(No Model.)

S. S. CASKEY.

DRIVING ROPE SHIFTING MECHANISM.

No. 501,869. Patented July 18, 1893.

FIG. 1.

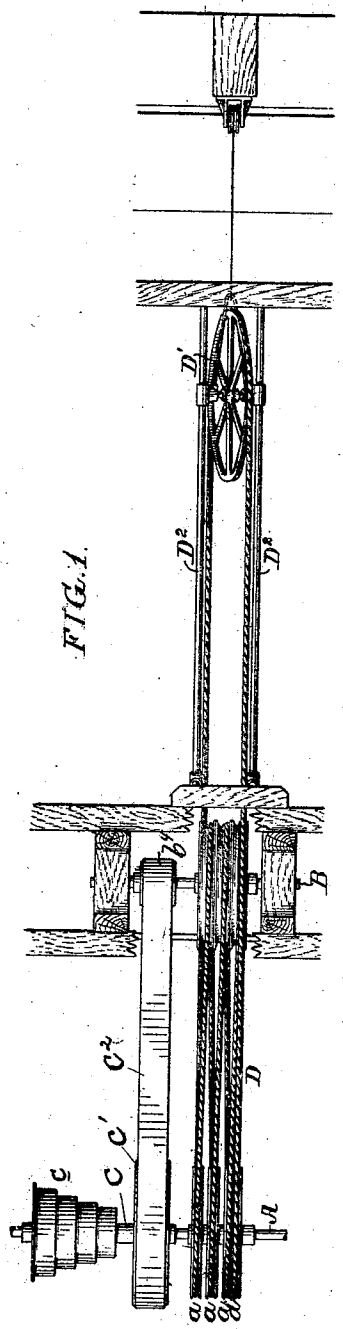


FIG. 2.

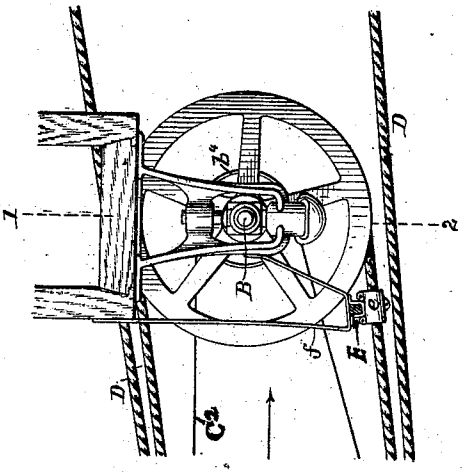


FIG. 3.

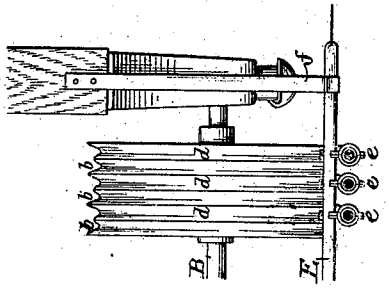
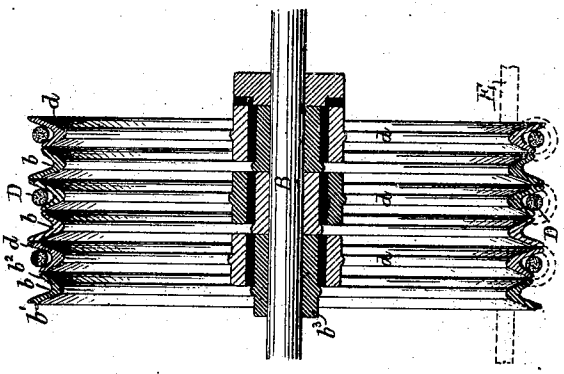


FIG. 4.



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UNITED STATES PATENT OFFICE.

SAMUEL S. CASKEY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE LINK-BELT ENGINEERING COMPANY, OF SAME PLACE.

DRIVING-ROPE-SHIFTING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 501,869, dated July 18, 1893.

Application filed September 14, 1892. Serial No. 445,886. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL S. CASKEY, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Driving-Rope-Shifting Mechanism, of which the following is a specification.

The object of my invention is to provide shifting mechanism for shifting drive ropes used in rope transmission of power. This object I attain in the following manner, reference being had to the accompanying drawings, in which—

Figure, 1 is a plan view showing sufficient of a rope driving gear to illustrate my invention. Fig. 2, is a side view of one of the counter-shafts showing the shifter in position. Fig. 3, is a face view looking in the direction of the arrow Fig. 2; and Fig. 4, is an enlarged section on the line 1—2, Fig. 2.

The use of rope as a driving medium has been of late extensively introduced into mills and factories, a single rope being usually coiled several times as shown in Fig. 1, and then passed around a take-up pulley, but devices have also been used in which a series of endless ropes have been placed side by side for the same purpose but in both these instances it has been deemed impossible to shift the ropes from a fast set of sheaves to a loose set so as to stop the action of the shaft. Clutches have usually been used, or some other means entirely independent of the rope, but by the device I will now proceed to describe the rope can be readily shifted from a series of fast sheaves to a series of loose ones.

A is the main shaft, on which is secured a series of sheaves *a;* hung in suitable boxes is a countershaft B to which is secured a series of sheaves *b*, clearly shown in Fig. 4; and C is a second countershaft, mounted as a sleeve shaft on the main shaft A, and which carries a series of graduated pulleys *c* and also the pulley *c'* by which the countershaft B is driven through the medium of the belt c^2 and the pulley b^4 on the shaft B. The flanges *b'* on one side of the sheaves *b* are high while the flanges b^2 on the opposite sides are low, sufficiently high however to prevent the rope from slipping off. In the present instance the hubs b^3 of the sheaves *b* extend to one side, forming bearings on which are mounted the hubs of the loose sheaves *d*. These sheaves *d* are of the same diameter as the sheaves *b*, and are similarly grooved for the reception of the rope, and have corresponding high and low flanges. The sheaves *b* and *d* are arranged in pairs with the low flanges abutting each other, as clearly shown in Fig. 4, so that when the ropes are shifted from one sheave to the other they will readily ride over the low flanges, but in no instance would they ride over the high flanges; the sheaves are preferably bushed with antifriction material so that the hub of one can easily ride upon the hub of the other.

In front of the sheaves *b* and *d* is a bar E, connected in any suitable manner to a hand pull or lever for shifting it transversely across the face of these sheaves; this bar is mounted in suitable bearings *f* and has a series of guiding eyes *e* preferably made in two parts and clamped together, as shown in Fig. 3. These guiding eyes are so mounted that when they are in one position they align with the sheaves *b* secured to the shaft B and when they are in the other position they align with the loose sheaves *d* mounted on the hubs of the sheaves *b*. The drive rope, in the instance illustrated in Fig. 1, is a single rope D which passes around the sheaves *a*, around the sheaves on the countershaft B and around the take-up wheel D' mounted in suitable bearings which are guided on rods D^2. These bearings are attached to a suitable weight at the rear for taking up the slack of the rope. The rope D passes through the eyes *e* in the manner shown and it will be seen that by simply shifting the rod E across the faces of the sheaves, the rope will be shifted from the loose set of sheaves, in which position they are represented in Figs. 3 and 4 to the fast set of sheaves; the power exerted being sufficient to carry the several portions of the rope over the lower flanges of the sheaves; thus it will be seen that I provide means whereby the several coils of the rope can be shifted without complicated apparatus and without interfering with the general construction of the mechanism.

I have shown the countershaft C as a sleeve shaft mounted upon the main shaft, but it

will be understood that the countershaft may be mounted and geared in any manner, as this forms no part of my invention.

I claim as my invention—

1. The combination in rope driving mechanism, of the series of sheaves secured to the main shaft, a series of sheaves secured to a countershaft, a series of sheaves loosely mounted on the hubs of the sheaves secured to the countershaft, and alternating with the same, and ropes adapted to said sheaves, with mechanism for shifting the coils of rope from one set of sheaves to the other, substantially as described.

2. The combination of the sheave fast upon the shaft, said sheave having a high and a low flange, with a loosely mounted sheave on the hub of the sheave fast upon the shaft, said sheave also having a high and a low flange, the two low flanges of the sheaves adjoining each other, with a rope adapted to the sheave, whereby, when transverse pressure is applied to the rope, it will readily pass from one sheave to the other, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL S. CASKEY.

Witnesses:
O. N. TIMMINS,
C. M. STOKES.