

No. 750,587.

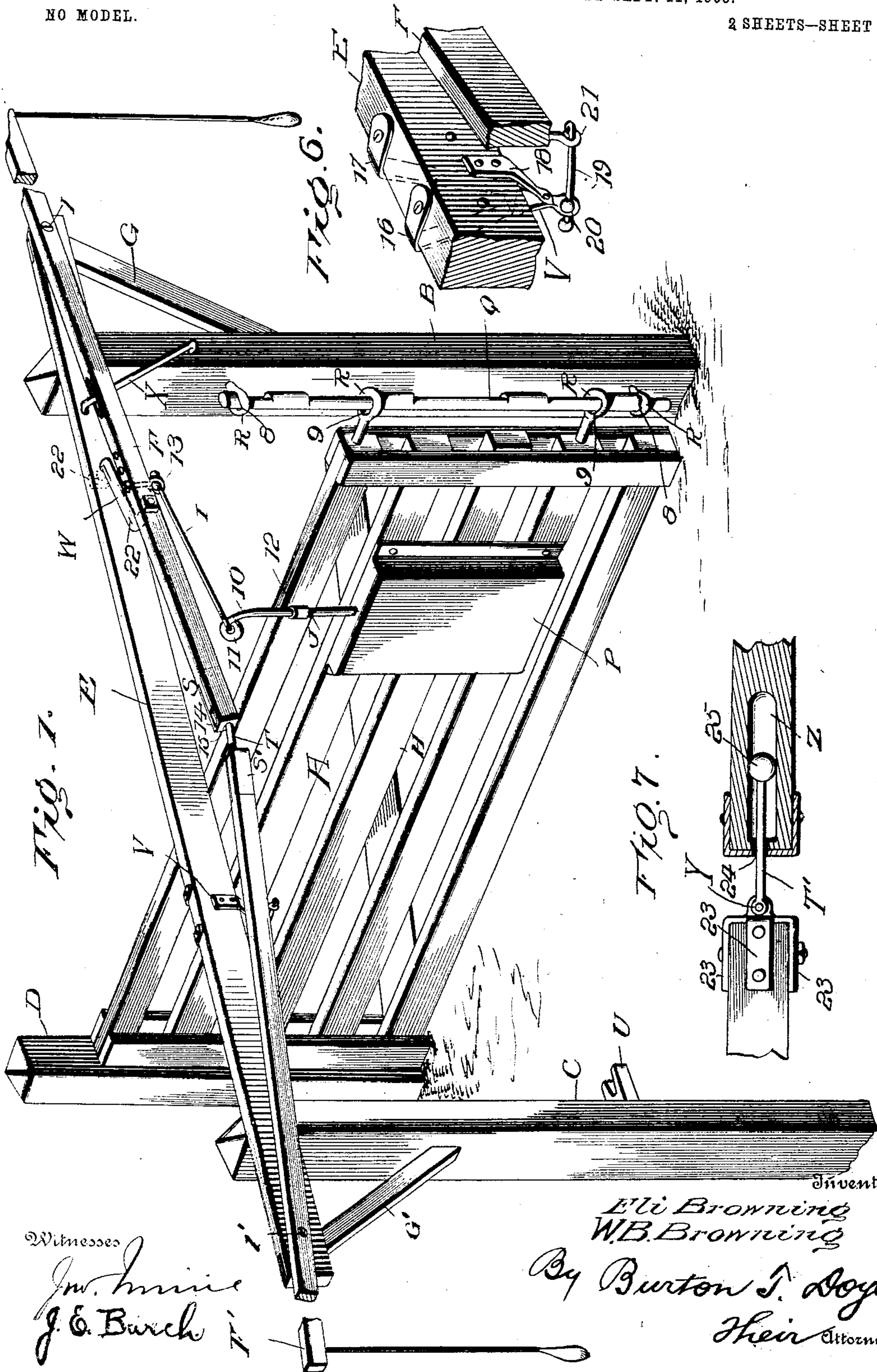
PATENTED JAN. 26, 1904.

E. & W. B. BROWNING.
SWINGING GATE.

APPLICATION FILED SEPT. 15, 1902. RENEWED SEPT. 11, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

J. E. Burch
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Inventors:

Eli Browning
W.B. Browning

By Burton J. Doyle
Their Attorney

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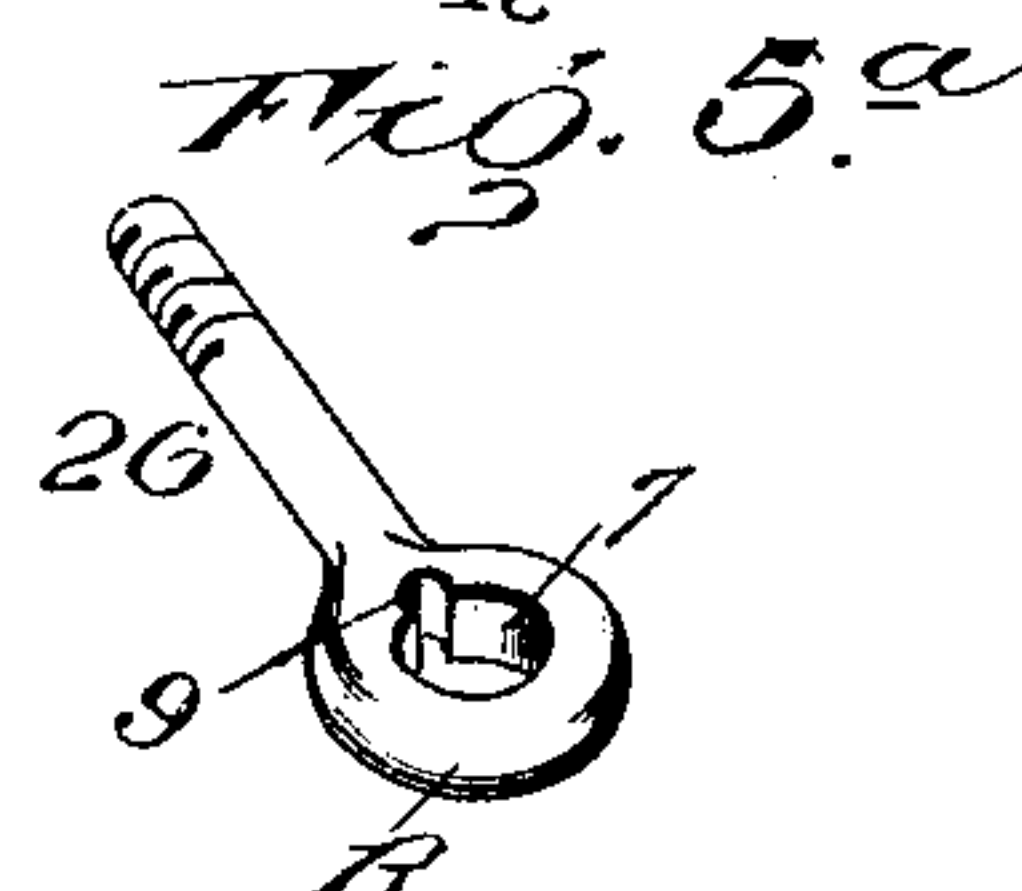
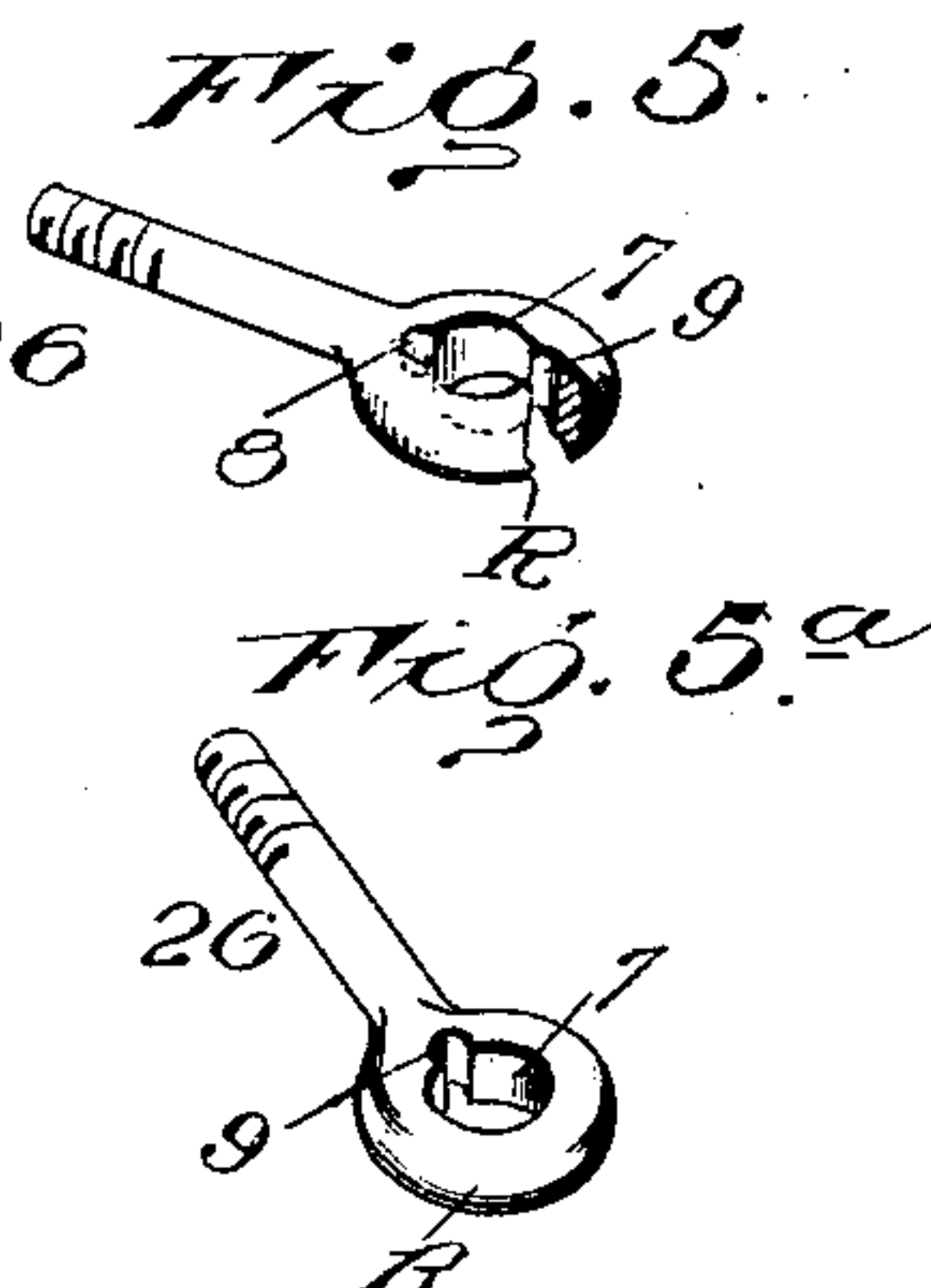
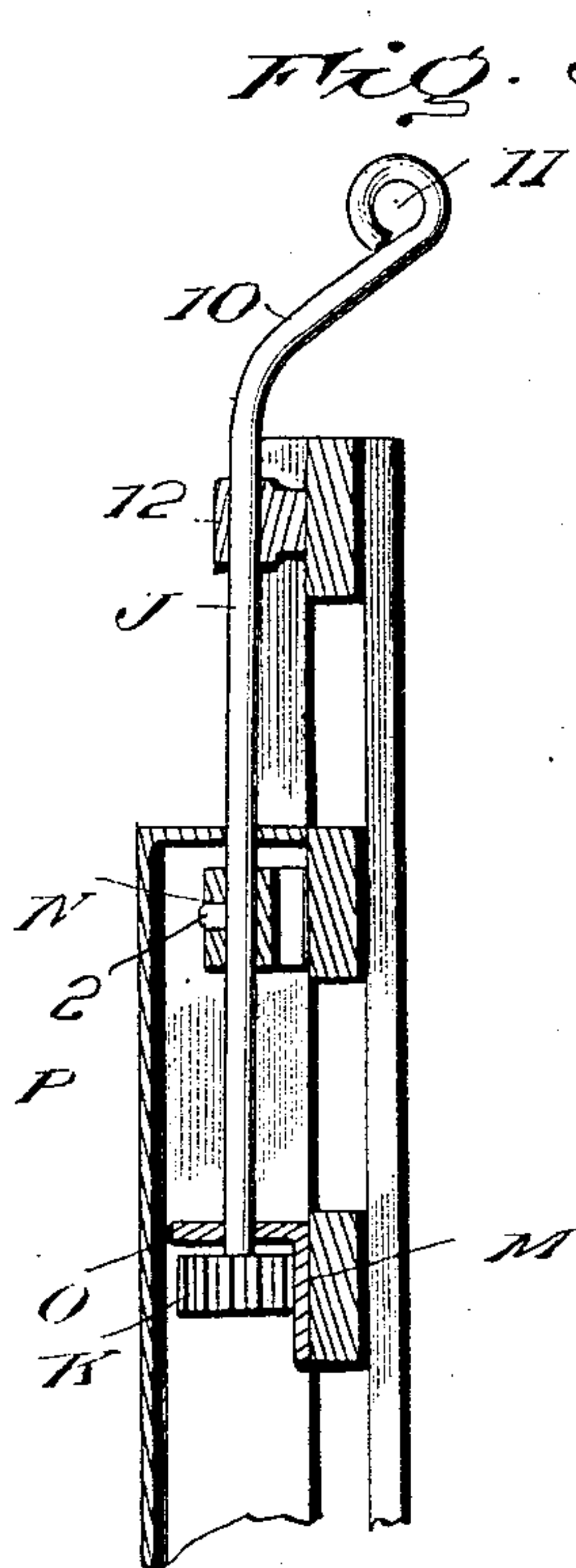
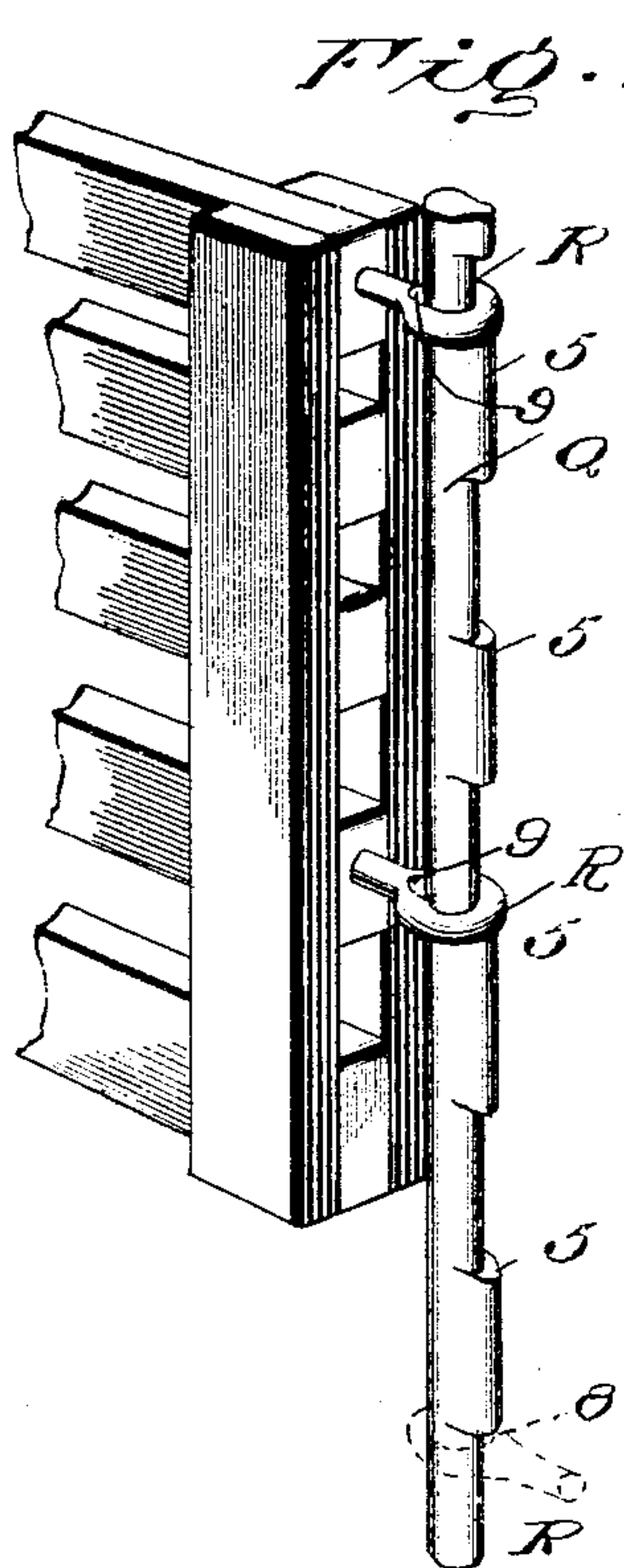
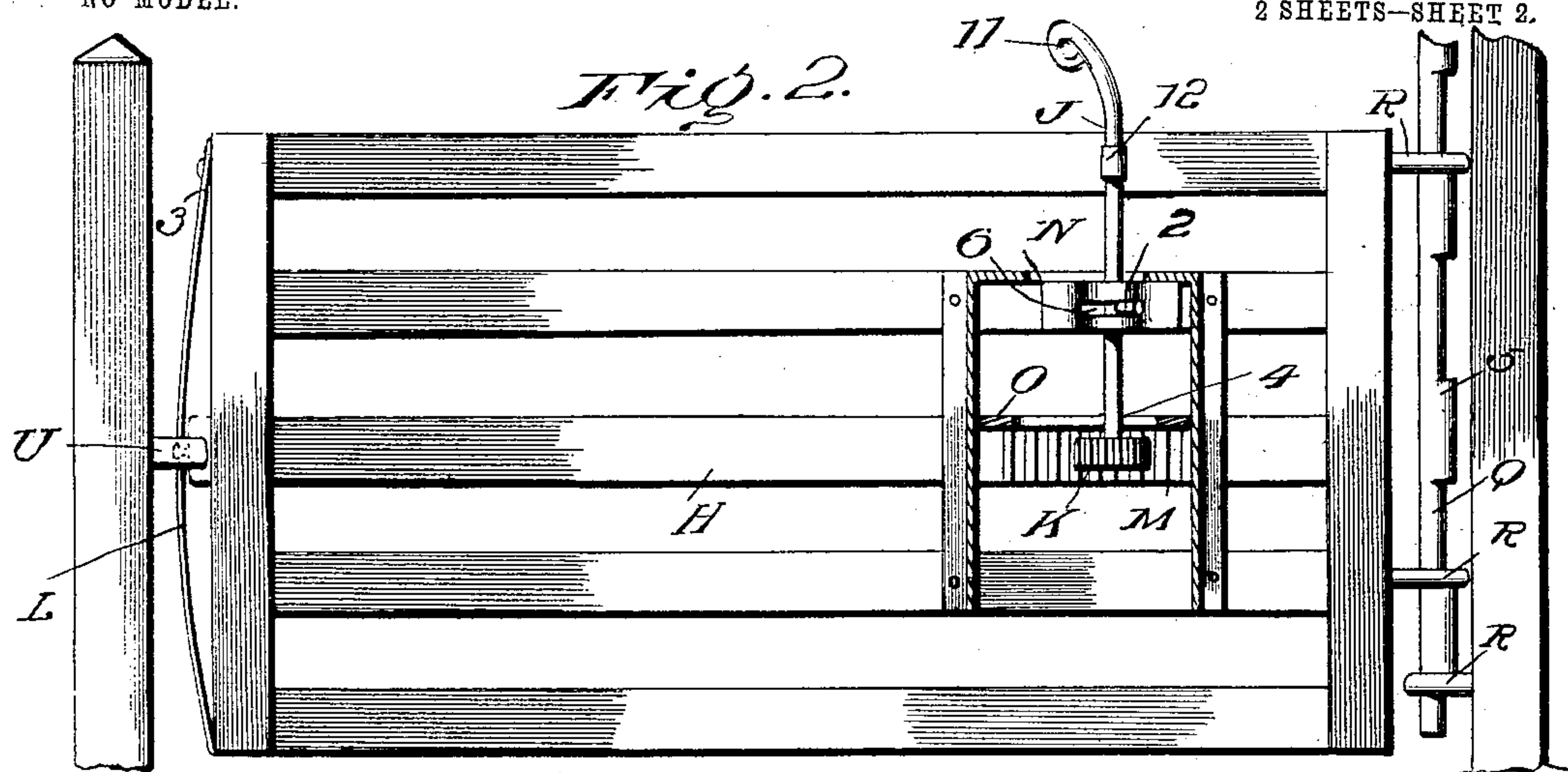
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UNITED STATES PATENT OFFICE.

ELI BROWNING AND WILLIAM B. BROWNING, OF IOWA CITY, IOWA,
ASSIGNORS TO BROWNING BROTHERS COMPANY, OF WESTBRANCH,
IOWA.

SWINGING GATE.

SPECIFICATION forming part of Letters Patent No. 750,587, dated January 26, 1904.

Application filed September 15, 1902. Renewed September 11, 1903. Serial No. 172,824. (No model.)

To all whom it may concern:

Be it known that we, ELI BROWNING and WILLIAM B. BROWNING, citizens of the United States, residing at Iowa City, in the county of Johnson and State of Iowa, have invented certain new and useful Improvements in Swinging Gates, of which the following is a specification.

This invention relates to swinging gates adapted to be opened and closed by a system of levers so disposed as to be operated from either side of the fence and without requiring the operator to dismount for that purpose.

One object of this invention is to produce a swinging gate of this character which may be swung and operated at any distance above the level of the ground that may be desired to adjust the open space under the gate to the ingress and egress of stock of a certain size or under.

Another object of this invention is to produce a swinging gate of the character described which cannot be opened at inopportune times by stock rubbing against it or against any part of it in such a manner as to operate the latch.

Another object of this invention is to produce a swinging gate of the character described whose leverage system shall be simple, inexpensive, easily adjusted to a gate, readily operated from either side of the fence to which it is attached, not liable to get out of order, and which shall be even, uniform, and exact in its movements and consist of but few parts.

Another object of this invention is to produce a swinging gate of the character described which when opened from one side of the fence by the depression of the lever on that side shall be caught and securely held open till deliberately released and closed by the reverse operation of the levers.

These and other objects not specifically enumerated are attained by means of the features of construction, arrangement of parts, and combinations of mechanism represented in the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a view in perspective of a swing-

ing gate constructed and arranged in place for operation in accordance with the details of this invention. Fig. 2 is a front or flat view of a gate, showing in position the cog mechanism and the latch-spring. Fig. 3 is a cross-sectional view of such cog mechanism provided with a protecting hood or shield. Fig. 4 is a detail view of the rod part and the gate part of the hinge-and-lock device used in swinging a gate at adjusted distances above the level of the ground for the admission or exclusion of stock according to size. Figs. 5 and 5^a are detail views of the hinge and bolt parts of this peculiar hinge-and-lock device. Fig. 6 is a detail view of a guiding device used to hold the working motion of the operating-levers in the line of a vertical plane. Fig. 7 is a detail view, partly sectional, of an oscillating connection provided for use between the inner ends of the operating-levers to hinge such levers together.

Like characters of reference denote like parts wherever they occur in the various views of the drawings.

A is a swinging gate.

B is a combined gate-post and lever-post having a shoulder provided at its upper end for the reception of a cross-beam.

C is a lever-post and catch-post combined, having a shoulder provided at its upper end for the reception of a cross-beam.

D is the other gate-post, which must be placed at right angles with the line of the two lever-posts B and C.

E is a cross-beam extending horizontally across from lever-post to lever-post, carefully adjusted in the shoulders at and securely riveted to the upper ends of the lever-posts B and C and having its two ends projected each way a little beyond the vertical lines of such lever-posts.

F and F' are oppositely-disposed operating-levers horizontally fulcrumed for vertical motion upon bolt-pivots sunk through the cross-beam E and the braces G G' at points I and I' outside of the vertical lines of the lever-posts B and C.

G and G' are braces provided with shoulders

similar to those on the lever-posts for the reception and support of the outer ends of the cross-beam E, the lower ends of said braces resting slantingly downward against and being made fast to the outer sides of the lever-posts B and C, while their upper ends extend upwardly and outwardly in the plane of their respective lever-post to receive and be securely fastened to the cross-beam E at the pivots of the respective operating-levers.

H is a latch-slat in the gate, so made and adjusted as to permit of its being moved horizontally to and fro by a cog-wheel K, Fig. 2, traveling over a cog-track M, mounted upon the side of the latch-slat H.

I is a link connecting one of the operating-levers with the shaft of the cog-wheel K. Said shaft J is provided at its upper end with an angular curve or crank formation with terminal means for engaging one end of link I, by means of which said link serves to rock said shaft, which is placed in a vertical position up the side of the gate at some point nearer the hinge end than the latch end, so that its curved end projects above the top of the gate sufficiently to permit the beginning of the curve to clear the top of the gate, and its other end extends down to the latch-slat H, passing through the fastenings provided at 12, N, and O and terminating in the cog-wheel K, of which it forms the spindle and to which it is fastened in a rigid position, so that when the shaft turns in its vertical position said cog-wheel must turn laterally with it and force the cog-track and the latch-slat to which said track is attached backward and forward, and thus operate the latch-spring. The upper end of said shaft J is provided with a ring-eye, hook-eye, or loop-eye at the upper end of the angular curve to engage the lower end of the link I of the hinge-link in such a manner that when the levers are raised or depressed this angular top of the vertical shaft J is pushed or pulled around laterally on the arc of a circle. Such turning of said shaft J laterally does not change its vertical position; but it turns the cog-wheel K, which is securely fastened to it, and forces the cog-track M backward or forward, carrying the latch-slat H with it, in such a manner as to unfasten the latch-spring from the latch-catch on either post, after which a further pull on the operating-levers will swing the gate open or shut.

L is the latch-spring formed by bending a strip of some suitable spring metal into a bowed shape and placing it, bow outward, on the outer end face of the gate-frame so that the central part of the bow will be over the outer end of the latch-slat. The latch-spring is then riveted to the end of the latch-slat, so that the latch-spring is drawn in or forced out with the latch-slat as the latter is moved in or out by the operation of the cog mechanism. The lower end of the latch-spring is se-

curely riveted to the gate-frame and its upper end being provided with a slot-aperture 3, through which a nut-bolt passes and secures that end to the gate-frame in such a manner as to relieve the latch-spring of any undue tension or useless strain by permitting the upper end thereof to slide up and down as the latch-slat is drawn in or forced out by the cog-wheel mechanism.

N is a metal piece (or it may be made of any other material, if preferred) encompassing the shaft J to hold it in place, securely attached to the slat of the gate next above the latch-slat, and provided with a lateral slot 2, through which a knob, pin, or other projection on shaft J passes and operates to control the lateral travel of the cog-wheel by striking against either end of slot 2 and stopping the rotation of the shaft J at proper limits.

O is another piece which may be made of metal or any other material and be integral with M or separate from it. It is placed horizontally over the cog-wheel K, securely attached to the upper edge of the latch-slat H, and provided with a longitudinal slot 4, through which shaft J passes and in which said shaft J is permitted to travel as the latch-slat is forced to the right or to the left, thus serving to hold both shaft J and the cog-wheel K secured to its end in positions of vertical adjustment.

P is a protecting hood, cover, or shield, which envelops the whole cog-wheel mechanism and prevents its being accidentally operated by stock in opening the gate by rubbing against it or any part of it. This protecting hood, cover, or shield extends vertically from the top of the gate-slat next above the latch-slat to the gate-slat next below the latch-slat, to both of which it is firmly secured, and laterally far enough to inclose and cover the whole cog mechanism. Its upper surface is provided with an aperture through which shaft J passes and in which it is permitted to turn in operating the cog mechanism.

Q is a hinge-rod used in swinging the gate to the gate-post. It is provided with adjustment-shoulders 5, upon which the gate part of the hinge R may rest and rotate. Such adjustment-shoulders are elongated knobs, nearly egg-shaped in cross-section, formed on the rod at stated distances apart to give adjustability in the height of the gate's swing from the ground. This rod is round between these shoulders and so attached at each end to the gate-post by use of a hinge-and-lock device 7 and 8 and 9 in Figs. 5 and 5^a as to permit of its being turned till its adjustment-shoulders are brought in line with and may pass through the groove on the gate side of the hinge-bolt or pintle-bolt in changing the gate's elevation above the ground and then turned back again till its adjustment-shoulders will fit into and rest in the lock-bed 8, Fig. 5, on the post side of the hinge-bolt or pintle-bolt when the gate is adjusted at the

desired height. The hinge is provided with a bolt end 26 to be sunk into or passed through and secured by nuts to the gate-post or the gate-frame and a hinge-and-lock end to accom-
 5 modate the hinge-rod. This latter end may be made in two shapes. The one which is to be secured to the gate-post is provided with the round part 7, Fig. 5, and lock-bed 8, Fig. 5, and the one which is to be secured to the
 10 gate-frame is provided with the round part and the groove part 7 and 9, Fig. 5^a. The use made of this difference of formation is obvious. The groove permits the adjustment-shoulders to pass through when by turning the
 15 hinge-rod they are brought in line with it, and the lock-bed receives and holds the adjustment-shoulders when by turning the hinge-rod back again they are brought in line with it, and that permits the gate to be swung or
 20 suspended upon any pair of shoulders on the hinge-rod. To change the adjustment of a gate in height after it is swung, the shoulders are disengaged from their lock-beds by lifting the hinge-rod till its adjustment-shoulders
 25 clear these lock-beds, the hinge-rod is turned in place till the adjustment-shoulders come in line with the groove, and then the gate may be hung higher or lower by raising it up or letting it down (the shoulders passing through
 30 the groove) to the next set of adjustment-shoulders and then turning the hinge-rod again in place till its shoulders engage the lock-beds. The weight of the gate will hold them there. When the gate is raised or lowered, the gear-
 35 ing is adjusted to its changed position by shifting the link inwardly or outwardly at its junction with the operating-lever, adjustment-holes being provided in the operating-lever for that purpose. To connect the inner ends
 40 of the operating-levers, a hinge and balled-rod device, as shown in Fig. 7, is used, consisting of a connecting-rod T', having a terminal ball 25 at one end and a hinge Y of extensive vertical oscillation at the other end, said hinge
 45 being provided with flanging arms 23 to span and be firmly secured to the inner end of one of the operating-levers, the inner end of the other operating-lever being provided with a metal-lined boring or kerf Z lengthwise of
 50 the lever to serve as a barrel or track for the ball end of the connecting-rod to travel in, said barrel or track being provided with means 24 for holding it in place of adjustment and for preventing the ball end of the connecting-rod
 55 from coming clear out of its socket. Such retention and prevention means may be provided by making the metal lining the retention means and the prevention means integrally or in sections. When made integrally,
 60 the whole thing make take the form of a thimble device, with a reinforced end opening 24 for the connecting-rod to pass through after the thimble is adjusted over the end of the lever, said thimble being provided with means
 65 for retaining it in such adjustment and an inner

thimble to line the bore in the end of the lever, or when made in sections the several sections may take this same thimble formation, respectively, or be made in strips similar to or
 in configuration with a section made length- 70 wise of such thimble device. In either case the metal-lined track should be made large enough to accommodate the terminal ball pliantly, and the reinforced opening forming the mouthpiece of the barrel should be
 75 made smaller than the bore—large enough to accommodate the connecting-rod, but sufficiently smaller than the metal-lined track to provide shoulders to engage the terminal ball on the rod and prevent its falling out of its
 80 position. Of course the inner ends of the operating-levers may be connected in other ways.

U is a latch-catch used to hold the latch-spring in place against the gate-post when the gate is closed and by reversing its position 85 to hold the latch-spring in place against the catch-post when the gate is open.

V is a guiding device, detailed more fully in Fig. 6. It is used to hold the operating-levers in a vertical plane—that is, to prevent 90 their wobbling from side to side when they are operated up and down. As shown, it is all made of metal; but it may be made wholly or in part of any other material suitable for the purpose. It consists of a guiding- 95 rod 19, having one end connected with a ring bolt 21, secured to one of the operating-levers, and the other end forming a ball-and-socket connection with a shoulder projected downwardly out from the cross-beam E on the side 100 thereof away from the levers. This shoulder projection consists of three arms, two of them coming down in something like a V shape from the side of the cross-beam away from the levers and bearing outwardly from the 105 beam near the bottom of said side and terminating in a ring which passes between two balls on the guiding-rod 19, as shown at 20. The third arm comes down from the lever side of the cross-beam E and meets and engages 110 the other two just above the ring and acts as a brace to hold the ball-and-socket joint rigidly in place.

W is another guiding device, which may be used to hold the working movement of the 115 operating-levers in a vertical plane, either independently of or in conjunction with either one of the other two devices for a like purpose described in this specification. It consists of one bar of metal and two thimble bolt-holes, 120 one through cross-beam E and the other through one of the operating-levers. The bar of metal has its two ends bent at right angles with the bar itself and in opposite directions to each other, so as to form a sort of 125 right-angled Z, the bent ends being threaded for nuts and used as spindles to pass through the two thimble bolt-holes.

X is still another device for the same purpose. It consists of a guiding-bar X, passed 130

slantingly upward from one of the lever-posts to the cross-beam near their juncture in an oblong slot provided through one of the operating-levers and securely bolted at each end, one to the lever-post and the other to the cross-beam. These results may be effected by many different equivalent devices, and it is apparent that we should not be limited to the particular devices herein shown and described for the accomplishment of any one of them.

Without limiting ourselves to the precise constructions shown and described, what we claim, and desire to secure by Letters Patent, is—

1. Mechanism for opening and closing a swinging gate, comprising pivoted operating-levers, means for connecting the inner ends of the operating-levers, a movable slat carrying a cog-track, a cog-wheel engaging said track, means for protecting the cog mechanism against weather and inopportune operation, means for connecting the cog mechanism with the operating-levers, means for limiting the longitudinal motion of the slat, means for holding the operating-levers in the line of a vertical plane while in motion, a latch-spring attached to and worked by the movable slat, adjustable pintle and pintle-bolts for swinging the gate at any desired height from the ground and means for preserving the connection between the operating-levers and the cog mechanism in any adjusted position of the gate, substantially as described.

2. In gate-operating mechanism, the combination, with pivoted operating-levers, of means for connecting the inner ends of the operating-levers, comprising a connecting-rod having at one end thereof a vertically-oscillating hinge provided with arms to span and be firmly fastened to the inner end of one of the levers and at the other end thereof a terminal ball adapted to be received by a bore down the inner end of the other lever and means suitable for preventing the terminal ball from being pulled out of said bore as the operating-levers are worked up and down, substantially as described.

3. In gate-operating mechanism, the combination, with a swinging gate, pivoted operating-levers and a movable slat located on the gate and carrying a cog-track, of mechanism for moving said slat, comprising a cog-wheel meshing with the cog-track secured to said movable slat and provided with a vertical shaft having a gate-opening and gate-closing connection with the operating-levers, substantially as described.

4. In gate-operating mechanism, the combination, with pivoted operating-levers of a slat movably mounted within the framework of the gate about midway thereof and having its ends passed slidingly through apertures provided through the end pieces of the gate-frame, cog mechanism for moving said slat and connection between said mechanism and

the operating-levers, substantially as described.

5. In gate-operating mechanism, the combination, with pivoted operating-levers and cog mechanism for moving a slat, of means for connecting the operating-levers with the cog mechanism, comprising a vertical shaft forming the spindle of the cog-wheel, extending thence vertically up the side of the gate to which it is rotatably secured, and having its projection above the gate provided with a lateral extension and a link between said lateral extension and one of the operating-levers to swing said lateral extension around laterally on the arc of a circle when the levers are raised or depressed, substantially as described.

6. In gate-operating mechanism, the combination, with pivoted operating-levers and cog mechanism for moving a slat, of means for limiting the longitudinal motion of the slat, comprising a fixture attached to one side of the gate, encompassing the vertical shaft of the cog mechanism and provided with a lateral oblong slot through which a lug projects horizontally outward from the body of the vertical shaft and passes from one end of the oblong slot to the other end thereof as the shaft turns and thus limits the longitudinal motion of the slat, substantially as described.

7. In gate-operating mechanism, the combination, with pivoted operating-levers, of means for holding said levers in the line of a vertical plane while in motion, comprising two arms extended convergently downward and outward from the cross-beam on the side thereof away from the operating-levers and a third arm extended downwardly across underneath the cross-beam and joined with the other two arms at their point of intersection below the level of the cross-beam, together with a link having pivotal connection with the united end of the three arms and one of the operating-levers, substantially as described.

8. In gate-operating mechanism, the combination, with pivoted operating-levers, a slat and cog mechanism for moving said slat, of a latch-spring attached to and worked by said slat, comprising a strip of spring metal having its body bowed outwardly from the outer end face of the gate-frame, its lower end fastened in a vertical position against said outer end face, its bowed part attached to said movable slat and its upper end provided with a slot adapted to play up and down on a bolt holding its upper end in position as the spring moves inwardly and outwardly, substantially as described.

9. The combination, with a gate, of an adjustable pintle and pintle-bolts for swinging the gate at any desired height from the ground, comprising a pintle or rod provided with elongated adjustment-shoulders at stated distances

apart on one side thereof, and two pintle-bolts having their bolt ends provided with nut-threads and their pintle ends provided with an eye; the eye of one of them having,
5 on the bolt side thereof, a vertically-disposed groove running from the top to the bottom thereof and adapted to pass the adjustment-shoulders of the pintle; and the eye of the
10 other one having a similar groove on the side thereof away from the bolt end and a similarly-shaped bed or rest provided on the bolt end side thereof, running only part of the way through from top to bottom and adapted to dovetail with and lock the terminal should-
15 ders of the pintle or rod and hold it in place, substantially as described.

10. In gate-operating mechanism, the combination, with pivoted operating-levers, cog mechanism for moving a slat, carrying part of
20 said cog mechanism and means for connecting said cog mechanism with said operating-levers, of means for preserving the connection between the cog mechanism and the operating-levers in any adjusted position of the
25 gate, comprising the provision on one of the operating-levers of adjustment-holes through

any of which the bolt holding the upper end of the link which connects the vertical shaft of the cog mechanism with the operating-levers may be passed after adjusting the gate
30 to different heights from the ground, substantially as described.

11. In gate-operating mechanism, the combination, with pivoted operating-levers, a movable slat and cog mechanism for moving said
35 slat, of means for holding the cog-wheel on its track while said slat is being moved, comprising a horizontally-disposed piece projected outwardly from the movable slat above the cog mechanism and provided with a lon-
40 gitudinal slot, encompassing the vertical shaft and permitting it to travel backward and forward therein, as the slat moves inwardly or outwardly, substantially as described.

In testimony whereof we affix our signatures
45 in presence of two witnesses.

ELI BROWNING.
W. B. BROWNING.

Witnesses:

R. H. BROWNING,
T. M. FAIRCHILD.