Jan. 1, 1957 A. E. BRICKMAN 2,776,116

BEAM GUARD FOR HIGHWAYS AND THE LIKE

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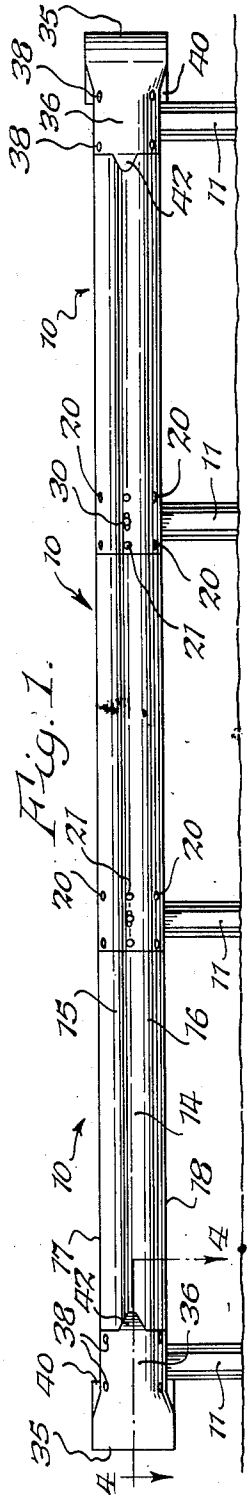


Fig. 1.

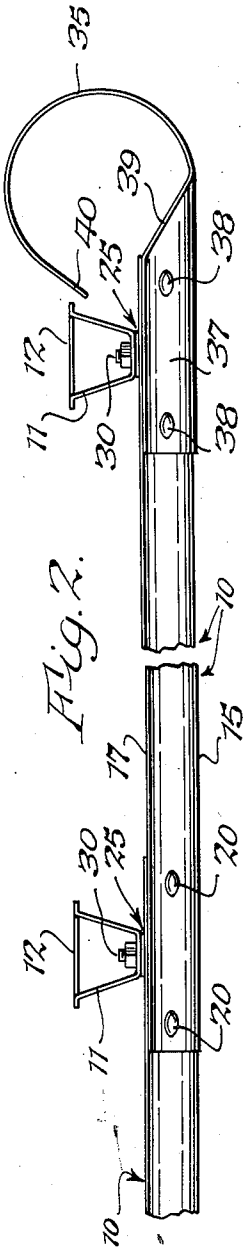


Fig. 2.

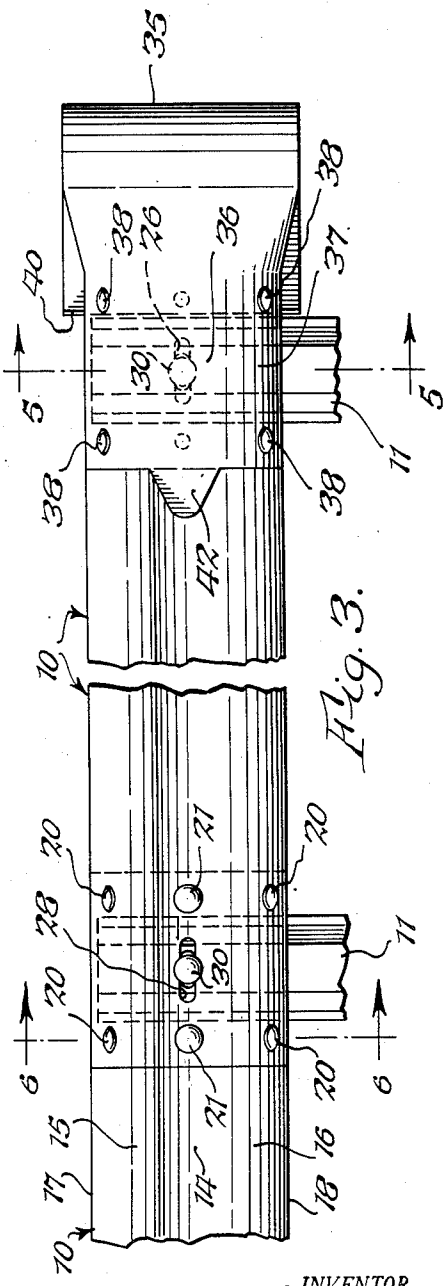


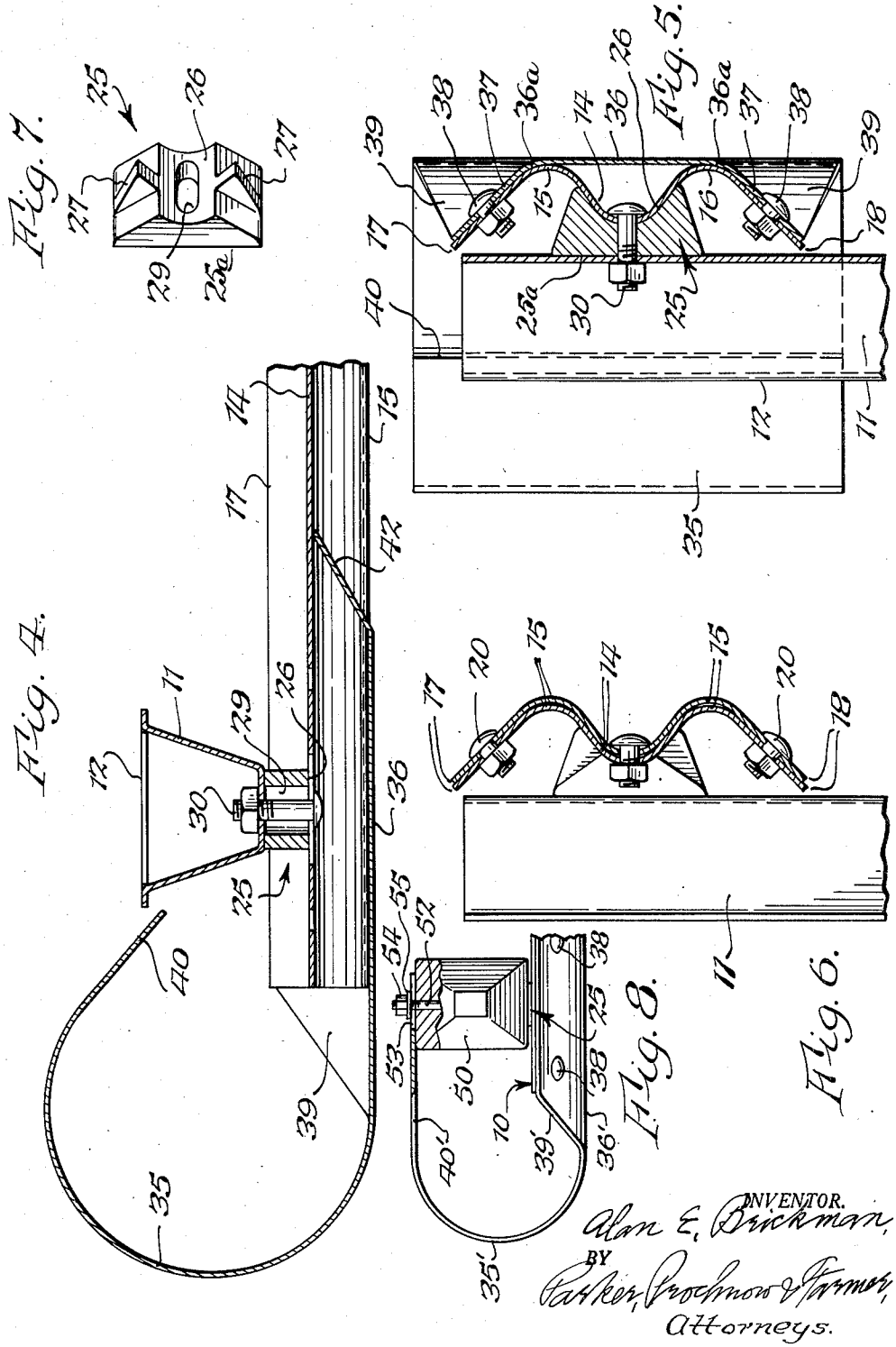
Fig. 3.

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BEAM GUARD FOR HIGHWAYS AND THE LIKE

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2,776,116

BEAM GUARD FOR HIGHWAYS AND THE LIKE

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3 Claims. (Cl. 256—13.1)

This invention relates to the construction of beam guards for use along roads or highways to prevent vehicles from passing beyond the shoulders or edges of the highways.

Guards of this type are employed mainly for the purpose of reducing as much as possible damage to vehicles contacting therewith, by preventing such vehicles from running off the highway. These guards are made sufficiently flexible to reduce as much as possible damage to vehicles contacting therewith. The flexibility should be sufficient to deflect the vehicles back onto the road, but not so great as to cause the vehicles to cross to the opposite side of the road and then possibly collide with vehicles moving in the opposite direction.

One of the objects of this invention is to provide a highway guard of improved construction which is strong and rugged, but which has sufficient flexibility to cushion as much as possible the impact of vehicles colliding therewith. It is also an object of this invention to provide an improved mounting of the highway guard on the supporting members or posts, so that the portions of the guard beams contacting with the vehicles will be yieldingly mounted with relation to such posts. A further object is to provide highway guards which are so mounted as to permit adequate paint or other surface protection to be applied to the beams and the posts, to reduce as much as possible the rusting or corrosion of these parts. A further object is to provide the highway guard with end pieces of improved construction and resilient nature for the purpose of reducing the damage to vehicles contacting therewith.

Other objects and advantages will be apparent from the following description of one embodiment of the invention and the novel features will be particularly pointed out hereinafter in connection with the appended claims.

In the accompanying drawings:

Fig. 1 is a side elevation of a highway guard embodying this invention.

Fig. 2 is a top plan view of a portion thereof, on an enlarged scale.

Fig. 3 is a fragmentary elevation thereof, on the same scale as Fig. 2.

Fig. 4 is a longitudinal sectional elevation thereof, on line 4—4, Fig. 1, on a still larger scale.

Figs. 5 and 6 are transverse sectional views thereof, on lines 5—5 and 6—6 respectively of Fig. 3.

Fig. 7 is a perspective view of a saddle by means of which beams of the guard are mounted on the supporting members or posts.

Fig. 8 is a top plan view, partly in section, of an end of a beam guard of modified construction.

The highway guard shown in the accompanying drawings illustrates by way of example one embodiment of this invention, and comprises a plurality of beams 10 having their ends connected and mounted on upright supporting members or posts 11. The posts may be of any usual or suitable construction, those shown being made of metal of U-shaped cross section and provided at intervals with cross pieces 12 connecting the free ends of the legs of the U-shaped posts. It will be obvious, however, that posts of any other type may be employed for supporting the beam guard embodying this invention. Those posts are generally driven into the ground beyond the shoulders of the highway. However, my improved beam guard may be secured to parts of bridges or other structures.

The beams 10 are made of metal and provided with corrugations extending lengthwise thereof. Each beam is provided along the longitudinal middle portion thereof with a trough or depression 14. Above and below this trough upper and lower shoulders 15 and 16 are provided and the upper edge of the upper shoulder 15 and the lower edge of the lower shoulder 16 extend respectively upwardly and downwardly and away from the road or highway to form wings or flanges 17 and 18. This corrugated construction is preferred, since it imparts the desired rigidity to the beams, but permits a certain amount of flexing.

The beams are connected at their ends and as many beams are employed as may be necessary to form the highway guard of the desired length, three beams being shown in the construction illustrated. The end portions of the beams overlap and are secured together. For this purpose, apertures are preferably provided in the wings or flanges 17 of these beams which are so positioned as to register when the ends of adjacent beams overlap, so that bolts 20 may be passed through the apertures. If desired, additional bolts 21 may be provided to pass through apertures arranged in the trough portions of the beams. By means of this arrangement any vehicle moving along in contact with the shoulders 15 and 16 of these beams will not be injured by the heads of the bolts on the wings or in the trough.

The joints or overlapping portions of adjacent beams are arranged at the supporting members or posts 11 and means of improved construction are provided for supporting the beams on the posts. In the construction shown for this purpose, I have provided saddles 25, which support the beams in spaced relation to the posts. These saddles have their back faces 25a arranged to seat against the posts and have on their opposite faces seat portions 26 which are formed to receive the troughs 14 of the beams. The saddles are so formed that these seats are spaced at such distance from the back portions of the saddles that all parts of the beams will be supported in spaced relation to the supporting members or posts as clearly shown in Figs. 5 and 6, in which the edges of the wings or flanges 17 and 18 are arranged in spaced relation to the posts.

The saddles are also provided with parts for supporting the beams in correct relation to the posts so that the beams will not tend to tilt or assume positions inclined to the vertical, in which positions the upper or lower edges of the beams may contact with the posts. For this purpose, the saddles are provided on their upper and lower ends thereof with projections or horns 27, the adjacent surfaces of which are formed to lie in contact with the sides of the troughs 14 of the beams.

The beams may be secured to the saddles and the saddles to the posts in any suitable manner. In the construction shown, each beam is provided in the trough portion thereof with a slot 28 extending lengthwise of the beam. The saddles 25 are also provided with elongated openings or slots 29 in the middle portions thereof and extending in the direction of the length of the highway guard. This makes it possible to adjust the saddles relatively to a supporting member or post 11. Bolts 30 may then be passed through the slots of a beam at the end portion of the highway guard or through a pair of slots in the overlapping portions of two beams, through the elongated opening 29 in the saddle and through an aperture provided in the post, so that the bolts securely hold the beam or beams in correct relation to the saddle and also support the saddle and beams on the post. It will be realized that it is not possible to position posts in the ground in the exact spacing desired, and consequently, these slots are provided to compensate for differences in the distances between adjacent posts.

It is, of course, very necessary to provide some protection on the ends of the guard to prevent vehicles from becoming impaled or otherwise seriously damaged by collision with such ends of the guard. For this purpose, I have provided looped buffers at the ends of the highway guard. These buffers are made of a flat sheet or strip of metal, preferably steel. One end of each buffer is bent back on itself into an approximately circular loop **35**. The flat width of the buffer is preferably somewhat greater than that of a beam and the other end of the buffer is formed with a flat portion **36** which extends across a part of the trough **14** of a beam and the upper and lower edge portions **37** of this end of the buffer are bent as shown at **36***a* to lie along the wing or flange portions **17** and **18** of the beam. The buffer may be secured to the end portions of the beam by means of bolts **38**. Inclined portions **39** extend from the parts **37** to the loop portion **35**.

The end **40** of the loop portion may be left entirely unsupported so that this loop portion will be quite resilient to cushion the impact of any vehicle against the end of the guard. However, if desired, the end **40** may be secured to a post or supporting member to reduce to some extent the resiliency of this loop, and to support the same more securely, as shown in Fig. 8.

In this construction shown in Fig. 8, **50** represents a post, such for example as a wooden or concrete post, and **35'** represents a loop portion of modified construction in which the end **40'** extends backwardly substantially parallel to the beam. This end of the loop may be provided with a slot **53** open at the outer end thereof and through which a bolt **52** extending through the post **50** passes. This beam end **40'** is then secured to the post by means of a nut **54** engaging the bolt **52**, a washer **55** being preferably interposed between the nut and the beam end. This construction has the advantage that when the loop portion is assembled to the post and to the beam **10**, it is merely moved endwise of the beam so that one part of the loop is moved into position to be secured to the beam **10** while the other end of the loop is moved into position in which the bolt **52** enters the slot **53**. The slot thus facilitates the assembly of the beam guard and also compensates for variations in the locations of the posts.

In order to further protect vehicles from damage by means of the resilient end portions of the guard rail, the flat portion **36** of each buffer which extends across the trough **14** preferably terminates in an inclined tongue or deflector **42** which is formed to extend into the trough **14** at an inclination thereof. This deflector is preferably formed separately from the buffer and welded thereto, but may if desired, be formed integral with the buffer, as shown in the drawings. Consequently, if any part of a vehicle contacting with the guard extends into the trough **14**, the inclined tongue or deflector **42** will deflect such part of the vehicle out of the trough and thus reduce damage which might result if such part of a vehicle came into contact with a sharp edge at the end of the buffer extending across the trough **14**.

A highway guard constructed as described has the advantage that the same is quite resilient to reduce as much as possible the damage to vehicles contacting with the same. Heretofore highway guards have been rigidly secured to the supporting posts and, consequently, the portions of the highway guard at the posts were unyielding, which results in more serious damage to vehicles than with the highway guard forming the subject matter of this invention. If a vehicle contacts with the guard as herein described at a post, the wings or flanges of the beams will be deflected away from the highway, thus cushioning the blow of the vehicle against the guard. There are, however, other advantages in spacing the upper and lower edges of the beams from the posts, namely, that the beams can be made of less width, thus economizing in the use of steel. Furthermore, when such edges of guards as heretofore constructed were pressed against posts, it was practically impossible to apply paint or other coating material to the parts on the posts which were contacted with the edges of the beams, so that rusting would readily occur at such places. By means of the construction described, paint can readily be sprayed or brushed into the spaces between the upper and lower edges of the beams and the posts. The saddles **25** and posts **11** are preferably galvanized or otherwise protected against rusting or corrosion.

The loop-shaped buffers also greatly reduce the chance for serious damage to a vehicle contacting therewith, since the outer loop from this buffer is quite resilient and presents no sharp edge with which a part of a vehicle may contact.

It will be understood that various changes in the details, materials, and arrangements of parts which have been herein described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art within the principle and scope of the invention, as expressed in the appended claims.

I claim as my invention:

1. A highway beam guard including a plurality of beams secured end to end, a buffer for an end of said guard, said buffer having one end thereof secured to an end of a beam of said guard and having the outer end thereof of loop shape and extending from said beam in a direction away from the highway, said beam having a horizontally extending trough portion intermediate of the upper and lower edges of said beam, and upper and lower flanges extending from said trough portion in a direction away from a highway, and a deflecting member extending from said buffer into said trough and inclined to deflect a part of a vehicle in said trough and moving toward said buffer outwardly toward the highway and away from said buffer.

2. A highway beam guard for mounting on upright supports and including a plurality of beams each having lengthwise corrugations forming a trough arranged substantially midway of the upper and lower edges of the beam, and extending in a direction away from the highway, shoulders above and below said trough and wings extending from said shoulders in a direction away from the highway, means for securing said beams to said supports, including saddles interposed between said supports and said troughs and extending outwardly from said supports sufficiently for supporting said beams with said wings spaced from said supports, said saddles having seat formed to receive said troughs of said beams to prevent said beams from tilting relatively to said saddles, and means for securing said troughs and saddles to said supports.

3. A highway beam guard for mounting on upright supports and including a plurality of beams each having lengthwise corrugations forming a trough arranged substantially midway of the upper and lower edges of the beam and extending in a direction away from the highway, shoulders above and below said trough and wings extending from said shoulders in a direction away from the highway, means for securing said beams to said supports, including saddles interposed between said supports and said troughs and extending outwardly from said supports sufficiently for supporting said beams with said wings spaced from said supports, said saddles having seats formed to receive said troughs, and horns projecting outwardly from said seats into engagement with the opposite sides of said troughs for holding said beams in substantially upright planes to hold said wings out of contact with said supports.

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