FLUTED PORTABLE FLOORING AND MATTING.

A new article of manufacture, intended for flooring and matting, has lately been introduced into the United States. A specimen of the same is represented in the adjoined engraving, partly rolled up; it is chiefly intended for crowded and much trodden floors, stairs and landings.

It is made of strips of hard wood, attached by strong thread-work upon wire cord, in such a way as to be easily rolled up. At doorways and in vestibules the sharp edges of the ridged surfaces effectually remove dirt from the feet and drop it into the grooves between, where it remains undisturbed until removed and swept, or dropped out of the mat in cleaning. This it does in common with some other kinds of matting, but more neatly. Used inside of crowded halls, passage ways of stores filled with costly goods, etc., it performs an important office in regard to dust. This it collects and retains out of reach of the feet, which otherwise would continually sweep it about the floor and fill the air with it.

For the preservation of costly floors of wood or marble from wearing into holes where much trodden, as in hotels, apartment houses, etc., it is at once a durable and handsome article, as it can be varnished, or otherwise kept in as perfect order as the floor itself. It is also a preventive against slipping.

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For greater dryness and cleanliness, a requisite not generally secured in matting, it is grooved underneath as well as on its upper surface, thus affording a free passage of air, which is a great advantage in case there is a damp floor or carpet. Where there is most excessive wear, the treading surface is inlaid with iron, steel, or other material of a more durable character, making the mat not only more lasting, but more ornamental as well.

It will be evident that in a bank, or other place where the floor is much trodden upon by people going in and out, carrying water and mud with them on their feet, and dripping umbrellas in their hands, ordinary floor mats become soaked, and hollows in the floor filled with water, making it very unpleasant. The application of this flooring obviates this, alike in preventing the wear or in covering the hollows of a worn floor.

HARDENING STEEL TIRE FLANGES.

An English journal gives an account of an Austrian furnace for partially hardening the steel tires of locomotive wheels. Although we do not build many locomotives on this coast, the arrangement may have other adaptations. A condensed description of the process is given in the *Iron Age* as follows: The furnace has a small, square, central grate, above which the section of the furnace is circular. The wheel with the tire on it is placed on a projecting ring of the furnace, and the nuts of the tire bolts are slacked to allow the tire to expand from the wheel when heated. The annular space around the tire is then packed with coke in a state of ignition, and blast coming from a large number of nozzles attached to a circular blast pipe is directed at the root of the flange of the tire under treatment. In order to insure uniform heating, the wheel is turned around from time to time. When the flange of the tire which is thinner and therefore heats more rapidly, has become dull red, the wheel is lifted from the furnace and the heated tire is plunged into water of 60° to 70° Fahr. As a fragment shown by the Oravitza-Anima railroad at Paris proves, this process hardens the steel to a depth of from 0.08 to 0.12 inch, especially near the root of the flange. The heating process, which must be rapid to insure its being local, requires only from six to seven minutes. The inner part of the tire must be kept cool by a covering of old cotton waste constantly moistened. It is stated that tires so treated last twice as long as ordinary ones.

THOMAS' STEAM WHEEL.

The accompanying engravings, with the following description, will sufficiently explain to all, but especially to our mechanical readers, the advantages which the inventor claims for this machine over the ordinary rotary and reciprocating engines, to wit:

"Fig. 1 is an exterior perspective view, and from Fig. 2 the working parts will be understood. The wheel, the shaft of which rotates in bearings in the case, has ring flanges on the edges of its face, making a wide and deep channel thereon. Six or more arms connect the rim to the hub, midway between which and on the face of the wheel are formed deep transverse recesses, in which work the radial pistons *A*. To the inner edge of each piston are attached two or more rods *B*, which pass through stuffing-boxes, so as to prevent any steam from leaking around them into the interior of the wheel. These rods are secured to boxes in which are placed bars *C*, said bars being held out by springs. As the bars pass through slots in the ends of the boxes, the pistons are thus allowed a little play, while the springs also serve to hold them against packing, noted further on. At *D* are radial bars attached to the rim and the hub of the wheel. In guide-slots in these the ends of the bars *D* enter, and they also pass through holes in the long arms of levers *E*, which are pivoted to the wheel arms. To the short arms of said levers are pivoted bars *F*, which slide in keepers on the wheel-rim, and have pins on their ends. These pins carry friction-rollers which move in guide-slots *G*, in the sides of the case. The object of the jogs in said slots is to throw the pistons *A* out to receive steam, and to draw them in at the exhaust ports.

"Fig. 1 is the steam-chest, resting upon the upper edge of the case and fastened to packing I, Fig. 2, which is curved upon the arc of the circumference of the wheel, and has abutments *J* to fit into the space between the rim flanges. These abutments are beveled as shewn, and are provided with brasses held out against the rim by springs. The brasses have arms which, in similar manner, are pressed against the inner side of the wheel-flanges. They are also so constructed that they may be expanded and contracted longitudinally to allow of nice adjustment to the wheel. On their inner side a plate is provided, acted on by springs to prevent steam from passing between their parts when they are expanded. The packing *I* rests on a concaved block *K*, which may be moved forward and back by the screw *L*; it may be adjusted so as to cause the packing to bear squarely against the face of the wheel, by four set-screws. The block is held down by flanges, one of which enters a keeper in the case, and the other passes out through an aperture in the end of the same. The latter flange is slotted to receive a screw for further securing.

"The entrance of steam through the inlet port is regulated by the valve *N*, the stem of which is pivoted to an arm on the rock-shaft B, Fig. 1. A crank-arm on this shaft receives a notch on the connecting rod, which is guided in a bracket on the case. A pin on the rod enters a groove in the side of wheel *P*. This groove has as many offsets as there are pistons *A*, and these are in such positions as to operate the valve to admit steam as each piston passes the inlet port, the length of the curve regulating the length of time in which the valve is held open.

"By suitable construction, the connecting rod may be regulated to govern the throw of the valve; and by engaging the hook *Q*, on the protruding end of the shaft above, the notch in the rod is raised from the crank, so that the valve may be operated to start the wheel regardless of the position of the same. The hole shown in the rock-shaft is for a hand-lever, so that the valve may be operated by hand for starting the wheel.

"The advantage of working steam directly on the periphery of the wheel and its use expansively from boiler pressure down to any point desired, at the same time working on the same leverage and to same mechanical advantage on all points of the circle. The 'wheel' does not require to be cased up steam-tight all around, as the steam is applied only to one piston at a time, and it is intended to run so that the pistons will travel the same number of feet per minute as the piston in the reciprocating engine. Hence the friction is reduced to a minimum and the durability increased to the maximum. The machine is simple in construction, requires but little room, will start off freely and easily at all points, is easily managed, and can be built for less money than the ordinary engine. Unlike the reciprocating engine, it is free from all liability to such accidents as the bursting out of cylinder-heads, breaking of crank-pins, connecting rods, &c., and last, but not least, it will effect a great saving in fuel. — *Polytechnic Review.*