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RAILROAD TIE PAD
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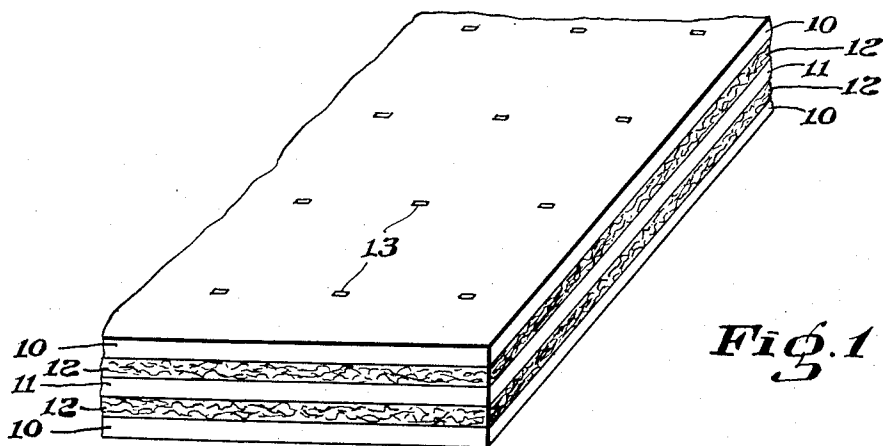


Fig. 1

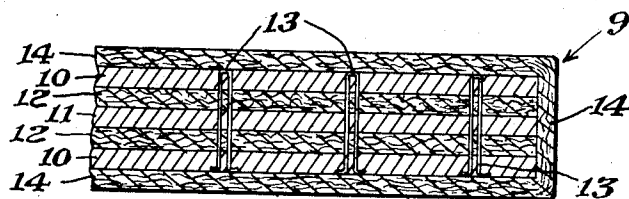


Fig. 2

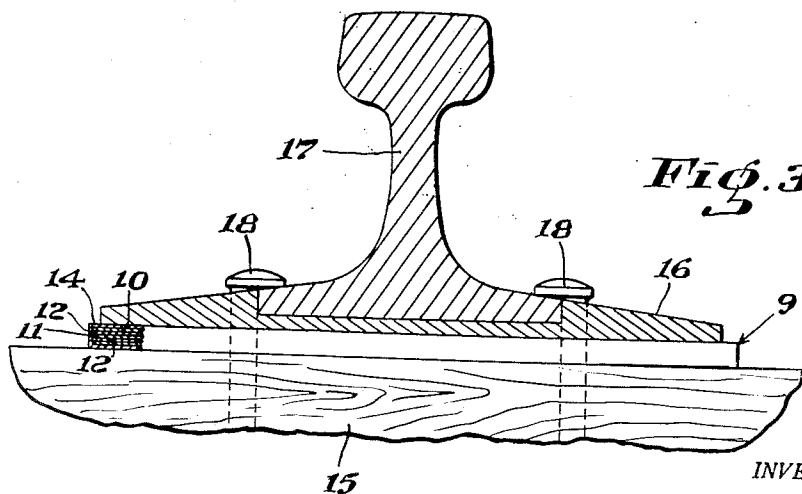


Fig. 3

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RAILROAD TIE PAD

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The present invention relates to structural bearing pads for use between structural load bearing members.

One particular application of the structural bearing pad of this invention is its use as a tie pad, i. e., between a steel tie plate (or a rail base) and a wooden railroad tie or between other track accessories such as switch and crossing frogs and their supporting members, and the invention will be disclosed with particular reference to this application.

Railroad rails are customarily supported on the ties by an intervening metal tie plate which bears directly on the wooden tie. With this arrangement many difficulties are experienced in maintaining good gauge, line and surface. The tie wood under the plates tends to become and remain damp, leading to a general softening of the underplate wood, loss of compressive strength of the tie, deterioration of the spike hole wood with loss of spike holding power, and attack of micro-organisms on the wood. The ties are subject to "plate cutting" in which the wood under the plate is worn away by abrasive action and the plate sinks deeply into the tie—usually at a faster rate at one end of the plate than at the other with a corresponding loss of gauge and line. When there is not equality of load distribution over the area of the tie engaged by the plate rapid destructive deterioration of the tie takes place at points of excessive load. The wooden ties are subject to splitting and checking, caused by changes in moisture gradient resulting from repeated wetting and drying and which may proceed rapidly to the point where the tie must be replaced. Development of rail fissures, rail-end batter and displacement of ballast, with accompanying loss of surface, are other difficulties encountered in right of way maintenance.

An object of the invention is to provide a structural bearing pad, particularly useful as a railroad tie pad, which reduces substantially or eliminates the foregoing troubles and difficulties in maintaining gauge, line and surface.

Another object of the invention is to provide a tie pad which will effectively prevent entry of free water and abrasive particles between the tie plate and the tie, reducing or eliminating failures such as plate cutting and loss of spike holding power.

A further object is to provide a tie pad which will yield under load to provide uniform load distribution over the area of the tie underlying the tie plate but which nevertheless will not flow objectionably even at extreme summer temperatures.

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A further object is to provide a tie pad which will remain for a protracted period of time sufficiently resilient to cushion impacts and dampen vibration, and thus reduce rail end batter, ballast displacement, and development of rail fissures.

Other objects and advantages of this invention will appear from the following description.

The pad of this invention consists of a resilient, cushioning pad body of high resilience and high load bearing capacity, and permanently united therewith, a slightly flowable, sealing type coating, capable of preventing the entry of free surface water, dust and air to the under-plate area of the wood and especially around the shanks of the spikes, of preventing the passage of water from the pad, when it is wet, to the tie, of holding the pad tightly to the tie, and of accommodating itself to irregularities in the tie to form a uniform bearing area for the tie plate. In some forms, the pad body also accommodates itself to help provide a uniform bearing area.

Sealing out free surface water and air prevents the softening, loss of strength, and general breakdown of underplate, spike-hole, and wood-plugged spike-hole wood. It also prevents the continuous shrinking and swelling from wetting and drying that breaks down wood. It establishes and maintains a constant moisture gradient from interior wood to surface wood, eliminating the stresses from wet interior wood and dry surface wood which cause checking and splitting. The slightly flowable coating also fills up small checks and splits under the plate and especially those formed by driving the spikes, and prevents their growth by the entry of water and subsequent expansion when freezing. Failures from the breakdown of underplate and spike-hole wood and from checking and splitting account for over 90% of all tie failures.

A seal of the type provided by my invention entirely eliminates mechanical wear or plate cutting, which is caused by motion of the plate against wood with abrasives such as sand and cinder grit between, and which is greatly accelerated when the wood has been softened and deteriorated by continuous wettings. The seal removes all of the basic factors causing mechanical wear.

The pad has other important benefits. It holds track to gauge by several means, first by cushioning lateral impacts so that spikes do not crush fibres and lose their position, thus letting the rail move, second by keeping the spike-hole wood sound and hard, making it more resistant

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to breakage from lateral impacts and third by eliminating uneven plate cutting from end to end of the plate, which throws the head of the rail in or out, tightening or spreading the gauge. This improved spike-holding power also results in holding better line.

The pad of this invention maintains better surface by modifying loadings and impacts sufficiently to slow the rate at which ballast is driven down under joints and other parts of the track. The pads consequently have a direct effect on gauge, line and surface, and it is well known that any improvement in any one of these three factors is favorably reflected in the other two. Consequently track with my tie pads rides much better and is maintained at considerably less cost.

Better surface has several secondary advantages. The insulation in insulated joints lasts much longer when the joint is kept up to surface. There is less wear on joint bars and rail when standard joints are kept up to surface. The better riding qualities of track in good gauge, line and surface is highly beneficial to rolling stock and also decreases damage to lading.

Locomotive and car wheels exert terrific forces, which are supported by the rail, tie plate, ties, and ballast all acting as an anvil. A cushioning pad body does not make a good anvil, consequently, the forging effect of wheel loadings and impacts on the rail is modified by the cushioning effect of the pads and there are definite benefits from longer rail life, less flange wear, and longer life of switch and frog points.

There are important advantages in tie plate cost and design—a much smaller tie plate with a tie pad exceeding the performance of large expensive plates without pads. Also the question of the plate eccentricity, a difficult problem, the solution of which at best provides only a compromise between requirements for curved and tangent track, becomes a matter of no importance. The object of eccentricity in a tie plate is to prevent uneven plate cutting. My sealed tie pads as noted eliminate all plate cutting.

The present invention provides for the first time in the art a structural pad, the coating on which possesses the above named characteristics as well as having the character of remaining sufficiently soft and plastic so as not to shatter in winter cold and yet be sufficiently solid at extreme summer heats that an adequate amount will be retained at all times to maintain a firm and complete seal between the pad and the underlying structure. The coating is also such that firm adhesion, as to a tie, may be attained even when the pads are put into use during cold weather yet is such that its flow may be limited even when under extreme pressure in hot weather. The coating is also of such a nature as to provide a water barrier between the tie pad body and the tie, this being necessary to prevent water absorbed by the pad from rain, snow, etc., and held by the pad for long periods of time from passing to the wood under the tie pad, to either increase its moisture content or prevent its moisture content from dropping to its natural equilibrium point.

Other objects and advantages of the invention will appear from the following description taken in conjunction with the accompanying drawing in which—

Fig. 1 is a perspective view of a preferred tie pad after plies and laminations have been mil-

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dewproofed, saturated and fastened together, but before the protective sealing coating has been applied;

Fig. 2 is a cross-sectional view, to an enlarged scale, of the pad of Fig. 1 after the protective sealing coating has been applied; and

Fig. 3 is a cross-sectional view of the pad in use as a tie pad, showing its relationship to a rail, a rail tie plate and a tie.

A tie pad with laminated body construction, generally indicated by reference character 9 in the drawing, preferably consists of 5 plies or laminations of sheet material. The outer plies 10 and the center ply 11 are cotton duck and the intermediate plies 12 are burlap. The duck is preferably U. S. No. 8 cotton duck having a minimum tensile strength of 285 lbs. per inch in the warpwise direction and 210 lbs. per inch in the weftwise direction as measured by the grab method described in Fed. Spec. CCC-T-191a (1937). It provides the pad with a material having a high standard of wearing qualities and resistance to abrasion, yet having a favorable price ratio as compared with other materials of unusually high strength. The burlap ply is preferably made of 14 ounce jute fiber burlap, count 18x15, having a minimum tensile strength of 110 lbs. per inch in the warpwise direction and 80 lbs. per inch in the weftwise direction (as tested on a 1" wide strip) and provides the pads with a durable low cost fabric of high resilience and load-bearing capacity.

The duck and burlap are first saturated with a saturant, preferably a bituminous material, which renders the fabric mildewproof; the duck being saturated in the range of 20% to 70% and the burlap in the range 20% to 45% by weight. A particularly satisfactory saturant is provided by a coal tar having the following specifications:

Specific gravity	1.175-1.192 at 15.5° C.
Free carbon	3%-8%
Flash	240°-330° F.
Float test	70-115 sec. at 32.2° C.

I add to the coal tar an amount equal to about 10% of its weight of a fungicide, such as copper naphthenate containing 10% copper, to improve the resistance of the pads to micro-organisms such as molds and mildew. Alternatively, I may employ as the saturant an asphalt to which has been added sufficient copper naphthenate so that there is present, according to the percent of saturation used, an amount equivalent to 0.1% to 1.0% of copper based on the dry weight of the fibre being saturated. The asphalt should have as high a softening point as possible and yet have satisfactory saturating properties such as speed of saturation and degree of penetration. Asphalt saturants having a ball and ring softening point in the range of 49° C. to 71° C. are in general satisfactory for the purpose. The saturant improves the resistance of the sheet materials of the pad to water and to micro-organisms such as mold and mildew and increases the strength of the laminated sheets. Among other materials which are suitable saturants are high melting point vegetable pitches, such as blown fatty acid pitches, to which the proper mildewproofing agent has been added, as in the case of the coal tar and asphalt.

The plies are adhesively combined by means of a hot bituminous combining medium which preferably consists of a mineral-filler reinforced asphaltic composition. A satisfactory mineral-

filler reinforced asphaltic composition for use in preparing the combining medium is composed, for example, of 60 parts by weight, of a petroleum residual flux of preferably Texas Coastal or Venezuelan stock blown to a ball and ring softening point of 93°-105° C. and 40 parts by weight of reinforcing finely divided mineral filler. The reinforcing mineral filler is slate or other inert rock of 98% *p*-100 mesh and 85% *p*-200 mesh. (as tested by an ASTM testing sieve). The reinforcing mineral filler adds improved weathering qualities and increases resistance to shattering. The above combining medium is applied at a temperature of approximately 205° C. and at the rate of about 17 pounds per 100 square feet, that is in an amount between 0.4 and 0.6 lbs. per 5-ply 8 x 13 pad and the plies are then combined by pressure while the combining medium is still hot. Certain rubber-asphalt compositions, for example, have the necessary adhesiveness and toughness to be used as an alternate to the above combining medium, the essential things being that the combining medium used must be adhesive and resistant to shattering. Although it is not essential and in some cases may be objectionable, the combining medium may contain an added tackifier or plasticizer such as for example, 5% to 10% of its weight of a polyisobutylene (e. g. that known in the trade as Vistac P). Polyisobutylenes having molecular weights in the range of 1000 to 2000 are suitable for this purpose.

For use in some localities and under some conditions, I may add a mildewproofing agent to the combining medium. In such cases there should be added to an asphaltic composition, for example, a suitable mildewproofing agent such as enough copper naphthenate so that there is the equivalent of 0.1% to 1.0% of copper in the composite combining medium.

The combined plies of the pad are further secured together by a mechanical fastening such as wire staples 13 in four or five evenly separated rows running parallel to the length of the pad. The staples are formed from a corrosion-resistant material, preferably .103" x .020" bronze wire and provide a permanent means of fastening the plies together to prevent undue slippage. Bronze staples are resistant to the brine from refrigerator cars and to the sulphurous and other chemical action of cinders and coal smoke.

The fastened pad is finally coated on all sides and edges thereof with a bituminous coating 14, which provides weather resistance and a means of adhesion of the pad to the tie and which consists of 55%-60% of a petroleum residual flux of the same general type as used for the combining medium and hereinbefore described, 40% to 30% of finely divided mineral filler and 5%-10% of a polyisobutylene, for example Vistac P, having a molecular weight in the range 1000 to 2000. The coating is applied to all outside surfaces of the pad at the approximate rate of 83 pounds per 100 square foot area of pad. Between 0.5 and 0.7 lb. of this reinforced coating is applied to a 5-ply 8" x 13" pad. Here again the filler in the coating adds to the weathering qualities and shatterproofness, and the polyisobutylene content reduces any tendency of the composition to shatter at low temperatures and contributes improved adhesive qualities to provide a tight seal to the tie and spike throat. The polyisobutylene, or its equivalent, is an essential component of my coating. I may also add a mildewproofing agent to the coating, in which case there is added, for example, enough copper naphthenate so that

there is the equivalent of 0.1% to 1.0% of copper in the coating material.

To prevent the pads from adhering to each other when packed or handled, a layer of pulverized mineral matter, such as mica or soapstone is applied to the coating, the said mineral matter being of such fineness that it will substantially pass through a 48-mesh ASTM testing sieve.

Fig. 3 shows the finished pad 9 mounted between a rail tie 15 and a rail tie plate 16 supporting a rail 17. Spikes 18 hold the entire assemblage to the rail tie in a conventional manner and are driven through the pad 9, which is sufficiently yielding and pliable to allow the forced entrance also to be mounted between the rail base and the tie.

While the aforesaid description is that of the preferred pad of this invention, it is not desired that it should be limiting as to exact construction. The number, material, order and composition of the plies may be varied to meet particular conditions. For instance, for a pad which is thicker, more resilient and more durable than the preferred pad which has been described, four plies of cotton duck may be used with three interspersed plies of burlap. When an unusually high degree of accommodation to irregularity of bearing surfaces is required of the pad to serve its function of providing a uniform bearing surface between the supporting and supported structural members, intermediate plies of certain felts can be used, such as a felt composed of vegetable fiber (standard Mullen 30-36) of .040"-0.060" caliper, weighing 48 to 56 pounds per 480 square feet B. D. This felt has very high load bearing and resiliency properties, but when saturated with coal tar or asphalt also has a limited flow under exceptionally high stresses. Such felt consequently flows from areas of high stress to areas of low stress, the fabric plies holding their position during such process. A 5-ply pad consisting of three duck plies and two intermediate .056" felt plies, for instance, will give a total yielding to irregularities of over .2 of an inch.

In very lightly used tracks where gross tonnage is low it is feasible to use weaker and less expensive materials in the pad body. In some cases, pads in which the body is made entirely of burlap plies can be used.

As used herein, the term burlap refers to a fabric woven from jute fibers. The term "duck" is employed in its usual sense to indicate a dense, strong, tightly woven cloth woven from tightly twisted cotton yarns. While duck and burlap have been used in the preferred pad, other fabrics might be used but it is essential that they be strong, dense, tightly-woven fabrics made from tightly twisted yarn having high load-bearing qualities and good resilience. For service conditions requiring very high tensile strength, a fabric made of glass fibers may be used for one or more of the intermediate plies.

The body member of the structural pad is one of its most essential component parts and it must be strong, capable of bearing heavy loads and resilient. It must be capable of slight compressibility yet so constructed that it has limited deflection. Its outer surfaces must be of such character as to offer a high degree of resistance to flow of the coating.

I have described above a pad in which various textile fabric materials have been used in laminated construction. There are, however, other combinations of materials which can be used and which fall within this invention. The top ply

can be a resin impregnated or coated fabric or all of the plies can be given a light resin treatment to further strengthen them. Rubber-resin combinations have been found to have advantages. Pad bodies of masticated fiber-rubber construction and of sisal fiber and resin combinations have been found to have requisite toughness and strength as well as pads wherein compressed sheets or blocks of asphalt-fiber mastic, asphalt-fiber-granule mastic, asphalt-asbestos mastic, or asbestos and rubber are used either as a pad body or as intermediate plies in a pad body. The top ply can be impregnated and/or coated with rubber or a rubber-resin composition. While in the preferred pad described, the irregularities of the fabric weave and the exposed fibrous material of the duck serve to offer resistance to flow of the coating, it is desirable in the case of pad body elements which are more smooth and even on the surface, to roughen the surface by means of, for example, a screen impression or by the removal of surface rubber or resin to expose a multitude of fibers and fiber ends, and in this way provide the resistance desired.

The manner of fastening the plies together may also be varied. The number, arrangement and spacing of the staples may be varied. Other mildew-resistant and corrosion-resistant stapling materials may be used in place of bronze. Under certain conditions, particularly where it is required that there be no metallic fastenings which would ground electric current, the plies may be secured by use of mildew-resistant thread instead of wire staples. A suitable thread is a No. 7 or No. 8 cotton cord which has been rendered mildew-resistant by treatment, for example, with enough copper naphthenate solution so that the equivalent of 0.5% by weight of copper is retained in the thread. In some cases, both staples and thread are desirable.

The polyisobutylene which has hereinbefore been referred to as the tackifier of the coating material (or of the combining material, if present therein) may be replaced in whole or in part by rubber or by factice, e. g. the factice known in the trade as Amberex B. Whatever the tackifier used, best results are obtained by addition of amounts within the range of 3% to 15% of the coating material. The material which serves as the tackifier is extremely important for it must be a true tackifier and not just a plasticizer for the coating. It must be one which is completely, uniformly and thoroughly miscible in the coating in order that a complete air-tight sealing of the pad to the tie may be attained.

While asphalt is preferable as the principal ingredient of both the laminating adhesive and the outer coating, suitable rubber-asphalt compositions or high melting point pitches may be utilized in place of asphalt.

Another variation in construction of the pad would permit the use of initially mildewproofed fabrics in which case the additional use of a mildewproofing agent in the saturant would be optional and dependent upon the severity of conditions to which the pad would be subjected.

The combination of pad body and coating described herein retains sufficient coating between pad and protected surface to do the sealing job. The coating is not shattered at low temperatures and is not lost by extrusion or absorption at higher temperatures. The coating seals up spike holes and drift pin holes, keeping them sound and hard. Protected surfaces and spike and other

fastening holes are kept like new during the life of the structural pad.

The pad as a whole serves to impart a long service life, more especially to the tie, but also to the rail, the tie plate, their accessories and to rolling stock.

This application is a continuation-in-part of my prior application Serial No. 755,549 filed June 19, 1947.

I claim:

1. In combination with a tie and railroad rail, a bearing pad positioned between said tie and said rail, comprising a pad body of high resilience and high load bearing capacity having at least one load bearing surface which has exposed fibrous material, said fibrous material being bonded to said body to prevent any relative movement therebetween regardless of high loads and vibrations, and a tacky adhesive coating bonded to at least said exposed fibrous material having sufficient body to limit flow and remain sufficiently solid at extreme summer heats that an adequate amount will be retained to maintain a firm and complete seal between the pad and tie, and yet remain sufficiently flexible and plastic to be proof against shattering at extreme winter temperatures, forming a water and dust-tight seal between the pad and said underlying tie regardless of intermittent high loads and vibrations, said coating comprising a bituminous composition having a ball and ring softening point of from 93° to 105° C., and an agent for maintaining the bituminous composition flexible at extreme winter temperatures selected from the group consisting of polyisobutylene having a molecular weight of between 1000 and 2000, factice and rubber.

2. In combination with a tie, tie plate and rail a bearing pad positioned between said tie and said tie plate, comprising a pad body of high resilience and high load bearing capacity having at least one load bearing surface which has exposed fibrous material, said fibrous material being bonded to said body to prevent any relative movement therebetween regardless of high loads and vibrations, and a tacky adhesive coating bonded to at least said exposed fibrous material having sufficient body to limit flow and remain sufficiently solid at extreme summer heats that an adequate amount will be retained to maintain a firm and complete seal between the pad and tie, and yet remain sufficiently flexible and plastic to be proof against shattering at extreme winter temperatures, forming a water and dust-tight seal between the pad and said underlying tie regardless of intermittent high loads and vibrations, said coating comprising a bituminous composition having a ball and ring softening point of from 93° to 105° C., and an agent for maintaining the bituminous composition flexible at extreme winter temperatures selected from the group consisting of polyisobutylene having a molecular weight of between 1000 and 2000, factice and rubber.

3. A structural bearing pad adapted to be positioned between a railroad tie and an overlying tie plate, comprising a pad body of high resilience and high load bearing capacity including a plurality of plies of textile fabric having at least one load bearing surface which has exposed fibrous material, said fibrous material being bonded to said body to prevent any relative movement therebetween regardless of high loads and vibrations, and a tacky adhesive coating bonded to at least said exposed fibrous material having sufficient body to limit flow and remain sufficiently

solid at extreme summer heats that an adequate amount will be retained to maintain a firm and complete seal between the pad and tie, and yet remain sufficiently flexible and plastic to be proof against shattering at extreme winter temperatures forming a water and dust-tight seal between the pad and an underlying tie regardless of intermittent high loads and vibrations, said coating comprising a bituminous composition having a ball and ring softening point of from 93° to 105° C., and an agent for maintaining the bituminous composition flexible at extreme winter temperatures selected from the group consisting of polyisobutylene having a molecular weight of between 1000 and 2000, factice and rubber.

4. A structural bearing pad adapted to be positioned between a railroad tie and an overlying tie plate, comprising a pad body of high resilience and high load bearing capacity having at least one load bearing surface which has exposed fibrous material, said fibrous material being bonded to said body to prevent any relative movement therebetween regardless of high loads and vibrations, and a tacky adhesive coating bonded to at least said exposed fibrous material having sufficient body to limit flow and remain sufficiently solid at extreme summer heats that an adequate amount will be retained to maintain a firm and complete seal between the pad and tie, and yet remain sufficiently flexible and plastic to be proof against shattering at extreme winter temperatures forming a water and dust-tight seal between the pad and an underlying tie regardless of intermittent high loads and vibrations, said coating comprising a bituminous composition having a ball and ring softening point of from 93° to 105° C., and an agent for maintaining the bituminous composition flexible at extreme winter temperatures selected from the group consisting of polyisobutylene having a molecular weight of between 1000 and 2000, factice and rubber.

5. A railroad tie pad adapted to be positioned between a railroad tie and an overlying tie plate, comprising a pad body of high resilience and high load bearing capacity including a plurality of plies of a strong, dense, tightly-woven textile fabric woven from tightly-twisted cotton yarns and providing a load bearing surface which has exposed fibrous material, said exposed fibrous material being bonded to said body to prevent any relative movement therebetween regardless of high loads and vibrations, and a tacky adhesive coating bonded to at least said exposed fibrous material having sufficient body to limit flow and remain sufficiently solid at extreme summer heats that an adequate amount will be retained to maintain a firm and complete seal between the pad and tie, and yet remain sufficiently flexible and plastic to be proof against shattering at extreme winter temperatures, forming a water and dust-tight seal between the pad and said underlying tie regardless of intermittent high loads and vibrations, said coating comprising a bituminous composition having a ball and ring softening point of from 93° to 105° C., and an agent for maintaining the bituminous composition flexible at extreme winter temperatures selected from the group consisting of polyisobutylene having a molecular weight of between 1000 and 2000, factice and rubber.

6. A railroad tie pad adapted to be positioned between a railroad tie and an overlying tie plate, comprising a pad body of high resilience and high load bearing capacity including a plurality

of plies of a strong, dense, tightly-woven textile fabric woven from tightly-twisted cotton yarns and providing a load bearing surface which has exposed fibrous material, said exposed fibrous material being bonded to said body to prevent any relative movement therebetween regardless of high loads and vibrations, and a plurality of plies of burlap interposed between said first-named plies, said first-named plies being individually saturated with 20% to 70% of their weight and said burlap plies being individually saturated with 20% to 45% of their weight of coal tar having a specific gravity between 1.175 and 1.192 at 15.5° C., a free carbon content between 3% and 8%, a flash point between 240° F. and 330° F. and a float test between 70 seconds and 115 seconds at 32.2° C., said plies being adhesively connected by an adhesive comprising a bituminous composition, and a finely-divided mineral filler, a corrosion-resistant mechanical fastening further securing said plies together, and a tacky adhesive coating bonded to at least said exposed fibrous material having sufficient body to limit flow and remain sufficiently solid at extreme summer heats that an adequate amount will be retained to maintain a firm and complete seal between the pad and tie, and yet remain sufficiently flexible and plastic to be proof against shattering at extreme winter temperatures, said coating forming a water and dust-tight seal between the pad and an underlying tie regardless of intermittent high loads and vibrations, said coating comprising a bituminous composition having a ball and ring softening point of from 93° to 105° C. and an agent for maintaining the bituminous composition flexible at extreme winter temperatures selected from the group consisting of polyisobutylene having a molecular weight between 1000 and 2000, factice and rubber.

7. A railroad tie pad adapted to be positioned between a railroad tie and an overlying tie plate, comprising a pad body of high resilience and high load bearing capacity including a plurality of plies of a strong, dense, tightly-woven textile fabric woven from tightly-twisted cotton yarns and providing a load bearing surface which has exposed fibrous material, said exposed fibrous material being bonded to said body to prevent any relative movement therebetween regardless of high loads and vibrations, and a plurality of plies of burlap interposed between said first-named plies, said first-named plies being individually saturated with 20% to 70% of their weight and said burlap plies being individually saturated with 20% to 45% of their weight of a material selected from the class consisting of coal tar having a specific gravity between 1.175 and 1.192 at 15.5° C., a free carbon content between 3% and 8%, a flash point between 240° F. and 330° F. and a float test between 70 seconds and 115 seconds at 32.2° C., an asphalt having a ball and ring softening point in the range 49° C. to 71° C., and vegetable pitches, said material containing a mildew-proofing agent, said plies being adhesively connected by an adhesive comprising asphalt and a finely-divided mineral filler, a mechanical fastening further securing said plies together, and a tacky adhesive coating bonded to at least said exposed fibrous material having sufficient body to limit flow and remain sufficiently solid at extreme summer heats that an adequate amount will be retained to maintain a firm and complete seal between the pad and tie, and yet remain sufficiently flexible and

plastic to be proof against shattering at extreme winter temperatures, said coating forming a water and dust-tight seal between the pad and an underlying tie regardless of intermittent high loads and vibrations, said coating comprising a bituminous composition having a ball and ring softening point of from 93° to 105° C. and polyisobutylene having a molecular weight between 1000 and 2000.

8. A railroad tie pad adapted to be positioned between a railroad tie and an overlying tie plate, comprising a pad body of high resilience and high load bearing capacity including a plurality of plies of a strong, dense, tightly-woven textile fabric woven from tightly-twisted cotton yarns and providing a load bearing surface which has exposed fibrous material said exposed fibrous material being bonded to said body to prevent any relative movement therebetween regardless of high loads and vibrations, and a plurality of plies of burlap interposed between said first-named plies, said plies being individually saturated with a material selected from the class consisting of coal tar having a specific gravity between 1.175 and 1.192 at 15.5° C., a free carbon content between 3% and 8%, a flash point between 240° F. and 330° F. and a float test between 70 seconds and 115 seconds at 32.2° C., an asphalt having a ball and ring softening point in the range 49° C. to 71° C., and vegetable pitches, said material containing a mildew-proofing agent, said plies being adhesively connected by an adhesive comprising asphalt and a finely-divided mineral filler, a mechanical fastening further securing said plies together, and a tacky adhesive coating bonded to said at least exposed fibrous material having sufficient body to limit flow and remain sufficiently solid at ex-

treme summer heats that an adequate amount will be retained to maintain a firm and complete seal between the pad and tie, and yet remain sufficiently flexible and plastic to be proof against shattering at extreme winter temperatures, said coating forming a water and dust-tight seal between the pad and an underlying tie regardless of intermittent high loads and vibrations, said coating comprising a bituminous composition having a ball and ring softening point of from 93° to 105° C. and an agent for maintaining the bituminous composition flexible at extreme winter temperatures selected from the group consisting of polyisobutylene having a molecular weight between 1000 and 2000, factice and rubber.

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