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ROAD SURFACING UNIT

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Fig. 1

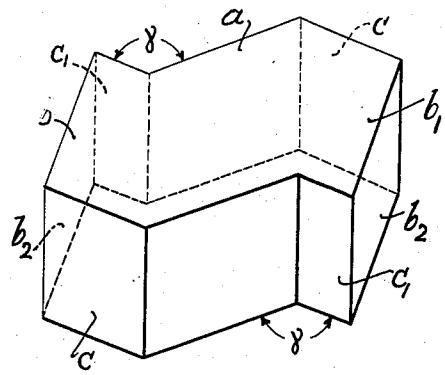
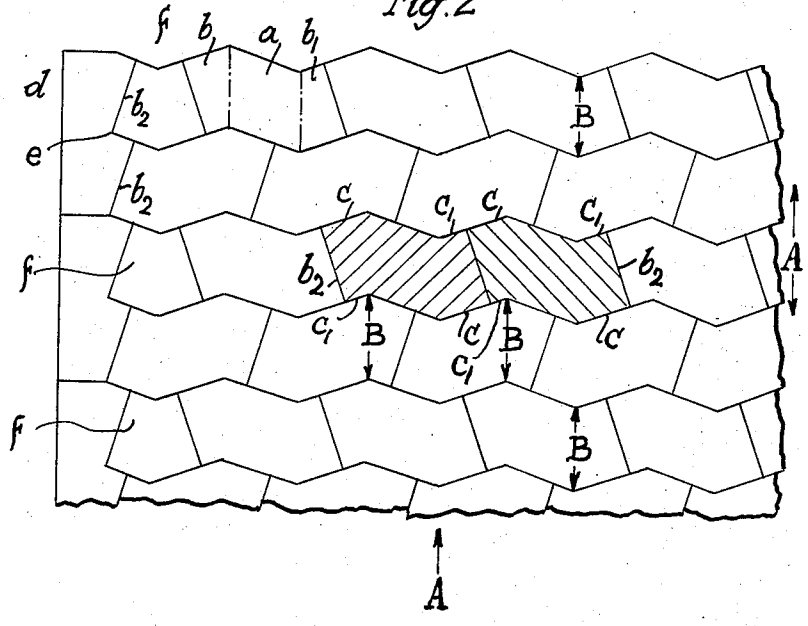


Fig. 2



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ROAD SURFACING UNIT

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This invention concerns a paving stone or a road surfacing unit by means of which a consistent road surface may be produced by arranging the surfacing units in close assembly.

It is one particular object of the invention to provide in a row of such surfacing units, a certain degree of flexibility, so that shearing forces applied thereto by traffic passing over the units are well distributed, and no breakages caused by overloading of any unit can arise.

Paving stones have already been proposed with a double-T shape, and with a Z-shape for surfacing purposes. With these block shaped stones there is produced a linked system wherein stones in each row or layer are locked against each other, and thereby protected against oblique thrust. By means of this interlocking connection of the paving stones a firm union is achieved in the form of an unbroken sheet. It has been found, however, that at all the interlocking joints or links or the stones, which are arranged adjacent to or behind one another, edge breaks or transverse breaks occur in the stones. The double-T-shaped stones are weakened at their central regions, whilst the Z-shaped stones present edges inclined at 45° to the direction of traffic, and break off just as easily, because the thrust in the direction of traffic builds up a maximum leverage precisely at the edges.

Another object of the invention is therefore to avoid the disadvantages of the above types of stone, and at the same time to avoid rigid interlocking or interconnection of the stones as by claw means.

It has already been proposed for building walls, chimneys or wells to use roof-like stones formed in a conical shape from artificial stone. In this proposal a half stone is added on to the regular stones to act as a corner stone, whereby the stone surfaces abut one another at an obtuse angle. Apart from the fact that such stones are not designed as paving stones for producing a smooth road surface, they have the further disadvantage that there are resultant acute angles at the edges which a load such as is applied by traffic would easily destroy by crumbling the artificial stone material. Such ridge-shaped stones are therefore unsuitable for road-surfacing purposes, which require a smooth stone, as elastic as possible when assembled in rows and yet taking up the load forces applied in the direction of traffic movement.

According to the present invention, therefore, a road surfacing unit includes a center section of parallelogram shape, and at each end of said parallelogram, an end portion disposed obliquely thereto, characterized in that each end portion has a smaller upper surface area than that of the center section, for example half as large as the latter, and the end faces of said end portions are rectangular and parallel to one another, the end faces of said end pieces forming right angles with the front and rear faces of said end pieces.

The long face of each end piece, abutting on one face of the central portion, may have a length two thirds of the length of the side face of the central portion, and the shorter face of the end piece on the other side may be

a third or less of the length of the faces of said central portion.

According to another feature of the present invention, in a road surface laid with these units, said units joined together fit with their end faces against one another in each row, being wedged at the same time between units of the next row. A certain flexibility of each row of units in the road surface is thereby achieved, without a fracturing effect being caused upon the units themselves. Individual units are thus not exposed so readily, as a result of their shape, to the danger of breakage either as a whole or at their edges by forces moving in the direction of traffic, but all strengthened collectively against thrust forces. All impacts, frictional and compressing forces, splitting or sliding pressures exerted on any one unit are, by means of the surfaces lying essentially transversely to the direction of traffic, distributed proportionally on to other units. The rows of units following one after the other protect each other against transverse thrust, and an equalization of forces is achieved amongst the rows inasmuch as each unit in the assembly forming the road surface adjoining to two further units, a certain mobility of the stones relative to one another is permitted in case of extra heavy requirements, or of diagonally acting forces, in other words, a certain flexibility is provided in the road surface.

The invention also provides for a special design of packing units and edging units for the road surface.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a diagrammatic perspective view of one road surfacing unit constructed in accordance with the invention, and

Fig. 2 is a plan view of a plurality of units arranged to form a road surface, the road edging and filling-in pieces also being shown.

The shaped unit shown in Fig. 1 and produced, for example, from concrete, consists of a central portion a, whose top surface is designed as a parallelogram with acute and obtuse angles. This central portion a is designated in Fig. 2 by dot-dash lines.

The thickness of the unit is arbitrary; it may either be specially designed to be of flat shape, or, as shown in the drawings, it may be block-shaped.

At the ends of central portion a are provided end pieces b, b_1, each of which is disposed at an angle γ to said center section. These end portions b, b_1, are of smaller upper surface area than is the central portion a, being, for example, half as big as the latter.

The end portions b, b_1, terminate in perpendicular end faces b_2, which are rectangular and run parallel to one another. The end faces b_2 are at right angles to the front and rear faces c, c_1 of the end portions b, b_1.

In the embodiment shown in the drawings, the end portions have front and rear faces c, c_1, of differing areas. On the front, for example, is provided a large face c of some two thirds the area of the front and rear faces of the central portion a, whereas the rear face c_1 has an area about a third or less than that of the faces of the central portion.

The outlines of these end pieces thus comprise trapezia.

As may be seen from Fig. 2, the road surfacing units of the invention in the formation of a road surface, joined together in such a way that both a large face c, of one unit and a small face c_1 of an adjacent unit in the same row abut on the rear and front faces of the central portions a further units in adjoining rows, as may be seen from the shaded units in Fig. 2. The end faces b_2 of the units in different rows lie at an obtuse angle to one another.

The rows of shaped units, as shown in Fig. 2, are laid

in rows in opposite positions one to another. In the longitudinal direction A of the road surface, which corresponds in general to the direction of traffic, the units possess an increased transverse broadening B, whereby they are guarded against breakage in the direction of traffic by the obtuse-angled junction of the end pieces.

The obtuse angles of the units may be greater or lesser than shown, as required by given circumstances.

In the preparation of the road surface, edging units *d* having an inner, toothed edge presenting notches *e* are used for the side edging. These notches are engaged alternately by an end face b_2 of a surfacing unit, and by a packing unit *f*, in such a way that said packing units *f*, seen in outline, form two obtuse-angled trapezia abutting one another. An unbroken road surface is thus achieved, in which the shaped units are fitted and aligned to the side edging.

As shown in the drawings in Fig. 2 by the shaded units, each unit is required to withstand entirely the pressure and stress of forces arising in the longitudinal direction A of the road surface. Its faces *c*, c_1 will distribute shearing forces over the unshaded units adjacent to it. As the end pieces of these units run obliquely to the central portions, and the joint between both the units abutting on the central portion of a unit under load extends, as it were, perpendicularly to said central portion, the shearing forces are distributed (according to the parallelogram of forces) as lengthwise and transversely directed forces, without their being able to act in a destructive way upon acutely disposed edges.

The invention thus seeks to provide between the several units, an absolutely firm connection like an unbroken sheet, yet with a certain elasticity in the resulting road surface. A distribution of all perpendicularly acting forces, as also of all impact, frictional and cleavage forces, is thereby guaranteed over several units. Travelling over the surface thus provided is accomplished even at high speed with only slight noise as would obtain with netting.

By means of the novel shape of surface units and the method of laying them, it is achieved that in a completed road surface the side edges of said units run collectively at an oblique angle to the direction of traffic movement.

Finally, on account of the oblique direction of the joints, even the binding material between individual units is protected against overloading and displacement in the direction of traffic.

I claim:

1. A roadway comprising in combination; a plurality of interlocked successive and adjoining rows of main paving blocks with each row extending in a direction transverse to the longitudinal direction of said roadway, each of said main paving blocks having a central portion with a parallelogram-shape top surface and having front and rear vertical faces of substantially equal area, said main paving blocks further having two spaced end portions oppositely inclined to, and integral with, said central portion, each end portion being provided with a top surface in the shape of a trapezoid having all sides thereof of different length, said end portions being joined along the greater side thereof with said central portion and being of equal height to said central portion, the front and rear faces of said main blocks being inclined and forming at the surfaces thereof zig-zag lines across the roadway, said end portions respectively being provided with end faces parallel to each other and forming right angles with the respective front and rear faces of the central portions of the blocks in each adjoining row, the front and rear faces of said end portions having areas of approximately one-third and two-thirds respectively with respect to the area of said faces of said central portion; the blocks being so disposed that the position of said face of one-third area and said face of two-thirds area of said end portions is reversed in alternate rows, second paving blocks having V-shaped front and rear surfaces and engaging the respective outermost end surfaces of the respective outermost main blocks, each two adjacent successive second blocks of each two successive rows forming a step at the outer end surfaces thereof, the edges of said second blocks being diagonal to the longitudinal direction of said roadway, and border blocks respectively extending along two rows of said main blocks and having a step engaging the step formed by each two successive second paving blocks.

2. A roadway comprising in combination: a plurality of interlocked successive and adjoining rows of paving blocks with each row extending in a direction transverse to the longitudinal direction of said roadway, each of said paving blocks having a central portion with a parallelogram-shaped top surface and having front and rear vertical faces of substantially equal area, said paving blocks further having two spaced end portions oppositely inclined to, and integral with, said central portion, each end portion being provided with a top surface in the shape of a trapezoid, and having all sides thereof of different length, said end portions being joined along the greater side thereof with said central portion being of equal height to said central portion, the front and rear faces of said blocks being inclined and forming at the surfaces thereof zig-zag lines across the roadway, said end portions respectively being provided with end faces parallel to each other and forming right angles with the respective front and rear faces of the central portions of the blocks in each adjoining row, the front and rear faces of said end portions having areas of approximately one-third and two-thirds with respect to the area of said faces of said central portions, the blocks being so disposed that the position of said face of one-third area and said face of two-thirds area of said end portions is reversed in alternate rows.

3. In a road pavement: a plurality of interconnected paving blocks each of which consists of a central portion and two end portions respectively arranged at the ends of said central portion oppositely inclined to said central portion and integral therewith, said central portion having a top surface in the shape of a parallelogram having substantially equal sides, each of said end portions having a trapezoid-shaped top surface with two sides of each trapezoid parallel to but differing in length from each other, the greater side being approximately equal to two-thirds of a side of said top surface of said central portion, and the lesser side being approximately equal to one-third of a side of said top surface of said central portion, said end portions being of equal height to said central portion and being angled to said central portion at an obtuse angle, said paving stones being arranged in such a way that all of the upper surface edges of said stones form zig-zag lines across the roadway, the blocks being so disposed that the position of said greater and lesser sides is reversed in adjoining rows.

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