(No Model.)

3 Sheets—Sheet 1.

T. L. WILSON.

RAILWAY CAR.

No. 371,403. Patented Oct. 11, 1887.

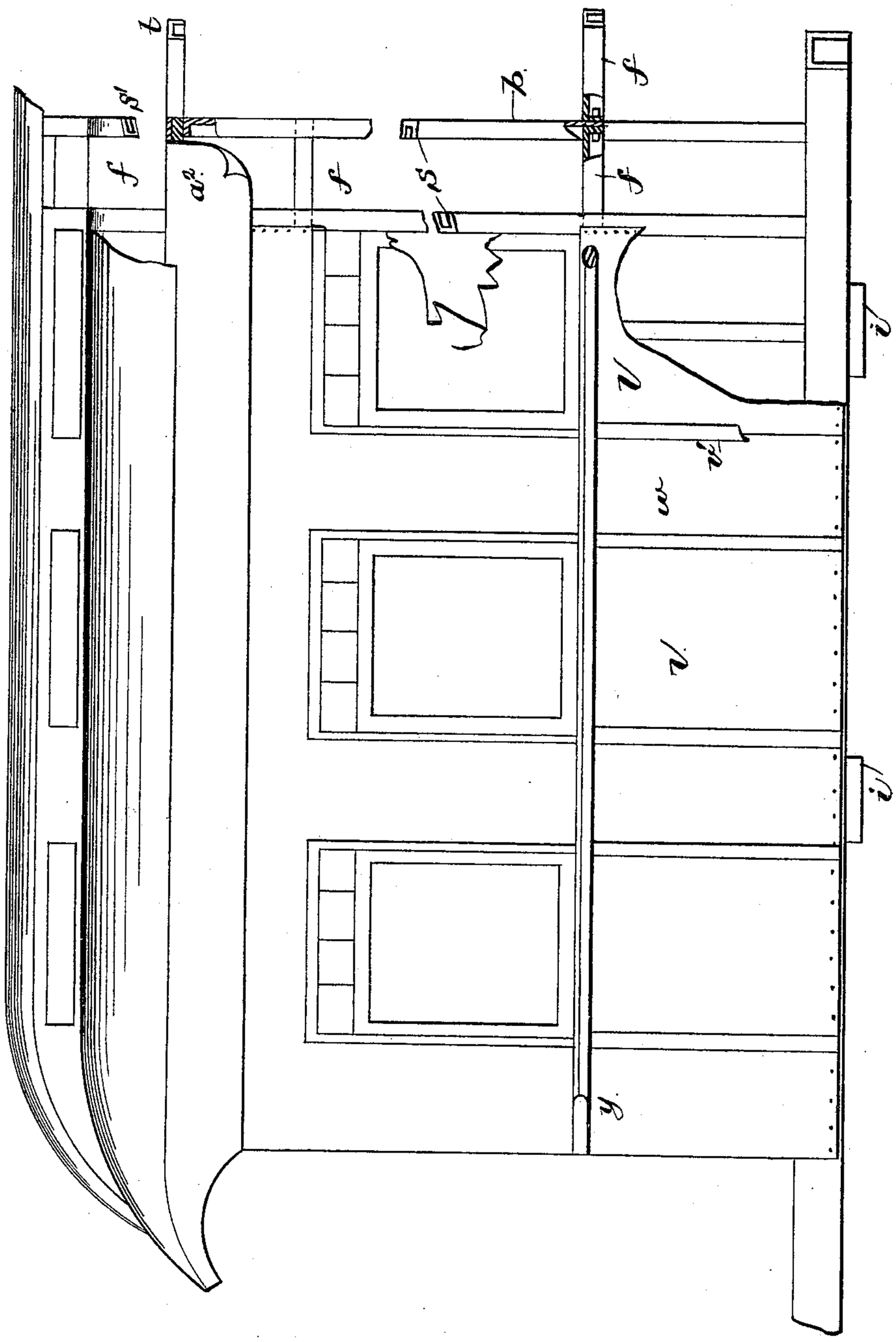

Fig. 1.

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(No Model.) 3 Sheets—Sheet 2.

T. L. WILSON.

RAILWAY CAR.

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Fig. 1.

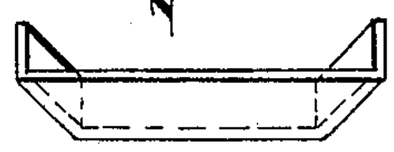
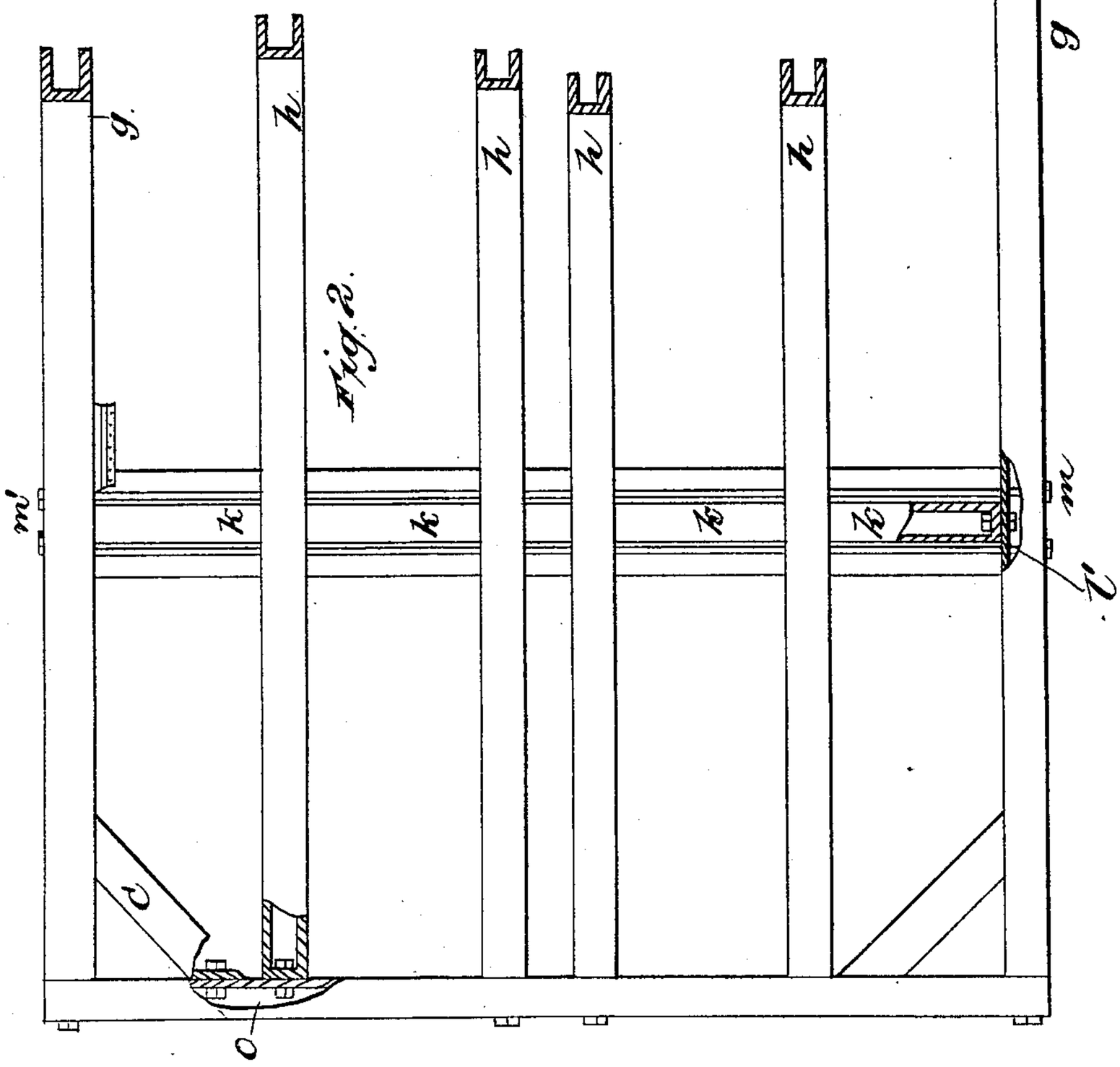


Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

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Fig. 5.

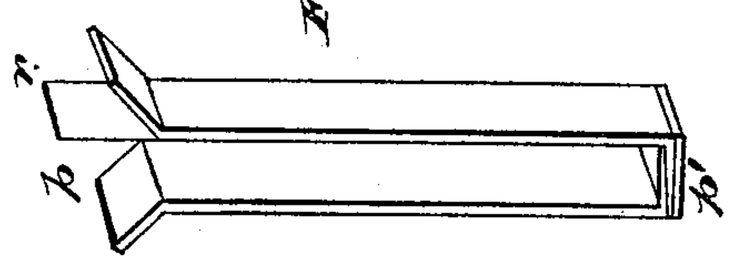
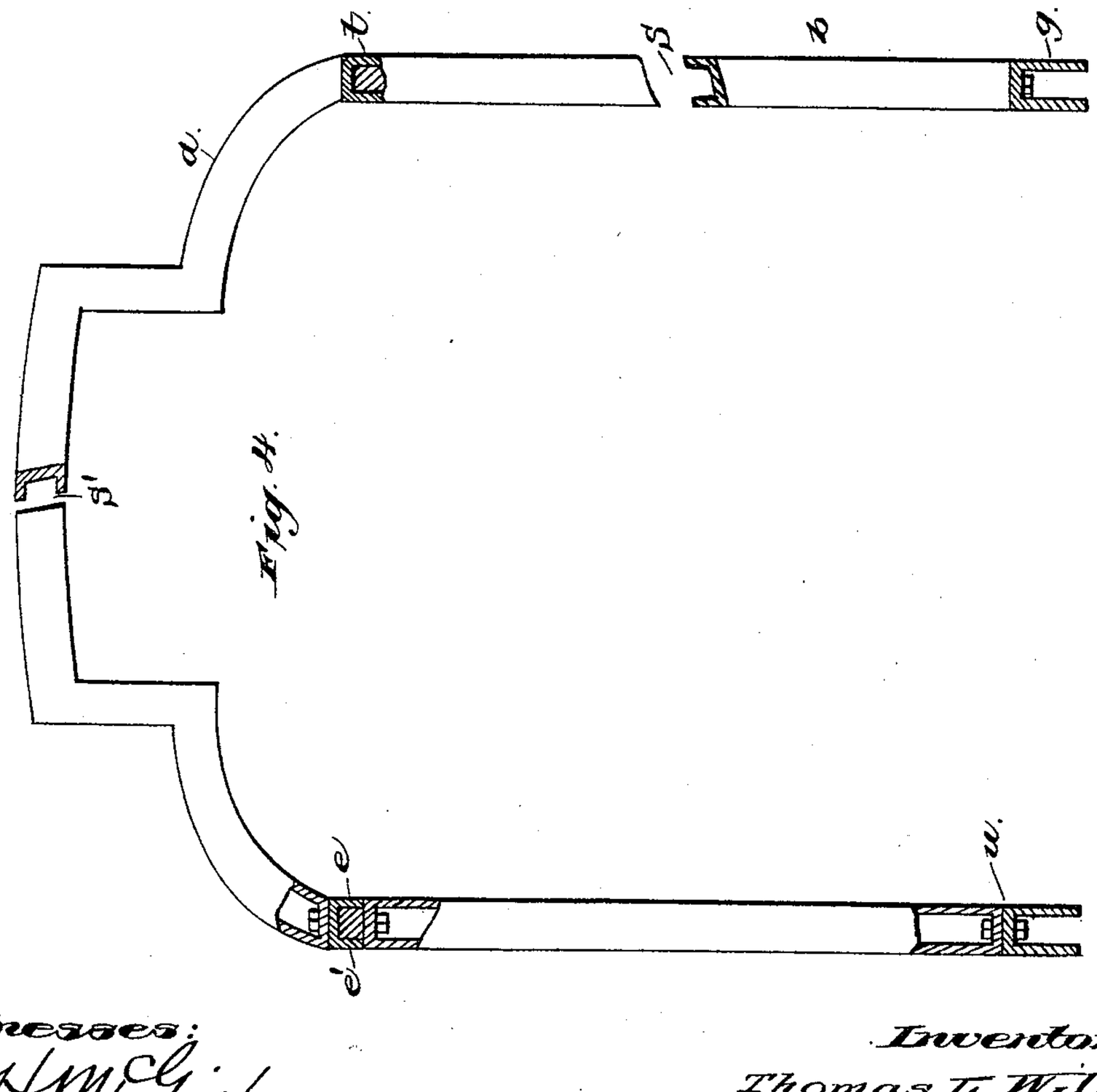


Fig. 4.



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UNITED STATES PATENT OFFICE.

THOMAS L. WILSON, OF PORT HOPE, ONTARIO, CANADA.

RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 371,403, dated October 11, 1887.

Application filed July 2, 1886. Serial No. 206,997. (No model.)

To all whom it may concern:

Be it known that I, THOMAS L. WILSON, of Port Hope, in the county of Durham and Province of Ontario, Canada, have invented a new and useful Improved Railway-Car, of which the following is a specification.

This invention relates to railway-cars, and has for its object to construct a car or other vehicles of rolled steel and fire-proof paper to produce a car that will be very much lighter and stronger than the cars now built, and positively fire-proof, all as will be hereinafter explained.

Railway-cars of the present construction are composed of wood with iron fastenings, and, in order to be sufficiently strong to meet the demands and services required of them, must necessarily be very heavy and cumbersome.

It is a well-known fact among railroad men that the enormous weight of the present passenger-coaches is destructive to themselves, to say nothing of the rolling-stock and road-bed, and by reason of such heavy cars locomotives are compelled to haul short trains in order to perform the work required of them. It is also a well-known fact that the present cars, being constructed of wood, will ignite and burn very easily in case of fire, and that railway men have been discussing for some time the means by which cars could be made fire-proof and lighter.

My method, therefore, of constructing a car-frame of rolled steel and covering the inside and outside surface with fire-proof paper will undoubtedly produce a car that will be very light and strong, thoroughly fire-proof, and superior to the cars of the present construction in every respect, as the following description will show.

In the accompanying drawings, which form part of this specification, my invention is fully illustrated in several figures, with letters of reference indicating corresponding parts.

Figure 1 represents a side elevation showing a part of a railway-car with a portion of the side broken away to show the construction of the car. Fig. 2 represents a plan view showing a part of the bottom or platform of the car, with portions broken away to show the manner in which the floor-beams, sills, tie-pieces, &c., are secured together, also showing the ends of the floor-beams and sills to illustrate the manner in which they are laid. Fig. 3 illustrates in perspective view the corner-brace *c*, to show its formation and the bolt-holes by means of which it is secured in position between the side sills and end pieces. Fig. 4 represents a single "frame," consisting of the carling *a* and the two uprights *b*, bolted to the side sills, *g*, and wall-piece *e*, with parts of the uprights and carling broken away to show the shape of the rolled steel and the manner of fastening the parts together. Fig. 5 represents one of the brace pieces *f*, showing the manner of closing the end for the purpose of creating end bearing-surface and to facilitate the fastening of the parts together, as will be hereinafter explained.

As shown by the drawings, all the frame-work of the car is made of rolled channel-steel, and the method of butting and joining the ends together is illustrated in Figs. 2, 4, and 5. The covering of the car inside and outside is compressed paper, which is rendered fire-proof by means of a process heretofore described by me in an application for Letters Patent to protect the said process. The compressed paper is applied in sheets and either riveted or screwed to the sides of the channel-steel.

In order to construct my improved car, I first proceed to roll the steel or iron, as the case may require, (it being understood that in some cases I use iron instead of steel; but I preferably use steel, as it can be rolled much thinner and will be lighter and equally as strong,) in the form of channel-bars of the requisite size and thickness. I then take the side sills, *g*, and floor-beams *h* and place them in position on the body-bolster pieces *i*, with their two edges *x x* resting on the bolster-pieces. The body-bolster pieces *i* are constructed of solid steel, and provided on their under side with an additional brace-bolster, which carries the center plate of the car. These sills and floor-beams are fastened to the body-bolster by means of angle-iron, which is riveted to the side of the sills and top of the body-bolsters, as shown at *l*, Fig. 2, each beam and sill being provided with a separate fastening, as described. In between each of the floor-beams, resting with their edges on the body-

bolster pieces *i*, are the short stay-pieces *k*, which are constructed as shown in Fig. 5, and are bolted at each end to the floor-beams, as shown at *l''*, Fig. 2. After the pieces *k* are in position and properly bolted, as described, I usually run two tie-bolts through the sills and floor-beams, one each side of the pieces *k*, with a nut on the outer side of the sills *g*, as shown at *m* and *m'*, Fig. 2. Across the ends of the sills and floor-beams is the "head-stock" or end framing-piece, *n*, which is secured to the ends of the floor-beams and sill by means of bolts, as shown at *o*, Fig. 2. In each corner of the frame secured to the side sill, *g*, and head-stock *n*, I secure a corner-brace, as shown at *c*, and more fully illustrated in detail in Fig. 3.

The method of closing the ends of the channel-steel (or iron) for the purpose of creating a bearing-surface and means by which the ends can be secured is as follows: The beams side uprights, bracing-pieces, &c., are all cut to a length which is double their width longer than is required. The closed corners on each end are then split or opened back to the exact length which the bar or beam is intended to be, as shown at *p*, Fig. 5. The ends are then folded in, as shown at *p'*, Fig. 5—that is, one side is folded over at right angles inside of the opposite side, which in turn is folded over on top of the one just mentioned. After this is done the cap or top piece, *r*, is folded over on top of the two side pieces, as shown at *p'*, Fig. 5, and are welded together in the usual manner, which of course will make a very secure and firm end.

After the floor-frame is completed, as heretofore described, I place my uprights *b*, as shown in Figs. 1 and 4, in position, with their two exposed edges facing lengthwise of the car, but in reverse directions, so as to form a smooth surface for the window-framing and to create a level surface upon which to secure the paper sheathing inside and outside of the car-frame, all as shown at *s*, Figs. 1 and 4. On top of the ends of the uprights *b*, which form one side of the car-frame, I place the wall-plates *t*, Figs. 1 and 4, and on top of the wall-plates *t*, spanning each pair of uprights, as shown in Fig. 4, I place the carling *a*, which, like the side upright pieces, *b*, is formed so as to present a level surface inside and outside, as shown at *s'*, Figs. 1 and 4. The carlings *a* rest on the wall-plates *t* directly over each pair of uprights, and are secured as shown at *e*, Fig. 4—that is, the ends of the carling *a* and the ends of the uprights *b* are made solid, as heretofore described. Inside of the wall-plate, as shown at *e'*, is a solid block, which fills the space within the channel of the wall-plate, so as to create a level surface on the lower side. The said block, wall-plate, ends of the carling, and upright being drilled with the requisite sized hole, a bolt is passed through the end of the carling, wall-plate, block, and end of the upright *b*, and secured by means of nuts, as illustrated in Fig. 4. The method of securing the side uprights to the sills *g* is as heretofore described—that is, the end of the upright is drilled with a corresponding hole to that which is drilled in the upper surface of the sills *g*, and the said end is secured to the sill by means of a bolt, as illustrated at *u*, Fig. 4.

In between the uprights *b*, as shown in Fig. 1, are the pieces *f*, which are formed with their ends closed, as shown in Fig. 5. These pieces are rolled a little narrower than the upright pieces *b*, so that their ends will fit inside of the channel in the said upright, as shown in Fig. 1. The ends of these pieces being provided with a hole similar to one which is drilled in the longitudinal surface of the adjusted upright in the desired locality, a bolt is passed from the end of one piece through the upright *b* and end of the opposite piece, and secured by nuts, as shown at *f'*, Fig. 1. It will thus be seen that the entire framework of the car, with this method of fastening carried out, is secured positively and firmly together, creating a very solid and strong structure which is exceedingly light and durable.

After the frame is completed, as heretofore described and illustrated, I proceed to cover the outer and inner surface with compressed paper, as follows, it being understood that the said paper before its application is rendered fire-proof, as heretofore stated:

The sheets of paper with which I cover the outside of the car are made in squares of various sizes and are applied as illustrated in Fig. 1. The pieces *v*, which are the requisite size to fill the entire space under the windows, have their edges either riveted or screwed to the two uprights, which partly lap, and also to the sills *g* and pieces *f*. In between the two pieces *v* is a narrow piece, *w*, which extends from the bottom to the top of the car and fills the space between the windows butting against the pieces *v*, as shown at *w'*. Over the joint formed by the pieces *w* and *v* butting together is secured a strip, *v'*. The joint formed between the pieces *w* and *v* above the windows can be covered in the same manner, if desired; but I prefer to fill the joints above the windows with cement or putty and paint over them, so as to create a level surface, as shown in Fig. 1. Underneath the windows, extending the entire length of the car and covering the upper ends of the pieces *v*, is a nosing-strip, *y*, which forms the sill for the windows in the usual way. This nosing-piece is secured by screws or any other desired means. On the upper side of the frame above the windows is the frieze-board a^2, which is either riveted or screwed to the wall-plate *t*, as shown in Fig. 1, its lower edge being secured to each of the uprights *b*.

The roof portion of the car is covered with the same paper, which is applied in a similar manner, the method of applying and fastening the paper being the same throughout the construction of the car.

Having thus fully described my invention,

what I claim, and desire to secure by Letters Patent, is—

1. In the construction of railway-cars, the upright pieces *b*, arranged and secured as described, with their edges facing each other, so as to present a smooth surface for the window-slides, as described and specified.

2. The method herein described of closing the ends of the channel-bars, which consists in folding one side over the other across the channel and folding the top over the two sides and welding the same together, as herein described.

3. In the construction of railway-cars, the side uprights, *b*, secured to the sills *g*, as shown at *u*, Fig. 4, in combination with the carlings *a* and wall-piece *e*, the said carling, wall-piece, and upright being secured together by means of a bolt, as shown at *e* and *e'*, Fig. 4, and as herein described.

4. The floor-framing of a railway-car, constructed of the sills *g*, intermediate longitudinal sills, *h*, and end sills, *n*, all constructed of rolled channel steel or iron and placed with the channel side down to form a flat surface on each side and top of the sills, the end sills, *n*, secured to the sills *g* and *h*, as illustrated at *c*, Fig. 2, and as herein described.

5. The floor-framing of a railway-car, constructed of the channel steel or iron sills *g*, *h*, and *n*, and secured together as herein described, the corner-braces *c*, constructed and secured as shown in Figs. 2 and 3, the transverse channel-pieces *k*, their ends, closed as described, inserted between the sills and bolted thereto, as shown at *l'*, Fig. 2, the long transverse bolts passing through the sills *g* and intermediate sills, *h*, and secured on the outside by nuts or other suitable fastenings, as shown at *m* and *m'*, Fig. 2.

6. In the construction of frame-work of railway-cars, the steel or iron channel bar-pieces *f*, inserted between metal upright pieces, with a bolt or rivet passing through the metal upright pieces and the abutting ends of the pieces *f* and securing them all rigidly together, as shown at *f b f*, Fig. 1, thus continuing so as to form a complete rigid metal fastening and brace from one end of the car to the other.

7. The herein-described method of constructing a railway-car frame of rolled channel steel or iron, with its channel standing transversely to the plane of the framing, so as to create a flat surface on the inside and outside of the framing, as shown in Fig. 1, in combination with a fire-proof paper, as *v*, covering the inner and outer surfaces of the frame and secured to the respective sides of the channel-bars, against which they rest, as and for the purpose specified.

8. In the construction of railway-cars, the combination of the sills *g*, intermediate sills, *h*, transverse pieces *k*, and end sills, *n*, with the uprights *b* and longitudinal bracing-pieces *f*, wall-plates *t*, and carlings *a*, all constructed of rolled channel steel or iron with their ends closed, as described, and secured together, as illustrated and specified.

9. In the construction of railway-cars, the combination of the sills *g*, intermediate sills, *h*, transverse pieces *k*, and end sills, *n*, with the uprights *b* and longitudinal bracing-piece *f*, wall-plates *t*, and carlings *a*, all constructed of rolled channel steel or iron with their ends closed, as described, and secured together, as illustrated and specified, in combination with fire-proof paper as an outer and inner covering, the paper being formed into boards, as *v*, and secured to the framing, as described and set forth.

In testimony that I claim the foregoing improved railway-car, as above described, I have hereunto set my hand this 30th day of June, 1886.

THOMAS L. WILSON.

Witnesses:
ALEXR. MELHADO,
SIDNEY ROWLEY.