Aug. 10, 1965 L. E. LINDSEY 3,199,840

CONVERTIBLE STRINGING BLOCK ASSEMBLY

Filed June 25, 1963 2 Sheets-Sheet 1

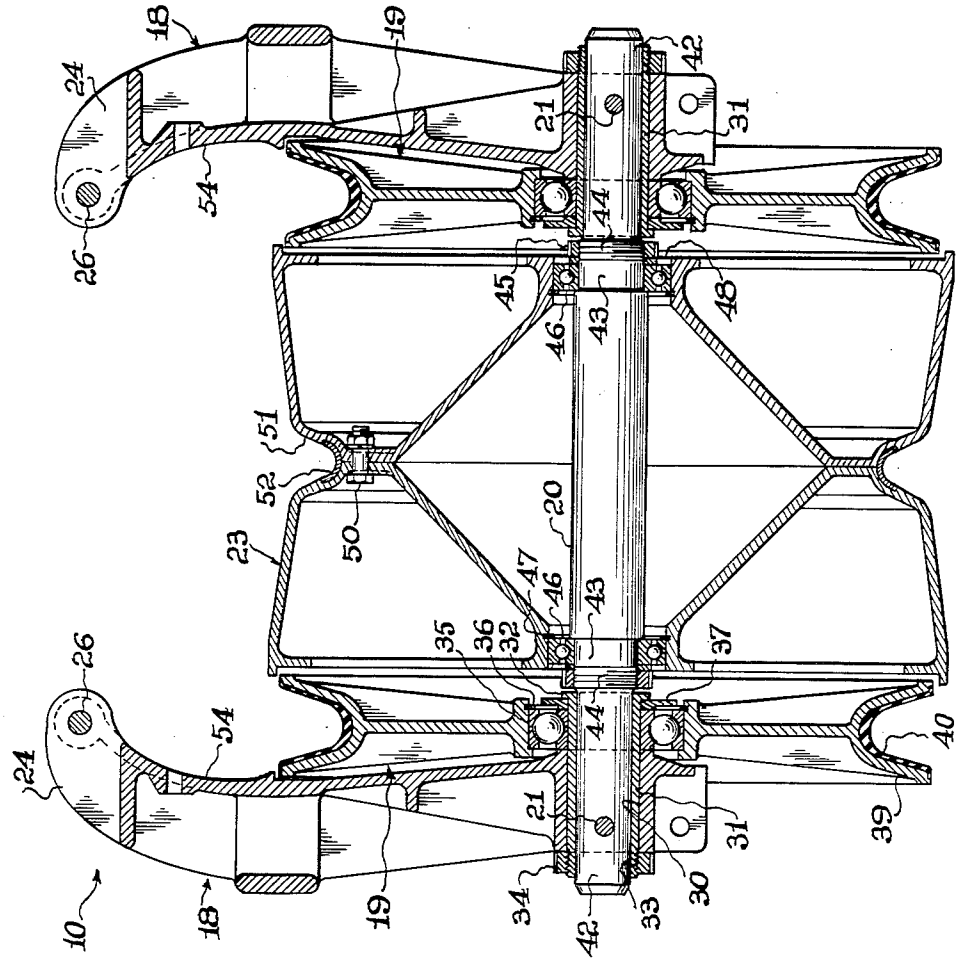

FIG. 3

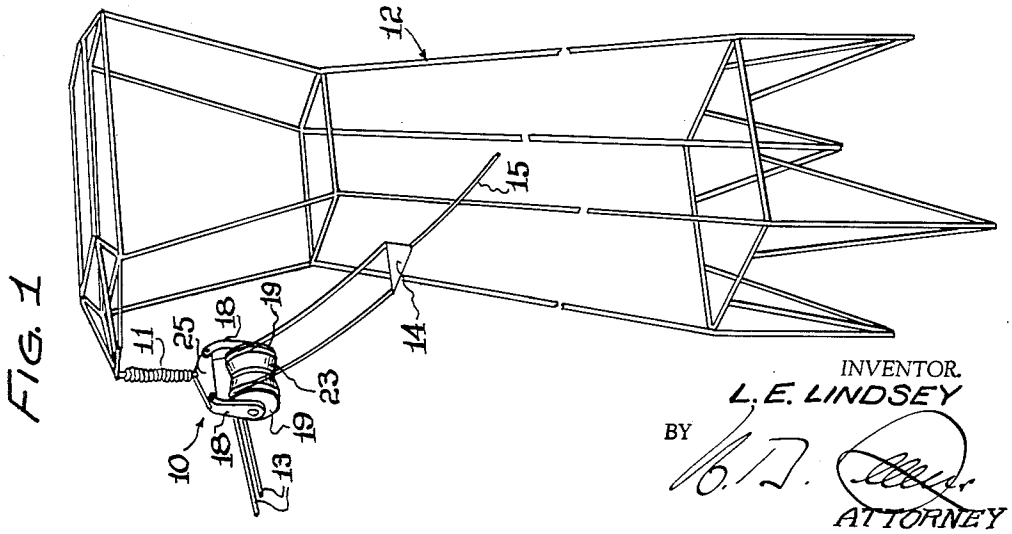

FIG. 1

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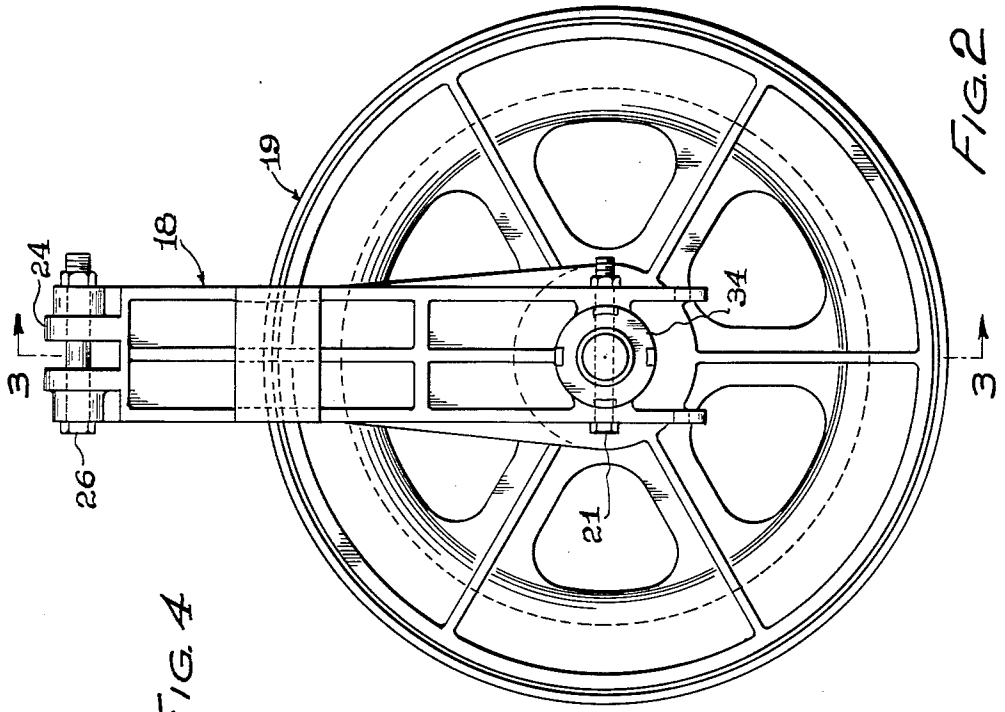
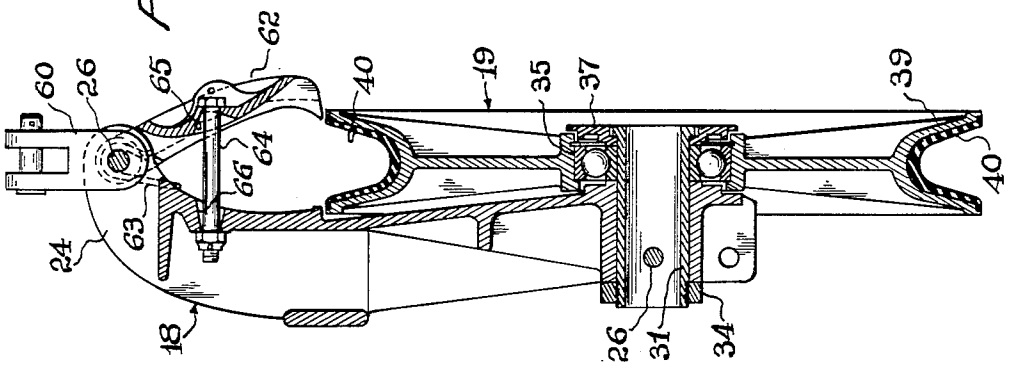


FIG. 2

FIG. 4



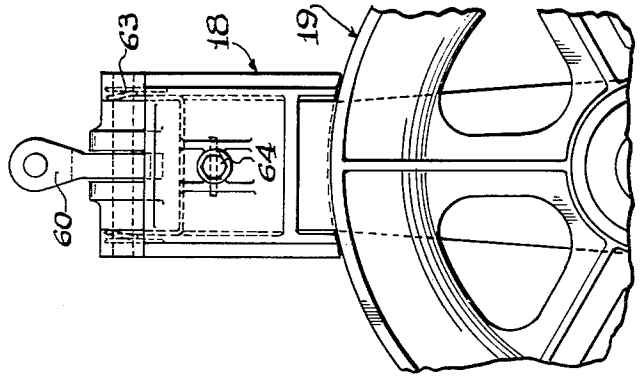


FIG. 5

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CONVERTIBLE STRINGING BLOCK ASSEMBLY

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8 Claims. (Cl. 254—192)

This invention relates to devices for facilitating stringing of conductors or overland transmission lines and the like, and more particularly to a unique and versatile stringing block assembly readily and easily convertible for use to string either single or multiple conductors at the user's option.

When initially constructing or later servicing overland power lines, it is highly advantageous to string the conductors between the towers by hauling the conductor through pulley assemblies temporarily supported by the insulators. Once the conductor has been pulled into position it is transferred to clamping devices carried by the insulator and the pulley assembly is removed.

During recent years it has become desirable and increasingly common to employ multiple conductors in closely spaced relation supported in a bundling clamp attached to a common insulator. This arrangement of power conductors offers numerous advantages including greatly increased power transmitting efficiency. However, the use of multiple conductors presents new problems as respects the efficient stringing and servicing of the conductors. There have been prior proposals for pulley assemblies capable of use in simultaneously stringing multiple conductors but such assemblies are subject to numerous disadvantages including the very serious objection that they are excessively bulky, costly and heavy and are incapable of use to string single conductors. This necessitates power line operators to possess supplies of both types of stringing block assemblies.

By the present invention there is provided a unique and improved convertible stringing block assembly equally suitable for use in stringing single and multiple conductors. The construction is readily convertible to either mode of use with the result that it is necessary to employ but a single sheave and supporting bracket when it is desired to string a single conductor. At other times the components are quickly securable together for use in stringing multiple conductors.

The invention assembly includes a pair of identical single sheave units usable by themselves when stringing single conductors. When needed for multiple stringing operations, a pair of the single sheave units are joined together by a common shaft supporting an intervening idler roller. A spreader bracket is then connected between the upper ends of the two single units and suspended from the top of each tower of the power line.

Accordingly, it is a primary object of the present invention to provide a unique convertible stringing assembly for use in installing either single or multiple power transmitting cables between the towers of a transmission line.

Another object of the invention is the provision of a simple, lightweight, rugged stringing block assembly readily convertible for use in stringing both single and multiple conductors.

Another object of the invention is the provision of a stringing block assembly comprising a pair of single sheave pulley block assemblies adapted to be rigidly connected together by an intervening shaft and idler pulley assembly and supportable from a power line tower by a common suspension bracket.

Another object of the invention is the provision of an improved stringing block assembly having a supporting bracket restricted to one side thereof and including means for detachably supporting a keeper member.

These and other more specific objects will appear upon reading the following specification and claims and upon considering in connection therewith the attached drawings to which they relate.

Referring now to the drawings in which a preferred embodiment of the invention is illustrated—

FIGURE 1 is a perspective view of a typical power line tower with the invention stringing block assembly in use while installing multiple conductors;

FIGURE 2 is an end elevational view of the stringing block assembly shown in FIGURE 1;

FIGURE 3 is a cross-sectional view taken along line 3—3 on FIGURE 2;

FIGURE 4 is a cross-sectional view through one one of the single conductor stringing block subassemblies in readiness for use in stringing a single conductor; and

FIGURE 5 is a fragmentary face view of FIGURE 4 as viewed from the right-hand side thereof.

Referring more particularly to FIGURE 1, there is shown an illustrative embodiment of a convertible stringing block assembly, designated generally **10**, supported from the lower end of a typical insulator **11** suspended at one side of a power line tower **12**. Shown in the process of being installed in readiness for atttachment to insulator **11** are a pair of identical cables **13, 13** attached at their forward ends to a suitable running board fixture or pulling rigging **14**. Connected to the leading end of this running board is a hauling line **15**. As will be observed from FIGURE 1, running board fitting **14** and haul line **15** are designed to pass over the several sheaves and idler roller and between the opposite side frame members of stringing block assembly **10** as will be better understood from the detailed description of the assembly which follows.

The constructional details of stringing block assembly **10** are shown in FIGURE 3 and include a pair of identical single sheave units each consisting of side frames **18** and attached sheave **19**. As shown in FIGURE 3, these units are held detachably assembled in axially spaced relation by a through shaft **20** detachably assembled and a through bolt **21** (FIGURES 2 and 3). Rotatably supported on the midportion of shaft **20** is a broad-faced idler pulley **23**.

The bifurcated upper ends **24** of main frames **18** are attached by bolts **26** to a spreader and suspension bar **25** (FIGURE 1) provided with an opening at its center for attachment to the lower end of insulator **11**. Main frame **18** may be of any suitable construction and is provided at its lower end with a through bore **30** in which is mounted a suitable sleeve **31** having a flange **32** at one end and threads **33** at the other mating with a keeper nut **34**. Sheave pulley **19** is rotatably supported on sleeve **31** by way of an antifriction bearing assembly **35** held assembled to sheave **19** by a snap ring keeper **36**. A guard ring **37** lies against the outer end face of bearing assembly **35** to exclude dirt and foreign matter and to aid in retaining lubricant grease in the bearing.

The rim of sheave **19** is deeply grooved and provided with flaring side walls **39** to the interior of which may be bonded an electrically conductive liner of conventional construction and effective in preventing abrasion and damage to the cable while conducting static charges therefrom to the sheave and the string blocking assembly generally. Liner **40** may be formed of conductive rubber or neoprene and is bonded or vulcanized within the sheave groove in a manner well known to those skilled in this art.

It will be observed from FIGURE 3 that the ends of shaft **20** are of reduced diameter readily receivable within sleeves **31, 31** to which they are held assembled by through bolts **21, 21**. The larger diameter midportion of shaft **20** is provided with intermediate diameter shoul-

dered portions 43 threaded at 44 to receive a retainer nut 45 effective to hold the idler roller 23 in assembled position. The opposite ends of this idler are journaled on antifriction bearing units 46 held in place in flanged cores of the idler by split ring retainer rings 47. The exterior faces of bearing assemblies 46 include a guard ring 48 similar in structure and function to guard ring 37.

Idler roller 23, as here shown, is formed in two annular rings held in abutting assembled position by bolts 50, only one of which is shown. A groove 51 positioned in the midportion of the idler roller preferably includes an abrasion-resistant liner 22, as, for example, one of heat treated steel. This groove with its liner seats the hauling cable 15 attached to the running board assembly 14. It can also seat a third conductor if one is being used. The running board is so dimensioned transversely of the direction of pull as to pass easily between the inner surfaces 54 of main frames 18, 18.

The operation and mode of utilizing stringing block assembly 10 to install multiple cables 13, 13 along a power line and in position for clamping to the lower ends of insulators 11 will be readily apparent from the foregoing detailed description. A separate stringing block assembly is supported from each insulator of a power line to which two or more power lines are to be connected. After being installed in the manner illustrated in FIGURE 1, a light-duty line is usually threaded over the tops of each of idler rollers 23. This line is then attached to the leading end of a heavy-duty hauling line 15 and this is likewise threaded through the successive idler rollers. The trailing end of the hauling cable is attached to the center of running board 14 having cables 13, 13 to be installed attached to its rear in any suitable secure manner. The hauling line is then attached to a winch or other power source and advanced along the power line to haul the cables into their installed position. The running board easily passes over the tops of the two sheaves and the intervening idler roller as it advances past first one and then another of the stringing block assemblies.

After the cables have been hauled into position suitable rigging, not shown and not germane to this invention, is employed in a conventional manner to transfer the cables to clamps attachable to the insulator as the spread bar 25 is removed and the stringing block is lowered to the ground.

Should the user have need for installing but a single power cable between the insulators of a power line, he need but remove the supporting spreaded bar 25 by detaching bolts 26 and remove bolts 21 from the ends of shaft 20 permitting the latter to be withdrawn from the single pulley assembly. A simple mounting clevis 60 is then assembled to the upper ends 24 of the main frame using bolts 26. This same bolt is also employed to hold a pivoting guard member 62 in its normal operative position shown in FIGURE 4. The guard member 62 pivots freely about bolt 26 and is normally biased counterclockwise, as shown in FIGURE 4, by means of a torsion spring 63 encircling bolt 26. One end of this spring bears against main body 18 and the other end against member 62. The latter member is normally held in the position shown in FIGURE 4 by the spring and by a stop bolt 64. This bolt is loosely supported in opening 65 in member 62 and in a similar opening 66 in main frame 18 and does not interfere with the free pivotal movement of member 62 inwardly to receive a power cable but positively prevents disassembly of the cable from liner 40 unless member 62 is forcibly held inwardly against frame 18.

The two individual stringing block subassemblies formed by frames 18 and sheaves 19 are employed to install single cables on a power line by attaching their mounting clevis 60 to the lower end of an insulator 11. Hauling line 15 is then attached to the end of the single cable to be installed and threaded through the upper sides of each sheave. The new cable is then hauled into position in the same manner described above in connection with the installation of multiple cables. When it is desired to remove the cable from the sheave it is merely necessary to pivot guard member 62 inwardly while lifting the cable from the sheave groove. Normally, this is not necessary and the cable is not removed until the pulley block is being removed from the tower to complete clamping of the cable to the insulator.

While the particular convertible stringing block assembly herein shown and disclosed in detail is fully capable of attaining the objects and providing the advantages hereinbefore stated, it is to be understood that it is merely illustrative of the presently preferred embodiments of the invention and that no limitations are intended to the details of construction or design herein shown other than as defined in the appended claims.

I claim:

1. A pulley block assembly readily convertible for use to string both single and multiple sets of power conducting lines between the lower ends of suspension-type insulators supported from the towers of a cross-country power line, said pulley block assembly including as principal subassemblies a pair of single pulley block assemblies each provided with suspension means adapted to be detachably connected to suspension means closely adjacent the lower end of a power line insulator, a third subassembly including roller means and means for rotatably supporting the same between and in axial alignment with said pair of single pulley block assemblies, and means for detachably securing said three subassemblies together for conjoint use in stringing multiple sets of power conducting lines and for releasing said roller means and permitting said single pulley block assemblies to be used separately when stringing but a single power conducting line.

2. A convertible pulley block assembly as defined in claim 1 characterized in that said single pulley block assemblies include a main frame and a grooved pulley rotatably supported on one side of said main frame, said main frame having a suspension end projecting radially beyond the rim of said grooved pulley and including means thereon for attaching said pulley block to suspension means.

3. A convertible pulley block assembly as defined in claim 1 characterized in that said single pulley block assemblies each include a grooved pulley, an elongated main frame disposed along one end face of said grooved pulley having means for journaling said pulley thereon, said journaling means including means for detachably seating one end of said roller means.

4. A convertible pulley block assembly as defined in claim 1 characterized in that said roller means includes axially aligned trunnion-like axle means projecting from its opposite ends, and said pair of single pulley block assemblies having means thereon sized to receive and seat said trunnion-like axle means when said stringing block assembly is rigged to string multiple sets of power conducting lines.

5. A convertible stringing block assembly as defined in claim 3 characterized in that said assembly is free of obstructions between the adjacent inner faces of said main frames and in the zone of the latter immediately outwardly of the rims of said grooved pulleys and the peripheral surface of said roller means, whereby rigid running board means interconnecting power conductor lines undergoing stringing may be passed over said pulleys and roller means.

6. In combination, a convertible stringing block assembly for use in installing both single and sets of multiple power conductors between the lower ends of suspension-type insulators already installed on the towers of a cross-country power line, said stringing block assembly comprising relatively wide-surfaced roller means having an axle projecting trunnion-fashion from the opposite ends

thereof, a pair of single pulley block assemblies each supporting a grooved pulley having a diameter substantially similar to that of said roller means, said single pulley block assemblies having a main supporting frame extending along the remote faces of said grooved pulleys and journaled on said pulleys, and means for rotatably supporting said roller means between and in axial alignment with said pair of single pulley block assemblies, one end of said frames projecting substantially beyond the pulley rims and including means for suspending said stringing assembly from the tower of a power line with said pulleys supported for rotation in parallel vertical planes, and the area overlying the rims of said pulleys and said wide roller means being free of obstructions and adapted to pass pulling rigging for a plurality of power conductor lines.

7. A convertible stringing block assembly as defined in claim 6 characterized in the provision of means for quickly

securing and releasing said roller means to and from said single pulley block assemblies.

8. A convertible stringing block assembly as defined in claim 7 characterized in that said single pulley block assemblies include tubular stationary hubs for said grooved pulleys and in that the interiors of said tubular hubs provide sockets for seating and supporting the ends of said trunnion-like axle for said wide roller means.

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