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 elevation 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 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 a perspective view of being installed in readiness for attachment to insulator 11 are a pair of identical cables 13, 13 attached at their forward ends to a suitable running board fixture or pulling rig 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 a 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 stringing block 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 
position. The opposite ends of this Idler are journaled on bearings 46 held in place in flanged 
cores of the idler by split ring 47. The exterior faces of bearing assemblies 46 include a guard 
ing 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, not one of which is shown. A groove 51 positioned in the midportion of the idler roller preferably includes an abra-
sion-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 sur-
faces 54 of main frames 15, 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 con-
ected or 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 posi-

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 tension the cable 
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 only remove the supporting spreaded bar 25 by remov-
ing 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 piloting guard member 62 in its normal operative posi-
tion shown in FIGURE 4. The guard member 62 pivots 
freely about bolt 26 and is normally biased counterclock-
wise, 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 
do not interfere with the free pivotal movement of mem-
ber 62 inwardly to receive a power cable but positively 
prevents the cable from liner 49 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 member 63 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 assem-
by herein shown and disclosed in detail is fully capable of 
attaining the objects and providing the advantages here-
before 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 conduct-
ing lines between the lower ends of suspension-type insu-
lators supported from the towers of a cross-country power 
line, said pulley block assembly comprising principal sub-
assemblies 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 includ-
ing roller means and means for rotatably supporting the 
same between and in axial alignment with said principal 
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 grooved pulley, said 
journaling means including means for detachably sealing 
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 con-
ducting lines.

5. A convertible stringing block assembly as defined in 
claim 3 characterized in that said assembly is free of ob-
structions between the adjacent inner faces of said main 
frames and in the zone of the latter immediately out-
wardly of the rims of said grooved pulleys and the peri-

deral surface of said roller means, whereby rigid run-
ning board means interconnecting power conductor lines 
undergoing stringing may be passed over said pulleys and 
roller means.

6. In combination, a convertible stringing block assem-
by 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 com-
prising relatively wide-surfaced roller means having an 
axe 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.

References Cited by the Examiner

UNITED STATES PATENTS

3,010,700 11/61 Peterson 254—193 X
3,050,286 8/62 Seamans et al. 254—195
3,145,973 8/64 MacFarlane.

SAMUEL F. COLEMAN, Primary Examiner.