

J.F. Le Moulinier, Concrete Pavement

N^o 12,136.

Patented Jan. 2, 1855.

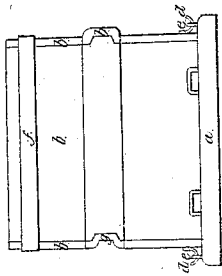


Fig. 8.

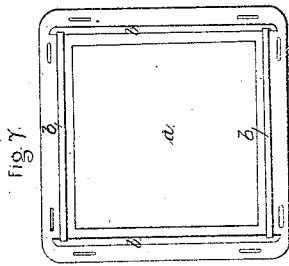


Fig. 7.

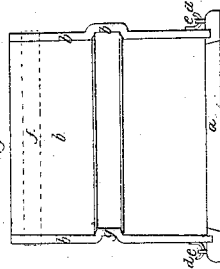


Fig. 9.

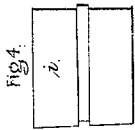


Fig. 4.



Fig. 6.

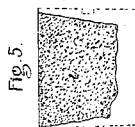


Fig. 5.

Block in rough state

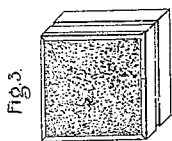


Fig. 3.

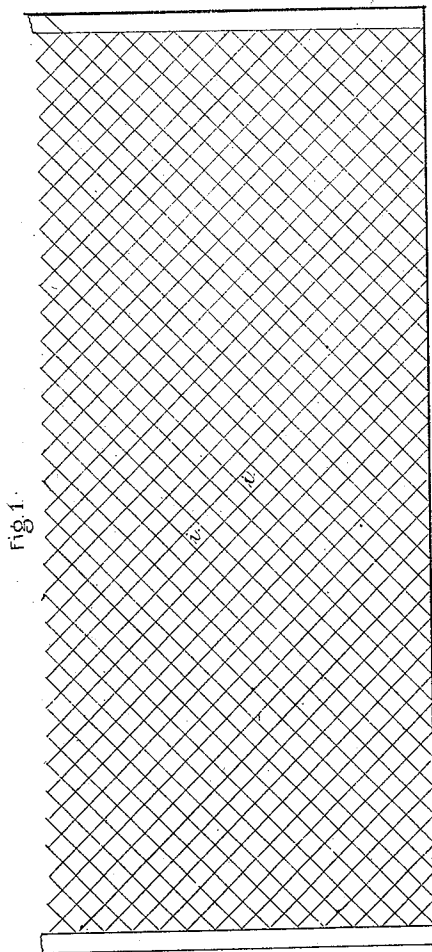


Fig. 1.

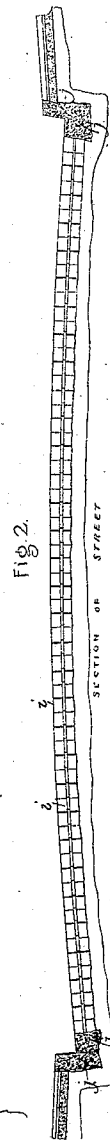


Fig. 2.

SECTION OF STREET

Inventor:

J. F. Le Moulinier

UNITED STATES PATENT OFFICE.

JEAN FRANÇOIS LE MOULNIER, OF NEW YORK, N. Y.

CONSTRUCTING PAVEMENTS, &c.

Specification of Letters Patent No. 12,136, dated January 2, 1855.

To all whom it may concern:

Be it known that I, JEAN FRANÇOIS LE MOULNIER, of New York city, have invented certain new and useful Improvements in
5 Paving for Roadways and other Purposes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

10 Figure 1, is a plan of a roadway paved; Fig. 2, a cross vertical section of the same; Fig. 3, a perspective view of a block prepared for paving; Fig. 4, an elevation of the same; Figs. 5 and 6, vertical sections of a
15 block representing the block of stone in the rough state with the sides and bottom brought to the required form by this composition cast around it; Fig. 7, is a plan of the bottom; and Figs. 8 and 9, vertical sections of the mold employed in casting the composition around the block.

The same letters indicate like parts in the several figures.

The object of my invention is to pave road-
25 ways with blocks of stone fitted to, and interlocking each other, so that the joints shall be close, and the whole locked together, and effect this without the labor and expense of dressing the several blocks. And to this end
30 the nature of my invention consists in giving the required shape to rough blocks of granite or other suitable stone, with tongues and grooves, or other equivalent form for interlocking the several blocks in forming a
35 roadway or other structure, by casting a preparation of asphaltum around the separate blocks placed in suitable molds which determine the form to be given, whereby each block, however rough, will receive the
40 precise form required to make a pavement with close joints, and with the blocks interlocked. And my invention also consists in the employment of a compound of asphaltum, bastenne, or pitch, and cinders, or coal
45 ashes, or pulverized stone coal, or sand, or other equivalent substance, thoroughly amalgamated in the heated state, to cast around the blocks of stone to obtain the required form. And my invention also consists
50 in heating the blocks of stone, before the asphalt compound is cast around them, by means of which the compound is made to adhere thoroughly to the surface of the stone.

55 I take blocks of granite or other suitable stone of an appropriate size for paving a

road way, or for other purposes, and with the upper face suited to such purposes, and these I bring to the form and size required on the four sides, and bottom also, if re-
60 quired, by placing them in suitable molds, and cast around them the composition to be hereafter specified.

For this purpose I prepare molds, such as are represented in Figs. 7, 8 and 9, of the
85 accompanying drawings, made of any suitable material. They are composed of a bottom *a* and four sides *b*. The sides should be made separate from each other and from the bottom, the edges of two of the sides being
70 let into grooves made in the other two, and the four let into grooves in the bottom *a*, and held down by hooks *d*, which enter staples *e*, attached to the bottom near the
75 outer edges. The four sides are then bound together by a surrounding strap *f*. The inside of the mold should be smooth and the exact reverse of the intended form of the blocks, and two of the sides formed with
80 a projecting tongue *g*, and the other two with a corresponding groove *h*. The sides are made movable, so that the mold may be taken apart to liberate the blocks after they
85 have been formed, as they should be parallel on two sides and slightly tapering on the other two sides to suit the arch form of the roadway, and as the blocks are molded
90 in an inverted position, the mold will be wider at bottom than at top.

It is immaterial what the form of the
95 blocks may be, and how rough and irregular, except on that face which is to form the surface of the roadway.

The blocks are put into molds formed as above described, in an inverted position,
95 that is, face downward, the inner surface of the mold having been previously greased or coated with any other substance which will prevent the asphalt compound from adher-
100 ing.

I take a kettle or caldron of suitable capacity provided with a lid, and placed over
a furnace which will apply a gentle and uniform heat, to prevent overheating the
105 asphaltum which would thereby be rendered worthless. In this caldron I first put about five per cent. of tar, bastenne, or mineral
pitch, and then put in the asphaltum which
110 should be broken in lumps of about one inch. The purpose of the pitch is to aid in dissolving the asphaltum, and to make it run and mingle freely, otherwise it would be next

to impossible to prevent the asphaltum from being injured by heat. And another important object is to make it run freely in casting, for without this it would not run
5 into the sinuosities of the stone and would not thoroughly adhere. After the asphaltum is melted, and about three quarters baked, as it is termed, I add about seventy
10 five per cent. in bulk, of calcined cinders or coal ashes, or, where coal is cheap, pulverized coal, or bank or river sand. The sand should be thoroughly washed and separated from all foreign substances, and well dried,
15 and put in through a sieve so as to spread it well and evenly over the surface, and the whole should then be stirred, and the caldron covered and the baking continued.

The blocks of stone are to be heated in an oven, or by a suitable fire, up to about 120°
20 Fahrenheit's scale, and put into the molds with the face downward, and then the asphalt compound, when completely baked, which is indicated by a blue smoke escaping from it, is poured in and there permitted to set
25 and cool.

When the blocks are removed from the molds they will be of regular form with a tongue on two sides and a corresponding groove on the other two sides, and so regularly shaped as to interlock and fit together
30 as perfectly and accurately as if chiseled to the required form. And it will also be found that the asphalt compound is as hard as stone, and so thoroughly attached to the surface of the stone as not to be removable
35 therefrom except by breaking, which is very difficult from the extreme toughness of the compound. And, what is of great importance, the compound thus prepared will not
40 be softened by the action of the sun at the highest temperature.

When the blocks of stone have not sufficient depth, in filling in the molds, fragments of stone are put in; but these must be
45 thoroughly heated before putting them in. The object is to have the face of each block

of the required size, and form, or approximately, so, and then the sides and bottom can be filled out by fragments cemented by pouring in the asphalt compound. The
50 blocks being thus formed, the roadway is made by properly grading, and covering the surface to the proper depth with sand, and sufficiently arched for drainage.

The grade of the surface should correspond with the arch determined on in forming the molds, as the blocks, when shaped, will not fit properly for any other grade.

After the blocks *i* prepared as above, have been laid as represented in Figs. 1 and 2, the
60 gutters at the junction of the side walks can then be made by blocks *j*, brought to the required form by casting the asphalt compound around in suitable molds. The blocks being accurately fitted and interlocked with
65 each other and formed into series of arches will not require much support from the foundation. And to prevent filtration, which is the fruitful source of injury to foundations, care should be taken to close
70 the joints thoroughly at the side gutters by running in the asphalt compound in the heated and liquid state.

I do not wish to be understood as limiting myself to the interlocking of the blocks by
75 means of tongues and grooves, as any form can be adopted for the junction of the blocks. Nor as limiting myself to the paving of roadways, as my improved method is applicable to the roadways of bridges, the construction
80 of bridges, the side walks, vaults, cellars, sewers and similar works.

What I claim as my invention and desire to secure by Letters Patent, is:

Effecting the thorough union of the asphalt compound, or any equivalent therefor, and stone, by heating the blocks of stone
85 previously substantially as specified.

LE MOULNIER.

Witnesses:

W. B. NONES,
MICHAEL DRURY.