

No. 845,289.

PATENTED FEB. 26, 1907.

E. H. BENNERS.
PAVEMENT AND METAL REINFORCE THEREFOR.
APPLICATION FILED JULY 12, 1906.

Fig. 1.

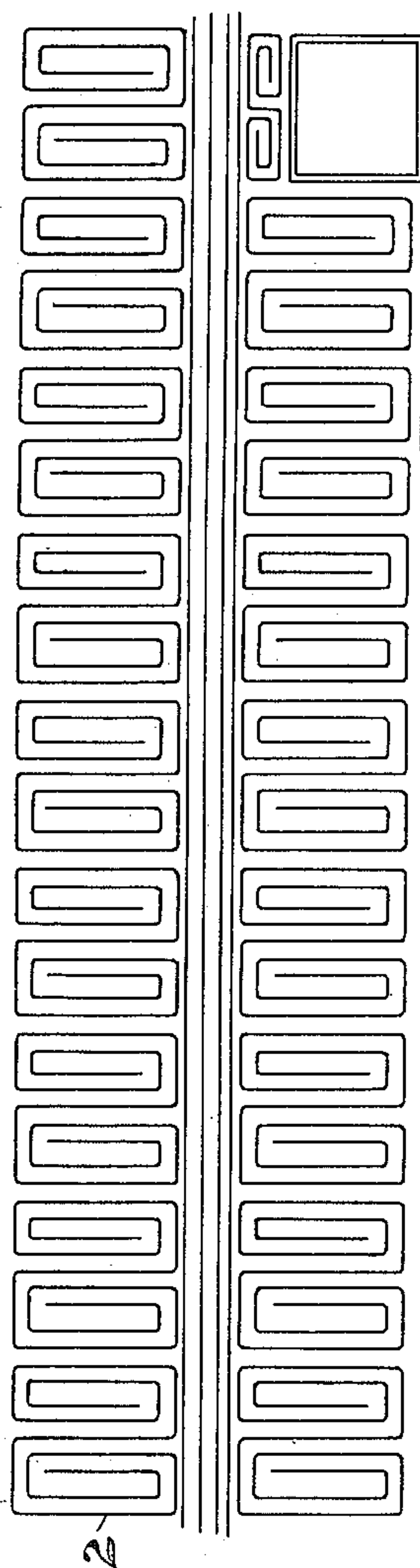


Fig. 7.

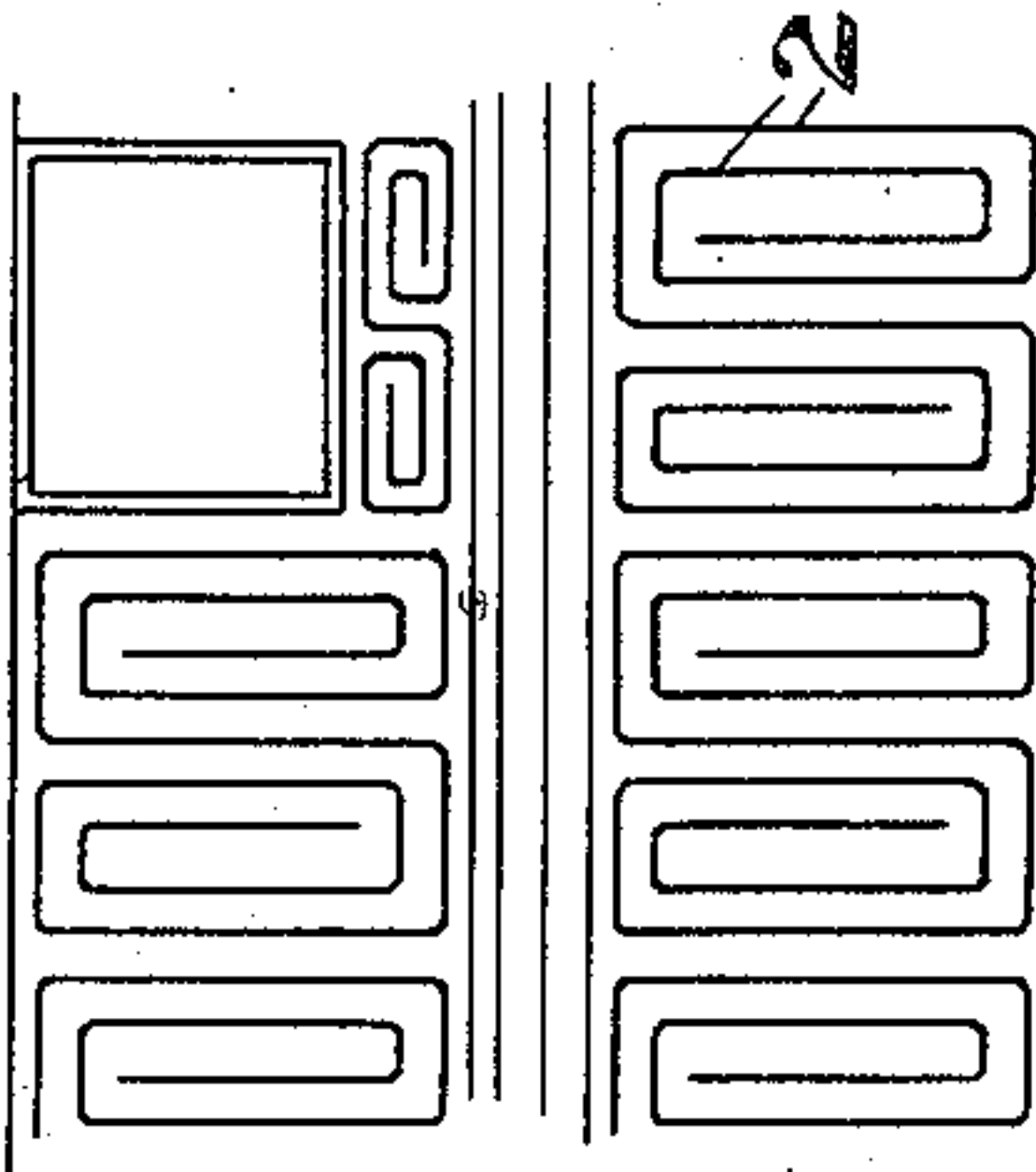


Fig. 6.

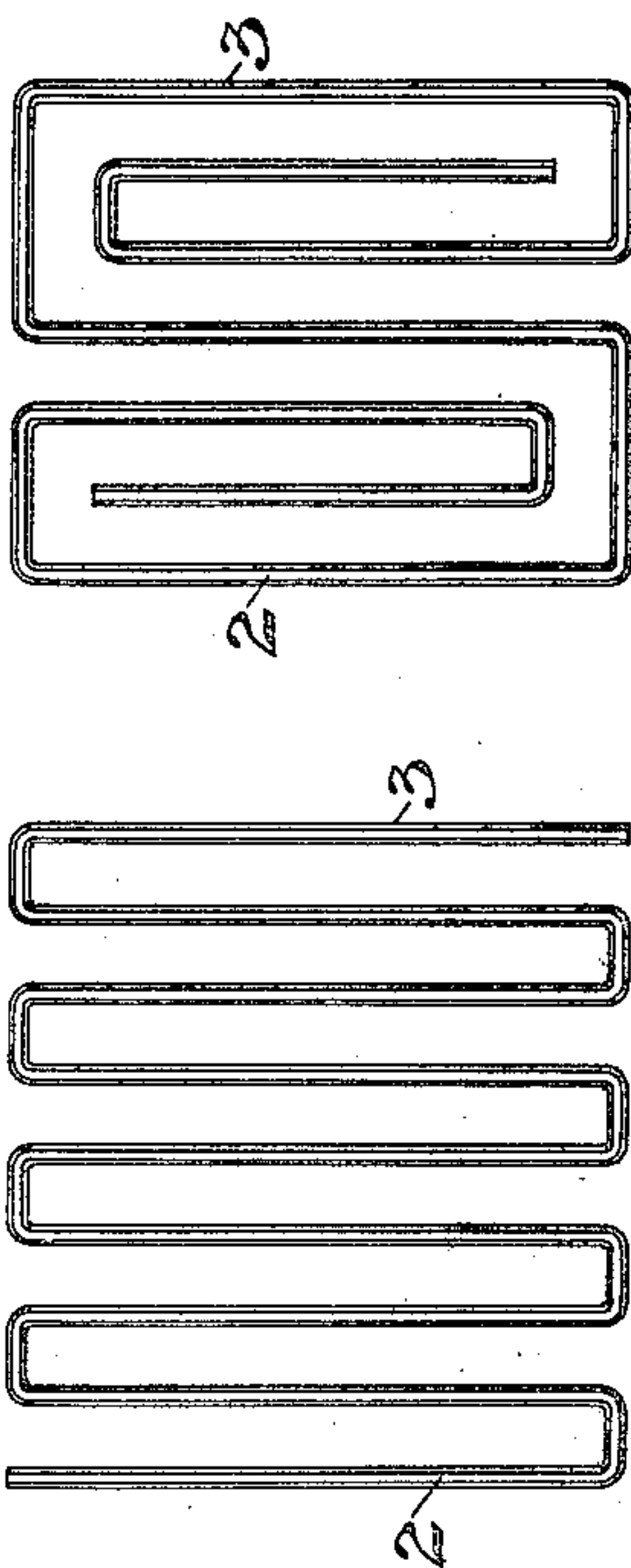


Fig. 8.

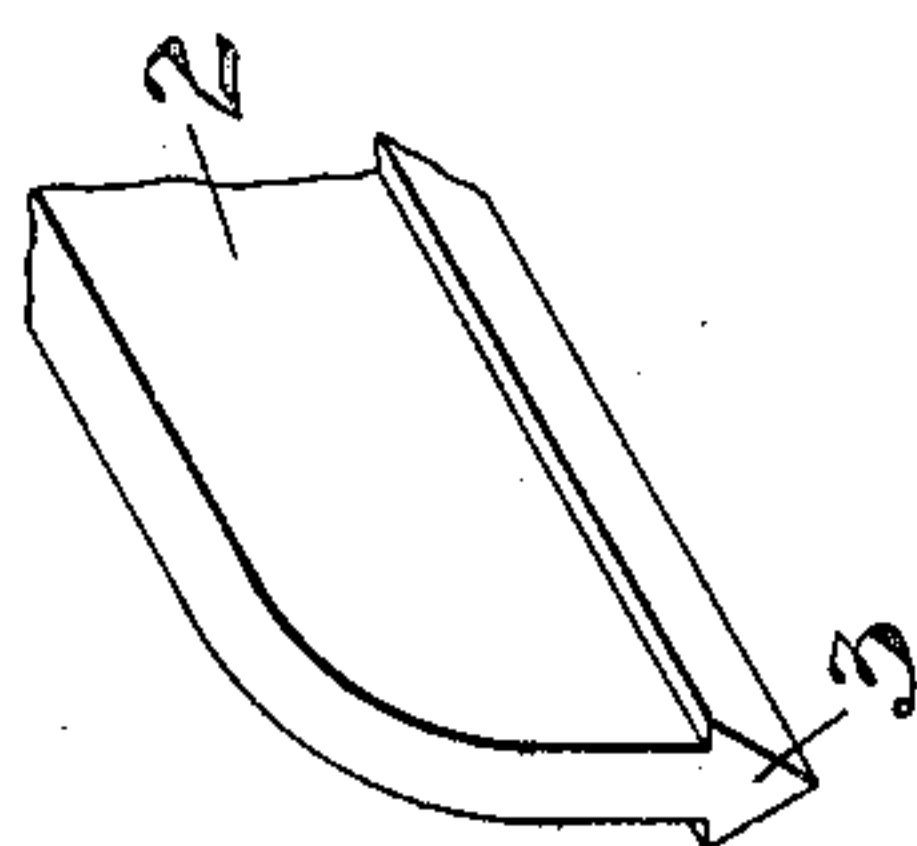


Fig. 3.

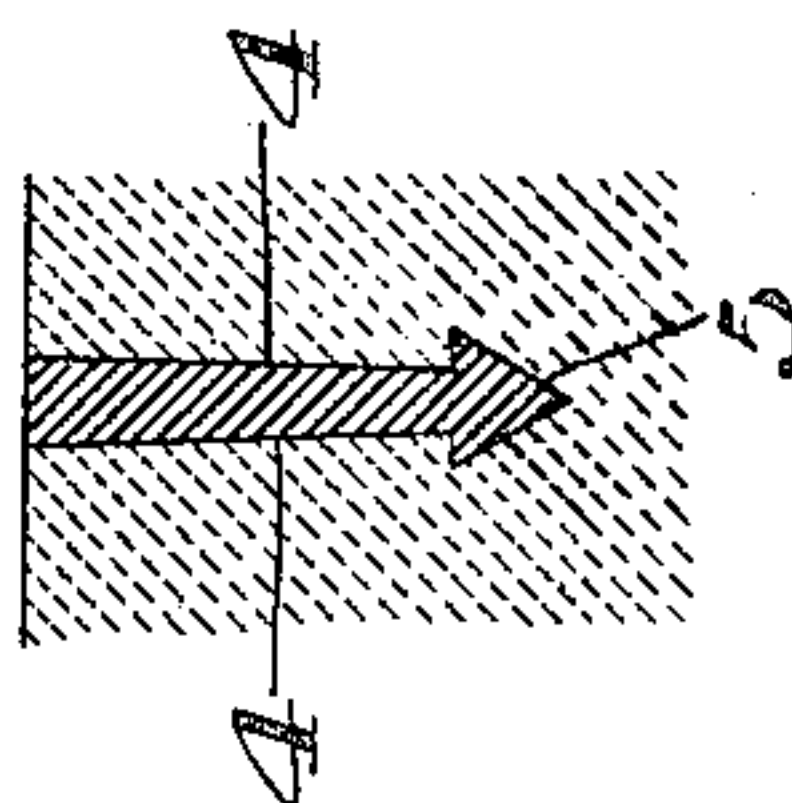


Fig. 2.

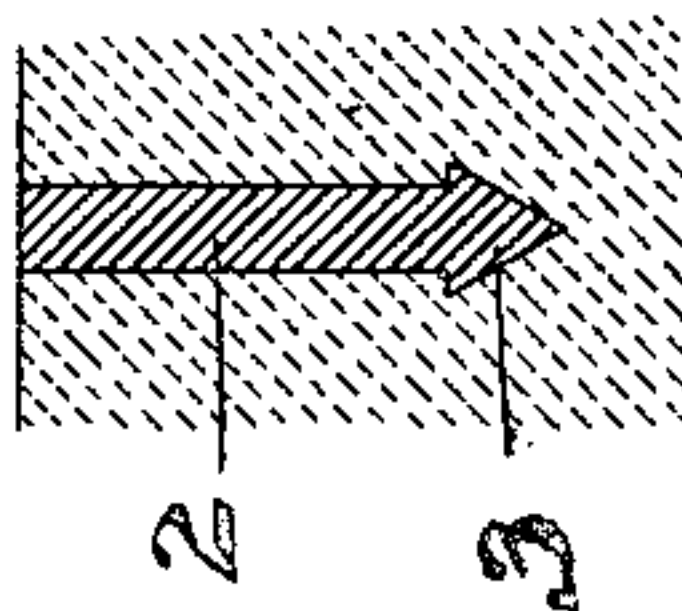
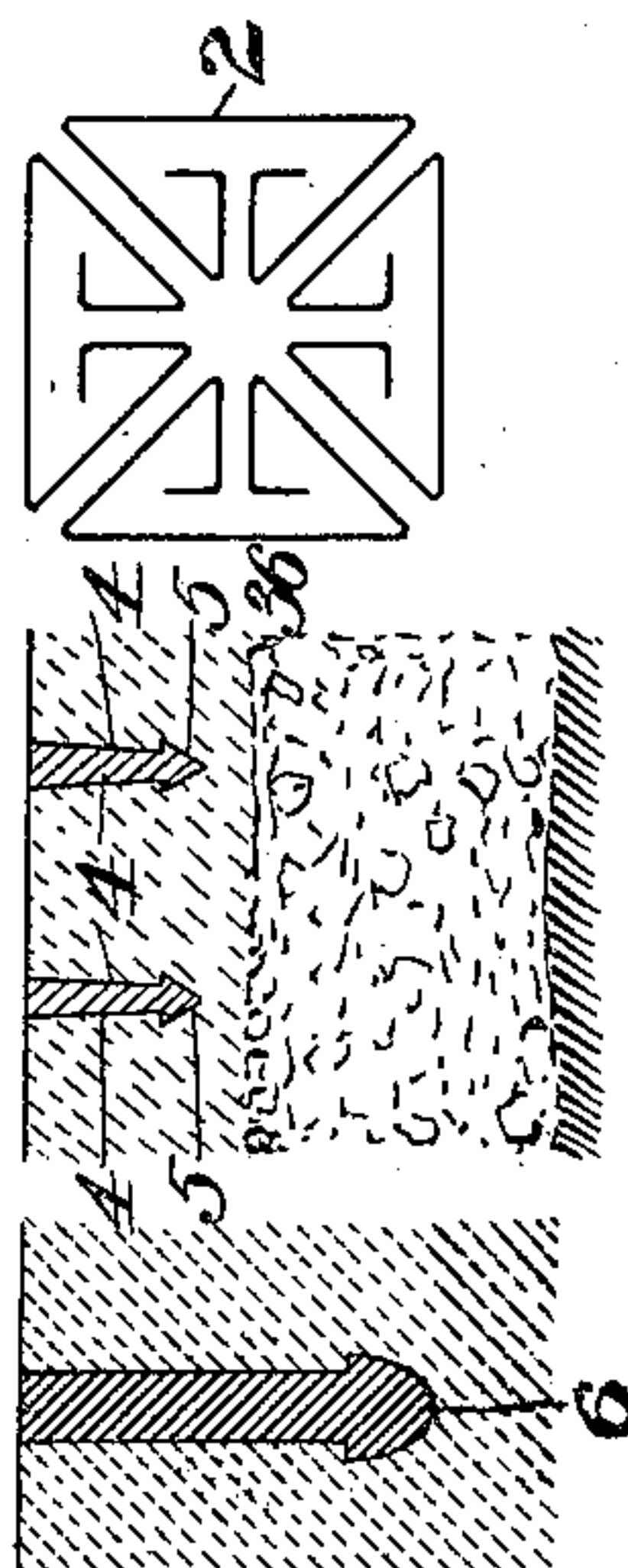


Fig. 4. Fig. 9. Fig. 5.



WITNESSES
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UNITED STATES PATENT OFFICE.

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PAVEMENT AND METAL REINFORCE THEREFOR.

No. 845,289.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Application filed July 12, 1906. Serial No. 325,767.

To all whom it may concern:

Be it known that I, EDWIN H. BENNERS, of Elizabeth, Union county, State of New Jersey, have invented a new and useful Pavement and Metal Reinforce Therefor, of which the following is a full, clear, and exact description.

This invention relates to pavements of the so-called "concrete" or "asphalt" type, and has for its object to provide an improved surface reinforce for such pavements without requiring any change in the manner of laying the same as now universally practiced.

I am aware of the patent to J. C. Bayles, No. 781,869, issued February 7, 1905, and it is the prime object of the present invention to overcome certain disadvantages of the patented device. Experiment with the Bayles device has shown that it tends to work loose under wear, and therefore I propose to prevent loosening of the reinforcing element without complicating the structure thereof and without increasing its cost. Another disadvantage in the Bayles device resides in the fact that it tends to bend or buckle, while in the present device this bending or buckling is effectually prevented.

According to the Bayles method the metal reinforcing-strips remain at their initial level when the surface of the pavement has worn away, whereby the reinforcing-strips project above the main surface of the pavement to the great inconvenience of travel. In view of this difficulty I propose to construct the metal reinforce so as to permit sinking thereof in the plastic surface material by the passage of vehicle-wheels thereacross, thereby to effectually maintain the exposed upper edge of the reinforce in substantially the same plane as the surface of the pavement, and thus the pavement always presents a smooth upper surface.

In the production of asphalt pavements it is essential that a predetermined surface compression be produced by rolling the surface, and this compression is materially interfered with by the use of the Bayles reinforce, for the reason that such reinforce does not readily sink under the weight of a rolling-machine, and hence prevents the proper compression of the surface material. Having appreciated this defect, I propose to entirely obviate the same by forming the reinforce in such a manner as to insure proper depression thereof

under the weight of the rolling-machine, so as to obtain the necessary compression of the surface material.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a plan view showing a portion of a pavement provided with one form of my improved surface reinforce. Figs. 2, 3, and 4 are enlarged detail cross-sectional views showing different forms of reinforcing-strips. Fig. 5 is a detail plan view showing a form of reinforce wherein the strips are infolded. Figs. 6 and 7 are plan views showing other manners of folding the reinforcing-strips. Fig. 8 is a fragmentary perspective view of one end of a reinforcing-strip having a rounded or convexed extremity. Fig. 9 is a fragmentary cross-sectional view of a portion of a pavement embodying the features of the present invention.

Like characters of reference designate corresponding parts in each of the figures of the drawings.

The reinforcing element of the present invention may be embodied as a strip or in the form of a grille bent from a strip. As indicated at 2 and as best shown in Figs. 2, 3, 4, 8, and 9, the surface reinforce consists of a metallic strip of suitable length, and preferably about one inch wide and one-quarter of an inch thick, the lower edge being beveled or tapered, as at 3, to produce a penetrating lower edge and to provide longitudinal shoulders 3^a upon opposite sides of the strip and extending throughout its entire length. It is preferred to roll the strip from plain stock, thereby to produce the tapered lower edge and longitudinal shoulders. It will here be explained that I do not limit myself to any precise shape for the lower edge of the strip, as will be understood by reference to Figs. 2, 3, and 4. In Figs. 2 and 3 the rib produced by the shoulders is substantially triangular in cross-section, whereas in Fig. 4 the cross-sectional shape is semi-elliptical or rounded; but in each form the sides converge downwardly. The rolling of the strip to form the shoulders 3^a of course produces a thickened rib upon the lower edge of the strip, and this rib not only presents the shoulders 3^a, but

also stiffens the strip, so as to prevent bending or buckling thereof under wear, as would result in the absence of the stiffening-rib.

Upon examination of Figs. 2 and 4 it will be noted that the opposite sides of the strip are substantially parallel; but I also contemplate the form shown in Fig. 3, wherein the sides of the strip converge or incline downwardly to the stiffening-rib.

In practice the pavement is built up in the ordinary manner. The rigid foundation first being laid, a binder 8 of cement is then placed upon the top of the foundation, and then a layer 9 of asphalt is placed upon the binder. In applying my invention the reinforcing elements are forced down into the plastic surface material, which application is materially facilitated by the shape of the penetrating lower edge of the elements, and finally the surface material is rolled to bring about the proper compression. By reason of the lower penetrating edge of the reinforcing strips or elements the strips readily sink under the action of the roller, and therefore do not interfere in any manner whatsoever with the surface compression. When the reinforcing elements have thus been embedded in the plastic material, the latter of course fills in snugly over the tops of the shoulders, which thereby constitute anchoring devices and effectually prevent upward working of the strips. Hence looseness of the strips under the action of vehicle-wheels is effectually prevented.

While the reinforcing elements are prevented from working upward under climatic conditions and under the effects of blows by vehicle-wheels, the penetrating lower edge permits of the ready sinking of the reinforce, so as to compensate for wear upon the exposed surface of the pavement, whereby the objectionable projecting of the strips above the surface is prevented in a very simple and efficient manner.

In addition to preventing upward working of the reinforce it is apparent that the barbs or shouldered lower portions of the strip effectually prevent tilting thereof under the impact of vehicle-wheels upon one end only of the strip.

It is apparent that wearing away of the surface material will expose the extremities of a strip, and therefore I propose to round each upper corner of the strip, as shown in Fig. 8, so as to avoid a definite projection when the surface material wears away.

The simplest form of the invention is that of a straight bar; but I also contemplate bending a bar to form a grille, different forms of grilles being shown in Figs. 5, 6, and 7 of the drawings, and it is of course apparent that many other shapes may be produced.

A very important feature of the present invention resides in the fact that it is not necessary to infold the ends of the bar when the

latter is bent into the form of a grille to protect the ends and prevent them from working upward, as suggested in the Bayles patent, for the reason that the present provision of the shoulders or barbs effectually prevents upward working of the ends of the strip.

From the foregoing description it will be understood that the device of the present invention is very simple and effective for the purposes designed. The application of the device does not require any change in the steps now universally followed in the production of concrete or asphalt pavements. Moreover, the device is not limited to any particular shape to obtain the most effective results, and therefore it will be understood that changes may be made in the form and arrangement of the surface reinforce within the scope of the claims without departing from the present invention.

Having thus described the invention, what is claimed, and is desired to be secured by Letters Patent, is—

1. A pavement formed of plastic material having an embedded metal surface reinforce free to sink and provided with means to prevent upward working of said reinforce.

2. A pavement formed of plastic material having an embedded barbed metal surface reinforce free to sink and having its barbed portion arranged to prevent upward working of the reinforce.

3. A pavement formed of plastic material having an embedded metal surface reinforce free to sink and provided with a longitudinal shoulder to prevent upward working of the reinforce.

4. A pavement formed of plastic material having an embedded metal surface reinforce free to sink and provided adjacent its lower edge with longitudinal shoulders upon opposite sides to prevent upward working of the reinforce.

5. A pavement formed of plastic material having a metal surface reinforce embedded therein, said reinforce being provided with a lower penetrating edge.

6. A pavement formed of plastic material having a metal surface reinforce embedded therein, the lower edge of the reinforce being beveled to form a penetrating edge.

7. A pavement formed of plastic material having a metal surface reinforce embedded therein, the lower edge portion of the reinforce having its opposite sides converged downwardly to form a penetrating edge.

8. A pavement formed of plastic material having a metal surface reinforce embedded therein, said reinforce having a penetrating lower edge, and shoulders above said edge to prevent upward working of the reinforce.

9. A pavement formed of plastic material having a metal surface reinforce embedded therein, said reinforce being provided with opposite longitudinal shoulders to prevent up-

ward working of the reinforce, and opposite sides of the reinforce being converged downwardly from the shoulders to form a penetrating lower edge.

5 10. A pavement comprising a foundation, plastic material thereon, and a metal surface reinforce embedded edgewise in the plastic material, the lower edge of the reinforce terminating short of the foundation and shaped
10 to permit sinking of the reinforce to compensate for wear on the surface of the pavement.

11. As a new article of manufacture, a metal surface reinforce for pavements having a penetrating lower edge.

15 12. As a new article of manufacture, a metal surface reinforce for pavements having shoulders upon opposite sides and tapered downwardly from the shoulders to provide a lower penetrating edge.

20 13. A pavement formed of plastic material having a metal surface reinforce embedded therein and provided with a lower penetrating edge, and means to prevent upward working of said reinforce.

14. A pavement formed of plastic material 25 having a barbed metal surface reinforce embedded therein and provided with a lower penetrating edge, the barbed portion being arranged to prevent upward working of the reinforce.

15. A pavement formed of plastic material 3 having a metal surface reinforce embedded therein and provided with a lower penetrating edge, said reinforce being provided with a longitudinal shoulder to prevent upward
35 working of the reinforce.

16. A pavement formed of plastic material having a metal surface reinforce embedded therein and provided with a lower penetrating edge, and longitudinal shoulders upon opposite sides of the reinforce to prevent upward working thereof. 40

In testimony whereof I have hereunto set my hand July 5, 1906.

EDWIN H. BENNERS.

Witnesses:

GEORGE H. SONNEBORN,
EMILY LONG.