

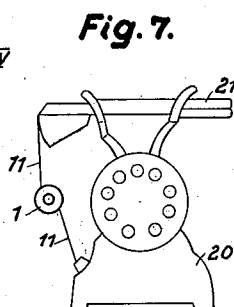
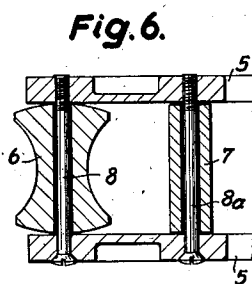
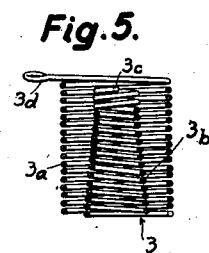
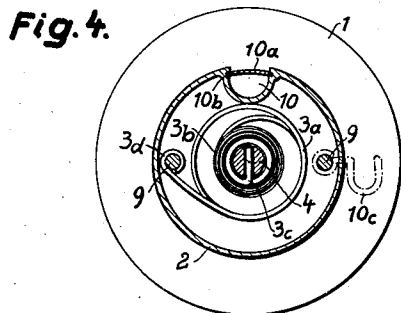
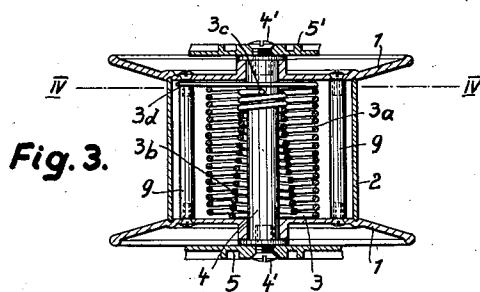
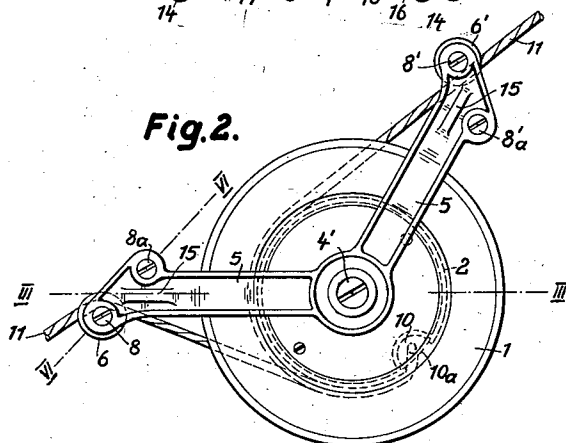
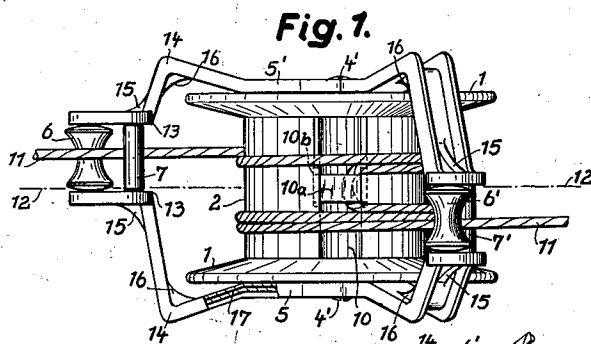
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TENSIONING DEVICE FOR FLEXIBLE MEMBERS

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TENSIONING DEVICE FOR FLEXIBLE MEMBERS

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4 Claims. (Cl. 242-109)

My invention relates to tensioning devices for flexible members, such as cables, or the cords connecting telephones, flat irons, lamps, and other electrical appliances, to a system. Such cords are subject to damage as they mostly hang down freely on account of their length and so get kinked or looped, and finally break. The cords are also very troublesome in the manipulation of the appliances to which they are connected, as they have a tendency to get entangled and must be disentangled before the appliance can be used.

It is an object of my invention to eliminate the difficulties involved by the use of such cords so as to prevent breaking and entangling, and other unfavorable occurrences.

To this end, in a tensioning device for flexible members according to my invention, I provide a shaft, means such as a frame in which the shaft is mounted, for supporting the shaft through the member which is to be tensioned, and on this shaft I arrange a rotary drum for winding the flexible member.

My novel device is so designed that it can be connected to the flexible member, or cord, without any alterations in the member, and without disconnecting the member. The device is fitted to any cord or the like by a few manipulations, without disconnecting one end of the cord, and so it may be fitted, for instance, to existing telephones in which the receiver is permanently connected to the apparatus.

In a preferred embodiment of my invention, the shaft on which the rotary drum is mounted, is carried by a frame equipped with guiding rollers for the flexible member and is supported on the member by means of the rollers.

In the accompanying drawing, a device embodying my invention is illustrated by way of example.

In the drawing

Fig. 1 is a plan view, and

Fig. 2 is an elevation of the device,

Fig. 3 is a section on the line III—III in Fig. 2,

Fig. 4 is a section on the line IV—IV in Fig. 3,

Fig. 5 is an axial section of a coiled spring by which the drum is connected to the shaft.

Fig. 6 is a section on the line VI—VI in Fig. 2, and

Fig. 7 illustrates the arrangement of my device on a telephone.

Referring now to the drawing, and first to Figs. 1 to 3, the drum comprises a hollow barrel 2, and a pair of side plates 1 at opposite ends of the barrel. The side plates 1 are held against

the ends of the barrel 2 by stays 9, Fig. 3, and crozes are formed in the side plates for locating the barrel. The side plates are equipped with central bosses for the reception of a shaft 4 which is held against rotation in the two members 5 and 5' of a frame, by screws 4'.

The drum is insulated, or, preferably, made of insulating material, such as compositions known by the trade names of bakelite, galalith, etc.

Housed within the barrel of the drum is a torsion spring 3 which, as best seen in Fig. 5, comprises an outer portion 3a, and an inner portion 3b which is arranged co-axially in the outer portion 3a. The overall size of the spring is reduced by the co-axial arrangement of its portions. The two portions are wound from a single wire but they might also be separate members.

One end of the spring 3 is at the upper end of its co-axial inner portion 3b, and is connected to the shaft 4 at 3c, Fig. 3. The other end 3d of the spring is at the upper end of its outer portion 3a, and is attached to one of the stays 9 of the drum. In this manner, the ends of the spring are anchored to the shaft 4 and, through the shaft, to the frame 5, and to the drum, respectively, and the spring serves for rotating the drum and for winding the flexible member or cord 11.

Any suitable means, for instance a hook 10c, as illustrated in Fig. 4, may be provided for securing the cord 11 to the drum. Preferably, however, a connection is provided which does not project outwardly from the barrel 2, like the hook 10a, because such a projecting member may interfere with the winding of the cord on the barrel. Preferably, the barrel has a recess or depression 10, as also shown in Fig. 4, and a slide 10a which is mounted in grooves 10b at the sides of the recess or depression 10, for partly closing the recess, so as to retain the cord in the recess.

The frame 5, 5' encloses the drum, as shown in Fig. 1, and has two arms at whose ends a grooved roller 6 and a plain roller 7, and a grooved roller 6' and a plain roller 7', respectively, are arranged to rotate about stays, 8, 8a and 8', 8a', respectively. The stays are threaded so that any one of the rollers may be removed after unscrewing its stay. One reach of the cord 11 is guided by the rollers 6 and 7, and the other reach by the rollers 6' and 7'. The individual pairs of rollers are staggered with respect to the central plane 12—12 of the drum, as shown in Fig. 1, in order to effect uniform winding of the individual reaches.

The frame 5, 5' is insulated or, preferably, made of insulating material, like the drum, so that short-circuiting is avoided if the insulation of the

cord 11 is defective. The frame members have a somewhat complicated configuration, with portions having bends or kinks. In order to make the frame members strong enough, notwithstanding their being of insulating material, strengthening ribs are provided at the sharper kinks, for instance at 13 and 14 on the frame member 5 where a rib 15 is formed on the outer side of the frame member, and a rib 16 on its inner side, respectively. Similar ribs are provided at corresponding points of the frame member 5', and elsewhere, as may be required. Portions which are bent less abruptly, for instance the portion which extends from the kink 14 of frame member 5' to the shaft 4, may be re-inforced by insertions 17 of fibrous material, to prevent breaking of the frame members when dropped.

In operation, the stays 8' of the roller 6', and 8a of the roller 7, are unscrewed, and the rollers 7 and 6' are removed. The cord 11 is then doubled up to form a loop. Before this is done, the drum must obviously be rotated several times in order to put tension on the spring 3, in conformity with the length of the cord 11. After the cord has been looped, and the loop placed in the recess or depression 10, the slide 10a is pushed forward to retain the loop which is now locked in its position. The drum is now released and rotated by the reaction of the spring 3a, winding the two reaches of the cord on the drum from opposite sides. The cord 11 is placed on the rollers 6 and 7', and the rollers 7 and 6' are re-inserted, their stays 8a and 8' being screwed into the frame member 5'. The device is now supported by the cord 11.

Fig. 7 illustrates the arrangement of my device on a telephone. Only the drum is illustrated in Fig. 7. The cord 11 is attached to the casing 20 of the telephone at one end, and to its receiver 21 at the other end. When the receiver 21 is raised, the cord 11 is unwound from the drum, and tension is put on the spring 3. When the receiver is returned into its initial position, the spring 3 turns the drum in opposite direction, winding the cord 11 uniformly on the drum. The cord is always under tension and the forma-

tion of loops, and other undesirable events, are prevented.

I claim:

1. In a tensioning device for flexible members, a shaft, means for supporting said shaft on the member to be tensioned, a rotary drum on said shaft for winding the member, said drum having a recess for the reception of a portion of member, and a slide on said drum which spans said recess and is mounted for displacement parallel to the axis of said drum, for retaining the member in the recess.

2. A tensioning device for electrical conducting cords and the like, including a shaft supported by the cord, a drum adapted for winding the cord rotatable on the shaft including a hollow cylindrical body, means for detachably connecting the cord to the body of the drum consisting of a longitudinally extending recess depressed in the periphery of the body of the drum, and an arcuate member partially closing the recess and slidably engaged with the walls thereof.

3. A tensioning device for electrical conducting cords and the like, including a shaft supported by the cord, a drum adapted for winding the cord rotatable on the shaft, means for detachably connecting the cord to the drum, and a supporting frame associated with the drum and including a series of bends of varying sizes, reinforcements at the bends, the reinforcements at the larger bends being in the form of strengthening ribs while the reinforcements at the smaller bends consist of fibers embedded in the material of which the frame is formed.

4. A tensioning device for electrical conducting cords and the like including a shaft supported by the cord, a drum adapted for winding the cord rotatable on the shaft, means for detachably connecting the cord to the drum, and a single torsion spring formed from a single piece of material and consisting of two parts in coaxial relation to each other, both parts being arranged between the drum and the shaft and also in coaxial relation therewith.

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