May 24, 1932. A. W. SCHENKER 1,860,205

BEAM PROTECTOR

Original Filed Jan. 4, 1929

Fig. 1,

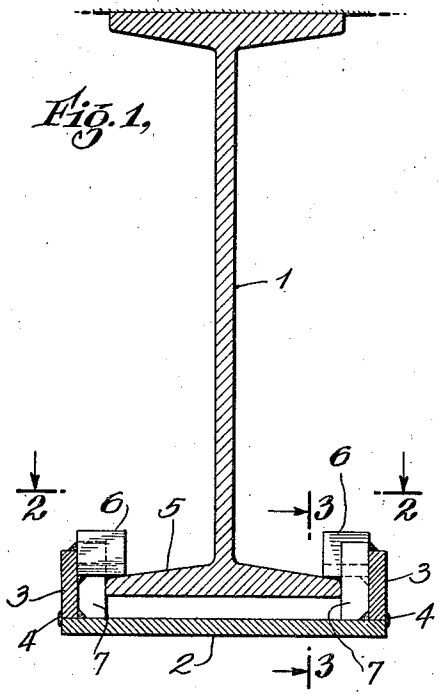


Fig. 2,

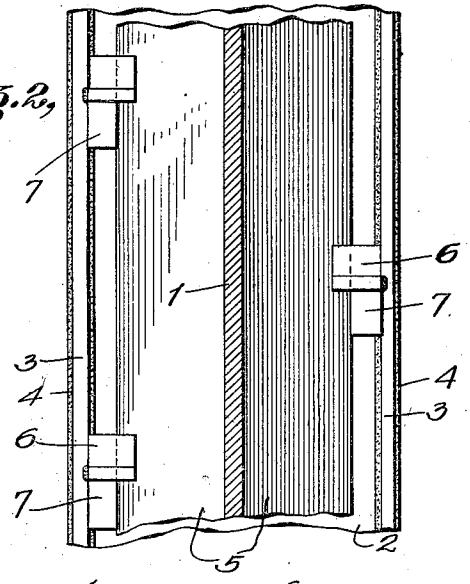


Fig. 3,

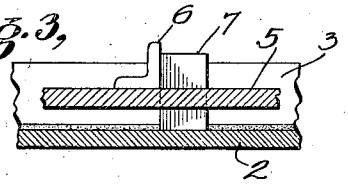


Fig. 4,

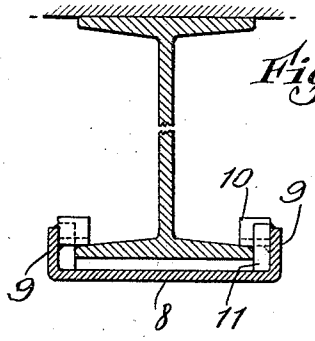


Fig. 5,

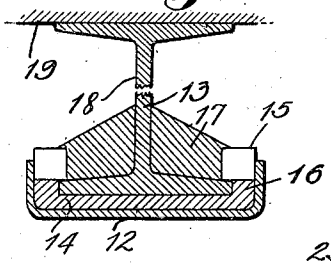


Fig. 6,

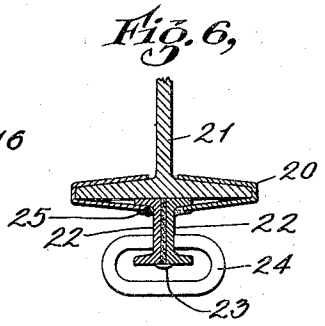


Fig. 7

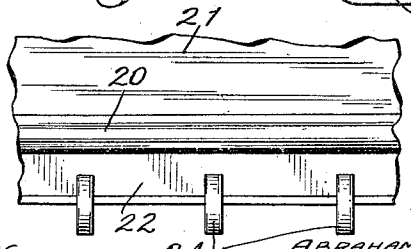
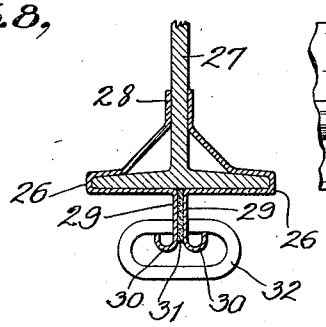


Fig. 8,



INVENTOR.
ABRAHAM W. SCHENKER
BY Meyers & Jones
ATTORNEYS.

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UNITED STATES PATENT OFFICE

ABRAHAM W. SCHENKER, OF FOREST HILLS, NEW YORK, ASSIGNOR TO THE ELECTRIC WELDING COMPANY OF AMERICA, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK

BEAM PROTECTOR

Application filed January 4, 1929, Serial No. 330,296. Renewed March 12, 1932.

This invention is an improvement in beam protectors, and more particularly in protectors for the beams of railroad bridges.

Bridge beams of the character in question deteriorate very rapidly, due to the action of the blast discharged by locomotives passing beneath the beams. The action of the sulphur products discharged by the locomotives in connection with the moisture in the atmosphere, tend to erode and weaken the beams.

One of the primary objects of the present invention is the provision of a type of protector, which provides complete protection for the exposed parts of the beam.

Another object is the provision of a protector capable of being easily applied to beams in existing structures, and which is easily removed when desired for any purpose.

Another object is the provision of a protector with which may be combined protecting means for all of the exposed surfaces of the beam, held in place by the protector proper.

Another object is the provision of a type of protector so constructed that it may be applied to beams of any length.

With these and other objects in view the invention consists in the construction and novel combination of parts fully described hereinafter, illustrated in the accompanying drawings, and pointed out in the claims appended hereto, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims, may be resorted to without departing from the spirit of the invention.

In the drawings forming a part hereof:—

Fig. 1 is a transverse vertical section of a beam provided with the improved protector.

Figs. 2 and 3 are sections on the lines 2—2 and 3—3, respectively, of Fig. 1.

Figs. 4, 5, 6 and 8 are views similar to Fig. 1, showing alternate constructions.

Fig. 7 is a side view of the contruction shown in Fig. 6.

In the embodiment of the invention shown in Figs. 1, 2 and 3, the protector is shown in connection with an I-beam 1 of usual construction. The protector is a channel shaped structure including a body or bottom plate 2, and side plates 3, which are secured to the bottom plate to form a trough like or channel shaped structure, by welding, or the like, the welding being indicated at 4.

The bottom member 2 is of a width greater than that of the flange 5 of the I-beam to be protected, so that when the protector is in the position of Fig. 1, the side plates 3 will be spaced apart from the side edges of the flange. Angle plates 6 are secured to the side plates 3 near their upper edges, as for instance, by welding, the angle plates being of such size that they will extend inwardly, when the protector is in the position of Fig. 1, beyond the edges of the flange 5, and will rest thereon. Each angle plate is arranged with one part vertical and the other horizontal, and the horizontal part rests upon the flange.

The angle plates of the two side plates 3 are staggered, as shown in Fig. 2, so that the angle plates of one side plate 3 alternate with the angle plates of the other side plate. With this arrangement the protector may be easily engaged with the beam flange, by engaging first the angle plates of one side plate and afterwards the angle plates of the other side plate. The width of the bottom plate 2 with respect to the flange 5 is such that lateral movement of the structure, that is, the protector, is enabled in order to facilitate the engagement above mentioned.

After the protector has been placed as above described, blocks 7 of wood or the like, are dropped down between the side plates 3 and the beam flange edges, as shown in Figs. 1, 2 and 3. These blocks are of a thickness to fill the space between the respective side plates and the adjacent flange edges, and they prevent lateral movement of the protector after it has been placed. As shown in Fig. 3, the blocks are of a length to extend somewhat above the upper edges of the plates 3, to enable their easy removal. The improved protector provides complete protection for the I-beam flange against the deleterious gases discharged by locomotives.

In Fig. 4, the protector is in the form of a channel shaped plate including a body or

bottom 8 and side flanges 9. The angle plates 10, corresponding to the plates 6 of Fig. 1, are similarly arranged and similarly connected, and the blocks 11 corresponding to the blocks 7 are of similar construction and similarly placed. The only difference between this structure and that of Fig. 1, is that the body and sides are integral.

In the embodiment shown in Fig. 5, the protector 12 is similar to that of Fig. 1, and is shown in connection with an I-beam 13 of usual construction. In the Fig. 1 construction, however, the body 2 of the protector is spaced below the bottom of the flange, and in Fig. 5, this space is filled with a layer of asphalt fiber mastic indicated at 14, thick enough to fill the space between the flange of the I-beam and the bottom plate or body of the protector, and to the level of the upper face of the flange.

The structure is held on the flange by angle plates 15 similar to the angle plates 6 of Fig. 1, and the top of the flange is covered by a layer 17, of emulsified asphalt, cement and sand, the layer extending from the side plates of the protector to the opposite sides of the web of the I-beam, and the side faces of the web and the underface of the upper flange are covered by coats 18, in the present instance, two in number, of emulsified asphalt paint. This paint extends from the layer 17 to the concrete indicated at 19, above the I-beam. The arrangement described protects the entire surface of the I-beam, it being understood that in each case the protector extends from one end of the I-beam to the other.

In the embodiment shown in Figs. 6 and 7, the protector is in the form of a pair of substantially U-shaped sections 20, each of suitable material, and the sections are shaped to embrace the lower flange of the I beam 21 on each side, and to substantially cover the upper surface of the flange, the said sections extending to near the web. On the underside the edges of the sections are spaced apart somewhat, and they are held in place by channel bars 22, arranged back to back as shown, that is, with their channels outward.

A layer of packing 23 is arranged between the channel bars, the packing being of any suitable material, as for instance, lead, solder, or the like, and the channel bars are clamped together by clamping members 24, which are substantially C-shaped. The clamping members are slipped over the channel bars from the end, and a sufficient number are placed to firmly hold the channel bars, the spacing being indicated in Fig. 7.

The sections 20 are soldered to the channel bars as indicated at 25, and this construction provides a relatively simple lightweight form of protector, which is easily applied to existing beams, and it is of especial advantage where the length of the beam is interrupted by cross beams, for instance, which would make the application of the Fig. 1 construction in one piece, difficult.

In Fig. 8, the protector consists of similar sections 26, oppositely placed. Each section is shaped as shown, to engage approximately half of the underface of the flange, and to closely engage a part of the upper face. The upper edges 28 of the sections engage the opposite faces of the web of the I beam 27, and the lower edges are bent to form planes 29 lying substantially parallel, each having a hook or gutter shaped extension 30 at its free end. These portions 29 lie in parallel relation, and they are connected by a suitable packing, as for instance, solder 31, which extends the full width of the plane 29. The sections are held in place on the beam by clamps 32, similar to the clamps 24 of Fig. 6. These clamps which are C-shaped, are supported by the hook or gutter shaped extensions 30, as shown.

In each construction, the protector is composed, so far as concerns the protector proper of copper bearing steel, which is resistant to the SO_2 gas discharged by locomotives, and it will be understood that if desired, any of the embodiments described may be coated with the emulsified asphalt paint, in the manner shown in Fig. 5. It will be evident from the inspection of Fig. 8, that the sections 26 are symmetrically arranged when in place, but they are similar when similarly arranged, and may be manufactured in one piece and afterwards cut to length.

In the Fig. 6 construction, the elements 20 may be and usually are secured to the channel bars 22 before placing the parts on the I beam, though it is apparent that the connection may be made afterwards. With the channel bars attached, the sections 20 are substantially the same as the sections 26 of Fig. 8. In each case the members have depending portions which are clamped together by the C-shaped clamps, and each portion has an outward extension for supporting the clamps. The sections 26 cover a part of the web of the I beam, while the sections 20 cover only the upper surface. It is apparent, however, that they might have extensions lying along side the web.

What is claimed as new is:—

1. A bridge beam protector including a channel shaped structure to receive the lower flange of the beam to be protected and of greater width than the flange, and having means to engage above the flange to prevent downward movement of the protector, and other means to center the protector with respect to the beam.

2. A bridge beam protector including a channel shaped structure to receive the lower flange of the beam to be protected and of greater width than the flange, said structure having inwardly extending lugs at the

opposite sides thereof to engage above the flange to support the structure with the bottom thereof below the flange, and means to center the protector with respect to the beam.

3. A bridge beam protector including a channel shaped structure to receive the lower flange of the beam to be protected and of greater width than the flange, said structure having inwardly extending lugs at the opposite sides thereof to engage above the flange to support the structure with the bottom thereof below the flange, and filler blocks between the side walls of the structure and the edge of the flange to prevent lateral movement of the structure.

4. A bridge beam protector including a channel shaped structure to receive the lower flange of the beam to be protected and of greater width than the flange, said structure having inwardly extending lugs at the opposite sides thereof to engage above the flange to support the structure with the bottom thereof below the flange, and filler blocks between the side walls of the structure and the edge of the flange to prevent lateral movement of the structure, the lugs at each side being arranged in spaced relation and staggered with respect to the lugs at the opposite side.

5. A bridge beam protector including a channel shaped structure to receive the lower flange of the beam to be protected and of greater width than the flange, said structure having inwardly extending lugs at the opposite sides thereof to engage above the flange to support the structure with the bottom thereof below the flange, and filler blocks between the side walls of the structure and the edge of the flange to prevent lateral movement of the structure, the lugs at each side being arranged in spaced relation and staggered with respect to the lugs at the opposite side, the filler blocks being arranged at the lugs.

6. A bridge beam protector including a channel shaped structure for receiving the lower flange of the beam to be protected, said structure being of greater width and depth than the flange to be protected, inwardly extending lugs on opposite sides of the structure to engage above the flange when the structure is centered with respect to the flange to hold the same in spaced relation thereto, and a protective filler between the sides and bottom of the flange and structure and between the sides and top of the flange.

Signed at New York in the county of New York and State of New York this 31st day of December, A. D. 1928.

ABRAHAM W. SCHENKER.