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IRON ARCHITECTURE.

(For the Journal of the Board.)*

The employment of cast-iron for the fronts of buildings in cities, has not only rendered cheap and practicable a far greater amount of tasty ornamentation than heretofore; but singular as the proposition may seem, has actually rendered such architectural display, or some variation in the surface, essential to the obtaining of a proper degree of strength. Economy of material dictates that the actual thickness of an iron wall shall be very moderate, and in some of the first applications of wrought iron to this purpose, the walls, flat, plane, and consequently very weak, were so cracked and distorted on the occurrence of a fire, either without or within, that its use was almost abandoned. Some of the first in California thus failed, but cast-iron buildings are so profusely filled with pilasters, cornices, lintels, and various other angular and curved projections and recesses, that the metal has everywhere liberal opportunity to spring, and expand or contract to any required degree, and the leverage of the parts to resist any lateral force is also increased to nearly as great an extent, as if the walls were made solid to that thickness. The practical thickness therefore, of the present styles of iron fronts is about eighteen inches, measuring for this purpose from the front of the pilasters and window caps to the recesses of the windows, while the actual thickness of the castings is nowhere intentionally made more than five-eighths of an inch, and many castings are less than three-sixteenths.

The popularity of cast iron for buildings is sufficiently evident, whether we inspect the principal streets of any of our chief cities, or note the activity in the establishments specially devoted to such constructions. In Canada, there is no one establishment which we can say is specially devoted to such manufactures, but when the writer was in New York last summer, he was in D. D. Badger & Co's, who employ over four hundred men, and although a part of the work of this company is the manufacture of iron shutters, more than nine-tenths of this force is engaged in the designing, patterning, moulding, cleaning, finishing, oiling, painting, transporting, and erecting of iron buildings.

* Communicated.

In this last sentence is briefly analyzed the whole construction of an iron front. Some of the processes are obvious enough, but others may need explanation. A professional architect usually works out a design which in some of its features is incapable of production in iron. The first step of the constructor, then, is to alter the design, until all the parties are suited. The next is the detail drawing and pattern making, necessarily a large portion of the labor, although as the art advances and stocks of the patterns are increased, a large number of parts will be but duplicates of shapes and sizes before in existence, and therefore require little or none of this labor. Upper stories now generally resemble the lower portions, except that the height is diminished by carving off the pattern in the middle, and removing a part, and some of the smaller ornaments, especially the leaves on the Corinthian Capitals (Corinthian, is a favorite style by the way, in these buildings) are cast separately, and attached by screws or rivets. The casting is conducted in the usual manner, but the long flasks are mostly of iron, and the metal is poured at as high a heat as practicable, to ensure its filling completely the broad thin cavities. Cleaning the large, and "tumbling" the small parts are processes familiar to every body, as are also the planing and slabbing by machinery, and the more primitive processes of chipping and filing, which to save handling is often permitted to supersede the machine work.

The establishment mentioned above is a fine building. The main shop is 300 feet long by 60 feet wide, and five stories high. The ground floor where all the heavier parts are finished, has two lines of railroad (21 inch gauge) extending its whole length, and is studded with cranes to facilitate the handling of the pieces. The drilling and fitting being here completed, each part is oiled and painted. All the small parts are *boiled* in oil, by which we mean immersed in oil, at nearly its boiling or rather "frying" point, and allowed to remain in this bath until it has become thoroughly heated. This process is believed to so effectually fill the pores of the metal as to very materially add to its durability. Cast iron is very readily preserved, but the wrought iron screws or rivets, oxidize with more avidity; and this heating in linseed oil has been adopted as the best method of defence, and as contributing, as far as possible to make iron buildings absolutely unaffected by time. In addition to this oleaginous filling of the pores, the surfaces are painted once in the shop, and again twice after placing in the building before the work is finished.

Iron buildings properly constructed, combine