

(No Model.)

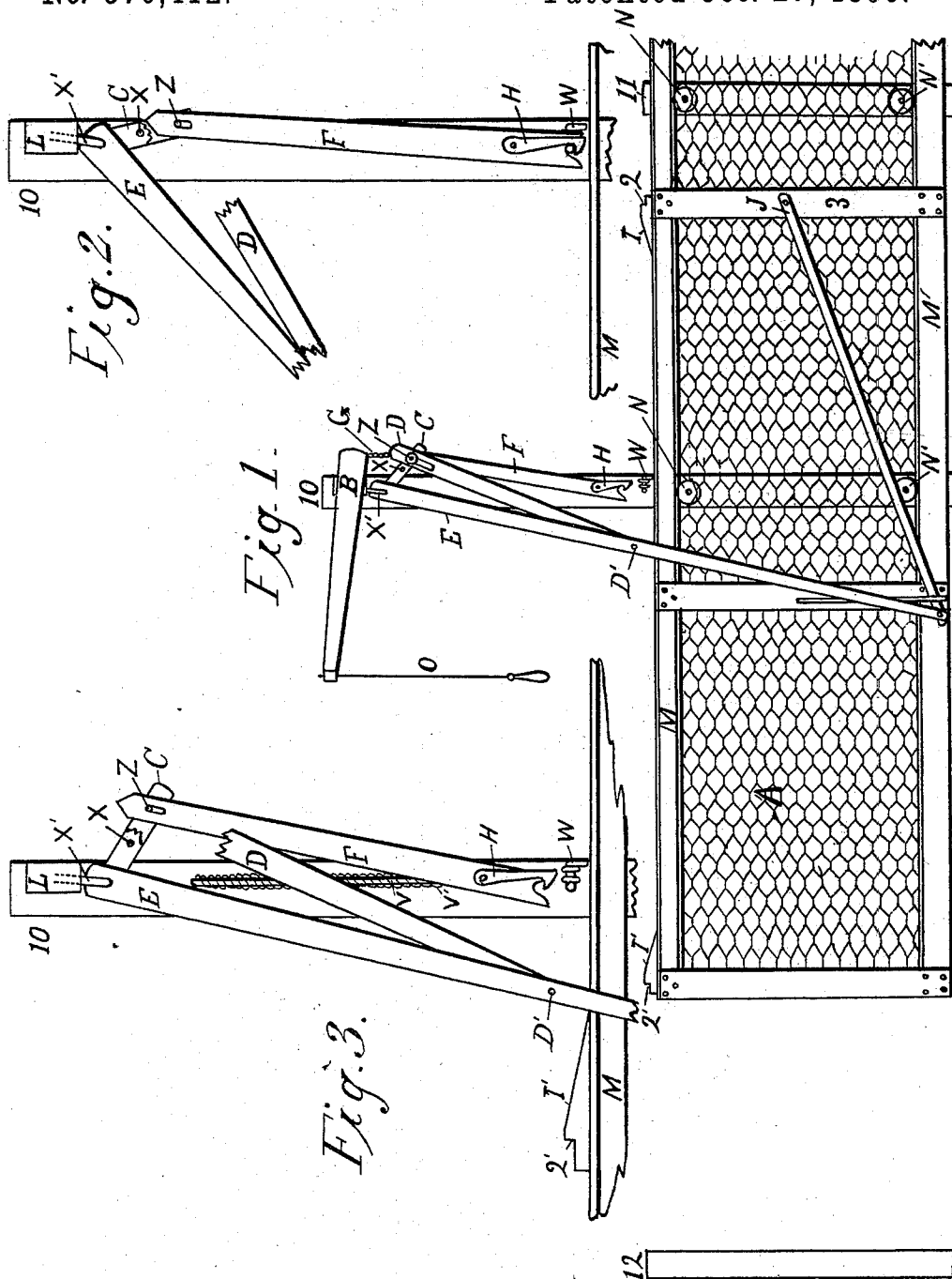
2 Sheets—Sheet 1.

A. J. SHROPE.

DEVICE FOR OPENING OR CLOSING GATES, BARN DOORS, &c.

No. 570,412.

Patented Oct. 27, 1896.



Witnesses

Berdena Frazer
W H Smith

Inventor

Albert J. Shrope

(No Model.)

2 Sheets—Sheet 2.

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Fig. 5.

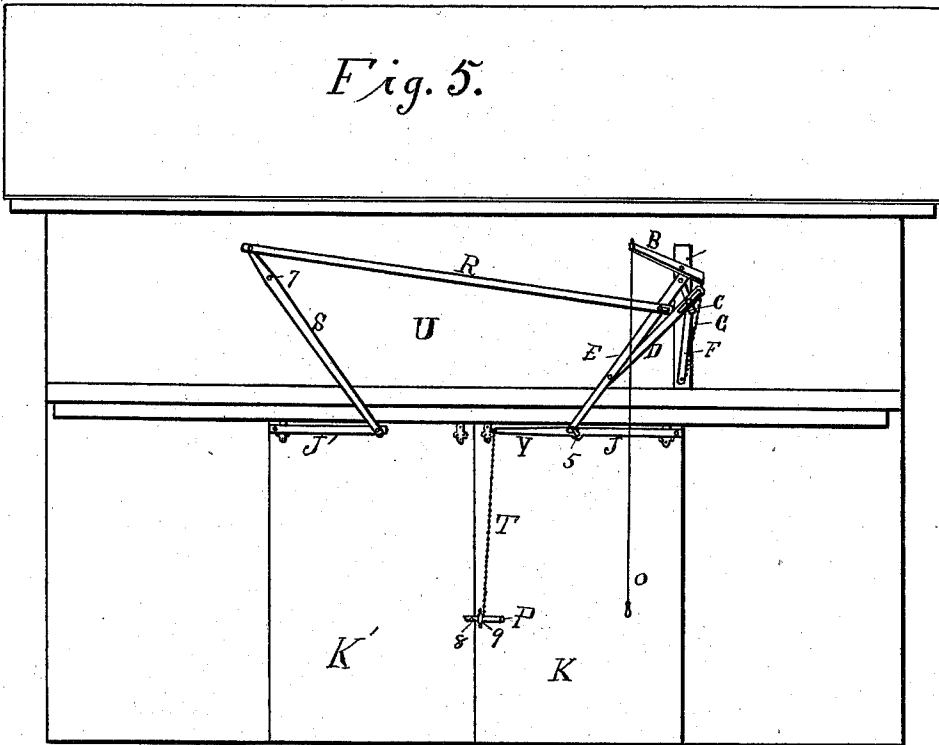
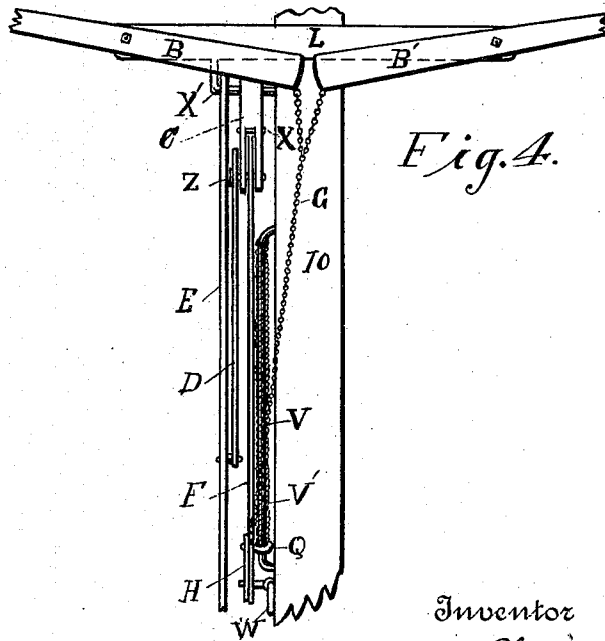


Fig. 4.



Witnesses
Geo. H. Studer
W. H. Smith

Inventor
Albert J. Shroppe

UNITED STATES PATENT OFFICE.

ALBERT J. SHROPE, OF MECHANICSVILLE, IOWA, ASSIGNOR OF ONE-HALF
TO JOSEPH K. MILBOURNE, OF SAME PLACE.

DEVICE FOR OPENING OR CLOSING GATES, BARN-DOORS, &c.

SPECIFICATION forming part of Letters Patent No. 570,412, dated October 27, 1896.

Application filed March 30, 1896. Serial No. 585,499. (No model.)

To all whom it may concern:

Be it known that I, ALBERT J. SHROPE, of Mechanicsville, in the county of Cedar and State of Iowa, have invented a new and novel
5 Device for Opening and Closing Gates, Barn-Doors, and other Closures, of which the following is a clear and exact description.

The object of my invention is to provide a new and simple means to open and close gates,
10 barn-doors, &c., which is easily made, durable in construction, and can be easily operated.

The invention consists of the construction and novel combination and arrangement of
15 the parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

Figure 1 is a side elevation of my device, showing the gate partially open. Figs. 2 and
20 3 represent sectional views in detail. Fig. 4 is a sectional side elevation in detail. Fig. 5 is a side elevation of my devices attached to a barn door or doors.

The gate is hung and travels with its upper rail M on the rollers N and N' and is held
25 in place by rollers N' N'' above the lower rail M'. The rollers are grooved and adapted to receive the edges of the rails M and M' and are mounted on posts 10 and 11.

The gate is composed of horizontal rails, woven wire, and vertical braces. To the vertical brace 3 is pivoted by one end the bar J. Its other end is pivoted to the vertical lever E. The upper end of lever E is fulcrumed
30 on rod X', which is a horizontal rod, the inner end of which is secured to post 10 and the outer end bent at right angles and secured to the cross-bar L, as shown in Fig. 3. At a point near the center of the lever E, as D', is
35 pivoted the lower end of the draw-bar D, whose upper end contains a long slot, as shown in Fig. 1.

C is a short hanging bar bifurcated at its lower end and pivoted at its upper end by the
45 rod X', as shown in Figs. 3 and 4. Across the upper end of the bifurcation in hanging bar C is pin X, beveled at its lower edge, Fig. 3. Near the lower end of the hanging bar C is the pin Z, which penetrates both sides of the bifurcation and extends far enough outward to en-

gage through the long slot in bar D, thus pivoting bar D to the hang-bar C, Fig. 1.

F is a push-bar suspended between the sides of the bifurcated hanging bar C by the pivot-pin Z, passing through a short slot near
55 its upper end. Its upper end is beveled to form a sharp end, which, in combination with the beveled pin X in bifurcation of hanging bar C, prevents the device from stopping upon a dead-center.

Near the lower end of the push-bar F on its inner side is secured an eye-pin Q, Fig. 4, which engages the vertical guide-rod V, whose ends are bent at right angles and secured to upright post 10, as shown in Fig. 4. Around the rod
65 V and above the eye-pin Q is a coil-spring V', extended, to bring device in working position, Figs. 3 and 4. Around the neck of the eye-pin Q is secured the lower end of the chain G. The upper end is bifurcated and the ends
70 attached to the inner ends of the working levers B and B', Fig. 4.

B and B' are working levers of the first class and are fulcrumed to the ends of the cross-bar L, which is secured to the upper end
75 of the post 10. (See Fig. 4.) From the outer end of the lever B is suspended a rope O. (See Fig. 1.)

The locking is performed thus: The lower end of the push-bar F is notched, and above
80 the notch is pivoted the catch H, which hangs suspended, as shown in Fig. 2. To the post 10 is secured the lock W by two staples. This lock is a rod with its ends bent at right angles to the body and at right angles to each
85 other, the body horizontal and secured to post 10, the long arm horizontal and at right angles to the post, the short arm vertical and parallel to the post. (See Fig. 3.) On the top of the rail M are secured two blocks I
90 and I', each having a right-angled shoulder 2 or 2' and beveled from the shoulder to the opposite end, forming an inclined plane, as shown in Figs. 1 and 3.

The manner in which the gate or door is
95 caused to travel sidewise by means of the aforesaid-described combinations of several parts I shall now describe.

Suppose the gate closed and to open travels to the right. The device is at rest. The 100

bar D, by reason of gravity and the long slot at its upper end, falls to the right side of the lever E, and as it is pivoted to the hanging bar C and the latter to upper end of push-bar F it causes them also to incline to the right. The long arm of the lock W engages the shoulder 2 of block I and the gate is locked. The catch end of the latch II engages under the long arm of the lock W and holds said arm within the notch in the lower end of the push-bar F. Power applied to the rope O in a downward direction lowers the long arm of working lever B and elevates the short arm, raises chain G, which raises push-bar F, which carries latch II upward, lifting the long arm of lock W and disengaging it from shoulder of block I, thus unlocking the gate. As push-bar F proceeds upward the long arm of W disengages itself from the catch of latch II and falls into position. The upper end of push-bar F, by reason of its being pivoted within the bifurcation of hang-bar C, pushes it upward and to the right, causing it to describe an arc of a circle. The draw-bar D, being also pivoted at same point of elevation, is made to describe the same arc. The bar D, by reason of its being pivoted to lever E, causes that lever also to describe by its lower end an arc of a circle from left to right. The said end of lever E must necessarily cause its connected end of bar J to describe the same arc, and the gate A being movable to travel to the right a distance equal to double the sine of the arc the long arm of latch W drops over the shoulder of block I' and the gate is locked and open. Remove the force from rope O and the device is drawn into position to close by means of coil-spring V'. By gravity, and permitted by the long slot in bar D, the upper end of bar D falls to the left of the lever E, carrying the other parts with it.

If at any time the device is stopped at a perpendicular, the push-bar F by means of the short slot in its upper end is permitted to rise in the bifurcation in hanging bar C, and its beveled end strikes the beveled pin X and is deflected to one side, preventing resting on a dead-center. The lock falls in position. Apply, now, the power to the working lever and the device performs the same action, except

in the opposite direction, thus closing the gate.

Having thus described my invention, what I claim as new and novel, and desire to secure by Letters Patent, is—

1. The combination with a gate or door formed to slide sidewise, bar J pivoted to the same and vertical lever E, the lower end pivoted to bar J and the upper end fulcrumed on rod X'; of hanging bar C fulcrumed on same rod; bar D pivoted at its lower end to lever E and through a slot in its upper end to the free end of hanging bar C by pin Z; slotted push-bar F pivoted by its slot within the bifurcation of bar C and the operating-chain G connected to said push-bar near its lower end, substantially as described.

2. The combination with the vertical lever E, and the bifurcated hanging bar C, of the slotted bar D, pivoted at its lower end to lever E, and through its slot to the hanging bar; the slotted push-bar F, beveled at its upper end, and pivoted by its slot within the bifurcation of bar C; pin X crossing the upper end of said bifurcation; guide-rod V, and eye-pin Q at the lower end of bar F, engaging said guide and coil-spring V' around guide-rod V, substantially as described.

3. The combination with the hanging bar C, bar D, lever E, bar J, push-bar F, eye-pin Q secured to lower end of said bar, post 10, the guide-rod V secured at both ends thereto and the coil-spring V' around the guide-rod V; of a bifurcated chain G secured at its lower end to neck of eye-pin Q and its upper ends secured to the short ends of working levers B and B', substantially as described.

4. The combination with a gate formed to slide sidewise, the push-bar F and the upright post 10; of the shouldered and beveled blocks I and I' secured to top rail of said gate; and the catch H suspended from lower end of push-bar F and the lock W stapled to gate-post, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

ALBERT J. SHROPE.

Witnesses:

GEO. W. STUDER,
W. H. SMITH.