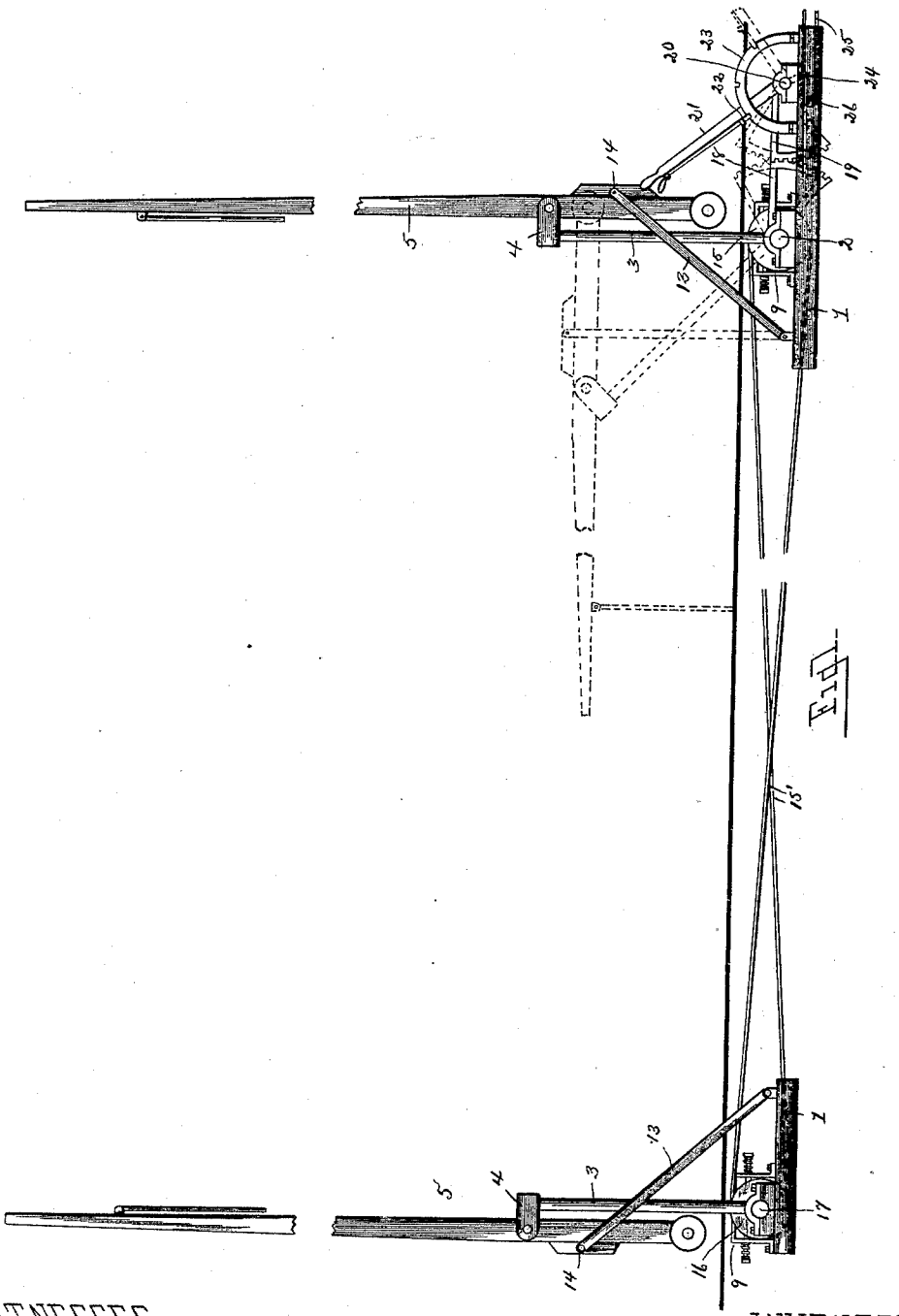
(No Model.)

2 Sheets—Sheet 1.

W. SMITH.

RAILWAY GATE.

No. 485,894. Patented Nov. 8, 1892.



WITNESSES.

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(No Model.) 2 Sheets—Sheet 2.

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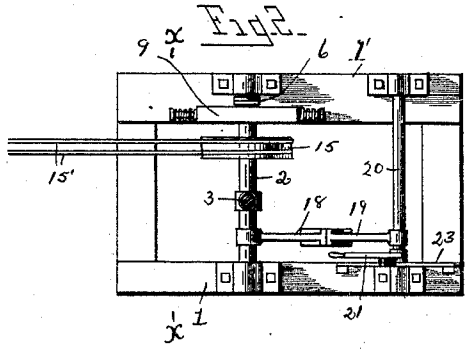
Fig 2.



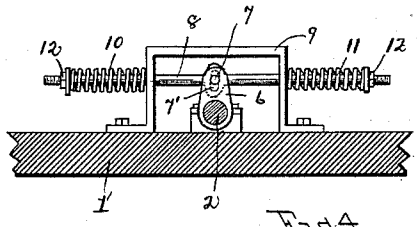


Fig 4.

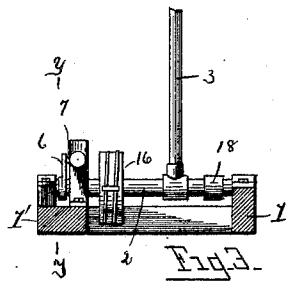


Fig 3.

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UNITED STATES PATENT OFFICE.

WESLEY SMITH, OF TOLEDO, OHIO.

RAILWAY-GATE.

SPECIFICATION forming part of Letters Patent No. 485,894, dated November 8, 1892.

Application filed October 27, 1890. Serial No. 369,537. (No model.)

To all whom it may concern:

Be it known that I, WESLEY SMITH, of Toledo, county of Lucas, and State of Ohio, have invented certain new and useful Improvements in Railway-Gates; and I do hereby declare that the following is a full, clear, and exact description thereof, which 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 figures of reference marked thereon, which form part of this specification.

This invention relates to railway-gates.

The object of the invention is to produce a gate which may be easily operated and one having its parts so arranged that the gates may be stopped at any point in their descent or ascent and remain stationary in such position without any detaining mechanism for holding them.

A further object is to produce a railway-gate which shall be of great simplicity of construction, high efficiency and durability in use, and cheapness of production.

The invention consists in the various novel details of construction of a railway-gate, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming part of this specification, and in which like numerals of reference indicate corresponding parts, I have illustrated one form of device embodying the essential features of my invention, although the same may be carried into effect in other ways without in the least departing from the spirit thereof, and in these drawings—

Figure 1 is an elevation showing a complete gate and its actuating mechanism. Fig. 2 is a plan view of a portion of the mechanism for operating the gate, that portion illustrating the mechanism for raising and lowering the same being shown. Fig. 3 is a sectional end view of the same on lines *x x*. Fig. 4 is a sectional detail view of the mechanism comprising the counterpoising device, this view being taken on lines *y y*, Fig. 3.

Referring to the drawings, 1 and 1′ designate two parallel supports forming a base upon which is journaled a shaft 2, carrying a standard 3, the upper end of which connects by means of a yoke 4 with the gate 5. At a point near one end of the rock-shaft 2 is mounted a plate or arm 6, which carries a pin 7, adapted to work in a vertical slot 7′, formed in an enlarged portion of a rod 8, which rod is mounted in bearings formed in a casing 9, secured to the support 1′. The function of the vertical slot 7′ is to allow the rod 8 to move in a horizontal plane as the arm 6 moves through an arc of ninety degrees, more or less, when the gate is being raised or lowered. Upon the ends of the rod 8 are mounted springs 10 and 11, the inner ends of which bear against the ends of the casing and are held in place, and are also regulated as to tension by means of nuts 12, between which and the springs are interposed washers 12′. The springs are normally under sufficient tension to hold the gate in a vertical position independent of any locking mechanism; but for obvious reasons a locking device is employed. Pivoted at its lower end to the support 1 is a brace 13, the upper end of which is pivoted to the gate at 14, below and on the side opposite that on which the standard 3 is pivoted, the said brace serving to support the rear portion of the gate, while the standard 3 supports the front portion. The shaft 2 also carries a grooved drum 15, around which passes an endless cable 15′, preferably of wire, extending to and around a drum 16, mounted upon a shaft 17, which carries the same mechanism as that carried by the shaft 2.

At a point upon the shaft 2, preferably opposite that on which the drum 15 is mounted, is secured a toothed sector 18, which is engaged by a similar sector 19, carried by a shaft 20, journaled upon the base, which shaft also carries a hand-lever 21, provided with a pawl mechanism 22, adapted to engage a toothed rack-plate 23, also mounted upon the base. All of the parts just described are to be made of any material, which will combine lightness and durability.

Having thus fully described the different parts of my invention, I will describe the manner of its operation.

The gate being in the position shown, the hand-lever 21 is moved to the position shown in dotted lines, which movement, through the agency of the sectors 18 and 19, rocks the

shaft 2, and with it the standard 3, and causes the gate to assume the position shown in dotted lines. In the downward movement of the gates the spring 10 is compressed and the spring 11 expands, the forward thrust of the latter, together with the power exerted by the hand-lever, being sufficient to overcome the backward thrust of the spring 10, so that but little power is required to lower the gate. As the gate nears a horizontal plane the pressure on the spring 10 increases with the increased leverage; but the resistance of the spring increases in the same or a greater ratio, so that it is necessary to apply a slight but constant force on the hand-lever to cause the gate to close. When the hand-lever is operated to raise the gate, the pressure is transferred from spring 10 to spring 11, and the forward thrust of spring 10, together with a slight force from the hand-lever, is sufficient to raise the gate, the back thrust from spring 11 being adequate to prevent the gates assuming a vertical position with greater rapidity than is desired. Initially the springs are adjusted by means of the nuts 12, so that each exerts an equal pressure when the gate is in a vertical position, which pressure is practically equivalent to the weight of the gate, and by this adjustment the gate will be caused to retain its vertical position; but when the gate is lowered the tension on one spring is increased and on the other spring is diminished, thus compensating for the varying leverage of the gate, so that should the hand-lever be released at any point in the ascent or descent of the gate the latter will remain poised until the lever is again moved. Of course it is to be understood that the parts are duplicated upon each gate, with the exception of the sectors and hand-lever mechanism, so that when a single part is spoken of it is to be understood that a corresponding part at the opposite gate is referred to. In case it is desirable to operate the gates from a tower a plate 24 is secured to the shaft 20, to one side of which plate is connected one end of a cable 25, the opposite end of said cable being passed around a pulley 26, and connecting to the plate on the side opposite that to which the first-named end is secured. The cable just referred to is carried upward to a tower and is actuated by suitable mechanism, so as to operate the gates, or it may be carried to any distant point and be actuated in a similar manner. The function of the pawl mechanism 22 and rack-plate 23 is to lock the gates at any desired point, so that the same cannot be raised by exerting a pressure at their ends or from the action of the wind. By employing the springs referred to the increasing leverage of the gate as it approaches a horizontal plane is compensated for, so that it takes no more labor to lift than to lower the gate. This result cannot be obtained by the ordinary weights, inasmuch as the weights are always the same and do not change as the position of the gates vary. By this construction I provide a gate which may be operated with extreme ease and yet is constructed of so few parts that it is not liable to get out of order.

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

1. The combination, with a swinging gate, of an oscillating standard to which said gate is pivoted and a connecting-brace pivoted at one end to a support and at the other to the gate, its pivotal points being respectively at opposite sides of the ends of the oscillating standard.

2. The combination, with a rock-shaft, of a standard rigidly attached thereto, a gate pivoted to said standard, a brace pivoted at one end to the gate and at the other to a convenient support, its pivotal points being respectively on opposite sides of the standard, an arm secured to the rock-shaft, a reciprocating rod loosely connected to the arm, a frame in which said rod moves, and springs between the ends of the rod and frame.

3. In a railway-gate, a gate-mast, a rock-shaft, a standard connecting the mast and the shaft, and a brace connecting the mast and base, in combination with a rod connecting through interposed mechanism with the shaft, springs carried by the rod and exerting pressure in opposite directions, and means for increasing or diminishing the tension of the springs.

4. In a railway-gate, a casing, a rod movable therein, and springs carried by the rod and bearing against the casing, in combination with a rock-shaft, an arm carried thereby and connecting with the rod, a gate-mast, and a standard connecting the rock-shaft and the gate, in combination with a brace connecting the gate and base.

5. In a railway-gate, a casing, a rod movable therein having a vertical slot, and springs mounted on said rod and bearing against the outer surface of the casing, in combination with a rock-shaft, an arm carried thereby having a pin engaging the said slot, a gate-mast, and a standard carried by the shaft and connected with the gate, and a brace connecting the gate and base.

6. In a railway-gate, the combination, with a gate, of a rock-shaft, a spring-carrying sliding rod connected therewith, a standard carried by the shaft, the upper end of which is pivotally connected with the gate-mast, a brace connecting the gate and base, and mechanism for actuating the shaft to raise or to lower the said gate.

7. In a railway-gate, the combination, with a gate-mast, of a rock-shaft, a spring-carrying sliding rod connecting with the shaft, a standard carried by the shaft, the upper end of which is pivoted to and supports the front

portion of the mast, a brace pivoted to the base of the gate and connecting with and supporting the rear portion of the mast, and mechanism for actuating the said shaft to raise or to lower the mast.

8. The combination, with a rock-shaft, of a standard connected therewith and carrying a gate, and a reciprocating counterbalanced rod connected, also, with the rock-shaft and adapted to regulate the movement of the same.

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

WESLEY SMITH.

Witnesses:
WILLIAM WEBSTER,
JOSEPH ZIEGLER.