Oct. 11, 1932. E. E. KELLEMS 1,881,659

CABLE GRIP FORM

Filed March 9, 1929 3 Sheets-Sheet 1

Fig. 1.

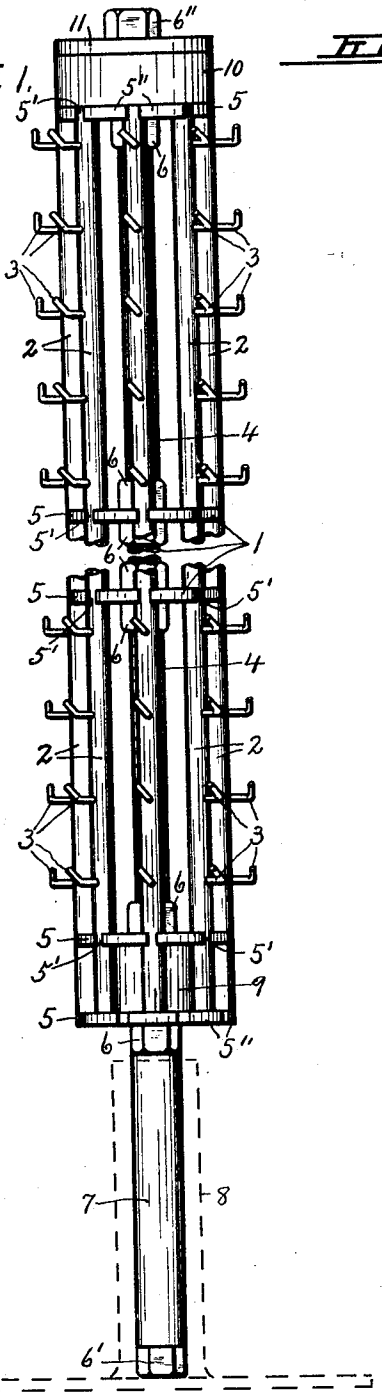
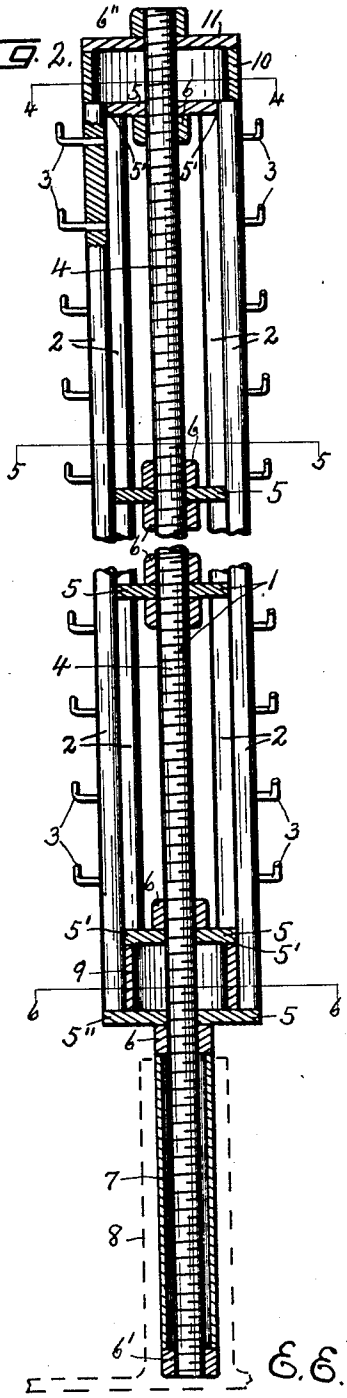


Fig. 2.



WITNESS

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Oct. 11, 1932. E. E. KELLEMS 1,881,659

CABLE GRIP FORM

Filed March 9, 1929 3 Sheets-Sheet 2

Fig. 4.

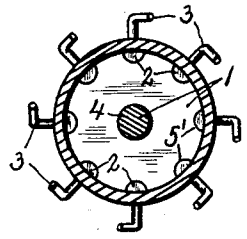


Fig. 5.

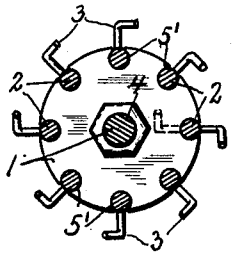


Fig. 6

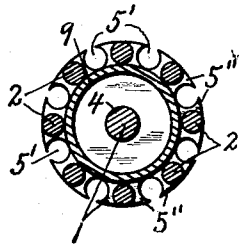
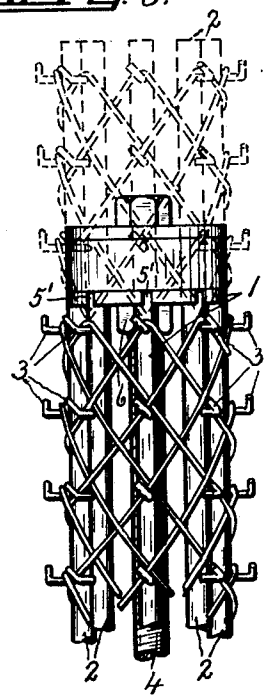


Fig. 3.



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CABLE GRIP FORM

Filed March 9, 1929 3 Sheets-Sheet 3

Fig. 7.

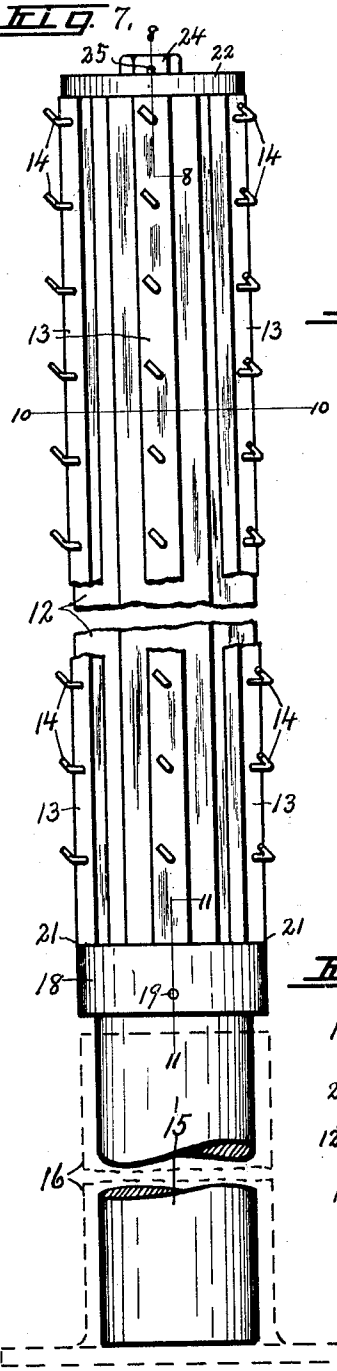


Fig. 8.

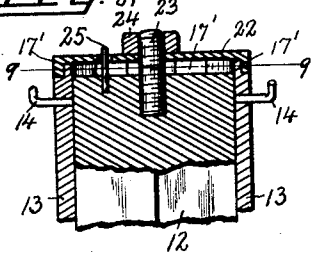


Fig. 9.

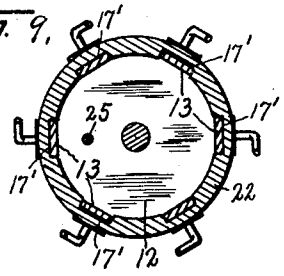


Fig. 10.

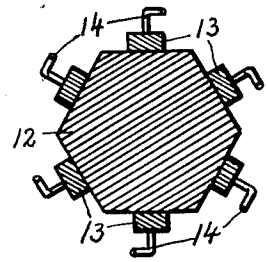


Fig. 11.

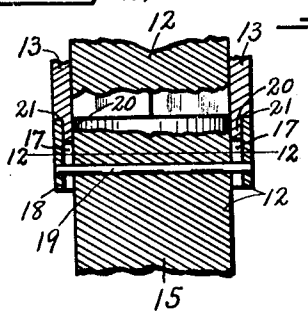
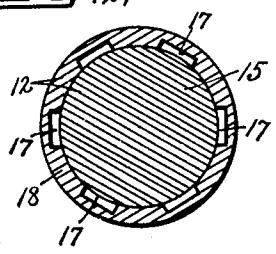


Fig. 12.



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Patented Oct. 11, 1932

1,881,659

UNITED STATES PATENT OFFICE

EDGAR EUGENE KELLEMS, OF LONG ISLAND CITY, NEW YORK

CABLE GRIP FORM

Application filed March 9, 1929. Serial No. 345,682.

This invention relates to a cable grip form adapted to be used in the manufacture of expansible and contractile woven or braided wire grips of the class set forth in my Patent No. 1,670,543, May 22, 1928, in which the strands at the cable receiving end are continuous or returned, without break, toward the opposite ends of the cable but obviously the same form may be used in the manufacture of other types of cable grips.

The wires or strands used in the manufacture of grips of this character are usually woven or braided by hand around a suitable mandrel having a plurality of rows of pins arranged spirally around and projecting from the periphery of the mandrel in uniformly spaced relation longitudinally of the mandrel so as to form an open mesh tubular fabric capable of contracting when extended longitudinally and of expanding when contracted longitudinally.

Under these conditions it has been necessary to remove the relatively large number of pins in order to permit the stripping of the finished tubular fabric from the mandrel thereby necessitating the expenditure of considerable time and labor in the act of removing and replacing the pins.

The main object of the present invention is to obviate these difficulties by providing a mandrel with removable bars or rods arranged in uniformly spaced relation circumferentially around the axis of the mandrel and provided with the requisite number of pins permanently secured thereto so that when the weaving or braiding operation is completed the bars with the tubular fabric thereon may be removed endwise from the mandrel and then removing the bars from the interior of the woven wire fabric for replacement on the mandrel in repeating the weaving operation of other tubular grips.

In other words, I have sought to materially reduce the time and labor required for the weaving or braiding of the tubular grips and thereby to greatly increase the output of grips for a predetermined time with a corresponding reduction in the cost of manufacture.

Other objects and uses relating to specific parts of the invention will be brought out in the following description.

In the drawings:

Figure 1 is an elevation, partly broken away, of one form of my invention, partly broken away, in which the strand-engaging pins are mounted upon round bars held in place by a plurality of axially spaced disks on a central supporting shaft.

Figure 2 is a longitudinal vertical sectional view of the same device, partly broken away.

Figure 3 is an elevation of the upper portion of the same device with the strands woven thereon, the dotted lines indicating the removable rods with the tubular fabric thereon as partly removed by upward displacement from the supporting disks and shaft.

Figures 4, 5 and 6 are horizontal sectional views taken respectively in the planes of lines 4—4, 5—5 and 6—6, Figure 2.

Figure 7 is an elevation of a modified form of my invention, partly broken away, in which the pin supporting bars or rods are held in place against the flat sides of a hexagonal frame through the medium of end caps or collars.

Figure 8 is a sectional view taken on line 8—8, Figure 7.

Figures 9 and 10 are horizontal sectional views taken respectively in the plane of line 9—9, Figure 8, and 10—10, Figure 7.

Figure 11 is a detail sectional view taken in the plane of line 11—11, Figure 7.

Figure 12 is a horizontal sectional view taken in the plane of line 12—12, Figure 11.

The construction shown in Figures 1 to 6 inclusive comprises an elongated frame or mandrel 1 and a plurality of, in this instance eight, lengthwise bars or rods 2 removably mounted thereon in parallel spaced relation uniform distances apart circumferentially about the axis of the frame, each rod or bar being provided with a series of relatively fixed lugs or shoulders 3 in uniformly spaced relation lengthwise thereof to form gages for directing the weaving or braiding of the strands spirally around the mandrel and

thereby determining the size of the mesh of the tubular fabric woven on the mandrel.

Suitable means is also provided for holding the rods 2 on the frame 1 against accidental endwise, circumferential and radial displacement immediately preceding and during the weaving or braiding operation.

That is, the supporting frame or mandrel for the bars or rods 2 comprises a central lengthwise shaft 4 carrying a series of axially spaced coaxial circular disks 5 of similar construction, each disk being provided with a series of openings 5′ in uniformly spaced relation circumferentially about the axis of the shaft and preferably opening through the periphery thereof for receiving the corresponding rods or bars 2.

As illustrated, the shaft 4 is threaded throughout its length and is adapted to be engaged by a plurality of nuts 6 which are arranged to hold their respective disks 5 in operative position, as shown more clearly in Figure 2.

The shaft 4 is extended beyond the lower and upper end disks 5 and has its lower end in a spacing sleeve 7 which is clamped between the lowermost nut 6 and an additional nut 6′ engaging the extreme lower end of the shaft.

The sleeve 7 serves as a protecting medium for the adjacent threaded portion of the shaft 4 and is adapted to be inserted into a socketed supporting base 8 shown by dotted lines in Figures 1 and 2. This base 8 is adapted to rest upon the floor and may be moved from place to place with the form thereon to suit the convenience of the operator.

As previously intimated the disks 5 are similar and interchangeable and when placed in operative position upon the shaft 4 constitute a mandrel having a series of vertical slots 5′ in which the rods or bars 2 are movable.

It will be observed, however, that the lower disk 5 is adjusted circumferentially to register the portions thereof between the slots with the lower ends of the bars or rods 2 and thereby to provide abutments 5″ upon which the lower ends of the rods 2 are adapted to rest and which serve as a means for holding the rods against downward displacement.

The remaining disks 5 are adjusted to bring their respective slots 5′ into vertical alinement for receiving the rods 2 and retaining them in uniformly spaced parallel relation. These slots or openings 5′ are open at the peripheries of their respective disks but are of less circumferential width at said peripheries than the diameters of the rods to hold the latter against radial displacement.

As previously stated, the disks 5 are held in operative position by the nuts 6 which are adjustable along and upon the shaft 4 to permit corresponding adustment of the disks as may be required in the manufacture of cable grips of different lengths.

The two lowermost disks 5 are held in axially spaced relation by means of a sleeve 9 surrounding the shaft 4 and firmly clamped between said disks by the adjacent nuts 6.

The uppermost disk 5 is arranged so that its upper surface is substantially coincident with the upper ends of the rods 2 and is adapted to support a superposed sleeve 10 which is held in place by a cap disk 11 and nut 6″, said sleeve 10 being vertically alined with the upper ends of the rods 2 to hold the latter against upward displacement when the device is adjusted for use, Figure 2.

The lugs 3 are preferably hook-shaped with their outer ends projecting upwardly to hold the strands against accidental displacement therefrom during the weaving or braiding operation although it is to be understood that during this latter operation the strands will be woven tightly against the outer surfaces of the several rods 2, Figure 3.

When the parts of the form shown in Figures 1 to 6 inclusive are assembled in the manner illustrated, the wire strands are bent intermediate their ends and hooked upon the uppermost set of hooks or lugs 3 after which the remaining portions of the strands are woven or braided around the mandrel in such manner that the upper ends of each pair of strands will be integrally united to form continuous loops of the character set forth in my patent previously referred to.

When the cable grip is finished the lower ends if not of the same length may be cut to about the same length and adjacent portions of the separate strands temporarily twisted together to hold the woven fabric against unraveling.

When the woven or braided grip is completed the uppermost nut 6″, cap 11 and sleeve 10 may be removed by hand thus permitting all the bars or rods 2 with the woven or braided grip thereon to be removed from the mandrel by upward displacement in the manner indicated by dotted lines in Figure 3 thus permitting the inward collapse of the rods and the removal thereof from the interior of the woven grip for reuse in the manufacture of other grips.

When preparing to weave or braid one of the grips the rods 2 will be inserted from the top downwardly through their registering slots 5′ in the disks 5 until their lower ends rest upon the abutments 5″ of the lowermost disk.

The sleeve 10, disk 11 and nut 6′ are then placed in operative position to hold the rods 2 against upward displacement whereupon the weaving operation of the grip may be performed in the manner described.

The construction shown in Figures 7 to 12 inclusive comprises a vertically elongated multi-sided or hexagonal frame or mandrel 12 and a plurality of, in this instance six, upright rods or bars 13 applied to the several

sides of the frame midway between the angles thereof as shown more clearly in Figure 10, each rod or bar being provided with a series of hook-shaped lugs 14 in uniformly spaced relation longitudinally as shown in Figure 7, to serve the same purposes as the lugs 3 of the construction shown in Figures 1 to 6 inclusive.

The frame or mandrel 12 is provided with a downwardly projecting coaxial extension 15 which is preferably cylindrical in cross section and adapted to be supported in a socketed supporting base 16 as shown by dotted lines in Figure 7.

The frame 12 is provided with a series of vertical slots 17 and 17′ arranged in uniformly spaced relation circumferentially thereof for receiving portions of the upright bars or rods 13 to hold the latter in uniformly spaced relation circumferentially when adjusted for use and also to support said rods against relative vertical movement relatively to the frame 16.

As illustrated, the slots 17 are formed in the inner periphery of an annular sleeve 18 which is secured by means of a pin 19 to the cylindrical portion 16 of the frame adjacent the hexagonal portion of said frame, as shown in Figure 11.

The lower ends of the rods or bars 13 are reduced in radial depth at 20 to approximately the cross sectional form of their respective slots 17 in which they are inserted, the reduction in radial depth of the bars forming shoulders 21 which rest upon the upper edge of the sleeve 20, Figure 11.

It is now evident that the bars 13 are held against downward displacement and also against circumferential or radial displacement by the collar 20.

These rods or bars 13 are held against upward displacement by means of a cap disk 22 in which the slots 17′ are formed to receive the reduced upper ends of the bars and thereby not only hold the bars against upward displacement but also to assist in holding them against circumferential and radial displacement.

The cap 22 is detachably held in operative position by means of a screw 23 and a nut 24, the screw 23 being secured to the upper end of the frame 12 coaxial therewith and extended through a registering opening in the cap to be engaged by the nut 24 which, in turn, engages the upper face of the cap.

This cap 22 is held against accidental turning movement by means of a pin 25 which is secured to the upper end of the frame 12 at one side of the screw 23 to project through a registering opening in the cap so that when the cap is placed in operative position upon the frame its slots or grooves 17′ will be in vertical alinement with the corresponding slots or grooves 17 in the lower collar 18.

It is now clear that when the bars 13 are adjusted for use they will be held in operative position at the bottom and at the top by the members 18 and 22 thus permitting the weaving or braiding of the grip around the outer faces of the bars 13 and lugs 14 in the manner described in connection with the construction shown in Figures 1 to 6 inclusive.

When the grip is completed on this modified form the nut 24 and cap 22 may be removed by hand by upward displacement thus permitting the several bars 13 with the woven grip thereon to be displaced upwardly by hand from the collar 18 until entirely removed from the top of the frame 12 whereupon the bars 13 will be collapsed inwardly to free them from the previously woven grip and to permit them to be reused in the manufacture of other grips.

I claim:

1. A form for making expansible and contractile woven wire cable grips thereon, comprising a mandrel, and supporting bars upon which the cable grip is woven arranged around the axis of the mandrel during the weaving operation and displaceable endwise from the mandrel with the woven grip thereon, said bars being collapsible inwardly from the woven grip when removed from the mandrel.

2. A form upon which expansible and contractile cable grips are adapted to be woven, comprising a mandrel having opposite end heads relatively adjustable axially thereon, and a series of lengthwise bars arranged about the axis of the mandrel with their opposite ends engaged with the corresponding heads, said heads having means for holding the bars against radial displacement from the mandrel when adjusted for use.

3. A form upon which expansible and contractile cable grips are adapted to be woven, comprising a mandrel having opposite end heads relatively adjustable axially thereon, one of the heads having a series of sockets arranged in uniformly spaced relation about its axis, and a series of lengthwise bars arranged about said axis and having their ends adjacent the socketed head seated in said sockets and their other ends seated against the adjacent head.

4. A form upon which expansible and contractile cable grips are adapted to be woven, comprising a mandrel having a plurality of axially spaced disks provided with openings therethrough, said openings being arranged in uniformly spaced relation about the axis of the mandrel, and a plurality of lengthwise bars arranged in uniformly spaced relation about said axis and extended through the openings in the disks, said bars being provided with outwardly projecting hooks arranged spirally around said axis for receiving the strands of the grip.

5. A form upon which expansible and con-

tractile cable grips are adapted to be woven, comprising a mandrel having a plurality of axially spaced disks provided with openings therethrough, said openings being arranged in uniformly spaced relation about the axis of the mandrel, and a plurality of lengthwise bars arranged in uniformly spaced relation about said axis and extended through the openings in the disks, and provided with outwardly projecting hooks, said bars being slidable endwise in their respective openings in the disks to permit their endwise displacement from the mandrel with the woven grip thereon.

6. A form upon which expansible and contractile cable grips are adapted to be woven, comprising a mandrel having opposite end members relatively movable axially thereon, and a series of lengthwise bars arranged about the axis of the mandrel with their opposite ends engaged with the corresponding members, said members having means for holding the bars against radial displacement from the mandrel when assembled for use.

In witness whereof I have hereunto set my hand this 4th day of March, 1929.

EDGAR EUGENE KELLEMS.