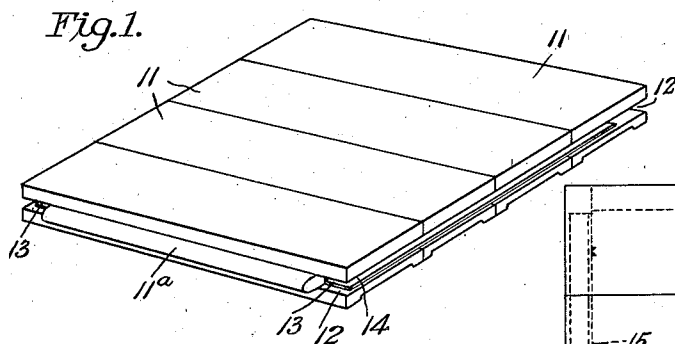


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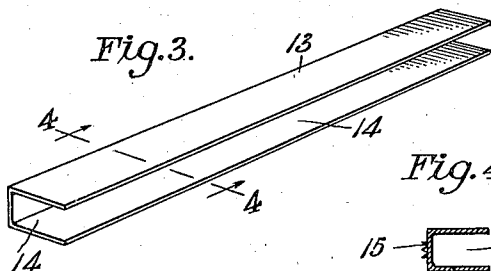
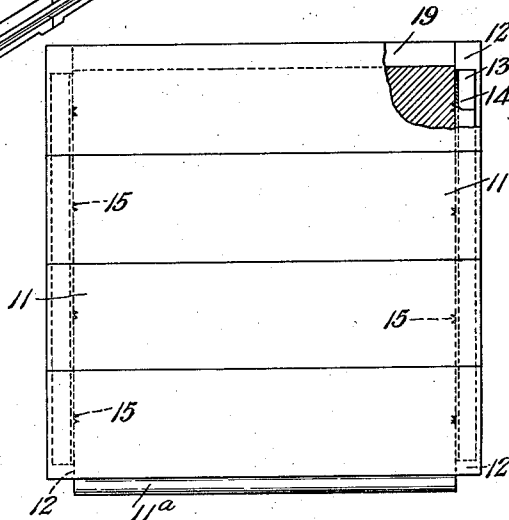
H. P. SCHUCK  
COMPOSITE BLOCK OR PANEL

2,049,571

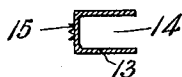
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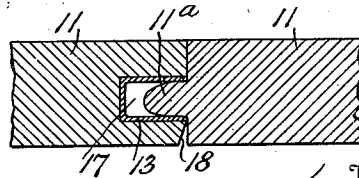
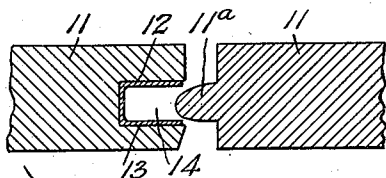
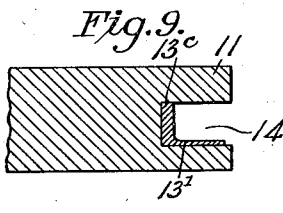
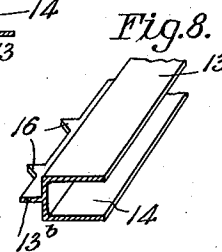
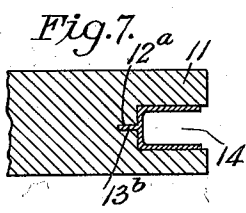
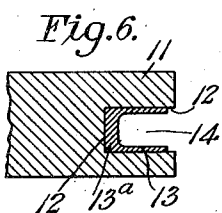
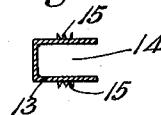
*Fig. 2.*



*Fig. 4.*



*Fig. 5.*



*Fig. 10.*

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## UNITED STATES PATENT OFFICE

2,049,571

## COMPOSITE BLOCK OR PANEL

Harold P. Schuck, Shamrock, Fla.

Application August 29, 1933, Serial No. 687,345

14 Claims. (Cl. 20—8)

This invention aims to provide an improved composite block or panel, with reference especially to flooring, adapted to interlocking connection in different arrangements of sectional or parquetry surface constructions.

Its primary object is to produce a very strong and rigid block accommodated to nailing or cementing in place, which will not warp or cup and buckle out of plane, even when made of thin material, and which will at the same time be advantageously light, very simple and inexpensive to make. Another object is to give such a block a certain inherent movement capacity allowing expansion and contraction of its component parts without distortion under changing atmospheric conditions.

Other objects in addition to the general concept and advantages of the invention will be best understood by the following description with reference to the attached drawing, illustrating one practical embodiment of the same in a floor block of common form, along with several modifications of an incorporate feature.

In said drawing:

Fig. 1 is a perspective view of the block showing its complete assembly;

Fig. 2 is a top plan view of the same with certain parts represented in dotted lines and a portion broken away to better reveal the structure;

Fig. 3 is a perspective view of one of the parts forming a feature of the invention;

Fig. 4 is an exemplary cross-section of such part as taken on the line 4—4 of the same;

Fig. 5 is a similar section illustrating a modification; detail;

Fig. 6 is a fragmentary cross-sectional view of the block with a form modification of the aforesaid part;

Fig. 7 is a like view illustrating another modification of the part;

Fig. 8 is a fragmentary perspective view of the last-named modification showing a further detail;

Fig. 9 is another fragmentary cross-sectional view of the block with still another modification of said part; and

Fig. 10 is a cross-sectional representation of two of the blocks in connecting relation, the upper half showing them about to be interlocked and the lower half showing them interlocked adjacently.

The illustrative block is shown to comprise a plurality of ordinary wooden flooring pieces 11 of equal length, arranged longitudinally abreast or edge to edge in formation of a rectangle or

square of the desired dimensions. These pieces are preferably of the standard form with the usual interconnecting tongue and groove along opposite sides and the usual "clearance" shear or bevel along the bottom edge for close fitting together. They may also advantageously have conventional "hollow back" recessing and "gap" cuts in the bottom to facilitate laying and holding in cement or mastic when the block is to be so applied. However, it is not essential to use pieces of such form, because entirely satisfactory results can be attained with plain or odd form strips and it is also unnecessary for the pieces to be of wood, since other material such as composition fibre may in some cases be preferred.

In the edges of the pieces arranged together as stated, transverse kerfs or grooves 12 are formed at opposite ends. These grooves are desirably made of a liberal depth and of a width ordinarily somewhat greater than the width of the standard interconnecting tongue of the pieces, or approximately  $\frac{1}{2}$  by  $\frac{1}{4}$  inches in a block of the standard 9 x 9 inch size. No depth or width is fixed, however, because the measure may be varied according to circumstance and preference, and need only be suitably proportional to the size of the block and the thickness or weight of the pieces used.

Applied with a squeezing fit into said grooves, preferably while subjecting the pieces to a lateral compression, are transverse spline members 13, comprising metal bars of a strength to be substantially inflexible. These splines shown made to conform in shape cross-sectionally to the grooves are channeled or recessed longitudinally on the outward side so as to present open slotways 14 along the edges of the pieces in place of the grooves 12 which they fill. Thus formed and applied as shell inlays to the grooves, the splines frictionally bind and hold the pieces together in a strong rigid structure, while the tensioning of a certain amount of resiliency therein causes them to press engageably into the groove walls or material of the pieces so as to wedgingly grip and hold the pieces inseparable. At the same time they permit a certain free longitudinal movement of the pieces for natural expansion and contraction under atmospheric conditions without allowing a distortion or warping of the block.

The bars providing said spline members advantageously consist of lengths or strips of sheet steel, bent or rolled into proper form as shown in Fig. 3. The simple U-shaped member here illustrated may be of very small wall thickness if the

material is stout and strong enough to make it sufficiently inflexible after formation. Material of as little as  $\frac{3}{8}$  inch thickness has been used very successfully for the purpose and thin material will in most instances be desirable for reasons of economy, weight minimization and shipping facility.

A more secure engagement and fixture of the splines within the grooves will be attained by providing thereon a plurality of projections which extend or bite into the walls or material of the pieces when the splines are driven or pressed into place. Such projections 15 are exemplified on the back of the spline in Fig. 4. These consist in this instance merely of integral portions of the splines punched out to sharp or jagged edges. The punchings may of course be triangular, circular or of any other convenient kind. In Fig. 5, like projections or punchings are shown on the sides of the spline. It will accordingly be understood that they may be disposed in both as well as either of these faces and that it is largely a matter of choice how and where the same are provided. In either event, the projections will burrow into the material against which they are forced with the spline inserts and so hold them tenaciously. A particularly strong and unloosenable block results.

Fig. 6 illustrates a modification of the splines, wherein the back wall 13a bearing against the bottom of the groove is made thicker than the sides for greater strength. It is desirable in this instance to make said wall merge or curve into the sides so as to eliminate sharp angles on the inside or slot-way part, but this is of course not essential.

Fig. 7 illustrates another modification of the splines, wherein a reinforcing rib 13b extends along the back wall part and is received within a counter-groove part 12a of the main groove 12 in the block pieces. This rib advantageously has teeth 16 formed along its edge, as shown in Fig. 8, to bite into the material of the pieces at the bottom of said counter-groove. Such teeth may be substitute for or in addition to the afore-described projections 15 which are desirably used in all forms of the splines.

A further modification is illustrated in Fig. 9. This proposes an L-shaped spline 13<sup>1</sup> in place of the U-shaped form of the other figures. In such instance of course the splines bear against and overface only two instead of all three walls of the grooves. However, they are wedged in similar fashion against these two of the three walls and the free edge 13c of the back wall part bears engagably into the third or uncovered wall of the groove. Although this form is not preferred, it may have certain advantages in some cases.

Various other modifications or forms also may be used, as the invention is not limited in this respect. Indeed, several other forms have already been designed, but are not here shown because they all embody the same principle and accomplish the same result.

In applying the splines to the grooves in the block pieces, it is desirable to seat them deep enough to leave a fractional part of the grooves overextending or projecting beyond the edges of the splines on all sides as shown clearly in the several views. This allows the block to be "squared" or milled on all four sides or edges without contacting the metal of the splines, which is aidful and in some cases necessary

when a close neat fitting or interconnection of blocks is desired.

It will be obvious that the splines 13 thus serving to join the block pieces together in a rigid inseparable structure, also, by presentation of the slot-ways 14, form grooves in the ends of the block to receive the interlocking tongues of other blocks brought adjacent thereto for the purpose. This is illustrated in Fig. 10. Therein are shown two of the blocks in relative positions when about to be and as connected together, the upper half exemplifying the preliminary position and the lower half representing the final position. The interlocking tongue 11a of the one will be seen to enter the slot-way or groove 14 formed by the spline of the other, so as to effect a tight frictional engagement between the two.

A narrow space 17, caused to be left beyond the end of said interlocking tongue when the blocks are connected together, and also a space 18, resulting from the aforementioned shearing or "gap" cutting of the bottom edge of the blocks where they come together, advantageously provide for ventilation and for firmer seating in mastic when the blocks are to be so laid. The usual "hollow-back" grooving of the block pieces of course assists this purpose, which is however purely incidental to the invention. If the blocks are to be nailed instead of cemented in place, holes (not shown) may be provided in the splines 13 through which then to drive the nails along such edge.

The illustrative block is designed to correspond with the ordinary type having grooves at opposite ends and tongues at opposite sides. If desired however, the block may be made with a groove in place of the tongue at either or both sides. Fig. 2 exemplifies this by the showing of a groove 19 at one side opposite the tongue 11a formed on the other. In such instance, the splines are merely terminated at said side a fraction short of the groove depth, so as not to obstruct the same. The groove 19 should of course be of a width corresponding to the width of the slot-ways or grooves 14 formed by the splines, so as to similarly receive and engage the tongue of an adjacent block. The block is accordingly adapted to laying or interlocking connection in various parquetry arrangements.

The block thus formed has decided advantages. In addition to extreme simplicity, great strength, inseparability and prevention of warping or "cupping", combining the advantages of both wood and metal splines, while yet allowing the natural adjustments to atmospheric influences, it utilizes the same means that produce these several results to form grooves for interlocking tongue engagement with other blocks laid therewith. Another advantage of considerable importance is that the block can be made cheaply and rapidly in large numbers on machines heretofore used only for the application of wooden inserts, such for example as the automatic panel forming or trimming, grooving and spline inserting machine set forth in my prior Patents Nos. 1,762,642 and 1,762,643 dated June 10, 1930, respectively.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A floor block embodying a plurality of flooring pieces arranged longitudinally abreast, and a metal spline fitted frictionally into a transverse groove in the ends of the pieces so as to hold the

same together; said spline providing a receptive space for the interlocking tongue of an adjacent block.

2. A composite floor-panel section, comprising a plurality of flooring pieces arranged longitudinally edge to edge, and uniting metal splines pressed into transverse grooves in the ends of the several pieces so as to rigidly bind the same together; said splines providing channel recesses into which interlocking tongues of other sections will fit in frictional engagement.

3. A floor block embodying a plurality of flooring pieces arranged longitudinally together, and a metal spline pressed with squeezing fit into a transverse groove in the ends of the pieces; said spline forming a groove to receive the interlocking tongue of an adjacent block.

4. A floor block according to claim 3, wherein the spline consists of a cross-sectionally U-shaped strip or bar tensionally pressing engageably into the material of the block pieces.

5. A floor block according to claim 3, wherein the spline consists of a bar or strip of angular cross-section bearing against the walls of the groove and tensionally pressing engageably into the material of the same.

6. A floor block according to claim 3, wherein the spline has integral projections extending into the material of the block pieces.

7. A floor block according to claim 3, wherein the spline is provided with projections engaging in wall portions of the groove.

8. A floor block or panel comprising a plurality of flooring pieces arranged longitudinally together, and uniting metal splines pressed with squeezing fit into transverse grooves in the ends of the pieces; said splines forming grooves to receive the interlocking tongues of adjacent blocks and being somewhat shorter and of lesser depth than the grooves into which they are fitted so as to allow "squaring" or milling of the block edges on all four sides without contacting the metal of the splines.

9. A floor block or panel comprising a plurality of flooring pieces arranged longitudinally together, and uniting metal splines pressed with squeezing fit into transverse grooves in the ends of the pieces; said splines being of a cross-sectional shape conforming substantially with that

of the grooves so as to fit therein squarely against the walls and forming grooves to receive the interlocking tongues of adjacent blocks in frictional engagement.

10. A floor block or panel comprising a plurality of flooring pieces arranged longitudinally together, and uniting metal splines pressed with squeezing fit into transverse grooves in the ends of the pieces; said splines being of a relatively thin sheet material in a substantially U-shape cross-section conforming to said grooves and forming grooves to receive the interlocking tongues of adjacent blocks.

11. A floor block comprising a plurality of flooring pieces arranged longitudinally abreast, and a metal spline fitted frictionally into a transverse groove in the ends of the pieces so as to hold the same together; said spline being angular in cross section to provide a cover for the bottom of the groove and a lining for a transverse face of the groove.

12. A floor block comprising a plurality of flooring pieces arranged longitudinally together and a uniting metal spline pressed with squeezing fit into a transverse groove in the ends of the pieces; said spline being a right-angled member in cross section to seat against the bottom of the groove and surface one of the sides of the groove.

13. A floor block, comprising a plurality of flooring pieces arranged longitudinally abreast and a metal spline fitted frictionally into a common transverse groove in corresponding edges of the pieces so as to hold the same together; said spline providing a receptive space for a tongue to interlock the block with another block placed adjacent thereto.

14. A floor block, comprising a plurality of flooring pieces arranged together longitudinally edge to edge and a uniting metal spline pressed to frictional fit in a transverse groove in corresponding transverse edges of the pieces so as to bind the same together; said spline being a cross-sectionally angular member lining the walls of the groove and itself providing a groove to receive a tongue for interlocking connection with an adjacent block.

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