May 18, 1926. 1,584,848

S. A. CLOWES

CLAMP

Filed August 23, 1924

FIG. 1.

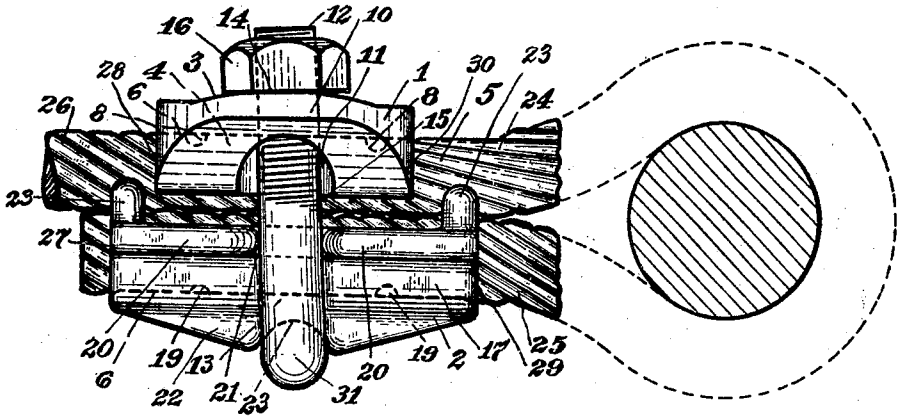


FIG. 2.

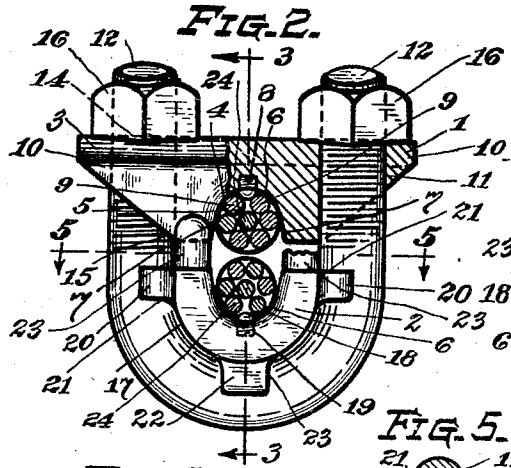


FIG. 3.

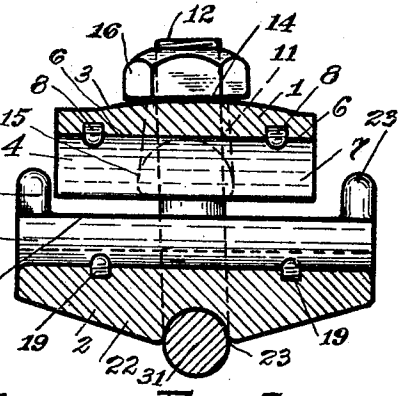


FIG. 4.

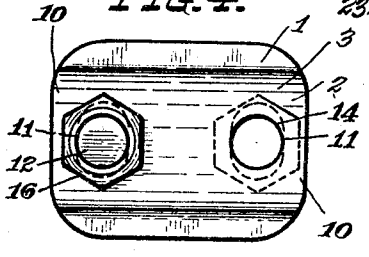


FIG. 5.

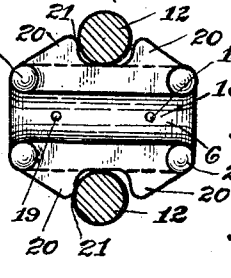


FIG. 6.

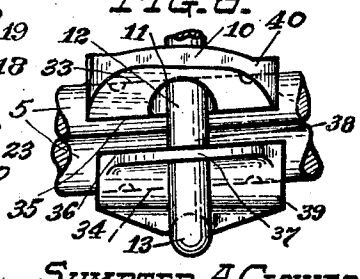
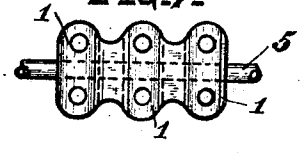


FIG. 7.



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Patented May 18, 1926. 1,584,848

UNITED STATES PATENT OFFICE.

SUMPTER A. CLOWES, OF GLENSHAW, PENNSYLVANIA.

CLAMP.

Application filed August 23, 1924. Serial No. 733,670.

The present invention relates to cable clamps which are of the type which exert a compressive action on a double layer of the cable, which is usually returned upon itself to form a loop as is displayed in the drawings of the present application. The advantageous features of the present device are set out more fully in the following specification, and one or more of said features are that said clamp is designed to permit a sliding action of the two halves of said clamp along the cable, and in this fashion obtain a stronger compressive grip on the same than is obtainable with the usual type of U-bolt compressive clamp commonly used. By means of bosses formed on the contact surfaces of the two sections composing the present clamp, a certain spreading action is obtainable on the strands composing the cable, and thereby a greater frictionable action is obtained by the inner side walls of the clamp sections as will be more fully explained hereinafter as the description proceeds. On the lower section of the clamp as shown in the drawings ears are provided through which the ends of the U-bolt pass, same forming a means to prevent separation of the U-bolt and lower section in handling said parts, which feature is found to be a very desirable one in the use of said clamp.

As illustrative of the additional power obtainable by the use of my type of clamp, it has been found under actual test that with a cable of selected size, that the present invention resisted a pull on said cable of fourteen thousand pounds comparable with a strain of some six thousand two hundred pounds with a clamp of the usual type, under similar test conditions.

In the accompanying drawings forming part of this specification I have illustrated a complete example of the clamp fashioned according to the best mode I have so far devised for the application of the principles of the invention, together with a modification of the device, which is found desirable in some instances.

In the drawings, Figure 1 shows a side elevation of the clamp as applied to use in a cable.

Figure 2, is an end elevational view, taken from the left of Figure 1, part of same being shown in section.

Figure 3 is a longitudinal section taken on line 3—3 of Figure 2.

Figure 4 is a plan view of the upper section of the clamp.

Figure 5 is a plan view of the lower section of the clamp taken on line 5—5 of Figure 2.

Figure 6 is a side elevation of a modification of the clamp shown in Figure 1.

Figure 7 is a diagrammatic plan view of a series or multiple type of the present clamp.

In the drawings the numeral 1 indicates the top section of my clamp, and 2 the lower section thereof as illustrated in Figures 1 to 5 inclusive. The top section 1 has among its salient features its rounded top 3, which is preferably "struck" to a radius as seen from the Figures 1 and 2. The purpose of said rounded top will be explained as the description proceeds herein. The section 1 has also a curved recess 4 adapted to receive the strands of a cable 5, said recess being preferably formed to a radius at its seat 6 of slightly smaller diameter than the diameter of the cable being used therein, while the side walls 7, 7 of the recess are slightly enlarged as shown and spread at the mouth of the recess, in order to more readily receive the cable 5 as is evident from Figure 2 of the drawing.

In the seat 6 of the recess 4 are found a number of bossed pins 8, 8, which may be either screw-threaded into the top section of the clamp 1, or formed integral therewith as desired. These pins or bosses are of proper diameter and shape as will enter between the strands 9, 9 of the cable 5, as illustrated in Figure 2 of the drawings, without cutting into the material of the strands. For this purpose it is found that the bosses 8, 8 should be rounded or semi-spherical at 9, in order not to cut or injure the cable itself when under load, since it is found that the clamps 1 and 2 tend to slide longitudinally past each other when the device is under load. The top section 1 has two outstanding side ears or projections 10, which are pierced by the apertures 11, 11, adapted to receive the ends 12, 12 of a U-bolt passing therethrough, for the purpose of holding the upper and lower sections together. These holes or apertures 11, 11 are substantially

the same in size as the diameter of the bolt 13 at the top of the section 1, at point 14, but they are flared longitudinally of the section 1, as shown in Figure 1, as said apertures approach the under or bottom sides of the projections 10, at points 15. The purpose of such flared ends of the bolt holes 11, and the rotundity of the top 3 of the section 1 is readily seen to be one of accommodation for the ends of the U-bolt 13, and nuts 16, 16, (see Figure 1).

The lower section 2, has the following features, to wit: a rounded body portion 17, a rounded complementary recess 18, which is similar to that in section 1 and provided with bosses 19, 19 for the purpose above described in connection with bosses 8, 8 of section 1. The recess 18, is practically an inverted duplicate of recess 4 above described. Section 2 has a pair of outstanding lugs or ears 20, 20 which are recessed at 21 of a proper size and shape as will accommodate the U-bolt ends 12, 12, as the upper and lower sections move somewhat past each other when the clamp is in service. The section 2 has also a downstanding projection or lug 22, which is recessed at 23 to receive the U-bolt 13 as shown clearly in the drawings. These projections 20 and 22 hold the U-bolt in position on the lower section 2 and it will be seen that the lower section also is provided with four preferably integral upstanding guide pins 23, 23, on the upper face, and near the ends of said section 2. The use of these last is readily seen to be to provide a means for holding the two portions of the cable in proper vertical alignment as seen in Figures 1 and 2 of the drawings, as it is found in practice that when the load is put on the cable 5 that there is a tendency of the two portions 24, 25 to slide past each other vertically, thus preventing the proper jamming action of the clamp on the parts of the cable.

The present clamp has several distinct features which are advantageous, and which are as follows: The greater holding power of the clamp in hand is due to its ability of gripping the cable with a greater frictional and compressional hold than can be obtained with the ordinary type of clamp in current use. The latter depends for its frictional and compressional hold on the binding power of the bolts used to hold its opposed sections together, said bolts usually being similar to the U-bolt shown in the present drawings. This being true, it is readily appreciated that if the nuts which correspond to nuts 16 of the drawings are not thoroughly tightened up on the U-bolt, that there is very little frictional hold of the clamp on the cable uses. This condition is avoided in the present invention by the use of two means to obviate it.

It is evident from the drawings that when pressure is brought to bear on the parts 24, 25 of cable 5 when they are in their respective recesses, that as the seats 6, 6 of the recesses 4 and 18 are of slightly smaller diameter than the cable, that some pressure must be used to fully seat the cable parts 24 and 25 in said recesses. This is accomplished by the tightening of the nuts 16, 16, and thereby a tight fit is secured by the clamp sections over the parts of the cable. It is also evident that as the strands of the cable contact the bosses 8 and 19, etc., that same are spread apart as can be observed in Figure 2 of the drawings clearly, and as a consequence the pressure being maintained on the cable, the cable will tend to enlarge laterally against the side walls of the recesses 4 and 18. This feature is important as it tends to increase the frictional hold of the clamp sections on the parts of the cable 5, and thereby increases the holding power of the clamp. It is important also that the bosses 8 and 19 are not made with a cutting edge, but rounded at the point where they engage the cable, as otherwise as the cable sways in service, the strands of the cable will be cut, and the cable cut through and weakened. As a second feature of the present invention, it will be noticed as before referred to that as a strain is placed on the end of the cable at say point 26, the tendency is found to be for the parts 24 and 25 to slide past each other as illustrated in Figure 1, in which the end 27 of section 2 is shown closer to the end 28 of section 1, than the end 29 is to end 30 as is readily understood. The effect of this action of the cable is to cause the lower section to approach the upper section of the clamp, the distance between the sections 1 and 2 being lessened, and a jamming action takes place between said sections thereby increasing the compressional hold of the clamp on the cable. For instance if point 31 be taken as a supposed center it is evident from Figure 1 of the drawings that the U-bolt 13 is thrown to the left, and as the nuts 16, 16 hold the clamp section 1, the bolt 13 tips to the left about point 31 as a center, and the top 3 of section 1 is rounded vertically in a longitudinal direction, so that the nuts 16, 16 can ride thereon without putting an unequal strain on the edge of the nuts. It will be noted that in order to enable the bosses 8 and 19, etc., to coact properly with the cable ends 24, 25, and the side walls of the recesses, that the parts 24, 25 of the cable must be held in proper vertical alignment, and it is for this latter purpose that the upstanding prongs or guide pins 23, 23, etc., are provided on the lower section 2 of the clamp.

As many of the clamps in common use have several U-bolts, I have shown in Fig-

ure 7 diagrammatically a multiple type of my clamp, and how same can be constructed using the clamp shown in Figures 1 and 2 as an element in its construction, and adding successive sections thereto as shown.

In the Figure 6 I have illustrated a modification of my clamp which will be found useful in some cases, in which 40 is the upper section and 39 is the lower section. The main difference between this clamp and the first described one lies in the beveled recesses 33, 34 and the beveled edges 35, 36. The ears 37 completely enclose the U-bolt ends 38 as shown, and the guide prongs which would correspond to 23, of Figure 1 are omitted. The guide pins 23 may however be used with this type of clamp if desired, as also the open type of ears or lugs 20, 20. The beveled recesses 33, 34 accommodate themselves somewhat to the direction of strain on the cable, and may be found useful in some instances. The ears 37 completely surrounding the U-bolt ends 12 are a convenience in handling, tending to hold the U-bolt and the lower section of the clamp 39 in close relation while the clamp is being adjusted on a cable.

I claim:—

1. In a clamp, a section having a recess formed therein adapted to receive a cable, a plurality of bossed pins in said recess, a plurality of upstanding guide pins formed on the upper face of the section, and a plurality of recessed projections on the outer surface of the section adapted to receive a U-bolt therein.

2. In a clamp, a section having a recess formed therein of smaller diameter than the diameter of the cable it is intended to receive, a transversely flared mouth on said recess, a plurality of upstanding guide pins formed on the upper face of the section adapted to accommodate a cable, and a plurality of bossed pins in the clamp recess.

3. In a clamp, a section having a recess formed therein of smaller diameter than the cable it is intended to receive, a transversely flared mouth on said recess, a plurality of bossed pins in the clamp recess, and a number of recessed projections on the outer surface of the section adapted to receive a U-bolt therein.

4. In a clamp, a lower section having a recess formed therein of smaller diameter than the cable it is intended to receive, a transversely flared mouth on said recess, a plurality of bossed pins in the clamp recess, and an upper section having a rounded top thereon, adapted to accommodate a holding nut in various positions and means engaging the holding nut for holding the said sections in operative relation to each other.

5. In a clamp, an upper and a lower section each having a recess formed therein of smaller diameter than the cable it is intended to receive, a transversely flared mouth on each recess, a plurality of bossed pins in each clamp recess, a rounded top adapted to accommodate a holding nut in various positions, formed on the upper section, a number of recessed projections on the outer surface of the lower section adapted to receive a U-bolt therein, and a U-bolt having a holding nut thereon for holding the said sections in operative relation to each other.

6. In a clamp, an upper and a lower section each having a longitudinally beveled recess formed therein of smaller diameter than the diameter of the cable it is intended to receive, a transversely flared mouth on each recess, a plurality of bossed pins in each clamp recess, a rounded top adapted to accommodate a holding nut in various positions, formed on the upper section, a number of recessed projections on the outer surface of the lower section adapted to receive a U-bolt therein, and a U-bolt with a holding nut thereon, for holding the said sections in operative relation to each other.

In testimony whereof I affix my signature.

SUMPTER A. CLOWES.