2 Sheets—Sheet 1.

T. T. PROSSER.

Freight-Car.

No. 224,728. Patented Feb. 17, 1880.

Fig. 1.

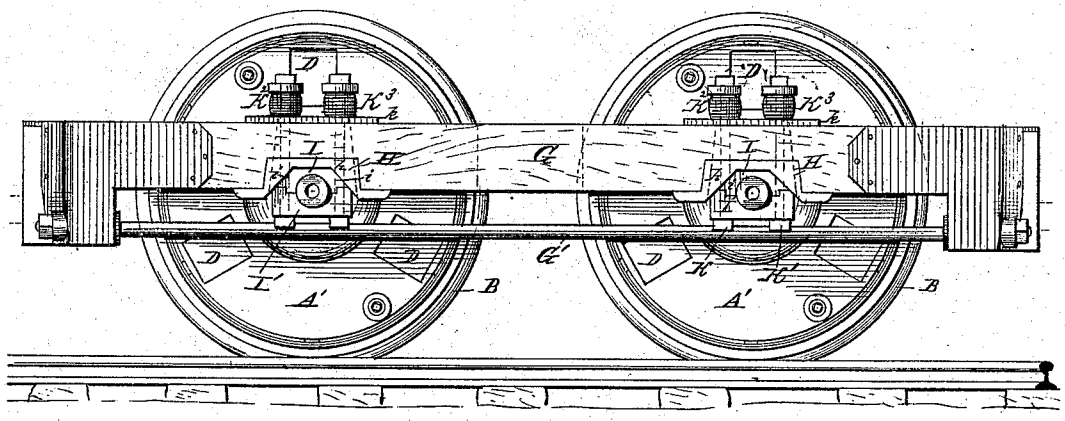
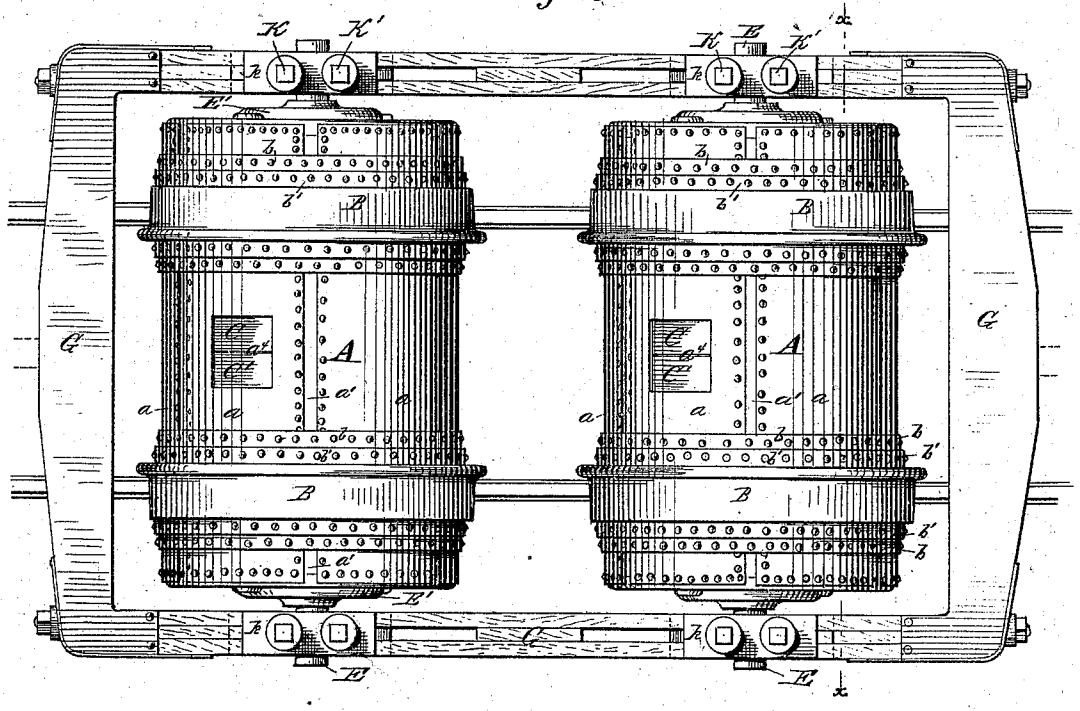


Fig. 2.



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2 Sheets—Sheet 2.

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Fig. 3.

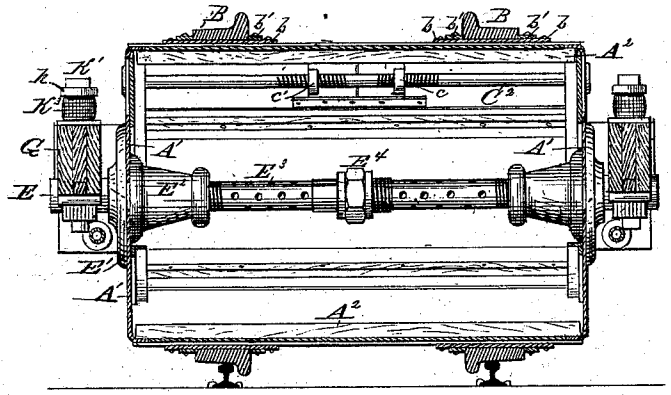


Fig. 4.

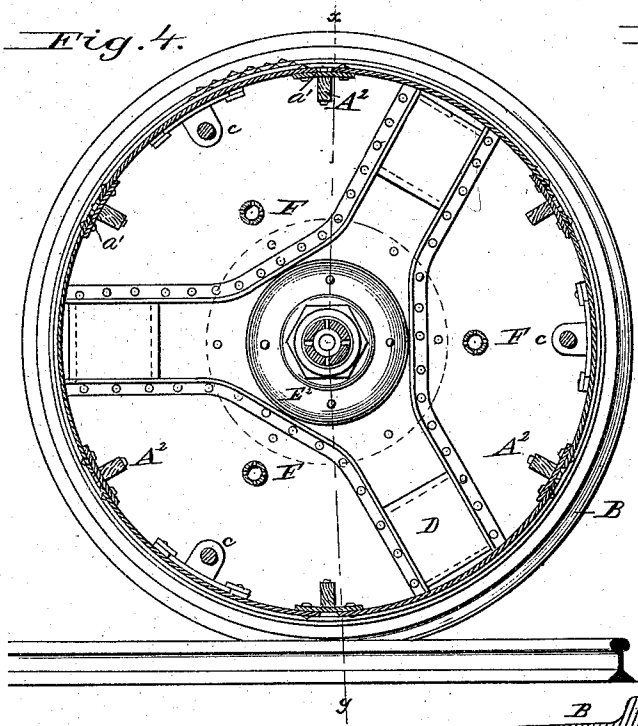
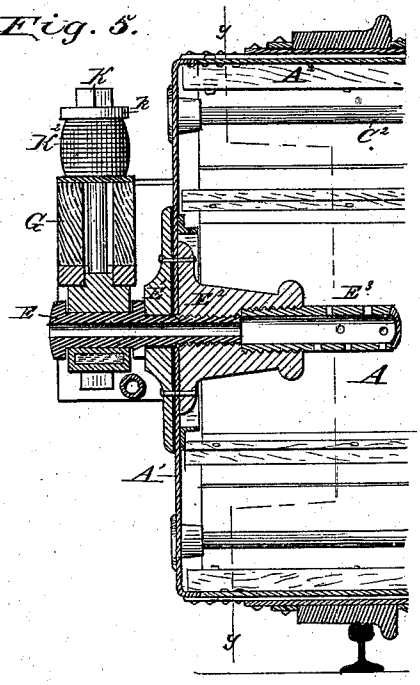


Fig. 5.



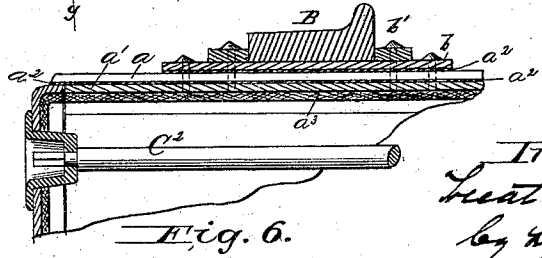


Fig. 6.

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UNITED STATES PATENT OFFICE.

TREAT T. PROSSER, OF CHICAGO, ILLINOIS.

FREIGHT-CAR.

SPECIFICATION forming part of Letters Patent No. 224,728, dated February 17, 1880.

Application filed January 27, 1880.

To all whom it may concern:

Be it known that I, TREAT T. PROSSER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Freight-Cars; 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 letters of reference marked thereon, which form a part of this specification.

This invention relates to freight-cars the body of which rests directly on the rails and rotates as it progresses—to such a car, for instance, as is described in my former application for United States Letters Patent, filed March 13, 1878, and which is more especially intended for transporting grain in bulk.

My present improvements consist of certain novel features of construction and combination of various parts of such a freight-car, the objects of which features are distinctly set forth in the ensuing specification, while the features themselves are epitomized in the claims at the close thereof.

In the accompanying drawings, Figure 1 is a side elevation of a car of my construction having two rotating freight receptacles or cylinders. Fig. 2 is a plan view of the same. Fig. 3 is a vertical transverse section through the axis of one of the rotating freight receptacles or cylinders. Fig. 4 is a cross-section of one of the rotating freight receptacles or cylinders. Fig. 5 is a vertical axial section of one end of one of the rotating freight-receptacles, showing the hollow journal and air-distributing pipe. Fig. 6 is a sectional detail view, showing, on an enlarged scale, the mode of securing the tire to the cylinder and paper and felt linings.

The same letters of reference are used in all the figures in the designation of identical parts.

The freight-receptacle or body of the car is a cylinder, A, two of which are preferably connected to a single draft-frame, as shown in the drawings, although each car might have only a single freight-receptacle instead of two, as is apparent. The length of this freight-cylinder is preferably made about twice the length of the track-gage, so that when resting on the track the weight of said cylinder will be approximately balanced on the rails of the track.

In the construction of the freight-cylinder pains are taken to get it balanced throughout as nearly as practicable. It is also very important to make the cylinder as light as possible, and at the same time give it the necessary degree of stiffness and rigidity throughout to prevent undue vibrations in running. These considerations, besides other minor considerations, have led to constructing the shell of the cylinder of comparatively narrow plates of iron instead of rolling it out of a single plate.

It should, of course, be understood that other parts of my invention are not dependent upon the peculiar construction of the cylinder, to be presently described in detail, as any other part or parts of my invention may be used with advantage in connection with freight-cylinders differently constructed.

My present freight-cylinder is constructed of a number of narrow, practically segmental plates, *a*, which are joined together by coupling-strips *a'*, to which the adjacent edges of plates *a* are riveted, leaving a narrow space between the edges of said plates *a*. The cylinder is encircled by a pair of flanged steel tires, B, the tread of which, cross-sectionally, is like the tread of an ordinary car-wheel.

In order to provide for the exact parallelism and axial coincidence of these tires—points of great, if not vital, importance—it is most expedient to build the cylinder in the tires while the tires are being maintained in proper juxtaposition by suitable rigging. To this end each tire is forced, under heavy pressure, upon a wide hoop, *b*, of boiler-iron, the ends of which hoop, while they abut, are yet disconnected. The hoop is then hammered on the inside to make the contact between it and the tire as intimate as possible, and prevent all possibility of slippage of one on the other. The tires thus prepared are suitably rigged, and then the plates *a* of the shell successively riveted to the hoops *b*, the coupling-strips *a'*, for closing the spaces between the plates *a* and connecting them together, being applied as the securing of the several plates *a* progresses, or after all the plates *a* have first been riveted to

the hoops *b* of the tires, as convenience or circumstances may dictate. Narrow strips *b'* are then riveted to the shell along the edges of the flanged tires B to fix them against all possible lateral movement. The heads A' A', which may be made of single plates of boiler-iron, are then riveted to the shell, flanges being preferably formed on the heads to overlap the ends of the shell for making the rivet-joints.

The heads are preferably slightly dished with the convexity on the outside, and are further stiffened by angle-irons on the inside, as shown in Fig. 4.

In order to guard against the transmission of vibrations from plate to plate, it is expedient to introduce lining-strips a^2, of card-board, rubber, felt, or other suitable material, along all the seams to break direct contact of the metal surfaces. Such lining will also act as a sound-deadener.

It is important to prevent as far as possible motion of the grain in the cylinder. To this end projecting longitudinal flanges or ribs A^2, of wood or other suitable material, are secured on the interior of the cylinder to extend some little distance into and take hold of the grain. The heads of the cylinder are similarly flanged or ribbed on their interior sides for a like purpose. The stiffening angle-irons thereof will alone suffice, probably; and to obviate any grinding action of the cylinder on the grain, by reason of what little independent motion the grain may obtain, the interior may, if found expedient, be lined with felt, leather, or other suitable material sufficiently soft and smooth for the purpose, as shown at a^3, Fig. 6.

Openings a^4 are formed in the cylinder for the introduction and removal of the grain, each of these openings being closed by double slides C C', which are operated by a rod, C^2, journaled in the heads of the cylinder, and provided with a right-hand screw-thread, engaging a tapped lug, *c*, on slide C, and a left-hand screw-thread, engaging a tapped lug, *c'*, on slide C'. To one end of rod C^2 a winch can be applied to turn it when the slides are to be opened or closed. A suitable contrivance may be applied to lock the rod after the slides have been closed. In the present example three such openings, a^4, with covering-slides C C', are shown. The heads of the cylinder are also provided with sliding doors D, three in number, for cleaning purposes. These doors are arranged equidistant, as are also the openings in the shell, in order to preserve the balance of the cylinder.

The cylinder-heads are provided centrally with hollow journals E, to which the draft is applied. Each journal is forced tightly into a cheek-plate, E', and has a screw-threaded end adapted to a nut, E^2, on the interior of the head of the cylinder. The cheek-plate and nut are rigidly screwed to opposite sides of the heads of the cylinder, and aid very materially in stiffening the same.

A perforated sectional pipe, E^3, connects the nuts E^2 on the respective heads of the cylinder. The pipe E^3 consists of two lengths connected together, after they have been screwed home into their respective nuts E^2, by a union-coupling, E^4. The journals E are made tubular for the twofold purpose of admitting air to the perforated pipe E^3 for ventilating the grain and of maintaining a circulation of air through the journals themselves to prevent the overheating of the same.

For ventilating the grain, the shell of the cylinder is to be provided with numerous perforations for the escape of the air taken in through the tubular journals, and additional perforated pipes F may be used for introducing air at various points into the body of the grain. These additional pipes may extend obliquely from head to head.

The freight-cylinders are made of such a diameter that their axes will be about the height of the draw-heads of ordinary cars above the track. The cylinders are connected, preferably in pairs, to a rectangular draft-frame, G, the end sills of which are to be provided with suitable draw-heads so placed that the line of draft will be just below the plane of the journals. The end sills are tied together by rods G', which may consist of tubes for the sake of stiffness. The side beams of the draft-frame, which may be made of several planks united together, are, at the proper points, provided with metal seats H, firmly secured in recesses in the lower edges of the side bars, and adapted to receive the boxes in which the journals of the cylinders turn.

The journal-boxes consist of an upper half, I, and a lower half, I'. The upper half, I, is formed with inclined ends *i*, and fits snugly in a recess in seat H, with reverse inclines *h*. The two halves of the box are interlocked, as shown, to prevent motion, at right angles to the axis of the journal-bearings, and the whole box is firmly held in and to its seat H by two bolts, K and K', passing through the two halves of the box, and extending through slots in the seat H and the side beam of the draft-frame. The upper ends of these bolts are encircled by stiff springs K^2 and K^3, which are confined between a plate, *k*, on the top of the side beam of the draft-frame and washers or cheek-plates and nuts on the ends of the said bolts. A single spring might be used for each journal-box instead of two. The bolt-holes in the halves of the box are somewhat larger than the diameter of the bolts K and K', so as to provide for slight independent motions of the bolts and boxes.

If it should be found expedient to provide for elastic action between the journal-boxes and their seats H, the springs K^2 and K^3 might be introduced between the boxes and seats with suitable modification of the parts, such as will readily suggest itself to a skilled car-builder.

The lower half of each journal-box contains a reservoir for a suitable lubricator, to be fed by cotton-waste or otherwise to the journal.

It will be observed that by reason of the construction and arrangement of the journal-boxes, their seats, and the springs, the draft will be more gradually transmitted to the cylinders than it would be if horizontally-sliding boxes seated against springs were used, and that the action of the springs is the same whether the car be drawn in one direction or the other. In turning curves the boxes will yield sufficiently to amply provide for the slight obliquity which the draft-frame must assume with reference to the cylinders, and the cylinders with reference to each other.

A light box superstructure should be erected on the draft-frame to house in the freight-cylinders. This superstructure (not shown in the drawings) will not only afford safe travel through the train by the train-hands in the exercise of their functions, but might be utilized for carrying light freight, or as emigrant-cars.

The brakes are to be applied, preferably, between the two freight-cylinders, where two are connected to one draft-frame. The brake-shoes might be of wedge-like form, and might be drawn up between the cylinders to act on the flanged tires of the same. In that way the brakes would be very effectively applied with the exercise of but little power, for the action of one cylinder would balance the action of the other on the brakes.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A freight-cylinder the flanged tires of which are frictionally secured on metal hoops, which are in turn positively secured to the cylinder, substantially as before set forth.

2. A freight-cylinder the flanged tires of which are frictionally secured between riveted confining-strips on metal hoops, which are in turn positively secured to the cylinder, substantially as before set forth.

3. A freight-cylinder lined on its interior surface with felt or its equivalent, substantially as and for the purpose set forth.

4. The combination, substantially as before set forth, of the head of the freight-cylinder, the tubular journal thereof, the cheek-plate on the exterior of said head, and the nut on the interior thereof.

5. The combination, substantially as before set forth, of the tubular journals, the nuts on the interior of the heads of the cylinder, and the sectional perforated pipe for connecting the said nuts.

6. The combination, substantially as before set forth, of the journal-box having inclined ends, the reversely-inclined fixed seat on the draft-frame, and the spring or springs for yieldingly connecting the draft-frame to the journal-box.

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

TREAT T. PROSSER.

Witnesses:

CHAS. A. NEALE,

H. J. ENNIS.