June 30, 1953 K. C. JENNE 2,643,425

CLAMP FOR GUY WIRES AND THE LIKE

Filed Sept. 5, 1951

Fig. 1.

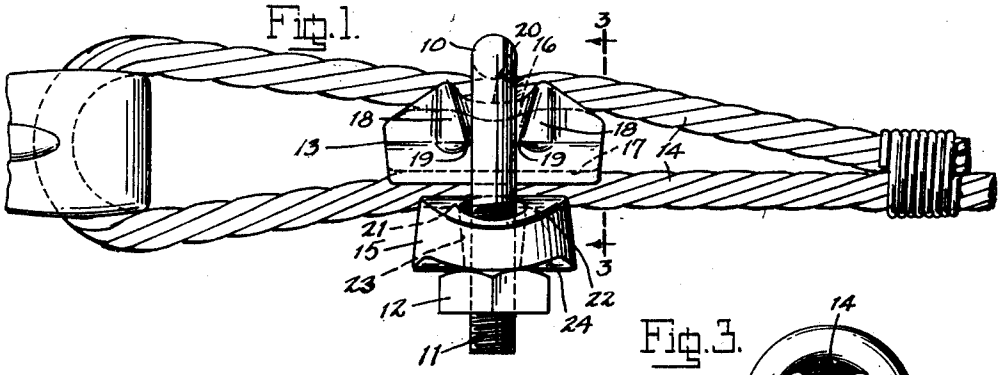


Fig. 2.

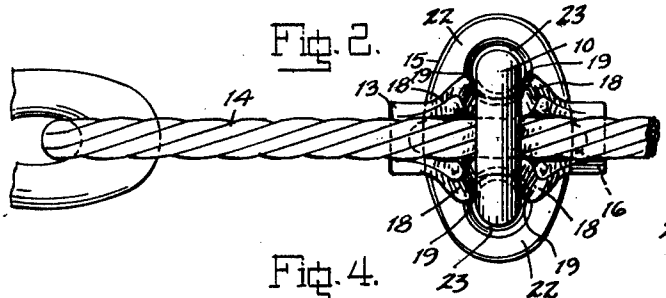


Fig. 3.

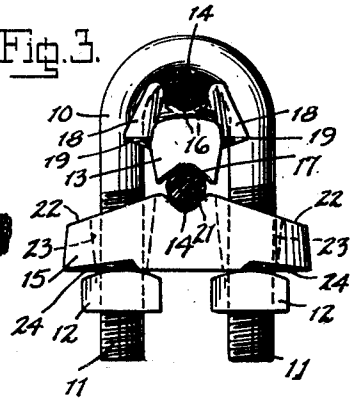


Fig. 4.

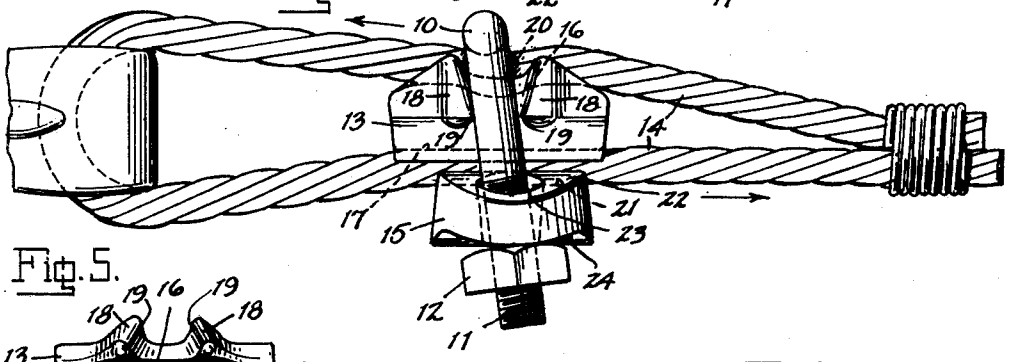


Fig. 5.

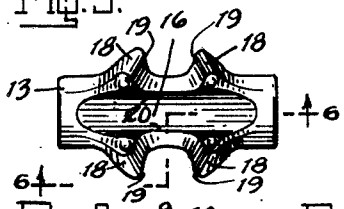


Fig. 6.

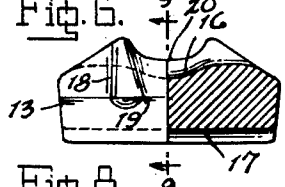


Fig. 7.

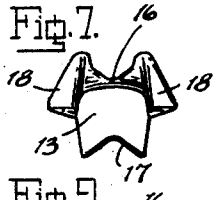


Fig. 8.

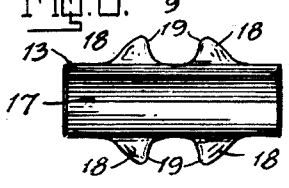


Fig. 9.

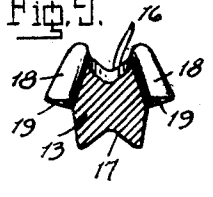


Fig. 10.

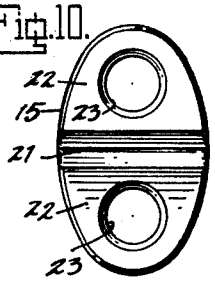
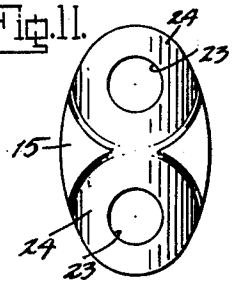


Fig. 11.



Inventor

KENNETH C. JENNE

By

Attorney

Patented June 30, 1953

2,643,425

UNITED STATES PATENT OFFICE

2,643,425

CLAMP FOR GUY WIRES AND THE LIKE

Kenneth C. Jenne, Branford, Conn., assignor to Malleable Iron Fittings Company, Branford, Conn., a corporation of Connecticut

Application September 5, 1951, Serial No. 245,209

2 Claims. (Cl. 24—81)

1

The present invention relates to improvements in clamps for guy wires, and the like, and in particular is an improvement of the guy clamp disclosed in my U. S. Letters Patent No. 2,327,307, granted August 17, 1943, an object of the invention being to increase the effectiveness of the clamp in its clamping action upon a guy strand of cable twisted wires by eliminating, or reducing as much as possible, the spreading or flattening out of the strand under compression. When such spreading or flattening out occurs there is a loss in compression and a consequent reduction in the clamping effect, as well as a distortion of the strand wires out of their normal cable twisted relation.

The guy clamp as disclosed in this patent, and more particularly the embodiment thereof illustrated in Figs. 1 to 5 thereof, consists of a clamping body or separator block interposed between the load and tail sides of the looped end of a guy strand, a U-bolt having its bight portion clampingly engaged with the tail side of the guy strand with its side legs extending at each side of the separator block to the load side, and a clamping plate engaged upon the side legs and clampingly engaged with the load side of the guy strand through tightening of nuts screwed upon the side legs. The unusual holding power of this guy clamp is due to its ability to exert a continuing and increasing force on the guy strand at its load and tail sides as the load increases, this force resulting from the fact that the U-bolt is arranged for relative tilting movement which produces in effect a "come along" grip; that is, as the pull on the load side tends to pull the clamping plate in the direction of the load the pull on the tail side tends to swing the bight of the U-bolt in opposite direction so that the distance between the clamping plate and the bight decreases and the compressive clamping effect upon the load and tail sides of the guy strand is increased.

The clamping plate is provided with a straight longitudinal clamping groove opposed to a similar groove in the separator block, so that relatively long clamping surfaces are provided for clamping engagement with the load side of the strand, with relatively little tendency to flatten out the strand between these clamping surfaces. However, the bight of the U-bolt, which extends transversely across the tail side of the strand, has a relatively small area of contact with the strand, and, having a radius substantially larger than the radius of the maximum size strand for which the clamp is designed, has a natural tendency to flatten the strand, thus producing a distorted area. It is proposed in the present invention to eliminate, or reduce as much as possible, the tendency of the strand to flatten out under the bight of the U-bolt by providing upwardly extending projections upon the separator block, longitudinally at each side of the U-bolt, and transversely at each side of the strand receiving clamping groove, and which closely support the strand against flattening at each side of the U-bolt so that the intermediate portion engaged by the bight of the U-bolt between the supported portions is also supported against flattening.

2

The upwardly extending projections also have the additional function of identifying the side of the separator block for engagement with the tail side of the strand, and, as they are also incapable, because of their height, of proper clamping cooperation in reverse position, with the clamping plate, it becomes impossible to assemble the separator block in improper working relation. This is particularly important, as the clamping groove of the separator block, intended for engagement by the tail side of the strand in cooperation with the bight of the U-bolt, has a depression or dip between its ends, so that as the bight of the U-bolt is clampingly pressed upon the strand it is forced downwardly into the depression to increase the holding effect, as distinguished from the straight groove of the separator block intended for engagement by the load side of the strand. In the separator block, as disclosed in my above referred to patent, the very slight difference in appearance of the indented groove for the tail side over the straight groove for the load side would very often result in the reverse assembly of the separator block, particularly if the clamp is assembled by workmen in the field, with the resulting impairment of the clamping effect at both the load and the tail sides. This possibility of reverse assembly of the separator block in working relation with the other parts of the clamp is prevented in the present improvement.

Another object is the provision of a pair of positioning projections upon each side of the separator block of the clamp for substantially centering the U-bolt in its non-tilted position, and which allow for increased freedom in the tilting action. In particular, it is proposed to provide angular corners upon the projections which offer edge or line contact with the U-bolt, where actual contact between the U-bolt and the projections occur, instead of the

relatively large radius contact of the rounded projections as employed in the clamp of my patent, and which limited the tilting action to a relatively small angle. It is pointed out that in the normal operation of the clamp the U-bolt pivots in the space between the projections and actual contact between the U-bolt and the projections does not occur, such contact resulting from improper or non-central initial positioning of the U-bolt, uneven loading or excessive loading.

With the above and other objects in view, an embodiment of the invention is shown in the accompanying drawings, and this embodiment will be hereinafter more fully described with reference thereto, and the invention will be finally pointed out in the claims.

In the drawings:

Fig. 1 is a side elevation showing a guy wire clamp, according to the invention, in engaged relation with the loop end of a guy strand shown looped through the eye end of an anchor rod or the like, the clamp being shown in its tightened relation with the load and tail sides of the guy strand with the U-bolt in its centralized non-tilted position prior to imposition of load on the guy strand.

Fig. 2 is a plan view thereof.

Fig. 3 is an end view, wherein the guy wire is shown in vertical section taken along the line 3—3 of Fig. 1.

Fig. 4 is a side elevation showing the U-bolt of the clamp in a tilted position produced by imposition of load on the guy strand in the direction indicated by the arrows.

Fig. 5 is a detail top plan view of the clamping body member or separator block.

Fig. 6 is a view of the separator block partially in side elevation and partially in vertical section taken along the line 6—6 of Fig. 5.

Fig. 7 is an end view thereof.

Fig. 8 is a bottom plan view.

Fig. 9 is a vertical transverse section taken along the line 9—9 of Fig. 6.

Fig. 10 is a detail top plan view of the lower clamping plate member.

Fig. 11 is a bottom plan view thereof.

Similar reference characters indicate corresponding parts throughout the several figures of the drawings.

Referring to the drawings, the guy clamp, according to the exemplary embodiment of the invention illustrated therein, comprises three main parts, i. e., a U-bolt 10, having the lower portions of its side legs threaded as at 11—11 and provided with tightening nuts 12—12, an intermediate clamping body or separator block 13, adapted to be interposed between the load and tail sides of the loop end of a guy strand or the like 14, and a lower clamping plate member 15 retained upon the side legs of the U-bolt by the nuts 12. The U-bolt is adapted to have tilting movement about a transverse axis intermediate the load and tail sides of the guy strand in response to longitudinal pull upon the guy wire and whereby the compressive clamping action of the bight of the U-bolt and the clamping plate upon the tail and load sides of the guy strand is increased as the load increases.

The intermediate clamping body or separator block 13 is in the form of an elongated block provided in its upper surface with a groove 16 for receiving the tail side of the guy strand, this groove being of generally V-shape transversely to accommodate both the minimum and maximum sized guy strands for which the clamp is designed, the base of the groove being concavely rounded to fit the minimum size strand and the sides of the groove providing a trough to fit strand sizes up to the maximum. Longitudinally the groove is provided intermediate its ends with a dip or depression beneath and substantially concentric to the bight of the U-bolt, and into which the guy strand will be pressed through the compressive clamping action of the U-bolt. In the underside of the clamping body there is provided a longitudinally extending straight groove 17, also of generally V-form transversely for receiving the load side of the guy wire. At each side of the clamping body there are provided projections 18—18 which define spaces centrally of its length within which the legs of the U-bolt are positioned for relative tilting movement, this movement taking place about a transverse axis, which in the normal operation of the clamp is substantially centrally between the projections and centrally between the clamping grooves 16 and 17.

The inner surfaces of the projections 18 are substantially straight between their upper and lower ends and diverge upwardly with respect to each other, their lower ends each forming a relatively sharp corner 19 with the lower end surface. These corners are substantially coincident to a horizontal plane substantially centrally between the clamping grooves 16 and 17, so that they are substantially in horizontal line with the approximate tilting axis of the U-bolt. The corners 19 are spaced from each other a distance slightly greater than the diameter of the side legs of the U-bolt, and thus substantially centralize the U-bolt in its vertical position, as shown in Fig. 1, when the nuts are tightened to apply compressive clamping force upon the guy wire. At the same time there is sufficient clearance at each side of the U-bolt to permit free tilting movement thereof which occurs as load is applied to the guy wire in the direction indicated by the arrows in Fig. 4. The divergent angle of the inner surfaces of the projections is determined with respect to the maximum position of tilt to which it is considered desirable to allow the U-bolt to move under extreme load conditions, the angle being such that in such maximum tilted position of the U-bolt, the U-bolt will lie in parallel engagement with the inner surface of one projection and will engage the corner 19 of the other projection. This extreme tilted position is also calculated so that the lower clamping plate 15 is held against movement beyond the end of the clamping body member. Transversely, the upwardly divergent surfaces of the projections 18 curve into the side surfaces of the clamping body between the projections, these side surfaces being upwardly convergent and slightly spaced from the side legs of the U-bolt in the clamped position so that there is no frictional interference with the tilting action thereof.

The upper ends of the projections are extended upwardly at each side of the groove 16 to a height calculated as being slightly above the horizontal diametric plane of the largest diameter guy strand which can be accommodated in the groove 16, the inner surfaces of the upwardly projecting ends providing upward continuations of the groove 16 which closely conform to the side surfaces of the guy wire. Thus, the guy wire is confined and supported against flattening contiguously at each side of the clamped portion of the guy strand beneath the bight of the U-

bolt, and therefore the clamped portion is effectually sustained against flattening. It is pointed out in this respect that the radius of the bight of the U-bolt is substantially greater than the diameter of the guy strand, and that the upper edges **20** of the side walls of the groove **16** between the projections are substantially below the horizontal diametric plane of the guy wire, in order to provide the necessary clearance for the clamping and tilting action of the U-bolt, so that, in the absence of the sustaining support provided by the upper ends of the projections, the relatively large radius of the U-bolt would allow substantial flattening of the clamped portion of the guy strand to take place.

The lower clamping plate member **15** is provided centrally of its upper side with a longitudinal wire receiving groove **21** of shallow V-shape in cross-section and disposed in complementary opposed relation to the lower groove **17** of the clamping body. The upper surface of the plate is inclined downwardly at each side of the groove **21**, as at **22—22**, and is provided with vertically extending holes **23—23**, through which the side legs of the U-bolt extend in loose relation, the diameter of these holes being sufficiently larger than the diameter of the side legs of the U-bolt to permit the latter to assume a tilted position, as shown in Fig. 3, while the lower clamping plate remains parallel to the lower side of the clamping body. Preferably the holes **23** are tapered, so that they converge downwardly to allow for the maximum tilting of the U-bolt with minimum longitudinal displacement of the clamping plate with respect to the U-bolt.

The lower side of the clamping plate is provided with convex cylindrical bearing surfaces **24—24** in surrounding relation to the lower ends of the holes **22** to provide for the firm engagement of the nuts **12** therewith in substantial line with the axis of the side legs of the U-bolt, the radius center of the cylindrical surfaces **24** being substantially co-incident to the approximate pivotal axis of the U-bolt. The nuts have their chamfered sides in engagement with the bearing surfaces for better tilting engagement therewith. The longitudinal dimension of the lower clamping plate is less than the longitudinal dimension of the clamping body member **13**, so that at any degree of tilt of the U-bolt the clamping groove of the lower clamping plate will remain in opposed relation to the clamping groove **17** of the clamping body throughout its length.

What is claimed is:

1. A clamp for guy wires, and the like, comprising a U-bolt formed of circular cross-section stock having a bight at its upper end and side legs threaded at their lower ends, a nut screwed upon each of said threaded ends, a clamping body member disposed between the legs of said U-bolt having at its upper side an upper guy strand receiving groove opposed to the bight of said U-bolt, and having at its lower side a lower guy strand receiving groove, a lower clamping plate engaged upon the legs of said U-bolt above said nuts and having at its upper side a guy strand receiving clamping groove opposed to said lower groove of said clamping body member, two transversely aligned pairs of projections, one pair on each side of said body member, each said pair having upwardly diverging longitudinally opposed surfaces defining between them a space within which a leg of said U-bolt is pivotally movable about a transverse axis to swing the bight of the U-bolt from a central position in one direction or the other toward said upper groove, the convergent ends of said surfaces being longitudinally spaced apart a distance slightly greater than the cross-sectional diameter of the leg of said U-bolt engaged therebetween, whereby said U-bolt is substantially centered thereby, and said projections having upper end portions extended upwardly to points above the base of said upper groove with their inner surfaces constituting upward extensions of a side of said upper groove, said extensions of the transversely aligned pairs of projections being spaced apart a distance approximately equal to the diameter of the maximum diameter of strand receivable in said groove and being of a height above the base of said upper groove at least equal to the radius dimension of said strand, whereby as said U-bolt is tilted in one direction or the other its bight moves toward the space between the transversely aligned projections at one side or the other of said U-bolt and said guy strand is pressed by the bight of the U-bolt between said projections and is transversely supported by said projections against flattening.

2. The invention as defined in claim 1, wherein the lower ends of said divergent surfaces form relatively sharp corners with the lower ends of said projections and are disposed substantially in the central horizontal plane of said body member.

KENNETH C. JENNE.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,233,366	Keator	July 17, 1917
1,373,800	Crosby	Apr. 5, 1921
1,584,848	Clowes	May 18, 1926
1,667,345	Cummins	Apr. 24, 1928
1,811,154	Reilly	June 23, 1931
1,905,967	Milne	Apr. 25, 1933
2,182,151	Hofmann	Dec. 5, 1939
2,327,307	Jenne	Aug. 17, 1943

FOREIGN PATENTS

Number	Country	Date
371,068	Italy	May 10, 1939