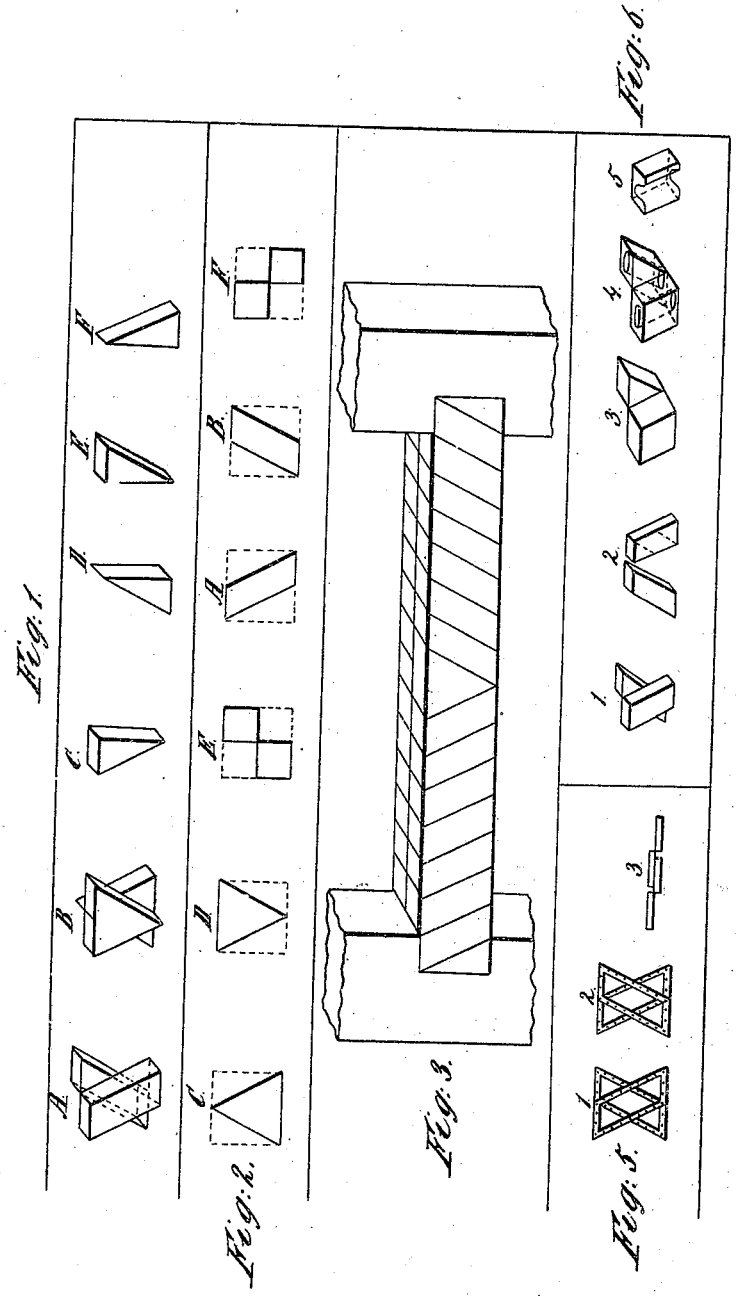
Sheet 1, 2 Sheets.

A. C. De Lisle.

Wood Pavement.

No. 1,683. Patented Jul. 10, 1840.



Witnesses.

J. S. Burton

John A. Hodgson.

Inventor.

de Lisle.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

Sheet 2, 2 Sheets.

A. C. De Lisle.

Wood Pavement.

No. 1,683. Patented Jul. 10, 1840.

Fig: 4.

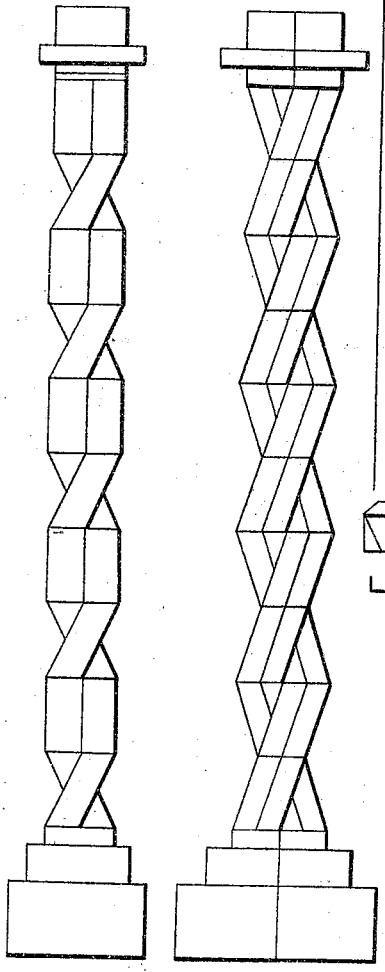


Fig: 7

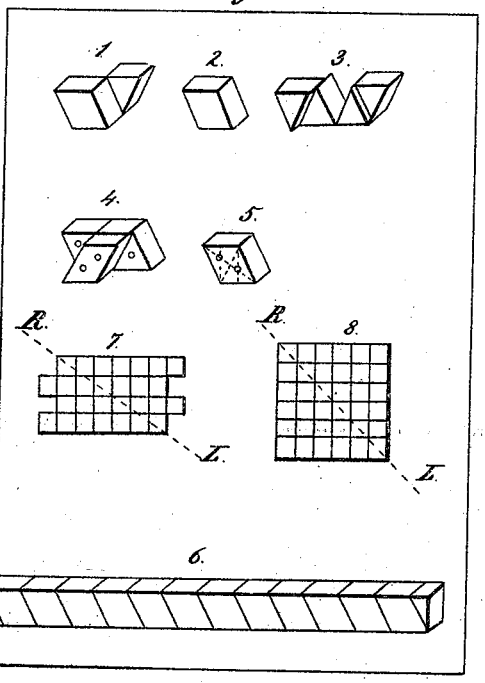
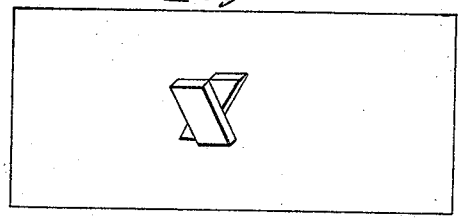


Fig: 8.



Witnesses.
J. S. Burton
John H. Hodgson

Inventor
de Lisle

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

AUG. COUNT DE LISLE, OF PARIS, FRANCE, ASSIGNOR TO REDWOOD FISHER.

MODE OF FORMING BLOCKS FOR WOODEN PAVEMENTS, &c.

Specification of Letters Patent No. 1,683, dated July 10, 1840.

To all whom it may concern:

Be it known that I, AUGUSTUS COUNT DE LISLE, of the Rue de Provence, in the city of Paris, in the Kingdom of France, but at present staying at No. 66 St. James street, in the county of Middlesex, in England, have invented improvements in the forms or shapes of materials and substances used for building and paving and in their combination for such purposes; and I do hereby declare that the following is a full and exact description.

My invention has for its objects to effect the following improvements in the art of construction, namely, first, the formation of a perfectly horizontal platform without the aid of an arch; secondly, the formation of a horizontal platform superseding the use of the arch by the adoption of a peculiar but simple and regular form of construction in which all the materials are of the same shape and the weight or pressure acts perpendicularly and equally upon each material or stone whereas in the construction of horizontal platforms by means of arches, the only mode hitherto known, all the materials must be of different forms and inclinations according to the situation in which they are proposed to be placed and the pressure is lateral or dependent upon the key stones and abutments only; thirdly, the application of this principle of construction to buildings in general instead of the only principle hitherto known, that of forming all the materials of a perpendicular and rectangular shape the present invention accomplishing the same result by means which add considerably to the strength and solidity of the building, viz, by producing the perpendicular equilibrium and external rectangular form by shaping all the materials or component parts according to the precise fixed and determined acute angle set forth in the drawings hereunto annexed.

The invention in fact consists in forming or shaping materials or substances according to a new section of the cube (such invention being called by me the stereotomy of the cube) which section is obtained by dividing the cube into eight equal prisms or parts four of which are to be taken from the perpendicular corners of the cube and the other four to be left remaining as a compact solid body but presenting the appearance of two solids or parallelepipeds of equal size and shape lying obliquely across each other and inclined in opposite directions the angle of their inclination being determined and invariably fixed as represented by the drawings annexed hereto and being found by logarithmic calculation to be exactly 63 degrees 26 minutes 5 seconds and $\frac{8}{10}$ths of a second.

The mode of ascertaining and forming this angle with accuracy and correctness and upon which the success of the invention wholly and entirely depends (inasmuch as it is the only angle which causes the diagonal joining the obtuse angles of the two parallelepipeds to fall in a perpendicular straight line and which therefore produces an inclined surface having the property of keeping a perpendicular tendency) is to draw a square representing one side of the cube and to divide the upper side thereof into two equal parts and from the point of division to draw an oblique line to the extreme point on the right at the bottom of the square and to divide in like manner the bottom side of the square into two equal parts and from the point of division to draw another oblique line to the extreme point on the left at the top of the square thus forming two oblique parallel lines or a parallelogram and in the same manner on the square representing the opposite side of the cube to form two oblique parallel lines but in the inverse or contrary way that is to say—to divide the top side of the last mentioned square into two equal parts and from the point of division to draw an oblique line to the extreme point on the left at the bottom of the said square. Also to divide in like manner the bottom side of the said square into two equal parts and from the point of division to draw an oblique line to the extreme point on the right at the top of the said square forming two parallel lines or a parallelogram as before which operations will present at the upper and lower surface of the cube two squares united at the angles and forming one half of the whole cube. I further declare that the shapes and forms before described with their combinations are applicable generally to materials and substances employed in building and paving whether of stone, iron, bricks or wood and that though the said shapes and forms must in all cases and materials be es-

sentially the same yet that they may be usefully obtained and combined together in different ways according to the nature and quality of the materials employed in the manner hereinafter mentioned.

1st. The shapes and forms before described are in the case of stone, marble or other similar substances to be formed by sawing or cutting the same out of the full size of the cube and leaving them entire in their relative dimensions so as to be ready to be placed together either horizontally, vertically or obliquely as the case may require and with or without the joints being filled with cement, mortar or plaster.

2nd. Iron may be wrought or cast from models made for the purpose and although the angles are to be strictly the same the thickness may be modified according to circumstances and the mode of uniting them is by screwing or otherwise securing the two oblique surfaces together.

3rd. Bricks may be of the same shape and form as described for the stone and put together with or without cement or mortar but it is not necessary to make them so thick as described under the head No. 1 bricks may also be made singly and put together when used so as to produce the same shape and forms as if made and molded in a solid body and in doing so it is proper to form the separate parts one with a recess and the other with a projection to fit. Bricks of the same shape may also be made with holes or grooves therein to be applied in certain cases to the roofs of furnaces and similar erections not only for the purpose of diminishing the weight but also for the purpose of giving a divided free and more diffused issue to the heat.

4th. The shape and form in wood must be precisely the same as described for the stone to No. 1 but in order to lessen the expense both in labor and material attendant upon producing the shape from a solid cube, the same form may be attained by making the solid body from two equal parts or blocks which must be pegged or doweled together at the center of each isosceles triangle forming the lozenge presented by their lateral surfaces the peg or dowel being in the center of each isosceles triangle as will appear in the said drawings hereunto annexed.

For wood paving a peculiar disposition of the materials or blocks thus shaped and if necessary pegged or doweled will be required inasmuch as the blocks will have to bear a great superincumbent weight which will be continually moving and rolling over them—they should therefore be laid upon solid firm dry ground or other solid firm dry foundation. As to the depth of the blocks in ordinary cases it will not be necessary to have them more than half the depth of a whole cube (say one of 12 inches) as described in Nos. 1 and 4 but the angle in all cases to be the same. The solid body to be formed by two separate blocks doweled together with two strong pegs or dowels placed in the center of each isosceles triangle forming the lozenge which represents the two lateral faces of the blocks as described in the annexed drawings. Each row of blocks should be also pegged together on the same principle or they may be united by any bituminous compound usually employed for similar purposes so as to form one compact body and prevent the blocks being disengaged or separated one from the other. It is necessary to add that the blocks may be packed up together in the workshop in large square or oblong masses as shown in the said drawings hereto annexed so as to be laid down more speedily on the prepared ground where these masses must be fastened or united together either with pegs or with any bituminous compound usually employed for similar purposes. It should be further observed that the wooden blocks must and will be necessarily placed nearly vertically as the tree grows. It should also be stated that according to the traffic in the roads or streets where the wood paving is intended to be laid down its depth or substance must be increased or diminished according to circumstances. The wood paving may in most cases be laid across the roads or streets from side to side so as to terminate each row of blocks or square masses of blocks against the stone channel or the curb stone as the case may be and the blocks or square masses of blocks must be cut or terminated in two perpendiculars so as to form proper abutments to each other or to the curb stone. In some cases however where it may be necessary the square masses of blocks may be placed in various directions such as for instance in a diagonal line. The top face of the blocks may also be usefully grooved at distances not exceeding six inches apart to prevent the sliding or slipping of horses.

Drawing No. 1, consisting of 6 figures, represents substances or materials formed or shaped according to the aforesaid division of the cube. A shows that portion of the cube which in a solid body forms the general shape (consisting of two parallelepipeds) to be given to all substances and materials. The figures 1 and 2 denoting one moiety or parallelepiped of such solid body and 3 and 4 the other moiety or parallelepiped placed and crossing each other in opposite directions and joined together in such cases where they cannot conveniently be formed out of or of one solid mass. C, D, E and F represent the perpendicular corners of the cube which are to be taken out of it to obtain the forms and shapes shown by the figures A and B when cut from the solid.

Drawing No. 2, consisting of 6 figures, represents the two modes of obtaining the exact angle with correctness. A and B show the two parallelograms of the front and back faces of the solid body or parallelepiped extracted from the cube and placed in opposite directions as directed in the drawing No. 1. C and D show the two isosceles triangles of the front and back faces of the figure B in drawing No. 1 and figure E shows the two squares of the upper surface united at the angle forming one half of the whole square and figure F shows the similar squares of the bottom surface placed of course the contrary way.

Drawing No. 3 shows the principle applied to platforms in bricks or stone and which are formed by uniting the several solid portions of the cube laterally, the joints being united together with or without cement or mortar. This figure is intended to represent the application of the principle to platforms instead of arches over all windows and other similar apertures to roofs and floors of houses and buildings bridges and other similar purposes.

Drawing No. 4, consisting of two figures, represents the elevation of a column showing the two different sides and built according to the same principle by placing the several solid portions of the cube one over the other in order to evince the advantage arising from that shape, namely, by diverting the cube of one half of its substance and weight the form which remains still preserves the same principle of equilibrium and perpendicular tendency as if it had remained in its entire and solid state.

Drawing No. 5, consisting of 3 figures, represents by Nos. 1 and 2 of those figures frames of wrought or cast iron bolted together upon the same principle and at the same angle as previously directed and No. 3 shows the plan.

Drawing No. 6, consisting of 5 figures, represents the different kinds of bricks to which the principle is applicable the advantages of which are precisely the same as described for other substances and particularly for roofs of furnaces ovens and other similar erections some of which may require a roof of pierced or open work.

Drawing No. 7, consisting of 8 figures, represents the principle as applied to wood pavement. No. 1 shows the shape of the block supposing it to be cut or made out of one solid piece of wood. No. 2 shows one of the parallelepipeds cut separately to be afterward coupled with another similar one by pegs as in Fig. 1. No. 3 shows how in some instances greater strength may be obtained by means of intercutting or dovetailing the blocks at their isosceles triangles. No. 4 shows the mode of pegging in order that one block may be united to two others adjoining. No. 5 shows the exact position of the two pegs in the center of each isosceles triangle as shown by the letters A and B. No. 6 shows a range of the blocks as laid across the road or street pegged and united together. Nos. 7 and 8 show how the blocks may be in the workshop disposed and packed up in large oblong or square masses and the lines R, Q, show the direction in which these masses may be placed across the street R being the right and Q the left side of the street. Drawing No. 8, consisting of one figure, represents the principle as applicable to railways or other similar purposes in one block cut solid out of one piece of wood or in two united and bolted together.

Having thus described the nature of the invention and the manner in which the same is to be carried into execution I would have it understood that what I claim as my invention and desire to secure by Letters Patent is—

1. The mode of forming or shaping material or substances for building paving and other purposes according to the division of the cube herein described.

2. The mode of employing in combination for building paving and other purposes blocks materials or substances so formed or shaped.

DE LISLE.

Witnesses:
T. T. Burton,
John H. Hodgson.