R. Hart,

Hinge.

No. 16,920. Patented Mar. 31, 1857.

Fig. 1.

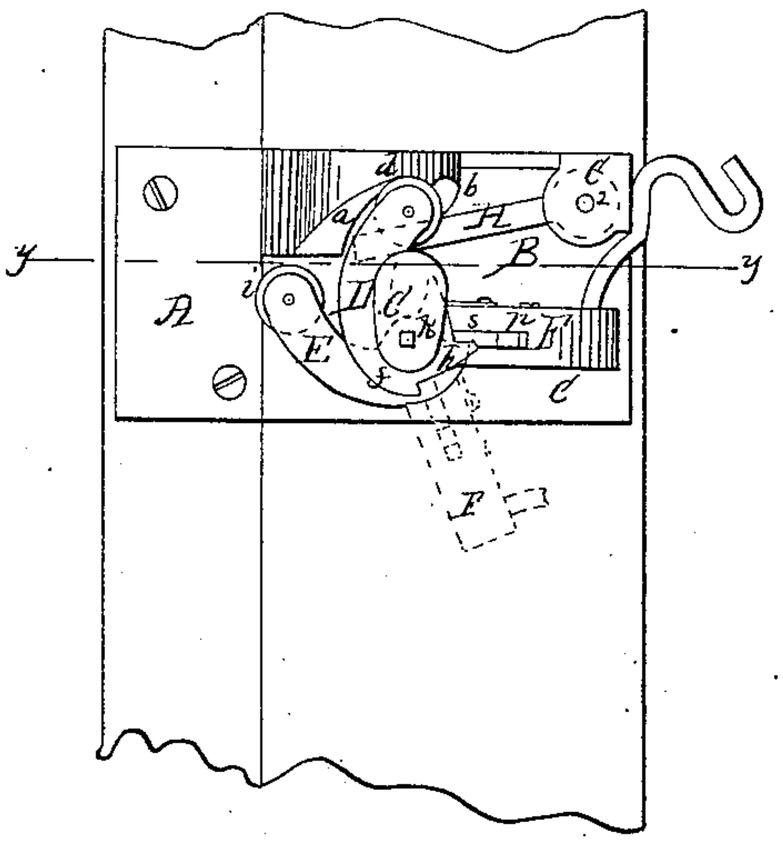


Fig. 2.

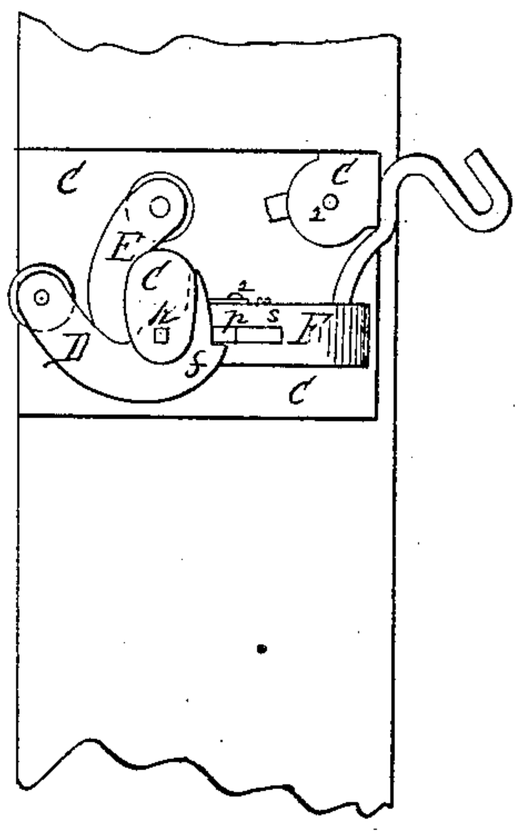


Fig. 3.

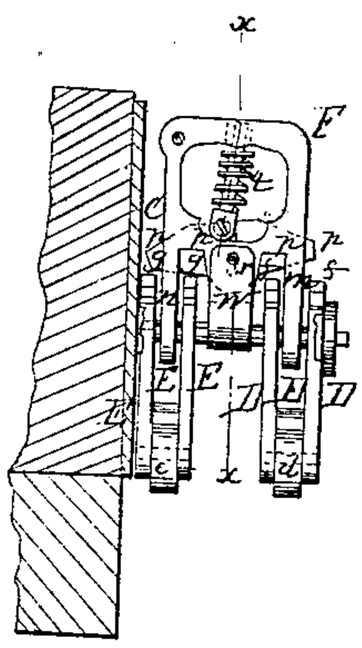


Fig. 4.

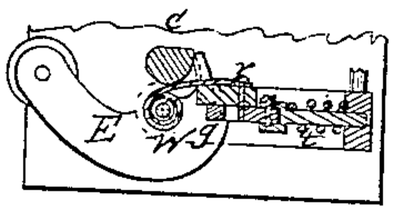
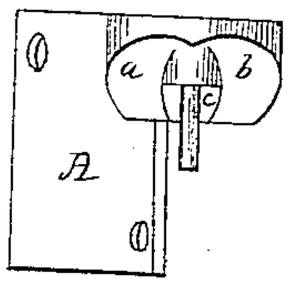


Fig. 5.



UNITED STATES PATENT OFFICE.

R. HART, OF MARIETTA, OHIO.

HINGE.

Specification of Letters Patent No. 16,920, dated March 31, 1857.

To all whom it may concern:

Be it known that I, R. HART, of Marietta, in the county of Washington and State of Ohio, have invented a new and Improved Hinge or Apparatus for Opening and Closing Gates and Doors; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side elevation. Fig. 2 is a side elevation with the part A removed. Fig. 3 is a section through the line *y y*. Fig. 4 is a section through the line *x x*. Fig. 5 is a view of the part A.

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

The nature of my invention consists in the employment of movable arms or levers attached to our portion of the hinge or apparatus, and arranged to operate on flat and inclined planes or surfaces on the other portion of the hinge or apparatus, and thereby cause the gate or door to open and close as hereinafter described.

A represents the part of the hinge or apparatus attached to the gate or door. It is constructed of iron or other suitable material, having two spiral inclined planes or surfaces (*a*) (*b*). These planes are on opposite sides of the pivot (*c*), Fig. 5, have a flat surface comprising a quarter of a circle or thereabout between them and incline upward therefrom in opposite directions.

B represents that part of the hinge or apparatus attached to the gate post or door casing, and is constructed of iron or other suitable material and consists of the following parts: C, the frame work for supporting the other parts; D, E, the movable arms; F, the lever; H, the shackle bar.

The two movable arms D, E are similar in form, one constructed with friction rollers (*a*) (*e*) at one end, with projections or catches (*f*) (*g*), with cams (*h*) (*j*), and are respectively held in position under the inclined planes (*a*) (*b*) by the rod or bolt (*k*) passing through them and sustained by the frame work. These arms D, E, are permitted to move around the bolt (*k*) as a center through about 60° of a circle and are checked by a portion of the frame work from fourth movement.

The lever F is constructed with a double or forked termination embracing the parts (*m*) (*n*). Through each of these parts passes the bolt (*k*) which sustains the movable arms D, E. This lever F is permitted to move around the bolt (*k*) as its fulcrum through about 60° of a circle and is prevented from lateral movement and pressing against the arms D, E, by having one or both of the parts (*m*) (*n*) work in a notch in the frame work or by some equivalent device.

Attached to the lever F is a shifting pawl (*p*) constructed and arranged to move on its pivot (*r*) and passing through the slots (*s*) in the parts (*m*) (*n*) of the lever F, and is held in required position by a spring (*t*). Attached also to the lever F at (*r*) and also to the bolt (*k*) is the coiled spring (*w*). The locality and form of this spring (*w*) is not material and any other device calculated to produce the same effect may be substituted.

The shackle bar H is attached to the frame work by the rod or bolt (*z*) and is allowed a slight vibratory motion thereon. The other end of this shackle bar is provided with an eye or socket in which works the pivot (*c*) attached to the part A. The design of this shackle bar is to diminish friction in the vertical motion of the part A, and in cases where such friction is not too great this shackle bar may be dispensed with, the pivot (*c*) of the part A being allowed to move in a socket made in the frame work.

The operation will be readily understood. The gate or door being closed the apparatus is in the position as shown in Fig. 1, the part A and the gate or door to which it is attached resting at a point in its inclined plane (*a*) upon the friction roller of the arm D, the arm E having its friction roller lying beneath the flat surface between the inclined planes (*a*) (*b*), the lever F being in the horizontal position shown by the black lines and the shifting pawl (*p*) attached thereto thrown over the projection or catch (*g*) of the arm E.

Power is applied to the lever F and it moves on its fulcrum to the position shown by the red lines in Fig. 1. The pawl (*p*) bearing on the arm E the friction roller of the arm E is made to bear against the flat surface between the inclined planes (*a*) (*b*) of the part A, and the gate or door to which it is attached is raised and the arm E takes the position shown in Fig. 2, the friction roller being under the in-

clined plane (*b*). In the mean time the arm D being released from the weight upon it, falls to the position shown in Fig. 2. The weight of the gate or door now being upon the friction roller of the arm E at a point in the inclined plane (*b*) the reaction of the friction roller against the part A causes the gate or door to open, and the flat surface between the inclined planes (*a*) (*b*) is brought over the friction roller of the arm D. The power being removed from the lever F the spring (*w*) or some equivalent device, causes the lever F to resume its former position, and in doing so the cam (*j*) of the arm E bearing upon one end of the pawl (*p*) causes the other end to be thrown over the projection or catch (*f*) of the arm D when it is retained by the spring (*t*).

Power being again applied to the lever F, the arm D raises the part A and the gate or door attached, and the friction roller of the arm D reacting on the inclined plane (*a*) causes the gate or door to close. Upon the removal of the power from the lever F all the parts of the apparatus assume their original position and the operation may be repeated as desired.

What I claim as my invention and desire to secure by Letters Patent is—

1. The employment of the arms or levers D, E, constructed, arranged and operating, substantially in the manner and for the purpose above set forth.

2. I also claim in combination with the movable arms or levers D, E, the lever F, constructed and arranged with a shifting pawl and operating substantially as herein shown.

R. HART.

Attest:

SAM'L GRUBB,

JOHN S. HOLLINGSHEAD.