Aug. 5, 1952 V. TRIEF 2,605,681

PAVING BLOCK

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Fig. 1.

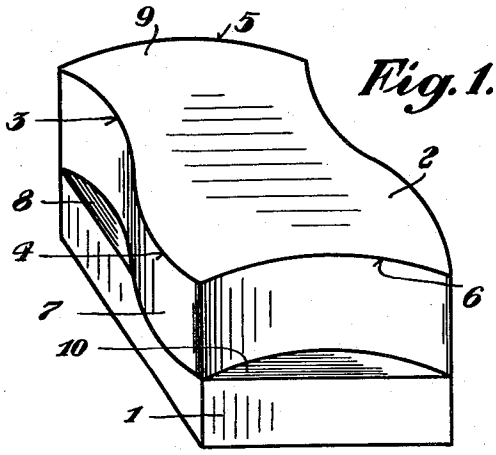


Fig. 3.

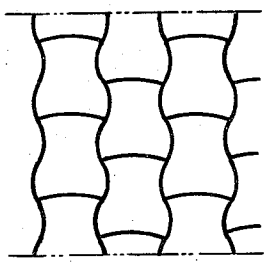


Fig. 2.

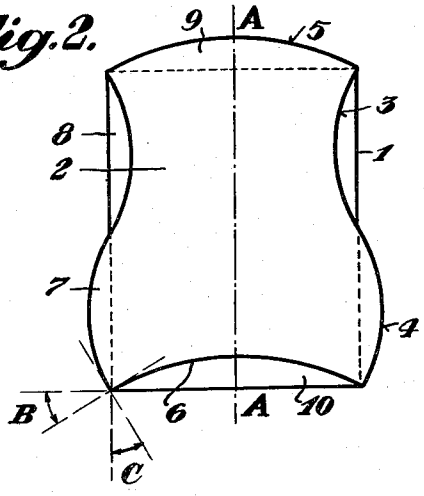
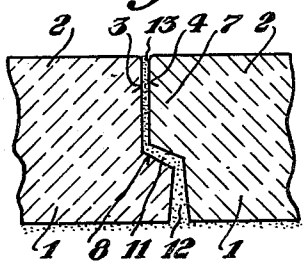


Fig. 4.



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Fig. 5.

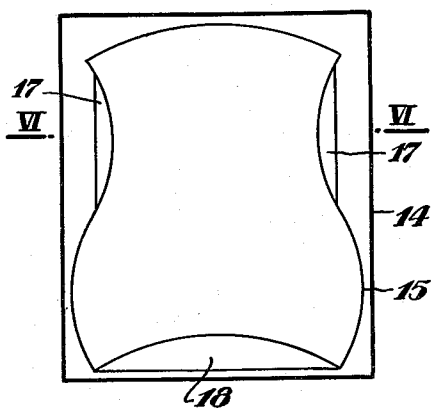


Fig. 6.

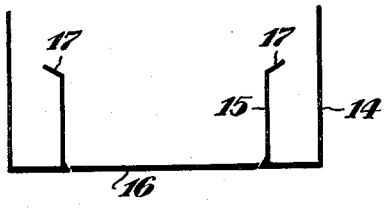


Fig. 7.

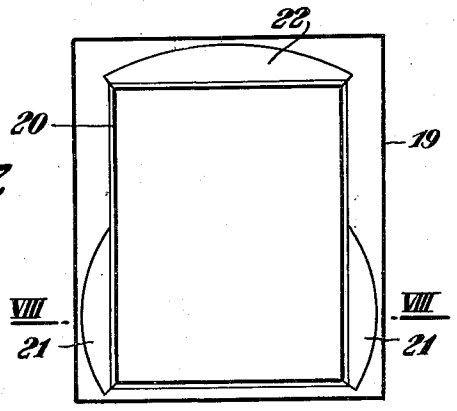
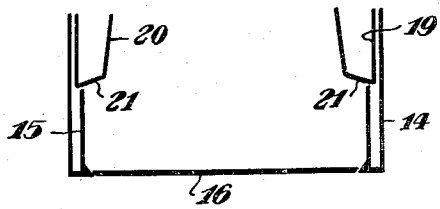


Fig. 8.



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Patented Aug. 5, 1952 2,605,681

UNITED STATES PATENT OFFICE

2,605,681

PAVING BLOCK

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Application July 28, 1949, Serial No. 107,168
In France July 31, 1948

1 Claim. (Cl. 94—13)

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The invention relates to a paving or surfacing block of concrete and the like, having lateral bosses and hollows whereby the blocks may fit in one another when placed side by side, said bosses and hollows being provided owing to the fact that the block has one portion of its thickness of rectangular form and, the remainder of its thickness, of a different geometrical shape, the two portions being united by faces parallel or inclined with respect to the upper and lower faces of the block. The blocks support each other in the same plane and may be laid upon a simple layer of sand without necessitating rigid foundations. They further offer the great advantage that the load applied to one block is distributed over several blocks owing to their mutual interfitting.

The invention relates to a paving block of simple and expedient shape, that shows to the highest degree such advantages as are requested when using paving blocks of that type. The paving block of the invention is essentially characterized by the fact that the non-rectangular portion has a contour, two opposite sides of which show each a whole regular, full wave with the corresponding side of the rectangle as abscissae axes, the waves being arranged symmetrically to the corresponding geometrical axis of the base rectangle, the two other opposite sides being formed by parallel half waves.

The arrangement is such that the convex portions of the full waves are adjacent the concave side comprising one half wave. The waves preferably are of sinusoidal form. Some or all of the sine curves may be replaced by arcs of a circle. Further according to the invention, the tangents at the points of origin of adjacent curves that meet at the angles of the base rectangle are preferably perpendicular to each other, such tangents forming preferably an angle of 30° with the corresponding sides of the base rectangle.

Among the advantages of the invention it should be mentioned that it enables effective interfitting of the paving block with adjoining blocks all over the periphery thereof, it is to say, on the four sides of the base rectangle, while each boss cooperates with one single corresponding notch of an adjoining block and will never become located at the joint between two adjacent blocks. Thus, the distribution of the load over the blocks is effected in the best possible manner.

Paving blocks of the aforesaid type may, if strictly necessary, be laid without jointing, and so that the bosses of one block rest directly upon corresponding bearing faces of the adjoining

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blocks. However, owing to unavoidable imperfections in the manufacture of the blocks and in the laying operation, such method is detrimental from the standpoint of a good transmission of the stresses in view of distributing the load and is liable to cause local overloads capable to bring about untimely destruction of the pavement. According to the invention, these drawbacks may be eliminated in that the faces uniting the rectangular portion of the block to the non-rectangular portion thereof are so arranged that a packing of sand or the like is formed between them after the blocks have been interfitted. Further according to the invention the said uniting faces are advantageously of such slope that the joint widens out somewhat downwardly and opens into a joint, likewise widening out downwardly and provided between the rectangular portions of the paving blocks so as to facilitate the packing in of sand.

Other features and advantages of the invention will appear from the disclosure of one embodiment of the invention, which will be given hereinafter by way of example with reference to the accompanying diagrammatic drawings, in which:

Fig. 1 is a perspective view of a paving or road surfacing block according to the invention;

Fig. 2 is a plan view of the paving block;

Fig. 3 is a plan view of a portion of a pavement executed according to the invention;

Fig. 4 is a vertical sectional view of adjacent portions of two paving blocks;

Fig. 5 is a plan view of the lower part of a mould according to the invention intended for producing blocks of the kind specified;

Fig. 6 is a sectional view on linue VI—VI of Fig. 5;

Fig. 7 is a plan view of the upper part of the mould, and

Fig. 8 is a section on line VIII—VIII of Fig. 7, the two parts of the mould being superimposed.

In the drawings, 1 indicates the rectangular portion of the paving block, the sides of which are in a ratio of about 4/5, while 2 indicates the non-rectangular portion. The two portions may have the same thickness or not. In the example illustrated, the thickness of the non-rectangular portion is about 8/5 that of the rectangular portion, such proportion having proved advantageous in the course of the tests.

The portion 2 has two opposite sides each formed by a full sine wave or the like 3, 4, the two sides being symmetrical with respect to the axis A—A of the paving block. The two other

opposite sides 5, 6 are superposable by translation along the axis A—A. The paving block thus includes two bosses 7 corresponding to the bearing faces 8 and a boss 9 corresponding to the bearing face 10. The interfitting of the paving blocks is thus effected along the four sides and transmission of the load to adjoining blocks takes place through the bosses 7 and 9, which take half the periphery. Each boss rests upon one single bearing face of an adjoining block, whereas, if the boss was to rest upon complementary bearings of two adjoining blocks, the joint between the latter would constitute a lost surface with regard to the transmission of stresses resulting from the load.

It will also be seen that the mutual thrust of the paving blocks takes place in three points, which is the ideal solution for securing a uniform distibution of the load in all directions.

Advantageously, the centres of the three bearing faces form the apices of a substantially equilateral triangle, which ensures a perfect distribution of the load. This is especially the case in the example illustrated, where the dimensions of the sides of the base rectangle are in a proportion of about 4/5, e. g. 20 x 25 cm. Moreover, since the bosses occupy half the periphery, the surface employed for transmitting the stresses due to the load is as large as possible, so that the cutting stress upon the bosses is reduced to a minimum. Further, it should be noted that the block has no unsupported pointed portions, which are always breakable and get easily damaged during transport and handling. It will therefore be seen that the paving block of the invention is particularly suitable for roads with hard and heavy-weight traffic.

The waves forming the contour of the portion 2 are advantageously of sine shape. They may be replaced, however, by arcs of a circle. With the same tangent at the point of origin, such arcs of a circle will have a smaller "track" or maximum set-off, which slightly reduces the surface of the boss. Since the "track" of the portions 9, 10 is larger than that of the portions 7, 8, assuming that the curves confining them are of the same nature, one may, for instance, maintain the sine curves 3, 4, but replace the curves 5, 6 by arcs of a circle, if one wants to obtain substantially equal "tracks" on the four sides of the block.

The curves confining the portion 2 are preferably so established that the angles B and C formed by their tangents at the point of origin with the sides of the rectangle 1 are equal to each other and have advantageously a value of about 30°, so that the block has four right angles.

It will be understood that the bearing faces 8, 10 and the lower faces of the bosses 7, 9 may be parallel to the upper and lower surfaces of the block. However, as shown in Fig. 4, it is preferable to impart them a slant upwardly from the rectangular portion 1, the inclination of the bearing faces 8, 10 being slightly sharper, so as to obtain a joint 11 widening out somewhat downwardly. Moreover, the lateral faces of the portion 1, instead of being vertical, are preferably inclined slightly inwardly of the paving block from their meeting point with the portion 2 of the block, so as to form joints widening out downwardly. It will be seen that the above arrangement enables an easy packing of the joints 11, 12 with sand or the like. It is also useful to provide a thin asphalt or like packing 13 between the portions 2, which is automatically confined as to its depth by the presence of the sand packing 11.

Figs. 5 to 8 illustrate a mould for producing paving or road surfacing blocks of the kind described. It is formed of two parts, the lower (Figs. 5–6) of which includes a rectangular frame 14 supporting a frame 15 corresponding to the contour of the upper portion of the block, and a removable bottom wall 16 that fits into the frame 15. The latter is provided with three flanges 17, 18 corresponding to the bearing faces 8, 10 of the block and having a corresponding slant.

The upper part of the mould (Figs. 7–8) includes a rectangular frame 19 fitting exactly into the frame 14 and carrying a rectangular frame 20 corresponding to the contour of the lower portion of the block, the faces thereof being slightly inclined on the vertical. At its bottom portion the frame 20 is provided with three flanges 21, 22 corresponding in shape and inclination to the bearing faces of the bosses 7, 9 of the upper portion of the block.

The moulding of a paving block is effected as follows. The two parts of the mould are superimposed as shown in Fig. 8 and the assembly is placed upon a vibrating table. The mould is filled with concrete and the vibration is set up. When the vibration is finished, the upper part is removed, this being easily disengaged especially if the walls of the frame 20 are inclined as shown in the drawing. The unit comprising the moulded block and the lower part of the mould is then turned upside down on the floor, and the latter part of the mould is removed very easily, since the removable bottom wall 16 is sticking to the upper face of the block. It is readily disengaged in turn by rotating it slightly in its own plane.

Thus, the mould enables to execute in one step and in a very simple way a block with lateral interfit portions, of intricate geometric shape. This procedure is much more advantageous than the one obtained with a vertically divided mould, the parts of which have to be disengaged in a horizontal direction during stripping and cannot practically be held perfectly in place during the vibration. This drawback does not appear with the mould of the invention, which is moreover practically subject to no wear and is besides simple and cheap to manufacture. Moreover, it is easy to produce a mould having several compartments similar to the individual mould above described. It will be understood that the mould of the invention is suitable not only for the manufacture of blocks of the kind described and illustrated, but also for that of any blocks comprising, in the direction of their thickness, two portions having different contours projecting locally one with respect to the other.

With reference to paving blocks the said moulding method has the further advantage that the upper face of the block, which is the wearing face, lays at the bottom of the mould, where the concrete of the best quality is forming.

I claim:

A paving block comprising, a rectangular shaped base having substantially straight side edge surfaces and end edge surfaces at right angles to said side edge surfaces, an upper portion integral with said base, a convex end surface on the upper portion overhanging one end surface of the base with the ends of said convex surface vertically aligned with two end corners of said base, a concave surface forming the other

end edge of the upper portion and arranged parallel with said convex surface with ends of the concave surface vertically aligned with other end corners of said base, a side edge surface on the upper portion including a concave surface beginning at one end of said convex surface retreating inboard of one side edge of the base and merging with a similarly shaped convex surface overhanging the same side edge of said base and terminating at one end of the first concave surface, another side edge surface on the upper portion including a concave surface beginning at the other end of the first convex surface and retreating inboard of the other side edge of said base and merging with a similarly shaped convex surface overhanging the same side edge of the base and terminating at the other end of the first concave surface, the concave and convex surfaces at the sides of the upper portion forming opposed sinuous faces with areas of the upper portion defined by the convex edges adapted to fit into recesses defined by the concave surfaces of adjacent paving blocks, substantially horizontal bearing faces at the top of the base portion outboard of all of the concave surfaces, ledges on the upper portion defined by the convex surfaces thereon having substantially horizontal bearing faces thereunder extending inboard of the convex surfaces and adapted to lie on bearing faces of the base portion of adjacent paving blocks, the centers of support of said ledges being so located as to define apices of an isosceles triangle whereby three support areas are provided on the paving block.

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