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CABLE STRAIGHTENING DEVICE

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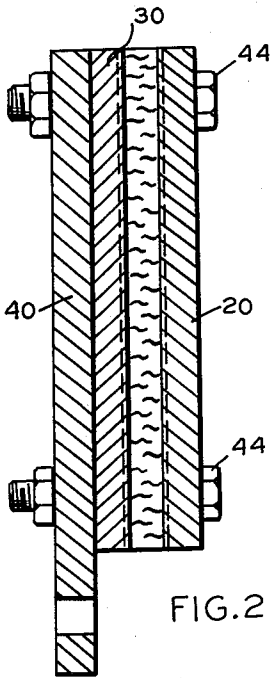


FIG. 2

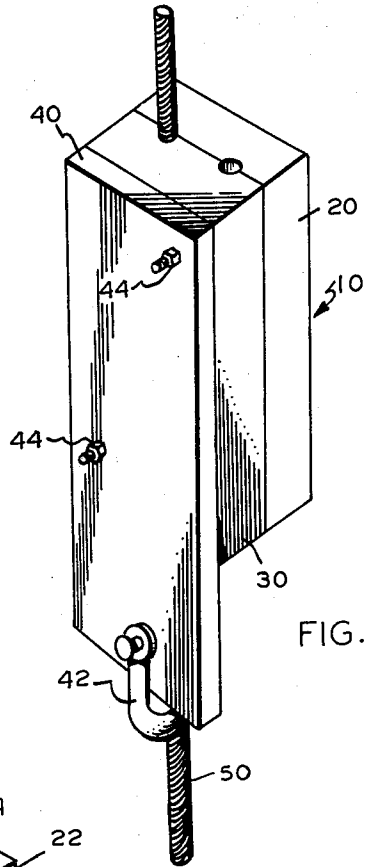


FIG. 1

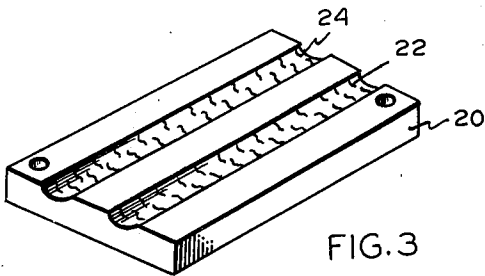


FIG. 3

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CABLE STRAIGHTENING DEVICE

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4 Claims. (Cl. 140—147)

This invention relates to a device for straightening cables and more particularly to a device for removing kinks from steel cable.

Steel cable is used extensively in construction work, for example, the lengthy cables seen on cranes and other power construction equipment. In steel erection work, short lengths of cable, known as chokers or slings, are passed around the heavy steel members and attached to the crane hook. This practice of hoisting heavy structural members frequently results in kinks being formed in the chokers. A cable with sharp kinks is very dangerous and can break on a lift of only a fraction of the rated capacity. Therefore it is important that kinks be removed from cables to insure a continuous steel erection operation. It is economically advisable to provide a means for removing the kinks at the place of use. The pair of eyes that must be woven or spliced at the ends of each choker raise the cost of the choker to a point where some salvage attempt must be undertaken. Moreover, it is to be noted that chokers are usually used in matched pairs, which means that a kink in one makes the pair unusable until repair can be effected.

Prior art methods of straightening all forms of cables, and particularly chokers, have involved returning the damaged members to a shop where tedious and time-consuming rainy day operations involving vices, sledge hammers, and wood blocks where many man hours are wasted in fruitless attempts to apply pressure to the apex of a kink, while attempting to keep the cable from rolling.

It is an object of this invention to overcome these and other disadvantages of the prior art.

It is another object of this invention to provide a cable-straightening device that will remove kinks from cables in a rapid fashion and at the place of use.

It is a still further object of this invention to provide a device for removing kinks from cables that makes use of the abundant sources of power that are available at the site of any steel erection operation.

These and other objects of this invention will become apparent upon consideration of the following description and the accompanying drawing, wherein:

FIGURE 1 is a perspective view of a preferred embodiment of the cable straightening device of this invention;

FIGURE 2 is a longitudinal cross-section taken along the center line of the preferred embodiment shown in FIGURE 1; and

FIGURE 3 is a perspective view of one of the pair of blocks employed in the preferred embodiment shown in FIGURE 1.

In general, the objects of this invention are attained by providing relative movement between the kinked cable and a device into which the lands and grooves of the cable are matched.

More particularly the objects of this invention are attained by a device comprising a pair of cast iron blocks provided with one or more grooves that are formed with the lands and grooves matched to the cable that is to be straightened. These blocks are clamped together about the cable on one side of the kink and are pulled past the kink, or the kink is pulled through the clamped blocks. By providing the blocks with the lands and grooves of the cable, a kink is much more readily removed from the cable because the straightening forces are concentrated on the separate braids and strands, rather than being spread over the whole diameter of the cable.

A preferred embodiment of this invention is shown in the drawing wherein cable straightening device 10 has a pair of matched blocks 20 and 30 preferably of cast iron that are provided with one or more grooves. FIGURE 3 shows the longitudinal grooves 22 and 24 of block 20 as being provided with lands and grooves to match the lands and grooves of the cable to be straightened. These lands and grooves constitute an essential feature of this invention and are necessary to the straightening operation. Although the theory of operation is not fully understood, it is believed that the lands and grooves in blocks 20 and 30 permit the straightening forces to be applied to individual braids or strands of the cable rather than the full diameter of the cable. Longitudinal grooves 22 and 24 are preferably provided in block 20 by positioning a section of cable of the size to be straightened in the mold in which the mating blocks 20 and 30 are to be cast. It has been found to be advisable to have the longitudinal grooves of different diameter to provide greater versatility by permitting the device of the invention to accommodate more than one cable size, and thereby further reduce the cost of straightening cable.

One of the advantages of the device of this invention is its small size that permits easy movement around steel erection sites to the place where the kinked cable and its power source, e.g., a crane, are located; rather than the old methods of moving cable to shops. However, the compact size of this invention permits ready movement between job and shop where the usual shop sources of steady pulling power (e.g., chain fall, coffin hoist, winch etc.) provide satisfactory results. Although it is to be understood that this invention is not limited to any size, it has been found extremely satisfactory to make the dual-grooved blocks 20 and 30 each 5½" x 3" x ¾" with one groove to accommodate a ½" cable and the other groove a ¾" cable. In a like manner, the invention is to be understood to be applicable to all sizes of cable and is not limited to the sizes recited in this example.

Blocks 20 and 30 are joined together in groove-matching relationship, and joined to backing member 40 by suitable means such as nuts and bolts 44. Backing member 40 is preferably of steel plate, and for purposes of illustrating this invention is shown as being 7½" x 3" x ¾" with one end flush with an end of the blocks 20 and 30, and the other end extending beyond the block to provide space for a shackle 42. The function of shackle 42 is to permit the attachment of the device of this invention to a suitable source of pulling power, such as a crane or bulldozer or the like which are readily available at any steel erection site. Backing member 40 is illustrated as extending beyond only one end of blocks 20 and 30; however, it should be understood to be within the scope of this invention to provide a like extension at both ends to permit reciprocal movement of the device 10 without requiring removal and reversal of the device from the cable.

Bolts 44 extend beyond blocks 20 and 30 and backing member 40 to permit the application of a mild heat source in the event that a particularly sharp kink resists the straightening action of the device 10. The preferred application of heat also makes use of equipment readily available at steel erection sites; namely electric welding equipment. One terminal of the welder is connected to a bolt 44 and the other terminal connected to the cable 50 beyond the kink.

A conventional spring loaded grease cup fitting may be applied to either or both of the blocks in such a manner as to dispense a cable lubricant and preservative into the grooves as the cable passes therethrough.

Many modifications and embodiments are possible within the concept of this invention which is intended to be limited only by the scope of the appended claims.

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What is claimed is:

1. A device for removing a kink from a cable by establishing relative movement between the device and the cable, said device comprising a pair of blocks adapted to be joined in surrounding relationship to the cable, said blocks being provided with a passageway of such size as to snugly pass the cable, said passageway having lands and grooves mated to the lands and grooves of the cable.

2. A device for straightening cables comprising a pair of matched blocks, each of said pair of blocks having a longitudinal groove that is provided with a surface adapted to match the lands and grooves of the cable to be straightened, said longitudinal grooves being so constructed that when arranged in face-to-face relationship a through passageway is provided to snugly pass said cable, means to secure said blocks in said face-to-face relationship, and means to permit the application of a force to produce relative motion between said pair of blocks and said cable.

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3. A device as defined in claim 2 wherein said blocks are joined to a backing member by said securing means, and said permitting means is on said backing member.

4. A device as defined in claim 2 wherein said securing means is constructed and arranged as a terminal for the application of heat, whereby removal of the kink is expedited.

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