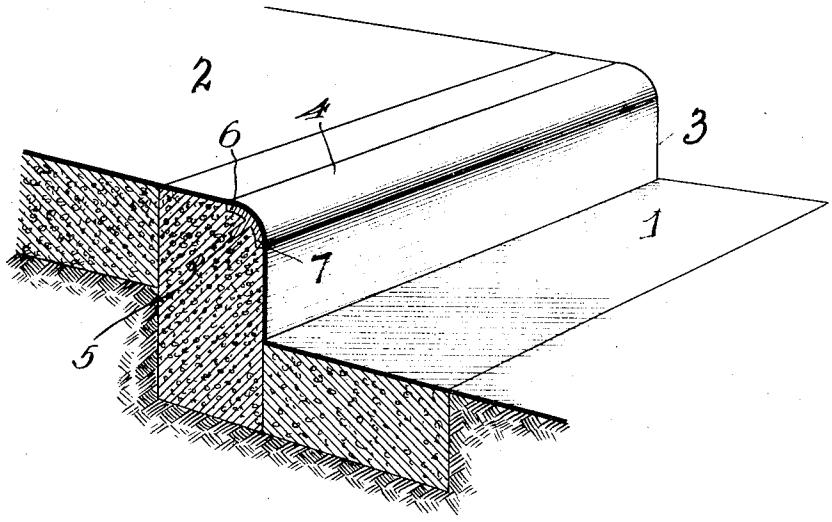
No. 833,623. PATENTED OCT. 16, 1906.

J. W. PARKER.

GUTTER CURB AND MEANS FOR PROTECTING CURB ANGLES.

APPLICATION FILED APR. 11, 1905.

Fig. I.



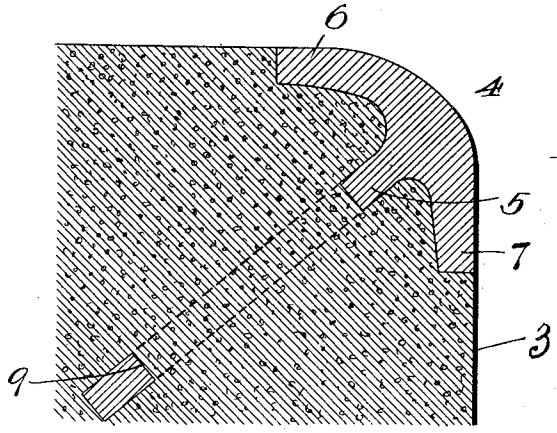


Fig. II.

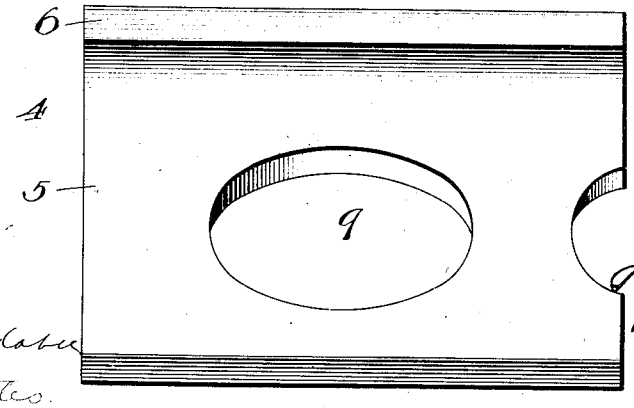


Fig. III.

Witnesses
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JOHN W. PARKER, OF MEXICO, MEXICO.

GUTTER-CURB AND MEANS FOR PROTECTING CURB ANGLES.

No. 833,623. Specification of Letters Patent. Patented Oct. 16, 1906.

Application filed April 11, 1905. Serial No. 255,075.

To all whom it may concern:

Be it known that I, JOHN W. PARKER, of the city of Mexico, in the Republic of Mexico, have invented certain new and useful Improvements in Gutter-Curbs and Means for Protecting Curb Angles, of which the following is a specification.

The object of my invention is to produce a curb for street-gutters which shall be at the same time economical, durable, and efficient.

The material most generally employed for the construction of curbs in localities where the cost of such material is not prohibitive is the hardest natural stone, particularly granite; but the cost of transportation imposes a prohibitive expense upon such material, except in localities within available distance from the quarries where such natural stone may be obtained. It has been proposed to substitute a manufactured article for the natural stone in the form of concrete construction sometimes called "artificial" stone, consisting of a hardened mixture of broken stone or suitable material of the like and hydraulic cement; but objection has been found in practice to the breaking or shaling off of the concrete under impact or abrasion of the wheels of vehicles to which a curb is necessarily exposed in use. This difficulty suggested the employment of a metallic protective plate, particularly for the curb angle, which is the portion of the curb that in practice requires protection. Here, again, another obstacle has been encountered, which presents a difficulty in a twofold aspect. The one difficulty is to produce a curb angle which will practically serve the purpose for which it is intended without the necessity of the employment of such weight of metal as to wholly deprive the structure of its economic availability. The second difficulty is to secure such anchorage in the concrete of the metal angle-plate as may effectually incorporate the two materials, metal and concrete, into a perfectly united composite structure and without subjecting the concrete to liability to cleavage by reason of the presence within it of the metallic member.

I accomplish the object in view by the employment of an external protective member or angle-plate designed to extend for indefinite lengths, as convenience may determine, lengthwise of a curb and upon the angle thereof. This angle-plate I provide with a web of sufficient transverse extent to secure for it ample anchorage in the body of the concrete into which it is introduced and also to accommodate at frequent intervals spacious apertures through which the material of the concrete mixture may pass substantially in mass and become equally well incorporated with the concrete mixture upon opposite sides of the web. The means described for securing the web are not to be confounded with the means of anchorage, in which engagement of the concrete in small or segregated masses with a metal plate is relied on to afford anchorage for the plate. It is well known that the strength of concrete is found in its resistance to crushing force. This resistance cannot be utilized if the concrete be segregated into small portions, but may be utilized only if the concrete be employed in mass. The difference between the contraction and expansion of concrete and metal tends to crumble the concrete, separating the metal therefrom, unless the metal is well bound into the mass of the concrete. The means which I employ for binding and incorporating the metal with the mass of the concrete is to provide in the web of the angle-plate a series of spacious circumscribed apertures, which are respectively penetrated by and filled with the concrete material of the curb in masses, which are in turn surrounded by the metal of the web. The result of the circumscribing apertures as distinguished from open-sided apertures is to afford efficient resistance to the force of resiliency which may be developed in the angle-plate and web by impact from without. When so bound and incorporated, as by my invention, the web of the angle-plate supports the angle-plate securely in position under all conditions of service to which it is exposed, and the mass of concrete affords anchorage for the web permanent and secure.

In the accompanying drawings, which constitute a part of this application, Figure I is a perspective view of a portion of a gutter in place, showing the exposed end thereof in section and illustrating the preferred form of embodiment of my invention. Fig. II is an end elevation of a portion of Fig. I, on an enlarged scale, illustrating my angle-plate and web in cross-section. Fig. III is a side elevation of a section of my angle-plate and web, intended particularly to illustrate the construction of the latter.

Referring to the numerals on the drawings, 1 indicates a roadway or gutter-floor, 2 a sidewalk, and 3 a section of a curb. It is to the

curb 3 that my invention particularly relates. In the practice of my invention the curb is made of concrete—that is to say, as has been specified, of a suitable mixture of bulky material, such as broken stone and a binder, as of hydraulic cement. In practice the cement is prepared by the proper admixture of water, which when the materials of the concrete are properly commingled undergoes a chemical change, commonly designated as "setting," whereupon the concrete becomes hard and solid like rock. The curb may be manufactured in sections, or it may be manufactured continuously and in place—that is to say, on the spot and in the location where it is to be used.

4 indicates my angle-plate, which is provided with an endwise-disposed web 5. The angle-plate and web are preferably integral with each other and may be made of structural steel of suitable shape, preferably having its opposite flanges 6 and 7 slightly inbent toward the web 5 to impart to it a curvilinear contour, as illustrated, for example, in Fig. II, that contour being the one preferred, though not essential. In the web at frequent intervals I provide spacious apertures 9, circumscribed and preferably of curvilinear contour. The circular shape is preferred, because it avoids the presence of segregated portions or points of the concrete and permits of the incorporation through the web of the concrete in mass and in regular uniformity of distribution.

While it is undesirable in an instrument like the present to specify exact datails of proportion, yet it will be obvious when pointed out to one skilled in the art that a too great reduction of the diameters of the apertures 9 will impair the bonding of the concrete and metal and tend in use to permit separation of the concrete and the metal. The minimum dimensions of the apertures 9 might perhaps be ascertained by experiment; but any experiment must prove to be of too little utility to be of general practical applicability, because the results obtainable vary with every varying condition of the material used, as well as of temperature and moisture of the atmosphere. The practicable course, therefore, is to specify such dimensions as may be relied upon under all conditions, and I accordingly specify in general terms that in a web approximately three inches wide circular apertures 9 should be two inches in diameter and located, respectively, three-quarters of an inch apart. These dimensions are regarded as suitable for all conditions; but if minimum dimensions available in any particular case be desired they may be readily calculated, under the general specifications hereinbefore set forth, by an expert in the art acquainted with the conditions of the case. In ordinary curb construction it is necessary in order to perfectly embed the web in the concrete to construct it of transverse extent greater than half the length of the transverse extent of the curb in the plane in which the said web is located, as shown, for example, in Fig. I of the drawings. This depth of anchorage of the web in the curb is made practicable by reason of the presence in the web of the spacious apertures which characterize my invention and without which such deep seating of the web in the curb would produce cleavage of the top of the curb above the web from its base. It may be noted, further, in this connection that the employment of large apertures is not only of practical importance for securing anchorage of the web in the concrete, but that it also materially diminishes the weight of metal in the angle-plate considered as a whole—that is, including its web, which is of paramount importance where cost of transportation must be, as in the present instance, considered.

What I claim is—

1. The combination with a curb of concrete construction, of an angle-plate and a central endwise-disposed web, said web being provided throughout its extent with a series of spacious circumscribed apertures that are respectively penetrated by and filled with the concrete material of the curb.

2. As an improved article of manufacture for use in concrete curb construction, the combination of an angle-plate and its central web made of structural steel, the angle-plate having its flanges inbent toward the web and the web perforated at frequent intervals by spacious circumscribed apertures.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN W. PARKER.

Witnesses:
ROBERT G. BOONE,
T. EDWIN SANDERS.