Sept. 23, 1941. F. P. LAWLER 2,256,982

FAIR-LEAD

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FIG. 2

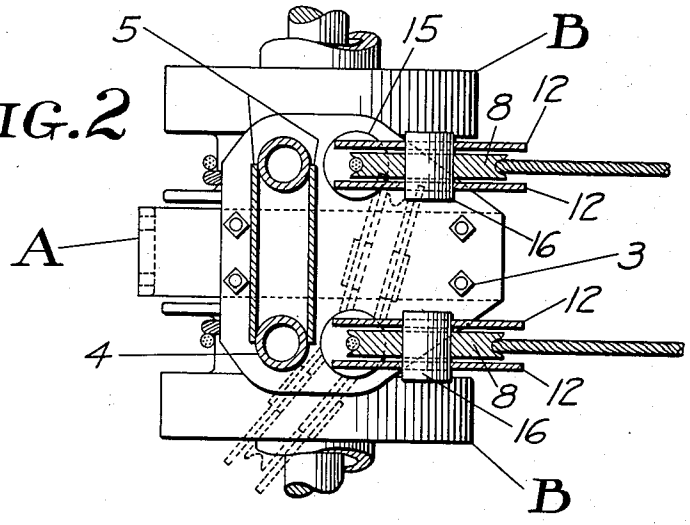


FIG. 1

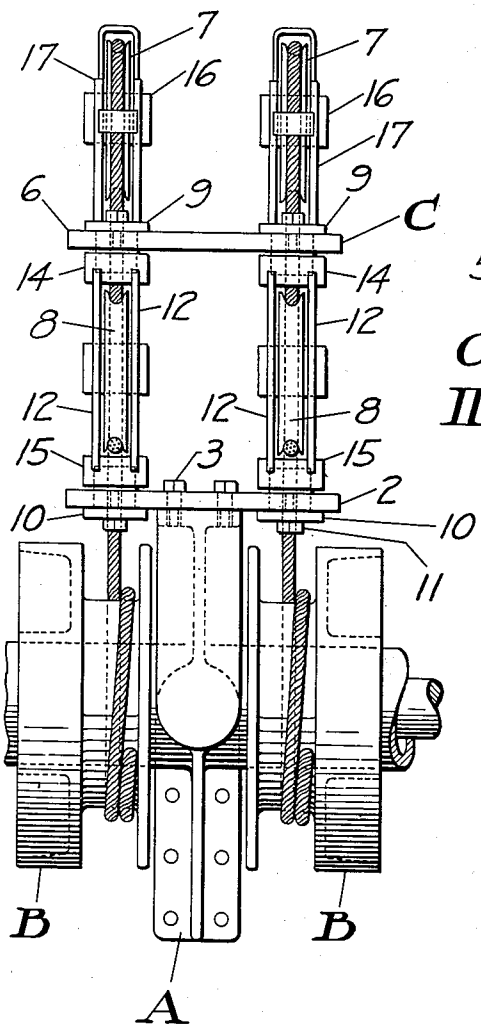
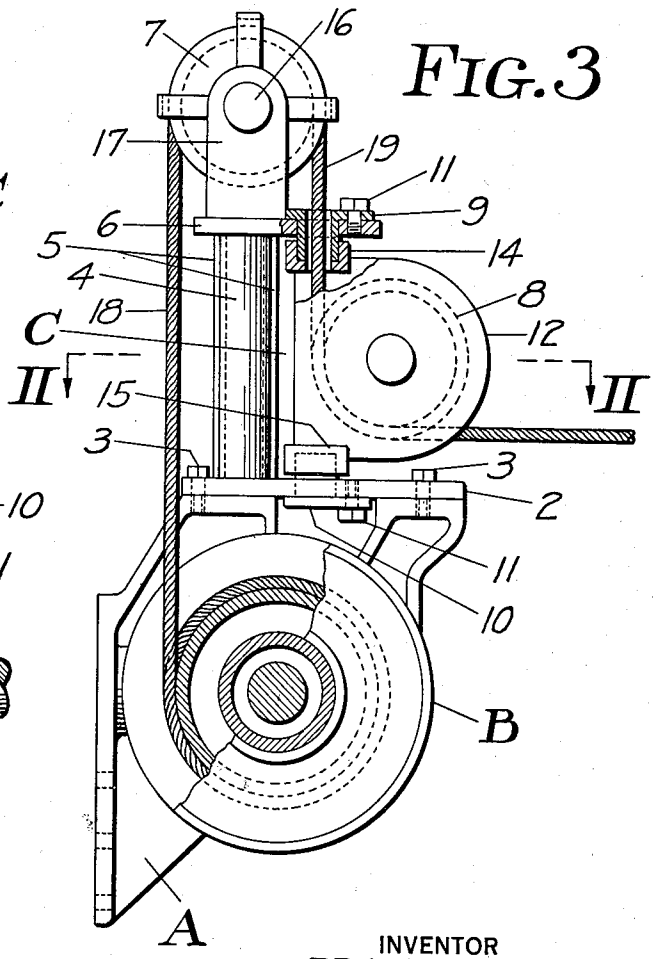


FIG. 3



INVENTOR
FRANK P. LAWLER
BY
Chas. E. Townsend.
ATTORNEY

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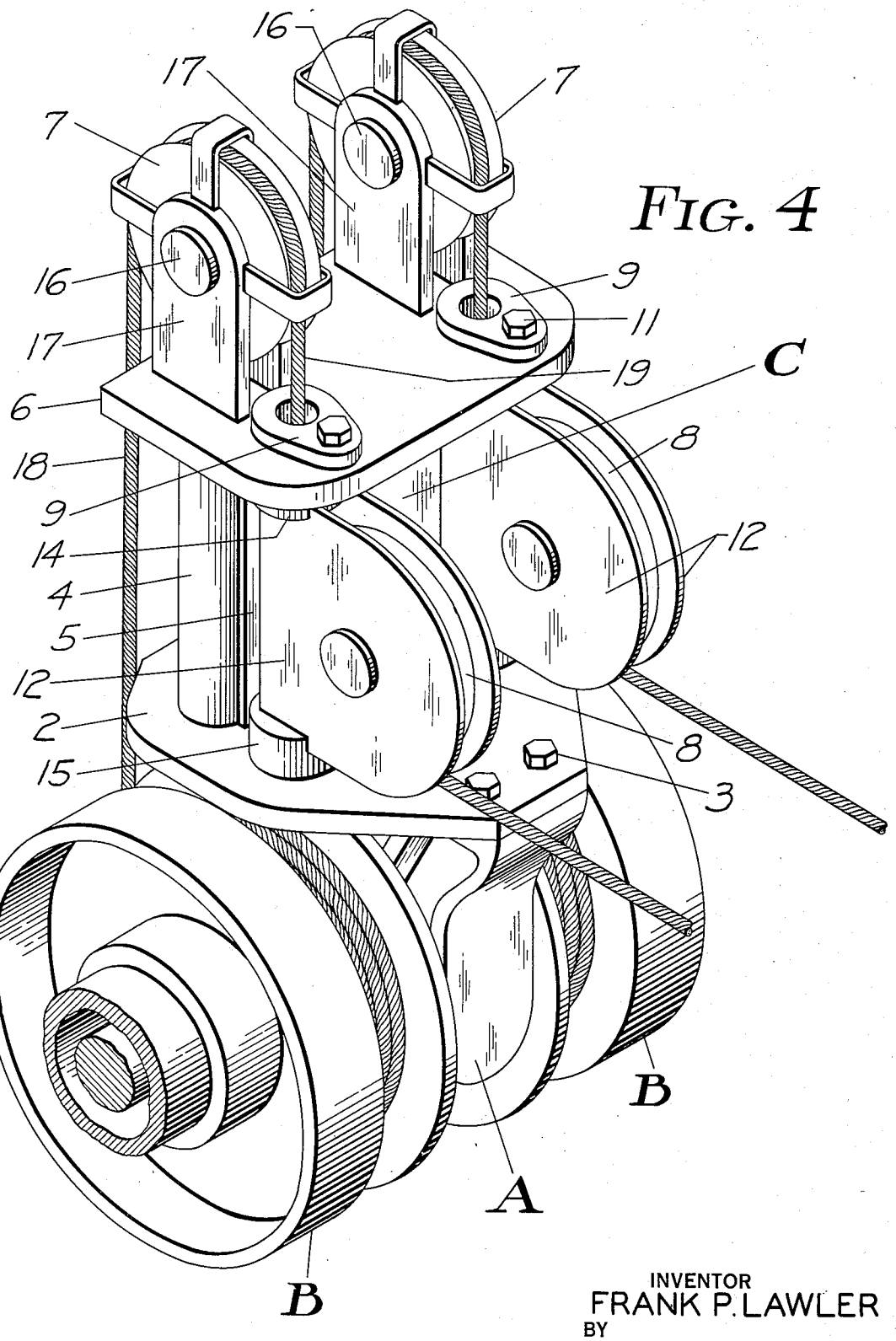


FIG. 4

INVENTOR
FRANK P. LAWLER
BY
Chas. E. Townsend.
ATTORNEY

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FAIR-LEAD

Frank P. Lawler, San Francisco, Calif., assignor, by mesne assignments, to G. L. T. Corporation, San Francisco, Calif., a corporation of California

Application February 19, 1938, Serial No. 191,505

2 Claims. (Cl. 254—190)

This invention relates to fair-leads or cable guides for hoisting drums, and especially to apparatus where the combined use of fair-lead and drum must be encompassed in the absolute minimum of space such as when mounted on tractors or other movable machinery.

The object of the present invention is to generally improve and simplify the construction and operation of fair-leads or cable guides of the character described; to provide a fair-lead or cable guide which requires a minimum number of pivoted or swiveled sheaves, and which will permit a maximum angle of slue of the fair-lead cable; to provide a fair-lead or cable guide which will permit the hoisting cable to automatically spool or wind on the cooperating drum in even and uniform layers; to provide a fair-lead assembly which can be readily mounted immediately adjacent to or on the drive gear housing or frame of the hoisting drum or drums; to provide a fair-lead which is particularly adapted to be constructed in any multiple, depending on the number of hoisting drums to be accommodated; to provide a fair-lead in which the structural frame supporting the fair-lead sheaves is of a highly efficient and economical design to withstand all of the varying angular operating forces incident to the cable pull; and further, to provide a fair-lead or cable guide in which all the moving and wearing parts are readily accessible and which can be easily replaced.

The fair-lead or cable guide is shown by way of illustration in the accompanying drawings in which—

Fig. 1 is a rear view of the fair-lead, the housing supporting the same, and the drums with which the fair-lead cooperates;

Fig. 2 is a cross section taken on line II—II of Fig. 3;

Fig. 3 is a side elevation of Fig. 1, said side elevation being partially in section; and

Fig. 4 is a perspective view of the fair-lead, said view also showing a portion of the transmission case and the hoisting drums journaled thereon.

This invention relates to an attachment known as a cable fair-lead for hoisting drums of the type shown in my copending application entitled "hoist," filed August 4, 1937, Serial No. 157,317, resulting in Patent No. 2,199,668 dated May 7, 1940. The hoist there described is particularly intended for use in conjunction with tractors and similar machinery, and is driven from the power take-off shaft of the tractor. Briefly stated, the hoist comprises a central power transmitting housing A adapted to be bolted to the rear end of a tractor. On opposite sides of the housing are journaled hoisting drums B—B to which power is transmitted from the power take-off shaft of the tractor.

The fair-lead or cable guide forming the subject matter of this application is generally indicated at C, and comprises a base plate 2 secured by bolts 3 or other suitable means to the top of the transmission housing A. Secured to the base plate is a pair of tubular column members 4—4, and secured to the exterior faces of the columns are plates 5—5 which, together with the columns, form a support for the head plate 6. The base plate, the columns, the side plates, and the head plate are all welded with relation to each other and form a rigid substantial frame which functions as a support for a pair of upper stationary cable sheaves 7—7 and a pair of lower swiveled cables sheaves 8—8.

The sheaves 8—8 are swiveled between the base and head plates of the frame in the following manner: Extending through the head and base plates are tubular bushings 9 and 10. These are flanged at their outer ends and are secured by one or more bolts 11. The side plates 12 of the sheave blocks in which the sheaves 8—8 are journaled are provided with bearing hubs 14 and 15 into which the tubular bushings extend. The hubs bear against the outer surface of the bushings and swivel about them. Large bearing surfaces are in this manner provided, and when excessive wear takes place, the bushings can be readily removed and replaced with new ones. The swivel points of the sheave blocks are placed in front of the frame, so that the axis of swivel is tangent to one side of the stationary sheaves 7—7 and are transversely spaced apart a sufficient distance to permit a maximum angle of slue of the cables as indicated by the two dotted-line positions of one of the sheave blocks (see Fig. 2). In actual practice, the range of swing or slue is permissible through an angle of 180° plus.

The upper sheaves 7—7 are journaled on axles as at 16 set in stationary bearing brackets 17 secured to the head plate. It will be noted that the center of the brackets and the journals 16 align with a vertical center line drawn through the frame, this being of great importance, as all the load to which the sheaves are subjected due to cable pull will be transmitted to the frame and the transmission case A in the form of compression only. That is, the cable indicated at 18 (see Fig. 3) extends vertically from the hoisting

drum up to the sheaves 7, then over and vertically downwardly as shown at 19 to the sheaves 8. The pull of the cable is thus vertical, and as each leg of the cable is spaced a substantially equal distance from the opposite faces of the frame and substantially parallel to a vertical center line drawn therethrough, the strain or load exerted on the frame and transmission case will be in the form of compression only. It should be noted that the stationary sheaves are placed in a position which is considerably elevated with relation to the hoisting drums, and further, that the drums are of large diameter but narrow. This is of considerable importance, as the distance provided between the drums and the sheaves 7 permits automatic spooling of the cables on the hoisting drums in even and uniform layers without any necessity of swiveling the sheaves 7.

The construction of the frame is also important as it is composed of a pair of columns which may be of a size capable of withstanding any compressive load supplied thereto. These columns are in turn transversely connected by the side plates 5—5 and by the base and head plates, and as such can readily withstand, in addition to the compression loads, all of the varying angular operating forces due to swivel of the fair-lead sheaves. The frame furthermore permits replacement of parts subject to wear.

While these and other features of the present invention have been more or less specifically described and illustrated, I wish it understood that various changes may be resorted to within the scope of the appended claims, and that the materials and finish of the several parts employed may be such as the judgment and experience of the manufacturer may dictate or other conditions may demand.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A fair lead for hoisting drum cables comprising a base plate and a head plate, a frame spacing said plates apart, said frame comprising a pair of vertically disposed spaced columns and a pair of plates secured to opposite sides of the columns and connecting the same, a pair of sheaves disposed in spaced relationship at one side of the frame and swiveled to swing through an arc of approximately 180°, and a pair of sheaves mounted on axles set in stationary bearing brackets on top of the frame, said axles being disposed on a line parallel to and centrally of the frame plates and intersecting a line extending vertically and centrally between the columns, whereby all loads on the stationary sheaves due to cable pull will impose a substantially direct compressive strain on the frame.

2. A fair lead for a hoisting drum cable comprising a hoisting drum, driving means for the drum, a base plate mounted substantially parallel to the axis of the drum, a column secured to the base plate, a sheave disposed on one side of the column and mounted to swivel, a second sheave, the axle of said latter sheave being mounted in stationary bearing brackets on the free end of the column, said axle being disposed at right angles to the central longitudinal axis of the column and being intersected by said axis of the column and being substantially parallel to the axis of the drum, said second named sheave also aligning with a point substantially midway of the barrel length of the drum, whereby all loads incident to cable pull in any direction of cable fair lead will bear in reaction upon the column substantially only in compression.

FRANK P. LAWLER.