Dec. 17, 1929. J. W. ROBINSON 1,740,119

SIDEWALK, ROADWAY, AND THE LIKE

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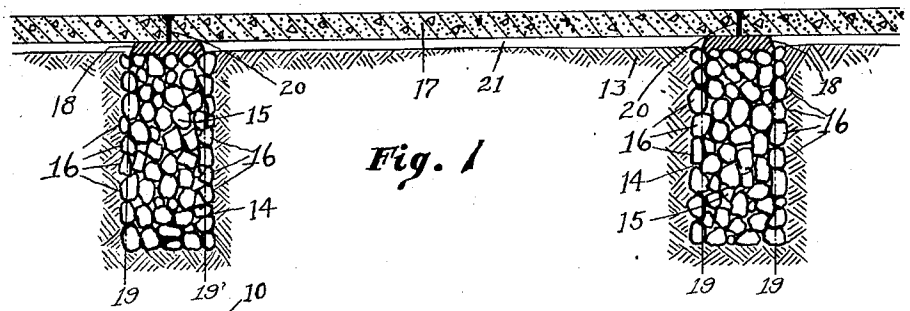


Fig. 1

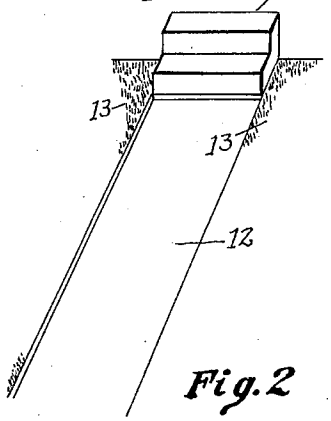


Fig. 2

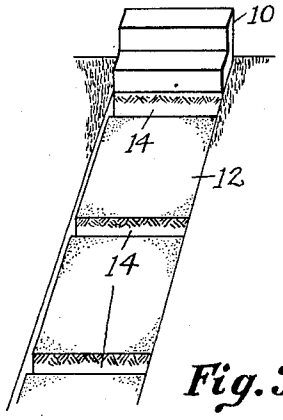


Fig. 3

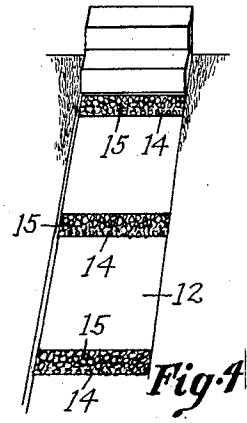


Fig. 4

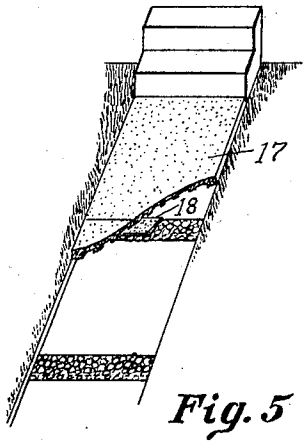


Fig. 5

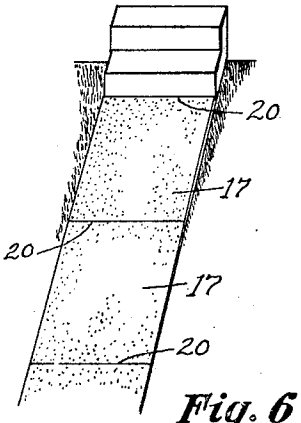


Fig. 6

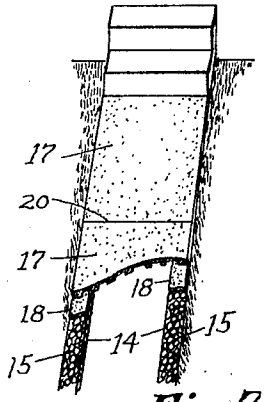


Fig. 7

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SIDEWALK, ROADWAY, AND THE LIKE

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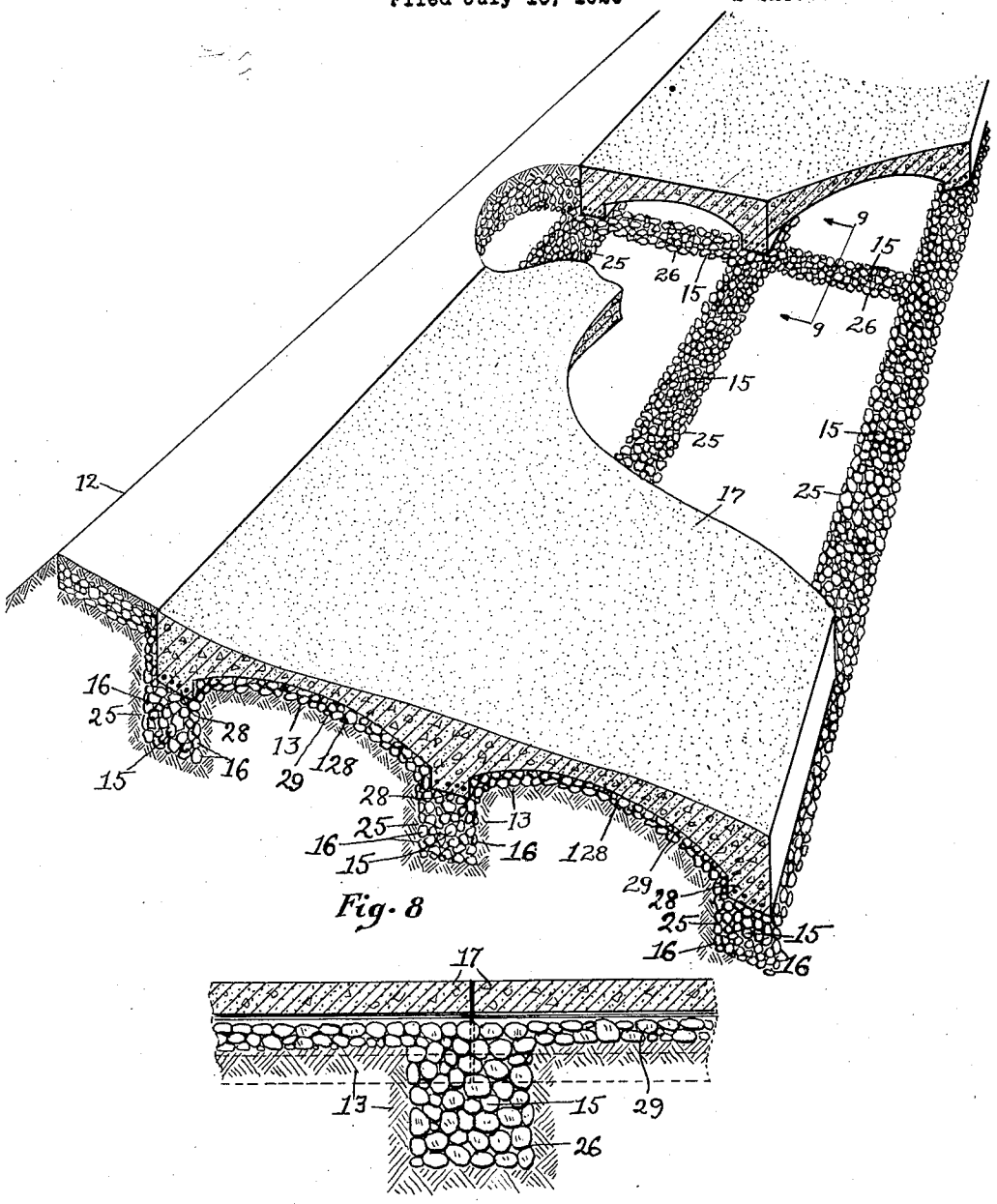


Fig. 8

Fig. 9

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UNITED STATES PATENT OFFICE

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SIDEWALK, ROADWAY, AND THE LIKE

Application filed July 16, 1926. Serial No. 122,892.

This invention relates to a novel construction of sidewalk, floor, roadway or the like having a tread member of concrete, cement or the like and to the method of making the same.

The invention has for its object to provide a construction of sidewalk, floor, roadway and the like which is simple and inexpensive to construct, is durable, and is substantially unaffected by temperature changes and particularly by frost.

To this end, the ground or eaath, which constitutes the foundation member, is provided with a plurality of trenches of substantial depth, which are spaced apart and preferably substantially parallel, and said trenches have located in them means for supporting the tread member above the trenches and also means for preventing or at least reducing to a minimum movement of the tread member by the upright walls of the trenches under the influence of frost.

The means for preventing movement of the tread member under the influence of frost, is preferably loose aggregate which is interposed between the tread supporting means and the upright walls of the trench and practically forms a slip or movable member which responds to the movement of the upright walls of the trenches without effecting corresponding movement of the tread supporting means, and said tread supporting means may and preferably will be made of loose aggregate, as will be described.

The tread member may and preferably will be made in the form of slabs, and the joints between adjacent slabs may be filled or sealed with asphalt or like material.

These and other features of the invention will be pointed out in the claims at the end of this specification.

Fig. 1 is a sectional view of a walk to a house embodying this invention;

Figs. 2 to 5, perspective views illustrating the method of making the walk shown in Fig. 6;

Fig. 6, a perspective view of the finished walk;

Fig. 7, a perspective view with parts broken away of a modified construction of walk;

Fig. 8, a perspective of a portion of a roadway and sidewalk embodying the invention, parts being broken away, and

Fig. 9, a detail in section on the line 9—9, Fig. 8.

In order that the invention may be clearly understood, I have illustrated in Figs. 1 to 7 inclusive, a walk leading to a house represented by the steps 10.

The walk in its finished condition is shown in Fig. 6, and in making said walk, a relatively shallow trench 12 leading to the house is first made in the ground 13, as represented in Fig. 2. The trench 12, which may be designated the main longitudinal trench, is then provided with a plurality of auxiliary trenches 14 of substantial depth and preferably materially deeper than the depth of the longitudinal trench 12, as represented in Fig. 3. The auxiliary trenches 14 are spaced apart and may extend transversely or longitudinally of the main trench, and in the preferred construction are filled or substantially filled with loose aggregate, which may be broken stone, sand, cinders, or the like, which are confined in the auxiliary trenches against lateral movement by the side and end walls of the auxiliary trenches. The auxiliary trenches 14, as represented in Fig. 4, extend across the main trench and are preferably made of substantial width so that when filled with the aggregate, the latter will form supporting members 15 of substantial thickness and slip or movable members 16 as will be described.

The greater area of the mass of aggregate removed somewhat from the upright walls of the trench is utilized to form the supporting member for the tread member 17, which is accomplished as shown in Fig. 1, by covering said area with a layer or bed 18 of normally plastic material, such as mortar, which when set forms a header or weight-transmitting member upon which the tread member 17 rests, and by which the weight of the tread member is transmitted to the portion or area of the aggregate directly under it, which portion or area constitutes the supporting member 15 for the tread member.

The header 18 also defines the portion of

the aggregate which forms the slip or movable member 16 between the supporting member 15 and the upright walls of the auxiliary trench.

The slip or movable member 16 is that portion outside of vertical planes indicated by the dotted lines 19 in Fig. 1, in which planes the sides and ends of the header 18 lie, and the portion of the aggregate within the planes 19 forms the supporting member 15.

The tread members are laid upon the headers while in a more or less plastic condition, so that they may be leveled and form a smooth continuous tread surface as represented in Figs. 1 and 6.

The spaces between adjacent slabs may be filled or sealed with asphalt or like material, represented by the heavy black lines 20 in Figs 1 and 6.

The concrete or cement slabs 17 are preferably raised above the bottom of the main trench so as to leave a space 21, which serves as a drainage channel or space for carrying off water to the cross trenches.

From the above description, it will be observed that the portions of the aggregate between the planes 19 and the upright walls of the trench do not directly support the weight of the tread member, and consequently such portions of the aggregate which may be designated the outside portions are free to be moved by the upright walls of the trench under the influence of frost and act as slip or movable members, which in turn have no material effect upon the mass of aggregate, which directly supports the weight of the tread members and which is included within the area defined by the vertical planes 19.

It will thus be seen that the slip members 16 act to protect the tread member 17 and its supporting members 15 from the effects of frost in the ground or foundation member, thereby imparting durability to the walk, avoiding cost of repairs, etc.

Furthermore by making the supporting member and the slip member of loose aggregate, the cost of construction is reduced to a minimum.

The invention may also be embodied in a roadway as represented in Figs. 8 and 9, in which case the ground or foundation member 13 is provided with a main longitudinal substantially shallow trench 12 and a plurality of auxiliary longitudinal trenches 25 and cross trenches 26 which are filled with aggregate and form longitudinal and transverse supporting members, upon which the tread member 17 of concrete or cement may be poured in place. The concrete tread member may be progressively formed by pouring the plastic concrete or limited areas of the roadway and uniting the poured areas of concrete while the latter is in plastic condition, or they may be poured in sections to form poured-in-place slabs of relatively large area whose joints are sealed with asphalt, similar to the precast slab construction shown in Figs. 1 and 6.

Headers 28 may be formed integral with the tread member as represented in Fig. 8, and said headers are made of less width than the width of the trenches so as to contact with the inner portion of the aggregate to form supporting members 15 and to leave the outside portions free to form slip members 16.

Drainage channels beneath the concrete tread member 17 may be provided by arching the bottom of the main or shallow longitudinal trench 12 in the road between the deeper longitudinal trenches 25 and covering the arch portion of the bottom 28 with a thin layer 29 of aggregate as represented in Fig. 8, or wooden or thin sheet metal forms of substantially arch shape (and not shown) may be laid so as to span the space between adjacent longitudinal trenches 25 and rest upon the aggregate therein, and the concrete is then poured upon these forms, which latter are left to form a part of the road.

The slip members 16 in the road construction act in the same way as they do in the walk construction above described, and prevent the tread member 17 from being moved by frost or at least reduce to a minimum such movement.

It will thus be seen that a structure of the character of a walk or road having a concrete or cement tread member supported by members composed of loose particles which are confined against lateral movement and whose outside particles are free to be moved by frost without moving the central or main body of the mass comprising the supporting members, serves to prolong the life of such structures and also to reduce the cost of construction and maintenance of sidewalks, floors, roadways and the like.

In the construction herein shown, the tread-supporting member is formed by a portion of the loose aggregate in the trenches, but it is not desired to limit the invention in this respect as solid or one-piece supporting members may be used with the loose aggregate surrounding them to form slip members, which reduce to a minimum the action of frost on the solid supporting members and the tread member supported thereby.

It is preferred to form the supporting members of loose aggregate on account of the material reduction in cost of construction by so doing.

By the term "aggregate" as used in the claims, I desire to be understood as including not only broken or crushed stone, but sand, cinders and the like, and by the term "concrete" I desire to include any admixture of cement and aggregate suitable for use as a tread member.

What is claimed is:

1. A structure of the character described, having an earth foundation provided with trenches spaced apart, a tread member located above said trenches and separated from said foundation, headers for said tread member of less width than said trenches, supporting means for said headers located in said trenches and substantially uninfluenced by movement of the upright side walls of said trenches, and means within said trenches and interposed between said supporting means and the upright walls of said trenches between the sides of the said headers and the upright walls of said trenches to be freely movable with said upright walls under the influence of frost and for rendering movement of said upright walls substantially ineffective to produce movement of said supporting means, headers and tread member.

2. A structure of the character described having an earth foundation provided with a relatively shallow longitudinal main trench and auxiliary trenches spaced apart and extended downward from the bottom of said main trench and transversely of the latter, a tread member located above said longitudinal and transverse trenches, supporting members for said tread member located in said transverse trenches, headers located in said longitudinal trench above the transverse trenches and of less width than the latter at their upper ends, said headers resting on said supporting members, and slip members in said transverse trenches beyond the sides of the said headers and between the supporting members and the upright walls of the transverse trenches in which said supporting members are located, said slip members being movable with the upright walls of the transverse trenches under the influence of frost without lifting said headers and the tread member supported thereby.

In testimony whereof I have signed my name to this specification.

JOHN W. ROBINSON.