Aug. 5, 1952 E. D. SAWYER 2,605,829

YIELDING BARRIER ROADWAY NETWORK CONSTRUCTION

Filed Feb. 23, 1946

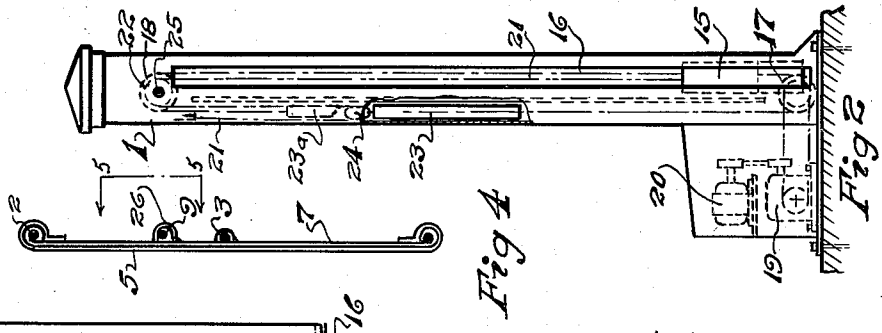

Fig. 4

Fig. 2

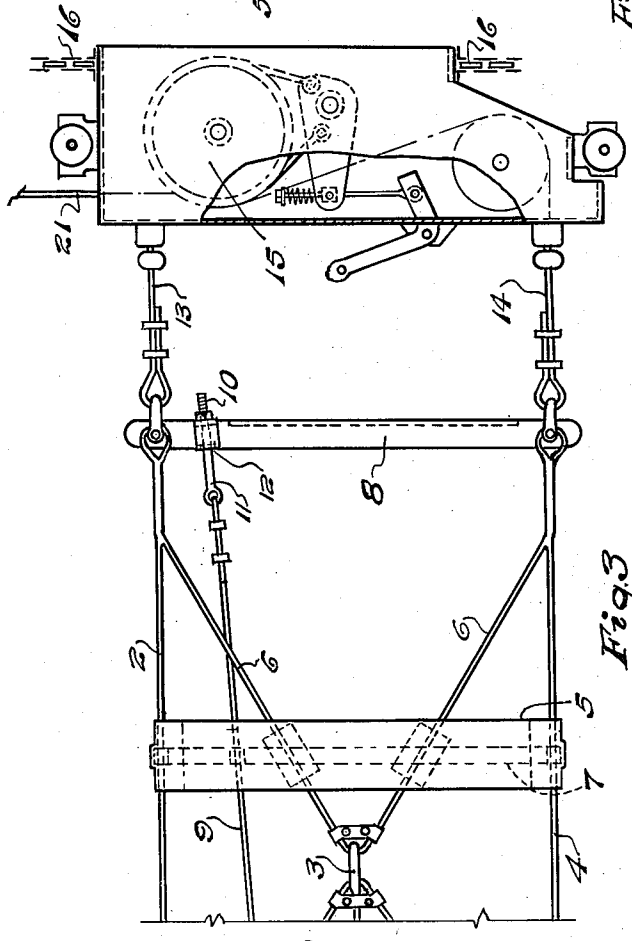

Fig. 3

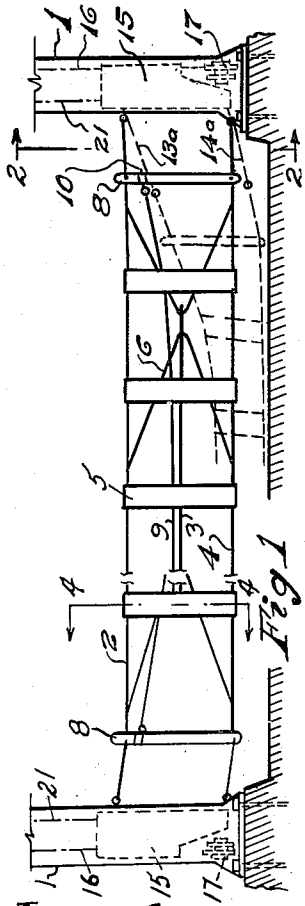

Fig. 1

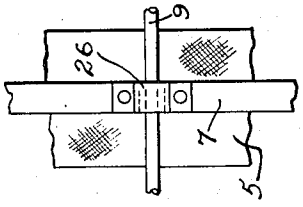

Fig. 5

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YIELDING BARRIER ROADWAY NETWORK CONSTRUCTION

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4 Claims. (Cl. 160—328)

1

My invention relates to certain novel improvements in yielding barrier roadway network construction, and has for its principal object the provision of an improved construction of this character, which provides a more efficient means for suspending the barrier net tautly between the columns of the barrier structure, and relates in part to my application, Serial Number 354,299, filed August 26, 1940, resulting in Patent 2,324,726, dated July 20, 1943.

A further object of this invention is to provide a novel means, in connection with the network, to obtain a taut horizontal net structure without the use of auxiliary net suspension devices which must be replaced manually after an impact test.

A third object is to provide means for obtaining a taut horizontally disposed roadway network, without appreciable sag even on roadways far wider than heretofore attempted, without the use of additional counterweight in the retrieving mechanism of the yielding barrier.

Another object of my invention is to provide a means for substitution of this new improved net construction on existing yielding barrier devices, so as to obtain a more taut net arrangement both for architectural desirability and efficiency of operation.

Other objects will appear hereinafter.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawing forming a part of this specification, and in which

Figure 1 is a partial elevational view of the lower part of the barrier structure, showing the net in full outline in its lowered position, and also showing the net in a possible extended position and embodying the invention.

Figure 2 is an elevational view of the motor column of the yielding barrier taken on line 2—2 of Figure 1, but with the full length of the column showing.

Figure 3 is an enlarged front view of one end of the yielding barrier net showing its association with the drum box portion of the barrier mechanism as fully described in my above mentioned patent application, Serial No. 354,299, filed August 26, 1940, resulting in Patent No. 2,324,726, dated July 20, 1943.

Figure 4 is an enlarged sectional view of the yielding barrier net taken on line 4—4 of Figure 1.

Figure 5 is a detail view taken on the line 5—5 of Fig. 4 showing the secondary cable passing slidable through ferrule of an intermediate spreader.

2

Referring to Figure 1 and Figure 2, the numeral 1 indicates one of the two columns of the barrier structure which serve to sustain the barrier network. Now, referring to Figures 1 and 3, this barrier network is composed of top cable 2 and center cable 3, bottom cable 4, vertical belting strips 5, diagonal cables 6, bendable stiffeners 7, rigid net end spreaders 8, catenary suspension cable 9 and its end take-up eye bolts 10, which are fitted with square shanks 11 so as to slip in square sockets 12 attached to rigid angle irons 8.

The means used to suspend the network between columns 1 consists of payout cables 13 and 14 at each end of the net, which pass into drum boxes 15 and are attached to drums as shown and described.

As shown in Figure 1 and Figure 2, drum boxes 15 are mounted so as to be moved vertically in columns 1 by means of sprocket chains 16, engaging sprockets 17 and 18. Sprocket 17 in motor column 1 is driven by speed reducer 19, which in turn is driven by motor 20. A synchronizing top shaft 25 extending between the colums 1 serves to synchronize the motion of the parts in each of the columns 1—as top sprockets 18 are secured to shaft 25, hence boxes 15 move up and down in columns 1 in unison. The cables 21 which pass upward in the columns 1 from each of boxes 15 pass around sheaves 22 mounted to revolve on shaft 25, and thence down around sheaves 24 of counterweights 23, which counterweights 23 are both the means for balancing boxes 15 and means for retrieving the network after the payout cables 13 and 14 have been extended to positions such as 13a and 14a. The counterweights 23 are made to rise to positions such as 23a when the payout cables 13 and 14 are extended to positions such as 13a and 14a. This raising of counterweights 23 due to extending payout cables 13 and 14 generates gravitational potential energy sufficient to pull the whole network back into a fairly taut position across the roadway.

The mechanical parts within boxes 15 cause the motion of payout cables 13 and 14 to induce movement of balance cables 21 as described in my above mentioned U. S. Patent No. 2,324,726, dated March 26, 1946.

In previous barrier constructions in which the catenary cable 9 was not used, the fairly taut retrieved position of the network still had consider-

able sag due to not having the counterweights 23 excessively large. With the catenary cable 9 built into the network, the retrieving pull of payout cables 13 and 14 communicate to rigid end angle irons 8 and thence thru eyebolts 10 to catenary cable 9 which when adjusted so as to take a heavy percentage of the suspension load of the network, produces a practically taut and straight-across-the-roadway net when observed visually. The stiffeners 7 keep the main cables of the net in a vertical plane and the placing of the catenary cable 9 well above the center of gravity at any point on the net, so as to avoid having the net tend to roll over into a warped surface, produces a workable straight-across-the-roadway network efficiently able to obstruct the passage of a car, pleasing to the eye architecturally and far more efficiently placed, as it fits the contour of the roadway surface and at the same time presents practically the same height of cable above the roadway surface for substantially the full width of the roadway.

In cases where the crown of the roadway surface is very pronounced, the network can even be made to apparently arch upward by taking up more slack on the catenary cable 9 at the adjustable end eyebolts 10.

The catenary cable 9 in its passage along the network from end to end passes freely thru loops 26 as shown in Figure 4, whereas the main cables 2, 3, and 4 are attached tightly though not rigidly to the stiffeners 7. This arrangement allows for catenary cable 9 adjustment without distortion of the other connections in the network.

Further, my present invention of an adjustable catenary cable type of network suspension for yielding barriers is applicable for use on any type of yielding barrier having a flexible roadway network supported in tension between the columns or standards and can be substituted thereon to enhance the architectural appearance and efficiency of any such barrier device. While I have illustrated and described a suitable embodiment for carrying the invention into use, I do not wish to be limited to the precise details set forth, but desire to avail myself of such combination, modification, and variations as may fall within the spirit and scope of the appended claims.

I claim:

1. In a yielding barrier of the class described having upper and lower payout cables, a roadway net stretched therebetween, a catenary tension member associated with the net, the ends of the catenary member terminated in adjustable devices located adjacent the top main net member, connections to the upper payout cables and slip-joint connections between the catenary tension member and the body of the net for freeing the catenary member from excessive impact stresses when the cables of the net are strained by impact.

2. A net for a yielding barrier extending in a vertical plane from and between two spaced supporting columns transversely across a roadway,

said net comprising upper and lower payout cables for resisting traffic impact, attached at their respective ends to said columns, a rigid spreader at each end of the net secured to and spaced between said upper and lower payout cables adjacent each column, bendable stiffeners spaced at intervals along said net, and a catenary suspension cable woven in hanging catenary pattern passing through said bendable stiffeners attached to and adjacent the tops of said rigid spreaders and the whole net being supported by said payout cables.

3. A pair of hollow columns, two primary flexible catenary cables stretched therebetween, winding drums and attached counterweights positioned within said columns, a pair of rigid vertical spreaders attached to said primary cables adjacent the face of each column, intermediate vertical spreaders having loops, mounted at their upper and lower ends on said primary catenary cables, a second catenary cable passed through said loops and attached to and stretched between said rigid vertical spreaders, and adjustable means in connection with the secondary catenary cable for length control, thereof, thereby shaping the flexible network between the rigid spreaders into a vertical rectangle hanging in a vertical plane.

4. A yielding barrier net comprising a pair of flexible upper and lower horizontal cables in spaced relation, and semi-flexible vertical bendable stiffeners attached thereto across a roadway between said upper and lower horizontal cables, a pair of opposed columns having counterweights movable vertically in said columns, a secondary catenary cable attached at its ends to said upper horizontal cable adjacent said columns, for supporting that portion of the net between its points of attachment, said secondary catenary cable woven to said bendable stiffeners with its whole length arranged above the center of gravity of the net having a sag well in excess of any sag of the said upper and lower horizontal cables of the net, and mechanical means for adjusting the tautness of said secondary catenary cable to align the net horizontally.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
403,433	Kosier	May 14, 1889
417,054	Little	Dec. 10, 1889
438,070	Eddy	Oct. 7, 1890
591,832	Fisher	Oct. 19, 1897
643,175	Warner	Feb. 13, 1900
2,324,726	Sawyer	July 20, 1943

FOREIGN PATENTS

Number	Country	Date
329,121	Germany	Nov. 13, 1920