

(No Model.)

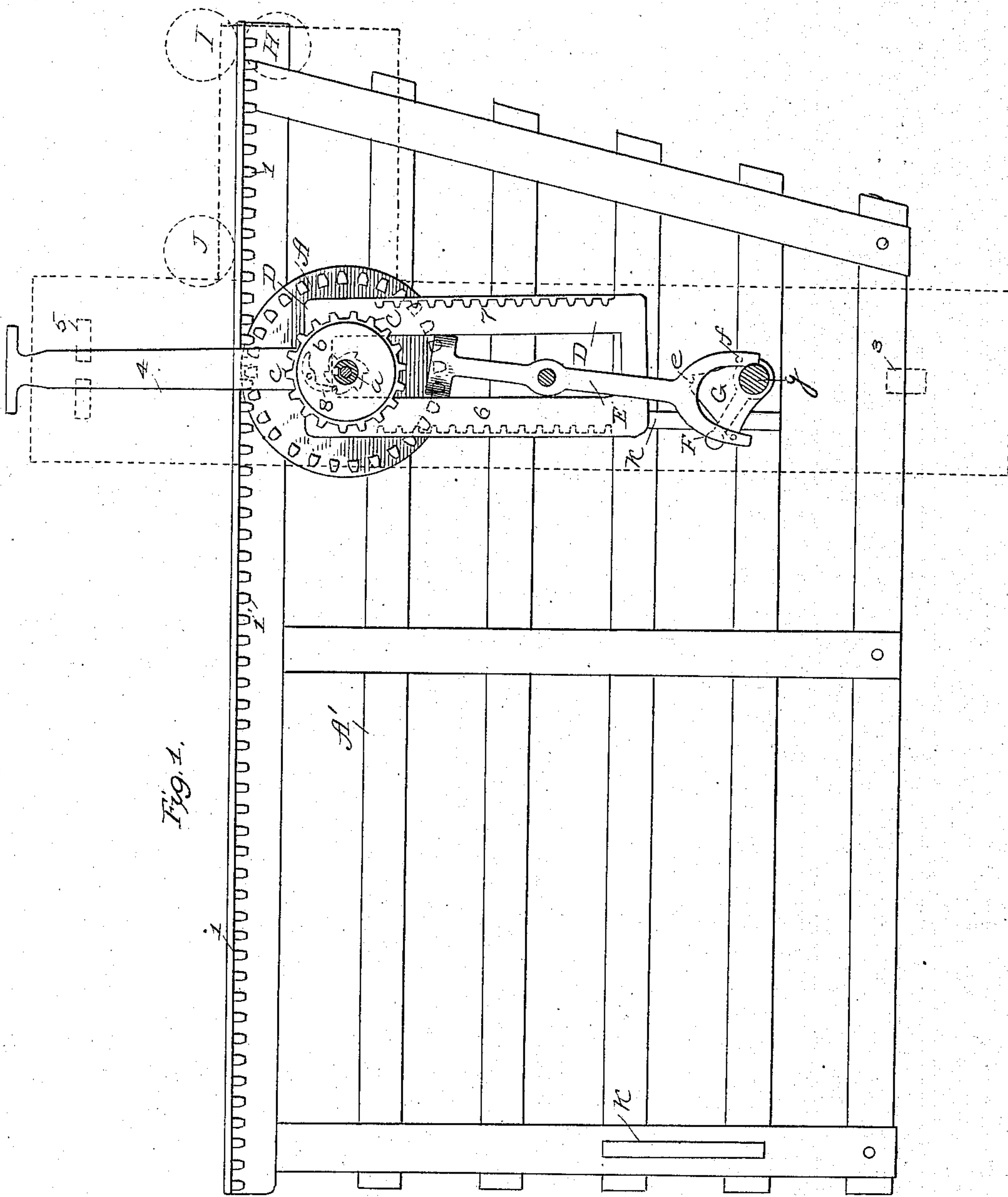
W. H. COX.

2 Sheets—Sheet 1.

GATE.

No. 322,352.

Patented July 14, 1885.



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F. L. Middleton

Inventor  
William H. Cox  
by Joyce W. Spear  
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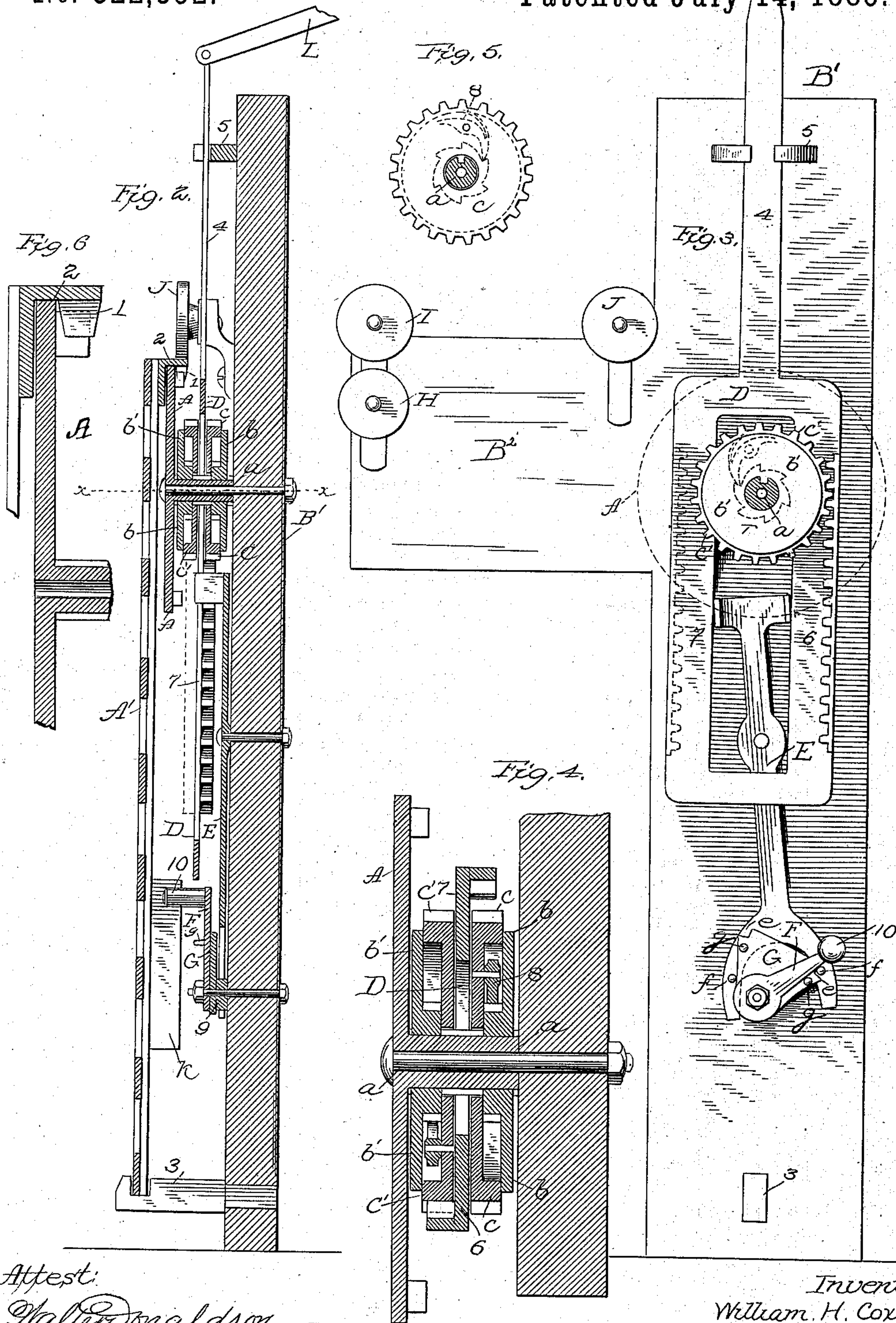
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# UNITED STATES PATENT OFFICE.

WILLIAM H. COX, OF VIRDEN, ILLINOIS.

## GATE.

SPECIFICATION forming part of Letters Patent No. 322,352, dated July 14, 1885.

Application filed November 12, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. COX, of Virden, in the county of Macoupin and State of Illinois, have invented a new and useful  
5 Improvement in Gates; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to gates of that class adapted to be operated from the carriage.

10 The invention is an improvement on the gate patented by me on the 6th day of November, 1883, No. 287,805, and while retaining the same general principle of operation the details of construction are materially modified, the object being to render the mechanism  
15 more simple and efficient than in the patent referred to.

In the following specification I have fully described my improvements, and specifically  
20 indicated in the claims what I consider to be of my invention.

In the drawings, Figure 1 represents a rear elevation of my gate, the post being shown in dotted lines. Fig. 2 is a central vertical section, through the supporting-post and operating mechanism. Fig. 3 is a view of the end  
25 where the operating mechanism is placed, representing the parts in front elevation, the supporting cog-wheel being removed. Fig. 4 represents a section on line *x x* of Fig. 2. Fig. 5  
30 is a view of the gear *c'*, looking from the front. Fig. 6 is a detail section of the main supporting-wheel and track.

The gate I have marked *A'*, which may be  
35 of suitable construction. In the present form I have shown the ordinary slatted gate provided with a cap-piece. This cap-plate projects beyond the top rail, and in the angle I screw or bolt a cogged track, 1, which is preferably cast in sections of two feet, more or  
40 less.

The gate is supported by a cogged wheel, *A*, which is on a shaft, *a*, supported in suitable bearings in a post, *B'*, this shaft being capable  
45 of being revolved with the wheel. The wheel *A* is supported on the outer end of this shaft, and has cogged teeth on its inner surface adapted to the teeth on the track of the gate. These teeth do not extend to the outer periphery of the wheel, but terminate within a short  
50 distance of the edge, so that the periphery of this wheel may bear directly on the gate-track,

and thus assist in the movement of the same, a space, 2, being left between the teeth of the track and the rear wall of the angle-iron for  
55 this purpose.

The post *B'* has an arm, *B<sup>2</sup>*, projecting from it at right angles at a height about the level of the track on the gate, and on this pulleys  
60 *H I J* are provided, the pulley *H* bearing in the space 2, above described, and the pulleys *I J* on the cap-plate, thus amply supporting the gate, whatever its position. A projection, 3, is formed at the bottom of the post to assist  
65 in supporting and guiding the gate, and, if desired, an anti-friction roller may be used, also.

The wheel *A*, and through it the gate, derives motion as follows: A slotted plate or bar, *D*, is provided, having an upward extension, 4, for the connection of the operating-  
70 handles, the slotted portion straddling the shaft *a* and the part 4 working in a guide, 5, on the upper part of the post. This plate *D* is in the shape of a rectangle, with a rectangular slot or opening in its center. The arms  
75 6 7 on the right and left of the slot have rack-teeth raised above the level of the plate, the teeth projecting inwardly from the outer edge and alternately arranged, the teeth on  
80 arm 6 being on the outer surface of the plate *D*, and the teeth on the arm 7 being on the inner surface thereof.

Splined to the hub of the wheel *A* is a disk, *b*, which is adapted to a gear-wheel, *c*, on the  
85 said hub, and arranged beneath the plate *D* next the post. The interior of the gear *c* is recessed and is provided with a pawl, 8, and spring, the pawl being adapted to engage with  
90 a ratchet-wheel, *d*, secured to the disk *b*, the recess in the gear *c* being sufficient to receive it without crowding. The disk *b* entirely covers the recess and makes a smooth cover for  
95 the gear-wheel. The teeth on this gear engage with the rack-bar on the side of the arm 7.

Above the plate *D* is a disk and gear wheel, *b' c'*, in all respects similar to the one just described, the disk being splined to the hub of  
100 the wheel *A*, and carrying a ratchet-wheel adapted to operate with the pawl within the gear *c'*, and the gear engages with the rack-bar on the arm 6 in certain movements of the  
105 plate *D*, as hereinafter described.

It will be seen from the above that the gear *c* will turn freely in one direction when oper-



ated by the teeth of the rack of the arm 7; but when turned in the opposite direction the pawl will engage with the ratchet-wheel on the disk *b* and will turn the wheel *A* and accordingly move the gate. The gear *c'* acts in a precisely similar manner when in engagement with the rack on its side, and turns the wheel *A* and gate in a direction opposite to the movement given by the gear *c*.

In order to provide for shifting the plate or frame *D*, so as to throw one or the other of the racks thereon into connection with the gear-wheels *c* or *c'*, I use a shifting-lever, *E*, which is pivoted to the post at about its center, as shown. This lever passes below the plate *D*, but has turned-up flanges in its upper end, which enter the slotted portion of the plate *D* and rest against the wall of the slot. By means of this lever motion communicated through its lower end will throw the plate or frame *D* to one side or the other, so as to engage the gear *c* or *c'*, as desired. In order to make this shifting automatic, so as to change at the end of one movement of the gate, whether the gate be open or closed, I provide the following devices: The end of the lever *E* is bifurcated or pronged, as shown, and the parts thereof pass upon each side of a stud, 9, fixed in the position shown. Upon this stud I pivot a shifting cam-plate, *G*, which is constructed, as shown, with curved sides approximately wedge-shaped, enlarging toward its upper end. This shifting plate has locking-notches *e* in the corners, which are adapted to pins *f* in the ends of the prongs of the lever *E*. As the shifting plate *G* is moved to one side the curved edge bears upon one of the pins *f*, and by reason of its wedge shape pushes the end of the lever *E* to one side until the pin falls into the locking-notch *e*, where it is held until the opening or closing of the gate is completed. This shifting of the lower end of *E* of course throws the plate or frame *D* to one side and places the rack on one side in engagement with the gear adapted thereto.

Pivoted to the same stud and resting upon the cam-plate *G* is a weighted lever, *F*, which is of the shape shown, carrying a weight, 10, upon its upper end and having a limited movement on the plate *G* between pins *g g*, set in each corner of the said cam-plate. The gate is provided at each end with a strip or projection, *K*, and the movement of the gate is between these projections. As the gate is being moved from one position to another, as it nears the end of its movement one of the projections comes in contact with the weight 10 of the lever, and as the movement continues the lever is moved in the same direction as the gate until it passes the vertical center of the pivotal point, whence it falls by gravity to the other side against the pin *g* of the cam-plate, which causes that plate to shift to the same side, which in turn bears against

the pin *p* of the lever *E*, moving it to one side into the locking-notch *e*, this movement pushing the plate *D* to one side and connecting the rack and gear on the side opposite to that which had been previously engaged.

The extended portion of the plate *D* is provided with ears, to which are connected levers *L L*, and ordinary hand-cords are attached to these levers, as in my patent aforesaid.

The operation of the gate is as follows: Supposing the gate to be closed and the operator upon the side of the gate facing the wheel *A*. The gate being shut, the weighted lever has fallen over to the right-hand side. A pull on the cord draws up the plate *D*, the rack on the right hand engaging with the gear-wheel *c'*. This opens the gate. Just before the gate has completed its movement in this direction the projection *K* on the front of the gate strikes the lever *F*, as described, throwing it to the opposite side, shifting the plate *D* through the lever *E*, and throwing the left-hand rack in gear with the wheel *c*. It will thus be seen that the rack and gear upon one side always opens the gate, and the opposite rack and gear closes it, without regard to which of the levers *L* are operated.

Any suitable stop at the ends receives the impact of the gate.

The racks on the plate *D*, when at rest, drop down so low that rack and wheel are not in gear, thus permitting the gate to be pushed backward or forward by hand freely.

Having thus described my invention, what I claim is—

1. A suspended gate resting upon a cogged wheel, a supporting-shaft for said wheel, clutch-gears on the hub of said wheel adapted to act in opposite directions, a slotted plate or bar straddling the said hub between the clutch-gears, rack-teeth on diagonally-opposite sides thereof adapted to mesh with the clutch-gears, and a pivoted bar fitted to the opening in the plate *D* and adapted to move said plate into gear with one clutch-gear or the other, and the operating-levers connected with the plate *D*, the parts being combined, substantially as described.

2. The combination, in a gate having a track resting upon a cogged wheel, *A*, of the plate or frame *D*, the gears *c c'*, adapted to the racks of the said frame *D*, the lever *E*, shifting cam-plate *G*, weighted lever *F*, and projections on the gate, all operating substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

W. H. COX.

Witnesses:

H. C. BRADLEY,  
G. H. COX.