(No Model.) 2 Sheets—Sheet 1.

C. FITZGERALD.

CABLE TENSION DEVICE.

No. 552,900. Patented Jan. 14, 1896.

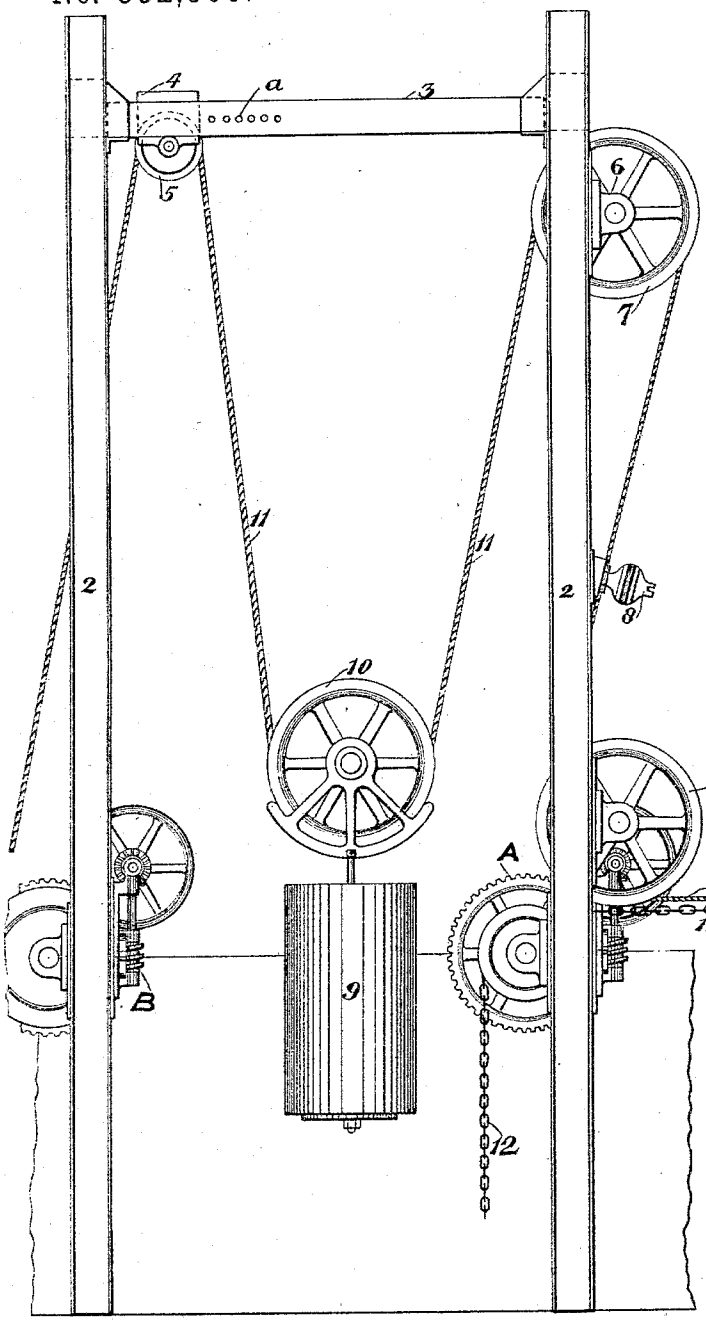

Fig. 1

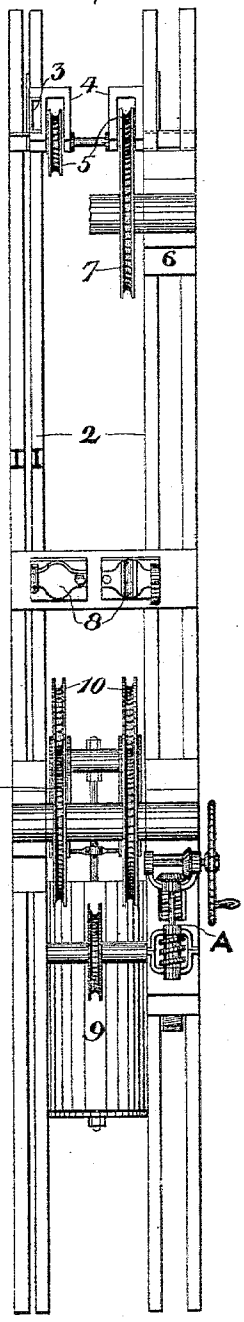

Fig. 2

Witnesses

Samuel S. Mehard

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Inventor

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(No Model.) 2 Sheets—Sheet 2.

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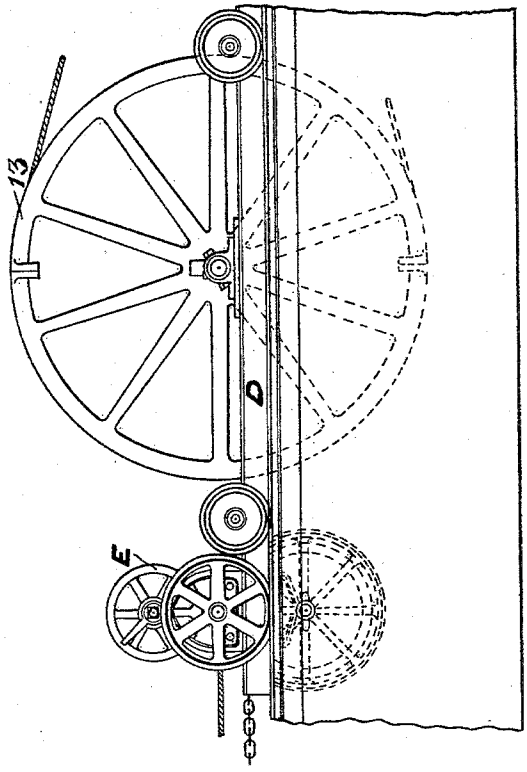
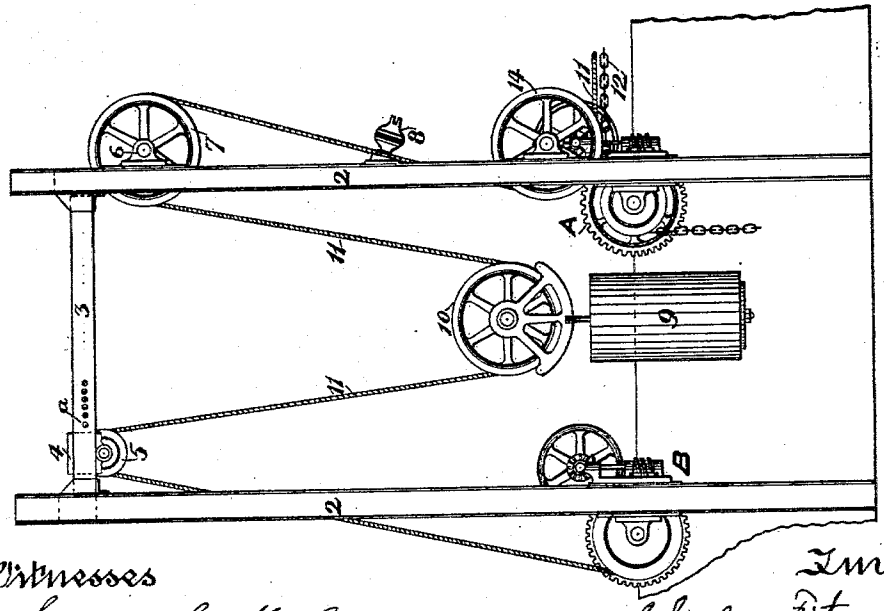


Fig. 3



Witnesses

Samuel S. Mehard

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UNITED STATES PATENT OFFICE.

CHARLES FITZGERALD, OF PITTSBURG, PENNSYLVANIA.

CABLE-TENSION DEVICE.

SPECIFICATION forming part of Letters Patent No. 552,900, dated January 14, 1896.

Application filed May 9, 1895. Serial No. 548,626. (No model.)

To all whom it may concern:

Be it known that I, CHARLES FITZGERALD, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered a new and useful Improvement in Cable Tension, of which the following is a specification.

In the accompanying drawings, which make part of this specification, Figure 1 is a side elevation of my improved cable-tension device. Fig. 2 is an edge view of the same; and Fig. 3 is a side elevation of same, showing how it is attached to the tension-carriage.

The purposes of my invention generally stated are to devise a construction by which as the slack of the cable is paid out the resistance to the paying out of said slack will automatically increase as the paying-out pull increases, so that said paying out will be done uniformly and not by spasmodic jerks; also, to construct the same apparatus so that as the slack of the cable is drawn in the weight tending to pull the same in will automatically be lessened, so that the same reverse result will be accomplished—viz., that the slack will be drawn in by a uniform pull and with regularity. I accomplish this result by supporting the weight which governs the paying out and drawing in of the slack from a pair or pairs of cables which drop angularly to each other instead of in parallel lines, as is customary.

It is well known by those skilled in the operation of traction-roads in which the motive power is a cable that the cable will drop between the different sheaves along the road, and will thus acquire considerable slack until the load comes upon the cable. Various devices have been contrived and used to take up this slack, but so far as my knowledge and experience goes the weight or other power for drawing in or resisting the paying out of this slack has been constant. This being the case the faster the slack is paid in and the less resistance it opposes the faster the weight will drop, if a weight is employed. The consequence is that the slack of the cable is drawn in with a jerk, and as the apparatus works on the same principle in paying out the cable it is also paid out with undue speed. By the following apparatus described I overcome both of these disadvantages by a simple and effective construction.

In the accompanying drawings, which make part of this specification, 2 2 are the side bars of the cable-tension frame. 3 is the top cross-bar of the same, upon which slides an adjustable block 4, secured to said cross-bar by a pin entering holes *a a* spaced along the same. In said block 4 are journaled a pair of sheaves 5 5, and upon one of the side bars 2 in bracket 6 are journaled two sheaves 7 7.

8 8 are clamps to hold the weight 9 and practically disconnect the same from the tension-carriage when desired. The weight 9 is supported by the movable sheaves 10 10, which hang upon the cables 11 11.

A is an ordinary winding-drum for the safety-chain 12, and need not, therefore, be described in detail. B is a similar winding-drum for the cable 11, which runs, as shown in Fig. 3, to the ordinary tension-carriage D, having tension-wheel 13 and winding-drum of the ordinary type E for cables 11, and which need not be described in detail. In passing to tension-carriage cables 11 11 pass beneath sheaves 14 14.

It will be noticed that the sheaves 10 10 are swung in such a position relative to sheaves 5 5 and 7 7 that the cables supporting said sheaves 10 10 approach each other at an angle instead of being parallel to each other, as they would be if sheaves 5 5 and 7 7 were placed closer together. It is this angularity between the two branches of the cable which supports the sheaves of tension-weight which constitutes the essential feature of my invention.

It will be observed that in operation, when the slack is being fed into the power-house, the weight 9 will of course sink, and that the branches of the cable supporting the sheaves 10 10 will more closely approximate parallel lines as said weight 9 descends. The pulling effect of the weight, therefore, will be gradually diminished as the slack is being fed in, and therefore said slack will be fed in with more regularity and less suddenness. On the other hand, when the slack is going out the weight will rise and the angle between the branches of the cable supporting said weight will become greater and the effective power of the weight increased as the slack is pulled out from the power-house,

therefore neutralizing the rapidity with which said slack is fed out and overcoming any tendency to jerks liable to rupture and injure the cable.

The lateral adjustment of the sheaves 5 5 on the cross-bar 3 is a second feature of my invention, as it enables me to determine the initial degree of angularity between the branches of the cable supporting the weight, and therefore to adjust the whole apparatus to the particular needs of the line upon which it is placed. By placing the cables in the grip of the clutches 8 8 the tension device can be disconnected from the tension-carriage at will. It will also be observed that I have provided a winding-drum for the cable both upon the tension device proper at B and also upon the tension of the carriage at E. This is desirable since, by winding up the slack at B, I can change the wearing-points of the cables of the tension device.

Although I have shown my tension device with the cables in duplicate, it is manifest that a single cable can be used to support the tension-weight and transmit its power to the tension-carriage. The relative positions, also, of the various sheaves may be considerably varied provided the weight is hung upon a line or lines having some degree of angularity to each other. One of the winding-drums for the cables may also be omitted and many modifications of the general arrangement made which would be apparent to a skilled mechanic, while the salient features of my invention will remain. If desired the sheave or sheaves 5 5 may be non-adjustable instead of laterally adjustable, as shown, although I prefer the arrangement illustrated.

Having described my invention, I claim—

1. An improvement in mechanism for automatically and uniformly taking up and paying out the slack of cables, which consists in the combination of the cable, the winding drums; a tension car; a frame work exterior to said drums, and a weight supported by angular lines of the cable passing over suitable sheaves on the frame work, whereby the effective power of the weight is increased as it ascends and decreased as it descends.

2. An improvement in mechanism for automatically and uniformly taking up and paying out the slack of cables, which consists in the combination of the cable, the winding drums; a tension car; a frame work exterior to said drums; a weight supported by angular lines of the cable passing over suitable sheaves on the frame work, whereby the effective power of the weight is increased as it ascends and decreased as it descends, and means for varying the degree of angularity of said lines of cable.

In testimony whereof I have hereunto set my hand this 8th day of May, A. D. 1895.

CHARLES FITZGERALD.

Witnesses:
LUCY DORSEY IAMS,
WM. L. PIERCE.