

B. F. Dickey,

Gate.

No. 102,783.

Patented May 10, 1870.

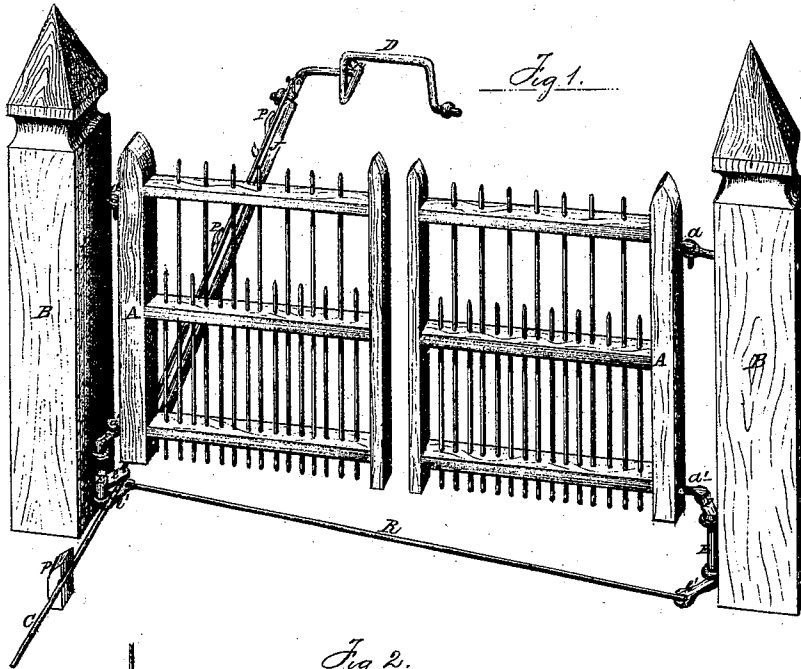


Fig. 1.

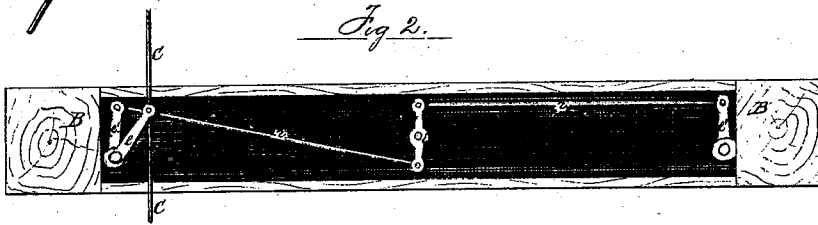


Fig. 2.

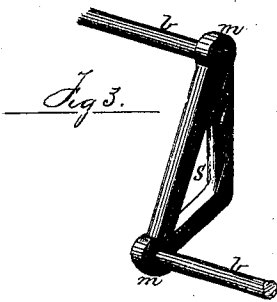


Fig. 3.

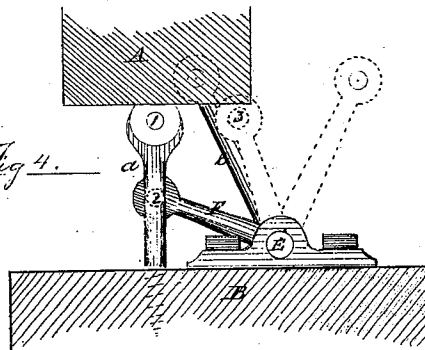


Fig. 4.

Witnesses:

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BENJAMIN F. DICKEY, OF MARSHALL TOWNSHIP, MICHIGAN.

Letters Patent No. 102,783, dated May 10, 1870

IMPROVEMENT IN GATES.

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

I, BENJAMIN F. DICKEY, of the township of Marshall, in the county of Calhoun and State of Michigan, have invented certain Improvements in Approach-opening Gates, of which the following is a specification.

My invention relates, in part, to an improved arrangement of the hinge-pivot centers in the automatic gate, for which Letters Patent, dated July 13, 1869, were awarded me, and to modes of connecting the operating parts with double gates.

Figure 1 is a perspective view of double gates, embodying my invention.

Figure 2 is a plan of connecting said gates.

Figure 3 is a broken view, in perspective, of wheel-iron section.

Figure 4 is a plan of the arrangement of the hinge-pivot centers.

Similar letters of reference indicate corresponding parts in the several figures.

A A are the gates.

B B, the posts.

The upper hinges *a a* are of the ordinary kind, with fixed pivot-centers, but the pivots of the lower hinges *a' a'* turn in sockets or eyes, marked 2, formed in the ends of the upper arms *F F* of two rocking-shafts, *E E*, hung vertically in any suitable bearings at the bottom of the posts, as shown.

The rocking-shaft on the wheel-iron side has a lower arm, *e*, to which the rods *C*, which move the bottom of the gate out and in, are jointed, so as to shift the center of gravity for opening or shutting.

Where double gates are to be operated, each rocking-shaft is provided at the extreme lower end with an additional crank-arm, *e'*, said arms being connected together by a single rod, *R*, boxed and sunk under the roadway, or by two rods, connected with a central vibrating bar, as shown respectively in figs. 1 and 2.

In the first-named mode, when the gates are shut the arm *e'*, on the wheel-iron side, should stand parallel, or nearly so, with the inner side of the post, and projecting toward the inclosure, and the arm on the opposite side should project toward the road, at such an angle with the post as to allow for the arc of vibration, in the manner as clearly shown in fig. 1, which represents the gates as seen from outside the inclosure.

In the plan shown in fig. 2, the arms *e'* project inwardly in the same direction, and parallel with each other and with the sides of the posts, and are connected by the two rods, *r r*, with the ends of a central pivoted cross-bar, *i*.

The operation in both modes is, by means of an alternate push and pull, to vibrate both of the arms *F*, in which the gates are stepped, at the same precise time, and in the same manner, to shift the center of

gravity, so as to cause the two gates to open and shut simultaneously.

These two modes are the same in effect, and, under ordinary circumstances, one is as good as the other; but when, on account of the width of the gate, a very long rod, *R*, would be necessary, it will be advisable to employ, in its stead, two short rods, *r r*, with the centrally-pivoted bar *i*, because the shorter the rods are the stiffer they will be, and unless they are in a great measure inflexible, the effective operation of the parts will be prevented.

In order to describe my improved mode of hanging the gate or gates, for the same hinge arrangement applies to a single gate, it is necessary to refer to the diagram or plan, fig. 4, where the figure 1 represents the position of the stationary pivot-center of the top hinge *a*; 2, the vibratory step-center of the arm *E*; and 3, its position when thrown over by the crank-irons to open the gate, as shown in dotted lines.

It will be seen, these three points lie in a right angle, and that the point 1 is set off from the post, further than is the movable point 2, such distance as may be necessary (usually one and three-fourths inch) to put the gate properly out of equilibrium, when it is opened by hand, and without changing the position of the center 2; for the gate, when fully opened in this way, will not stand in a vertical plane, and will close by the force of gravity. If, however, the gate opens by the action of the wheel-irons shifting its footstep from 2 to 3, then, when fully open, it will hang in a true vertical and horizontal plane, as when shut.

Gates hung in this manner will not strike violently against the latching-posts, but, moving promptly when thrown out of equilibrium, will terminate their swing with a retarded, instead of an accelerated, motion, as is usual, and so latch gently, and when in a state of rest, open or shut, will hang plumb and square with the post, which are great advantages in this kind of gates.

To stay and protect the rods *C*, when placed above ground, I set any requisite number of short posts, *P*, firmly in the ground, along the proper line, and cut grooves in their sides facing the roadway, to serve as bearings for said rods.

When the rods are placed in said bearings, and connected, I spike planking, *J*, of sufficient width, to the grooved faces of the posts, and, if necessary, drive staple-bearings in the intervals, to further stay said rods against the pushing action. This mode of staying is cheap, compact, and ready, permits the use of lighter metal, and effectually protects the rods against injury.

The wheel-cranks are usually constructed by bending a round iron bar to the desired form; but, made

in this way, they are very liable to be broken at the corner of the central angle. To remedy this defect, I construct these irons by connecting the tread-bars *b b* with a separate central section, *s*, triangular in form, and made of good common or malleable cast-iron.

Two of the apexes are bossed, as seen at *m*, and have a square eye cast in them, in which eye the ends of the tread-bars, previously squared to a shoulder, are snugly inserted, as shown; and this cast section may be a solid plate, or be cast open in the center, as desired.

In place of the cast section, an angle-brace, *n*, as shown in fig. 1, may be welded to the cranks, and, when made in either way, will prevent breakage at that point, without materially enhancing the cost of construction.

I am aware that it is not new to pivot a gate in a stationary arm at the bottom, and a vibrating arm near the top of the post, said vibrating arm projecting from a rod extending down to the ground, and

connected with the operating mechanism; but this I do not wish to claim, as, by my arrangement, the said long rod is dispensed with and the hanging devices greatly simplified.

I do not claim the arrangement of the lower pivot-center nearer to the post than that of the upper hinge, and at one side thereof, as this is old; but

I claim as my invention—

1. The construction and arrangement of the shaft *E*, provided with the arms *e F*, so as to form the step for the lower hinge, and the upper hinge *a*, all as herein set forth.

2. In combination with the rocking-shafts *E E*, when provided and arranged as aforesaid, the lower crank-arms *e e'*, and rod *R*, for operating double gates, substantially as described.

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Witnesses:

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