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EYE BOLT AND WASHER MEANS PREVENTING DISPLACEMENT OF THE FREE END OF THE EYE

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Fig. 1

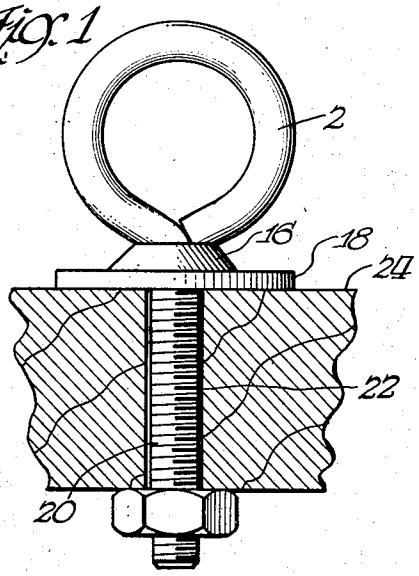


Fig. 3

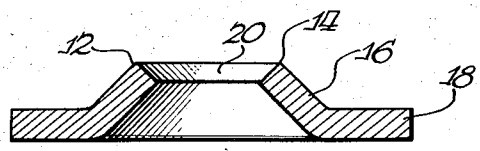


Fig. 4

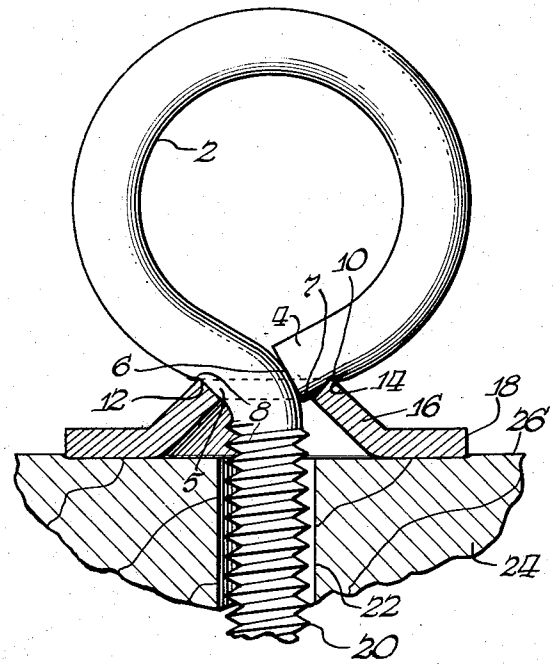
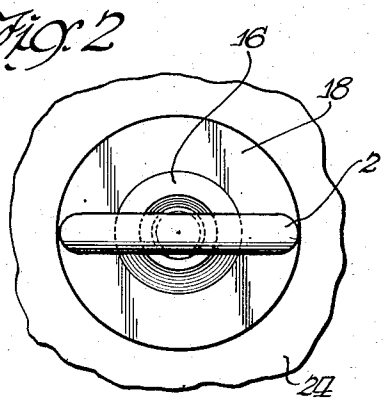


Fig. 2



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EYE BOLT AND WASHER MEANS PREVENTING DISPLACEMENT OF THE FREE END OF THE EYE

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2 Claims. (Cl. 24—115)

This invention relates to anchorage devices used for various purposes and more particularly does the invention have for its objects the provision of anchorage devices which include shanked means providing an eye and wherein an embossed washer surrounds the lower portion of the eye of the shanked means and wherein also embossment of the washer is substantially rigid and forms not only a strong unyielding support for the lower portion of the eye but also structurally cooperates with the lower curved portions of the eye to prevent the same from spreading or opening. In another form the embossed member strongly and relatively rigidly supports the eye and imparts extra strength to the eye. In addition, the invention has as an object, in combination with an eye bolt construction, an embossed washer-like device providing the supporting strength of substantially four times the ordinary washer and which embossed washer-like device likewise improves the appearance and durability of the application of the washer and eye bolt device.

Another object of the invention resides in providing an embossed washer construction for an eye bolt which washer construction has the supporting strength of substantially four times the ordinary washer besides improving the appearance and durability of the combination.

These and other objects of invention will be apparent from a perusal of the following specifications when taken in connection with the drawings wherein:

Figure 1 is a perspective view of an eye bolt rigidly supported by an embossed washer;

Figure 2 is a plan view of Figure 1;

Figure 3 is a sectional view of the washer; and

Figure 4 is an enlarged view of the upper portion of Figure 1 with the embossed washer in section, showing the support provided thereby for the eye portion of the eye bolt.

Referring now to the drawings in detail, and referring especially to the devices shown in Figures 1 to 4 inclusive, an eyebolt is disclosed provided with an upper relatively round eye portion **2** which has a free end **4** bent into contact with the curved wall **6**. At the locations **8** and **10** the underside portions of the substantially circular eye of the bolt may be provided with nicks or rugosities **8** and **10** preferably extending thereacross to receive and fit diametrically opposite upper edge portions of the rigid frusto-conical embossment **16** of washer **18**. This embossment is provided with a central circular opening **20** to receive the lower arcuate portions of the eye of the bolt as shown whereby the circular eye of the bolt and particularly the free end **4** thereof is rigidly supported by the embossment and whereby the relatively sharp outer edges of said opening in the dome engage nicks **8** and **10** in the lower outer walls of the eye. These nicks **8** and **10** engage the continuous circular sharp edges while at the same time permitting rotation of the eye of the bolt on and around the circular upper sharp edge of the embossment. The wall defining opening **20** is frusto-conically shaped and is disposed at right angles to the walls

defining frusto-conical embossment **16**. This construction provides a sharp substantially right angular edge **14** which engages under the nicks **8** and **10** as described above. The junction of the lower shank portion **5** and the free end **7** of the outer curved walls of the eye are thus prevented from spreading. In addition if desired the lower outer walls of said eye at **8** and **10** may be provided with nicks or roughened surfaces which assist the clamping action in holding the free edge in. In the clamped position the junction of the eye is held by the sharp circular edge **14** so that the free leg **4** will not spread in any turned position of the eye.

Attention is especially drawn to the thickness of the sectional wall of the embossment as shown in Figures 3 and 4 whereby said upstanding embossment wall is substantially rigid and is not, due to its angularity and especially its thickness, inherently resilient. In short the embossment **16** rigidly supports the eye **2** of the eye bolt and its thickness is selected with this function in mind so that due to its rigidity the embossment provides a firm non-resilient support for the bolt providing a circular sharp upper edge and whereby this relatively sharp circular outer edge thereof surrounds the basal junction of the leg portions of the eye to prevent and hold them from spreading in any turned position of the eye. Thus a rigid mounting is provided upon which the eye bolt may turn while at the same time the eye bolt is centered and held together by the engagement of the relatively sharp outer and upper edges of the rigid embossment **16** with the base walls of the eye.

Hence the eye bolt is automatically positioned, and centered on the outermost rigid sharp circular edge of the opening formed in the embossed dome and at the same time this centering and clamping action prevents spreading of the eye of the bolt.

Hence automatic correct seating is accomplished on a substantially rigid upstanding embossment with the threaded shank **20** of the eye bolt depending downwardly through the central opening of the embossment whereby to effect proper positioning of the eye bolt and its shank in the hole **22** of the anchorage piece **24**.

By reason of this construction the embossment and the edge **14** thereof in cooperation with the notches **8** and **10** provide centering means for rigidly and firmly centering the eye bolt in the aperture of the embossment so that the eye portion **2** lies normal to the face of the plate portions **18** of the washer and normal to the face **26** of the anchorage **24**.

Thus pronounced rigidity of mounting and automatic centering of the eye bolt is secured and maintained by this construction.

It will be seen that there has been provided an anchorage device which fulfills all of the objects and advantages set forth above. Although one preferred form of the invention has been shown in the drawings and described for purposes of illustration, it is to be understood that various changes and modifications can be made therein without departing from the spirit and scope of the invention. Accordingly, the invention is to be limited only as set forth in the following claims.

Having thus described my invention, I claim:

1. An anchorage device for use with a support having an opening therethrough comprising an elongated rigid shank, one end of said shank being shaped to form an eye with the free end of the shank turned back and abutting an intermediate portion of the shank at the point that said eye is joined to said shank, a washer having an outer plate-like portion merging into a central outstanding dome-like portion, said washer having a thickness to provide substantial rigidity for said dome-like portion, said dome-like portion having an aperture formed therein

centrally thereof, said aperture having a diameter to receive said shank therethrough and less than said eye, the walls defining said aperture being disposed at acute angles to provide a relatively sharp outstanding arcuate edge to receive and abut against the adjacent surfaces of said eyes, the adjacent surfaces of said eye having a notch therein to receive said arcuate edge, the other end of said shank being threaded and extending through the opening in an associated support with said washer and said eye disposed on one side of the associated support and said threaded shank end extending beyond the other side of the associated support, and a nut threaded on said threaded end to mount said shank and said washer on the associated support, said eye being turnable before tightening of said nut to any desired position relative to said washer and the associated support and after tightening of said nut being clamped in such position against turning and against opening, tightening of said nut clamping said eye against said dome-like portion of said washer whereby the free end of the shank forming said eye is securely anchored by said arcuate edge and held against movement away from the adjacent intermediate shank portion.

2. An anchorage device for use with a support having an opening therethrough comprising an elongated rigid shank, one end of said shank being shaped to form an eye with the free end of the shank turned back and abutting an intermediate portion of the shank at the point that said eye is joined to said shank, a washer having an outer plate-like portion merging into a central outstanding dome-like portion frusto-conical in shape, said washer having a thickness to provide substantial rigidity for said dome-like portion, said dome-like portion having an aperture formed therein centrally thereof, said aperture having a diameter to receive said shank therethrough and less than said eye, the walls defining said aperture being

disposed at an angle of approximately 90° to provide a relatively sharp outstanding arcuate edge to receive and abut against the adjacent surfaces of said eye, the adjacent surfaces of said eye having a notch therein to receive said arcuate edge, the other end of said shank being threaded and extending through the opening in an associated support with said washer and said eye disposed on one side of the associated support and said threaded shank end extending beyond the other side of the associated support, and a nut threaded on said threaded end to mount said shank and said washer on the associated support, said eye being turnable before tightening of said nut to any desired position relative to said washer and the associated support and after tightening of said nut being clamped in such position against turning and against opening, tightening of said nut clamping said eye against said dome-like portion of said washer whereby the free end of the shank forming said eye is securely anchored by said arcuate edge and held against movement away from the adjacent intermediate shank portion.

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