M. R. LEMMAN.

HINGE.

No. 112,934. Patented Mar. 21, 1871.

Fig. 1

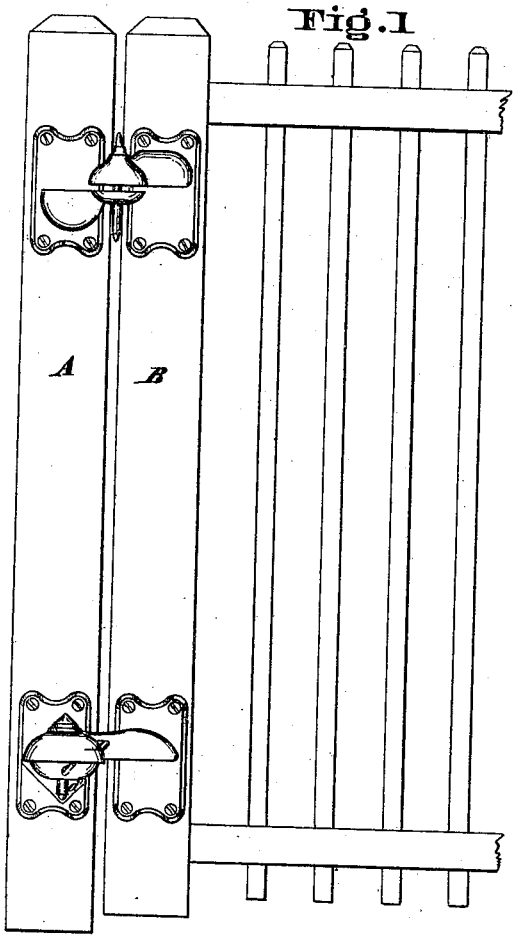
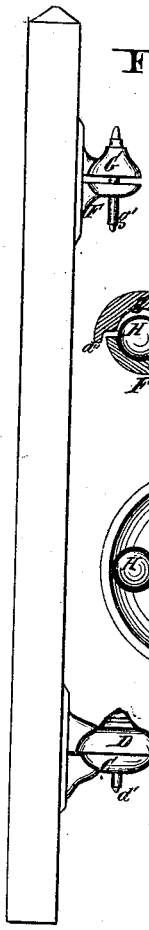


Fig. 2



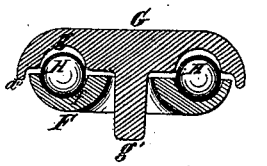


Fig. 5

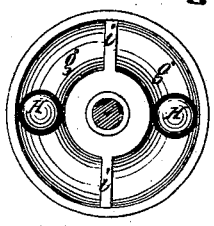


Fig. 3

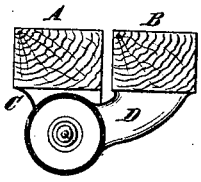
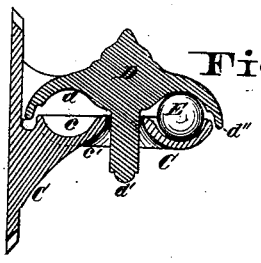


Fig. 4



Attest

Henry Millward

Eletha A. Layman

Inventor

Martin R. Lemman

By F. Millward

Attorney

United States Patent Office.

MARTIN R. LEMMAN, OF HAMILTON, OHIO.

Letters Patent No. 112,934, dated March 21, 1871.

IMPROVEMENT IN HINGES.

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

To all whom it may concern:

Be it known that I, MARTIN R. LEMMAN, of Hamilton, Butler county, State of Ohio, have invented a certain new and useful "Improvement in Hinges;" and I do hereby declare the following to be a sufficiently full, clear, and exact description thereof, to enable one skilled in the art to which my invention appertains to make and use it, reference being had to the accompanying drawing making a part of this specification

Nature and Objects of Invention.

My invention consists of a hinge, (for the lower part, preferably, of a gate or door,) in which the two parts, that attached to the post and that attached to the gate or door, are joined by a round pintle, and each part constructed with an annular groove of half-circle section, concentric to and entirely surrounding the pintle, for the reception and occupancy of a ball, which runs around the groove to support the gate, and serves as an anti-friction medium in the operation of the same.

Description of the Accompanying Drawing.

Figure 1 is a front elevation of a gate-post and portion of a gate connected by my improved hinges.

Figure 2 is an end elevation of the same.

Figure 3 is a sectional plan above the lower hinge.

Figure 4 is a vertical axial section through the lower hinge.

Figure 5 exhibits vertical section and plan of a modification in the construction of the hinge.

General Description.

A is the post, and

B the gate or door.

My improved lower hinge, or the hinge that supports the weight of the gate, is composed of two parts, C D, the part C being attached to post A, and D to the gate or door.

The part C is constructed with a central flaring or conical perforation, *c'*, and a circular or annular groove, *c*, which is nearly half-circular in cross-section, surrounds the groove *c* concentrically, and is horizontal when in position.

The part D is constructed with a groove, *d*, exactly corresponding with the groove *c* in size and shape, and is also constructed with a pintle, *d'*, to fit loosely into the hole *c'*, the flaring character of the hole enabling the pintle to "wobble" in the hole in the operation of the gate, which is hung so as to gravitate shut.

In the operation of the gate so hung the pintle swings in the hole similar to the motion of a circular pendulum, and the conical or flaring hole provides for this motion.

The part D is constructed with a circular lip, *d''*, which overhangs (as shown in fig. 4) the edge of the part C, and serves to prevent rain from entering the groove *c*, and thus corrosion or collection of dirt is avoided.

A ball, E, of cast-iron or other preferred metal, is inserted in the grooves *c d*, between the parts C D, as shown, and, the groove being an entire circle, the ball is at liberty to take any part of it, operating properly to support the gate, and, by rolling, to materially reduce friction, while occupying any part of the groove, the accidental change in position of the ball not interfering with the gravitating character of the gate.

The upper hinge is composed of parts F G, the pintle *g'* occupying a position closer, diagonally, to the line between the gate and hinge than the pintle *d'*.

This diagonally-inclined condition of the hinges is accomplished by their first construction, the parts C D projecting more, and in different direction from the plates which fasten them to the post and door, as compared with the parts F G, so that there is no skillful adjustment required in their attachment.

It will be seen that, with this construction of the lower hinge, and the combination of the same diagonally with the upper hinge, although the groove *c* is horizontal always and the ball is at liberty to occupy any part of the groove, that the gate will close automatically, riding upon the anti-friction ball continuously.

In the case of heavy gates I construct the upper hinge with grooves, *f g*, and inserted balls, H H, which are separated by partitions, *i*.

The object of these balls is not to support the gate, as this is done by the lower hinge, and the part G, therefore, is not allowed to rest upon the balls. The purpose is to prevent the hanging gate from riding upon the pintle *g'* and thereby causing great friction.

By the construction shown in fig. 5 the strain is taken up by the balls pressing against the sides of the grooves only.

I am aware that a ball has been used in combination with a gravitating hinge having short inclined grooves, but this is inoperative, owing to the frequent and unavoidable displacement of the ball.

Claims.

1. A hinge having an anti-friction ball, E, between the parts C and D, when the latter are constructed with annular horizontal concentric grooves, *c* and *d*, of equal depth throughout, and pintle *d'*, working loosely in the aperture of the lower part C, substantially as set forth.

2. In combination with the elements enumerated in the first claim, the overhanging lip on the part D, substantially as and for the purpose set forth.

In testimony of which invention I hereunto set my hand.

M. R. LEMMAN.

Witnesses:

FRANK MILLWARD,

J. L. WARTMANN.