

Fig. 1.—Perspective View showing Arrangement of Floor Beams, Rafters, Columns, &c., and Manner of Laying Floor.

SLOW BURNING BOOFS AND FLOORS.

The accompanying illustrations, from the circulars of the Boston Manufacturers' Mutual Fire Insurance Company, are of special interest as giving precise details in regard to an improved method of construction—namely, the slow burning, which might be, perhaps, more properly called fire-proof than the usual iron construction which has received that name. The roof itself is probably the most novel and striking feature in the design. The timbers are split or single, as the case may be, the aggregate width being 10 inches and the depth 12 inches. On top of this



Fig. 2.—Substitute for the Old Box Cornice.



Fig. 3.—Detail of Floor.—Scale, 1-Inch to the Foot

is laid a covering of 3-inch plank. The outside covering is either metal or any of the approved compounds. The company in their own practice use 23-inch as well as 3-inch plank. This apparently excessive thickness of plank is essential to safety, because there is always a very much better chance to save property before a wood roof is burned through than afterward, and to reach the open air.

When practically considered, it is found essential also to the stability of the covering, whatever it may be, to have a considerable thickness of wood on top of the so-called rafters. It keeps the upper room warm in Winter and cool in Summer, and at the same time checks what is so frequently an annoyance, condensation or dripping from the roof.

In Northern climates this thickness and strength of roof is not at all unnecessary since deep snows, especially if followed by light rains, as not unfrequently happens, will load the roof to a greater extent than a full comploment of machinery in a cotton or woolen mill. In fact it is estimated that the weight of a foot of snow would be nearly double that usually found on the weaving-room floor of a cotton mill. The 10×12 timbers are shown supported on iron columns which are, for the upper floor, $6\frac{1}{2}$ inches in diameter at the neck, and those for the floor below $7\frac{1}{2}$ inches in diameter. This construction is shown with considerable detail in Fig. 1, which represents an ideal section through a building constructed in this manner.

In Fig. 2 we have details of a very important feature in all mill construction, namely, an open cornice, which is made by allowing the timbers to project, their ends being formed into brackets. The common box cornice, whether of wood er metal, is considered dangerous in the extreme by the company we have named, and as they rightly say it is a useless cause of danger. The effect produced by an open cornice is good, as will be seen from the illustration.

The factoring, also, deserves mention. It consists, first, of S-inch planks which are laid upon the beams, spaced 8 feet from center to center, the spans not exceeding 24 feet, with timbers dimensioned as those shown in the cuts, 14 inches deep and 12 inches wide, either singly or split. On top of the bottom flooring plank, which is put together with tongues, we have a layer of roofing felt or of mortar, on which a layer of plank is bedded. This top flooring is of 12-inch stuff. In Fig 3, which shows a section of the flooring, a bead is used on the under side of the floor plank covering the joint. This supposes the planks to be of even width, and the bead covers the cracks which would be made by shrinkage. It should be nailed as shown, upon one side only. This finish is liked by many persons as it relieves the flat surface. Floors made in this way are essentially firresistant, and a long time is necessary for the fire, whether on top or beneath, to burn through to the upper surface so as to cause a draft. We think a foundry built with a roof as carefully laid as this, would be free from the complaints which so often treach us about the insecurity of such roofs and their frequent leakages. We have not at hand the figures of cost for this construction, but we imagine when the durability and leasened insurance is taken into consideration, that this will be fully as economical as the more flimsy plans usually adopted.