

**Description of the models of hospital cars, exhibited in room no. 2 / J.J. Woodward.**

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International Exhibition of 1876.

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HOSPITAL

OF

Medical Department, United States Army.

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No. 2.

DESCRIPTION

OF THE

MODELS OF HOSPITAL CARS

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EXHIBITED IN ROOM No. 2.

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J. J. WOODWARD,

*Assistant Surgeon, U. S. A.,*

IN CHARGE OF THE REPRESENTATION OF THE MEDICAL DEPARTMENT, U. S. A.

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Philadelphia, 1876.





# INTERNATIONAL EXHIBITION OF 1876.

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## HOSPITAL

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### DESCRIPTION OF THE MODELS OF HOSPITAL CARS.

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THESE models are intended to represent especially those methods of adapting the ordinary rolling-stock of American railroads to the transportation of sick and wounded soldiers, which were found to be most satisfactory during the war of 1861-5. They are all on the scale of one inch to the foot, and are made of hard wood and brass, all details being carefully worked out; they are made with their roofs removable to permit the inspection of the interior. They were constructed in accordance with plans furnished from the Surgeon-General's office, by J. G. Brill & Co., car builders, Thirty-first and Chestnut streets, Philadelphia, Pa.

Various plans were adopted by the several armies, some of them as early as the summer of 1861, a description of which may be found in a recent report by Assistant-Surgeon G. A. Otis, United States Army.\* As might have been anticipated, these methods were brought to the greatest perfection in the rear of the great Western armies, after they began to move southward from Chattanooga. While these armies were operating chiefly on the Mississippi river and its tributaries, hospital steamboats, one of which is represented by the model of the *D. A. January*, afforded a convenient mode of transporting their sick and wounded to the general hospitals at the base of operations and in the

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\* G. A. OTIS, *Assistant-Surgeon U. S. Army. A report on a plan for transporting wounded soldiers by railway in time of war, with descriptions of various methods employed for this purpose on different occasions* WASHINGTON: WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE, 1875.



Northwestern States; but after they concentrated at Chattanooga this was no longer feasible, and it became necessary to extend considerably the arrangements already made by the Army of the Cumberland for the transportation of its own sick and wounded on the railroad from Chattanooga to Nashville and Louisville. The first hospital cars on this route were run between Nashville and Louisville, before the concentration alluded to, but the service was subsequently extended to Chattanooga, and afterwards to Atlanta.

Surgeon George E. Cooper reports that when he became Medical Director of the Department of the Cumberland, in May, 1864, he found a train of hospital cars, which had been fitted up under the direction of Acting Assistant-Surgeon J. B. Barnum, already in operation on the line, one hundred and eighty-five miles in length, between Louisville and Nashville. This service he rapidly extended, using freight cars to some extent, but giving the preference to passenger cars fitted up with litters, so as to carry the patients in the recumbent position, until, as Dr. Otis states in the report above referred to, before the close of the year 1864, "there were three hospital railway trains, each consisting of ten or twelve cars, with several freight or baggage cars attached sometimes, connecting the advance of the army with Nashville and Louisville; one train at least daily leaving the vicinity of the field hospitals. In each train, one car was fitted up exclusively as a kitchen and store room, and another as a dispensary, with accommodation for the medical officer in charge, and an ample supply of medicines, stores, instruments, and appliances.

"These cars were fitted up under the immediate supervision of Medical Director Cooper, and of Surgeon O. O. Herrick, 34th Illinois volunteers.

"General Thomas accorded the fullest authority to Medical Director Cooper to select for the hospital trains the best locomotives and cars to be found among the rolling-stock, and to have new cars fitted up whenever necessary, and caused to be detailed for the hospital service the most experienced conductors, engineers, and other employés of the several railway lines. Medical Director Cooper informs the reporter that the smoke-pipes of the locomotives of the hospital trains were painted of a brilliant scarlet; the exterior of the hood, and of the tender-car with water and fuel, were of the same conspicuous color, with gilt ornamentation. At night, beneath the head-light of the engine, three red lanterns were suspended in a row. These distinguishing signals were recognized by the Confederates, and the trains were never fired upon or molested in any way. Dr. Cooper was informed by wounded Confederate officers in Nashville, who were captured at the battle near that place,



of the stringent orders given his troopers by General N. B. Forrest for the non-interference with, and protection of, the U. S. A. hospital trains, by giving them timely warning in the event of the railway being obstructed or torn up. The partisan troops of Colonel John Morgan's command had similar instructions. It is related, that on one occasion Colonel Morgan's scouts stopped the train directed by Dr. Barnum, and having switched it off upon a siding, after inquiring if there were sufficient stores on the train for the sick and wounded, they tore up the main track, and then rifled and destroyed five supply trains that successively arrived at the point where the line was interrupted.

"Ventilation, without exposure to drafts, was well provided for in these cars, by windows in the elevated part of the ceiling, and by valvular openings near the roof.

"When General Sherman's army was before Atlanta, until the lines of communication were destroyed, preparatory to the march to the sea, hospital cars ran regularly from the front to base hospitals, some of which were four hundred and seventy-two miles distant."

Assistant-Surgeon F. L. Town, U. S. A., in a report on these hospital trains, states that "the conception of a complete hospital, with all its appliances and means of comfort, propelled by steam, was first carried into practical operation in the medical department of the West, and its perfect success was most gratifying to all. In visiting these hospital trains the air is found sweet and pure, the wards neat and inviting, and it may unhesitatingly be said that men on hospital trains are often as comfortable, and better fed and attended, than in many permanent hospitals."

The operations of the Army of the Potomac led it for a large part of its history to occupy such camp sites that water transportation was available, and was extensively used for its sick and wounded. While this army lay along the Rapidan, however, transportation by rail became necessary, and a number of hospital cars were constructed for the purpose. Specially-constructed hospital cars were also used on several of the Northern railroads, and various plans for both freight and passenger cars were employed by the Confederate authorities. An account of these devices will be found in the report of Dr. Otis, already alluded to.

To illustrate this subject, five models have been constructed. No. 1 represents the surgeon's car of a hospital train of the Army of the Cumberland. No. 2, the kitchen car of a hospital train of the Army of the Cumberland. No. 3, the form of car found most satisfactory for the transportation of sick and wounded in the Army of the Cumberland. No. 4, a hospital car of the Army of the Potomac. No. 5, a freight car fitted up with litters for transporting sick and wounded.



No. 1. *Surgeon's Car, Hospital Train of the Army of the Cumberland.*—This model represents an ordinary passenger car, with the seats removed, and with partitions and fixtures introduced, so as to lodge the surgeon in charge of the train and his hospital steward, and give accommodations for the dispensary of the train, with an office for the transaction of business.

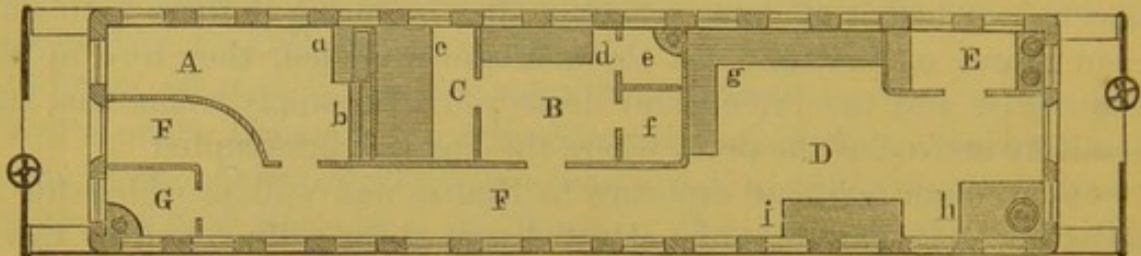


FIG. 1.—Horizontal plan of surgeon's car, Army of the Cumberland

Figure 1 represents the arrangements of this car.

A, dispensary and steward's quarters; *a*, desk and book-case; *b*, shelves for medicines. This apartment contains also a revolving chair at the desk and a bed for the steward.

B, surgeon's sitting-room; *d*, lounge; *e*, water-closet; *f*, clothes-closet.

C, surgeon's bed-room; *c*, bed.

D, office; *g*, lounge; *h*, water-cooler; *i*, wood-box and stove.

E, wash-room, with water-basin, tank, and dressing locker.

F F, passage through car.

G, water-closet.

No. 2. *Kitchen Car, Hospital Train of the Army of the Cumberland.*—This model represents an ordinary passenger car with the seats removed, and with partitions and fixtures introduced for a kitchen, store-room, and dining-room.

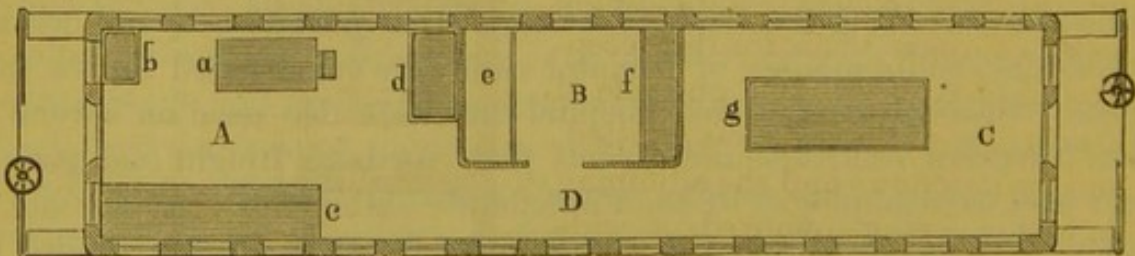


FIG. 2.—Horizontal plan of kitchen car, Army of the Cumberland.

Figure 2 represents the arrangements.

A, kitchen; *a*, cooking range; *b*, sink; *c*, cupboard; *d*, table and shelves.

B, store-room; *e*, ice-box; *f*, shelves for provisions.

C, dining-room; *g*, table, surrounded by benches. This apartment contains also a stove and wood-box.



No. 3. *Car for Sick and Wounded, Hospital Train of the Army of the Cumberland.*—This model represents an ordinary passenger car, fitted up in the manner reported by Medical Director Cooper to be “the simplest and best form.”

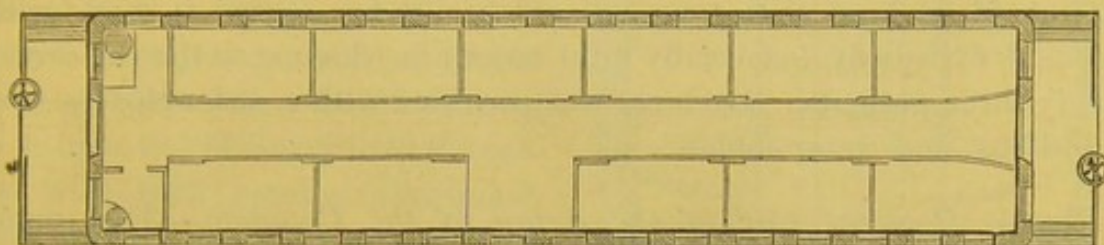


FIG. 3.—Horizontal plan of one of the hospital cars of the Army of the Cumberland.—(OTIS.)

Figure 3 is a horizontal plan of the arrangements. Figure 4 is a

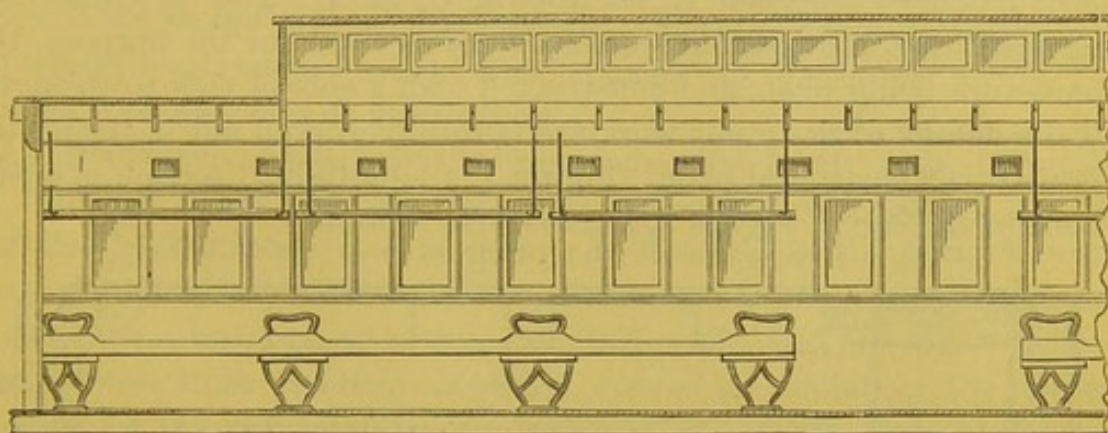


FIG. 4.—Longitudinal section of one of the hospital cars of the Army of the Cumberland.—(OTIS.)

longitudinal section of a part of the car. Figure 5, a transverse section.

The arrangements were as follows:

The alternate seats of the passenger car were removed, and suitable slats laid upon them for the reception of mattresses. On one side of the car, one of the beds was omitted, and two windows and the adjoining panelling being removed, a wide door was introduced, “affording an ample space for the ingress and egress of litters with the most severely wounded patients.” Eleven beds were thus formed, above each of which an ordinary field stretcher, with its handles shortened, was suspended by means of two iron hooks,

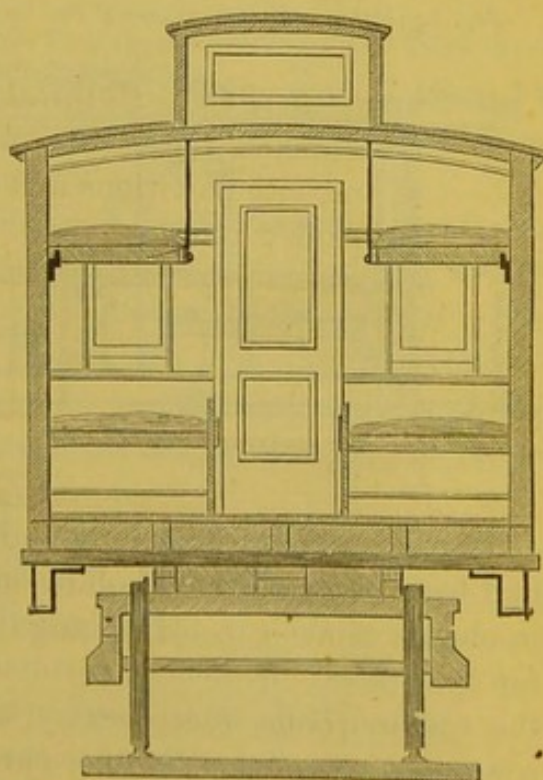


FIG. 5.—Transverse section of one of the hospital cars of the Army of the Cumberland.—(OTIS.)



one at each end, fixed in the side of the car, and two iron rods terminating in hooks, which were fastened above to the roof of the car. Eleven additional beds were thus provided, so that the car would carry twenty-two patients, one to each bed; but the lower beds were so wide, (about 44 inches,) that two patients could be carried in each when deemed expedient, (especially mild cases,) in which case the car carried thirty-three patients. Each car was provided with a water-closet, stove, wood-box, and water-cooler.

No. 4. *Hospital Car of the Army of the Potomac*.—This model represents the form of a hospital car devised by Mr. J. McCrickett, Assistant Superintendent of Military Railroads, and recommended for construction by Surgeon R. O. Abbott, U. S. A. The cars were not passenger cars refitted, but were specially devised for the purpose, the frame-work being plain, and constructed with a special view to strength. All the details of the frame-work are faithfully worked out in the model. Figure 6 is a horizontal plan. Figure 7, a longitudinal section of a part of one of the cars. Figure 8, a transverse section.



FIG. 6.—Horizontal plan of one of the hospital cars of the Army of the Potomac.—(OTIS.)

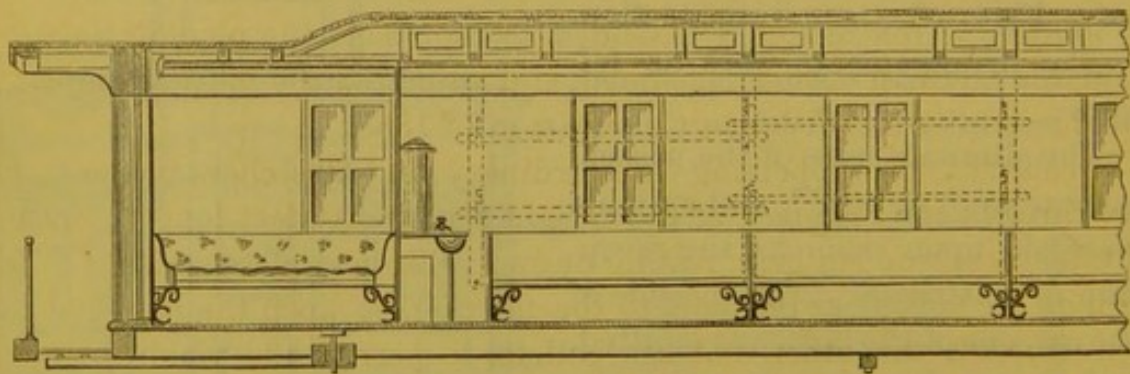


FIG. 7.—Longitudinal section of a part of one of the hospital cars of the Army of the Potomac.—(OTIS.)

The cars were 45 feet long and  $8\frac{1}{2}$  broad, inside measure. Six and a half feet were partitioned off at one end of the car for the medical officer in charge of the car. This apartment was fitted up with a desk, shelves for books and medicines, revolving chair and lounge. In the rest of the car, ten beds were constructed, by placing seats like those used in passenger cars, but without backs, at suitable intervals. On these, slats were laid for the reception of mattresses. Ten beds were thus formed,



which, however, were narrower than those of the hospital car of the Army of the Cumberland, (viz., thirty inches wide,) being intended for the reception of a single patient each. A passage-way three and a half feet wide was thus left. Above each of these beds two ordinary field stretchers, with their handles shortened, were suspended in the following manner: Opposite the middle of each of the seats supporting the lower beds, an upright wooden post was erected, extending from the floor to the roof, and firmly fastened at each extremity. Each stretcher was supported in its place by means of two iron hooks, (one at each end,) fastened to the side of the car, and two leather loops, (one at each end,) fastened to the upright posts. Beds were thus provided for thirty patients in all. Two stoves, a water-cooler, and a water-closet completed the outfit, and in order to give ready access to the severely wounded, carried on stretchers, the door at the end of the car, intended for patients, was made three and a-half feet wide.

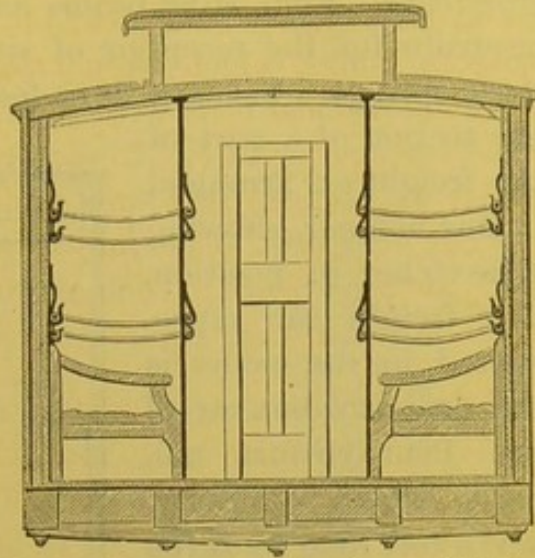


FIG 8.—Transverse section of one of the hospital cars of the Army of the Potomac.—(OTIS.)

No. 5. *Freight Car fitted up for the Transportation of the Sick and Wounded.*—This model is intended to represent the plan devised by Grund, a German master machinist, and adjudged the most suitable for freight cars by the Prussian Commission of 1868.

It consists "in supporting three ordinary field stretchers in the front, and three in the rear part of the freight car, twenty feet long, by means of transverse wooden bars, resting on semi-elliptical plate springs. The springs are spiked at one end to the flooring, to keep the bars stationary, while at the other end are rollers, to permit the yielding of the springs. The latter are surmounted by U pieces, or clips to receive the

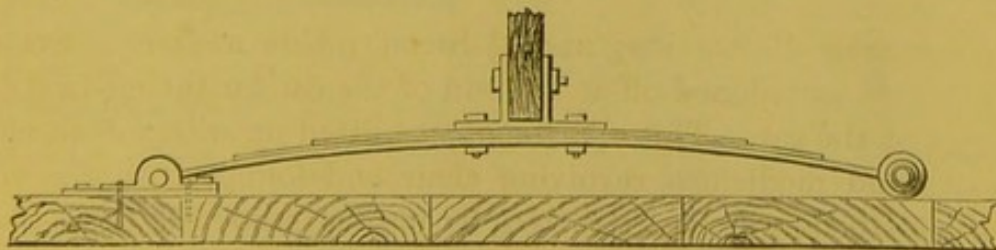


FIG. 9.—Enlarged view of the spring used in Grund's system, and adopted in the Bavarian trains, for the support of litters.—(OTIS.)



cross-bars. Four cross beams and eight springs constitute the outfit requisite for the reception of six litters." Figure 9 represents one of these springs, which are three feet in length. Figure 10 is a longitudinal section of a part of the freight car arranged in this manner, showing a stretcher in position. The freight car represented in the model is the ordinary box-car of the Pennsylvania railroad, which is twenty-seven feet long by seven and a half broad, inside measure. By a different arrangement of the springs, eight stretchers might be accommodated, as is shown in a partial model, representing the floor of a car of the same size.

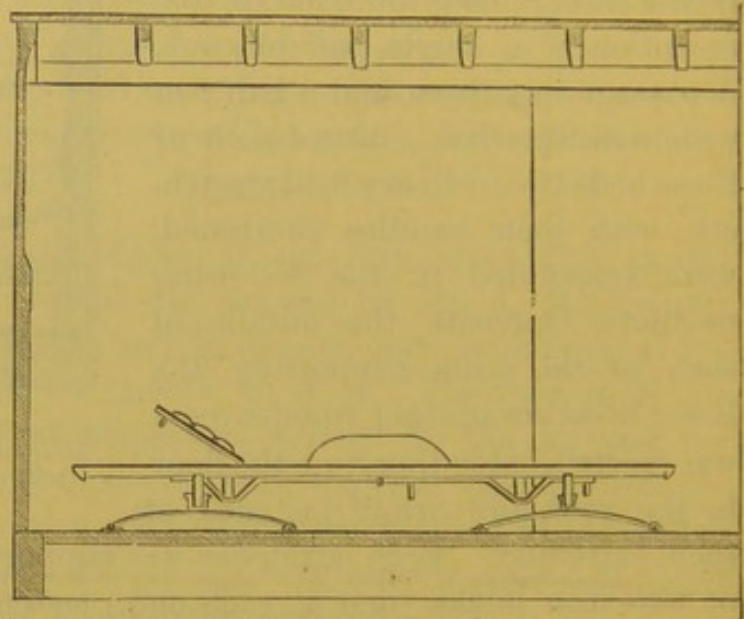


FIG. 10.—Longitudinal section of a part of a freight car arranged on Grund's system.—(OTIS.)

Assistant-Surgeon Otis has recommended that, in any future war, the Quartermaster's Department of our army should be authorized to keep on hand a supply of these semi-elliptical springs. Trains going to the front with provisions, forage, or ammunition, should then each carry, suspended under the roof, a sufficient number of these springs, with the spikes required, to enable the car on its return, instead of going back empty, to carry comfortably, on beds improvised by means of the ordinary field stretchers, a number of sick or wounded, corresponding to its size. Assistant-Surgeon Otis has also suggested that these springs might be utilized in connection with field stretchers for the comfortable conveyance of the wounded in ordinary army wagons.

PLANS  
of a  
POST HOSPITAL  
for 24 beds.

