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AERIAL RAILROAD BRIDGE FOR NAVIGABLE RIVERS.

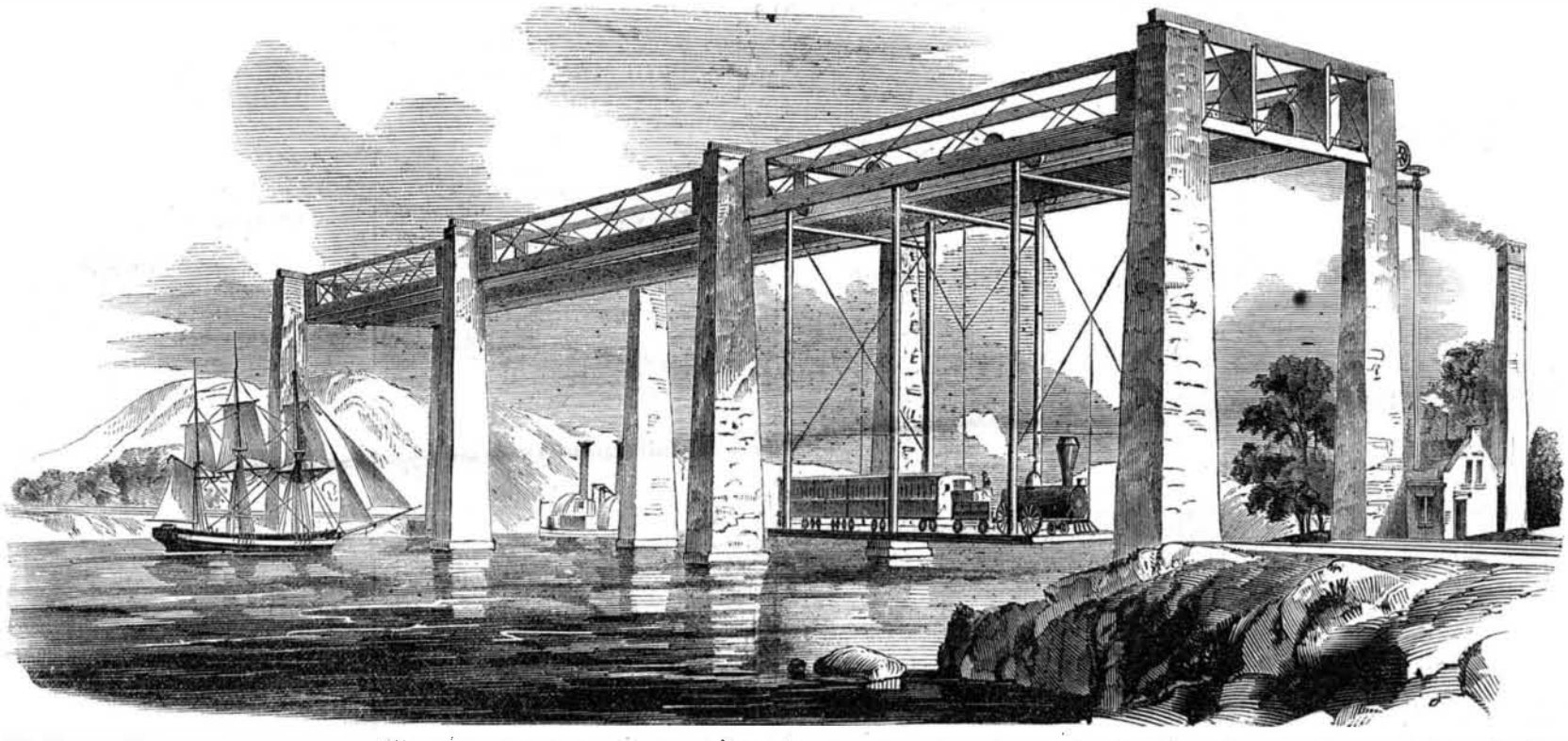
Mr. H. N. Houghton, of Bergen, New Jersey, has taken measures to secure a patent for a bridge to extend over navigable rivers, and to avoid all the objections heretofore brought against such structures.

Fig. 1 is a perspective view, and fig. 2 is a plan view.

The nature of the invention consists in erecting piers of a great height and placing a double track railroad on the same, sufficiently high to allow the masts of ships to pass freely underneath during the highest freshets or tides. A suspension carriage (or carriages) is employed; it is hung to run on the track above, and the platform of it is hung so far below the track on the piers, as to allow persons and carriages to pass on the suspension carriage or platform, and to be propelled to the other side.

A A represent the piers; sleepers, *a*, of great strength are laid from pier to pier. The sleepers are supported by stays and braces, B B, extending across, the strong ones resting on the centre of the piers, and binding the side sleepers, *a*. The rails are laid on the inside sleepers, F F. A truck or carriage platform is suspended from the track above. Its side suspension frames are hung on railroad car wheels, D D. It is like a railroad car with wheels inverted. It may be termed a railroad truck to which a carriage is attached by a suspension frame, the truck running above instead of below the common carriage. The truck may be formed in any manner found the most suitable, either like the one, C, D, E, or some other modification of it. A pulley, J, is represented in fig. 2 on a cross shaft, and a strong rope passes over it, and along the whole length of the bridge. This is operated by a stationary steam engine at one end of the

Figure 1.



bridge, in the same way that trains of cars are moved on some steep inclines. The number of piers will be in proportion to the width of the river the bridge is designed to cross. The sleepers, with their rails, are firmly supported on truss frames springing from the piers, so as to leave free space between the piers for the passage of the carriage, and they can be made stronger than common long suspension bridges.

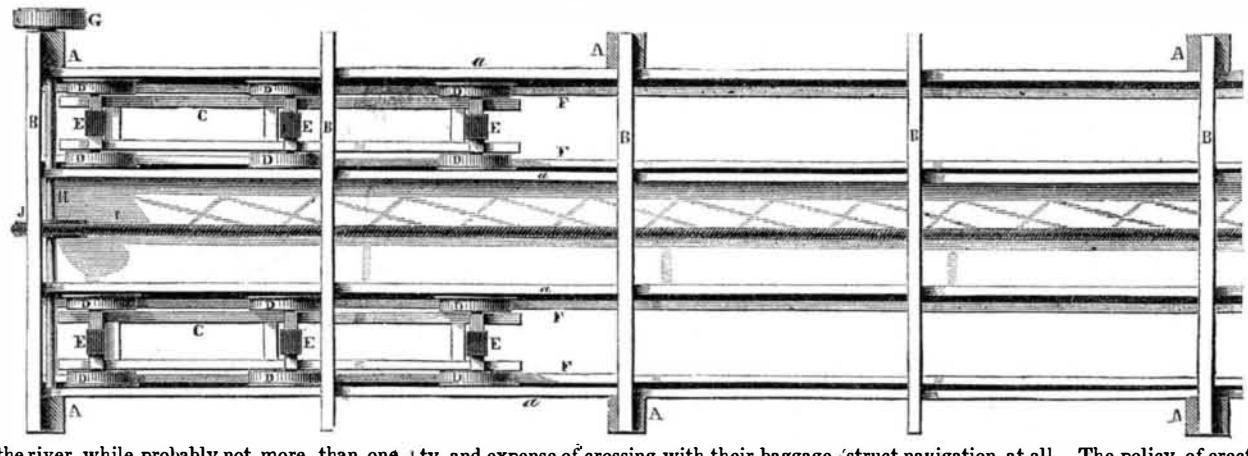
As will be observed, in fig. 1, the cars can run from the level of the track to the suspension carriage, and pass right on to the track on the other side. The Supreme Court of the United States has just decided that the Wheeling Suspension Bridge is an obstruction to the navigation of the Ohio river, and that it must come down or be elevated to one hundred and eleven feet, or nineteen feet higher than it is at present. There is a certain height—according to the altitude of the river banks—beyond which it is impossible to erect a bridge that will be useful. To erect a bridge over the East River, at New York, it would require to be 200 feet above the level of the river. It would be like climbing up the gable of a house for horses to get up to the roadway. This suspension carriage bridge removes this difficulty; the bridge may be 200 feet high, and the transporting carriage may be on a level with the roadway of a street. At the same time inclines or stairs may be made to the top of this bridge for foot passengers, while below it is adapted to carriages, leaving a free passage at all times for the tall ship or majestic steamboat. It thus can answer a three-fold purpose, viz., a bridge to transport carriages on a level with the roadway at each side; a bridge without a draw to let the largest vessels pass freely under it at all times; and a bridge for foot passengers like any other bridge.

The question of erecting a bridge over the East River at New York has been often discussed, but no bridge could be erected over it that would now pay expenses and compete with steam ferry-boats. That a bridge could be erected, there can be no doubt at all, and the one here presented would be by far the best in every sense of the word.

To erect a draw-bridge over the Hudson from New York to Jersey City, the interests of the public would probably suffer, that is the damage to navigation would be greater than the benefits conferred, because the shipping that passes this point is immense, and the other business is comparatively small. But at Piermont the shipping is much less, while the Erie Railroad brings to that point a world of freight and passengers from the great West.

By building a bridge like the one here represented, navigation there would not be impeded, we believe, at all, while the benefits to the railroad would be incalculable, as they could load and unload their cars in New York, take up and set down their passengers there, and not be delayed by ice in the winter, and by the unloading, storing, carting, and shipping of freight. At Albany there is still less shipping, and the five railroads already centering there make an immense amount of freight to cross the Hudson at this point, and it is understood that three more large roads, leading northeast to Vermont, northwest to Sackett's Harbor, and southwest to the Erie Road, some of which are already commenced, and all may be considered as fixed facts. All these roads, it is safe to say, will bring to Albany daily 3,000 passengers, and 3,000 tons of freight. A large proportion of this freight, and probably three-fourths of the passengers, (taking the whole year) cross

Figure 2.



the river, while probably not more than one-fourth this number of passengers and one-half the amount of freight passes by Albany on the river. The question then arises, why should these two thousand railroad passengers be subjected to the delay, inconvenience, uncertainty, and expense of crossing with their baggage upon a ferry-boat? What injustice would there be in subjecting the 500 river passengers to some little delay to save the 2,000 railroad passengers a much greater delay. But an elevated bridge and railway would not obstruct navigation at all. The policy of erecting such a bridge as this at such a place as Albany surely requires no second consideration. More information may be obtained by letter addressed to Mr. Houghton. We may make a few more remarks on this subject next week.