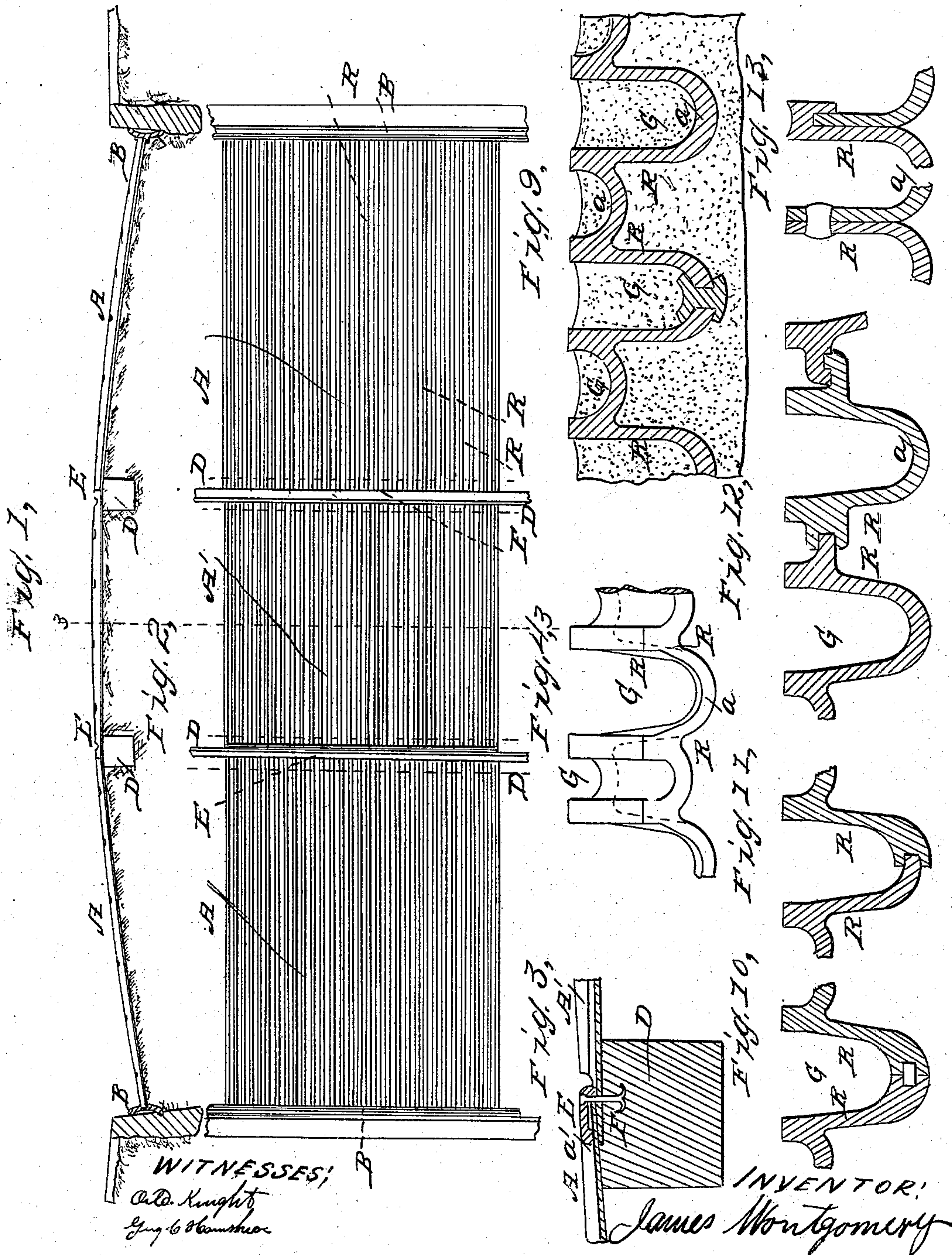


J. MONTGOMERY.

Pavement.

No. 23,188.

Patented March 8, 1859.



J. MONTGOMERY.

2 Sheets—Sheet 2.

Pavement.

No. 23,188.

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Fig. 7.

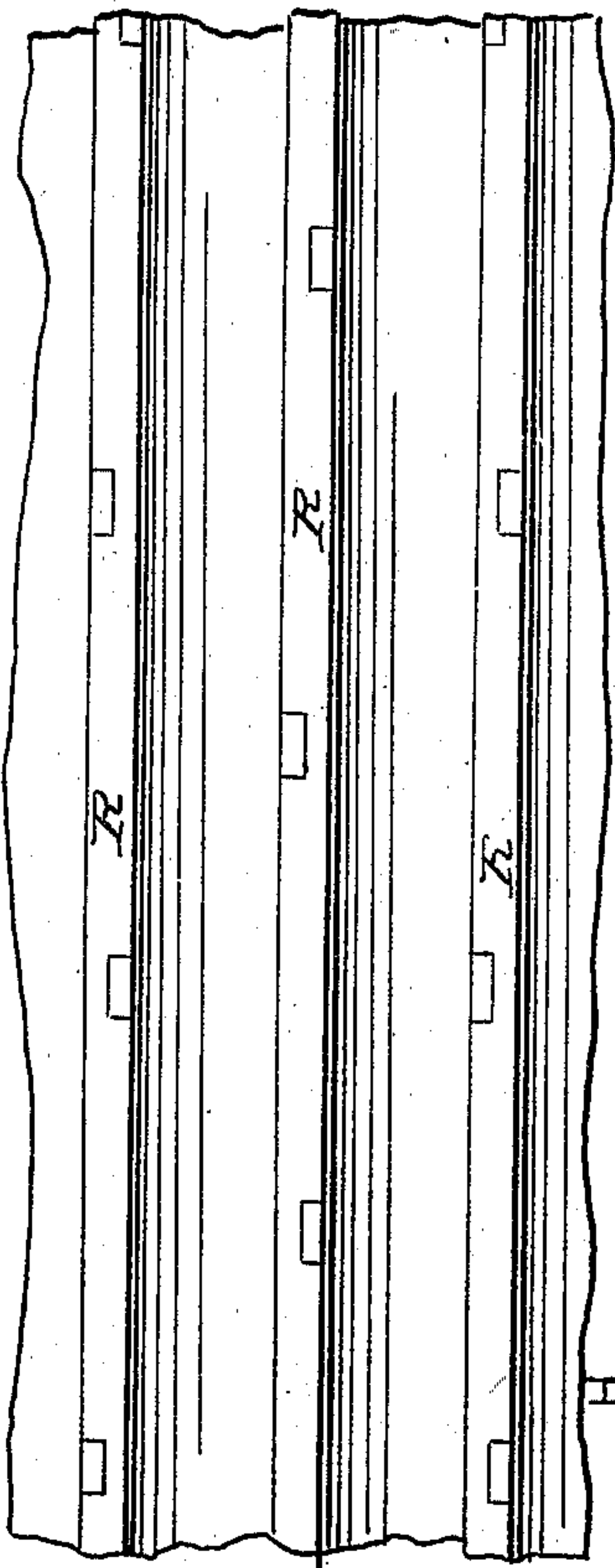


Fig. 6.

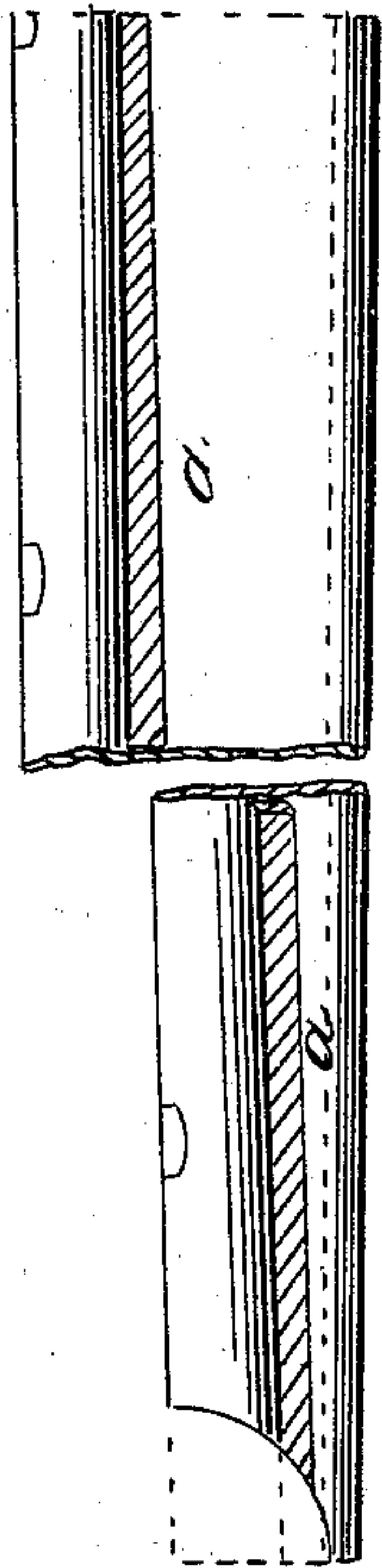


Fig. 5.

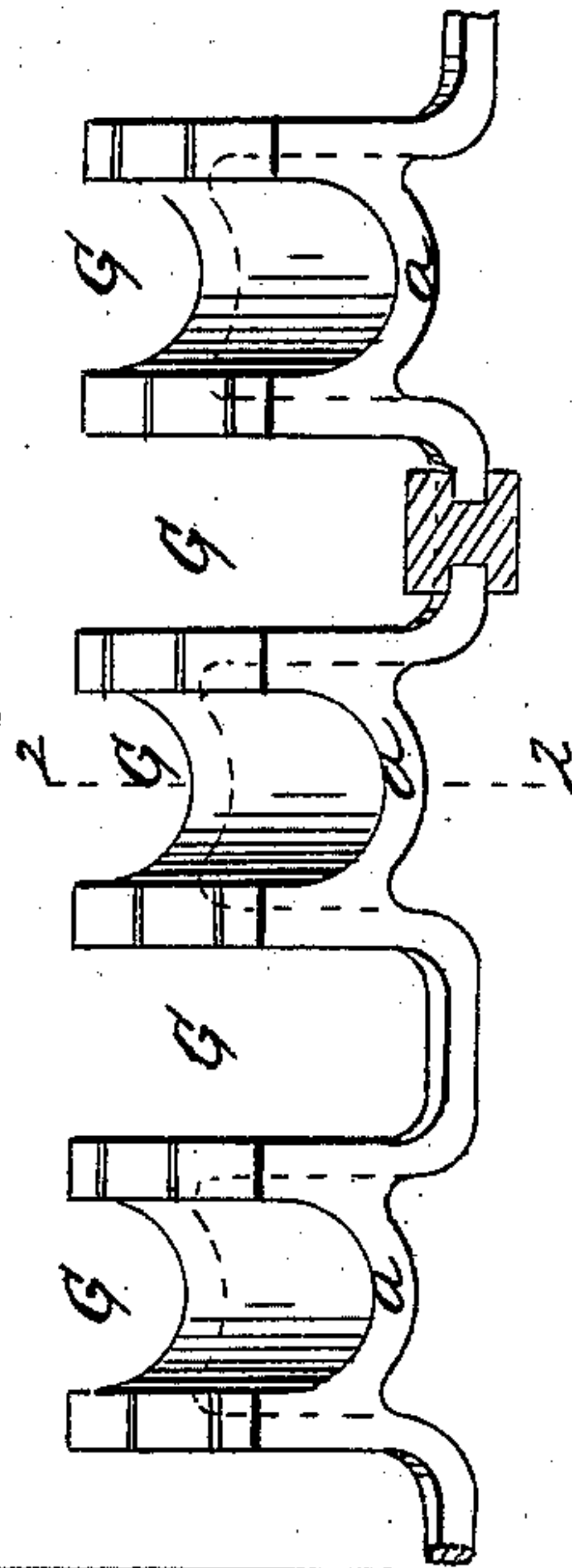
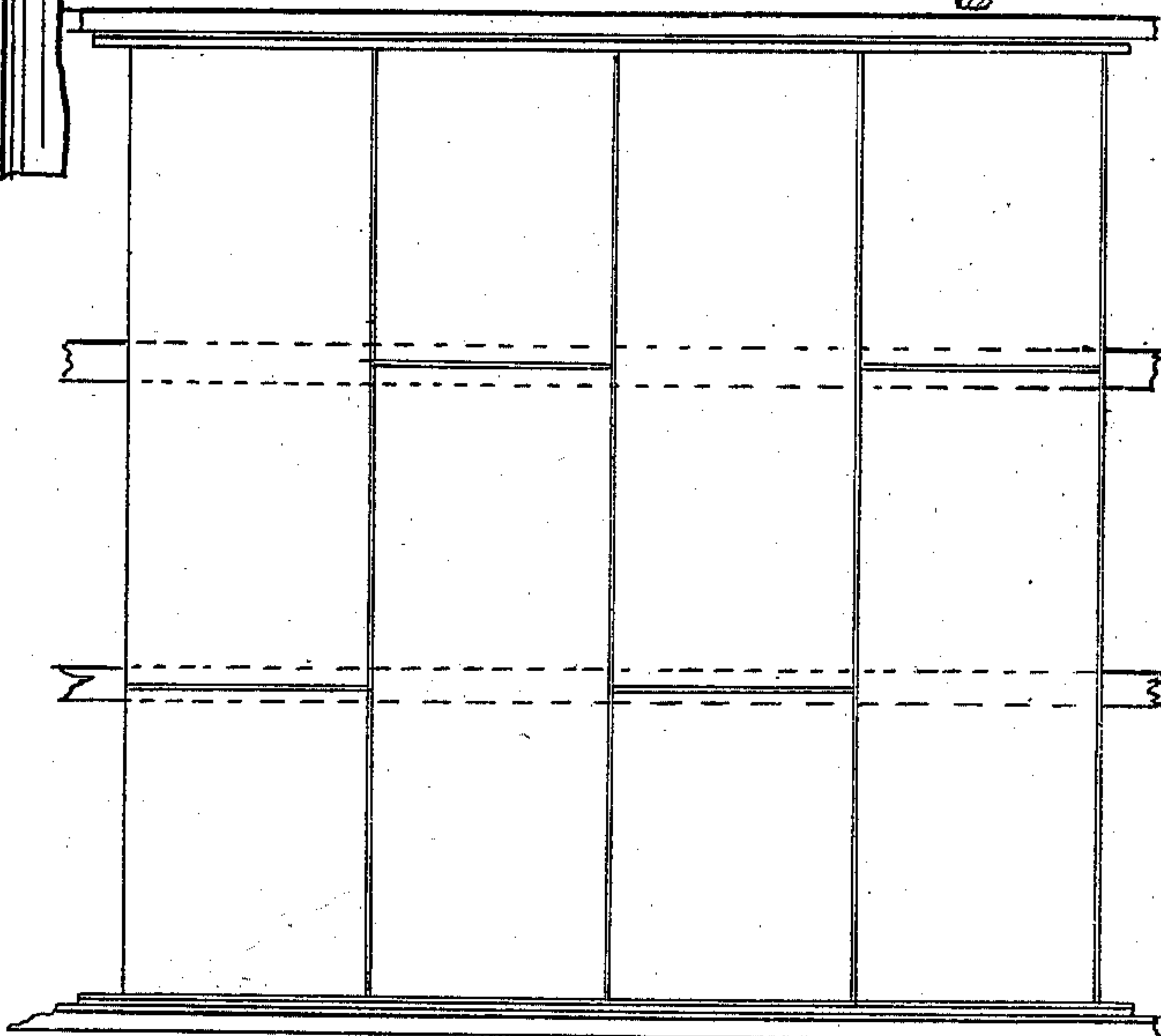


Fig. 8.



WITNESSES:

Chas. Knight
Geo. L. Thompson

INVENTOR:

James Montgomery

UNITED STATES PATENT OFFICE.

JAMES MONTGOMERY, OF NEW YORK, N. Y.

IRON PAVEMENT.

Specification of Letters Patent No. 23,188, dated March 8, 1859.

To all whom it may concern:

Be it known that I, JAMES MONTGOMERY, of the city, county, and State of New York, have invented certain new and useful Improvements in Pavements; and I hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, making part of this specification.

The subject of the said invention is a metallic pavement composed of ribs or laminæ in planes parallel or nearly so connected by webs of metal below the surface, the spaces between the said ribs being filled with a suitable concrete; and the leading features of novelty consist in methods hereinafter described of constructing and laying the said pavement and a railroad track in connection therewith.

In the accompanying drawings—Figure 1 is a transverse section of a street embodying my improvements. Fig. 2 is a plan of same. Fig. 3 is a transverse section on a larger scale, of one railroad rail with its underlying sleeper and adjacent parts of the ribbed plates. Figs. 4 and 5 are end views of fragments of the ribbed plates exhibiting different forms of construction. Fig. 6 is a longitudinal section at II, II, Fig. 5. Fig. 7 is a plan of a portion of one of the ribbed plates. Fig. 8 is a plan of a street with the railway omitted, exhibiting the manner of scarfing or breaking the joints between the plates. Figs. 9 to 13 inclusive are fragmentary sections at III III, Figs. 1 and 2, exhibiting modifications in the form of the ribbed plates and in the manner of connecting them.

A, A', are metallic plates constructed with ribs or laminæ R, connected below by webs of metal *a*, so as to leave grooves or spaces G, which are filled with a suitable concrete to give strength and rigidity, afford foot hold for horses and preserve the metal from corrosion. It is preferred to have the ribs R, vertical or nearly so; but whether vertical or inclined their planes will be parallel toward their upper part so as to firmly retain within the intervening grooves the concrete with which the latter are filled. It will also be apparent that in pavement constructed as described but a small amount of metal is exposed on the upper surface, and such as is exposed presents well defined angles so as to afford good hold for horses' feet. The material preferred for filling the

grooves in the metallic plates is a concrete composed of sharp coarse sand and gravel firmly consolidated by means of a grouting of any suitable cement, lime entering into the compound, to preserve the metal from corrosion.

The plates A, are sustained at the ends by buttress plates B, bearing against the curb stones C.

D, D, are longitudinal sleepers or strong pieces, which may be applied to sustain the pavement toward the center of the street.

The plates A and A', are so cast or rolled as to increase regularly in vertical depth toward their center, while their edges which rest upon the sleepers D are flattened and lapped in manner clearly shown in Fig. 3, so as to afford suitable bearing and attachment for a railroad rail E, one edge (*e*) of which engages under the projecting edge *a'*, of the plate A, while a spike F, passing through the rail near its inner edge and through both the plates A, and A', binds the whole firmly together. In the illustration given in Fig. 1 the form of the plates is such as to produce on their combined upper surfaces the necessary camber for a carriage way. When applied to sidewalks or other purposes requiring a flat surface the increase of thickness toward the center is produced by convexity exclusively on the under side.

r, r, are cavities formed at the upper edges of the ribs R, to prevent the slipping of wheels or of horses' feet when passing obliquely across the street.

The edges of the webs *a, a, a*, may be connected by tongues and grooves in any of the forms exhibited in the fragmentary sections above referred to or by various equivalent methods which will readily suggest themselves.

Instead of the edges of the plates A and A' lapping as shown in Figs. 1 and 3, they may be laid flush and a separate flat bar applied beneath the joint and riveted to the outer plate while the spike F, secures it to the inner one in the manner previously described.

From an examination of the construction of the buttress plates B, it will be apparent that they afford some degree of elasticity, which in connection with the camber of the street exerts a constant pressure toward the center so as to prevent the opening of the joints by change of temperature and by the

working in of dirt or other extraneous matter which would rapidly destroy the fittings.

The concavity beneath the rail E, is beneficial in reducing the laminating action caused by traffic over its surface, but the said cavity is not deemed an essential element of the invention.

Among the advantages produced by the described combination of the rail with the plates A and A' it may be observed that the rail when spiked down acts as a band to confine the ends of the plates and at the same time the projecting edge *a'*, of the plate forms a solid support to the outer edge of the rail and protects the latter from any sudden jars from the wheels of vehicles which would otherwise cause it to work loose and seriously impair its durability.

The tightness of the joints throughout this pavement is a feature of great importance with soils which would otherwise afford an insecure foundation and tend to ooze up between the plates. To render the joints more effectually water tight, strips of vulcanized india rubber or other material commonly used for such purposes may be introduced.

The method shown of connecting the ribs by webs near the top and base alternately, affords greater support to their upper edges and enables them to bent or yield sufficiently to prevent the distortion or fracture fre-

quently caused by changes of temperature in paving plates whose connecting web is in one plane.

I claim as new and of my invention and desire to secure by Letters Patent—

1. A metallic pavement consisting of a series of ribs or laminæ in planes parallel or nearly so, connected at alternate or varying levels by webs of metal substantially as and for the purposes set forth.

2. Constructing metallic paving plates with ribs or arches of greater vertical depth in their intervening portion than at or near their sustained edges.

3. The described combination of a concave or other suitably formed rail E, with the projecting edge *a'*, of the paving plate A, and the underlying edges of the plates A and A', for the purposes set forth.

4. The described construction and application of the buttress plate B, in connection with the plate A, and curb stone C, for the purpose explained.

5. Connecting the edges of ribbed or arched paving plates by tongue and groove joints as shown in Figs. 9 to 13 or in any mechanically equivalent form.

In testimony of which invention, I hereunto set my hand.

JAMES MONTGOMERY.

Witnesses:

OTIS KNIGHT,
EDW. F. BROWN.