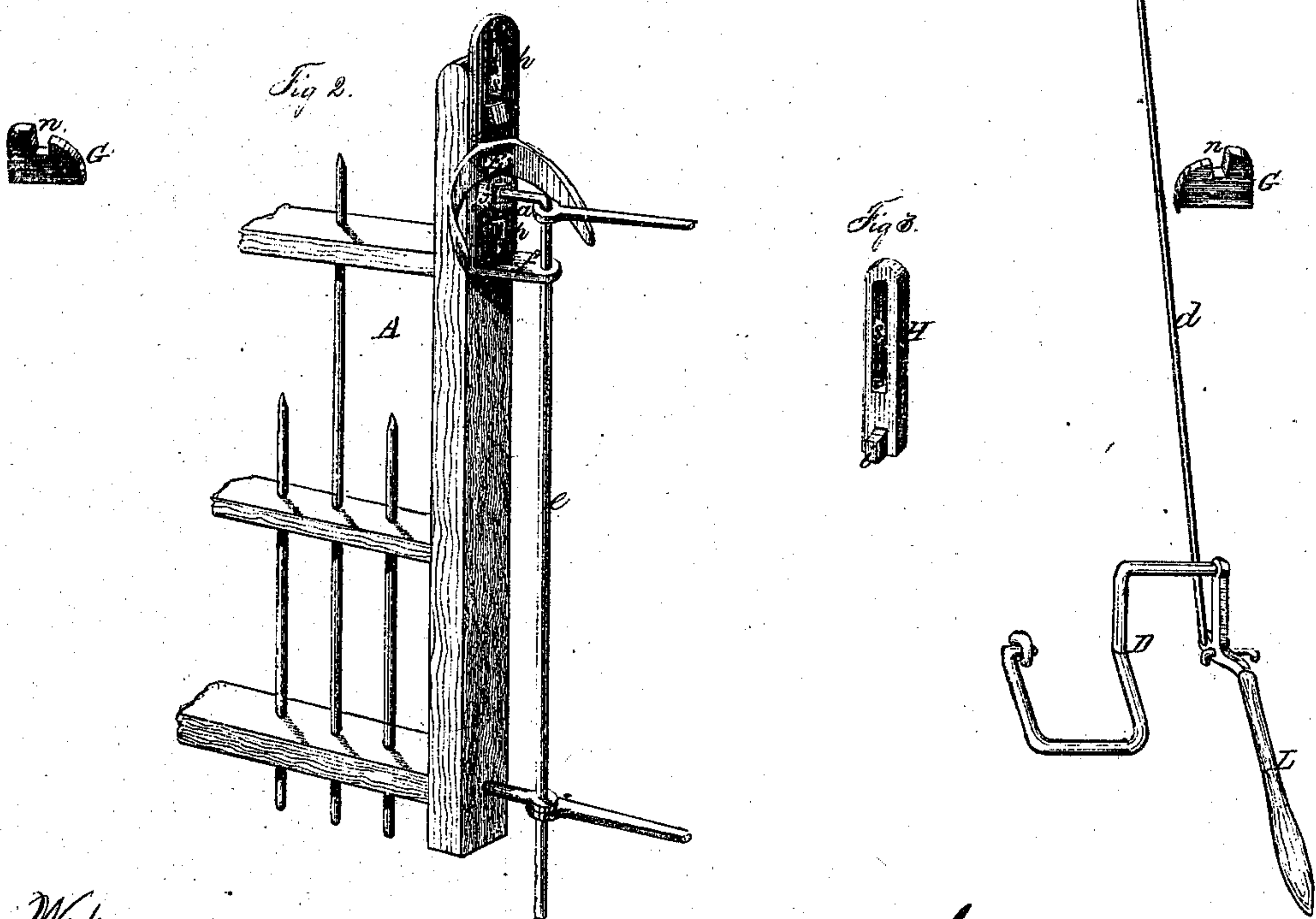
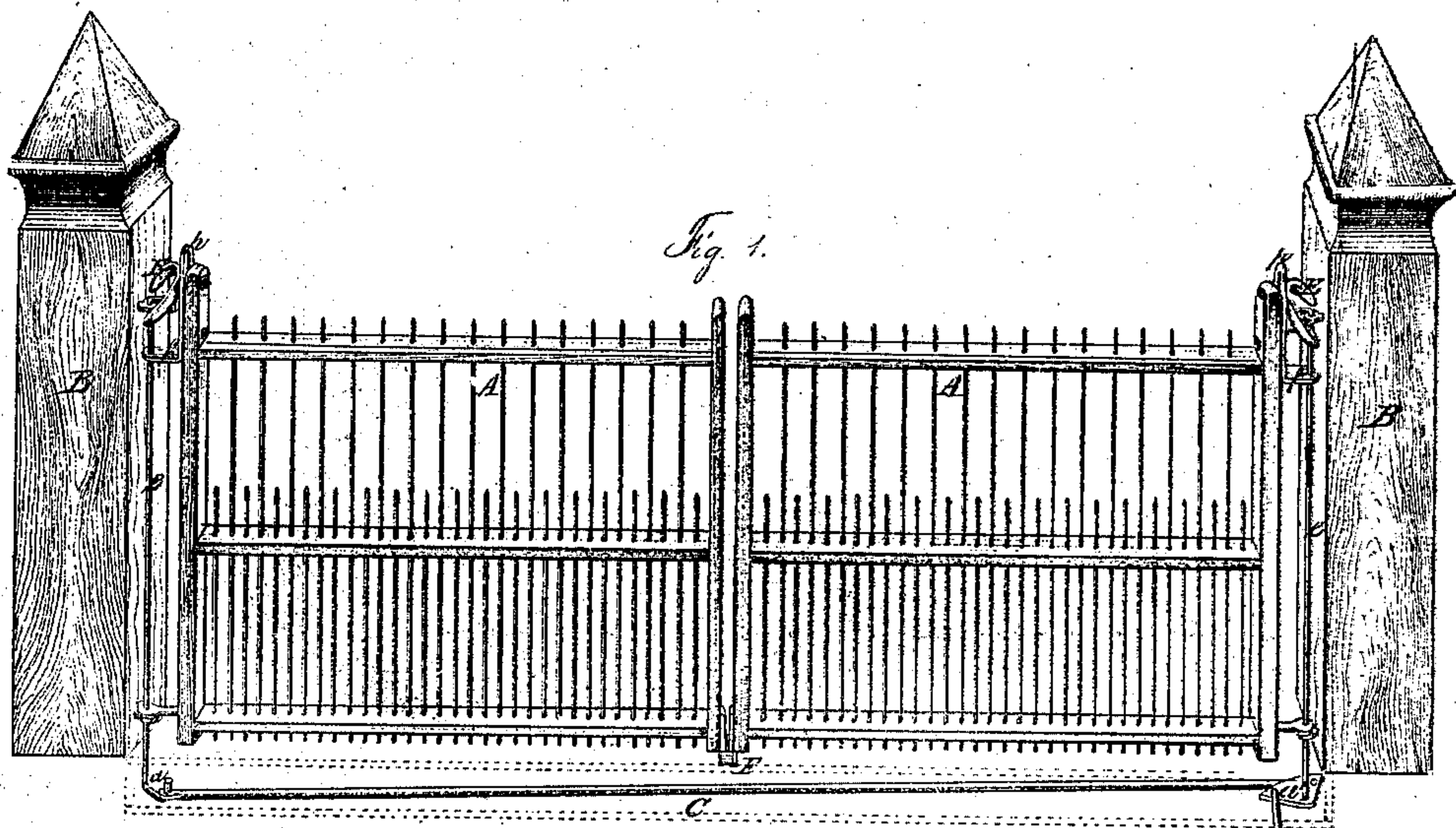


Spicer & Crossman,
Automatic Gate.
No. 105735. *Patented July 26. 1870.*



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PRATT A. SPICER AND MONTGOMERY CROSSMAN, OF MARSHALL,
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Letters Patent No. 105,735, dated July 26, 1870.

IMPROVEMENT IN AUTOMATIC GATES.

The Schedule referred to in these Letters Patent and making part of the same.

We, PRATT A. SPICER and MONTGOMERY CROSSMAN, both of the city of Marshall, in the county of Calhoun and State of Michigan, have invented certain Improvements in Adjustable Automatic Gates, of which the following is a specification.

Our invention relates to the attachment to a gate of an inverted, semicircular double incline track-way, to be employed in combination with a roller, placed at the end of the upper crank of the hinge-rod, the object being to lift up the gate or gates vertically (to a greater extent than is permitted by other devices) at or about the time when the automatic action of opening or shutting commences.

It also relates to certain devices, in combination with said track-way and with the latches, for causing the gate to swing in a higher or lower inclined plane above the ground; and to the combination, with the wheel crank-irons, of a hand-lever, for operating the gate while seated on horseback.

Our invention is embodied in the accompanying drawing, in which—

Figure 1 exhibits a pair of gates and operating mechanism, as seen from the inclosure.

Figure 2 is an enlarged broken section of a gate in perspective, showing more clearly the automatic and adjusting devices.

Figure 3 is a perspective view of one of the latch-plates detached.

In fig. 1 our adjusting and automatic arrangements are shown as applied to a pair of gates, A A, hinged to posts B B, respectively, but, for brevity, we will describe our devices as applied to a single-entrance gate, for which they are equally applicable; for, with the exception of the wheel crank-iron connections, the same appliances, in a properly reversed position, are applied to a twin gate, a reverse motion being imparted by the rod O, which connects the two cranks *a* of the hinge-rods *e e* together.

D represents the wheel-irons, and

d, the rod, which connects them with the bottom crank *a'* of the hinge-rod *e*, inside the lot, the wheel-irons outside not being shown for want of room.

L is a hand-lever, of iron or wood, and connected in any suitable way with the outer wheel-cranks.

It is best to bend this lever away somewhat, so as to be clear from contact with the wheels of a vehicle; and said lever should be of such length and set at such angle, that a person on horseback, by reaching down, may conveniently grasp it, and throw over the wheel-cranks to open or shut the gate.

The rod *e* forms the pivot of both hinges, which may be simply eye-bolts, as shown, or of the strap, or other suitable kind, and where said rod passes through

the upper eye-bolt in the post, it is bent crank-fashion, and furnished at the end of the bend with a roller, J, properly secured against a shoulder, but with freedom to turn freely on the rod, the distance from the center of the roller to the center of the vertical part of the rod being equal to the radius of the concentric track-way E, which we will now proceed to describe.

The track-way is a metal rim, usually of cast or malleable cast-iron, composing an arc of half a circle or more, shaped on the edges, and fastened to the gate stile near its upper end, substantially as shown.

The under edge of this track, or rather its bearing-face, is a double inclined plane, each incline descending from the center of the semicircle in opposite directions, and the grade should be of such nature as to cause the gate to act promptly against a stiff wind, and come gently to rest.

Said track-way E is provided with vertical central plates, *p*, through which it is firmly bolted to the gate, and the plates may have slots, *s*, in them, through which the bolts pass, so that, by lowering the track, the gate will be lifted above deep snow, or other obstruction.

This arrangement requires a corresponding adjustability in the latches, as applied to the stub F, between the two shut gates, the side stubs or posts to latch the gates to when open, as shown at G, or centrally, as applied to latch a single entrance gate when shut.

We effect this by forming a stud-like projection, *i*, at the bottom of latching-plates H, also slotted and bolted to the gate or gates, in appropriate positions to latch in the stop-notches *n* of the stubs or posts.

The operation is as follows:

When the wheel-irons D are thrown over by the wheels of a vehicle, or by the operation of the hand-levers L, in a direction to open or shut the gate, as the case may be, the cranked lower and upper ends of the hinge-rod are, by the intervention of one or the other of the connecting irons *d*, carried suddenly round a quarter of a circle, the roller J traversing one or the other of the descending inclines of the track-way E, and lifting up the gate vertically a distance equal to the height of such incline.

When the roller is in this position at the foot of the incline, the gate must open or shut promptly, for its weight acting through the attached track-way at a point on the roller beyond its vertical center, causes it to revolve, which carries the track-way and gate to their former lower level at the summit, causing the gate to open or shut, according to the particular incline which the roller is compelled to traverse.

A flange, *f*, may be cast on the end of the bottom track-way plate, provided with a hole to receive the

hinge-rod *e*, and so constitute a cheap and durable member of the upper hinge, in place of the eye-strap or bolt.

The automatic devices in our arrangement permits the hanging of the gate nearer to the ground than any others of which we have any knowledge, so as to prevent the passage of fowls or small animals, and its movements, in first lifting and then swinging from the higher to the original lower plane, gives a peculiar facility of avoiding (by rising above, or, when in motion, by sweeping away,) obstacles in its path.

The track-inclines being inverted, are always free from obstructions, except, perhaps, from small icicles, which the action of the roller speedily removes.

The parts are inexpensive, and easily finished and erected, and permit, in addition, the use of a cheap and ready means for a vertical adjustment of the gate to any requisite extent.

We disclaim the wheel-iron connections and connection C, for operating double gates; but

We claim as our invention—

1. The inverted double incline track-way E, with or without the flange *f*, in combination with the gate A, roller J, and cranked hinge-rod *e*, when arranged in relation with each other and with said gate and its hanging post, substantially as and for the purpose specified.

2. In combination with the subject-matter of the first claim, the slotted track-way plates *p* and slotted latching plates H, for the vertical adjustment of the gate, substantially as described.

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