

DAVID G. CONGER.

Improvement in Apparatus for Making Artificial Roofing.

No. 124,794.

Patented March 19, 1872.

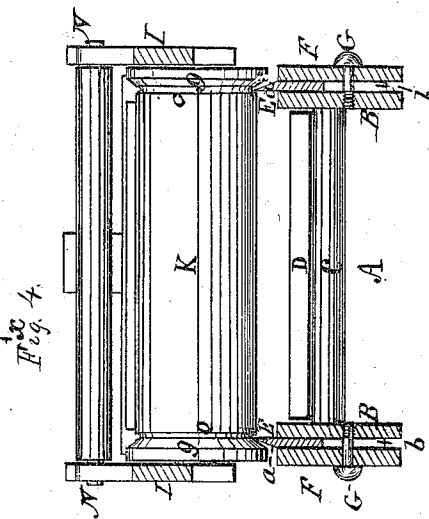
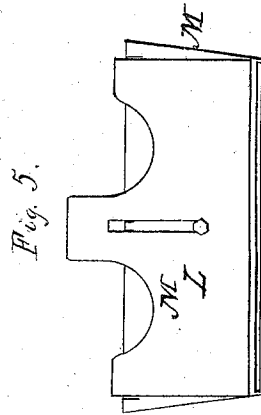
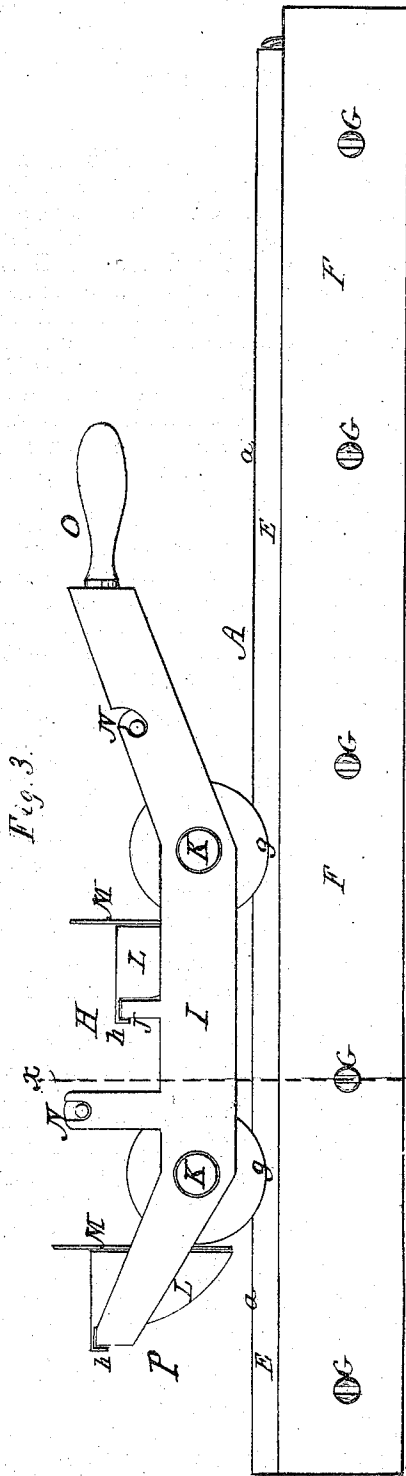
Inventor, 
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UNITED STATES PATENT OFFICE.

DAVID G. CONGER, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN APPARATUS FOR MAKING ARTIFICIAL ROOFING.

Specification forming part of Letters Patent No. 124,794, dated March 19, 1872.

To all whom it may concern:

Be it known that I, DAVID G. CONGER, of Chicago, Cook county, State of Illinois, have invented a certain new and Improved Apparatus for the Manufacture of Artificial Roof-Slates and Slabs; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying plates of drawing.

The present invention relates to the manufacture of tiles for paving, shingles, or coverings for roofs, &c., which are composed of sand, &c., applied and secured through the medium of a cement or a plastic composition to a sheet of paper, felt, cloth, or other continuous material; and the fabric finally divided to form such shapes as are desired; and consists in a machine constructed to lay and unite compactly the sand, cement, and fabric in layers to the desired thickness, and to cut from the fabric the tile or shingle of the desired shape at one and the same continuous operation.

The construction and modification of parts requisite to adapt a machine to perform this work consist, first, in a bed having a track or side rails for the car carrying the sand, cement, &c., and means for retaining and adjusting a series of cutters of the pattern desired; second, in a carriage provided with sand and cement receptacles, and rollers for carrying the fabric, together with a series of rollers for pressing and uniting the layers, said rollers being of different diameters, for reasons hereinafter set forth; third, in a device or devices to clasp and firmly hold the end of the paper sheet as it is being laid on the bed from the carriage.

In the accompanying plates of drawing my improved apparatus for the manufacture of roof-slates and slabs is illustrated—Figure 1, Plate 1, being a plan view of the same; and Fig. 2, a central longitudinal section; Fig. 3, Plate 2, a side elevation; Fig. 4, a transverse vertical section in plane of line *xx*, Fig. 3; and Fig. 5, a side view of one of the cement-distributing reservoirs.

A in the drawing represents a sand-bed. This sand-bed A is constructed of parallel side iron beams or girders B, joined together by any suitable number of cross-bars or rods, C, and it is provided with a metallic bottom

plate, D, having from the raised flanges surrounding its edges a dish-form. E, rails located along the length of each side beam B, the one rail parallel with the other. These rails E are secured to the side beams B so as to project by their edge *a* above the beams B and the level of the sand-bed, and at their projecting edge *a* are adapted to cut. The rails E are secured to the side beams B by means of a plate, F, which is applied outside of the rails, and there secured by screws or bolts G. For the reception of the screws G the rails E are provided with vertical slots *b*, open at one end, so that by loosening the screws G, and without removing the plate F, the rails can be removed for having their cutting-edges sharpened. H, the carriage of the apparatus. This carriage is constructed of two parallel side frames, I I, joined by cross-bars J. In these side frames I I are hung two rollers, K K, extending from one frame to the other. These rollers K are parallel to each other, and are of a length inside of their flanges *g* to run upon the parallel rails E of the sand-bed, and to be confined from escape by and between said flanges of each roller. The diameters of the series of rollers K K decrease from first to last in a ratio determined by the thickness of the successive layers. For instance, if the diameter of the first roll were twenty inches and the second layer was one inch in thickness, the second roller would be eighteen inches; and if a third and fourth were used they would be, respectively, sixteen and fourteen, provided each layer was an inch in thickness; but, of course, the thickness of the article will be controlled by the use for which it is intended. These rollers act not only as pressure-rollers, producing uniformity in the consolidation of the material, but, in conjunction with the knives in the bed, cut the various patterns desired. L, hoppers, two in number, and located in carriage H from one to the other of its side frames I, and in positions just alongside of the rollers K, one to each roller. These hoppers are hung, by hooks *h*, to the cross-bars J of the carriage H, so as to be inserted and removed at pleasure, and they are of a right-angle-triangular shape in cross-section, open at one side, which, when the hoppers are in carriage H, is their upper side, and they are by their upright side *l* per-

pendicular to the diameter of the rollers. The hoppers, at their lower edge or angle, are open, as shown at *m*, so as to allow the cement placed in the hoppers to be discharged. This open angle *m* is provided with a slide, *M*, arranged on the upright side *l* of hoppers to regulate the extent to which it is opened, or to wholly close it, according as may be desired. *N*, bearings in side frames *I I* to carriage *H* for receiving the centering-spindles of the sheet material used to produce the roofing-slabs. The carriage is shown as adapted for two paper-spindles. *O*, handle for running the carriage over sand-bed.

The bed is prepared with a layer of sand even in depth from end to end. The hoppers are filled with a cement or plastic composition of proper consistency to run, and rolls of paper or other sheet material are placed in the bearings of the carriage, their ends being carried, as shown, down over the top of rollers, between them and the hoppers, to the under side of the rollers. The carriage thus prepared with cement and sheet material, and the sand-bed with sand, run the carriage, with its end *P* first, onto the rails of the bed *A*, and, as soon as the advance hopper reaches the sand, opens its delivery-passage *m*, and runs the carriage along on the bed. When the next cement-hopper has come into position, open its delivery-passage for the cement, and then continue the running of the carriage along the length of bed, the carriage depositing a layer of cement, followed by a sheet of paper, and then a layer of cement that is followed by a second sheet of paper; the whole being pressed together by the pressure of the rollers *K K* of the carriage thereon, and thus uniting it to the sand, in the manner above indicated. The rollers *K K*, to guide them on the rails, have flanges *g*, which are outside of the rails. To adapt the first roller *K* to press within and below the plane of the rails it is grooved at each end, as shown at *o*. These grooves are necessary for such roller, so that the roller can press upon the first-deposited sheet of paper, which, it is manifest, must lie below the plane of the rails in order that the next sheet of cement and paper may be laid without lifting the carriage from the rail.

It may be well to here observe that the sand should be leveled to admit of the reception of the paper sheets and cement, as described, without throwing the carriage off from the rails.

In lieu of using two cement-distributing hoppers with two paper-sheet-delivering spindles there may be more; but in using more it is necessary to employ the same principle of con-

struction for the successive rollers as has been described for the roller *K*, in order to insure the retention of the carriage on the rails.

By the cutting-edges of the rails the edges of the paper sheets are trimmed. To cut the paper sheets as laid upon the bed into slabs or slates there are arranged at intervals along the length of the bed cross-cutting edges or blades *R*, fixed in any suitable manner in the bed.

I have in the drawing shown only knives placed at right angles to cut slabs; but this is not necessarily the form they may have. For instance, the knives may be placed diagonally and intersecting, so as to form diamonds, or the knife itself may be curved to produce a heart-shaped block or any desired pattern. Should the knives be independent of each other they may be arranged to produce any desired pattern in the sheet, the pattern itself forming one article of manufacture, while the sheet can be inlaid at those points from which the pattern was cut, forming a second and entirely distinct article.

Before running the carriage over the bed it is best to secure the end of the paper sheet to the bed, and thus prevent its being dragged along the bed as delivered thereon. For this purpose the bed at the end at which the carriage is first run on is provided with hooks *p*, and adapted, by spiral spring *q*, to hold the end of the paper, and, by pulling on a stem, *r*, to release the paper sheet; the shanks *s* of the hooks being guided in one of the cross-bars of the bed.

The advantage of using two sheets of paper in lieu of one is that it gives a firmer and stronger roofing.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the cutting-edges or knives *R* and the bed *D*, as and for the purpose set forth.

2. In combination with the carriage and receptacles, the rollers *K K*, as and for the purpose set forth.

3. The hooks *p*, or their equivalent, in combination with the bed *D*, as and for the purpose specified.

4. The combination of the carriage provided with the roller *K* and the bed provided with knives *R*, as and for the purpose specified.

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Witnesses:

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