

(No Model.)

B. L. REX.  
SLIDING GATE.

No. 246,341.

Patented Aug. 30, 1881.

Fig. 1.

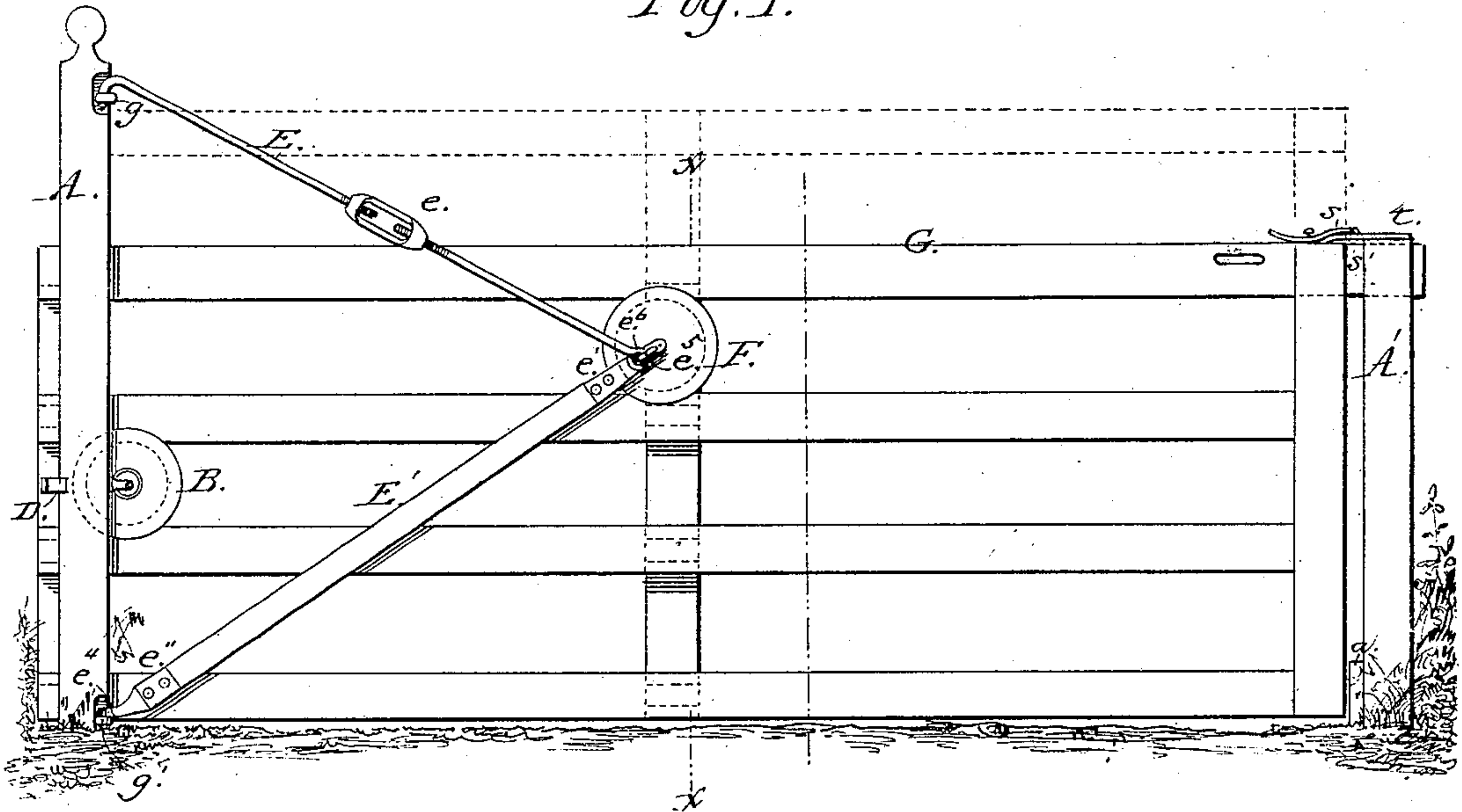


Fig. 2.

Fig. 4.

Fig. 3.

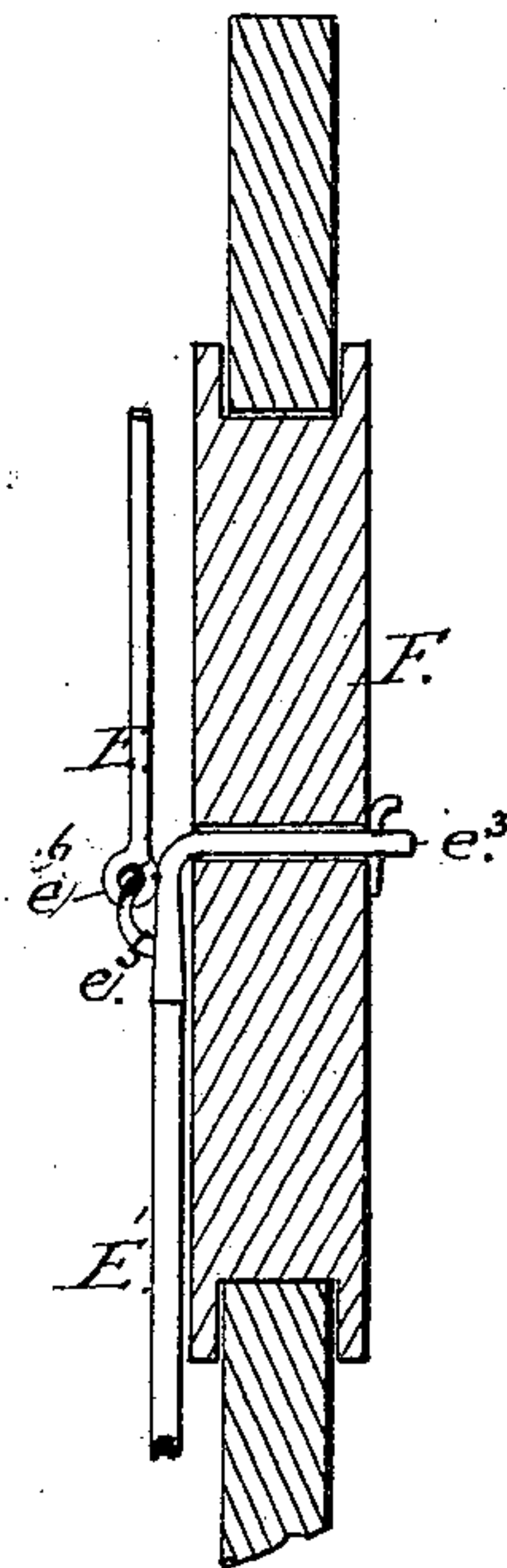
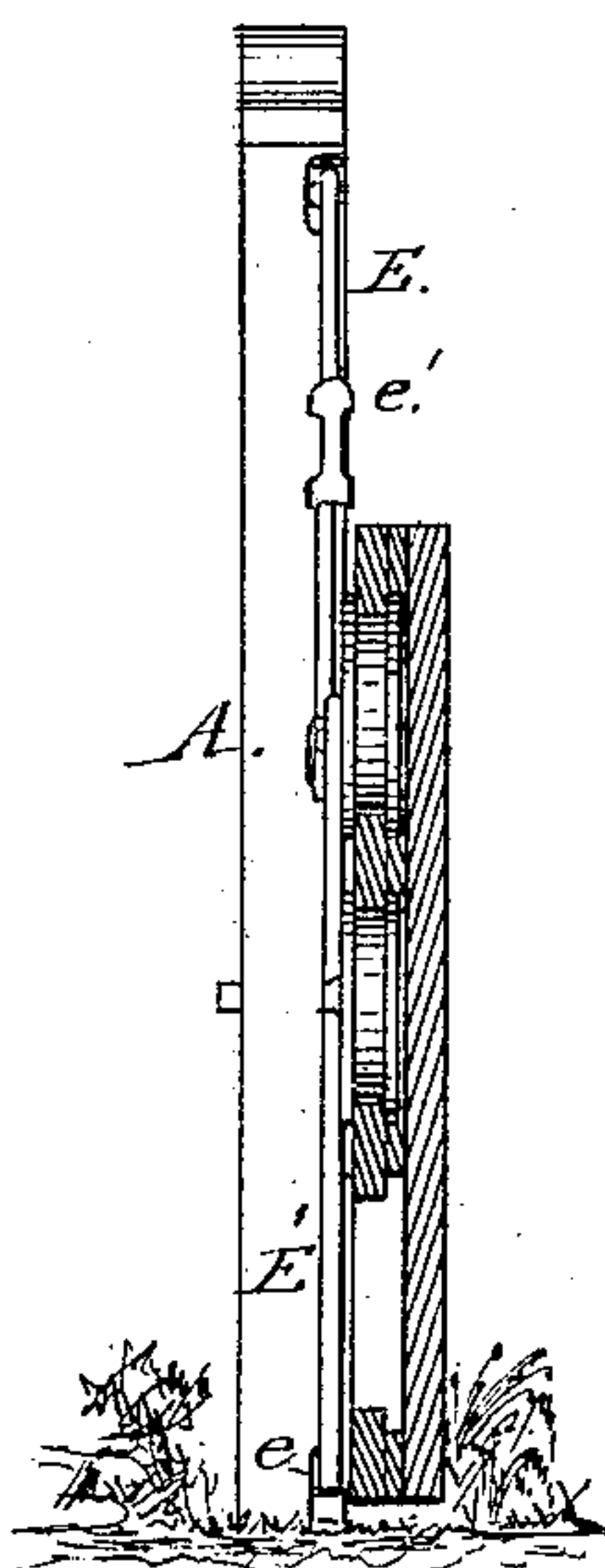
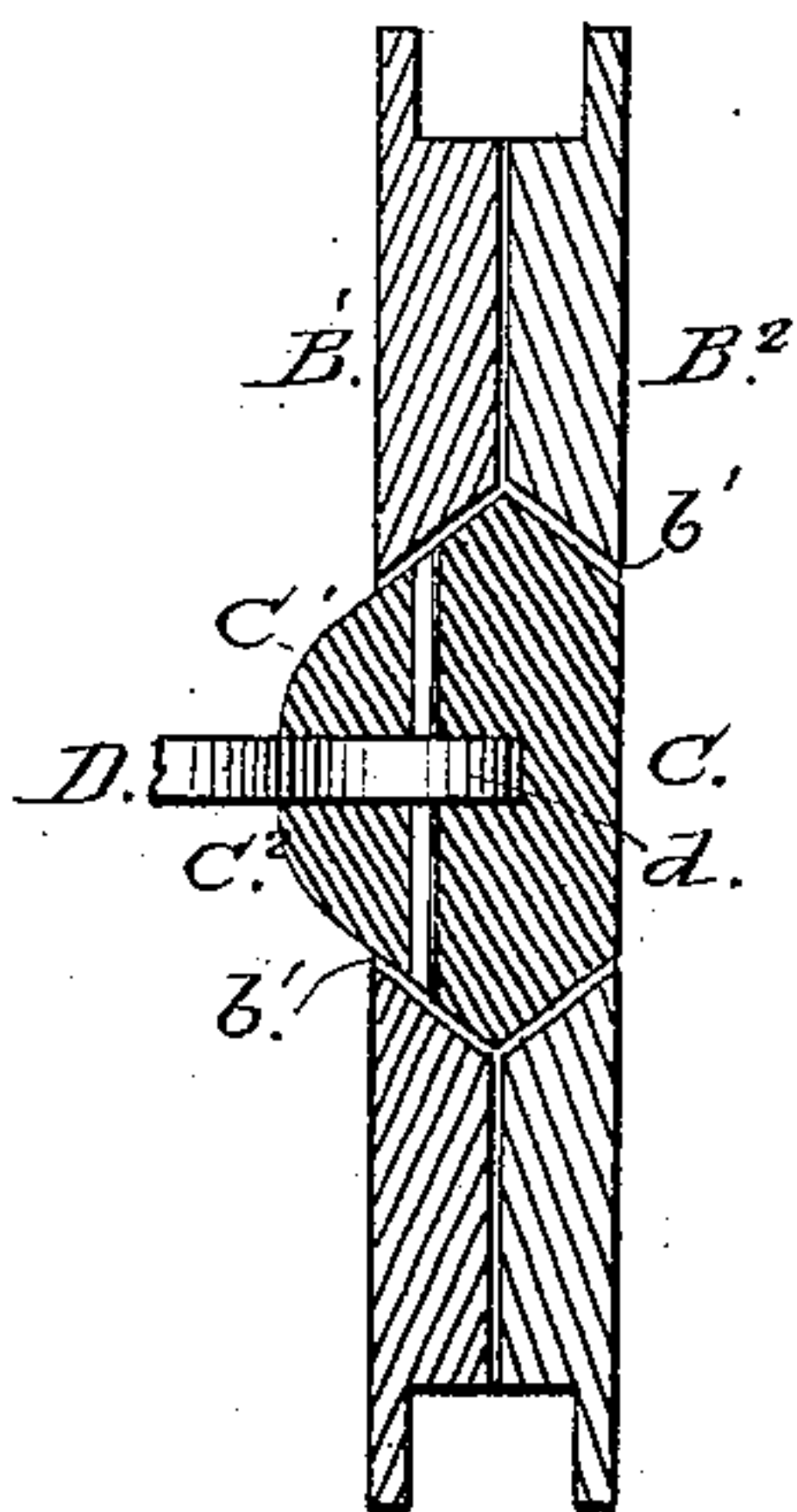
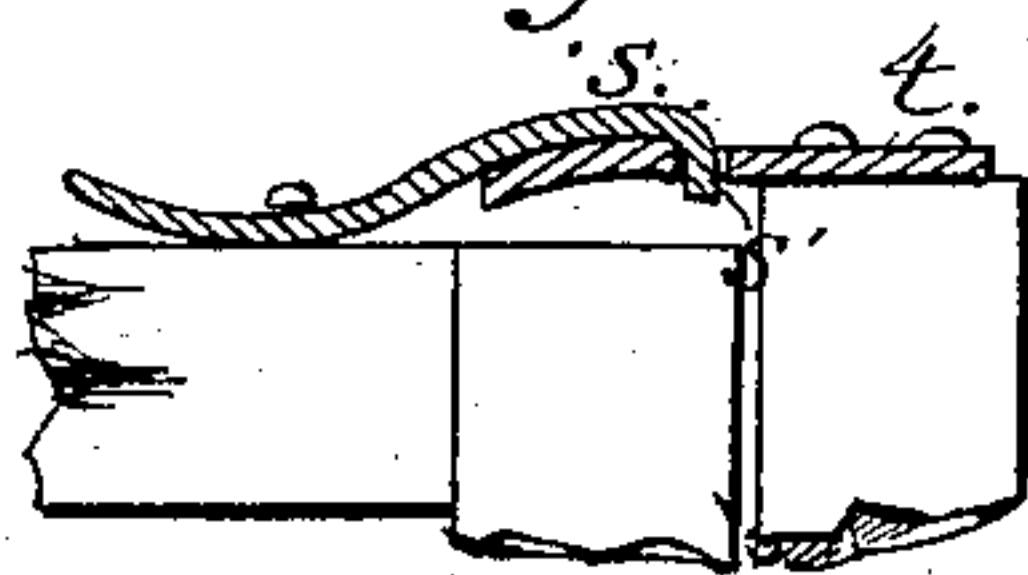


Fig. 5.



Witnesses:  
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Inventor:  
B. L. Rex  
per J. N. Kalb.  
Att'y



# UNITED STATES PATENT OFFICE.

BENJAMIN L. REX, OF LOVETTSVILLE, VIRGINIA.

## SLIDING GATE.

SPECIFICATION forming part of Letters Patent No. 246,341, dated August 30, 1881.

Application filed June 28, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN L. REX, a citizen of the United States, residing at Lovettsville, in the county of Loudoun and State of Virginia, have invented certain new and useful Improvements in Sliding Gates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it

appertains to make and use the same, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to sliding gates, and lies in a simple, strong, and efficient construction of the hinge-roller, being a wheel within a wheel, with a double-cone periphery fitting into an annular V-shaped groove in the body of the roller.

The invention will be further understood as set forth in the following specification and claims.

The accompanying drawings form a part of this specification and illustrate the invention. Figure 1 is an elevation of the gate. Fig. 2 is a transverse section of the gate on line  $x-x$ . Fig. 3 is a section of the hinge-roller. Fig. 4 is a section of the equalizing-roller. Fig. 5 is a sectional elevation of the fastening device.

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

A is the stationary rear post; A', the stationary front post. Into the rear post, A, the eyebolt of the hinge-roller and the bolts or staples for swinging the brace are placed in the same vertical line.

B is the hinge-roller. It consists of the following mechanism: Two circular pieces of cast metal are formed, with well-defined flanges on the opposite edges of their peripheries, and have cast in their centers (reamed out or otherwise formed) a bevel hole of considerable diameter, in such a way as that when the parts are brought together they form an opening with a V-shaped annular groove in its circumference. B' B<sup>2</sup> are the pieces; b', the groove formed by placing them together. The parts B' B<sup>2</sup> are adapted to encompass an interior core, C, which conforms on its circumference to the groove b', said circumference being formed with a double cone, having its sides at sufficient angle to fit

snugly in the annular V-shaped groove b', but with liberty to revolve therein. The exterior face of the core C is coincident with the corresponding face of the roller B, and offers no resistance to the easy travel of the gate upon the roller. The inner face of the core C is formed with a bold protuberance or swell, and is deeply channeled out to receive the eye end d of the eyebolt D. The swell on the inner face of the core, when thus channeled, forms supports or bosses C' C<sup>2</sup>, which, fitting closely but easily over the end of the eyebolt, prevent any movement on said eyebolt, except in the line of the channel. The eyebolt is secured in the core C by means of a pin passing through holes in the core and bolt at right angles to the channel. The channel is of such form as to allow rocking motion to the roller on the eyebolt in the line of said channel within wide limits, and gives all the swing which may in any case be required. By reason of the bosses C' C<sup>2</sup> and the peculiar formation of the double-cone periphery of the core fitting into the V-shaped annular groove b' the roller is insured an easy rotary and rocking action, while all play and vertical oscillation is effectually obviated and the roller held securely in a perpendicular position. The double-cone periphery working in the V-shaped groove gives an easy movement of the core with the least possible friction. Only two surfaces are exposed to contact, while if the core were made in the form of an ordinary wheel, three sides would receive friction, and consequently the action of the roller would be proportionately harder. The bosses C' C<sup>2</sup> hold the eyebolt D securely and relieve the strain from the pin. They allow the roller to swing on the eyebolt freely, but at all times form a support for the eyebolt.

The eyebolt D may be cut away to some extent near the eye end d, in order to enlarge the field of motion of the hinge-roller thereon; but it is preferable to have the core of sufficient diameter and the channel therein of sufficient length and proper form to give the required action without abstracting anything from the size and strength of the eyebolt.

E E' are the upper and lower arms of the brace. At their juncture they support the steadying and equalizing roller F, which lies between any two of the gate-slats. The upper



arm, E, is formed of an iron rod, and is divided at mid-length and provided with screw-threads. A turn-buckle, e, engages with the threaded ends, and has provisions for being  
 5 turned to take up the slack and prevent the gate from sagging by making the upper arm shorter. The lower brace, E', is preferably of wood of some strong tough character, and has metal sockets  $e^1 e^2$  at either end, which have  
 10 terminations  $e^3 e^4$ . The end  $e^4$  rests and turns in the staple  $g'$ , and the rear end of the arm E in the staple  $g$ . These staples  $g g'$  are placed in the stationary rear post, on the same corner as the eyebolt D of the roller B. The post A  
 15 is suitably cut or mortised to receive the staples without allowing them to project, and it is also grooved to accommodate the arms when the gate is turned. The staples are so placed in order to bring the strain on the rollers B F con-  
 20 sequent upon the weight of the sustained gate in the same direct line, avoiding all twist and lateral strain upon the rollers, and insuring an easy action of the gate backward and forward thereon.

25 The mortising and grooving of the post are done to keep the arms out of the way, offering no possible obstacle to the movement of the gate over the rollers nor when swung around.

30 The end  $e^3$  of brace E' passes through the roller F and constitutes the axis thereof; or the end of the socket  $e^1$  may be flattened and provided with a hole to receive an independent pin, which takes the place of the axis  $e^3$ . The socket  $e^1$  is also provided with a loop,  $e^5$ , formed to receive the hook  $e^6$  of the outer end of the  
 35 rod E.

It is important to have the sockets project but little beyond the end of the arm, in order to avoid leverage thereon and consequent strain.

40 G is the gate, having any desired number of slats. The rear swinging and center posts are cut away between each slat and for a sufficient distance under them to allow the gate to pass freely over the flanges of the rollers.  
 45 The rollers are made to run between the slats, and their flanges overlap the edges thereof.

The gate is placed in position by simply sliding it over the rollers, and as the posts are so mortised between the slats as to receive the  
 50 rollers, it is evident that the gate may be made to assume any height by merely placing it so that the rollers come between a different pair of slats. It will also be seen that the gate is entirely independent in the matter of removal  
 55 and replacement of any other portion of the structure, and that it can be removed and replaced without disturbing any of the parts. It is also apparent that by reason of both the center and rear swinging posts of the gate be-  
 60 ing cut away to receive the rollers the length

of the arms E E' may be indefinitely varied, and that the gate can be relied upon to swing without being supported, whether it is rolled back so as to be balanced on the hinge-roller or not. This is a great advantage in this class  
 65 of gates, particularly when they are used to pass through by persons on foot or horseback, and when it is not desired to open them to their full extent. It in effect gives this gate all the advantages of an ordinary swinging  
 70 gate, and at the same time adds superiority to it as a sliding gate. The adaptation of my gate to be slid over the rollers to any desired distance, to have the arms of the brace of any desired length, will readily approve itself in  
 75 this particular. The upper slat is extended beyond the front post, and when the gate is closed engages in a mortise in the front stationary post, A'. This mortise preferably has its sides beveled to receive the extended slat  
 80 easily. In addition to this fastening, I have provided a hand-hold, o, in the upper slat, and a spring, s, with a downwardly-projecting point,  $s'$ . Into the front stationary post, A', a piece of metal, t, is driven, which extends  
 85 out in a broadened plate, sloping downward in front, and provided with a hole to receive the point  $s'$  of the spring s when the gate comes in contact with the front post, A'. By this means a secure fastening is effected, and one  
 90 which is easily operated. At the bottom of the front stationary post, A', cleats a a are attached far enough apart to receive the lower front corner of the gate when the upper slat is brought into the mortise near the top of the  
 95 post. This steadies the lower part of the gate and keeps it secure.

Having thus described my invention, I desire to claim and secure by Letters Patent—

1. In combination with the supporting-roller  
 100 F, the braces E E', the latter having its socket extended to form the axis of said roller, and provided with a loop adapted to receive an eye formed at the end of the adjustable rod or brace E, as set forth.

2. The hinge-roller described, consisting of the two parts B' B<sup>2</sup>, provided with a central annular V-shaped groove formed by placing the two parts together, and a core fitting into the V-shaped groove with a double-cone pe-  
 110 riphery, and provided with the bosses C' C<sup>2</sup>, between which the eyebolt D works, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

BENJAMIN L. REX.

Witnesses:

WILLIAM P. HILLEARY,  
 W. R. CHINN.