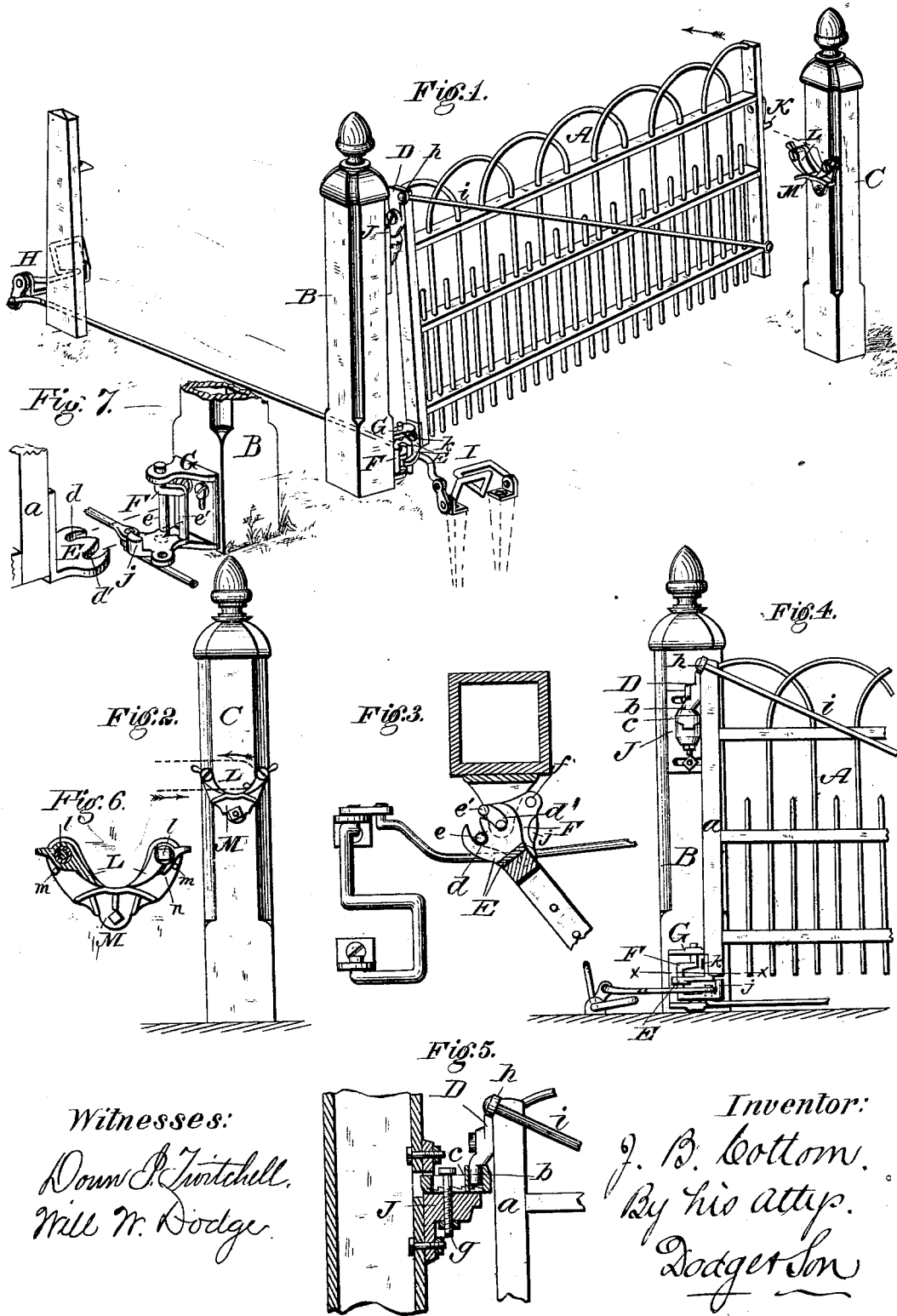


J. B. COTTOM.
Automatic Gate.

No. 218,235.

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN AUTOMATIC GATES.

Specification forming part of Letters Patent No. **218,235**, dated August 5, 1879; application filed December 17, 1878.

To all whom it may concern:

Be it known that I, JAMES B. COTTOM, of Dayton, in the county of Montgomery and State of Ohio, have invented certain Improvements in Automatic Gates, of which the following is a specification.

My invention relates to that class of gates which are operated by throwing their bearings or hinges out of line with each other; and consists in the peculiar construction of a forked lower hinge, to permit the opening of the gate by hand in either direction without reference to the action of the automatic devices, in a peculiar manner of constructing the upper hinge to facilitate its adjustment, and in a peculiar construction of the latch.

In the accompanying drawings, Figure 1 represents a perspective view of my improved gate and its fittings; Fig. 2, a face view of the latch-post and latch; Fig. 3, a cross-section on the line *xx* of Fig. 4; Fig. 4, a face view of hinge-post, showing the lower hinge or yoke shifted and the gate open; Fig. 5, a vertical central section of the upper hinge; Fig. 6, a detail view of the latch, and Fig. 7 a perspective view of the lower hinge and its connections.

In constructing gates of this class it is desirable that they shall be capable of being opened by hand, preferably in both directions, and that when so opened they shall automatically close and latch themselves, in order to effectually prevent the entrance of animals to the inclosure. It is likewise desirable that, in addition to the above properties, the gate should be capable of being arranged to open inward or outward, according to the location, when operated automatically, it frequently happening that a gate can be fully opened only in one direction.

In order to secure the most perfect operation of gates controlled in their movements by the shifting of their pivots or bearings, it is necessary that when closed the gate should stand horizontally and vertically true, and this feature is further rendered necessary in order to secure the proper action of the latch.

To provide means whereby these various objects may be attained, I construct my gate and its fittings as represented in the accompanying drawings, in which—

A represents the gate; B, the post to which it is hung, and C the latch-post. The rear post

or bar, *a*, of the gate is provided, at or near its upper end, with a plate, D, having a downwardly-projecting pin or hook, *b*, arranged to engage in an eye, *c*, secured to the post B, and at or near its lower end with a forked plate, E, extending horizontally backward from the gate, and furnished with two seats or notches, *d d'*, to fit the upright arms *e e'* of a shifting yoke, F, vertically pivoted in a block or frame, G, secured to the post, all as shown in Figs. 1 and 4.

When the yoke F remains in its normal position, with the arms *e e'* parallel with and equidistant from the face of the post, the arms will be one on each side of the vertical center of the hinges, and the gate will consequently stand closed, or, if opened by hand, will swing shut. This action is due to the fact that when closed the plate E bears upon both arms *e e'*; but when the gate is swung slightly in either direction the bearing is thrown entirely upon one of said arms, one side of the center, causing the gate to swing inward and close.

In order to render the gate automatic in its opening and closing operation, the yoke F is connected, by means of rods, with double cranks H and I, arranged on opposite sides of the gate in such manner that as the cranks are moved or turned they shall, through the rods, turn the yoke F upon its vertical pivot. The vertical pivot of the yoke F is arranged forward of the arms *e e'*, and the lower plate of the yoke, to which the rods are attached, is provided with two perforated arms, *f*, to either of which the operating-rods may be attached, according to the direction in which the yoke is to be turned and the gate made to swing.

As stated, when the yoke remains in its normal position the gate remains closed; but if its position be so changed as to throw the bearing of the lower hinge entirely upon one arm and at one side of the center, and the other arm be at the same time so moved that it shall not form a bearing for the hinge when the gate is in its closed position, the gate will be caused to swing in the direction of its inclination, and thereby cause the opening of the gate.

In order that the forward or free end of the gate may not be caused to strike the ground in thus swinging open, and also for the purpose

of releasing it from its latch or keeper, I so arrange the yoke F that the act of shifting its arms and bringing the bearing upon one alone also advances said arm, or moves it farther from the face of the post, thereby elevating the free end of the gate, increasing the tendency to gravitate or swing open, and at the same time detaching the gate from its fastening, the construction of which will be explained farther on.

The position and action of the parts of the lower hinge when shifted to open the gate are clearly illustrated in Fig. 3.

When the gate is to be closed the yoke F is returned to its normal position, when the gate swings inward, as above described. The movements of the yoke F are produced by the double cranks H and I, acting through the connecting-rods, the cranks being turned by the wheels of the passing vehicle, in the usual manner.

To prevent the gate from being lifted off its hinges the plate E is arranged to project a short distance below the end of the bar or post *a* of the gate, as shown in Fig. 4, and an upwardly-turned guard, *j*, is formed upon the yoke F, and projects upward in front of the plate E, thereby preventing the arms of said plate from being drawn forward off the yoke F by lifting the free end of the gate, while the head of the bolt K, which serves to or assists in securing the plate E to the bar or post *a* of the gate, projecting back under the upper arm of the block or bracket G, prevents the gate from being lifted bodily upward. In this way the gate is prevented from being lifted off its hinges by animals, while this result may be readily attained by persons when necessary by simply shifting the yoke F, allowing the gate to swing partially open, and then lifting the forward end first, and afterward the rear end.

In order that the yoke F may not receive the weight of the gate, except when swinging, and to prevent its being strained or broken by stock jumping upon the gate, the forward face of the upper arm of the bracket or block G is made concentric with the pivot of the yoke F, and when the gate is closed the plate E bears upon this face and takes the strain from the yoke.

As above stated, the action of gates of this class is greatly dependent upon the accuracy with which they are hung, or, in other words, upon their being true vertically and horizontally. This accuracy is difficult to attain, even in the first hanging of the gate, but even when secured is liable to be lost by the sagging of the gate or the settling of the post. To more readily secure this object in the first instance, and provide means for compensating for any subsequent disarrangement, I provide the upper hinge, J, with an eye-piece, *c*, provided, preferably, with teeth or ribs on its under face, and slotted to receive a bolt, *g*, which passes through the slot and through a bracket formed upon the hinge-plate, and provided with a corresponding roughened

upper face, said bolt serving to clamp the slotted eye-piece *c* to the bracket, as shown in Fig. 5, and nearer to or farther from the post, as desired. This adjustment permits the variation of the inclination of the gate-bar *a*, and, consequently, a perfect horizontal position of the gate may be readily secured at any time.

To secure a vertical position for the gate when by any cause it shall have lost such a position, the plate of the hinge J is slotted in a horizontal direction, and is secured to the post by bolts, by loosening which the plate may be adjusted to the proper position to cause the gate to stand vertically true.

For the purpose of more securely holding the pin or pintle of the hinge J upon the gate it is formed upon a plate, D, which is screwed or bolted to the bar or post *a*, and which is also furnished with perforated ears *h*, through which are passed brace-rods *i*, extending to the lower forward end of the gate, as shown.

By this arrangement the rods *i* are made to serve both as brace-rods and as an effectual means of securing the plate D to the gate.

In connection with the gate operating as above described I employ a latch or fastening of the construction represented in Figs. 1 and 2—a construction rendered necessary by reason of the peculiar action of the gate in opening and closing. As previously explained, this action consists in throwing the gate out of a vertical position and elevating its forward or free end, this taking place at each movement of the gate, either open or shut.

It will thus be seen that in opening the gate the stud K, which is secured to its face and engages with the fastening devices, will be elevated and carried over said devices, but that in closing, the gate being inclined in the reverse direction, it will swing lower down as it approaches the fastening, and will be unable to pass over the same.

To permit the stud K to enter the fastening device, and from either side, according to the direction in which the gate is made to swing, this fastening is made to consist of two gravitating dogs, L, with their lower ends turned inward toward each other, and resting upon the inclined upper faces of a support, M, the upper face of which support is as high as the lower ends of said dogs.

The action of the device will be readily understood upon reference to Figs. 1 and 2. The stud K, in opening the gate, swings out over the dogs L, as indicated by dotted lines; but, in closing, the gate strikes against and passes under one of said dogs, and riding up its inclined face is gradually arrested by the other, the line of this movement being indicated by the lower dotted line of Fig. 2. The dogs L are furnished with thumb-pieces to permit them to be raised by hand when the gate is opened by hand, in which case the stud K both enters and passes out below the dogs. As represented in Fig. 6, the dogs L are pivoted upon tubular stems formed upon the latch-plate and

the bolts *l*, the heads of which retain the dogs in place upon their pivots, extend through said stems and into the post *C* to secure the latch-plate thereto. The dogs *L* are prevented from turning over by a stud, *m*, formed upon the latch-plate.

In order to prevent the possibility of the stud *K* rising and locking directly beneath the pivots of the latches, each latch has on the under side an incline, *n*, extending to one side of the center, as shown.

Having thus described my invention, what I claim is—

1. In an automatic gate, a hinge-connection consisting of a forked plate, *E*, and a horizontally-swinging yoke, *F*, having two points of bearing for the plate, located on opposite sides of its axis.

2. The combination, in an automatic gate, of a vertically-pivoted yoke, *F*, having two arms, *e e'*, on opposite sides of its axis, with a forked plate, *E*, arranged to bear upon said arms.

3. The combination, in an automatic gate, of a forked plate, *E*, a vertically-pivoted yoke, *F*, such as described, and mechanism, substantially such as shown, for rotating said yoke, substantially as described.

4. In a hinge for automatic gates, the yoke *F*, provided with two bearings for the forked arm *E*, and with two arms for the attachment of operating devices, substantially as shown.

5. The upper hinge consisting of a transversely-slotted plate, *J*, having a toothed arm

on its face, and the toothed eye-piece *a*, secured thereon by the bolt *g*.

6. The plate *D*, having the perforated ears *h* and the pin or stem *b* formed thereon, as shown, and for the purpose set forth.

7. In combination with a swinging automatically-closing gate provided with a stud, *K*, a latch consisting of two gravitating dogs arranged to swing inward, and having their faces inclined outward from their points, as shown, whereby the stud is caused to ride upon them and gradually check the movement of the gate.

8. In combination with the swinging gate having the rigid stud *K* thereon, the latch-dogs having their faces inclined upward from the middle, as shown and described, whereby the stud is caused to ride up the inclines after entering the latch, so as to gradually arrest the motion of the gate.

9. The pivoted yoke *F*, having the guard *j*, in combination with the plate *E*, substantially as shown.

10. In combination with the swinging gate having a vertical motion at the commencement of the opening movement, the stud *K*, secured rigidly thereto, and the pivoted gravitating latch *L*, having an incline, *n*, on the under side, in the manner and for the purpose described.

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Witnesses:

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