Aug. 16, 1938. H. DEWHIRST 2,126,948

PAVING UNIT

Filed Aug. 17, 1935

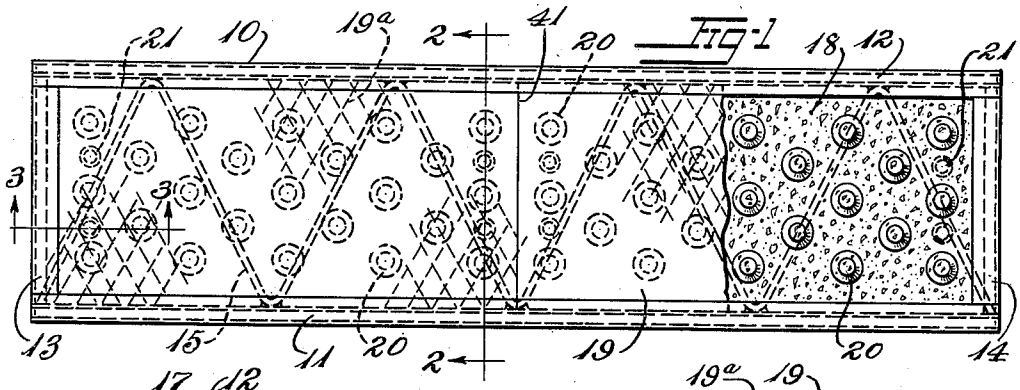


Fig-1

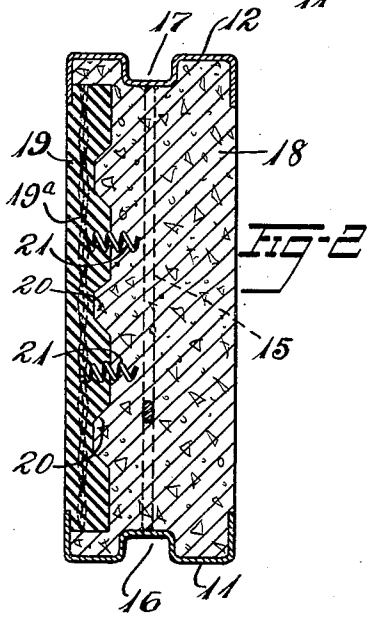


Fig-2

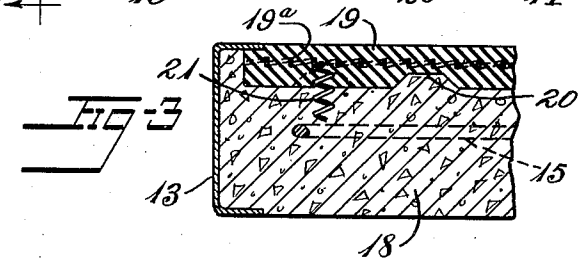


Fig-3

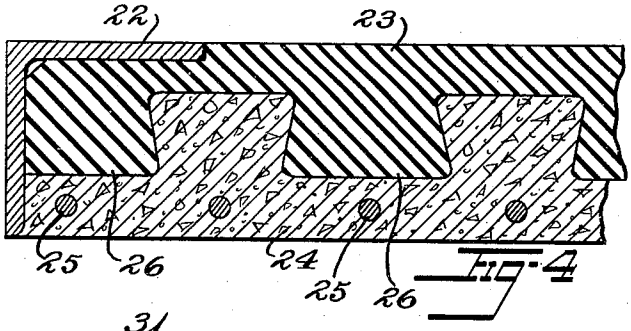


Fig-4

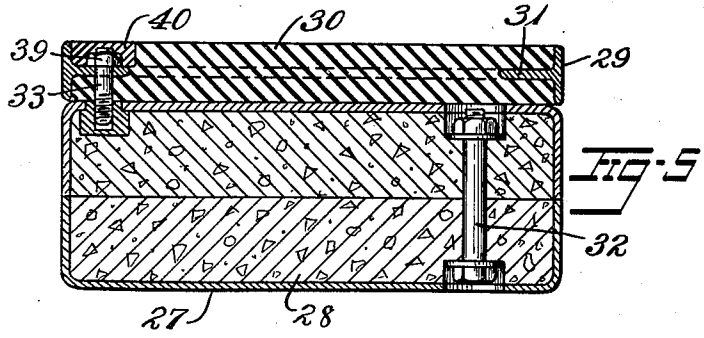


Fig-5

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2,126,948

PAVING UNIT

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Application August 17, 1935, Serial No. 36,675

2 Claims. (Cl. 94—15)

This invention relates to paving units adapted to be laid to provide a pavement, floor, or roadway, and the invention is especially useful in the paving of railroad grade crossings and the like where the pavement is subjected to heavy and suddenly applied loads and to vibrational disturbances of the underlying ballast or ties.

Heretofore such pavements have been constructed of small paving blocks of non-resilient material, or of asphaltic or bituminous mixtures, subject to crumbling under heavy suddenly applied blows or to flow under heavy loads, of concrete, also subject to crumbling under suddenly applied loads, or of expensive wooden planking, which is limited in its load supporting capacity, is subject to rapid wear, and requires constant replacement.

Due to the peculiar conditions of loading and disturbance of the underlying ballast or ties by the passing of trains or other heavy vehicles none of these materials have been satisfactory.

The principal objects of the present invention are to provide units of sufficient size as not to be unduly disturbed by vibrational shifting of the underlying ballast and of sufficient strength to resist suddenly applied or uneven loads, to provide a cushioning surface highly resistant to wear, and to provide against crumbling by blows applied to its edges.

A further object is to provide for ready replacement of the wear surface of the unit. Another object is to provide a novel method of manufacturing such units.

Other objects will appear from the following description and the accompanying drawing.

Of the drawing,

Fig. 1 is a plan view, partially broken away, of the preferred form of the device.

Fig. 2 is a cross sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary sectional view thereof taken on line 3—3 of Fig. 1.

Fig. 4 is a sectional view, partly broken away, of a modified form of the device.

Fig. 5 is a cross sectional view of a further modification of the invention.

Referring to the drawing, and particularly to Figs. 1 to 3, the device comprises a rigid metal frame 10 formed of channel members 11, 12, 13, and 14 preferably secured together at the corners by welding or other fastening means. A reinforcing rod 15, bent in zig-zag form is welded to the members 11 and 12 at its bends to additionally strengthen the frame. The side members 11 and 12 may be formed with grooves 16, 17 to additionally strengthen the side members, to engage fastening or locking means, and to hold expansion joint material.

The frame so formed is filled with a body 18 of concrete which extends above the reinforcing rod 15 but is chambered on its upper face to provide space for a surface element 19 of plastic material.

In order to anchor the surface element against horizontal movement, the concrete body 18 is formed on its upper face with interlocking protuberances 20, preferably in the form of truncated conical buttons. For further locking of the surface element against both horizontal and vertical movement metallic anchoring elements 21 are also provided. These are preferably in the form of compression coil springs embedded in the concrete and extending vertically into the plastic surface element. Such spring anchoring members are firmly embedded in the concrete, but their upper extremities being resilient and being embedded in resilient plastic material will be deflected vertically with vertical compression of the plastic material.

The rubber surface element 19 is a composition containing a high percentage of fibrous material and is flowable under heavy pressure. This material is unvulcanized and preferably comprises the unvulcanized reclaimed rubber described in the U. S. patent of Lane No. 1,990,658 mixed with suitable fillers, pigments, etc., a suitable material for the purpose being as follows:

	Per cent
Tire reclaim containing the original fiber and produced by the Lane patent	42
Clay	20
Whiting	20
Montan wax	5
Red iron oxide	3
Ground fiber from old tire carcasses	10
Total	100

This formula is only an example of a satisfactory material and other materials having similar properties may be used. Such materials should have sufficient pliability and resilience as to prevent cracking thereof under suddenly applied heavy loads.

The coil spring anchoring members are sharpened on one end and may be screwed into the rubber compound after the manner of a corkscrew. Where they are employed, the rubber surface element may first be molded to proper shape and the anchoring members then screwed

into place. The surface element is then placed in the metal frame and the concrete is formed into place and allowed to set.

Where it is desired to employ the buttons **20** to interlock the two materials, the surface layer of rubber composition is so molded as to provide corresponding conical depressions in its lower face and these, being later filled by the concrete, form mold cavities for the forming of the protuberances. In order to reinforce the surface element of rubber composition, a layer of expanded metal lath **19a** may be embedded therein midway between its faces.

In the modified form shown in Fig. 4, the device comprises an angle iron frame **22** which retains a rubber composition facing **23** and a concrete backing element **24**. Reinforcing rods **25** extend through the concrete and may or may not be attached to the frame as by welding. The rubber composition facing **23** and the backing **24** are formed with interlocking surfaces, preferably by forming dovetailed ridges **26** in one of the members and molding the other member thereagainst. For instance the facing element **23** may be separately molded, then inserted in the frame and the concrete backing poured in.

On the other hand the concrete may be molded to form within the frame and the facing material then molded thereagainst. Such alternate methods of uniting the two materials may also be used in the manufacture of the form shown in Figs. 1 to 3.

The character of the rubber composition used for the facing is such that it is quite flowable when it is hot but becomes relatively stiff when cold. In the molding thereof the material is heated and then placed in cold molds which are water-cooled. Pressure is maintained upon the molded material until the material is cold.

Where the coil spring anchoring elements **21** are employed and the concrete element is first to be formed, the springs may be forced into the cement while the cement is plastic and, when the cement has set, the rubber composition may be forced over the anchoring members due to its plastic condition.

In the modification shown in Fig. 5, the rubber composition face is removable and replaceable. This form comprises a hollow base **27** of metal filled with concrete **28** and a metal frame **29** attached thereto by studs **33**. The metal frame **29** is filled with rubber composition **30** and is formed with an internal flange **31** with which the rubber composition is interlocked.

The base **27** may be formed in halves which are separately filled with concrete and held together by bolts **32**. Flanges **31** on frame **29** are formed with openings to receive studs **33** and recesses are provided in the facing **30** to permit nuts **39** being placed on the studs. After the nuts are in place the recesses may be filled with a plastic filler **40**. By removing the plastic around the nuts the facing element with its frame may be removed and replaced.

Where paving units of considerable length are required the facing elements of rubber composition in any of the forms illustrated may be molded in sections and the sections assembled in contact with each other as illustrated in Fig. 1 where the element **19** is shown as divided at **41**.

I claim:

1. A composite paving slab suitable for railway crossings and the like comprising, in combination, a concrete base element, a pressed surface body of tough, resilient, slightly flowable material comprising unvulcanized rubber composition, a reinforcement embedded in said body and means at the adjacent faces of the body and base element for resisting movement of the material of said body with relation to the base element, and a metallic frame at the sides of the base element and surface body and having an inturned margin overlying the margin of the surface body.

2. A composite paving slab suitable for railway crossings and the like, said slab comprising, in combination, a concrete base, a pressed surface body of tough, resilient, slightly flowable material comprising permanently unvulcanized rubber composition, means comprising projecting elements at the upper face of the concrete base engaging the body material for resisting lateral movement of the material, and a metallic frame at the sides of the base element and surface body and having an inturned margin overlying the margin of the surface body.

HARRY DEWHIRST.