

(No Model.)

2 Sheets—Sheet 1.

F. W. MASE.
GATE.

No. 577,484.

Patented Feb. 23, 1897.

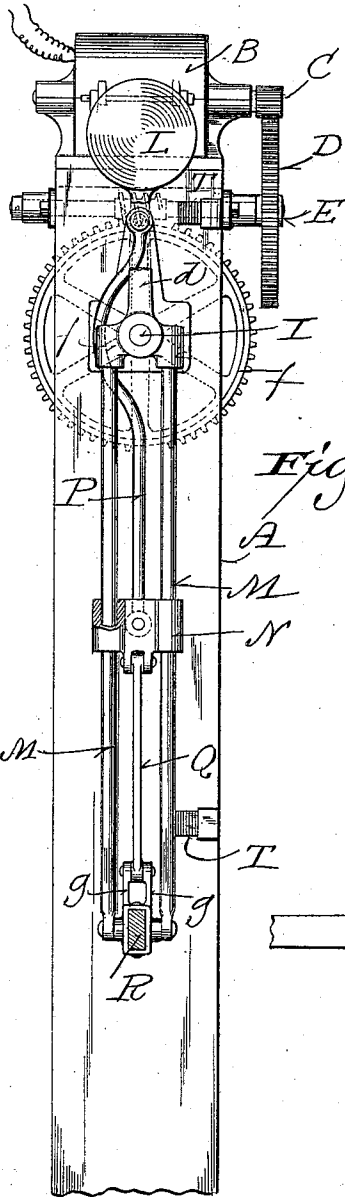


Fig. 1.

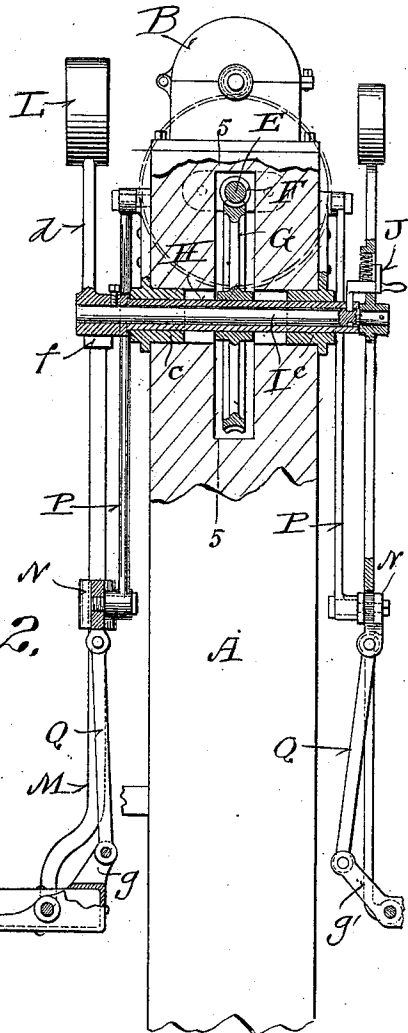


Fig. 2.

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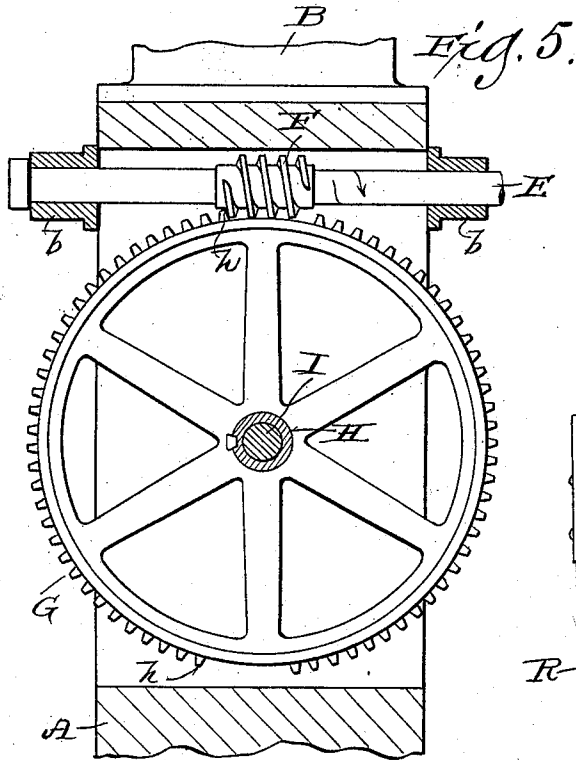


Fig. 5.

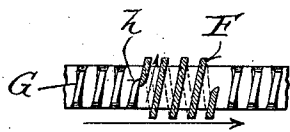


Fig. 6.

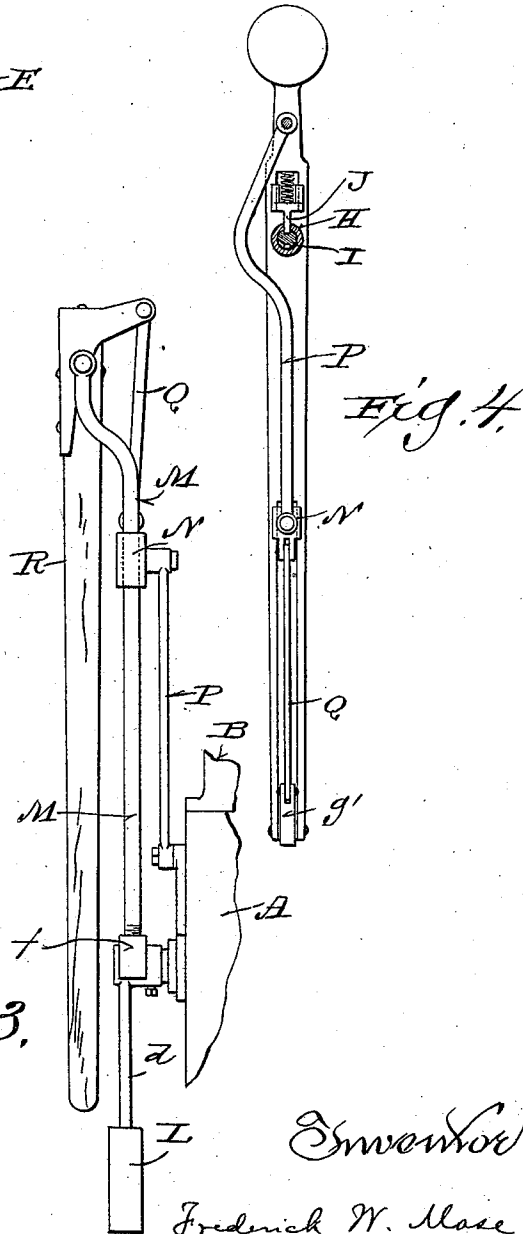


Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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TO AUGUST F. MASE, OF MILWAUKEE, WISCONSIN.

GATE.

SPECIFICATION forming part of Letters Patent No. 577,484, dated February 23, 1897.

Application filed July 20, 1896. Serial No. 599,833. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK W. MASE, a citizen of the United States, and a resident of Oshkosh, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Gates; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to simplify and cheapen the construction and operation of gates employed as barriers at railway-crossings and bridge approaches, it being especially designed as an improvement in the drop-and-lift mechanism of the gate set forth in Patent No. 558,192, issued April 14, 1896. Hence said invention consists in certain peculiarities of construction and combination of parts hereinafter set forth with reference to the accompanying drawings and subsequently claimed.

In the drawings, Figure 1 represents an assemblage of parts embodied in my invention as they appear in side elevation, the gate in this view being swung down and having its folding member in transverse section; Fig. 2, a front elevation, partly in section, showing two gates in connection with a single operating mechanism, both gates being swung down; Fig. 3, a front elevation illustrating a gate as it appears swung up out of the way; Fig. 4, a similar view, partly in transverse section, to illustrate a latch connecting a gate-arbor and a power-sleeve engaged thereby, the gate being in swung-down position; Fig. 5, a detail sectional view indicated by line 5 5 in Fig. 2, and Fig. 6 a diagram illustrating a worm-pinion running idle when the gate is full up or down.

Referring by letter to the drawings, A represents a longitudinally-slotted post that in practice is placed at one side of a crossing or bridge abutment to constitute a support for one or more gates and mechanism for operating the same. Mounted on the post is a properly-incased electric motor B, having its shaft provided with a pinion C in mesh with a spur-wheel D, the latter being fast on a shaft E, that turns in bearings b, bolted or otherwise rigidly connected to the post. Within the longitudinally-slotted portion of the post a worm-pinion F is made fast on

shaft E, and this pinion meshes with a worm-sector G, fast on a horizontal sleeve H, that is loose in bearings c, set in apertures in said post at right angles to the bearings aforesaid and below the same. The worm-sector may be obtained by mutilating an ordinary worm-wheel, so as to form diametrically opposite toothless spaces in which the worm-pinion may have free rotation.

Engaging sleeve H is a horizontal arbor I for one or more preferably counterweighted gates, that are hereinafter more particularly described. When the two gates are employed in connection with a single arbor, they operate on opposite sides of the post to form barriers for all or a portion of a roadway and an adjacent sidewalk.

A preferably spring-controlled latch J has longitudinally-adjustable connection with a gate-section fast on the arbor I, and this latch normally connects the sleeve H with said arbor, as clearly illustrated in Figs. 2 and 4. There are two diametrically opposite recesses in the arbor, and a latch-engaged opening in the sleeve comes into register with one or the other of said recesses to permit automatic seating of the latch when said gate-section is swung by hand, this being an operation that may be necessary at times, as hereinafter explained.

The arbor-connected section of each gate, as herein shown, may consist of a head having an arm d joined to a counterweight L, and a guide M made fast in sockets f of the head to extend therefrom in a direction opposite said arm.

The rods M serve as guides for a cross-head N, and a link P, pivoted on the gate-post above the arbor I, is also pivotally connected to the cross-head. Another link Q connects the cross-head with ears g of a bracket fast to the inner end of a bar R, constituting the folding section of the gate, the bracket being trunnioned to the lower ends of the guide-rods M, embodied in the arbor-connected portion of said gate.

In Figs. 2 and 4 an arbor-connected gate-section is shown in the form of a bifurcated counterweighted plate, the folding section of the gate being trunnioned to outturned ends of the plate-furcations and the cross-head

guided on these furcations and having an arm g' , pivoted to the link Q, that connects with said cross-head.

5 Elastic buffers T, of rubber or other suitable material, are shown in connection with the gate-post, and the utility of these buffers is hereinafter set forth.

Each gate or pair of gates is operated by a single electric motor, and in practice it is 10 preferable to have gates at diagonally opposite corners of a crossing or bridgeway brought into working position at the same time in order that traffic in the act of crossing in opposite directions may continue while other 15 traffic is cut off, after which the remaining gates are brought into working position, the respective motors being controlled from a more or less distant switchboard. It also follows that all the gates are preferably swung 20 up out of the way at the same time and that each gate in its upward swing moves away from the direction of traffic coming on the crossing or bridge. As each gate swings up its bar-section R automatically folds in and 25 down parallel to the remainder of said gate to clear overhead obstructions.

The operation of each gate from normal or swung-up position is as follows: Current is 30 let on the motor, and thus rotation is imparted to the gearing connecting the motor and worm-shafts. The worm-gear rotates the latch-connected sleeve and gate-arbor, whereby the guide-rod portion of said gate is rotated to come in position reverse to that shown 35 in Fig. 3, and at the same time there is play of the cross-head on its guides, due to differential movement of these guides and the link P, connecting said cross-head and gate-post. As a result of the differential movement of 40 the guides and the cross-head link P the other link Q operates to swing the bar R of the gate into horizontal position by the time the guide-rod portion of said gate has made one-half of one revolution to come into contact with the lower one of the elastic buffers 45 T on the gate-post.

Coincident with completion of the above-described operation the worm-pinion is practically out of mesh with the worm-sector, and 50 the terminal teeth h of this sector are made shorter than the intermediate teeth. Therefore the gate will have a slight oscillation should the motor continue to run after said gate is lowered, this oscillation being a result 55 of said pinion passing a short terminal tooth of said sector and the expansion of the elastic buffer in opposition to the guide-rod portion of the aforesaid gate. In consequence of the aforesaid oscillation the worm-sector 60 will come in and out of mesh with the worm-

pinion in order to readily operate in conjunction with the same when the motor is reversed. This same operation takes place when the gate is swung up to normal position should 65 the motor continue to run, the upper elastic buffer on the gate-post being then coactive with the worm-pinion operating upon a short terminal tooth of the worm-sector. The counterweight of the gate may be made to have a 70 preponderance beyond the center in such direction that when the guide-rod portion of the gate is vertical it will coact with the worm-gear to accomplish an oscillation for the purpose above specified, thus rendering the buffers a matter of choice rather than necessity. 75

In case the motor should fail to work from any cause, or it is desirable to have the gate swung up or down independent of said motor, a lift of latch J will permit operation of said gate by hand. 80

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

1. A horizontal arbor, suitable means for imparting rotary movement to the arbor, a 85 gate comprising a section fast on said arbor and another section in pivotal connection with the one aforesaid, a cross-head guided on the arbor-connected gate-section, a cross-head link having play on a fixed pivot, and 90 another link connecting said cross-head and pivotal gate-section.

2. A post, a sleeve in bearings on the post, suitable means for imparting rotary motion to the sleeve, an arbor engaging said sleeve and having latch connection therewith, a gate 95 comprising a section fast on the arbor and another section in pivotal connection with the one aforesaid, a cross-head guided on the arbor-connected gate-section, a link connecting 100 the cross-head and post, and another link connecting said cross-head and pivotal gate-section.

3. A post, an electric motor on the same for control from a more or less distant switch- 105 board, a motor-controlled worm-pinion, a worm-sector having terminal teeth of less length than the intermediate teeth, an automatic folding and rotary adjustable gate in connection with the worm-gear, and elastic 110 buffers on the post in position to abut the gate when the latter is up or down.

In testimony that I claim the foregoing I have hereunto set my hand, at Oshkosh, in the county of Winnebago and State of Wis- 115 consin, in the presence of two witnesses.

FREDERICK W. MASE.

Witnesses:

J. H. MERRILL,

C. H. McDONALD.