

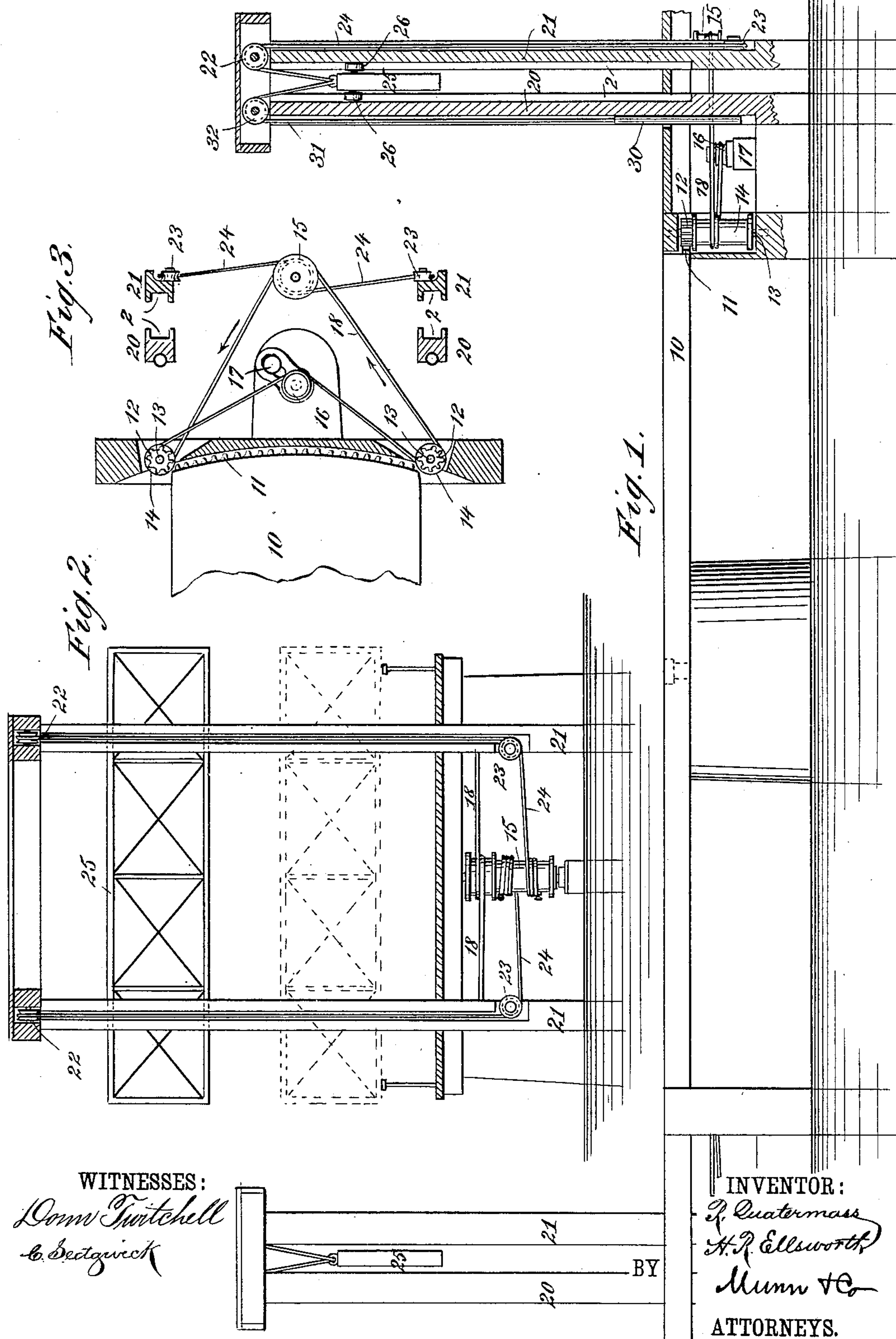
(No Model.)

2 Sheets—Sheet 1.

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DRAW BRIDGE GATE.

No. 350,696.

Patented Oct. 12, 1886.



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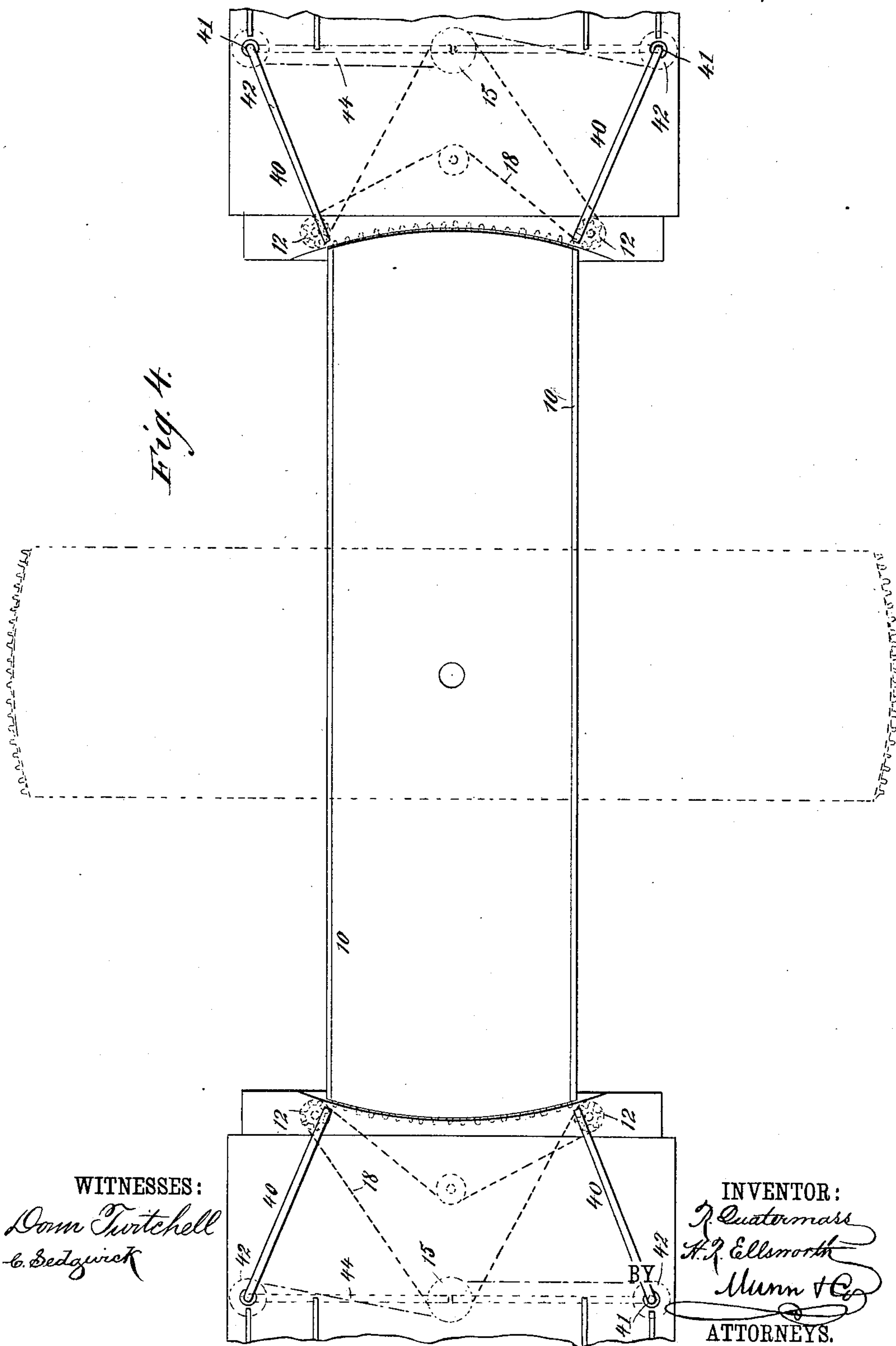
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# UNITED STATES PATENT OFFICE.

REUBEN QUATERMASS AND HERBERT R. ELLSWORTH, OF MOLINE, KANSAS.

## DRAW-BRIDGE GATE.

SPECIFICATION forming part of Letters Patent No. 350,696, dated October 12, 1886.

Application filed June 21, 1886. Serial No. 205,782. (No model.)

*To all whom it may concern:*

Be it known that we, REUBEN QUATERMASS and HERBERT R. ELLSWORTH, of Moline, in the county of Elk and State of Kansas, have invented a new and Improved Draw-Bridge Gate, of which the following is a full, clear, and exact description.

The object of our invention is to provide a gate to be used in connection with a draw-bridge, the said gate being so arranged that it will be automatically moved to close the roadway of the bridge at the time the bridge is opened, this closing being effected irrespective of the direction in which the bridge is moved.

To the end named the invention consists of a circular rack carried by the bridge and arranged to engage with pinions mounted upon the bulk-head upon either side of the end of the bridge when the bridge is in its normal or closed position, a peculiar and novel arrangement of cables and drums being employed to utilize the motion imparted to the pinions for the purpose of moving the barrier or gate to close the highway or road leading to the bridge.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the figures.

Figure 1 is a side view of our improved form of draw-bridge gate, the view being taken in partial section. Fig. 2 is an end view of our improved form of draw-bridge gate, the view being taken in partial section. Fig. 3 is a sectional plan view of the same, and Fig. 4 is a view of a modified construction.

In constructing such a gate as the one illustrated in the drawings, each end of the bridge 10 is provided with a circular rack, 11, arranged to engage with pinions 12, that are mounted on vertical shafts 13, said shafts being stepped in the bulk-head in about the relative position best shown in Fig. 3. In addition to the pinions 12 the shafts 13 carry drums 14, and back of the drums 14 there is mounted a double drum, 15, and a guiding-sheave, 16, which is preferably carried by an adjustably-mounted bracket, 17. An endless wire-rope cable or a chain, 18, is passed about the drum 15, (one or more turns being taken about said drum,) and from the drum 15 the cable or

chain is carried about one of the drums 14, then over the sheave 16 and about the other drum 14, and so on back to the drum 15, the cable being crossed behind one of the drums 14, as clearly shown in Fig. 3.

Upon either side of the roadway leading to the bridge 10 we mount two vertical posts or standards, 20 21, the approaching sides of each of the posts being provided with grooves 2, similar grooves being formed upon the opposite side of each of the posts. These posts extend beneath the roadway, and the posts 21 are provided with upper sheaves, 22, and lower sheaves, 23.

The gate or barrier 25 is mounted between the posts 20 and 21, and normally held in the position shown in full lines in Fig. 2 by wire ropes or chains 24, that are secured to opposite sides of the drum 15, and pass over the sheaves 23 22 to be secured to the top of the gate, as best shown in Fig. 1.

Upon each side of the gate there are arranged guiding-rollers 26, which ride in the grooves 2 and prevent jamming of the gate, and at the same time reduce the friction incident to the moving of the gate. Counterbalancing weights 30 are arranged in connection with the gate 25, said weights being connected to the gate by wire ropes or chains 31, which pass over sheaves 32.

Such being the general construction of the gate and its operating mechanism, it will be seen that, irrespective of the direction in which the bridge is moved to clear the way for a passing vessel, the pinions 13 will be rotated in a direction so as to carry the cable or chain 18 in the direction of the arrows shown in connection therewith, so that the drum 15 will be moved to unwind the cables or chains 24 and permit the gate to move to the position shown in dotted lines in Fig. 1, appropriate stops being provided which prevent the gate from being lowered below about the relative position illustrated in the drawings—that is, the stops are arranged so that the gate cannot be lowered below a position two or three feet above the roadway.

In Fig. 4 we illustrate a construction wherein the barrier employed to close the roadway leading to the bridge consists of two swinging bars or arms, 40, that are carried by vertical shafts 41, said shafts carrying drums 42, that



are engaged by a wire rope or chain, 44, which is secured to the drum 15, as indicated.

If desired, alarm bells may be secured in position so as to be sounded at intervals as the barrier is moved to close the roadway.

It will of course be understood that such a barrier as we have described would be located at each end of the bridge.

We are aware that it is old to operate a gate of a draw-bridge by means of a rack on the bridge engaging pinions on the gate-approach, each of the said pinions carrying two pulleys. Over one of the pulleys of each pinion and pulleys on uprights, chains having their ends attached to the gate pass, the other two pulleys being connected by a cross-belt passing under the gate-approach. We are also aware that a drum journaled under the gate-approach and carrying a pinion engaging a rack on the bridge, chains being attached to the drum, passed over guide-pulleys and attached to the gate, is likewise old, and we therefore do not claim such invention.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a bridge provided with a rack, 11, of pinions mounted on the bulk-head, drums carried by the shafts supporting the pinions, a double drum, and a cable or chain passing around said double drum, and the drums arranged in connection with the pinions, the chain being crossed at one of the pinion-drums, substantially as described.

2. The combination, with a draw-bridge provided with a rack, 11, of pinions 12, carried

by shafts 13, drums 14, carried by said shafts, a drum, 15, a sheave, 16, and a cable or chain, 18, which passes about the drum 15 and the drums 14, and is crossed at one of the drums 14, whereby, irrespective of the movement of the bridge in opening, the drum 15 will always be moved in the same direction, substantially as described.

3. The combination, with a bridge provided with a circular rack, 11, of pinions 12, arranged to be engaged by said rack, drums 14, controlled by said pinions, a drum, 15, guiding-sheave 16, an endless cable or chain, 18, passing about the drums 15 and 14 and being crossed at one of the said drums 14, a gate, 25, and cables or chains 24, extending from said gate over guiding-sheaves carried by properly-arranged standards to opposite sides of the drum 15, substantially as described.

4. The combination, with a bridge provided with a rack, 11, of pinions 12, drums 14, arranged in connection with said pinions, a drum, 15, guiding-sheave 16, a cable or chain, 18, arranged in connection with the drums 15 and 14 and crossed in front of one of the drums 14, a gate, 25, mounted between standards 20 and 21, and provided with guiding-rollers 26, cables or chains 24, connected to the gate and passing over sheaves 22 and 23 to opposite sides of the drum 15, weights 30, connected to the gate 25 by ropes or chains 31, which pass over sheaves 32, substantially as described.

REUBEN QUATERMAS.

HERBERT R. ELLSWORTH.

Witnesses:

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W. H. DOWNING.