

THE ST. LOUIS BRIDGE.

We give herewith a perspective view of the west abutment, and about two sevenths of the shore span of the stupendous bridge across the Mississippi river at St. Louis, Mo. This engraving will give our readers a much better idea of the magnitude and beauty of this remarkable work than anything yet published. The proportions of the bridge may be inferred by comparing them with the figures on the side of the river beneath the arches. The individual standing with his back against one of the small piers, with arms folded, surveying the father of waters as he rushes past the city, is only about as high as two and a half courses of the granite masonry of the pier, and he stands about 40 feet below the carriage way of the bridge. Seventy feet above him the iron horse is seen with its cloud of smoke emerging from the sandstone arcade which surmounts the five stone arches that carry the viaduct over the St. Louis wharf. The railway tracks are below the carriage way and foot walks, and the steam trains in no manner interfere with the local traffic of St. Louis, as the bridge is connected with a tunnel under the city.

The towers, which terminate the bridge proper at each end of the structure, contain elevators and stairways for the convenience of pedestrians on the wharfs on both sides of the river.

The St. Louis bridge will be found, if compared with other great bridges of the world, to surpass them all in several important particulars. In the massiveness of its masonry and the depth of its foundations, it stands alone. One of its channel piers and one abutment pier stand on the marble rock over 100 feet below the river's surface. In the length of its spans there is nothing equal to it in existence, except in suspension bridges. Its two shore spans are 500 feet each in the clear, and are built of masonry, and the middle one is 520 feet.

In capacity it far excels all others yet constructed or designed. The Brooklyn suspension bridge, one of the remarkable works of the age, with its 1,600 feet span, is only designed to accommodate local traffic, and will not possess sufficient strength to sustain steam trains. The suspension bridge about to be constructed over the Hudson, at the Highlands, is only calculated to carry one railway track across the river on its grand span of 1,600 feet; but the business that will be borne across the Mississippi by the St. Louis bridge will greatly surpass that of any other. Already thirteen important lines of railway, says *Engineering*, are preparing to throw their traffic across its arches; and above their trains, on a wide street, now rolls the domestic commerce of the largest inland city in America. One of the widest and most central avenues of St. Louis is extended by it directly across the Mississippi, thus connecting, by a common highway, two of the most prosperous and fertile States in the Union, Illinois and Missouri.

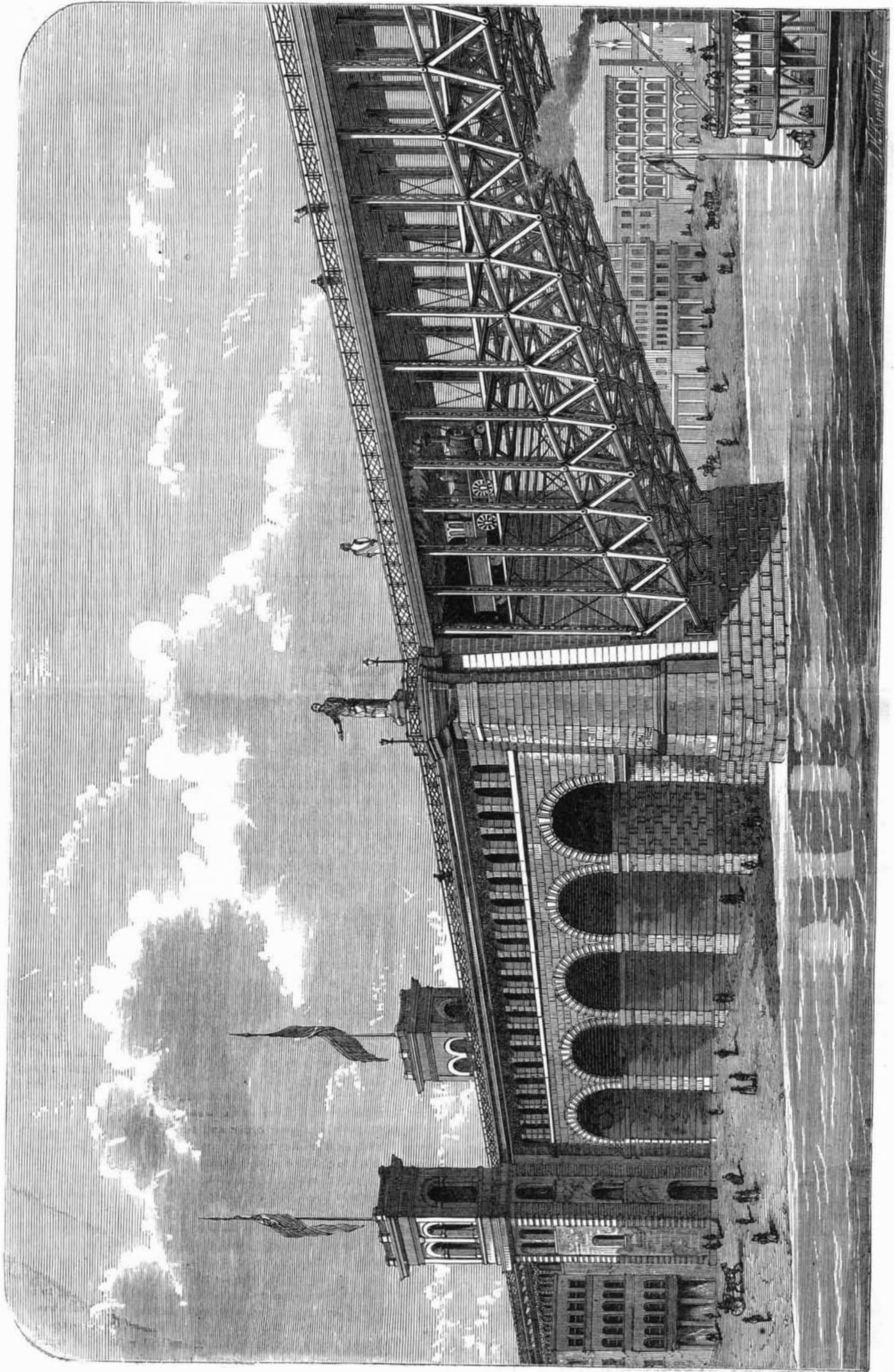
The Fisher Refrigerator.

We have to acknowledge the receipt of a very finely constructed refrigerator, forwarded to us by the inventor, Mr. J. Hyde Fisher, of Chicago, Ill. It is the tangible result of three excellent devices, patents for which were obtained through the Scientific American Patent Agency, and which together render the refrigerator one of the best both in principle and construction that we have ever examined. The first patent covers the principle of separating the cold and warm air, keeping the latter at the top of the cooling room. This is done by the cold air from the ice chamber entering the cooling room at a point below that at which the warm air escapes. There is a constant circulation so long as any ice remains. The other patented additions are a very ingenious latch for the doors and a tap hole protector, which is so constructed that, when the door is closed, no cold air can escape from the re-

frigerator around the faucet. We learn that meats, vegetables, and fruit have been kept in the cooling chamber for periods of several months at a time in perfectly sweet condition. The preserving properties of the invention have been put to a very severe test in its application to refrigerator cars, of which several, constructed on the principle described by Mr. Fisher, have for some time past been used as a means of transporting western fruit, etc., to eastern markets. For fish dealers who freeze

Magnetic Railway Locomotives.

In an arrangement lately devised by M. Burgin, the entire axle, with its wheels, is made into one electromagnet. The wire is wound with increasing thickness from the middle towards the wheels, in the case of external cranks, but uniformly in the case of internal. With coupled wheels the wire is so arranged that there is an alternation of poles, the piece of rails between two poles forming the armature. A locomotive model (without engine or boiler), having three



THE WEST ABUTMENT OF THE GREAT BRIDGE AT ST. LOUIS MO.

a large stock of fish, in order to keep the same over considerable lengths of time, the system has proved itself eminently suitable, since it has already been successfully adopted in the construction of several large cooling houses in western cities. These last mentioned receptacles have been, and we are informed will in future be, built under the direct supervision of the inventor.

The manufacturer of portable refrigerators and boxes is Mr. H. C. Van Schaack, Jr., of 991 Michigan avenue, Chicago, Ill., who may be addressed there for further information.

pair of wheels and internal cranks, was placed on a line with 30 per cent incline. Five Bunsen elements supplied the force, and a weight of 25 lbs., with cord, passed round the axles. The machine weighed 18 lbs., and, with no current flowing, the wheels merely slid on the rails in position; but when the circuit was closed, the model ran up the incline. When the brake was applied (and weight detached), the model could be held on the steep incline if the current were passing; but if not, the wheels began to slide and the locomotive went downwards with increasing pace; but this descent was promptly stopped when the current was made to flow again.