

(No Model.)

2 Sheets—Sheet 1.

W. F. MOSSOP.  
CONVERTIBLE FREIGHT CAR.

No. 381,410.

Patented Apr. 17, 1888.

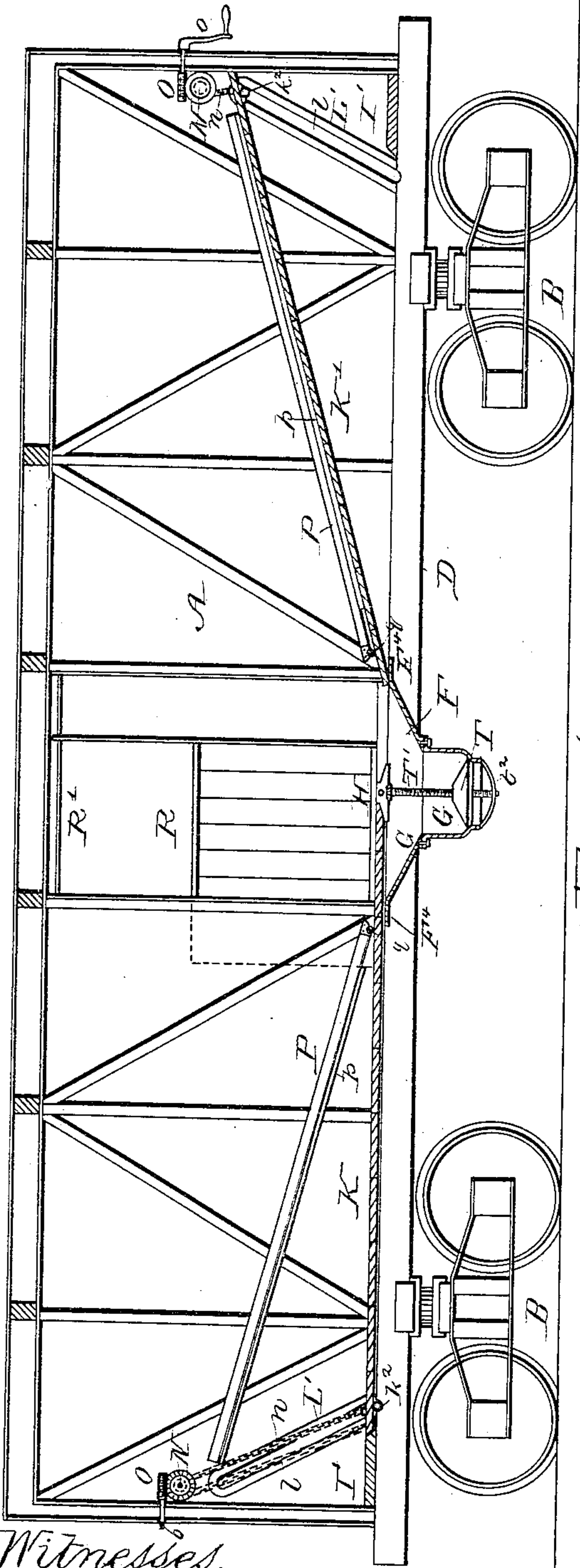


Fig. 1

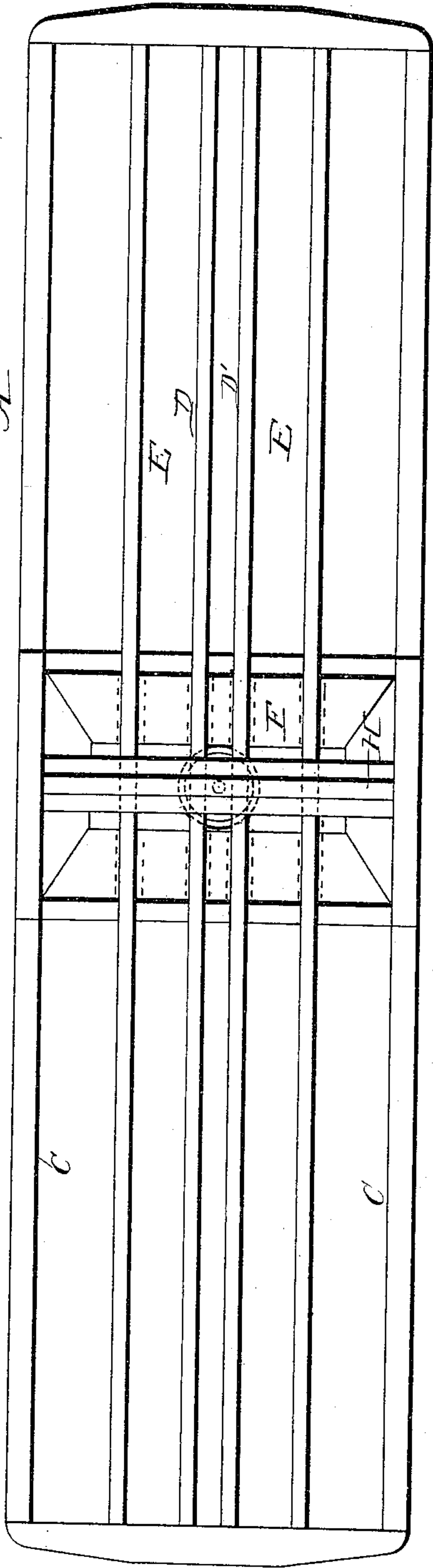


Fig. 2.

Witnesses.  
A. B. Blackwood  
G. Smith.

Inventor:  
W. F. Moss  
by Counsel Bros atty.

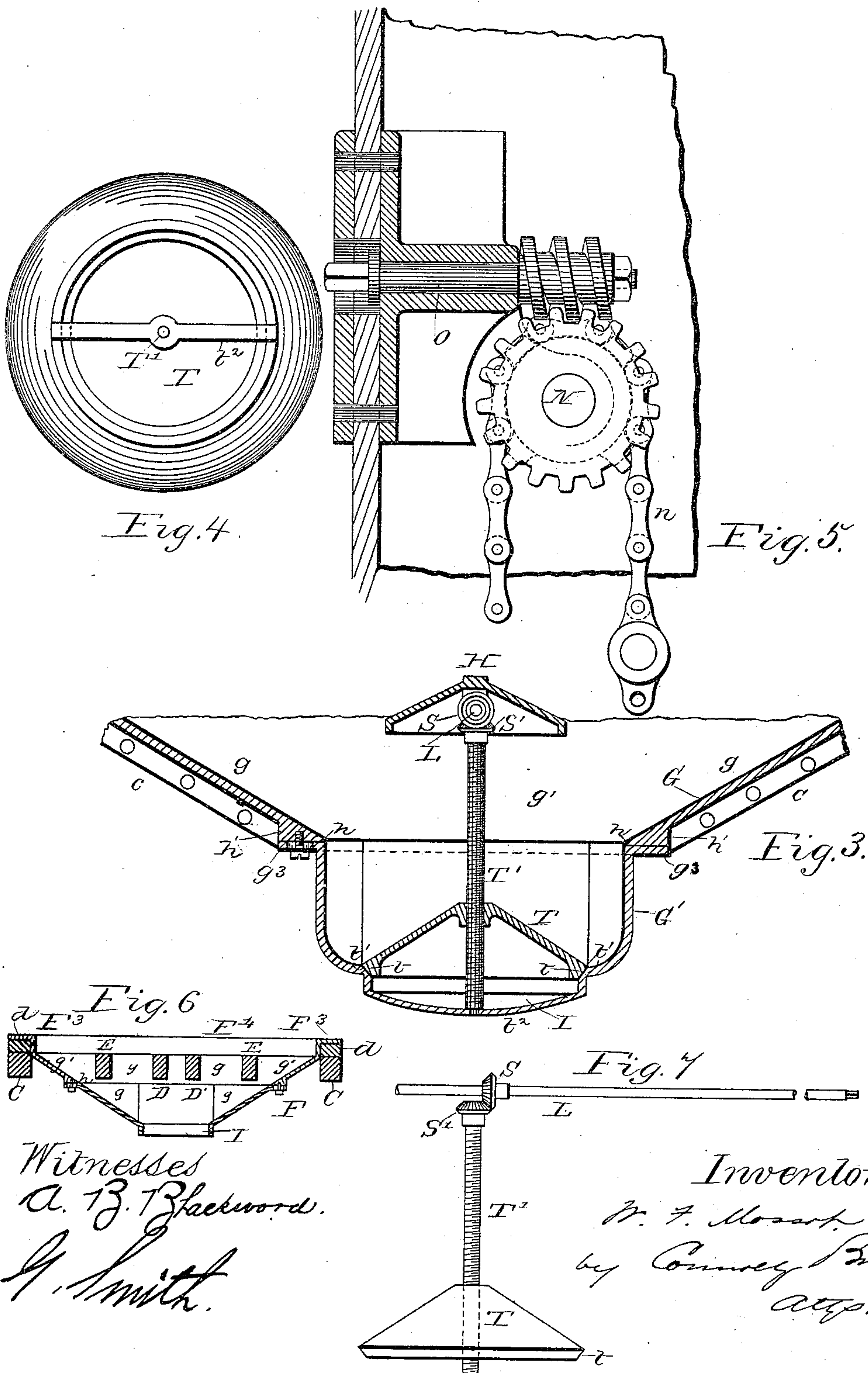
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# UNITED STATES PATENT OFFICE.

WILLIAM F. MOSSOP, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF  
ONE-HALF TO MORRIS M. HIRSH, OF CHICAGO, ILLINOIS.

## CONVERTIBLE FREIGHT-CAR.

SPECIFICATION forming part of Letters Patent No. 381,410, dated April 17, 1888.

Application filed November 23, 1887. Serial No. 256,002. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM F. MOSSOP, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Convertible Freight-Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form part of this specification.

My invention has relation to convertible freight-cars of the class to which pertains the car shown and described in Letters Patent of the United States granted to me February 15, 1887, No. 357,937, the prominent feature whereof is a sectional and adjustable floor which lies horizontally for the reception of ordinary freight or merchandise, and which may be raised so as to form inclined planes leading to a central hopper when the car is to be used for the reception of grain.

My present improvements have reference particularly to the hopper and its appurtenances; and it consists in the novel construction and combination of parts, hereinafter described, and specifically claimed.

The principal object of my improvements is to provide for the application or attachment of the hopper to the body of the car without necessitating the cutting or weakening of the sills.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of a convertible car embodying my improvements. Fig. 2 is a horizontal section of the same. Fig. 3 is a transverse section of the hopper, enlarged. Figs. 4, 5, 6, and 7 are detail views.

A designates the body of the car mounted on trucks B B. C C are the side sills, and D, D', and E the intermediate sills on which the bottom or floor of the car is supported.

In the car shown in my patent referred to the intermediate sill E is divided at the middle of the car to accommodate the hopper. In the present instance, however, I continue the sill the whole length of the car, and hence avoid weakening of the floor-support or body of the car incident to dividing the sills or framing.

F designates the hopper, which consists of a metallic structure of a rectangular shape in

horizontal section or plan. The mouth F' of the hopper is horizontally flanged, as shown at F<sup>3</sup> F<sup>4</sup>, and when the hopper is in position the flanges F<sup>4</sup>, running transversely of the car, lie flush or even with the top of the sills. The upper part of the hopper, instead of being made in the form of a single casting, is constructed of a number of sections having outwardly-projecting flanges *cc*, which embrace the sills D' and E and are bolted thereto, as shown. The flanges F<sup>3</sup> at the ends of the hopper, instead of being disposed in a line with the tops of the sills, are elevated a little above or on a line with the floor-level and rest on a narrow filling, *d*, of wood, which occupies the space between said flanges and the tops of the sills C C. The wall of the hopper is vertical for a short distance below the flange, or to a point about on a level with the upper surface of the sills, such vertical portion corresponding to the thickness of the floor of the car. The hopper is divided horizontally into upper and lower sections, G G'. From the flanged portions F<sup>2</sup> F<sup>3</sup> the transverse walls *g g* of the upper section of the hopper are inclined and convergent to their lower edges, *h h*, at which point they are united to the lower section. The end walls, *g' g'*, of the hopper are also inclined and convergent, but are extended some distance below the joints or seams *h h* and until they reach the central circular opening or mouth of the cylindrical outlet-spout I, formed at the base of the lower section. From the points *h h* the side walls, *g g*, of the hopper depend vertically, forming a cavity or chamber slightly narrower than the spout, but having segmental recesses coincident with the spout and leading thereto, and designed to afford clearing-space for the escaping grain. The lower section of the hopper, which, as stated, is made separate from the upper section, is in the form of a casting flanged on its upper edge, as shown at *g<sup>3</sup> g<sup>3</sup>*, and bolted to the flanges *h'*, surrounding the lower edges of the upper section. The bolt-holes in the flanges *h'* are elongated, so that the lower section may be nicely and accurately adjusted to the upper section and brought to the proper position for centering the screw-shaft of the outlet-valve.

T designates the valve by which the spout is closed and the capacity of the outlet-opening regulated. The valve consists of a circu-



lar conical disk or plate having beveled edges  $t$  resting on a correspondingly-beveled seat,  $t'$ , formed on and around the mouth of the outlet-spout. This valve has a central vertical screw,  $T'$ , journaled at its lower end in a curved brace or tie,  $t^2$ , cast with the spout and crossing the latter diametrically. The screw  $T'$  is journaled at its upper end in a cast-iron beam or bar,  $H$ , which extends across the car above the center of the hopper. The upper surface of the bar  $H$  is beveled to coincide with the beveled ends of the floor-sections, which abut against the same and form a close tight joint.

$L$  is a horizontal shaft, which passes through the cavity of the bar  $H$ , and is journaled in the ends thereof, the ends of the shaft projecting through the sides of the car and being squared for the reception of a key, wrench, or crank. Upon this shaft is keyed a beveled gear-wheel,  $S$ , engaging with a similar wheel,  $S'$ , on the end of the screw  $T'$ , so that by turning said shaft the valve may be raised or lowered.

In applying the hopper to the car the end plate of the upper section is first arranged in position and the intermediate plates then dropped into position between the sills and bolted thereto. The lower section is then adjusted and bolted to the upper section, and the valve and its appurtenances fitted into operative position.

$R$  designates the door of the car arranged to slide upon a horizontal rod,  $R'$ , holes being bored in the uprights of the door-framing for the passage of said rod. The uprights at the sides of the doorway are recessed for the passage of the door between the double walls of the car, and the recessed portions covered by metallic plates or bars bolted to said uprights.

$I$  and  $I'$  are permanent or stationary parts of the floor—one at each end of the car—and  $K$  and  $K'$  are adjustable sections of said floor, and, when lying horizontally, extending from said stationary parts to the girder or cross-beam  $H$ . These floor-sections are each composed of cross-boards or flooring-pieces fastened to longitudinal girders or beams of T-iron. The inner ends of said adjustable sections  $K$   $K'$  rest and run upon the flange-plates  $f$   $f$ . The opposite ends of said sections are provided with laterally-projecting pins or trunnions  $k^2$   $k^2$ , which enter inclined slots  $l$   $l$  in guides  $L'$   $L'$  on the sides of the car. These trunnions extend into the spaces between the double walls of the car, and in said spaces are endless chains  $n$   $n$ , which are wound upon shafts  $N$   $N$  by means of worm-shafts  $O$   $O$ , having handles  $o$   $o$  outside of the ends of the cars.

$P$   $P$  are inclined bars or cleats on the inner sides of the walls of the car, and  $p$   $p$  are sections of rubber tubing just below said cleats, which form tight joints with the floor-sections  $K$   $K'$  when the latter are elevated, and prevent leakage of grain.

Upon the inner and lower ends of the cleats

$P$   $P$  are fitted brackets or boxes having journaled thereto small rollers  $q$   $q$ , which, when the floor is raised and lowered, serve to protect the ends of the rubber tubing and provide anti-friction devices, upon and against which the floor will move.

When the car is to be used as an ordinary freight-car or for general merchandise, the floor-sections  $K$   $K'$  are disposed horizontally, as shown in the left of Fig. 1, forming, with the stationary parts  $I$   $I'$ , a continuous floor and covering the hopper, meeting end to end over the transverse girder  $H$ . When it is desired to use the car for grain, the sections  $K$   $K'$  are raised by means of the end gearing until they assume the inclined position, as shown in the right in Fig. 1.

Having described my invention, I claim—

1. In a convertible freight-car, a hopper consisting of a series of flanged sections secured in place and to the framing of the car by bolts, substantially as described.

2. In a convertible freight-car, a hopper composed of a number of metallic sections having outwardly-projecting flanges which embrace and are secured to the sills of the car, substantially as described.

3. In a convertible freight-car, the combination, with the undivided intermediate sills of the car, of a hopper having flanged sections which lie between and are bolted to said sills, substantially as described.

4. In a convertible grain-car, a hopper having upper and lower sections bolted together on a horizontal line, the upper section being divided vertically into a series of small sections flanged on their edges and secured between and to the sills of the car, substantially as described.

5. In a convertible grain-car, the combination, with a hopper having a central escape-opening, of a vertically-operating valve, a threaded set-screw upon which said valve travels, a transverse key-shaft, and intermediate gearing coupling said shaft and set-screw, substantially as described.

6. In a convertible grain-car, a hopper having upper and lower sections horizontally divided and flanged at their meeting edges and bolted together, the flanges of the lower section being formed with elongated bolt-holes for the purposes of adjustment, substantially as described.

7. In a convertible grain-car, the combination, with the adjustable floor and the cleats, of the anti-friction rollers, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 4th day of November, 1887.

WILLIAM F. MOSSOP.

Witnesses:

THOS. A. CONNOLLY,  
R. DALE SPARHAWK.