No. 683,261. Patented Sept. 24, 1901.

E. EINERT.

BRIDGE GATE.

(Application filed Dec. 3, 1900.)

(No Model.)

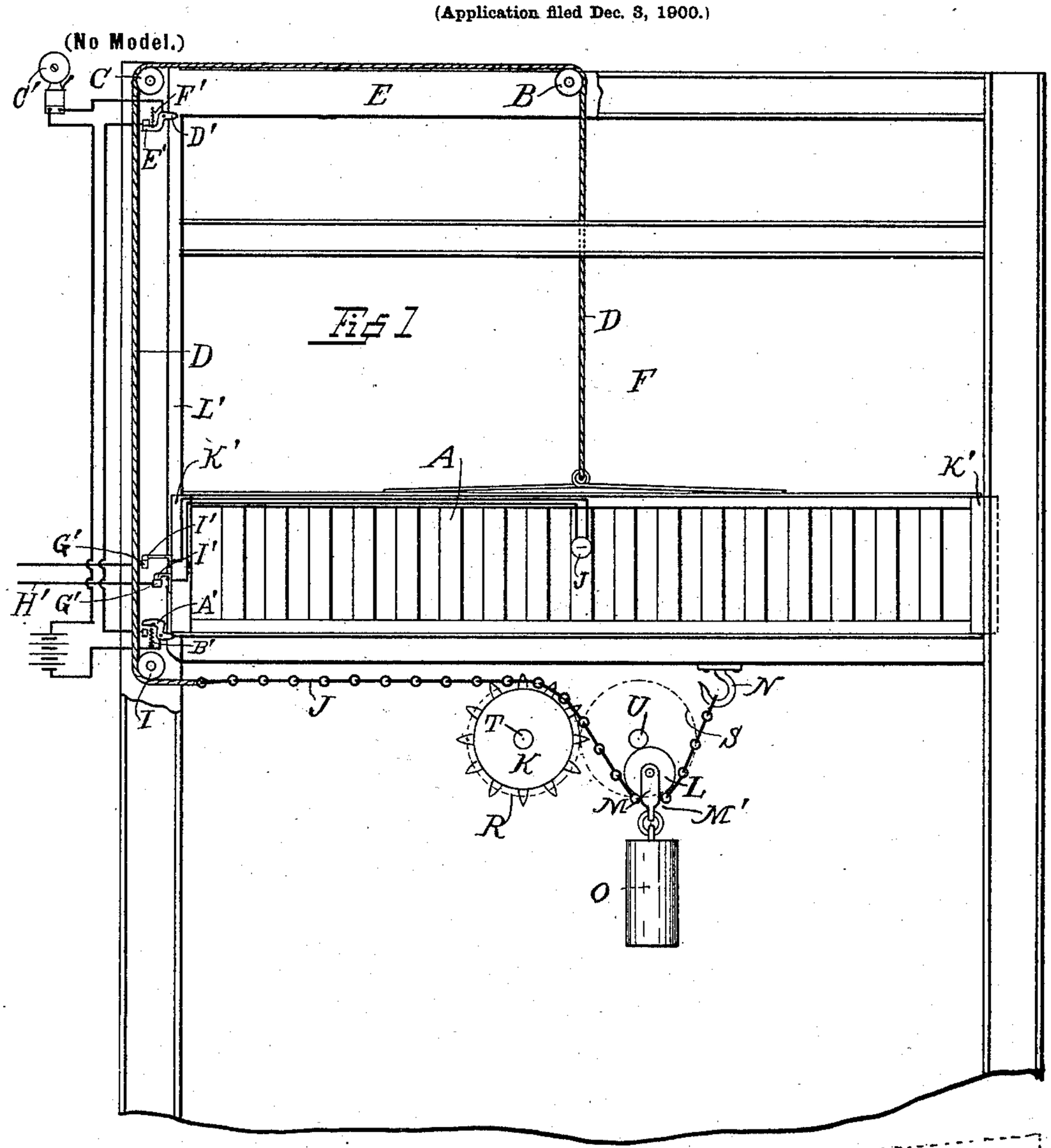


Fig. 1.

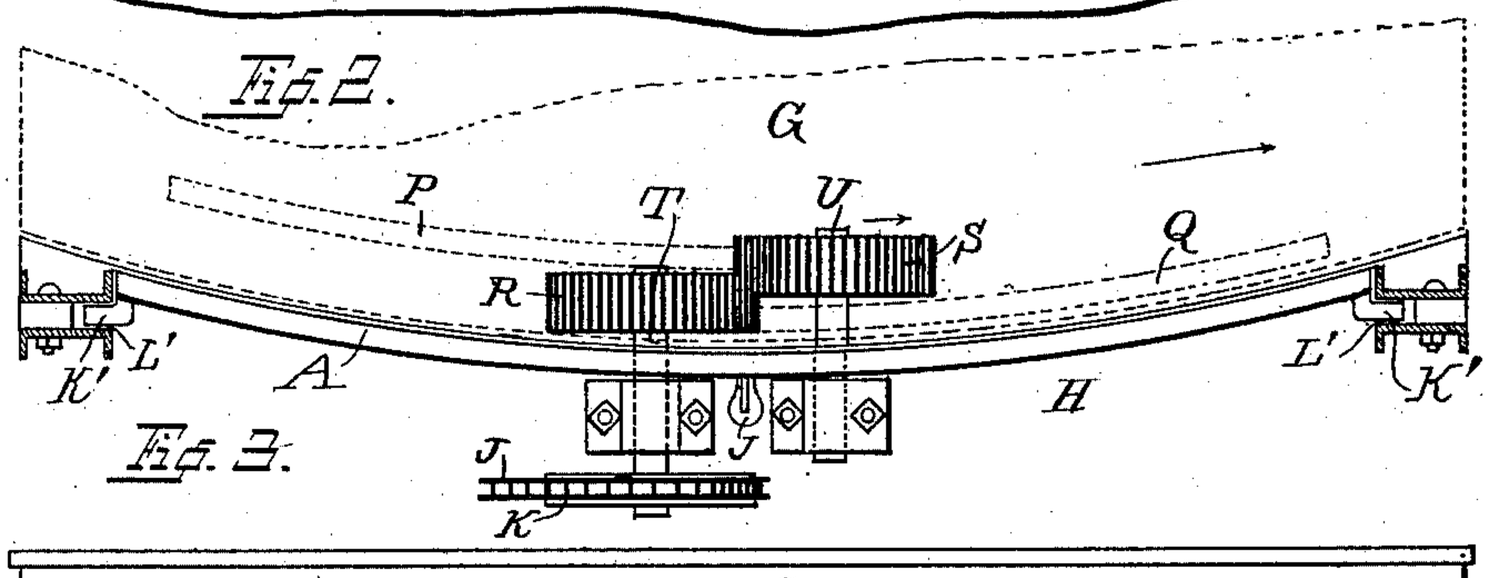
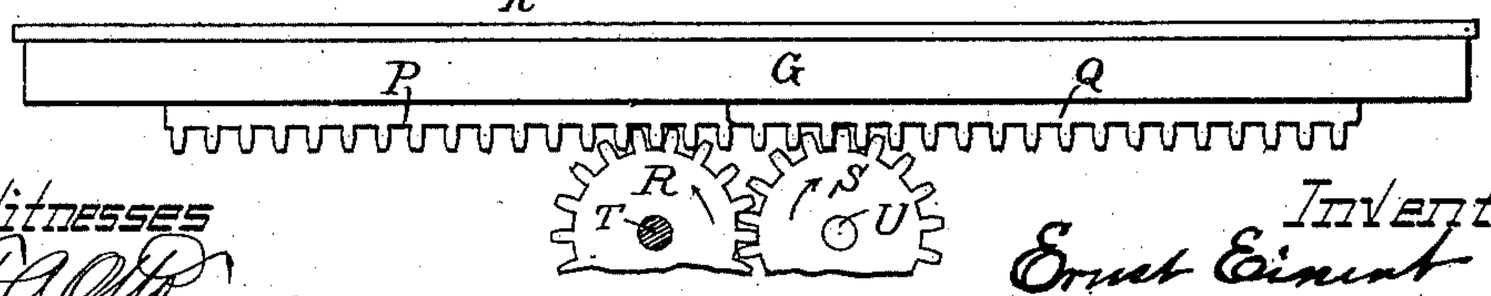


Fig. 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

ERNST EINERT, OF MILWAUKEE, WISCONSIN.

BRIDGE-GATE.

SPECIFICATION forming part of Letters Patent No. 683,261, dated September 24, 1901.

Application filed December 3, 1900. Serial No. 38,387. (No model.)

To all whom it may concern:

Be it known that I, ERNST EINERT, a citizen of the United States, residing at Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Bridge-Gates, of which the following is a specification.

My invention relates to improvements in that class of bridge-gates which are used in connection with an ordinary drawbridge, which are adapted to be automatically closed by the turning of the bridge in either direction as the same is opened and are automatically raised and opened as the bridge is turned back to the closed position.

My invention pertains more especially, first, to the device for raising the gate when the bridge is turned, as stated, in either direction by a single actuating cable or chain; second, to the device for counterbalancing the weight of the gate and retaining the actuating-chain in contact with the actuating-gear by a single weight, and, third, to the arched construction of the gate, whereby it is adapted to resist the movement of a vehicle if accidentally brought against it.

My invention is further explained by reference to the accompanying drawings, in which—

Figure 1 represents a front view of the gate and mechanism beneath for operating the same. Fig. 2 is a plan view, and Fig. 3 is a detail.

Like parts are identified by the same reference-letters throughout the several views.

A represents the gate, which is suspended from the pulleys B and C by the cable D. The pulleys B and C are supported from the frame E, which extends over and across the driveway F, which leads to the respective ends of the drawbridge G. The drawbridge G is pivotally supported at its center midway between the abutments H of the bridge, one of which only is shown in Fig. 2. The lower end of the rope or cable D passes around the pulley I and is connected with the sprocket-chain J, which chain J passes over sprocket-gear K and beneath the pulley L of the tackle-block M, when it is connected at a fixed point with the abutment of the bridge by the hook N. Suspended from the tackle-block M is a counterbalance O, the weight of which is merely equal to that of the gate, whereby the gate, being thus counterbalanced, is more easily moved.

The respective ends of the bridge are provided with segment rack-bars P and Q, which respectively conform in shape to the circles described by the bridge where attached. Each abutment of the bridge is provided with two separate rack-pinions R and S. The pinion S is actuated by the rack-bar P as the bridge turns toward the right, and the pinion R is actuated by the rack-bar Q as the bridge is turned toward the left. As the two rack-bars describe a different circle, it is obvious that when the rack-bar P is turned toward the right, as indicated by the arrow, the rack-bar Q will be turned away from and out of contact with the pinion R, whereby the shaft U and pinion S will be turned toward the right, as indicated by the arrow, and whereby the sprocket-gear K and shaft T will be turned toward the left through the action of the pinion S upon the pinion R, which pinions are geared together, when motion will be communicated through the sprocket-chain J and cable D to the gate, thereby causing the gate to be lowered to the position shown in Fig. 1. It will be understood that when the bridge is closed said parts will be moved in the opposite direction and motion will be communicated through said rack bar and pinion, sprocket-gear, and chain to said cable and gate, and the gate will be thereby opened. When, however, the gate is opened in the opposite direction, or turned toward the left, the rack-bar Q will be thereby brought in contact with the pinion R, while the rack-bar P will be moved out of contact with the pinion S, and the pinion R, shaft T, and sprocket-gear K will be revolved toward the left, thereby closing said gate.

A′ is an electric switch which is held open by contact with the gate A when down. When, however, said gate is raised, said switch is closed by the action of the spiral spring B′, whereby an electric signal-bell C′ is caused to ring until the gate A is brought in contact with the arm D′ of the switch E′, whereby said switch E′ is opened, when the electric circuit communicating with said bell is broken, and the ring of said bell thereby ceases. So in like manner when the gate A is lowered

away from contact with the arm D′ said switch E′ is closed by the action of the spiral spring F′ and said signal-bell is caused to ring until the gate reaches the lower position shown, when it is again brought in contact with the actuating-lever of the lower switch A′, whereby said lower switch is opened, and the signal-bell is thereby caused to cease ringing. Thus it is obvious that by this arrangement the signal-bell will ring when the gate A is moved in either direction, upward or downward, but is caused to cease ringing as soon as the gate reaches the limit of either of such movements.

G′ G′ are two terminals of an electric circuit H′, communicating from an electric-lighting plant, and I′ I′ are terminals of two wires communicating from an electric lamp J, located on the gate A. The terminals I′ are so located on the gate A that they are brought in contact with the respective terminals G′ G′ of the electric circuit H′, whereby when said gate is closed said electric light J′ is brought in electric circuit with the electric-lighting plant, and said light is thereby turned on and serves as a signal so long as said gate is retained in its closed position.

The gate A is preferably made in an arched shape, with its convex surfaces toward the approach of the bridge, whereby the strength of the gate is increased and whereby any pressure brought to bear against the center of the gate will have a tendency to force the two guide-bearings K′ outward and farther into the recesses L′ at the respective ends of the gate, thereby lessening the liability of the bridge becoming detached from its bearings.

While the counterweight O is preferably suspended from the tackle-block M, which tackle-block is supported upon the downward loop M′ of the sprocket-chain, said counterweight may, if desired, be suspended from the end of said sprocket-chain and said tackle-block M and hook N dispensed with.

The electric signaling apparatus shown and described in this application I reserve as the subject-matter of a separate application.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a drawbridge-gate, the combination of the respective ends of a bridge; of segmental rack-bars P and Q, each describing arcs of a different circle and with the respective bridge-abutments of the pinions R and S, adapted to mesh with each other and with the rack-bars P and Q respectively; pinion-supporting shafts T and U, having journal-bearings in said abutments; sprocket-gear K supported upon said shaft T; sprocket-chain J operating upon said gear K; counterweight O suspended from said sprocket-chain; frame E supported from said abutment over the approach to said bridge; gate A having guide-bearings in said frame; and flexible connections D communicating from said gate over suitable supports with said sprocket-chain J, substantially as and for the purpose specified.

In testimony whereof I affix my signature in the presence of two witnesses.

ERNST EINERT.

Witnesses:
JAS. B. ERWIN,
MARTIN EINERT.