

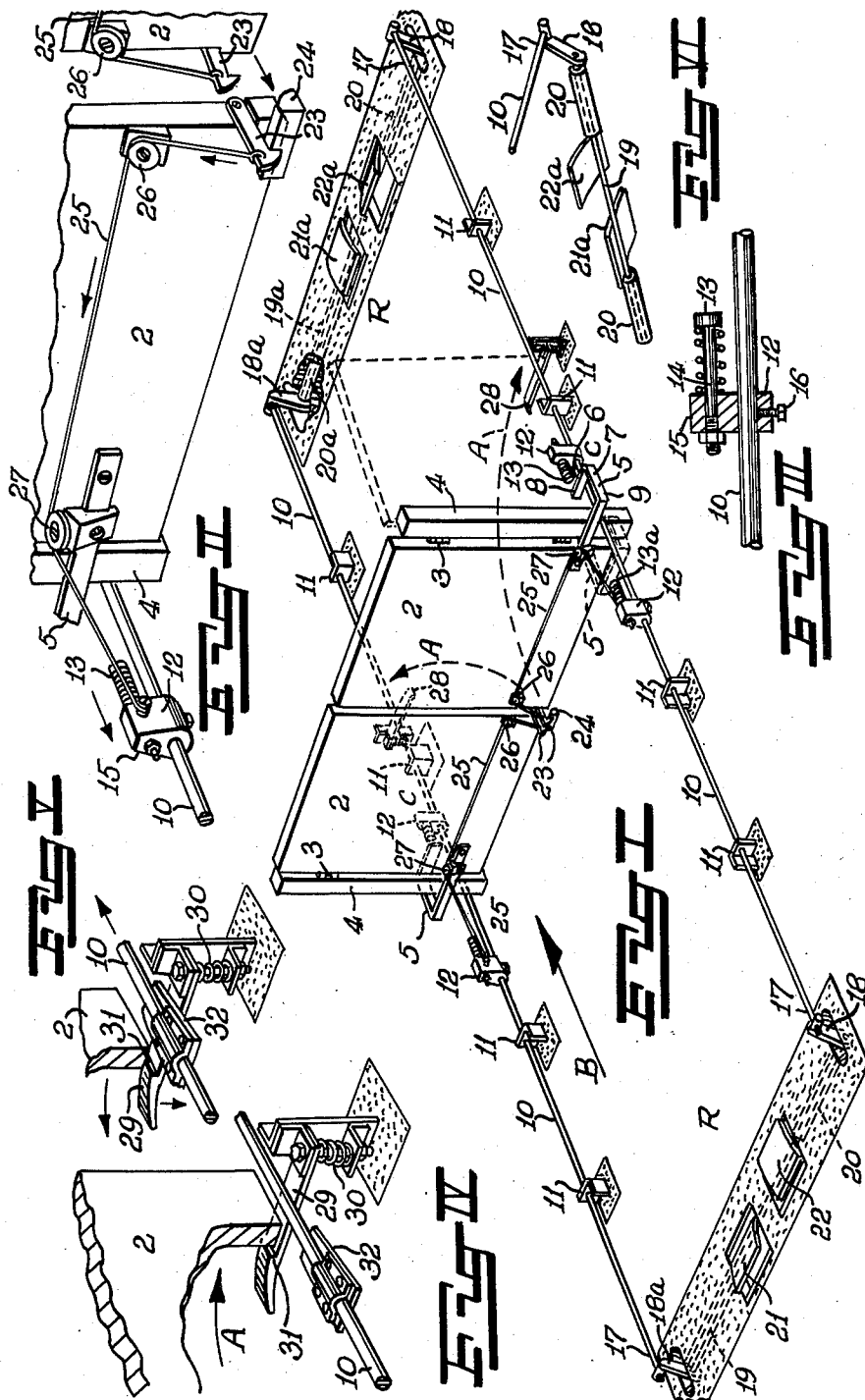
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DOOR AND GATE OPERATING MECHANISM

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DOOR AND GATE OPERATING MECHANISM

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This invention relates to door and gate operating mechanisms operated by the movement of a vehicle, and more particularly to mechanism designed to open and close vertically hinged gates of the type known as farm gates.

It is the object of the invention to provide simple and inexpensive mechanism to control the gates, and which ensures that gates are not left open; and in its preferred form the invention provides a means to open and close the gate irrespective of the side of approach of the vehicle.

Other objects will appear from the following description of an example of the invention which is illustrated in the attached drawings in which

Figure I is a perspective view of the assembly shown in operating position.

Figure II is an enlarged view, in perspective, of part of Figure I.

Figure III is a fragmentary side view, partly in section, of one striking element.

Figures IV and V are perspective views of a modified construction, and

Figure VI is a perspective view from below of part of Figure I.

The gates which are to be controlled are numbered 2, and may be double gates as shown in Figures I and II or, a single gate may be controlled, the former case being generally dealt with hereinafter. The gates are hung on vertical hinges 3 attached to gate posts 4. The gates swing open in the direction of the arrows A (Figures I and IV).

The opening and closing of the gates 2 are controlled by sets of mechanism which are the same for each gate, and for convenience only one set will be described.

If the gate be a single gate, then only one set of mechanism is provided.

Such mechanism comprises a bracket 5 fast with the gate and extending beyond it past the axis of the hinges 3. Said bracket presents two impact faces, 6, 7, respectively, both positioned beyond the said axis, one of which 6 is parallel to the plane of the gate and the other 7 of which is transverse thereto. To provide these faces, the bar is conveniently bent to U-shape, as shown, the faces being presented by the arms 8 and 9 respectively and being at right angles to one another.

Arranged parallel with the roadway R is a rod 10 which is slidably mounted in a series of guides 11 set into the edge of the roadway or into the earth adjacent that edge. The rod 10 extends to both sides of the gatepost 4.

Fixed on the rod 10 is striking structure generally designated 12, such structure being duplicated at either side of the gatepost 4. The purpose of such structure is to provide a striking element 13 (Figure III) which, when the rod 10 is moved longitudinally, impacts against one of

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the faces 6 or 7 to swing the gate open or closed, as the case may be. The structure may consist of a bolt 14 (the head of which impacts against the associated face 6 or 7 and constitutes the element 13), the bolt being slidably arranged in a block 15 mounted on the rod 10 and fixed to it by means of a set screw 16. At each of its ends 17 the rod 10 is fastened to a crank 18 or 18a (Figures I and VI) rigidly mounted on a rod 19 or 19a sunk into the roadway R and rotatably mounted in a sleeve 20. The rod 19 or 19a crosses the roadway and is connected to the cranks 18, 18a at either side of it.

Each rod 19 or 19a has rigidly mounted on it two plates 21, 22 or 21a, 22a respectively which are so arranged that when one of them is flush with the road surface, the other projects above the surface suitably to be trodden down by a wheel of a vehicle passing along the roadway.

The operation of the device thus far described is that the driver of a vehicle approaching the gate from either direction finds one of the plates on his side of the gate (say that marked 21) standing up from the road surface. For convenience, it is assumed that the direction of approach is that indicated by arrow B. He guides his vehicle for a wheel to run over the plate, which is depressed. The rod 19 is rotated and transmits its movement to the rods 10 which slide in their guides 11 in the direction opposite to that in which the vehicle is moving, thereby causing the elements 13 which are at the side of the gate opposite to that which the vehicle is approaching (and which are for convenience marked C) to strike against the faces 6 of the bars 5. The impact of the elements against the faces 6 swings the gates open.

The movement of the rods 10 is transmitted also to the rod 19a through the cranks, 18, 18a fast with the rod 19a, and rotation of the rod 19a causes the plate marked 21a—which hitherto has been flush with road surface—to be projected above the surface. Simultaneously, plate 22, hitherto depressed, is projected, and 22a, hitherto projected, is depressed.

The gates being now open, the striking face 7 of each bracket 5 is presented to its associated element 13a. This position is shown in dotted lines in Figure I.

The driver having negotiated the gateway, then guides a wheel of his vehicle over the plate 21a, thereby depressing it. The rod 19a rotates, the rods 10 move longitudinally, causing the faces 7 of the brackets 5 to be struck by their associated elements 13a, and thereby swinging the gates closed.

It will thus be seen that, in whatever direction the vehicle approaches and moves past the gateway, the driver finds one plate projected for depression to open the gates, and (when he has

passed through the gateway) another plate projected ready for depression to close the gates; the pair of plates 21 and 21a co-operating when the vehicle is moving in one direction and the plates 22, 22a co-operating when the approach is from the opposite direction.

It is desirable (if not essential) to provide positive means to hold the gates in open position, in addition to the means always provided to hold them closed. If the former means be provided, then it must be so arranged that it does not interfere with the swinging open or closed of the gates by the mechanism which has been described.

Dealing firstly with the means to hold the gates closed, such means consists, in the embodiment illustrated, of a hook 23 (Figures I and II) pivoted on each gate at its free vertical edge, and a block 24 positioned to be gravitationally engaged by the hooks when the gates close. A cord 25 is attached to each hook 23 towards the end of the hook remote from the pivot, passes over pulleys 26, 27 and is fastened to one of the blocks 15. The striking elements 13 which cause the gate to open are arranged to be a small distance from their associated faces 6 (about one-half inch being satisfactory) and during the movement of the elements towards the faces 6, the cords act to disengage the hooks 23 from the block 24; so that, by the time the elements meet the faces 6, the gates are free to be swung open. On the closing of the gates, the cords are sufficiently slack to enable the hooks to engage the block 24 gravitationally.

Means to hold the gates open is illustrated in Figures I, IV and V. In the Figure I arrangement, the means consists for each gate of a resilient leaf 28 positioned to engage the lower edge of the gate and to hold it frictionally against rebound. The Figures IV and V arrangement is intended for use in the case of a particularly heavy gate, such as may be the case when only a single gate fills the gateway. In this case the leaf 29 is biased upwardly by a compression spring 30, and is formed with a shoulder 31 to engage the gate against rebound. The gate is freed, before the closing means becomes operative, by a shoe 32 fast with the rod 10, which, as is shown in Figure V, engages the leaf 29 and depresses it to free the gate for closing.

The two plates 21, 22 or 21a, 22a at each side of the gate are so spaced that, when a vehicle wheel passes over one of them, the other is out of the way of the other wheel or wheels. They may be spaced sufficiently closely or sufficiently far apart to ensure that this occurs, whatever the wheel gauge of the vehicle.

I claim:

1. A gate-controlling device of the kind operated by the passage of a vehicle comprising a pedal in the road on each side of the gate in the path of a wheel of a vehicle using the road, a longitudinal rod parallel with the extent of the road, a crank mechanism connecting each pedal to the rod, and so arranged that movement of either pedal imposes longitudinal movement on the rod and vice versa; one pedal being projected above the surface of the road when the other is depressed, and vice versa; two striking surfaces rigidly associated with the gate and displaced from the hinge axis; and two striking elements mounted on the rod, each element being associated with one of the striking surfaces; one element being positioned to impact against its associated surface to swing the gate open when one of the pedals is depressed, and the other element being positioned to impact against its associated surface to swing the gate closed when the other pedal is depressed.

2. A device as claimed in claim 1 in which each striking element is resiliently mounted on the rod.

3. A device as claimed in claim 1 comprising a bracket attached to the gate and projecting beyond the hinge axis, the bracket providing the two striking surfaces.

4. A gate-controlling device of the kind operated by the passage of a vehicle, comprising a pair of pedals in the road on each side of the gate in the path of a vehicle using the road, a longitudinal rod parallel with one another and with the length of the road, a transverse rod at each side of the gate on which the pair of pedals is rigidly mounted, crank mechanisms connecting the transverse rods and the longitudinal rod so as to convert movement of the pedals to longitudinal movement of the rods, and vice versa; one of each pair of pedals being projected above the surface of the road when the other of the pair is depressed and one of the other pair of pedals being simultaneously projected and the other depressed; two striking surfaces rigidly associated with the gate and displaced from the hinge axis; two striking elements on the longitudinal rod each element being associated with one of the striking surfaces; one element being positioned to impact against its associated surface to swing the gate open when the projecting pedal at either side of the gate is depressed; and the other element being positioned to impact against its associated surface to swing the gate closed when the pedal at the other side of the gate which has been projected on depression of the first-named pedal is depressed.

5. A device as claimed in claim 4 in which each striking element is resiliently mounted on the rod.

6. A device as claimed in claim 6 comprising a bracket attached to the gate and projecting beyond the hinge axis, the bracket providing the two striking surfaces.

7. A device as claimed in claim 6 and suitable for controlling double gates hung on vertical hinges, including a second longitudinal rod parallel with the first longitudinal rod, and a crank mechanism between each transverse rod and each longitudinal rod, two striking surfaces rigidly associated with each gate, and two striking elements on each longitudinal rod, one pair of striking elements and surfaces controlling one gate, and the other pair controlling the second gate.

8. A device as claimed in claim 7 comprising a bracket attached to the gate and projecting beyond the hinge axis, the bracket providing the two striking surfaces.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
690,043	Allgier	Dec. 31, 1901
1,205,208	Holland	Nov. 21, 1916
1,426,062	Harrington	Aug. 15, 1922
2,079,919	Mowers	May 11, 1937
2,424,721	Stover	July 29, 1947