

July 24, 1951

H. H. HALL
GATE OPERATING MECHANISM

2,561,623

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2 Sheets-Sheet 1

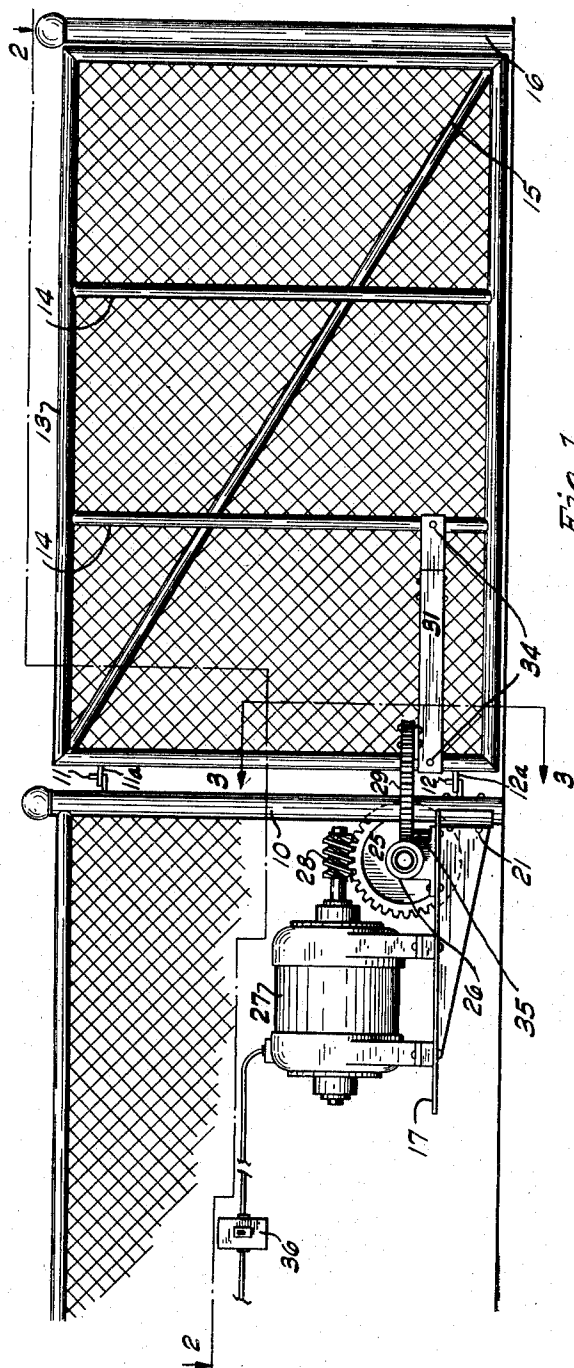


Fig 1

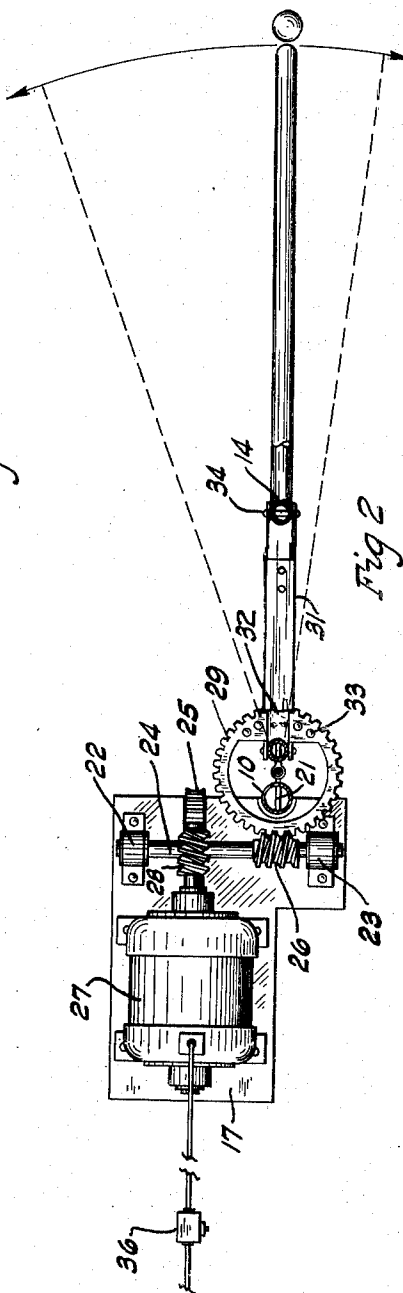


Fig 2

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2 Sheets-Sheet 2

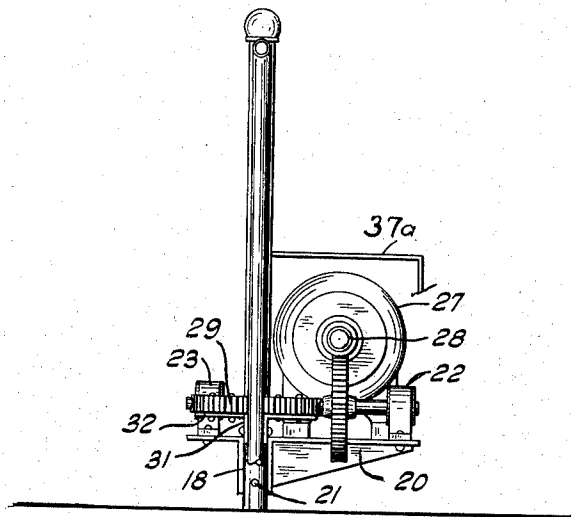


Fig. 3

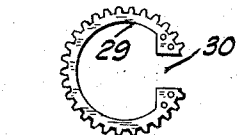


Fig. 4

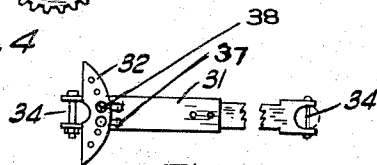


Fig. 5

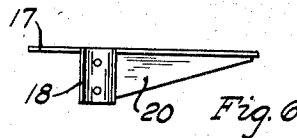


Fig. 6

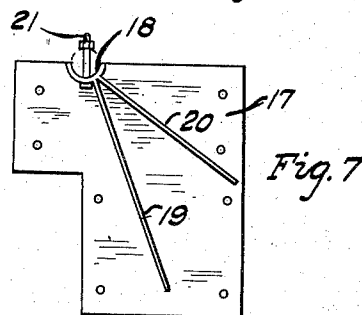


Fig. 7

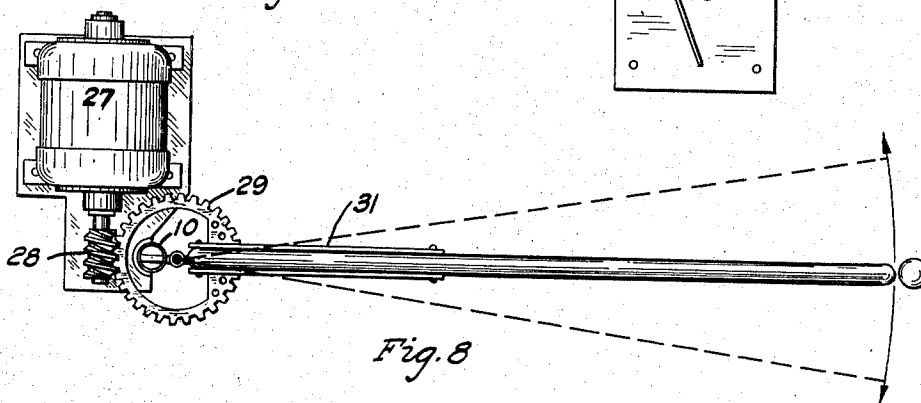


Fig. 8

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GATE OPERATING MECHANISM

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3 Claims. (Cl. 39—7)

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This invention relates to an improvement in means for opening and closing swinging gates.

It is customary to enclose factories, storage areas and similar places by means of high fences. Entrance to such enclosures are provided with gates that swing about vertical pivots positioned at one end.

It is the object of this invention to provide a mechanism for opening and closing such gates from a distance so that the gate keeper may control the operation by means of a switch position adjacent his station.

Another object is to produce a gate operating mechanism of such construction that it can be applied to gates that are already installed, without making any changes in the construction of the gates or their mode of operation.

Another object is to produce a gate operating mechanism of such a design and construction that all but one or two of the parts may be assembled at the factory and transported as a unit.

The above and any other objects that may become apparent as this description proceeds are attained by means of a construction and an arrangement of parts that will now be described in detail and for the purpose reference will be had to the accompanying drawings in which the invention has been illustrated and in which:

Figure 1 is a side elevation of a gate showing the operating mechanism in place, portions of the fence being removed to better disclose the invention.

Figure 2 is a top plan view of the operating mechanism showing portions of the gate in section, taken on line 2—2 Figure 1

Figure 3 is a section taken on line 3—3 Figure 1

Figure 4 is a top plan view of the worm gear

Figure 5 is a plan view of the brace bar;

Figures 6 and 7 are respectively a front end elevation and a bottom plan view of the support plate and

Figure 8 is a view similar to that shown in Figure 2, showing a modification

In the drawing reference numeral 10 designates a gate post that is provided with hinge members 11 and 12 which cooperate with loops 11a and 12a on gate 13. The upwardly extending hinge pins form the pivot about which gate 13 swings. The gate is constructed in the usual manner and comprises a rectangular frame having one or more vertical spacer bars 14 and a brace 15. The other gate post has been designated by numeral 16.

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The operating mechanism will now be described:

A support plate or bracket 17 is provided along its front edge with a semi-cylindrical sleeve 18 from which two gusset plates 19 and 20 radiate. Sleeve 18 has two holes for bolts 21 that serve to secure the sleeve and plate to the gate post as shown in Figures 2 and 3. Plate 17 is secured to the post at such a height that its upper surface is a short distance above the lower hinge somewhat as shown in Figure 1.

Two bearings 22 and 23 are secured to the upper surface of plate 17. A shaft 24 is journaled in bearings 22 and 23 and carries a worm wheel 25 and a worm 26. An electric motor 27 is secured to the upper surface of plate 17 and has its drive shaft provided with a worm 28 that is positioned to mesh with worm wheel 25.

A worm wheel sector 29, in the form of a ring, having a gap or opening 30 is positioned to encircle the gate post and is of such a diameter that its center will be positioned in the axis of pivotation, or, in other words, in a line joining hinge pivots 11 and 12.

A bar 31 is provided of a length sufficient to connect the end member of the gate with the nearest vertical bar 14. Bar 31 is provided at the left hand end, when viewed as in Figures 1 and 5, with a transverse plate 32 that may be secured thereto by welding. Worm wheel sector 29 is secured to plate 32 by bolts 33, or the like, after it has been positioned about the gate post, after which bar 31 is secured to the gate and to brace bar 14 by bolts 34. Worm wheel sector 29 is positioned so that it will be in operative engagement with the worm 26 as shown in Figure 2. Plate 17 may, if desired, be provided with a projection like that designated by reference numeral 35, for supporting worm wheel sector 29 in proper vertical position.

In Figure 8 a slightly modified form of the invention has been shown in which a single worm gear reduction has been shown. The embodiment shown in Figure 8 is better suited for small gates and with the same motor speed will operate the gate much faster.

The operation is controlled by a reversing switch like that shown in Figures 1 and 2 and designated by reference number 36.

The control circuit has not been shown because circuits for controlling the operation of a reversible motor are old and shown in many patents in this art. Limit switches can also be provided to stop the motor when the gate has reached fully open position.

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Since the gear reduction is effected by a non-reversible worm gear the gate will be held positively in any position. A suitable latch may be provided if desired.

The gist of this invention resides more particularly in the worm wheel sector 29 which has a gap 30. This makes it possible to position the gear on gates that have been hung.

Plate 17 can be attached to the gate post in a few minutes as it merely requires holes to be drilled in the post for bolts 21.

From the above description when taken in connection with the drawing it will be seen that the operating mechanism is very simple and rugged; that it is composed principally of parts that can be purchased in the open market. The worm wheel sector 29 and bar 31 being the only two members that must be manufactured special and bar 31 may be made in two parts and be adjustable as to length.

From Figures 2 and 8 it will be seen that the motor is positioned on the inside of the fence and the parts protected by a suitable cover as indicated by reference number 37a, Figure 3.

Attention is called to Figure 5 which shows that brace bar 31 is provided with two parallel slots 37, plate 32 has holes in register with slots 37 for the reception of bolts 38. Since worm gear 29 must be carefully centered with respect to the pivot of the gate any adjustments found necessary can be made by moving it along bar 31 and securing it in adjusted position by bolts 38.

Having described the invention what is claimed as new is:

1. A mechanism for use in controlling the opening and closing of gates that have one end supported by and swingingly connected with a vertical gate post; comprising a horizontal support plate connected with the gate post on the side opposite from the gate, an annular worm wheel sector encircling the gate post and the axis of gate pivotation, means securing the gear to the gate in concentric relation with the gate's axis of pivotation, bearings mounted on the support plate, a shaft journaled in said bearings, a worm carried by the shaft and positioned to mesh with the worm wheel sector, and a motor mounted on the support plate and operatively connected with the shaft for rotating it, whereby, when the shaft is rotated, the worm wheel sector and the gate will turn about the gate's axis of pivotation.

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2. A mechanism for use in opening and closing gates of the type having one end swingingly connected at one end with a vertical gate post; comprising a horizontal support plate secured to the gate post above the level of the bottom of the gate, said plate being on the side of the post opposite from the gate, a worm wheel sector attached to the gate at a height greater than the height of the support plate, said worm wheel sector being positioned in a plane perpendicular to the gate's axis of pivotation and concentric therewith, bearings mounted on the support plate, a shaft journaled in said bearings, a worm carried by the shaft in operative position relative to the worm wheel sector, a motor mounted on the support plate, and means comprising a speed reducing device transmitting rotations from the motor to the shaft.

3. A mechanism for use in opening and closing gates of the type having one end swingingly connected with a vertical gate post, comprising a horizontal support plate secured to the gate post at an elevation above the bottom of the gate, said plate being positioned on the side of the gate post opposite from the gate, a worm wheel sector attached to the gate at a height above the support plate, said worm wheel sector encircling the gate post substantially concentric with the axis about which the gate swings, a motor carried by the plate, aligned bearings mounted on the plate, a shaft mounted for rotation in said bearings, means comprising a worm gear reduction for transmitting rotation from the motor to the shaft, and means interconnecting the worm wheel sector with the shaft, for turning said sector and gate about the gate pivot when the shaft is rotated.

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

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