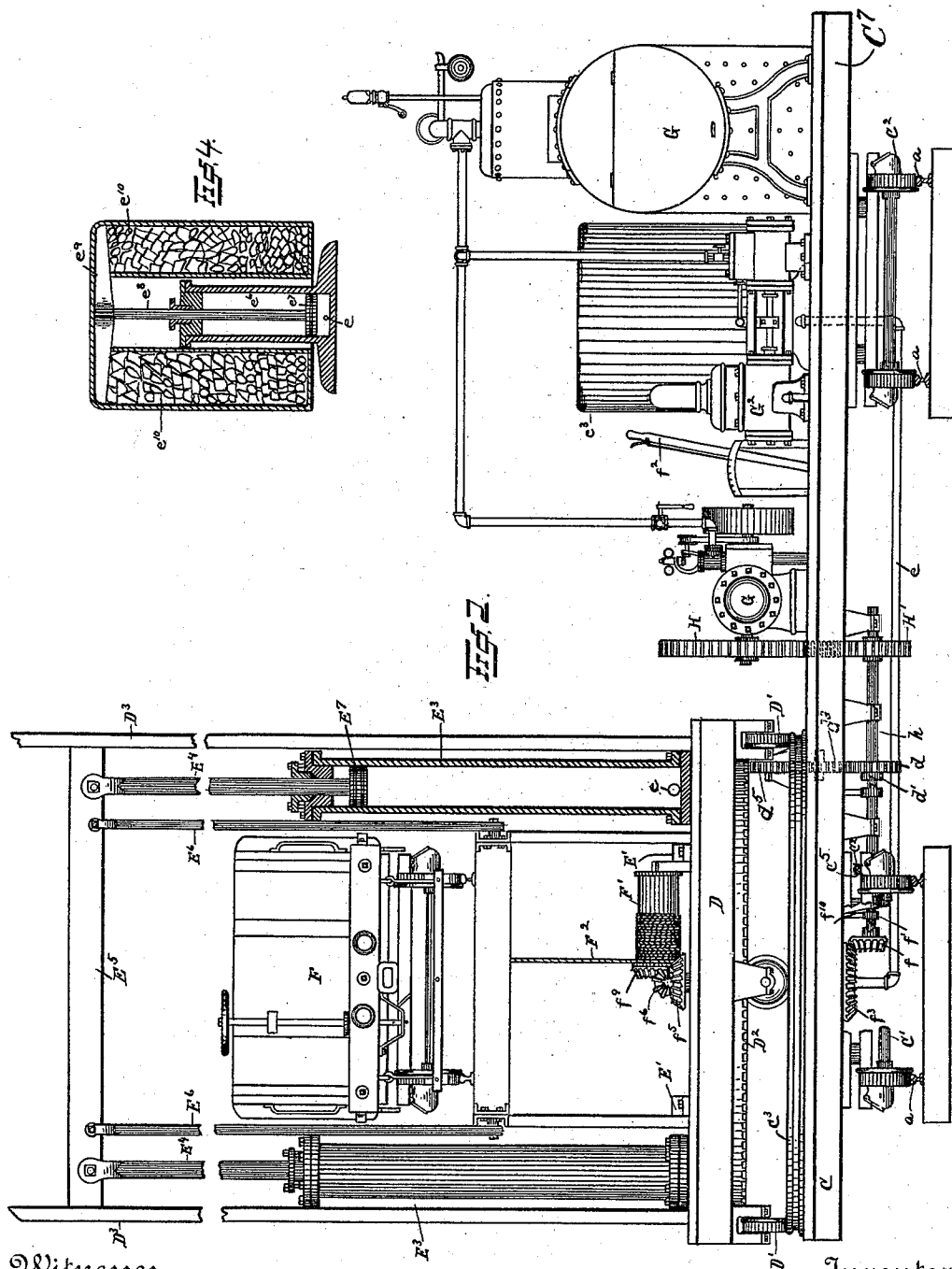
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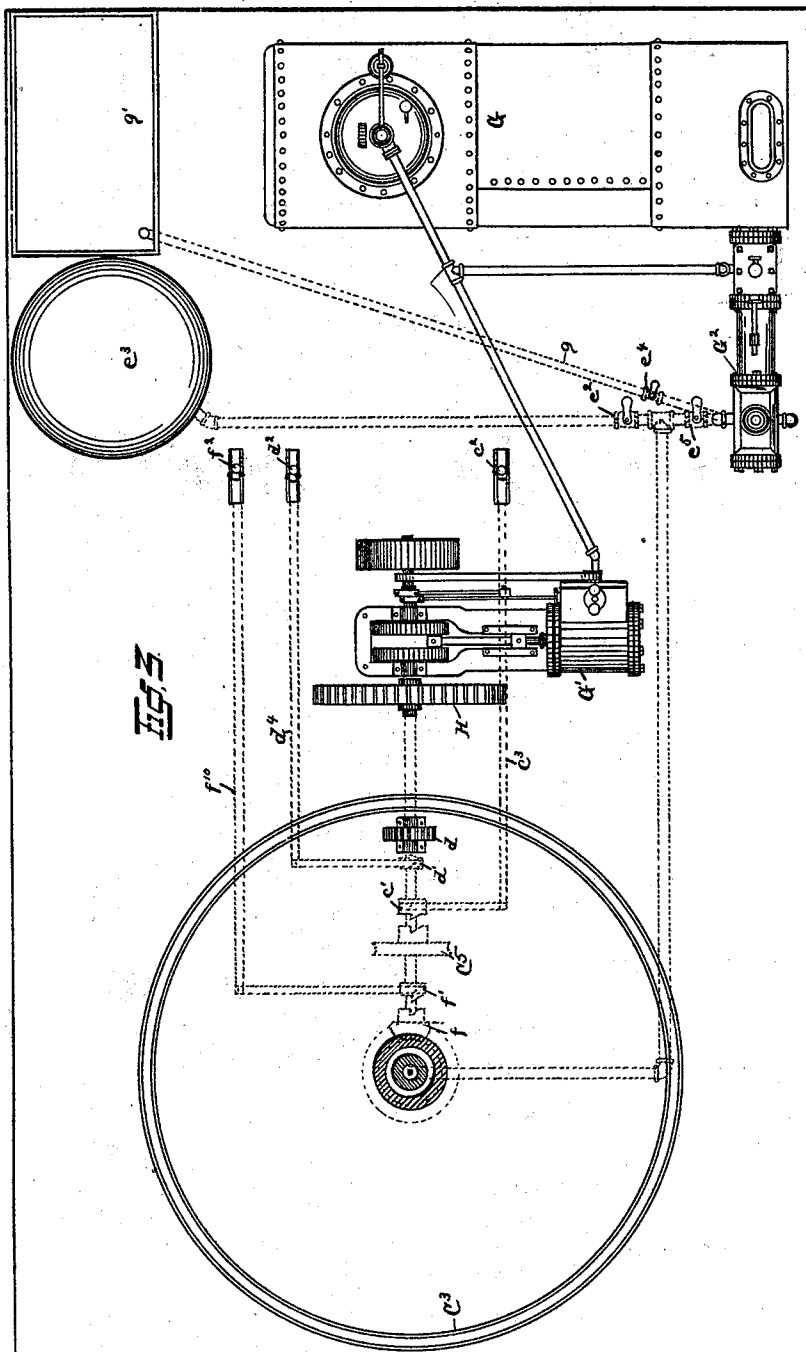
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UNITED STATES PATENT OFFICE.

PATRICK H. HAGENNEY, OF HARBOR, OHIO.

APPARATUS FOR DUMPING CARS.

SPECIFICATION forming part of Letters Patent No. 519,257, dated May 1, 1894.

Application filed May 22, 1893. Serial No. 475,146. (No model.)

To all whom it may concern:

Be it known that I, PATRICK H. HAGENNEY, a citizen of the United States, residing at Harbor, in the county of Ashtabula and State of Ohio, have invented certain new and useful Improvements in Apparatus for Dumping Cars; 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.

This invention relates to apparatus for dumping cars, and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

The object of this invention is, primarily, to dump cars of coal, ore or other material and thereby save shoveling. Incidental to this object, means are provided for distributing the coal as it is dumped. Such means are very desirable in the loading of ships, in that, the cars may be dumped alternately into the different hatches and the boat be kept trimmed and free from strain.

In the accompanying drawings and this description I have shown and described my invention as adapted to dock use, but I do not wish to be limited to such adaptation.

The invention is illustrated in the accompanying drawings as follows:

Figure 1 is a longitudinal section through the center of the dumping and distributing mechanisms. Fig. 2 is an end elevation of the device. Fig. 3 is a plan of the traveling base with superimposed parts thereon. Fig. 4 is a vertical section of the accumulator.

A marks the horizontal top of the trestle on which the apparatus travels; *aa*, the parallel tracks thereon; B, the incline, ordinarily used, leading to the trestle; *b*, the track thereon; C, the traveling base supported by the trucks, C' and C², which rest and run on the parallel tracks, *a a*; D, a revolving table riding on the circular track, C³, on the traveling base by means of the wheels, D' D'; E, a tilting dumping table, pivoted at E', and having a track, E², standard width, and adapted to be brought in line with the track, *b*, of the incline; F, a car in place on the dumping table.

The operation of the device is as follows: A car is drawn onto the dumping table, and

the apparatus is run to the location, opposite the hatch desired. Simultaneously with or at the completion of this movement, the revolving table is revolved so as to bring the end of the car toward the boat. The end-board of the car is then released, and the dumping table and car tilted so as to dump the contents of the car into the hatch of the vessel. The means of accomplishing these different movements will be described in their order.

The traveling base, C, has an extended platform, C', resting on the trucks, C². The boiler, G, properly connected engine, G', power machinery and operating levers are placed on this platform. A gear, H, on the crank shaft meshes the gear, H', on the driving shaft *h*, which is journaled on the traveling base. The hoisting drum, F', is placed on the traveling table, and power is transmitted to it from the driving shaft by means of the clutch controlled gear, *f*, gear, *f*³, meshing therewith, hollow shaft, *f*⁴, passing through the center of the revolving table, gear, *f*⁵, at the upper end thereof, gear, *f*⁶, meshing therewith, intermediate shaft, *f*⁷, connecting said gear with the gear, *f*⁸, which meshes gear, *f*⁹, of the drum. The clutch, *f*', for controlling the gear, *f*, and consequently this movement, is operated by a lever, *f*², on the extended or operating platform of the traveling base, which lever is connected with said clutch by rod, *f*¹⁰, shown in Fig. 2, and in dotted lines in Fig. 3. A cable, F², is wound by this drum, and passes over a pulley, F³, on the dumping table. In operating, the cable is attached to the car at the foot of the incline, and the clutch, *f*', thrown into engagement. The cable is then wound on the drum, and the car drawn into position.

A double sprocket wheel, *c*, is placed on the drive shaft in line with the sprockets, C⁵, on the truck axles, and is connected with them by the chain belts, C⁴ C⁴. A clutch, *c*', controls its engagement with the drive shaft, and is connected by means of a rod, *c*³, shown in dotted lines in Fig. 3, with an operating lever, *c*², on the operating platform which operates the clutch. It will be readily seen, that when the clutch is in engagement, the traveling base may be moved as desired, its direction being controlled by the direction of the engine.

For revolving the revolving table, the gear, d , is placed on the drive shaft. It is brought into engagement with, and axially disengaged from the shaft by the clutch, d' , which is operated by the lever, d^2 , on the operating platform which is connected with said clutch by means of a rod, d^4 , shown in dotted lines in Fig. 3. The gear, d , meshes an intermediate gear, d^3 , (shown in dotted lines in Fig. 2) which meshes a gear d^5 which in turn meshes a circular rack D^2 on the under side of the revolving table. With this system of gearing, the revolving table can be turned outwardly simultaneously with the forward movement of the traveling base, and swung back to place simultaneously with the backward movement of said base. When it is desired to revolve the table, the clutch, d' , is thrown into engagement. The table may then be revolved as desired, its direction being controlled by the engine. A hollow center stud, C^6 , is bolted to the traveling base, and the revolving table is journaled to it by means of a box, D^3 . This stud is made straight so as to receive nothing but the lateral strain, the load being carried by the wheels, D^4 . The stud, C^6 , also serves as a bearing for the shaft, f^4 , forming part of the mechanism for operating the hoisting drum.

The tilting of the dumping table is accomplished by means of a hoisting device the weight of the loaded car in its downward movement furnishing the energy for raising the table to its normal position.

In the following description I have described a hydraulic means of accomplishing this result, but I do not wish to be limited to this means. Two hydraulic cylinders, $E^3 E^3$, are placed on the revolving table at the sides of the front end of the car dumping table. They have the ordinary pistons or plungers E^7 to which are attached the plunger rods, $E^4 E^4$. The plunger rods are attached to a bridge piece, E^5 , which moves in guide grooves, D^4 , in an upright frame, D^3 , attached to the platform, D . The links, E^6 , connect the bridge piece and the ends of the dumping table. Hydraulic pipes, e , connect and lead from said cylinders, through the center of the table by way of the hollow shaft, f^4 , through a controlling cock e^2 , on the operating platform, into an accumulator, e^3 . A joint, e' , allows the axial movement of the pipe on the table. The dumping table is of such length, that, when the car is in place its center is slightly in front of the center of the dumping table. This brings the weight upon the hydraulic plungers, and when the controlling cock, e^2 , is opened, they pass down forcing the water through the pipe into the accumulator. The movement may be stopped at any point by closing the valve, and when the table has reached its extreme angle, the valve should be closed so as to hold it in that position until the material has run out. The accumulator is of the ordinary construction, having a cylinder, e^6 , in which is a piston or plunger,

e^7 , from which extends the plunger rod, e^8 . This rod terminates in a cross piece, e^9 , from which is suspended the weights, e^{10} . The piston should not be so heavily weighted, but that it will be raised by the water pressure exerted in the hydraulic cylinders, $E^3 E^3$, by the weight of the loaded car upon their plungers; but still should be sufficiently weighted to readily raise the table with the empty car by the water pressure its weight exerts. Thus it will be seen that a hoisting device connected with the dumping table is obtained, the energy necessary to actuate which so as to raise the dumping table and the empty car to the horizontal position is stored in an actuating means, which in the example shown is the accumulator during the downward movement of the loaded car. It will be noted that the effectiveness of this device is only limited as follows, viz: The lightest loaded car should be heavier than the heaviest empty car. Ordinarily this will cover all ranges of cars, as the lighter cars are usually shorter and consequently their centers pass farther over the center of the table; but to provide for any cars outside of this range, I provide the pump, G^2 , properly connected with the boiler and of any ordinary construction, which is connected to the pipe through the controlling or cut off cock, e^5 , and getting its supply from and wasting into the tank, g' , by way of the pipe, g . When the loaded car is too light to raise the weighted piston of the accumulator, the water is allowed to waste through the cock, e^4 , into the pipe, g , and the car returned to position by the pump. When the empty car is too heavy to be raised by the accumulator, it is raised by the pump, and when the car is in place, the water is allowed to waste so as to bring the parts to their normal position. The pump is also necessary to supply the leakage in the hydraulic mechanism. Several devices may be substituted for the accumulator with the desired result, the idea being, to utilize the energy exerted by the downward movement of the load in the car, to overcome the friction and inertia in returning the parts to their normal position. It will be noted that the tilting may be accomplished simultaneously with any of the movements of the apparatus heretofore described.

What I claim as new is—

1. In an apparatus for dumping cars, the combination with a dumping table that is tilted by the weight of the loaded car; of a hoisting device connected with said table for returning said table and empty car from their tilted position; and means whereby said hoisting device is actuated by power derived from the force generated by the downward movement of the loaded car.

2. In an apparatus for dumping cars, the combination with a dumping table that is tilted by the weight of the loaded car; of a hoisting device connected with said table for returning said table and empty car from their tilted position; means whereby said hoisting

device is actuated by power derived from the force generated by the downward movement of the loaded car; and means for controlling the movement of said table at its different points of travel.

3. In an apparatus for dumping cars, the combination with a dumping table that is tilted by the weight of the loaded car, of a hydraulic hoisting device connected with said dumping table that is depressed by the downward movement of said table, and an accumulating device that accumulates the waste fluid under pressure as it is expelled by the depression of the hoisting device and retransmits the power derived from the energy so accumulated, to the hoisting device and thereby returns the table and empty car from their tilted position.

4. In an apparatus for dumping cars, the combination with a dumping table that is tilted by the weight of the loaded car, of a hydraulic hoisting device connected with said dumping table that is depressed by the downward movement of said table, an accumulating device that accumulates the waste fluid under pressure as it is expelled by the depression of the hoisting device and retransmits the power derived from the energy so accumulated to the hoisting device and thereby returns the table and empty car from their tilted position, and a controlling cock through which the fluid passes and re-passes for controlling the movement of the actuated parts.

5. In an apparatus for dumping cars, the combination with a dumping table that is tilted by the weight of the loaded car, of a hydraulic hoisting device connected with said dumping table that is depressed by the downward movement of said table, an accumulating device that accumulates the waste fluid under pressure as it is expelled by the depression of the hoisting device and retransmits the power derived from the energy so accumulated to the hoisting device and thereby returns the table and empty car from their tilted position, a pipe connecting said hoisting device and the accumulating device that extends to the operating platform, and a controlling cock in said pipe and on said platform for the purposes set forth.

6. In an apparatus for dumping cars the combination with a dumping table that is tilted by the weight of the loaded car, of a hydraulic hoisting device connected with said

dumping table that is depressed by the downward movement of said table, an accumulating device that accumulates the waste fluid under pressure as it is expelled by the depression of the hoisting device and retransmits the power derived from the energy so accumulated to the hoisting device and thereby returns the table and empty car from their tilted position, and a pump intermediately connected for the purposes set forth.

7. In an apparatus for dumping cars, the combination with a base; a revolving table thereon; and a dumping table on said revolving table; of hydraulic cylinders, E^3 , at the dumping end of said revolving table; plungers in said cylinders operatively connected with the dumping table; pipe, e , leading from said cylinders through the center of the revolving table to an accumulating device on the base; a joint, e' , in said pipe to allow its axial movement; and said accumulating device.

8. In an apparatus for dumping cars, the combination of a traveling base; a revolving table thereon; a tilting dumping table on said revolving table that is tilted by the weight of the loaded car; a hoisting device connected with said dumping table for returning said table and empty car from their tilted position; and means whereby said hoisting device is actuated by power derived from the force generated by the downward movement of the loaded car.

9. In an apparatus for dumping cars, the combination with a traveling base and a revolving table on said base, of a tilting dumping table on said revolving table that is tilted by the weight of the loaded car, a hydraulic hoisting device connected with said dumping table that is depressed by the downward movement of said table and an accumulating device that accumulates the waste fluid under pressure as it is expelled by the depression of the hoisting device and retransmits the power derived from the energy so accumulated to the hoisting device and thereby returns the table and the empty car from their tilted position.

In testimony whereof I affix my signature in presence of two witnesses.

PATRICK H. HAGENY.

Witnesses:

JNO. H. DEMEY,
JAS. P. TINLEY.