

## ALL STEEL PASSENGER SERVICE CARS.

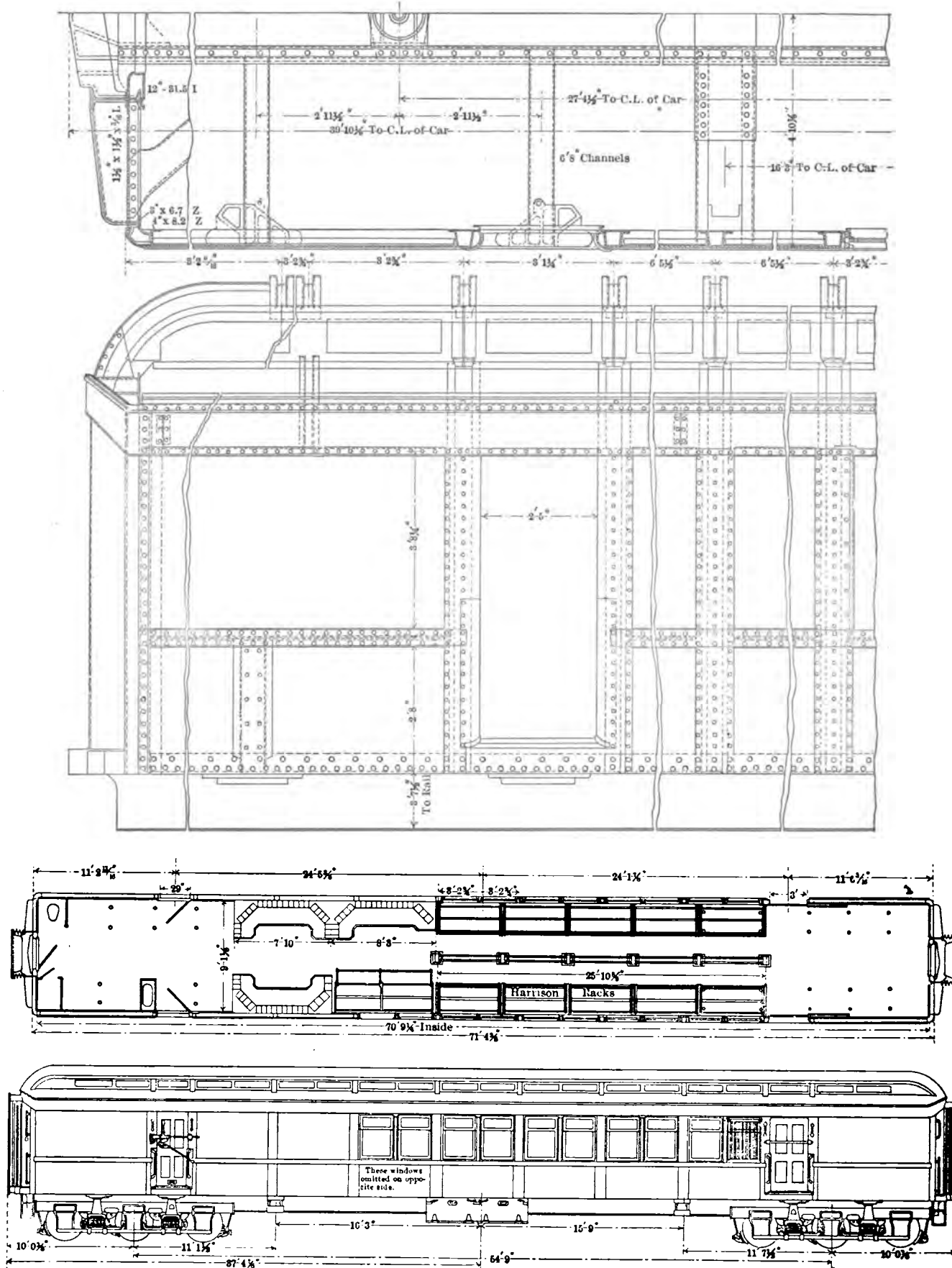
## PENNSYLVANIA RAILROAD.

## POSTAL CAR.

These cars, which follow very closely the general principles used in the passenger coach, were briefly described and illustrated

on page 136 of the April issue of this journal. At that time, however, drawings were not available and the description of the general structure will be repeated. Reference should be made to the previous article for views of the exterior and interior of the car and of its framing.

These cars are 70 ft. long, inside measurement, or 10 ft. longer than the present standard postal car. This extra length is used

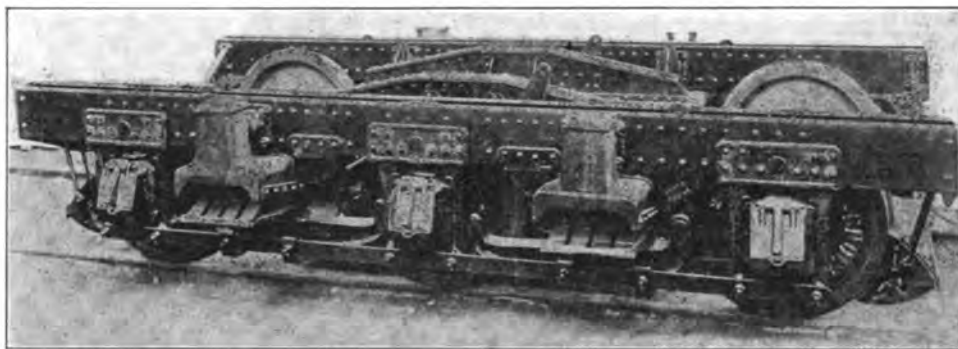


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flanges spanning the center axle. A heavy horizontal steel plate binds and stiffens this whole structure as is shown in the illustrations. The two truck bolsters are of the same design used on the four-wheel truck and rest on sixteen elliptical springs, four at each end of each bolster. The wheel pieces consist of two 10-in. channels and are spaced and secured by four cross bars of a special pressed steel shape, being dropped down in the center to clear the center sills. The weight is transferred directly to the journals of the outer two wheels through the wheel pieces and the nests of coiled springs on each box in the same manner as for the four-wheel truck. The center wheel, however, receives its load through similar coiled springs, the spring cap of which is connected through a short equalizer by hangers to the 2:1 equalizers on which the bolster springs rest. The shorter arm of these equalizers is connected directly to the wheel piece. In this manner each journal box receives  $1/6$  of the total weight brought to the truck.

The bolsters have a spring centering device of the same type

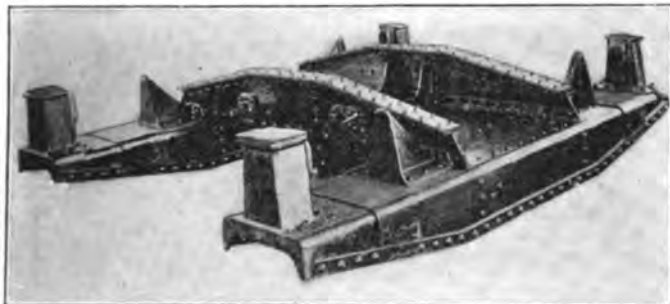


SIX-WHEEL TRUCK, STEEL POSTAL CAR—PENNSYLVANIA RAILROAD.

ing fastened to the webs of the center sills. These two ends are held apart and against their bearing by a large helical spring. Both levers have another arm extending back and bearing on the opposite sides of a pin in the draw bar which is shown just within the ends of the center sills.

The operation of the device is such that a movement of the draw bar as a whole operates through the pin just mentioned to one of the levers and the motion is then transferred to and resisted by the helical spring. The motion of the coupler head in rotating about its pivot is also transferred to these levers by the sides of the cavity in the head coming into contact with the lever and moving it against the resistance of the spring. Thus one spring acts as a centering device for both the draw bar and the coupler head.

To prevent trouble with the uncoupling connections when so large an amount of motion is provided for, they have been carried back to a bell crank pivoted around the inner draw bar pivot and by a series of bell cranks and rods, connection is made to the head and the uncoupling shaft from this point. The steam and air pipes are also connected so as to allow a certain amount of lateral motion and prevent interference with the coupler. They are connected, as is shown in the illustration, by a cast steel yoke having a bearing in lugs secured to the center sills and spanning the draw bar. Helical springs are arranged to keep this

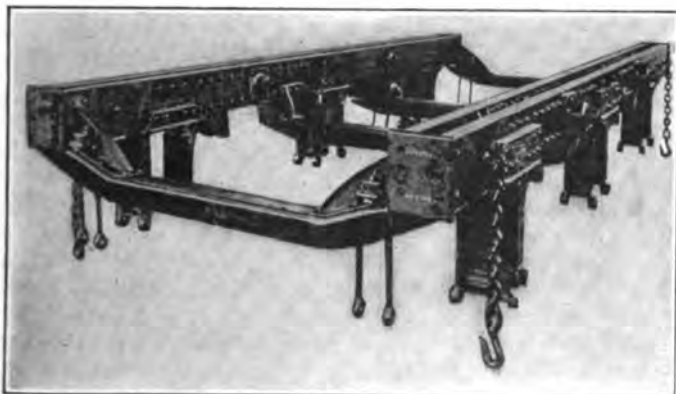


DOUBLE TRUCK BOLSTER—SIX-WHEEL TRUCK.

as used on the four-wheel truck and carry side bearings at their outer ends in a similar manner. This truck requires the use of brake beams, the connections to which, however, are made very close to the brake head instead of at the center as is usually done.

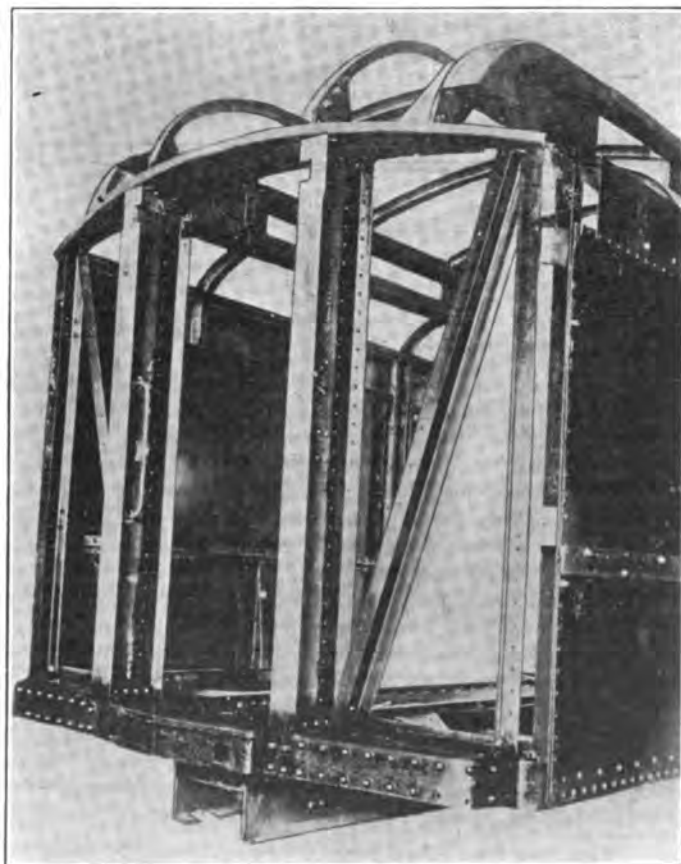
#### COUPLER AND DRAW BAR.

A special design of spring centering draw bar and coupler head has been applied to these cars. This will permit an 8-in. lateral motion of the draw bar on either side of the center with-



FRAME—SIX-WHEEL TRUCK.

out binding. The details of the design are shown in one of the illustrations. It will be seen that the draw bar is pivoted to the yoke at its inner end and to the coupler at its outer end. The socket in the coupler head in which the draw bar enters is broad enough to allow considerable radial movement of the coupler head. Within this socket pivoted around the same pin are two levers, the outer ends of which extend back and rest on a bear-



BODY END FRAMING—70-FOOT STEEL POSTAL CAR.

yoke central except when the draw bar has moved a certain definite amount and strikes the yoke, carrying it along against the resistance of the springs.

### A UNIT OF COMPARISON.\*

By GEO. G. YOEMANS.†

One of the gravest difficulties which confronts anyone who is attempting to exercise a general supervision over the supply department of a railroad, and to direct its operations without being intimately connected with the details of daily routine, is to determine definitely, and within reasonable limits, whether or not the total amount of supplies carried in stock is greater than it should necessarily be.

In other words, whether the interest charge on the money invested in supplies is warranted expense—and whether or not any portion of the amount so invested could be profitably released and diverted into other channels, where it would bring larger returns, without detriment to the service.

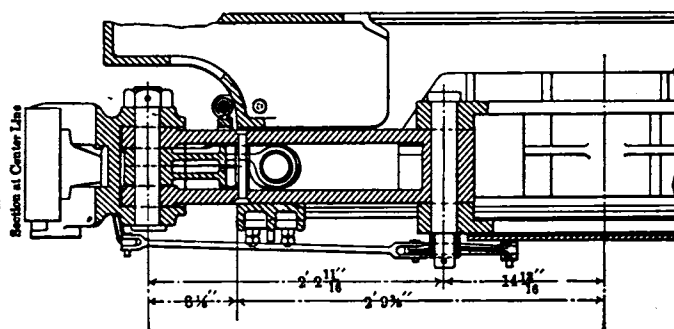
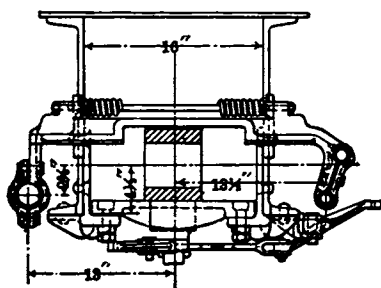
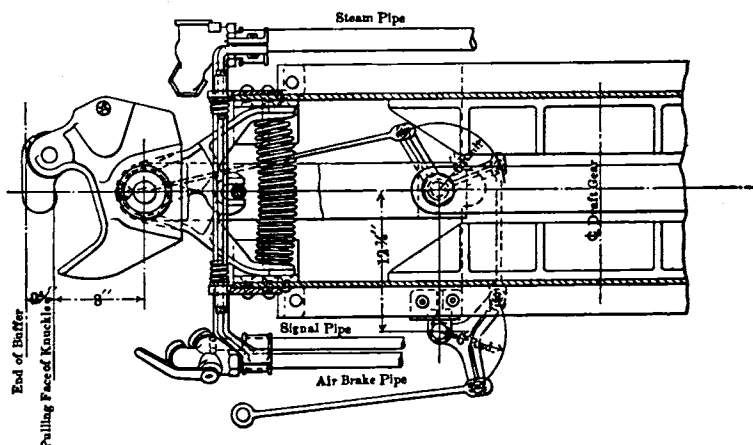
With the best intentions in the world the storekeeper is in the unfortunate position of being thrown in constant contact with those officials whose interests demand that there should always be "plenty" of everything available at a moment's notice, and while one of the fundamental duties of the position is to see that all reasonable demands of this nature are fully met, the daily surroundings of the storekeeper lead him to be on the safe side, and to frequently have more than "a plenty."

The measure of efficiency in this respect would naturally be the average amount of material carried in stock per something—PER WHAT? Copies of the annual reports of 33 different railroads in all sec-

cumstances behind which the supply agent may take refuge.

Tested by this unit it is surprising to see what a wide variation exists among the leading railroads of the country in this respect, and while a portion of it is undoubtedly due to discrepancies of accounting, more is undoubtedly due to the degree of organization, methods, and efficiency which have been reached by the department in charge of this important branch of the service.

The total amount of money invested in material on the thirty-three roads under consideration is over one hundred and four millions of dollars. As between the two roads which, tested by this method, show the best and the poorest performance, the latter company, if its stock of material could be reduced to the same relative basis as that shown by the former, would be able to release over nine millions of dollars; and if its stock of material was reduced only to the average amount per unit shown as carried in stock by all of these lines, it would still be able to release over six millions of the money it now has so invested, the interest on which is in the nature of a fixed charge against its operation. If the total stock reported on hand by all of the thirty-three railroads could be reduced to the basis



RADIAL COUPLER AND DRAWBAR—PENNSYLVANIA RAILROAD ALL-STEEL CARS.

tions of the country were obtained and a number of theories were considered and tested out in an attempt to reach a satisfactory conclusion, but in every instance we seem forced to the opinion that the only measure, which may be considered as approximately meeting all conditions, is the measure of work performed; namely the total number of tons moved one mile, and the total number of passengers carried one mile, added together; and that the percentage which the average amount of stock carried bears to the sum of these two factors expressed for convenience in "10,000 ton and passenger miles" may be considered as a guide to the amount of material necessary to be carried in stock, to meet the requirements of every-day operation.

The efficiency of the department must be judged upon the basis of the amount of miscellaneous stock material such as is commonly used in the ordinary every-day operations of the road and there should be no shelter of "extraordinary cir-

cumstances behind which the supply agent may take refuge.

These are startling figures. I do not claim that they accurately represent actual conditions, but I do claim that they clearly point to conditions that actually do exist. Allow, if you please, fifty per cent. of these amounts for discrepancies in the accounting methods on which this comparison is based, and the remainder is of sufficient importance to awaken the interest of managing officials. Don't make the mistake of thinking that this is a little thing. Every hundred dollars intelligently released from unnecessary duty adds at least four dollars to the net income of the company at the end of the year, and the figures I have given indicate the number of times by which it may be possible to multiply that hundred dollars perhaps in your own department.

The Pennsylvania Railroad has 45,496 shareholders, the average number of shares held by each being 137.

\* Extracts from a paper read before the Railway Storekeepers' Association.

† Assistant to the President, Wabash Railroad.