

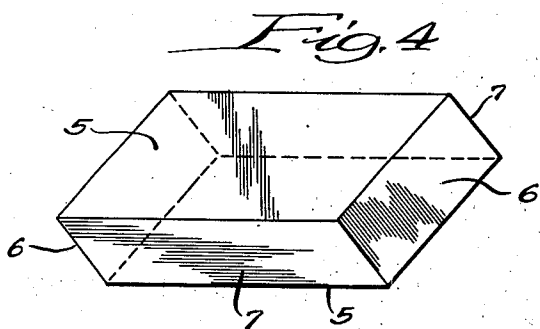
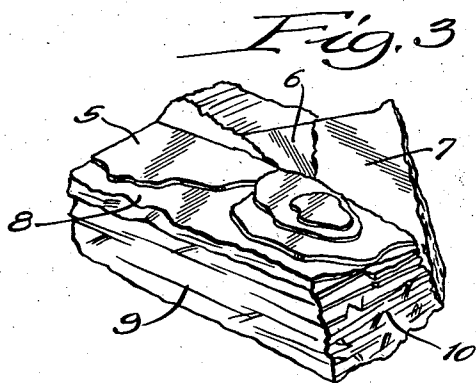
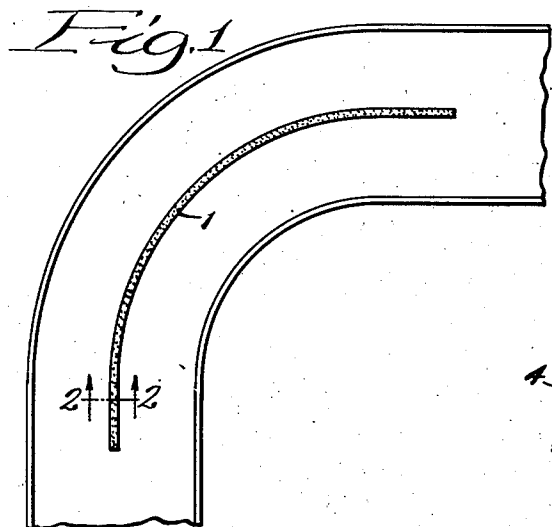
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DELINEATED AREA

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DELINEATED AREA

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5 Claims. (Cl. 94-1.5)

This invention relates to delineated areas.

A common method of making such areas is by the use of lacquer or paint containing various colored pigments; or a bituminous material without pigments is frequently used. Many of these materials, when used on roadway surfaces, are not only slippery in wet weather, but their visibility at night is low, and they are not greatly resistant to the abrasive action of traffic, requiring frequent replacement. Attempts have been made to increase the visibility of traffic stripes on pavements by applying a bituminous binder, and spreading thereon relatively finely divided materials such as glass beads, crushed glass, specially selected sand, colored ores and such. However, none of these possesses high light reflecting properties, and in the case of glass, the surfaces of the particles are not highly resistant to the weather and traffic conditions, soon becoming dull; furthermore, glass transmits and absorbs, rather than reflects, light. Traffic stripes constructed in the above manner depend for their visibility to the driver of a vehicle, on reflection of light rays from a source other than his own vehicle, since they lack sufficient reflective power to reflect back to him the rays of his own lights. Such traffic stripes are clearly visible principally from the light beams of vehicles approaching in the opposite direction or from stationary lighting of the roadway, since the materials used possess the property of diffuse or scattered reflection only, as distinguished from regular or specular reflection which is the reflection from smooth surfaces such as mirrors, polished metals, etc. An important and highly desirable function of a traffic stripe or other delineated area is that of reflecting back to the driver of a vehicle the rays of light from the lights of his own vehicle, especially on roads and pavements which are totally unilluminated except for his own lights as well as to reflect beams of light from other sources. This is true not only of roads and pavements but also of airplane landing runways and other areas as well.

An object of my invention is to produce a delineated area which will be visible by reflected light from all directions including light reflected to the driver of a vehicle from the lights of his own vehicle.

A further object of my invention is to provide such areas which will be highly resistant to weather conditions and the abrasive action of traffic.

A further object of my invention is to provide stripes and other markings on pavements for

traffic and parking purposes, which markings will show a clear contrast with the surrounding pavement and remain fixed.

Other objects will become apparent from the description.

In the drawing,

Fig. 1 is a plan view of a highway curve, illustrating how a delineated area is used for marking a division line between lanes.

Fig. 2 is a detail in vertical section as at line 2-2 of Fig. 1.

Fig. 3 is an enlarged view, in perspective, illustrating the diversity of specular plane surfaces on particles of antimony due to the cleavage and fracture characteristics of that metallic material.

Fig. 4 is a view showing a particle defined by cleavage planes of antimony crystals, in orthographic projection.

In my invention I use any binding material which possesses sufficient adhesive and weather- and wear-resistant properties. Upon this binding material I spread solid particles having plane faces capable of reflecting light to a substantial degree and resistant to change by the atmosphere. These particles may consist of metallic antimony, alloys of antimony, metallic chromium, metallic nickel, speculum metal, and other metals and alloys, or iron pyrites, galena, or similar ores. I prefer to use metallic antimony because it has a bright luster which is not affected by the atmosphere, is relatively hard, does not oxidize or tarnish under ordinary conditions, is resistant to acids, and tends to fracture in rhombohedrons and other forms of polyhedrons. These are well recognized properties of metallic antimony which are imparted to many of its alloys, and some of these, therefore, may be used instead of the metal alone.

For the binding material, I use one of the bituminous types commonly used for similar purposes in the paving industry. Where the dark color of the bituminous material is objectionable, I use a varnish or lacquer having the necessary adhesive and weather-resistant properties. After the application of the binding material 1 to the surface 2 to be delineated, I spread a coating of antimony particles 3 with or without subsequent rolling depending upon whether this is necessary in order to secure sufficient adhesion of the particles to the surface. This in turn will depend to a great extent on the character of the binding material and on the weather and other conditions. If necessary to secure a better bond I may heat the antimony particles. I usually

use antimony particles of such size that they will pass a ten mesh sieve and be retained on a thirty mesh sieve, although coarser or finer particles may be used. Since, in order to secure light reflection in all directions, particles 3 of substantial size must be above the plane of the surrounding surface, I frequently mix sand or similar hard material 4 with the antimony particles in order to protect the latter from the compressive effect of traffic. The sand also has the additional advantage of lowering the cost, but since it has little or no reflecting capacity, the reflecting power of the mixture per unit area covered decreases as the percentage of sand increases. The amount of sand or similar material may vary from 5% to 95% of the total mixture depending upon the delineated area to be produced and the amount of reflection desired, as well as on the nature and properties of the sand or other material. On airplane runways, parking and traffic markers on city streets, and other areas where complete reflection in all directions is not desired, or required, it is not necessary that the antimony particles remain above the plane of the surrounding surface, and therefore no sand need be used. In fact, when making delineated areas on bituminous pavements, and where full directional reflective action is not a factor, I have found that rolling the antimony particles into the surface so that they are flush therewith, or permitting traffic to accomplish this purpose, produces excellent results; the particles remain firmly embedded, yet their plane surfaces, exposed flush with the surface of the pavement, are kept clean and bright by traffic action and show marked contrast with the surrounding pavement. Embedding of the particles in the surface could also be applied to airplane runways where the principal reflected rays desired are perpendicular to the surface of the runways. One of the advantages in the use of antimony over other materials I have tried is the ease of obtaining the desired size and shape of particle with practically no waste. After crushing and sieving, the larger particles can be recrushed, while those too fine for use can be readily melted, allowed to solidify and again put through the crushing and sieving process. As has been previously pointed out, metallic antimony possesses a natural tendency to fracture in rhombohedrons and other forms of polyhedrons which are ideal shapes for my purpose.

The bituminous material which I use may be a solid asphalt or tar applied hot in a molten condition, a cut-back asphalt or tar, an asphalt or tar emulsion, or similar type of material commonly used in the paving industry for marking traffic lanes or for constructing bituminous seal coat. It may be applied by means of a machine such as is used for traffic lane marking, or by spraying or other methods commonly used in the paving industry for seal coating and similar construction.

While I have mentioned the use of my inven-

tion as related to roadways and pavements, it is apparent from the preceding description that it could be applied to floors, sidewalks, or other surfaces where it is desirable to secure light reflective properties. The antimony particles can also be used to increase the visibility of a pavement by distributing them over the entire surface when the pavement is being constructed. This applies to concrete as well as to bituminous types of pavements and the binding material may usually be eliminated, the particles of antimony becoming embedded in the surface of the newly built pavement from their own weight or by the use of a roller. On bituminous pavements, the binding material may be used, depending upon the results desired, and the type of bituminous pavement.

I have found that I can also mix the particles of antimony with the binding material to form a sort of lacquer or paint which may be applied to the surface in one operation thus eliminating the spreading of the particles after the application of the binding material. This lacquer or paint can be applied to road signs, city street signs, fence posts, and other objects whose visibility it is desired to increase, as well as to the roadway surfaces. In preparing the paint or lacquer, I often use fine particles of antimony, for example, passing a 30 mesh sieve.

A peculiar property of the metal antimony is the fact that not only its broad faces, such as those designated 5, 6, 7 and 8 of Fig. 3, conform to planes of cleavage but even the fractures across planes of cleavage, such as surfaces 9 and 10, Fig. 3, are brilliantly specular because they include innumerable facets conforming to planes of cleavage.

Having thus described my invention, I claim:

1. A delineated area, comprising a binder layer having adheringly distributed thereon crystalline metallic particles having four or more specular plane faces.

2. A delineated area, comprising a layer of adhesive substance and a layer of granulated metallic antimony embedded into said adhesive substance.

3. A delineated area, comprising means providing a foundation, a coating of binder substance thereon, and crystalline metallic particles having four or more specular plane faces adheringly distributed upon said binder coating.

4. A delineated area comprising means providing a foundation, a coating of an adhesive substance, said coating having adheringly distributed thereon a granular mixture including wear-resisting materials and crystalline metallic particles having four or more specular plane faces.

5. A delineated area comprising means providing a foundation surface, a layer of adhesive substance thereon, and a layer comprising a mixture of sand and granulated metallic antimony embedded into said adhesive substance.

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