

W. KLEIN.

SPRING HINGES FOR GATES, &c.

No. 176,539.

Patented April 25, 1876.

Fig. 1.

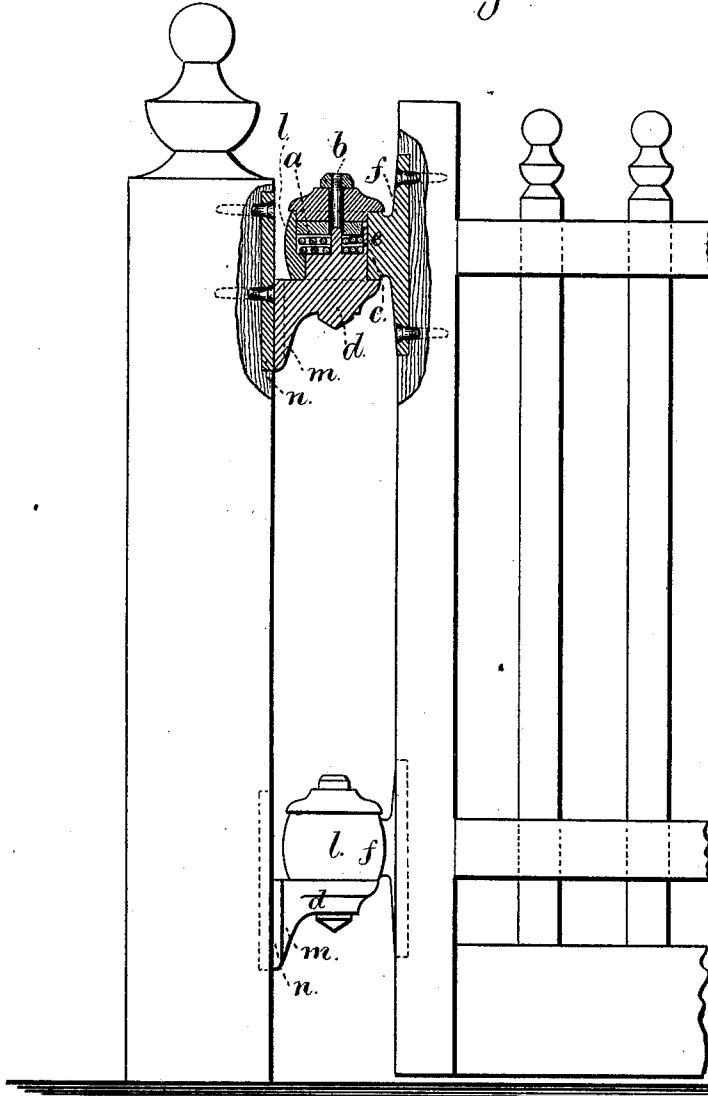


Fig. 3.

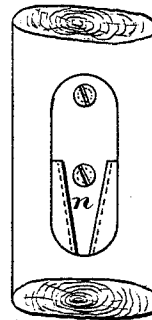
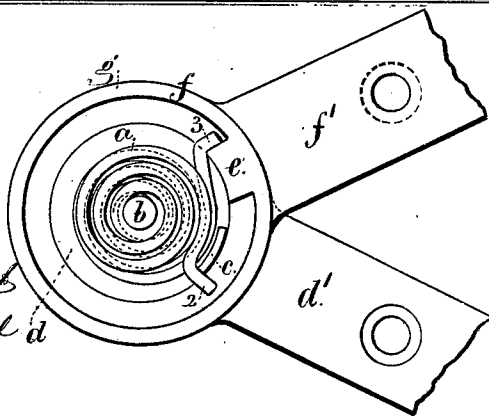


Fig. 2.



Witnesses

Chas. H. Smith

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att'y

UNITED STATES PATENT OFFICE.

WILLIAM KLEIN, OF PLAINFIELD, NEW JERSEY.

IMPROVEMENT IN SPRING-HINGES FOR GATES, &c.

Specification forming part of Letters Patent No. **176,539**, dated April 25, 1876; application filed March 1, 1876.

To all whom it may concern:

Be it known that I, WILLIAM KLEIN, of Plainfield, in the county of Union and State of New Jersey, have invented an Improvement in Spring-Hinges for Gates, Doors, &c., of which the following is a specification:

This improvement relates to a hinge that is provided with a double-acting spring, so that the door or gate may be opened in either direction, and brought to the normal position of rest, by the springs themselves.

The spring is a double volute coil, with the ends of the wire forming that coil standing in opposite directions, and acting against two adjacent blocks upon the two parts of the hinge, so as to bring them together when the hinge is at rest, but when the hinge is moved in either direction the block upon the moving part of the hinge carries with it either one end or the other of the coil, and the other end remains against the stationary block, and the hinge thereby is placed under tension, and reacts to close the door or gate when liberated. I also preferably construct the gate-hinges in such a manner that they can be easily separated from the post, so that the gate can be lifted out of its gateway in case of obstructions, such as snow or ice, and when replaced is in a condition for immediate use; but this construction forms no part of the present invention.

In the drawing, Figure 1 is an elevation of part of a gate, and its post, with the hinges in place, one of which is in section. Fig. 2 is a plan of the hinge as open, to show the spring and contiguous parts, and also the arms of the spring-hinge adapted to a door.

The spring *a* is of one piece of wire, rolled up to form double volutes, with the convolutions in opposite directions, and the ends of the springs terminating near each other, and extending out radially or in the form of hooks 2 and 3. The center pin *b* of the hinge passes through the center of this volute, and the blocks *c* and *e* are upon the parts *d* and *f* of the hinge, respectively. The ends of the volute *a* extend across both blocks and at opposite sides, and the spring is wound up in the act of placing the arms 2 and 3 in position, so that the force of the spring is exerted to bring the blocks *c* and *e* into line with each other. When the part *f* of the hinge is moved with the gate or door, to which it is attached,

the block *e* carries the arm 3 of the spring with it, the arm 2 remaining against the block *c*. This further strains the spring, and when the door or gate is liberated the spring brings it back to a normal position. The same effect is produced if the hinge *f* is moved toward the arm 2. This construction makes a very cheap, strong, reliable double-acting door spring and hinge.

The hinge may be made with a short barrel, *g*, and two arms, *f'* *d'*, as in Fig. 2, and be let into the top and bottom edges of the door in line with the back, so that the door can be opened either way, or only one way, according to the casing, and the spring will close it again. When the spring is used for a gate it is preferable to provide the cylinder *l*, surrounding the spring and forming one-half of the hinge, and to introduce the parts of the spring within the same, as shown, and upon the part *d* of the spring-hinge there is a tapering dovetailed stock, *m*, that fits into a similarly-shaped socket-plate, *n*, (shown separately in Fig. 3,) that is screwed upon the gate-post, so that the parts hold firmly when together; but the hinges and stocks can be lifted out of the socket-plates when the gate is to be removed.

I am aware that a volute-spring has been applied to a gate-hinge, with one end acting upon the center pivot, and the other end against the case; also that a helical spring has been applied with its ends bent back against the case. In my spring the volutes being double, and formed from one piece of wire, the ends stand in opposite directions, and are made to act upon the blocks *c* and *e* of the respective parts *d* *f* of the hinge, in the manner before described.

I claim as my invention—

The double volute wire spring *a*, formed from one piece, with the projecting ends 2 and 3 standing in opposite directions, in combination with the blocks *c* and *e* upon the respective parts *d* and *f* of the hinge, substantially as set forth.

Signed by me this 25th day of February, 1876.

WM. KLEIN.

Witnesses:

LOUIS KLEIN,
LEMUEL W. SERRELL,
PETER P. GOOD.