No. 719,621. PATENTED FEB. 3, 1903.

J. W. SHARRARD.

FOLDING GATE.

APPLICATION FILED AUG. 9, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

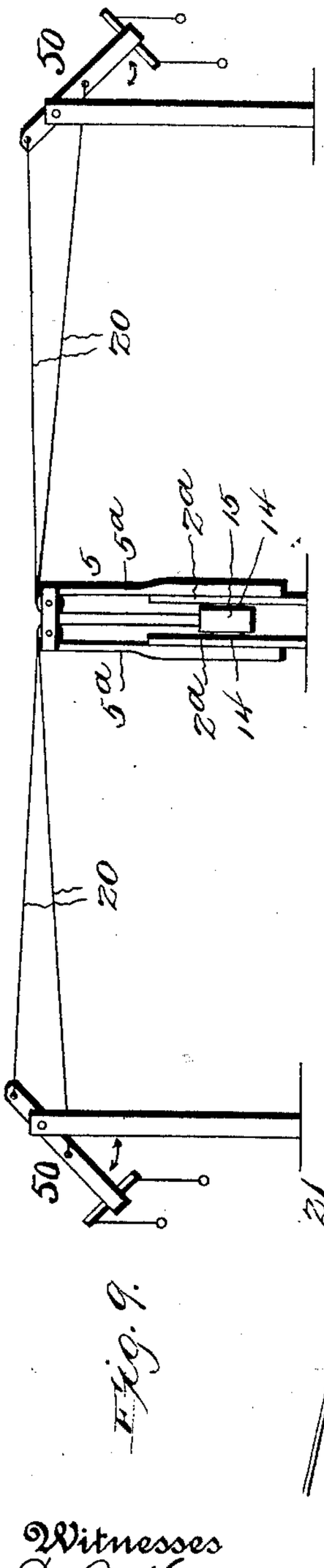

Fig. 2.

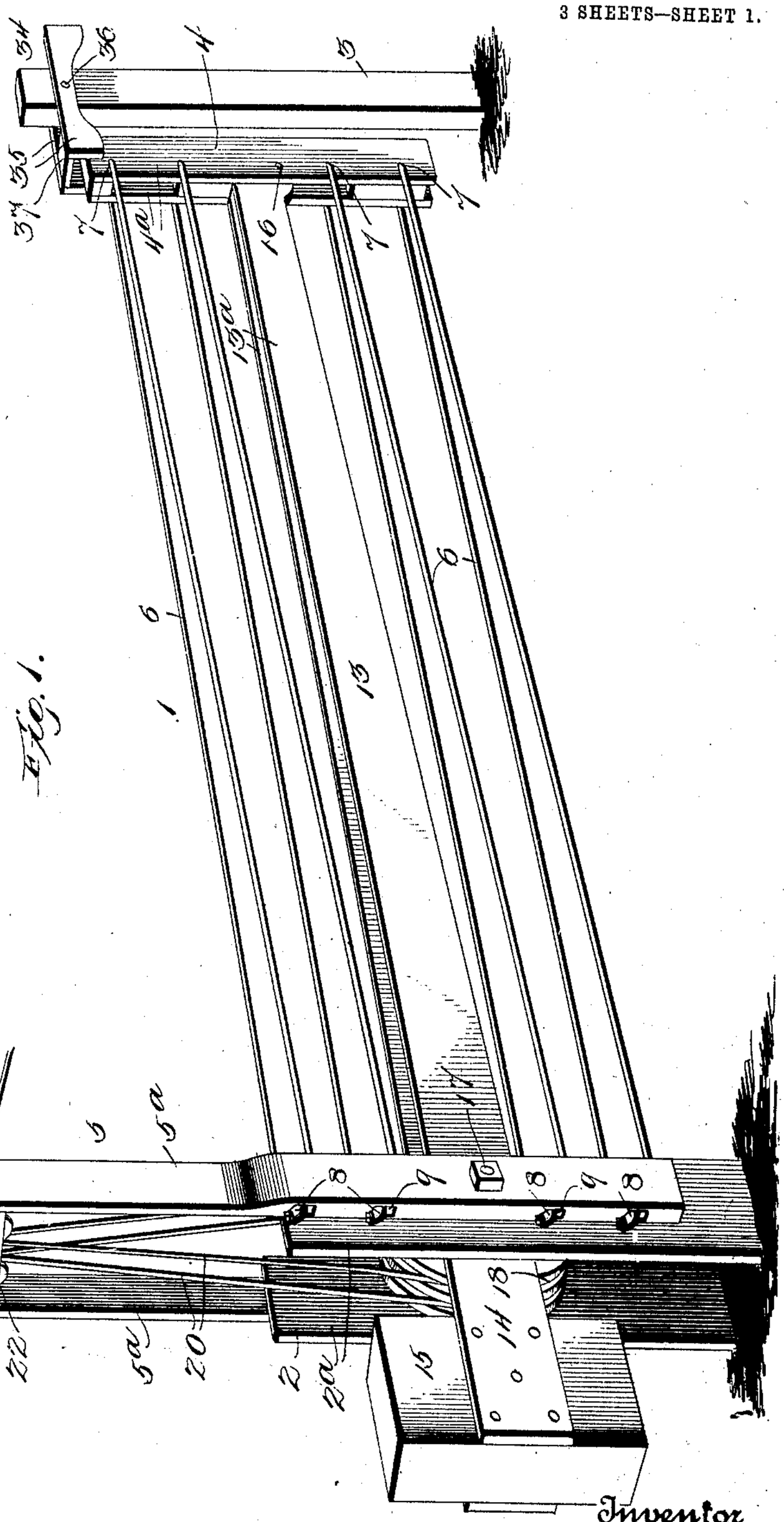

Fig. 1.

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NO MODEL.

3 SHEETS—SHEET 2.

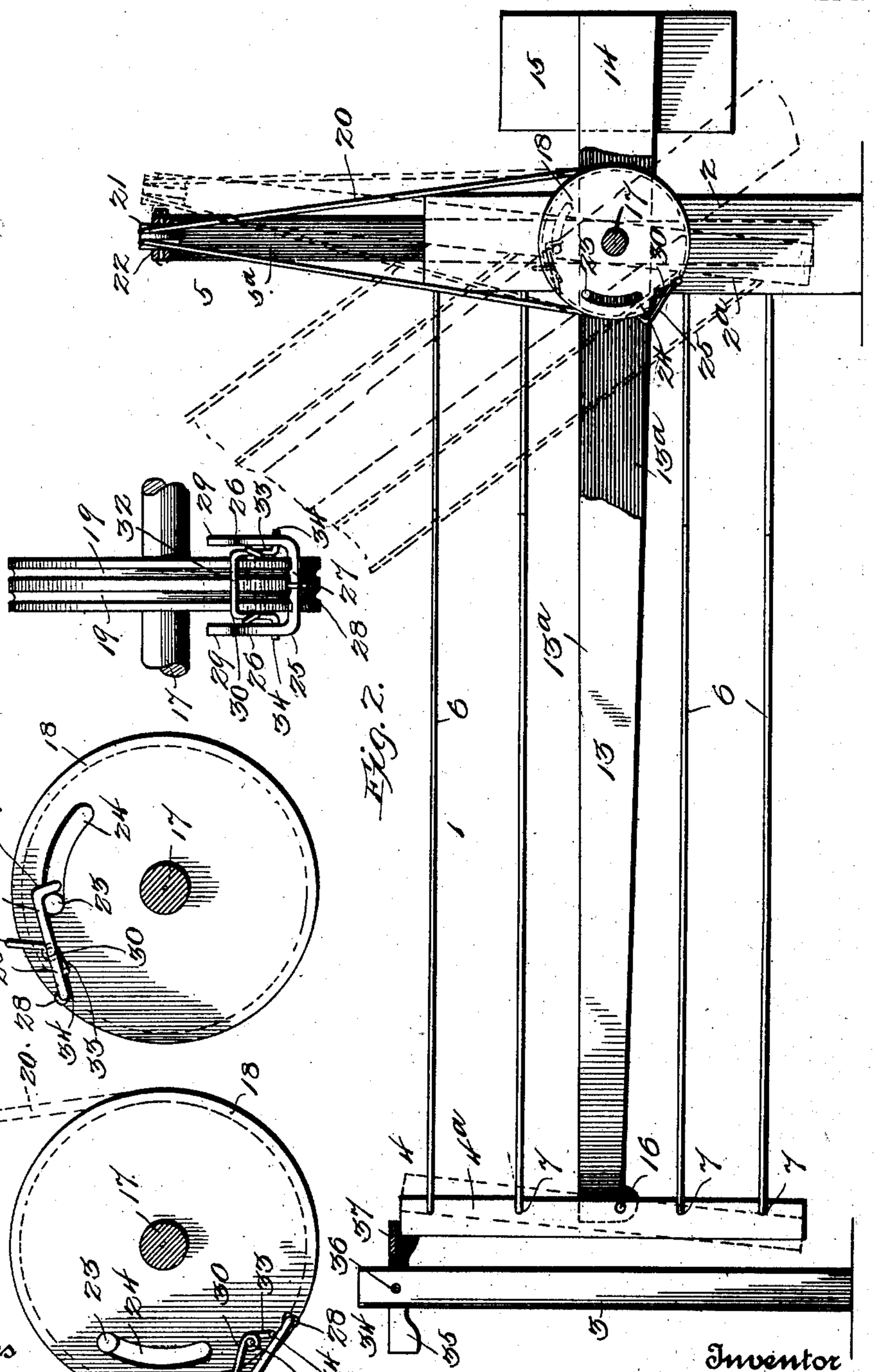

Fig. 5.

Fig. 2.

Fig. 4.

Fig. 3.

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NO MODEL. 3 SHEETS—SHEET 3.

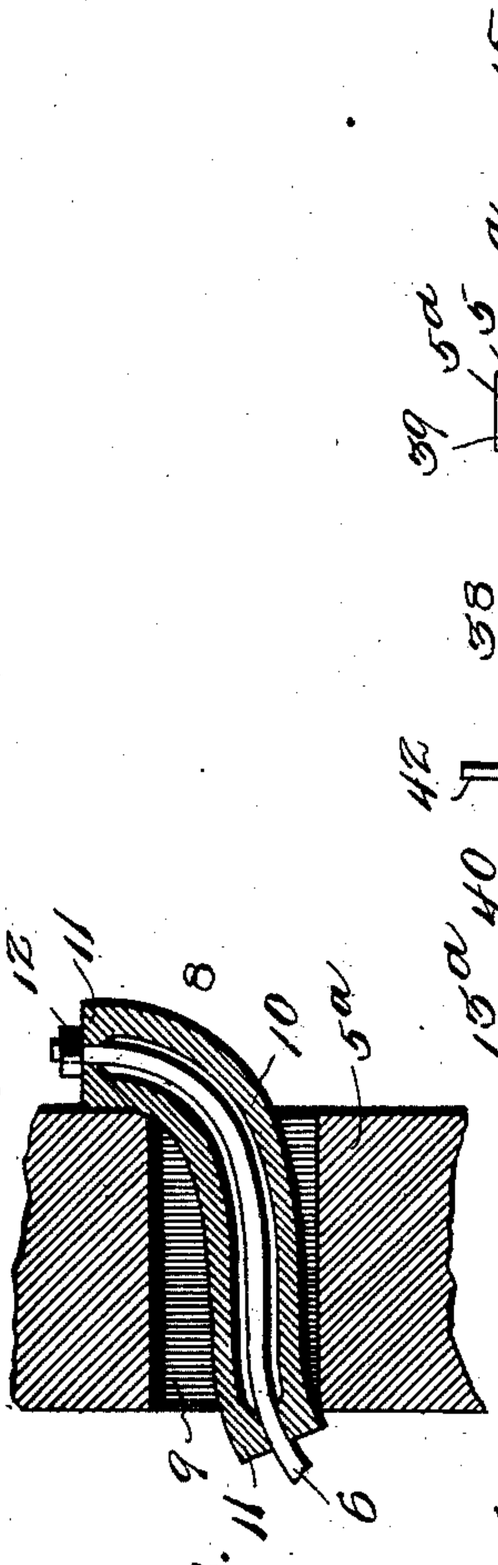

Fig. 8.

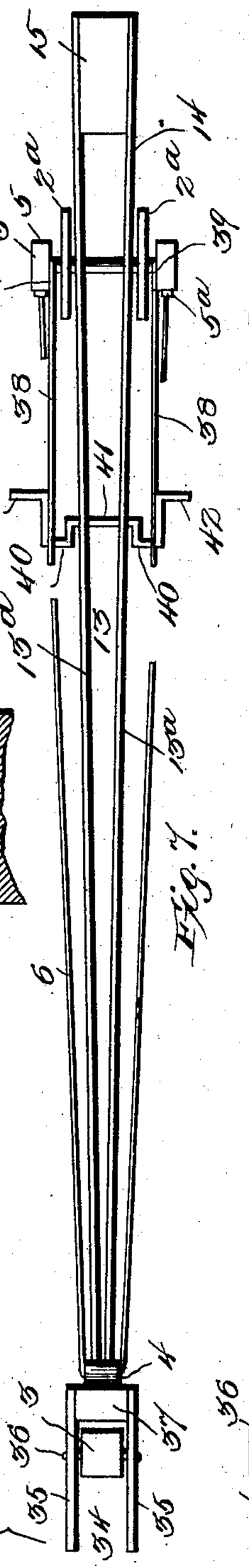

Fig. 7.

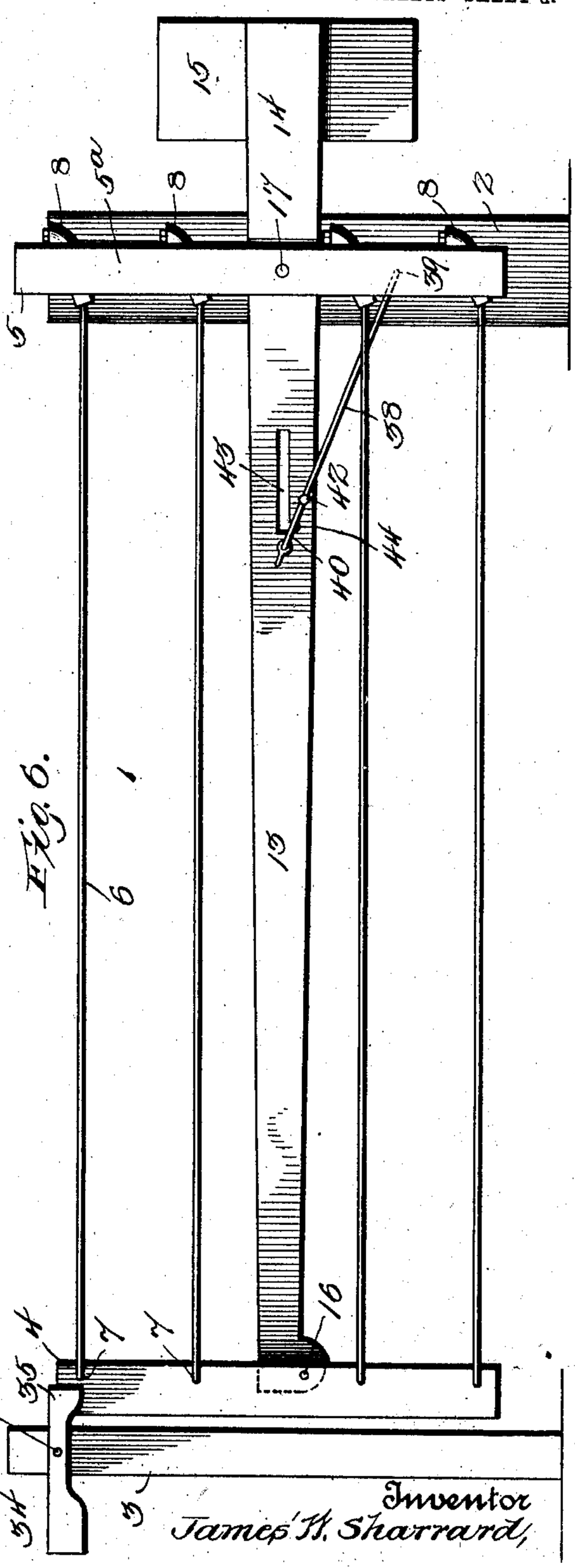

Fig. 6.

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UNITED STATES PATENT OFFICE.

JAMES W. SHARRARD, OF ATCHISON, KANSAS.

FOLDING GATE.

SPECIFICATION forming part of Letters Patent No. 719,621, dated February 3, 1903.

Application filed August 9, 1902. Serial No. 119,052. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. SHARRARD, a citizen of the United States, residing at Atchison, in the county of Atchison and State of Kansas, have invented certain new and useful Improvements in Folding Gates, of which the following is a specification.

This invention relates to an improved folding gate designed for use in connection with drive or road ways, easily and quickly manipulated for opening and closing, and occupying a minimum amount of space in the practical operation thereof.

The improvements contemplated by the present invention relate particularly to those gates which are known as "tilting folding panel-gates," and have a vertically-swinging movement in the opening and closing operation thereof, thereby avoiding the objections to the laterally-swinging gates which sweep over the ground in the opening and closing, and thus require considerable space for their use.

Among the principal objects of the invention is to provide a simple and practical construction of folding gate-panel which naturally assumes and maintains an oblique position in the opening thereof, whereby it may be advantageously counterbalanced to be easily and quickly manipulated.

A further object of the invention, in connection with the folding character of the gate-panel, is to associate therewith improved operating or controlling means whereby the gate-panel may be lowered in its angular or folded form and the obliquity thereof corrected and the locking or latching of the same effected when it has reached its lowermost position.

Another object of the invention is to provide improved means in connection with the structural features of the gate-panel, whereby the twisting or bending of the gate-panel runners is obviated during the folding and unfolding movement of the gate-panel.

With these and many other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts, which will be hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a perspective view of a tilting folding panel-gate constructed in accordance with the present invention and embodying a preferable form of operating device for adjusting the gate and also correcting the angularity thereof when folded. Fig. 2 is a side elevation of the same form of the gate, indicating by full and dotted lines different positions thereof. Figs. 3 and 4 are enlarged detail elevations illustrating more fully different positions of the preferred operating device and the releasable clutch carried thereby. Fig. 5 is a detail edge or edge plan view of said preferred operating device. Fig. 6 is an elevation of a modified form of gate. Fig. 7 is a top plan view of the gate shown in Fig. 6. Fig. 8 is an enlarged detail sectional view showing the self-adjusting turnable runner-holder employed for connecting the rear terminals of the gate-panel runners with the rear standards of said panel. Fig. 9 is an end elevation showing an arrangement of operating-levers that may be resorted to for working the gate.

Like numerals of reference designate corresponding parts throughout the several figures of the drawings.

The gate proper or gate-panel is designated in its entirety by the numeral 1 and is arranged for use in connection with the ordinary oppositely-located supporting and latch posts 2 and 3. The said supporting and latch posts may be of any approved construction; but for the purposes of the present invention the latch-post 3 may consist of a single bar or upright, while the supporting or hanger post 2 for the gate-panel preferably consists of a pair of parallel post uprights or standards 2^a, providing means for the convenient pivotal mounting or hanging of the gate-panel in the manner to be presently described. These details of the invention, however, may be varied without affecting the essential features thereof.

As indicated, the gate proper or gate-panel 1 is of the tilting folding type—that is, the same tilts or swings vertically on an axis in the opening and closing thereof and also folds in opening. These movements of the gate-panel may be accomplished in different constructions thereof; but the preferable and practical form of construction is shown in the drawings.

Referring more particularly to this pref-

erable construction of the gate-panel, the same essentially comprises the oppositely-located front and rear gate-standards 4 and 5, respectively, and a plurality of longitudinal runners 6, connecting the opposite standards. The longitudinal runners may consist of rails of any type, but are preferably wire strands which provide a comparatively light structure, while also more readily permitting of the folding movement or action of the panel with reference to its longitudinal plane. The main body portion of the panel includes as an essential part thereof a central runner-rail 13, hereinafter referred to as a "gate-carrier."

In the preferable construction of the folding panel 1 the standards 4 and 5 thereof are duplex, the front standard 4 consisting of a pair of upright members 4^a, secured together in spaced parallel relation, and the rear standards 5 consisting of a pair of upright members 5^a, likewise connected together in spaced parallel relation and designed to maintain a parallelism with reference to the members of the front standard 4, as will be readily understood. The wire strands may be pivotally connected to the opposite standards in any suitable manner; but a preferable construction is shown in the drawings and resides in stringing the wire runners through suitable openings 7 in the members of the front standard 4 and having their rear terminals fitted in the self-adjusting turnable runner-holders 8, mounted for self-adjustment or movement in the separate members of the rear gate-standard 5. There is one of the runner-holders for each rear terminal of each longitudinal runner 6, and the said runner-holder is mounted to loosely turn in a socket or socket-opening 9, piercing the standard member. Each holder consists of an elongated skeleton body 10 of an approximate sigmoidal shape and having the perforated terminal-wire-receiving collars 11 deflected outside of the opposite ends of the socket or socket-opening 9 and receiving therein the terminal of the runner, said runner-terminal being knotted or otherwise secured at one end, as at 12, against displacement from the body of the holder. By reason of the sigmoidal formation of the individual runner-holders 8 it will be observed that the terminal-wire-receiving collars thereof are deflected or hooked around the opposite edges of the standard member outside of the socket or socket-opening therein, thus maintaining an interlocked connection between the holder-body and the standard member, while at the same time permitting of its turning movement therein to assume positions accommodating it to the runner-wire.

The gate-carrier 13, previously referred to, preferably consists of a pair of rail members 13^a, extending the full length of the panel and having at the rear a counterbalancing-arm extension 14, upon which is mounted in rear of the rear standard 5 a counterbalance-weight 15 of any suitable form and providing means for counterbalancing the weight of the gate-panel, so that the same may raise and lower with perfect freedom.

The longitudinally-arranged gate-carrier 13 may be properly termed a "stretch-bar" for the gate-panel, as it not only carries the gate up and down as an entirety, but is also the member upon which the panel turns in assuming its angular or folded relation. The front end of the gate-carrier or stretch-bar 13 is pivotally connected by means of a pivot 16 with the front gate-standard 4 at a point intermediate the upper and lower ends of the latter. The rear end portion of the said carrier or stretch-bar is pivotally or loosely mounted upon the pivot-axle 17, arranged at a point intermediate the upper and lower ends of the rear gate-standard 5, and constituting the pivot point or axis upon which the gate-panel is hung, so as to tilt or swing in a vertical plane in the opening or closing operation thereof. The pivot-axle 17 is horizontally or transversely disposed and is mounted in the separate uprights 2^a of the supporting or hanger post 2 for the gate. The opposite ends of the said pivot-axle 17 also have mounted thereon the separate members 5^a of the rear gate-standard 5, which connection is preferably a fast one in order that the said rear standard may be moved in unison with the axle 17.

Various forms of operating devices may be associated with the gate-panel to facilitate the raising and lowering thereof, besides embodying means for locking the panel against folding, as well as providing for correcting the obliquity thereof. One form of operating device for securing these several results is shown in Figs. 1 to 5, inclusive, of the drawings, and primarily consists of an adjusting wheel or drum 18, mounted fast on the pivot-axle 17 between the separate rail members 13^a of the gate-carrier or stretch-bar 13. The said adjusting wheel or drum 18 is preferably provided with two circumferential cable-grooves 19, respectively, receiving the separate controlling-cables 20, passing entirely around the lower part of the wheel or drum and extending to the top of the rear gate-standard 5. There they are arranged to pass over suitably-mounted guiding-pulleys 21, preferably supported upon or by the cross-bar 22, connecting the upper ends of the standard members 5^a. The said guiding-pulleys 21 are disposed in such relation as to provide for guiding the separate cables 20 respectively in opposite directions, said cables leading to a suitable type of hand-actuating levers or devices 50, (see Fig. 9,) located at distances respectively beyond opposite sides of the gate, such as may be employed for the opening and closing of a gate without the necessity of a person dismounting or getting out of the vehicle. Inasmuch as the said carrier or stretch-bar 13 is loose upon the pivot-axle 17, it is necessary to pro-

vide a releasable operative connection between the wheel or drum 18 and the said carrier or bar. This is preferably provided through the medium of a transverse connecting-pin 23, carried by the stretch-bar 13 at one side of the pivot-axle 17 and passing through the segmental or arcuate slot 24, formed in the wheel or drum 18 at one side of and concentric with the pivot or axis 17. To provide for holding the pin 23 in locked engagement with the wheel or drum 18, the latter carries a releasable clutch, which provides means for coupling and uncoupling the gate-panel from its operating device. The said releasable clutch essentially consists of a pivotal catch 25, essentially in the form of a locking-bail having the side hook-arms 26 and the transverse pivot-bar 27, pivotally mounted in the periphery of the wheel or drum 18, as at 28. The engaging points 29 of the side hook-arms 26 are adapted to take over and interlock with the transverse connecting-pin 23, respectively at opposite sides of the wheel or drum, in the manner to be presently explained, and in connection with the said catch 25 there is employed an automatic trip 30.

The automatic trip for the pivotal catch 25 is pivotally mounted, as at 31, upon the wheel or drum and essentially consists of a bail having a transverse pressure-bar 32 extending transversely across the periphery of the wheel or drum 18 in the path of the cables 20, and the side tripping-arms 33, disposed, respectively, at opposite sides of the wheel or drum and having terminal fingers 34, engaging beneath the side hook-arms 26 of the catch.

When the gate-panel 1 is lowered, the same coöperates with a latching-keeper or latch 35, mounted upon the latch-post 3 at or contiguous to the upper end of the latter. The latching-keeper or latch 34 is of a pivotal self-adjusting type, consisting of the opposite cheek-pieces 35, pivoted between their ends, as at 36, respectively, upon opposite sides of the post 3 and connected at their inner ends by a cap 37, beneath which the upper end of the front gate-standard 4 is designed to lie when the gate is in its lower locked position. In such position the cheek-pieces 35 contiguous to the cap 37 prevent lateral movement or displacement of the front end of the gate-panel, and by reason of the pivotal mounting of the latch 34 any tendency of the gate to rebound after being lowered is permitted without straining or injury to any part of the gate.

Referring particularly to the operation of the construction described involving the wheel or drum-formed operating device, it will be observed that when the gate-panel is in its lowered position, with the front and rear standards thereof in perpendicular upright positions, as shown by full lines in Fig. 2 of the drawings, the connecting-pin 23 of the stretch-bar is in the upper end of the segmental or arcuate slot 24. In the same position of parts the pressure-bar 32 of the trip 30 is held by the cables inward against the periphery of the wheel or drum, thus holding the hooks 26 out of an interfering relation with reference to the pin 23. When either of the operating-cables 20 is drawn upon, motion is communicated to the wheel or drum, which in turn communicates motion to the rear gate-standard 5, which in turn through the medium of the runners 6 transmits a corresponding motion to the front standard 4, thus causing the gate to fold. By the time this adjustment of the gate has been completed the lower end of the slot engages with the pin 23, thus causing the gate-carrier or stretch-bar 13 to commence to move upward and carry the gate to its elevated open position. During this operation the pressure-bar of the trip passes from beneath the cables, permitting the engaging pins 29 of the hook-arms 26 to drop behind the connecting-pin 23, and thus lock the same in the lower end of the slot 24. Hence when either of the cables 20 is operated in a direction to reverse the movement of the wheel or drum 18 motion is communicated directly to the gate-carrier or stretch-bar 13 to move the same downward, and thereby carry the gate-panel to its lowermost position. By the time the gate-panel has thus been carried to its lower closed position the cables will have pressed inward upon the pressure-bar 32 of the trip device, throwing the arms 33 thereof outward and lifting the hook-arms 26 of the catch out of engagement with the connecting-pin 23. The release of the pin 23 permits the drum to continue its motion without moving the bar below the horizontal. The restoration of the standards 4 to a vertical position is insured by a pull on the lower wires.

A modified form of operating device for folding the panel and also for correcting the obliquity thereof is shown in Figs. 6 and 7 of the drawings. This operating device essentially consists of adjusting-rods 38, having connection at one end, as at 39, with the separate members 5^a of the rear standard 5 and at their other ends having loose connection with the locking-cranks 40 of a controlling device 41. This controlling device is in the form of a multiple crank-shaft having terminal handles 42 and whose intermediate axle portion has a movement in the longitudinal slot 43 of the stretch-bar and also a bearing in the bearing-notch 44 at the front end of the said slot. Normally the cranks 40 are disposed in alinement with the longitudinal plane of the rods 38, thereby providing what may be properly termed a "dead-center lock."

When it is desired to operate the gate, the crank-shaft 41 is turned, thereby drawing upon the lower end of the rear gate-standard and causing the gate-panel to fold, and by a pressure upward upon the gate-panel the crank-shaft or controlling device 41 will slide downward into the slot 43 and permit the gate to rise to its elevated position. With the gate in its folded relation it is drawn down-

ward to its lowermost position, whereupon the axis portion of the shaft 41 seats itself in the notch 44, so that by turning the said shaft in the proper direction the obliquity of the panel is corrected through the medium of the operating device, consisting of the adjusting-rods 34.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described improvements in gates will be readily apparent, and it will also be understood that various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit of the invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a gate, a vertically-tilting foldable panel having a longitudinally-arranged stretch-bar having pivotal connections respectively with the front and rear standards of the panel, and an operating device having a locking connection with the stretch-bar and comprising means for permitting the panel to fold as it rises, and also for correcting the obliquity thereof after the stretch-bar reaches the horizontal and without further downward movement of the latter.

2. In a gate, a vertically-tilting foldable panel having a longitudinally-arranged stretch-bar, a pivot-axle constituting a pivotal support for the panel, an operating device comprising a suitably-operated adjusting-wheel also mounted on said axle, and a releasable clutch for coupling and uncoupling the said wheel from the stretch-bar.

3. In a gate, a vertically-tilting foldable panel having a longitudinally-arranged stretch-bar, a pivot-axle constituting a pivotal support for the gate-panel and also for the stretch-bar thereof, and an operating device comprising a suitably-controlled wheel having a movement independent of the stretch-bar but in unison with the other parts of the gate-panel, and a releasable clutch for coupling and uncoupling the wheel from said stretch-bar.

4. In a gate, a vertically-tiltable folding panel having a longitudinally-arranged stretch-bar, the pivot-axle constituting a pivotal support for the panel, and also having loosely mounted thereon the stretch-bar, said stretch-bar having a connecting-pin, and an operating device comprising a suitably-controlled wheel having a movement independent of the stretch-bar and in unison with the remainder of the panel besides having a limited play with reference to the pin, and a releasable clutch carried by the wheel and coöperating with said pin to provide for coupling and uncoupling the wheel from the stretch-bar.

5. In a gate, a vertically-tiltable folding panel having a longitudinally-arranged stretch-bar provided with a transverse connecting-pin, a pivot-axle for the gate-panel having the rear gate-standard fast thereon and the stretch-bar loosely connected therewith, and an operating device comprising an adjusting wheel or drum fast on the axle and having a segmental slot receiving the connecting-pin, a controlling-cable passing over the wheel or drum, a pivotal catch mounted upon the wheel or drum and having side hook-arms adapted to coöperate with said connecting-pin, and an automatic trip also mounted upon the wheel or drum and having tripping-arms engaging the side hook-arms of the catch and also having a transverse pressure-bar extending transversely across the periphery of the wheel or drum and engaged by the controlling-cable.

6. In a gate, a vertically-tiltable folding panel comprising front and rear standards and longitudinal runners connecting the same, the rear gate-standard having socket openings or holes therein, and self-adjusting turnable runner-holders loosely interlocked within said socket openings or holes and engaged by the rear terminals of the runners.

7. In a gate, the combination of a folding gate-panel comprising opposite standards and longitudinal runners, one of the standards having a plurality of sockets or socket-openings, and self-adjusting turnable runner-holders loosely interlocked in said sockets or socket-openings, each of said runner-holders consisting of an approximately sigmoidal body having terminal runner-receiving collars.

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

JAMES W. SHARRARD.

Witnesses:

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W. A. JACKSON.