(No Model.)

G. S. DUNCAN.

CABLE PULLEY.

No. 462,379. Patented Nov. 3, 1891.

Fig. 2.

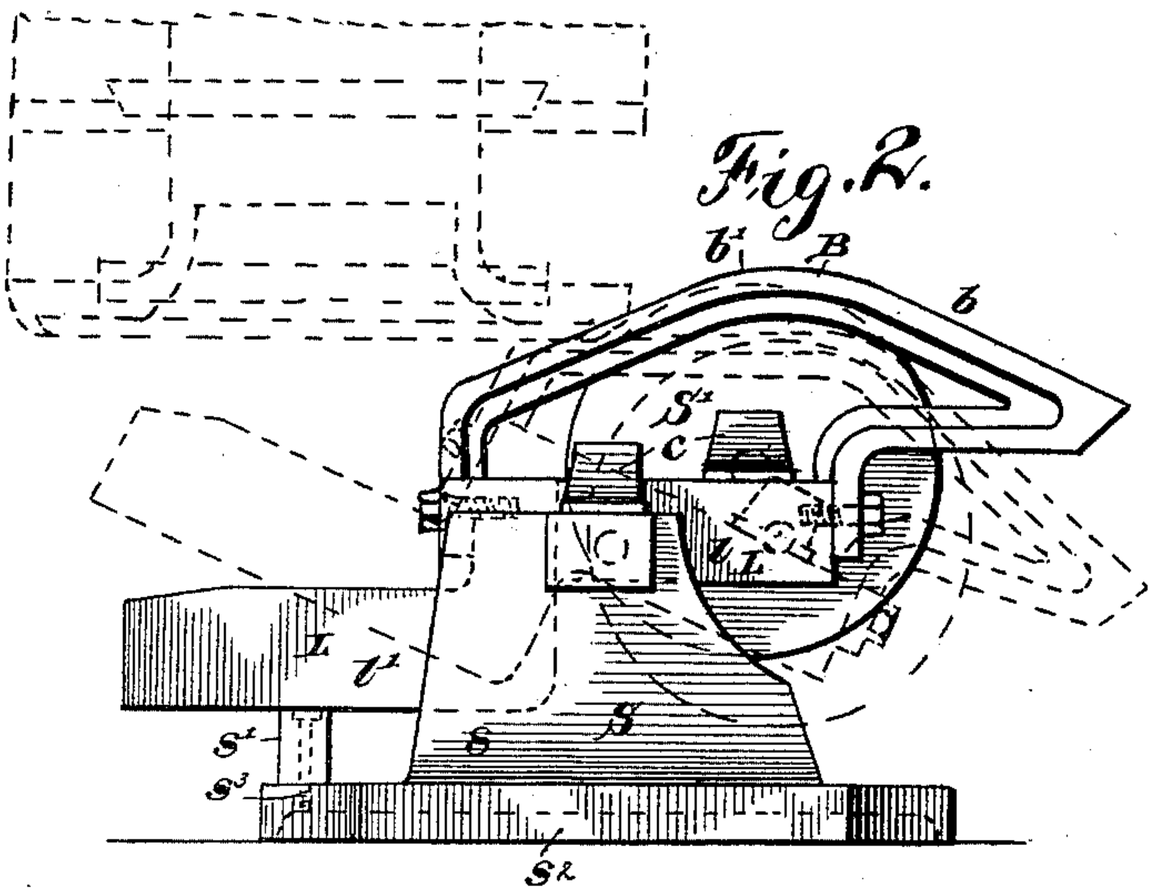


Fig. 3.

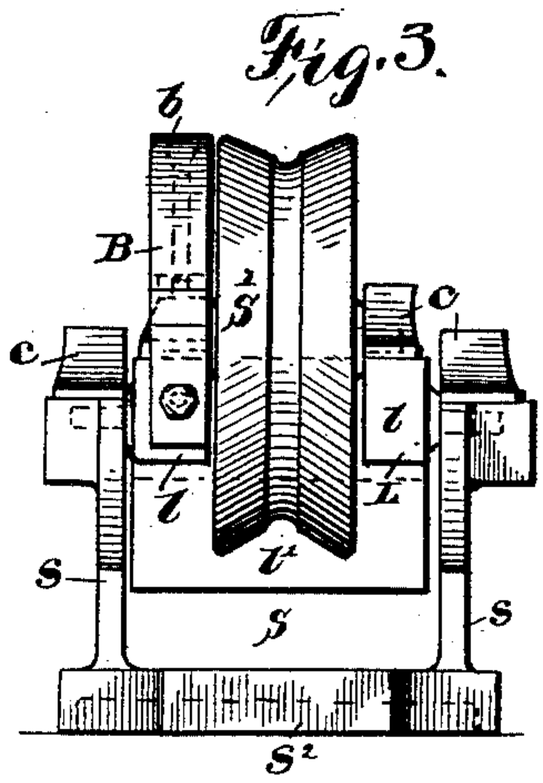


Fig. 4.

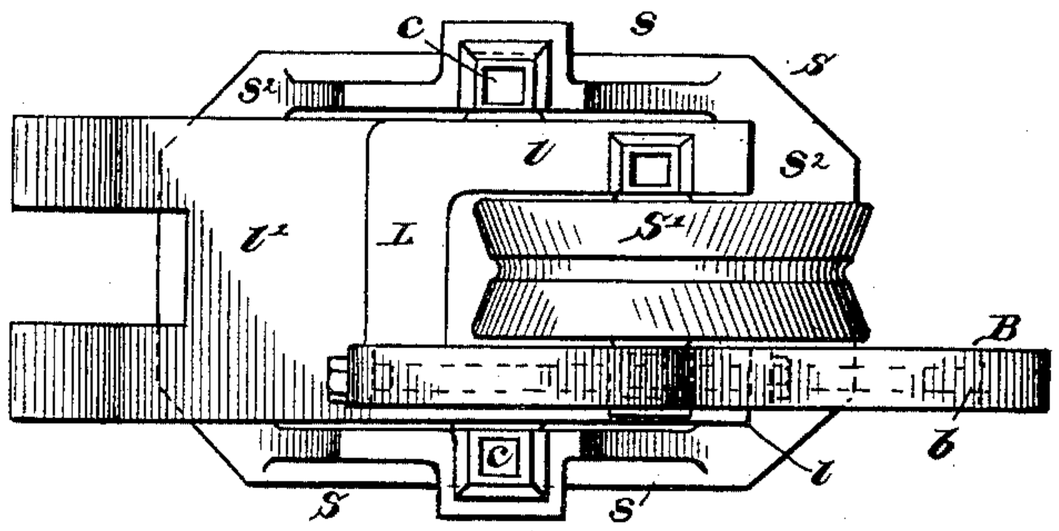
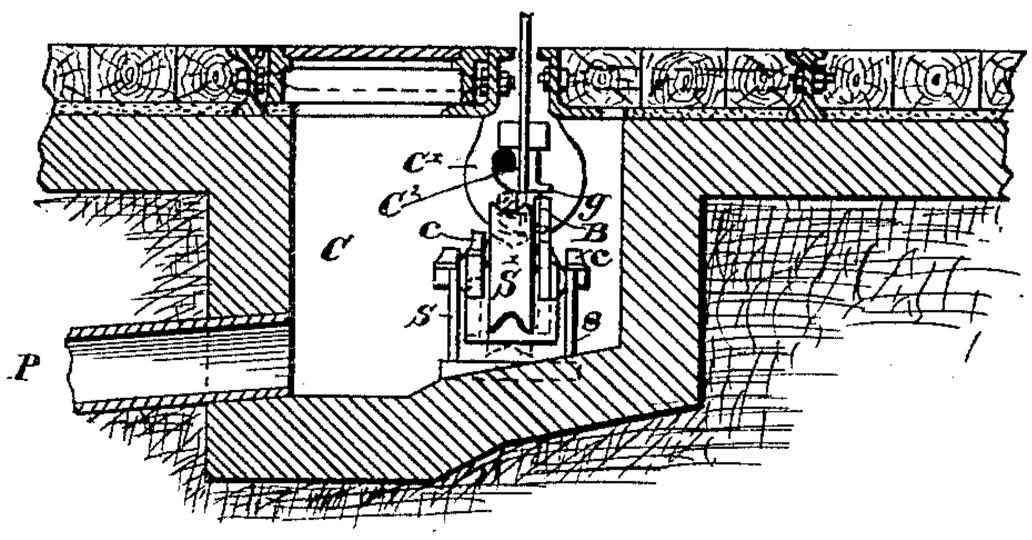


Fig. 1.



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CABLE-PULLEY.

SPECIFICATION forming part of Letters Patent No. 462,379, dated November 3, 1891.

Application filed August 14, 1891. Serial No. 402,682. (No model.) Patented in Victoria March 13, 1890, No. 7,580; in New South Wales March 15, 1890, No. 2,086; in South Australia June 24, 1890, No. 1,632; in Tasmania June 27, 1890, No. 830; in England July 30, 1890, No. 11,933, and in Queensland October 2, 1890, No. 1,047.

To all whom it may concern:

Be it known that I, GEORGE SMITH DUNCAN, civil engineer, a subject of the Queen of Great Britain, residing at Melbourne, in the British Colony of Victoria, have invented certain new and useful Improvements in Cable-Roads and Cable-Supports Therefor, (for which I have obtained Letters Patent in the following British colonies: Victoria, patent dated March 13, 1890, No. 7,580; New South Wales, patent dated March 15, 1890, No. 2,086; Queensland, patent dated October 2, 1890, No. 1,047; South Australia, patent dated June 24, 1890, No. 1,632; Tasmania, patent dated June 27, 1890, No. 830; also in Great Britain, patent dated July 30, 1890, No. 11,933;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The invention relates to the construction of cable roads, and has for its object a reduction of the cost of construction and working expenses by lessening the depth of the subway for the cable, and by providing a yielding support for the cable itself.

To these ends the invention consists in the construction of the subway and in that of the cable-supports, as will now be fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a cross-sectional view of a cable-road constructed according to my invention. Figs. 2, 3, and 4 are side and front elevations and a top plan view, respectively, of my improved cable-support.

Like letters of reference indicate like parts wherever such may occur in the above-described figures of drawings.

In the construction of cable roads, so far as I have a knowledge thereof, the sheaves or pulleys, from which the cable is supported when not gripped by the cable-grip, are mounted in suitable bearings in the cable-conduit. This necessitates a conduit of proper depth for the sheaves or pulleys and for the operation of the grip, and this depth of conduit is greatly increased when the sheaves are supported from weighted levers or other yielding supports.

In order to obviate the increased cost of deep conduits for the cable and also to provide for a more effectual drainage of said conduit, I construct at suitable distances from one another sheave and drainage chambers C, Fig. 1, said chambers being of the necessary depth to receive the supporting-sheaves, so that the bearing-face thereof will project into the cable-conduit C′ to properly support the cable. It is obvious that by this means the cable-conduit proper C′ may be comparatively shallow and narrow. In fact the depth and width of the conduit need not be greater than necessary for the passage of the cable C^2 and the reception and operation of the cable-grip, in addition to the small space required to allow the cable-supporting sheaves S′ to project sufficiently into the conduit to properly support the cable C^2. I am thus enabled to reduce the dimensions of the conduit to a minimum.

The chambers C themselves are comparatively narrow, access being had thereto through suitable openings in the road-bed for the purpose of lubricating the carrier-sheaves and for other purposes. The floor of these chambers is inclined toward one side, and at the lowest point is arranged a drainage-pipe P, which may be connected with a drainage-pipe common to all the chambers C, and the latter pipe with a sewer, or said drainage pipes P may be connected directly with a sewer, as found most convenient.

It will be observed that on level stretches of road but a very slight fall or inclination of the cable-conduit will suffice to effectually and thoroughly drain the same, and inasmuch as the carrier-sheaves are supported at some elevation from the floor of the drainage-chambers, even in very heavy rains, the water cannot rise to their bearings, so that rubbish cannot clog said bearings and render the sheaves inoperative or injure the same, as is frequently the case when the sheaves are arranged in the cable-conduit itself.

In order to lessen the depth of the drainage-chambers to a minimum, I have devised a sheave-support that is of comparatively small height, and in order to allow the grip to freely ride over said sheaves I mount the same in a yielding support, preferably a weighted lever, the weight of which is sufficient to maintain them in a normal position and carry the weight of the cable, but to yield or be depressed when the grip is lowered sufficiently to contact with the sheave or with the weighted lever. By means of this construction I am also enabled to lessen the height to which it is now necessary to raise the cable by the cable-grip in order that the latter may pass over the carrier-sheaves and, consequently, the depth of the cable-conduit.

In practice the sheaves are so arranged that when the grip has picked up the cable and grips it the lower gripping-jaw will just clear the sheaves, but will contact therewith when lowered to release the cable in order to decrease the depth of the cable-conduit, and as this motion of the grip is a comparatively limited one I am enabled to lessen the depth of the conduit very materially.

The sheave-supports comprise a stand S, in the cheeks *s* of which are formed bearings for the supporting-lever L, one end of which is forked, the arms *l l* of said forked end being provided with bearings for the journal or spindle of the sheave S′. In rear of its forked portion the lever is bent downwardly at right angles, thence extending horizontally, the horizontal rear arm being weighted sufficiently to counterbalance the sheave S′ and the weight of the cable C^2. In order that the sheave may be accurately positioned relatively to the cable, I provide an abutment *s′*, adjustable on the base s^2 of the stand S by means of a set-screw s^3, Fig. 2, so that the position of the sheave may be regulated with great nicety.

To one of the arms *l* of the carrier end of lever L is secured a guide-bar B, that has its upper faces inclined in reverse directions, the front inclined face *b* projecting some distance in front of the sheave S′, while the point of greatest elevation of the two inclines is about on the vertical diametrical line of the sheave and sufficiently above its periphery, so that the lower grip-jaw, as it rides over the front incline and before reaching the highest point thereof, will depress the lever with the sheave, and on reaching said highest point, as *b′*, said lower grip-jaw will clear the sheave. In other words, the reversely-inclined faces of the bar B are simply continuations of a curvilinear or convex portion, the segment of which is an arc of a circle greater than that of the periphery of the wheel, so that the lower jaw of the grip can under no circumstances come in contact with said sheave when said jaw is provided with proper means to co-operate with the bar B. The bearings for the lever-journals, as well as those for the sheave-journals, are provided with lubricant-cups *c*, as shown.

It will be seen that with the construction of lever shown and described the supporting devices are very low, so that the chambers C containing the same need not be of any inordinate depth relatively to the cable-conduit C′. Yet in practice I prefer to make these chambers of such size that ready access may be had to said cable-supporting devices for any purpose.

In Fig. 1 I have shown the grip in its position when gripping the cable, said grip being provided with a laterally-projecting arm *g*, as described in my application for Letters Patent, Serial No. 363,046, filed August 25, 1890, which arm *g*, when the lower jaw *j* is lowered to release the cable C^2, will contact with the arm B and depress the supporting-lever L, as above described.

Instead of supporting the sheave from a balanced lever, the bearings for said sheave may be supported from coiled or other springs, in which case the arm B will be connected with such bearings, and instead of the lever being weighted its rear arm *l′* may be held in a normal position by the stress of a spring, as will be readily understood by any skilled mechanic.

I am aware that it is not new to mount the cable-supporting sheaves for cable roads on a counterbalanced lever, and I do not desire to claim this construction, broadly; but

What I do claim is—

1. In a cable road, the combination, with the cable-conduit C′ and chamber C, of a cable-support consisting of a stand, a weighted lever journaled in said stand, said lever being forked at its outer end and having journal-bearings formed in the arms of the fork, and a cable-carrier sheave journaled in said arms, so that its carrying-face will project slightly above the lowest point of the cable-conduit, for the purpose set forth.

2. In a cable road, the combination, with the cable-conduit C′ and chamber C, of a cable-support consisting of a stand, a weighted lever journaled in said stand, said lever being forked at its outer end and having journal-bearings formed in the arms of the fork, a cable-carrier sheave journaled in said arms, so that the carrying-face will project slightly above the lowest point of the cable-conduit, and an adjusting device for adjusting the position of the sheave relatively to the conduit, for the purpose set forth.

3. In a cable road, the combination, with the cable-conduit C′ and the chamber C, of a cable-support, consisting of the stand S, the weighted angle-lever L, journaled therein, the sheave S′, journaled in the forked end of said lever, said support being arranged relatively to the cable-conduit to maintain the sheave in a position so that its carrying-face will be slightly above the lowest point of said conduit, and an adjusting device for adjusting the position

of the sheave relatively to the conduit, for the purpose set forth.

4. The combination of the stand S, provided with an adjustable abutment of the weighted angle-lever L, the weighted end of which has bearing on said abutment, the sheave S′, journaled in said lever, and the reverse incline B, arranged on the lever on one side of the sheave, for the purpose set forth.

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