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IMPROVED STEAM STREET CAR.

For suburban traffic, particularly where large numbers of excursionists are to be carried short distances to and from pleasure resorts, as between Brooklyn or Bay Ridge and Coney Island, the American practice is to use light cars, with or without steam motors. The advantage gained by the utmost lightness of construction consistent with strength arises from the relatively small weight of material for each passenger, the extra cheapness and durability of light cars, and the easy adjustment of dead weight to the traffic. This is particularly important where the traffic is irregular in quantity. When the rush of passengers is great, the additional capacity required is easily obtained by adding cars, which may be dropped when the rush is over.

The European practice is in many respects quite different. For the suburban traffic of Berlin, for example, the cars are much heavier than American cars for similar work, and usually are double deckers. Several attempts have been made in this country to introduce two-story cars for street service, but in no case has the attempt been long persisted in. The general verdict is that they are not profitable. What the secret of the success of such cars in Europe may be, we are not prepared to say; yet it is evident that they are successful and apparently popular. The illustration presented below gives a good idea of one of the most approved forms of such double cars. It is said to be specially adapted for short suburban roads and for connecting pleasure resorts. The car can be detached from the locomotive, but generally they remain together. The engine, which is capable of hauling two or more cars, has two seven-inch cylinders

with twelve-inch stroke, and can develop 100 horse power. It has a speed of 38 miles, and may be quickly stopped and started. It burns from 5 to 6½ pounds of coal per mile, and can carry fuel for a run of 125 miles and water enough for 50 miles. The ground floor of the car has seats for 20 first and second class passengers, and 20 third class; the upper story has 40 third class seats. There is also standing room for ten or twelve passengers, space for baggage, a closet for mail bags, two drop-boxes for letters, a closet for the conductor and another for tools and implements. The car is heated by steam, and is provided with both hand and steam brakes.

These cars and locomotives were designed by C. Thomas, civil engineer in Mainz. The special advantage claimed for them is their comparatively low cost, making them economical for roads having no very great traffic and unable to afford a large amount of rolling stock.

Where passengers are separated into classes paying different rates, the two story arrangement seems to answer very well. On American roads a few smokers might be induced to climb to the upper compartment, but the multitude would not willingly take to them. At least, that has been the experience wherever double deckers have been tried here.

How Hinges and Other Articles are Polished.

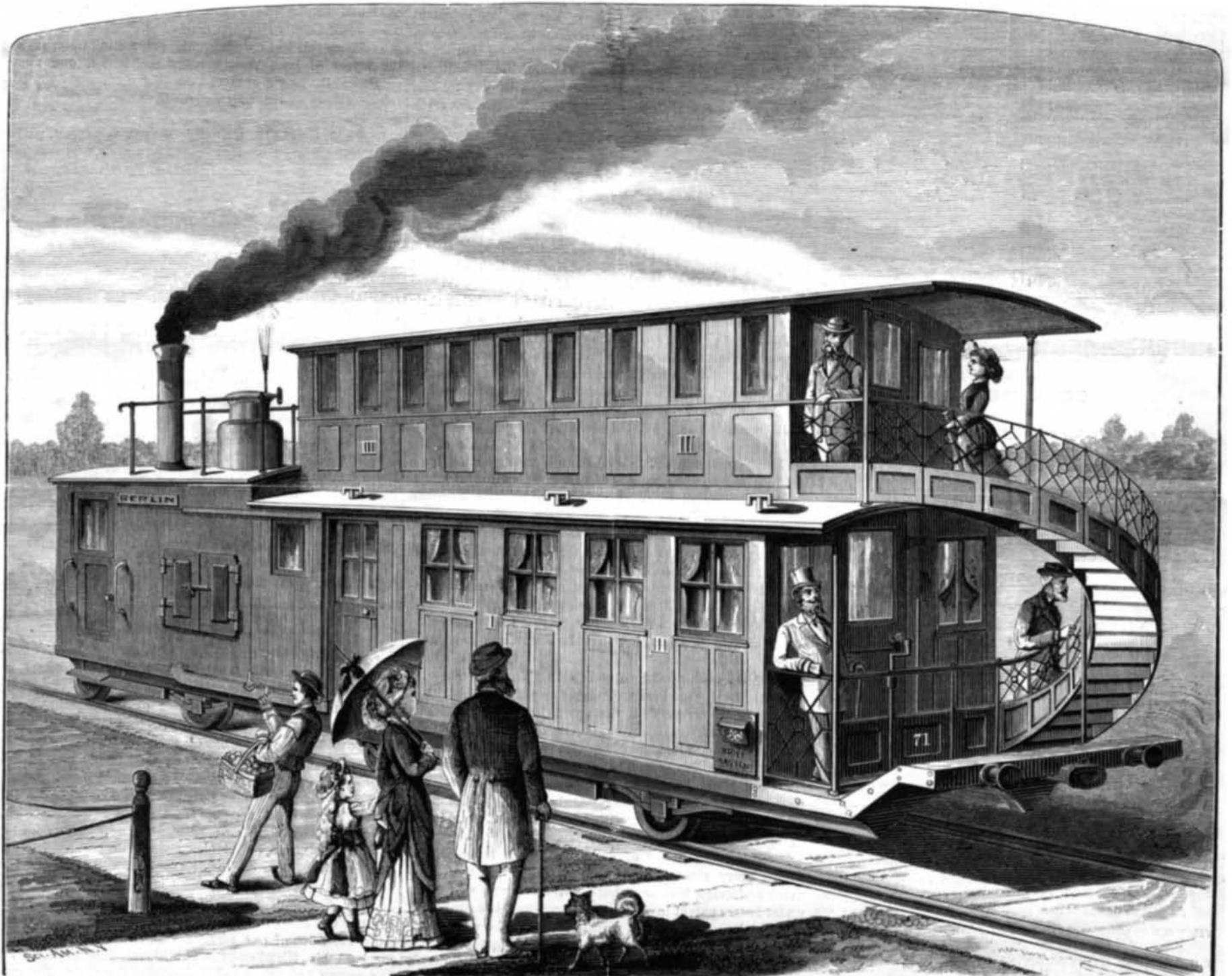
Common articles of hardware such as screw eyes, hinges, handles, etc., are polished by tumbling in a revolving barrel. The tumbler is charged about half full with the goods mixed with the material selected according to experience as best suited to do the work. Small scraps of iron, sand and

gravel with the attrition of the metal take away the roughness and put a moderately smooth surface to the work. Then charge the work into a tumbler partly filled with leather scrap or skivings cut fine, mixed with crocus or almost any fine polishing powder; after which it can be cleaned and brightened by an additional tumbling in saw-dust and lime. The above is a general feature of this kind of work. Almost every manufacturer has some peculiar system of management suited to the special kind of work made. Some use oil or water, then boil the work in lime water, and again tumble in saw dust to dry and brighten. The black oxide of iron (anvil scales) is much used where it can be had. A little plumbago is sometimes thrown into the tumbler to give the work a shining black surface. A strong barrel or keg on trunnions with a small door for charging is the most suitable for small, light work.

Much work that has a fine finish upon the surface is polished by boys, who handle the individual pieces against a large brush wheel with crocus or whiting. With a large wheel, the process is so quick that a boy will run through with many thousand pieces in a day.

A New Balloon Project.

M. Tissandier, the French aeronaut, is projecting the manufacture of an elliptical balloon, which is to be driven by a dynamo machine and storage batteries. The balloon will be 131 feet long, and will have a capacity of more than 100,000 cubic feet. It is calculated to give a lifting power of 3½ tons, which will, when the machinery is in place, allow for a ton of passengers and ballast.



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