

crete have been used with varying results, but unless laid with particular care they are very likely to settle, crack and wear into holes, becoming finally very uneven; in addition being objectionable from the operator's point of view in that they were hard and cold to work upon.

Another form of floor quite generally used at present is concrete foundation with nailing strips bedded therein. In some instances the tops of these strips were flush with the concrete, while in other cases the nailing strips in question projected $1\frac{1}{2}$ " to 2" above the concrete, thus forming, when the plank was laid, an air space between the concrete and the plank.

Still another form which the writer has used quite extensively and which he believes compares favourably in first cost, durability, rigidity and general service with any of the forms above mentioned; it consists of a 3" cinder ground, well tamped to receive a 3" tar and cinder foundation, rolled level, over which is then laid hot a vulcanite composition 1" in thickness, into which are bedded 3" sound hemlock plank, dressed one side and two edges, the rough side being well tamped into the hot vulcanite so as to give an even and true bearing. Toe nailing assists in laying plank true, but if the composition is properly made the adhesion of the plank to the vulcanite, after a few hours, is such that it is impossible to separate them without damaging the plank. The planking is in turn covered with two ply of tarred felt cemented at the joints, over which is laid, preferably at right angles or diagonally to the planking, a 1" matched hardwood flooring, of narrow widths securely blind nailed.

A floor of this description is so rigid that all but the heaviest of machine tools may be erected upon and secured to it without other foundation. The composition prevents moisture reaching the wood, thus preserving it to a great extent from decay. The top flooring will, of course, wear out, but it can be easily renewed at comparatively small cost as there remains a good foundation of plank to renew upon.

To the writer's knowledge one such floor has been in service for the past six years in a machine shop—all but four or five of the heaviest machines having no other foundation than the floor above mentioned, and all machines are to-day perfectly rigid and true, and the top flooring is not appreciably worn excepting at some few points where the traffic is heaviest.

For upper floors where brick, terra cotta or concrete steel construction are not used, the 4" plank flooring with 1" hardwood top covering is probably more generally used than any other. The 2" x 4" flooring laid on edge, instead of 4" plank, also finds some favour. This form of flooring is nailed through the side to the adjoining