

**CONSTRUCTIVE CARPENTRY.**

CONNECTIONS BETWEEN BEAMS WHEN  
THEY CROSS ONE ANOTHER.

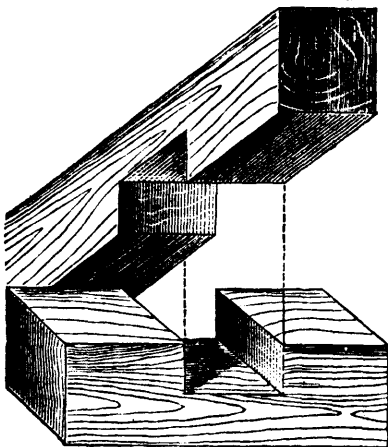


Fig. 23.

**THIRD PART.**

CONNECTING CROSS TIMBERS.

If both the timbers project beyond the point of crossing, the simple connection represented by Fig. 23 is customary. If the timbers have equal thicknesses, each is cut into half its thickness. If the thickness differs, the weaker beam is cut less, or not at all, according to the strain it has to bear, and the heavier beam is only cut far enough to let in the other. Of course this is only done when the surfaces of the beams must be flush; if this is not the case, and the surfaces do not need to be flush, it is of course better not to weaken them by cuts, but to connect them with bolts or bands.

If one of the pieces does not extend beyond the other, the best joint is the so-called dove-tail, represented in Fig. 24 in perspective, and in Fig. 25 in section; in this way the end of the beam most subject to decay when exposed, is entirely hidden and protected, especially when the joint is made to fit snugly.

If the beams are only joined at the ends, and do not project beyond, it is well not to make the cut surfaces parallel to the sides, as then they easily slide off one another by the least longitudinal strain, but to make them slanting, as in Fig. 26, or with a notch, as in Fig. 27; the latter can not be pulled apart by a longitudinal strain, except by breaking the wood, while Fig. 26 is only safe against such a strain when the joint is

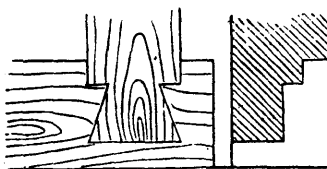


Fig. 25.

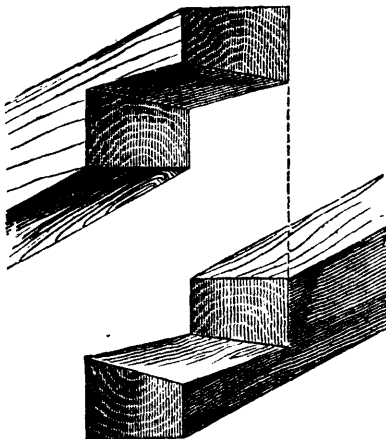


Fig. 26.

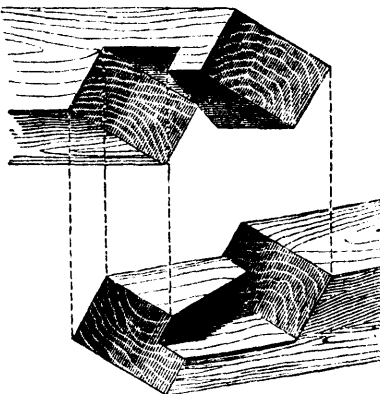


Fig. 27.

heavily loaded, or inserted in a wall preventing its expansion by sliding.

**Profitable Industries the Best.**

BY E. J. NIKULAND.

Among imported articles which can be manufactured much cheaper in the United States than in Europe, is corn syrup, or so-called glucose. Ten years ago this syrup was unknown in this country. In 1867 the importation commenced, and has increased every year at an enormous rate. Corn syrup is (under different names) largely consumed by confectioners, fruit preservers, wine and liquor dealers, and for table use. It is manufactured from potatoes, corn, wheat, and other cereals.

The profits connected with the manufacture of corn syrup are simply enormous. Foreign glucose is charged with 20 per cent duty and about 20 per cent freight. This great advantage to the home manufacturer is enhanced by the fact that the raw material in the United States is far cheaper than in Europe; a bushel of corn in Illinois costs from 30 to 60 cents, in New York 85 cents, while the European manufacturer of glucose and grape sugar has to pay \$1.25 for the same quantity.

The French capitalists who invested money in lace-making, divided in one year 50 per cent profit, which divided in following years increased. Fifty per cent

dividend is the lowest profit which can be expected from the manufacture of corn syrup, as proved by statistics. The only trouble is to find a man able to manufacture the article, and, as far as known to me, there is only one man in the United States who possesses this capacity. "Without the encouragement of a Colbert," that man and his friends invested a few thousand dollars in the erection of miniature machinery, with which he proved, in the presence of leading New York merchants and others, the feasibility of making first-class corn syrup in the United States. Since 1869 he has tried to come into connection with parties willing to establish such a company, but although money was abundantly offered for railroads, silver and coal mines, and wildcat enterprises, no capital could be found for manufacturing this article.

Our capitalists are undoubtedly willing to make safe and profitable investments; nevertheless it is very difficult to reach them, as it seems that our bankers and brokers are giving their cooperation exclusively to wall street securities and insecurities. It is under these circumstances that I call upon them with the suggestion that one of the main causes of the increasing pauperism, is the insufficient encouragement given by capital to home industry, and that the best way to diminish this now increasing evil is to invest capital in such enterprises as can give labor to the greatest possible numbers.

**Forests and Rain-Falls.**

The old question of the influence of forests on the amount of rain received by the soil is revived in a communication to the French Academy of Sciences, by MM. Pantot and A. Sartiaux who have been experimenting in the forest of Halatte, measuring the amount of rain-fall during six months of 1874 at two places about 1,000 feet apart, one being covered with trees and the other open. The figures they obtain show that the forest received a larger quantity of rain in the proportion of about twelve to eleven. The only valid argument of a theoretical character bearing in the same direction is, so far as we know, that of M. Dausse, quoted in this communication as follows: "Rain is formed when a warm and humid wind comes in contact with a strata of cold air; and since the air of forests is colder and more humid than that of the open, rain must fall there in greater abundance. The difference shown by these experiments confirms, indeed, to some extent, the argument referred to; but it by no means supports the popular impression that the removal of forests exercises a direct effect in diminishing the amount of rain-fall over large districts. A result far more important is the change produced in the flow of streams. Forests check evaporation and retain for a longer period both the snow and the rain, furnishing a steady supply to the streams and preventing, to a large extent, sudden freshets. When forests have been mostly removed, the smaller streams, which have furnished available water-power for mills and factories, are likely to become so irregular in their flow as to be apt to produce great inconvenience. It is, however, the distribution rather than the total amount of rain-fall which is thus affected.

**ARTIFICIAL STONE.**—A Mr. Carr has patented a process for the manufacture of a cheap and indestructible artificial stone. He finds that a mixture of fat lime slacked to powder with clay reduced to an impalpable powder by calcination at a cherry-red heat, when subjected to a high pressure, has the property of hardening rapidly under water, and exhibits a degree of durability proportionate to the pressure it has undergone.

**SOUTH AMERICAN TRADE.**—Already Mr. Fraick, who went to South America as the special Postal Commissioner, has accomplished important results by his trip. He has secured the removal of the freight discrimination of \$14 a ton from Panama to Callao against American in favor of English goods, and he has also concluded an agreement with the Peruvian government for the establishment of postal communication with the United States under the Berne Postal Union.

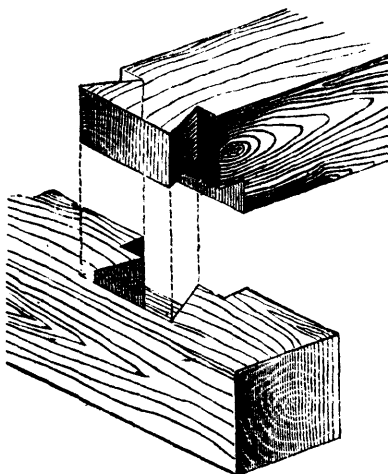


Fig. 24.