W. J. DONOVAN.

BARRIER FOR DRAWBRIDGES, STREETS, AND THE LIKE.

APPLICATION FILED AUG. 14, 1920.

1,437,404.

Patented Dec. 5, 1922.

Fig. 1.

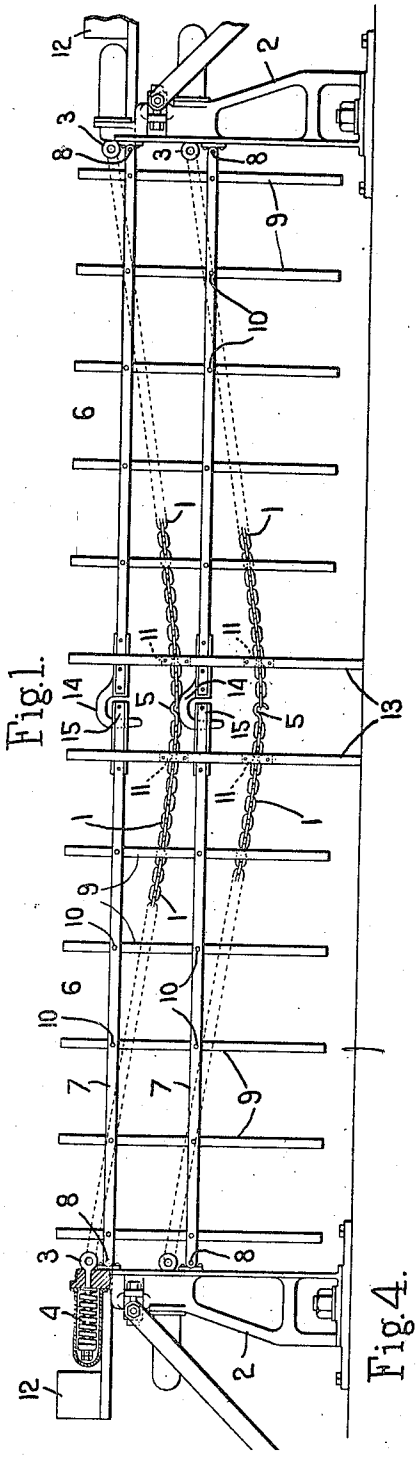


Fig. 3.

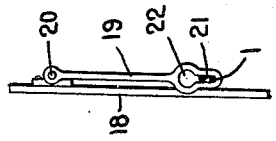


Fig. 2.

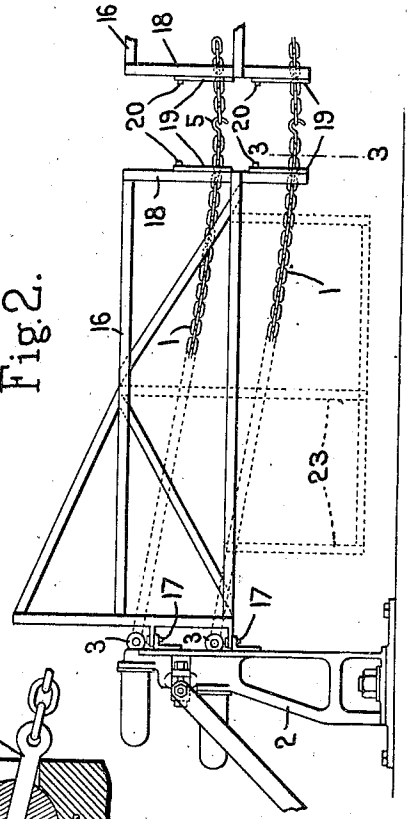
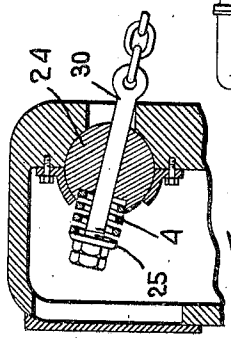


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM J. DONOVAN, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO RICHARD MINTON, OF EAST BOSTON, MASSACHUSETTS.

BARRIER FOR DRAWBRIDGES, STREETS, AND THE LIKE.

Application filed August 14, 1920. Serial No. 403,552.

To all whom it may concern:

Be it known that I, WILLIAM J. DONOVAN, a citizen of the United States, and resident of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Barriers for Drawbridges, Streets, and the like, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to barriers such as are placed across streets, highways, etc., at drawbridges for the purpose of protecting the traffic when the drawbridge is open.

The invention relates particularly to a barrier of the chain type, that is one in the form of a chain or chains which are arranged to be stretched across the street or highway when the latter is to be closed. The principal object of the invention is to provide an improved barrier of this type which is strong enough to stop a trolley car or heavily loaded truck without danger of breaking, and also to provide novel means for supporting the chain and carrying it into position across the highway when the barrier is put into operative position, and withdrawing it from the highway when the latter is to be open to traffic.

In order to give an understanding of my invention, I have illustrated in the drawings some embodiments thereof which will now be described, after which the novel features will be pointed out in the appended claims.

Fig. 1 is a view of a barrier embodying my invention;

Fig. 2 is a view showing a different embodiment of the invention;

Fig. 3 is an enlarged section on the line 3—3, Fig. 2;

Fig. 4 is a detailed sectional view showing still another embodiment of the invention.

Referring first to Fig. 1, 1—1 indicate chains which are adapted to be stretched across a highway or street for the purpose of closing the latter. These chains are supported at their ends by posts 2, and a yielding connection between the chains and the posts is provided so that if a moving vehicle engages the chains they will be permitted to give somewhat, thereby preventing damage either to the chains or to the vehicle. Any suitable spring connection between the chains and the posts may be employed without departing from my invention. I have illustrated herein a construction similar to that shown in my co-pending application, Serial No. 403,122, filed August 12, 1920. This connection comprises eyebolts 3 to which the chains are fastened and which are acted upon by suitable springs 4 arranged to yieldingly resist any strain to which the chain may be subjected. The posts 2 in Fig. 1 are shown as swivelled to the roadway so that they can turn about a vertical axis, all as described in my above-mentioned application.

There are many locations where it is desirable to have a barrier of sufficient strength to stop a loaded street car or a heavily loaded truck or any other heavy vehicle. The barriers which are ordinarily used are not of sufficient strength for this purpose and are more for the purpose of indicating that the street is closed than to provide a barrier which will actually stop a vehicle such as a street car.

I propose to provide a barrier which has sufficient strength to actually stop a moving street car or heavily loaded truck, and for this purpose I contemplate making the chains 1 of sufficient size to accomplish this object. A chain which has sufficient strength to actually stop a moving street car will be too heavy for a person to handle in the usual way.

My invention contemplates a chain-supporting device which is constructed to support the weight of the chain and is also constructed so that it can be moved to carry the chain into position across the roadway or into a position to open the roadway to traffic. This chain-supporting member may assume various forms without departing from my invention. In Fig. 1 each of the chains 1 is made in two sections, the two chain sections being detachably secured together at the center as shown at 5. Where this construction is employed, I will preferably use two chain-supporting members, one of which is associated with each of the posts 2, and each of which is adapted to support the weight of one section of each chain.

The chain-supporting members shown in Fig. 1 are indicated at 6, and each is in the form of a folding structure hinged to the posts 2 and arranged to swing upwardly into vertical position or to swing downwardly into horizontal position across the roadway.

Each of the chain-supporting elements

comprises two longitudinal members 7 which are hinged to the posts 2 at 8 and are adapted to swing from the horizontal position into a vertical position. Each chain supporting member also comprises a plurality of connecting members 9 which are pivotally connected to the two members 7, as shown at 10. This makes a pivoted, folding structure which can be swung from a horizontal to a vertical position, and which will fold up as it moves into its vertical position. The chain sections are secured to these chain-supporting members in some suitable way so that the latter will support the weight of the chains. One convenient way of securing the chains to the chain-supporting members is by means of straps 11 which are secured to one or more of the transverse members 9 and which inclose the chain. One of the longitudinal members 7 of each chain-supporting member extends beyond the pivot 8 and is provided with a suitable counter-weight 12 sufficient to counter-weight the weight of the chains 1.

With this structure, the chain sections 1 when connected provide the necessary strength to the barrier, and the chain-supporting members 6 provide means for supporting the chains and carrying them into and out of operative position. Each chain-supporting member will preferably be provided at its outer end with a rest or leg 13 to rest on the ground when the barrier is in operative position, thereby to hold the members in their horizontal position. These gate-supporting members 6 may be moved from their closed or horizontal position to the open position either manually or by power as desired. I will also preferably provide means for detachably connecting the gate-supporting members at their outer ends when they are in their horizontal or closed position. Such means are herein shown as a hook 14 on one gate section which is adapted to engage an eye or its equivalent 15 on the other gate section.

When the barrier is to be moved into inoperative position, the chain sections will first be disconnected at 5 and then the chain-supporting member having the hooks 14 will be raised sufficiently to withdraw the hooks from the eyes 15, after which both chain-supporting members may be swung up into vertical or open position. The reverse of these operations will result in bringing the chains into their operative position, after which the chain sections may be connected at 5.

The chains 1 provide an effective barrier for vehicles no matter how heavy they may be. Pedestrians however, can easily crawl through or under the chains. If it is desired to provide a barrier for pedestrians as well as for vehicles, then I propose to make the cross members 9 of sufficient length so that they will reach substantially to the ground and to place them close enough together to form an effective gate which will prevent the passage of pedestrians.

In Fig. 2, I have illustrated a different form of gate-supporting member, which is arranged to swing about a vertical axis or in a horizontal plane instead of in a vertical plane as in Fig. 1. In the structure shown in Fig. 2, the chains 1 are connected at their ends to the posts 2 by means of a suitable connection, all as indicated in Fig. 1, and the two chain sections are detachably secured together as shown at 5. This can conveniently be done by making one chain section with a hook to hook into an eye in the other chain section.

The chain-supporting members shown in Fig. 2 is in the form of a crane indicated generally at 16, said crane being hinged to the posts 2 as shown at 17 to swing in a horizontal plane. This crane 16 has at its outer end a vertical member or suspender 18 to which the chain sections are secured, so that the weight of each chain is taken by the chain-supporting member. For thus securing each chain to the crane I have shown a hanger 19, which is pivoted to the crane at 20 and is provided with a slot or loop 21 in which one of the links of the chain may be received. This slot 21 has an enlarged upper end 22 which is of sufficient size to permit the chain to be drawn therethrough. When, however, any link of the chain is dropped into the slot 21, then the chain will be prevented from longitudinal movement in the hanger but will be supported thereby.

This embodiment of the invention is susceptible of use in those locations where there are no obstructions to prevent the use of a horizontally swinging gate or crane.

The crane 16 may be simply a crane for supporting the weight of the chain or it may be in the form of a gate which will close the roadway to foot passengers. If a crane in the form of a gate is desired, then the crane may have the lattice work indicated by dotted lines 23 in Fig. 2.

In the above described embodiments of the invention, the posts 2 are swivelled to turn about a vertical axis so that if the barrier is struck by a vehicle and the chains are bowed outwardly, the posts can turn slightly.

In case a swivelled post is not suitable for use, I may in place thereof provide a swivel connection between each eyebolt 3 and the post. Such a construction is shown in Fig. 4 wherein the eyebolt indicated at 30 extends through a ball member 24 that has a socket bearing on the post 2. The cushioning spring 4 is interposed between a collar 25 on the eyebolt 30 and the ball member 24. With this arrangement, whenever either chain is engaged by a moving vehicle and is bowed outwardly, the ball members 24 will

permit the eyebolts to turn or swivel in the posts 2, so that said eyebolts will always remain in line with the chain. The strain on the eyebolts will always come longitudinally thereof and there will be no tendency to twist or break the eyebolts.

I claim:

1. In a barrier for streets, drawbridges and the like, the combination with two posts, of a flexible barrier extending from one post to the other and suspended from the posts when in operative position, said barrier being disconnectible to allow it to be removed from its operative position into position to permit traffic to proceed, and a barrier-supporting member independent structurally from the barrier and adapted to support the weight of the barrier when it is disconnected, the weight of the barrier when it is in operative position being sustained by the posts and not by the barrier-supporting member.

2. In a barrier for streets, drawbridges and the like, the combination with two posts, of a chain adapted to extend from one post to the other and when in operative position being suspended from the posts, said chain being disconnectible to allow it to be moved into inoperative position, and a movable chain-supporting member structurally independent from the chain and adapted to support the weight of the chain when it is disconnected, said member by its movement carrying the chain from its operative closed position to its inoperative open position.

3. In a barrier for streets, drawbridges and the like, the combination with two posts, of a chain section secured to each post, means for detachably connecting said chain sections together thereby to form a barrier extending from one post to the other and sustained by the posts, and a swinging chain-supporting member structurally independent from the chain and adapted to support the weight of the chain sections when they are disconnected, the swinging movement of said member carrying the chains into inoperative position.

4. In a device of the class described, the combination with two posts, of a chain section secured to each post, means to connect detachably said chain sections together thereby to form a barrier extending from post to post and suspended from the posts, a chain-supporting member for each chain section, each member being structurally independent from its chain section and being pivoted to the corresponding post, and means to support the weight of each chain on the corresponding chain-supporting member when the chain sections are disconnected.

5. In a barrier, the combination with a post, of a barrier chain, an eyebolt to which one end of said chain is connected, and a ball and socket connection between said eyebolt and post.

6. In a barrier, the combination with a post, of a barrier chain, an eyebolt to which said chain is connected, and a ball member through which said eyebolt extends, said post having a socket to receive the ball member.

In testimony whereof, I have signed my name to this specification.

WILLIAM J. DONOVAN.