J. S. G. HOFER.

GATE OPERATING DEVICE.

APPLICATION FILED APR. 13, 1915.

1,179,629.

Patented Apr. 18, 1916.

3 SHEETS—SHEET 1.

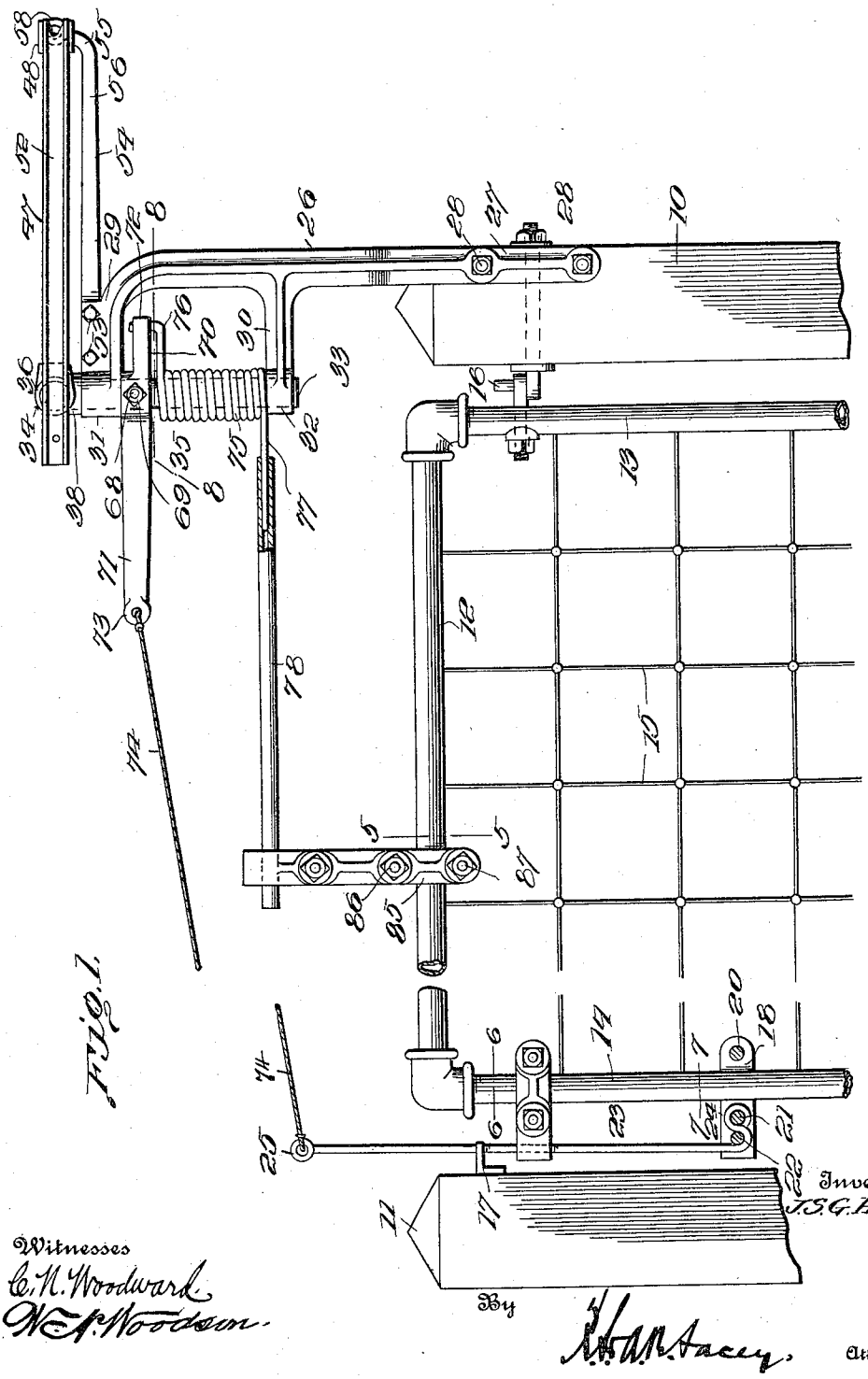


Fig. 1.

Witnesses

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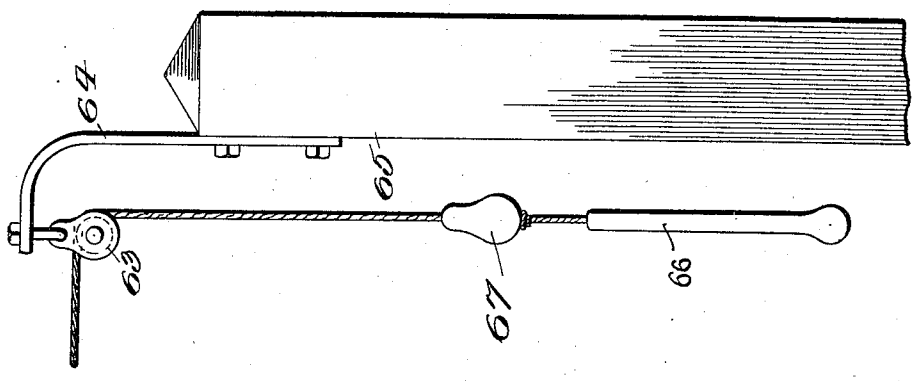
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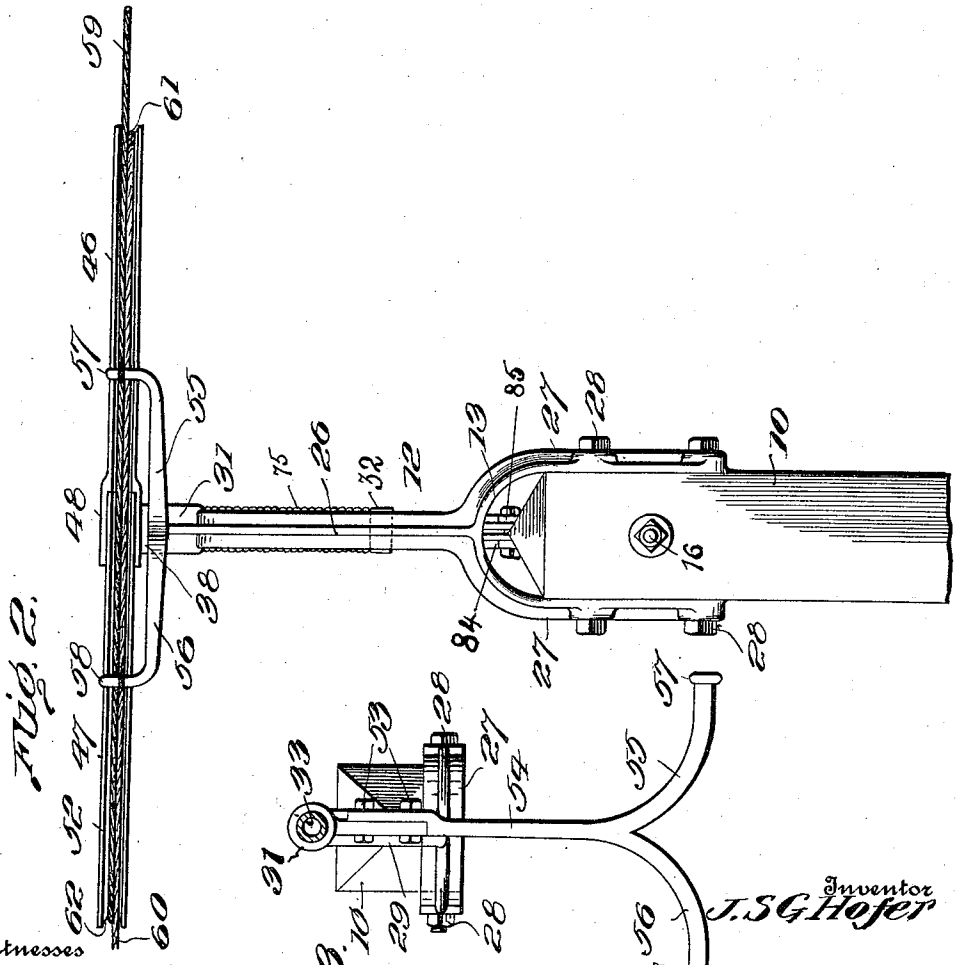


Fig. 2.

Fig. 3.

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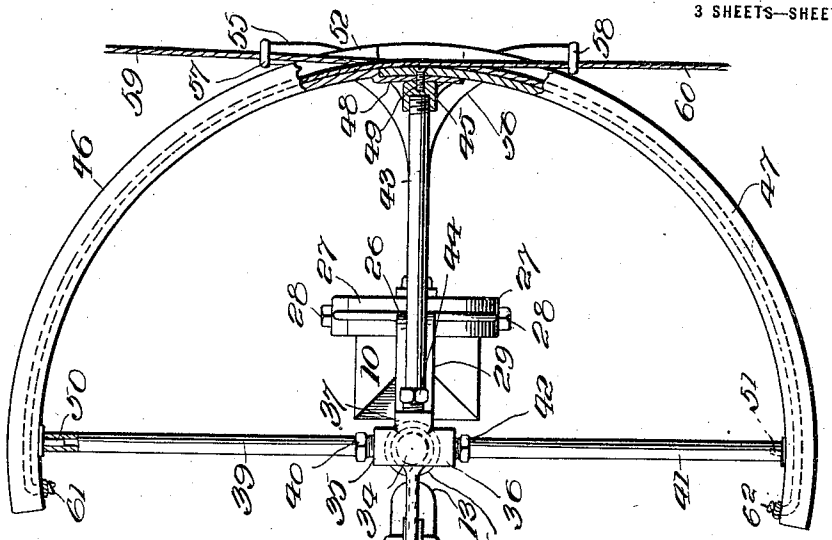
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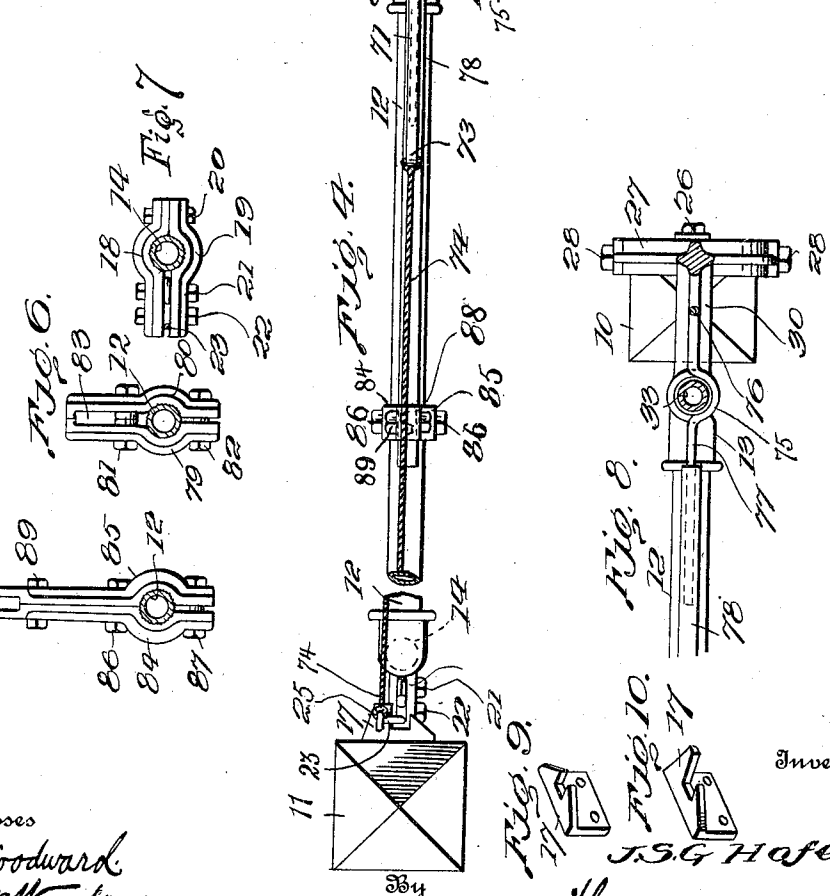


Fig. 7.

Fig. 6.

Fig. 5.

Fig. 4.

Fig. 8.

Fig. 9.

Fig. 10.

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UNITED STATES PATENT OFFICE.

JACOB S. G. HOFER, OF BRIDGEWATER, SOUTH DAKOTA.

GATE-OPERATING DEVICE.

1,179,629. Specification of Letters Patent. Patented Apr. 18, 1916.

Application filed April 13, 1915. Serial No. 21,047.

To all whom it may concern:

Be it known that I, JACOB S. G. HOFER, a citizen of the United States, residing at Bridgewater, in the county of McCook and State of South Dakota, have invented certain new and useful Improvements in Gate-Operating Devices, of which the following is a specification.

This invention relates to improvements in gate operating devices, more particularly to devices employed for opening and closing the large farm gates from a distance, or arranged to enable a person to open the gate from the vehicle or from horseback when approaching the gate and without alighting, and to close the gate after having passed through, and has for one of its objects to improve the construction and increase the efficiency and utility of devices of this character.

Another object of the invention is to provide a simply constructed device which may be applied without material structural change to gates of various sizes and forms.

With these and other objects in view, the invention consists in certain novel features of construction as hereinafter shown and described and then specifically pointed out in the claims; and in the drawings illustrative of the preferred embodiment of the invention. Figure 1 is a side elevation of a portion of a gate structure including portions of the hinge post and the latch post with the improvements applied; Fig. 2 is a rear elevation of the hinge post and a portion of the gate operating mechanism, and a side view of one of the supports for the operating cable; Fig. 3 is a detached plan view of the cable supporting bracket; Fig. 4 is a plan view partly in section of the parts shown in Fig. 1; Fig. 5 is an edge view of the bracket for receiving the free end of the gate operating member with the gate member in section on the line 5—5 of Fig. 1; Fig. 6 is a plan view of the bracket for supporting and guiding the resilient latch member with the adjacent vertical gate member in section on the line 6—6 of Fig. 1; Fig. 7 is a plan view of the bracket for connecting the lower end of the resilient latch member to the gate with the latch member in section on the line 7—7 of Fig. 1; Fig. 8 is a detail view in section on the line 8—8 of Fig. 1; Fig. 9 is a perspective view of the form of latch employed on the latch post when the gate is arranged to swing in both directions; Fig. 10 is a perspective view of the form of latch employed on the latch post when the gate is swung in one direction only.

A portion of the hinge post of the gate is represented conventionally at 10 and a portion of the latch post at 11, these parts being of the usual construction and arranged to support the fence material, not shown.

The gate may be of any suitable construction, but is preferably formed of gas piping and includes the upper member 12 and the end members 13—14, and connecting webbing indicated at 15. The end member 13 is hingedly united to the post, as represented at 16, while the latch post 11 is provided with a latch device 17. If the gate is to swing in both directions, the form of latch device shown in Fig. 9 is to be employed, but if the gate is to swing in one direction only, the form of latch device indicated in Fig. 10 will be employed.

Bearing upon opposite sides of the end member 14 of the gate are straps 18—19 and bolted together on opposite sides of the member 13, as shown at 20—21, and with another bolt 22 operating through the members 18—19 and spaced from the bolt 21. A rod 23, of resilient material, such as steel, is formed at one end with an eye 24 engaging around the bolt 21 between the plates 18—19 and looped around the bolt 22 and thence extended upwardly to a point above the upper line of the gate and terminating in an eye 25. The vertical portion of the rod 23 enters the notch in the latch member 17 and thus holds the gate in closed position. A simply constructed latch device is thus produced, which is certain in its action and may be readily released either manually or by the operating mechanism, as may be preferred.

Bearing upon opposite sides of the upper member 14 of the gate near the latch device 17 are clip members 79—80 and secured to the member 14 by clamp bolts or other suitable fastening devices 81—82 at opposite sides of the member 14. The members 79—80 extend toward the latch post 11 and are spaced apart to form a guide socket 83 to slidably receive the member 23 and thus prevent lateral displacement of the same.

A supporting standard 26 is forked at its lower end, as shown at 27, to bear upon opposite sides of the hinge post 10 and bolted thereto, as represented at 28. The stand-

ard 26 is formed with an upper lateral arm 29 and an intermediate lateral arm 30, the arm 29 terminating in a bearing 31, while the arm 30 terminates in a bearing 32. A supporting member 33 is mounted for rotation through the bearings 31—32 and is provided at its upper end above the bearing 31 with a coupling member comprising a central body portion 34 having three horizontal hubs or sockets 35, 36 and 37 and a downwardly directed socket 38. The member 33 is rigidly supported in the downwardly directed socket 38, the latter being thus arranged to rotate upon the upper face of the bearing 31.

A supporting member or spoke-like device 39 is provided with a threaded terminal member 40 which engages in the socket 35, while a similar spoke-like member 41 is provided with a threaded terminal member 42 engaging in the socket 36. A threaded spoke-like member 43 is provided with a threaded terminal member 44 engaging in the socket 37. The three members 39, 41 and 43 are preferably tubular, and the member 43 is provided with a cap 45 having a threaded outwardly directed aperture, as shown in Fig. 4.

The members 39, 41 and 43 are designed to support a mutilated cable carrying wheel formed in segmental sections 46—47. The member 46 is provided with a socket 48 to receive the contiguous end of the member 47, as shown in Fig. 4, the two parts being united by a clamp screw 49 which is threaded in the cap 45. The member 46 is provided with an inwardly directed pin 50 which engages in the outer free end of the member 39, while the member 47 is provided with a similar pin, indicated at 51, to engage in the outer free end of the member 41. By this means, a half wheel is produced having a cable receiving groove 52 in its outer face, the members being firmly united and capable of being separated for transportation or storage, as hereinafter more particularly described.

Bolted or otherwise secured, as shown at 53, to the arm 29 of the standard 26 is a cable guiding bracket comprising a body portion 54 and oppositely directed branching arms 55 and 56. The arm 55 terminating in a guide eye 57, while the arm 56 terminates in a guide eye 58. The segmental members 46—47 are designed to receive the terminals of draw cables, indicated conventionally at 59—60, the cable 60 being connected at 61 to the segmental member 46, and passing thence through the guide eye 58, and the cable 59 being connected at 62 to the segmental member 47 and passing thence through the eye 57, the two cables crossing each other between the eyes 57 and 58. The cables 59 and 60 extend in opposite directions for any required distance from the hinge post and pass over guide pulleys, one of which is represented at 63, connected to a bracket 64, the latter being connected to a suitable post, a portion of which is represented at 65. It will be understood that one of the posts 65, one of the brackets 64 and a pulley 63 will be located at each side of the gate when the gate is to swing in both directions, but one of the posts only is shown as sufficient to illustrate both of the cable supports.

Each of the cables will be provided with a pull member, one of which is represented at 66, and each cable is provided with a weight 67 to maintain the cables normally in tight position. Rigidly connected to the member 33 is a collar 68, the collar being preferably secured to the member 33 by a set screw 69. A relatively short arm 70 and a relatively long arm 71 extend from the collar 68 in opposite directions. The shorter arm 70 terminates in a bearing 72 having a vertical aperture, while the arm 71 terminates in an eye 73 to receive a pull cable 74.

A relatively heavy spring 75 surrounds the member 33 between the collar 68 and the bearing 32 with one terminal upturned to enter the aperture in the bearing 72, as represented at 76, and the other terminal extending outwardly substantially in parallel relation to the arm 71, as shown at 77, the portion 77 being adapted to slidably engage in a gate operating member 78, as shown.

Bearing upon opposite sides of the member 12 are clip devices 84—85 and secured to the member 12 by clamp bolts or like devices 86—87. The members 84—85 are extended upwardly for a suitable distance and are formed with a guide socket 88 between them, and likewise further secured by a clamp bolt 89 or like device. The guide socket 88 is designed to slidably receive the member 78, as shown in Fig. 1. The pull cable 74 is connected at its free end to the eye 25 of the resilient latch member 23. The spring 75 operates to maintain the arms 70—71 normally in longitudinal alinement with the gate when closed. When thus arranged, the half wheel cable supporting device will likewise be held normally in its central position, as illustrated in Fig. 4, and the pull members 66 will likewise be in their normal position, as shown in Fig. 2.

With the device thus constructed, the operation is as follows: Assuming that the gate is in closed position, a person approaching either in a vehicle or on horseback applies a downwardly pulling force to the member 66 and thus causes the member 33 to be rotated through the action of the cable 59 or 60, as the case may be, upon the half wheel portion of the device. This movement causes the arm 71 to move laterally

and exercise a pulling force upon the pull member 74 and thus draws the latch member 23 away from the latch device 17 and releases the gate. This movement of the member 71 correspondingly actuates the member 70, but does not actuate the member 78 until the gate has been unlatched, the spring permitting the movement of the member 71 to an extent sufficient to release the latch. Then the gate is picked up through the co-action of the extension 77 of the spring 75 and the member 78. The continued movement of the cable then carries the gate into open position. If the gate is to swing in both directions, two of the posts 65 will be arranged one at each side of the gateway opening and the latch device represented in Fig. 9 applied to the post 11. If the gate is to swing in but one direction, one of the posts 65 only will be required and the latch member shown in Fig. 10 applied to the post 11. When applied to a gate moving in one direction only, one of the segmental members 46 or 47 will remain idle, as will be obvious.

The improved device is simple in construction, can be inexpensively manufactured and applied without material structural change to gates of various forms and sizes by making slight and unimportant changes in the construction of the members for supporting the free end of the member 78, the guide and the support for the resilient member 23.

Having thus described the invention, what is claimed as new is:—

1. A gate operating apparatus comprising a shaft mounted to oscillate, a latch device adapted to hold a gate in closed position, an arm connected intermediate its ends to said shaft and partaking of its motion, connecting means between said latch device and arm at one end, a spring having laterally projecting terminals, one of said terminals being connected to the other end of said arm, and means adapted to couple the other of said terminals to a gate.

2. A gate structure including a hinge post, a latch post, a gate hinged to the hinge post and having a latch device, a standard connected to the hinge post and including lateral arms spaced apart and having terminal bearings, a shaft mounted for oscillation in said bearings, an arm connected intermediate its ends to said shaft and partaking of its motion, connecting means between said arm at one end and said latch device, a spring having laterally projecting terminals, one of said terminals being connected to the other end of said arm, means adapted to couple the other terminal of said spring to a gate, and means for oscillating said shaft.

3. A gate operating apparatus comprising a shaft mounted to oscillate, a gate mounted to swing, a latch device carried by the gate, means connecting the shaft to the latch and gate whereby the oscillation of the shaft opens the gate, a body connected to said shaft and having a plurality of radial sockets, a supporting member connected to each of said sockets, co-acting segmental members connected to said supporting members, one of said segmental members having a socket to receive the contiguous end of the other segmental member, a cap engaging over the supporting member which is located nearest to the socket, holding devices engaging through the socket and the socket engaging portion of the segmental member and into the cap, and pull cables connected, respectively, to said segmental members.

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

JACOB S. G. HOFER. [L. S.]

Witnesses:
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MATH MAYER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."