

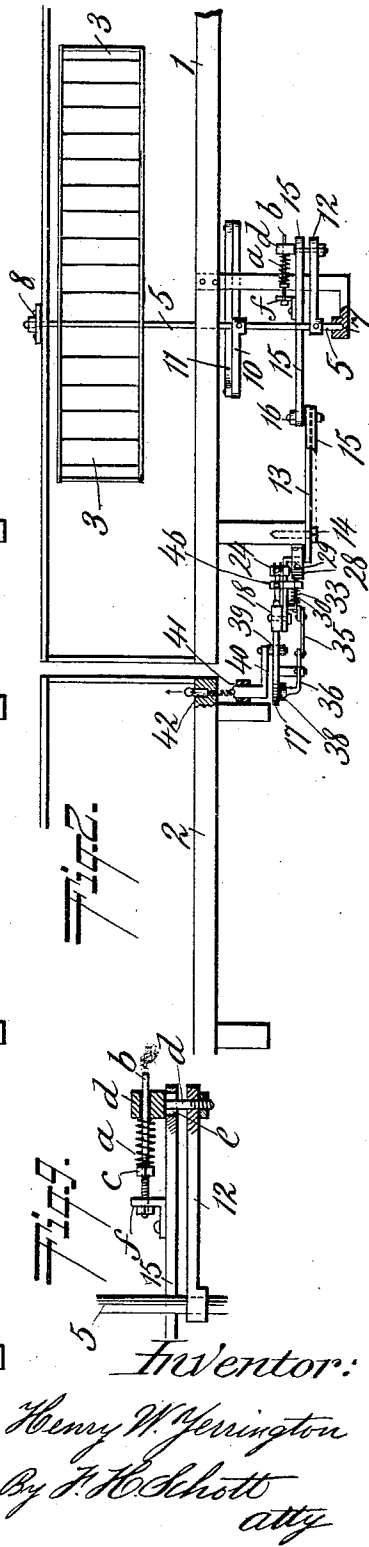
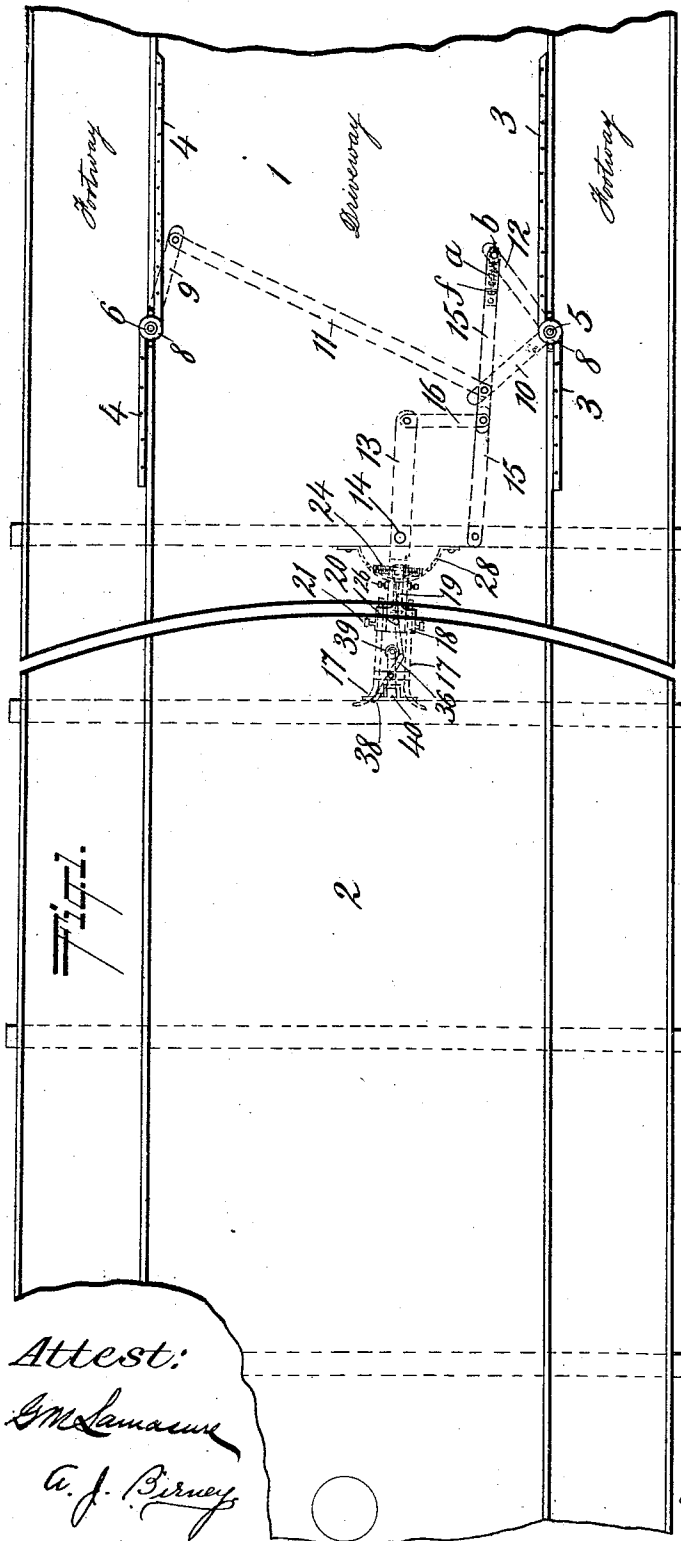
(No Model.)

H. W. YERRINGTON.  
DRAWBRIDGE GATE.

2 Sheets—Sheet 1.

No. 499,867.

Patented June 20, 1893.



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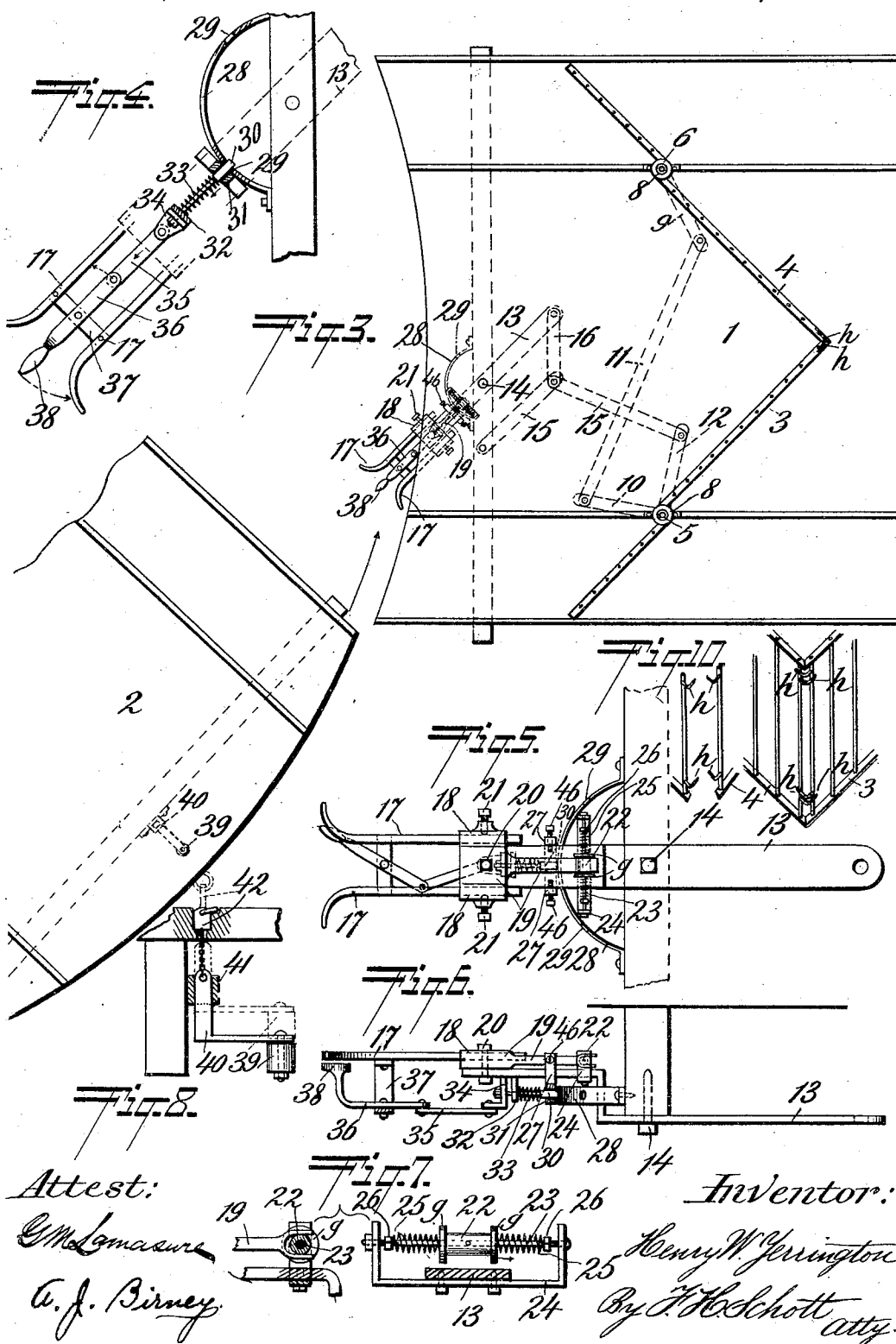
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# UNITED STATES PATENT OFFICE.

HENRY W. YERRINGTON, OF OCEANIC, NEW JERSEY.

## DRAWBRIDGE-GATE.

SPECIFICATION forming part of Letters Patent No. 499,867, dated June 20, 1893.

Application filed March 29, 1893. Serial No. 468,184. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY W. YERRINGTON, a citizen of the United States, residing at Oceanic, in the county of Monmouth and State of New Jersey, have invented certain new and useful Improvements in Drawbridge-Gates; and I do 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 and figures of reference marked thereon, which form a part of this specification.

My invention relates to mechanism for automatically operating the gates of swing and draw-bridges, by the swinging of the draw; and it has for its objects, first, to provide simple mechanism for opening and closing the gates quickly and without appreciable jar either to the gates or the bridge; second, to provide mechanism for locking the gates in their closed position; and third, to provide a device whereby the gates can be closed quickly when the draw is closed, when required by circumstances. These objects I accomplish by the mechanism shown in the accompanying drawings in which—

Figure 1 is a plan view of my improved mechanism showing the draw closed and gate open. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view showing the draw open and gates closed. Fig. 4 is an enlarged plan view of the locking mechanism showing the main lever locked. Fig. 5 is a plan view of the main lever and locking mechanism showing the main lever unlocked. Fig. 6 is a side view of Fig. 5 partly in section. Fig. 7 is an elevation and cross section of the spring cushion attached to the main lever. Fig. 8 is an enlarged section of the roller and its adjusting mechanism. Fig. 9 is an enlarged sectional view of the spring cushion attached to one of the toggle levers. Fig. 10 shows in detail perspective views means for keeping the ends of the gates closed against interference by passengers.

The numeral 1 indicates the fixed or permanent structure of the bridge provided with the foot and driveways as shown, and 2 the pivoted draw span of the bridge.

3 and 4 represent the gates which are fast

on and turn with the vertical gate posts or shafts 5 and 6. These posts are supported in step hangers 7, 7, secured to floor beams of the bridge, as shown, and their upper ends turn in bearings 8, 8, fixed to the railing separating the foot and driveways. Each gate closes an entire footway and one-half of the driveway. Arms 9 and 10 are secured to the shafts 6 and 5 respectively just below the bridge floor and are connected by a rod 11 pivoted to their outer ends. The shaft 5 is further provided near its lower end with an arm 12. A lever 13 is pivoted to the end beam below the floor of bridge at 14, and will be designated as the main lever. This lever is adapted to be acted upon by mechanism connected with the draw to open and close the gates with which it is connected by mechanism to be now described.

15, 15 represent a pair of toggle levers one of which is fulcrumed to the outer end of arm 12 and the other to the end beam on one side of the main lever. The inner ends of said levers are pivoted to and connected by a rod 16 to the inner end of the main lever 13. The toggle lever 15 which connects with arm 12 to operate the gate is provided with a spring *a* for taking up the shock or jar from the gates when opening the same. The spring *a* is coiled around a bolt *b* one end of which is fixed in a bracket *f* secured to the upper surface of the lever while the other end plays through a hole in the head of the pivot bolt *d* fixed to the arm 12. The bolt *d* passes through a slot *e* in lever 15, as shown in Fig. 9. A nut *f* on bolt *b* serves to regulate the tension of spring *a*. An auxiliary bifurcated lever 19 is pivoted to the upper surface of the main lever at the point 20, as shown. The bifurcated end consists of two adjustable jaws 17, 17, which are held in sockets 18, 18, on the lever 19 by means of set screws 21, 21. The rear end of lever 19 is forked and embraces a sleeve or collar 22 mounted fast on a bolt 23, which is supported in a bracket 24 bolted to the under side of the main lever and extending at right angles thereto on each side. The outer ends of the bracket are upturned forming the bearings for the bolt at the middle of which the sleeve 22 is mounted. Springs 25, 25, on each side bear against the movable washers *g*, *g*, one on

each side of the sleeve, as shown in Fig. 7, and are adjusted in tension by means of the nuts 26, 26 working on the threaded parts of the bolt 23. The vibration of lever 19 is limited by the set screws 46, 46, passing through lugs 27, 27, cast on each side of the main lever in front of the bracket 24. A semi-circular band 28 is bolted to the beam below and in front of pivot 14 which band embraces an upward bend in the main lever and is provided with two holes 29, 29 at about forty-five degrees on each side of the center adapted to receive the point of a locking bolt 30. Bolt 30 slides in lugs 31 and 32 on the under side of the main lever as shown. Behind the point of said bolt is spring 33 which keeps the bolt in contact with the locking band 28, and forces the said point into one of the holes 29 when it is brought opposite to one of them by the movement of the main lever in closing the gates. Bolt 30 is connected with a bent slide 34 which in turn is connected with a lever 36 by a link 35. Lever 36 is pivoted in a stirrup 37 depending from the jaws 17, 17 about midway of their length. The free end of lever 36 is upturned and formed with a double convex surface or nose 38, just below the plane of the jaws 17, 17, and is adapted to be acted on by a roller 39 adjustably secured to the under side of the draw span 2 at a point opposite the main lever. Roller 39 is pivoted to an angle iron 40 which fits in a socket 41 secured to the end beam of the draw below the floor, as shown in Fig. 8. A chain connects angle iron 40 with a catch 42 which rests in a recess in the floor of the draw and is provided with a ring for lifting said catch out of its recess when it is desired to elevate the roller out of the path of the jaws 17, 17.

The operation of the device is as follows:—The parts being in the position shown in Fig. 1, the draw is turned either to right or left by the usual means which causes roller 39 to strike one of the jaws 17 on the main lever and thereby closing the gates by means of the connecting rods and toggle levers. As the roller strikes the jaw the blow is cushioned by means of one or the other of the springs 25 acting against the end of lever 19 thus relieving the main lever and bridge from jar. With the continued movement of the draw the roller passes out of the jaws and when out the locking bolt riding on the band 28 comes opposite a hole 29 in the same into which it is forced by its spring thereby locking the main lever in the position shown in Fig. 3 and bringing lever 36 to a position midway between the jaws. The gates are now closed and cannot be opened until the locking bolt has been withdrawn from its hole in the band which is done by the roller striking the nose of the releasing lever 36 on its return to open the gates, which forces said lever to one side which movement causes the locking bolt to be withdrawn thereby releasing the main lever which will be turned back to its former position

straightening out the toggle levers and opening the gates and holding them in this position, all jar being taken from the gates by means of the spring cushion between the toggles and the gate arm before described. When the gates are closed their meeting ends may be kept together and prevented from being sprung apart by a passenger attempting to force his way through them, by means of fingers or hooks *h h* secured to the end rails of the gates as shown in Figs. 1 and 10, the fingers of each gate extending over or grasping the rail of the other gate, so that one gate can not be moved without the other. If it is desired to close the gates when the draw is closed, as in the case of a runaway team it is only necessary to raise the roller out of the jaws, by lifting the catch and then turning it one quarter around which will hold said roller up, allowing the gates to be closed independently of the swing bridge by suitable means acting on the main lever and its connections with the gates.

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

1. The combination in a draw bridge with the pivoted gates, of a bifurcated lever, a pair of toggle levers connected with the gates and the said bifurcated lever, and a projecting piece attached to the draw for engaging the bifurcated lever to open and close the gates, substantially as described.

2. In a drawbridge the combination with a main lever provided with a bifurcated lever and a cushioning device, of a pair of toggle levers, a pair of pivoted gates, a cushioning device connecting said toggle levers and gates, and an adjustable piece projecting from the draw and adapted to engage with and operate the main lever for the purpose set forth.

3. The combination with a main lever provided with an auxiliary or bifurcated lever, consisting of a pair of jaws adjustably secured to the auxiliary lever, and a spring cushioning device, of a pair of toggle levers connected by suitable means with the gates and the main lever, the gates, and a projecting piece secured to the draw for operating the main lever to open and close the gates substantially as shown and described.

4. A main lever for operating the gates, provided with an auxiliary bifurcated lever consisting of a pair of jaws adjustably secured to the auxiliary lever which is forked at one end to embrace a collar fixed on a rod supported in a bracket attached to the main lever, a cushioning device consisting of springs adapted to press against the movable washers located one on each side of the collar, and set screws for limiting the vibrations of said bifurcated lever, substantially as described.

5. A main lever for operating the gates provided with an auxiliary lever and a cushioning device interposed between said main and auxiliary levers, for the purpose set forth.

6. A main lever provided with a spring act-

uated locking bolt adapted to engage with a locking band for holding said lever in position, said locking bolt being adapted to be acted on by a projecting piece carried by the draw for the purpose of unlocking it, substantially as described.

7. A main lever provided with a spring actuated locking bolt connected with a slide which is connected in turn with a lever pivoted to a strap depending from the jaws of the auxiliary lever, and provided at its free end with a double convex surface or nose adapted to be acted on by a roller on the draw for the purpose of unlocking the bolt when the gates are to be opened.

8. A main lever for operating the gates of a draw-bridge, provided with a bifurcated lever having adjustable jaws, a spring cushioning device adapted to absorb the jar of said bifurcated lever, and a spring actuated locking bolt having a lever connected with it whereby it can be operated from the draw to

unlock the bolt and release the main lever when the gates are to be opened, substantially as described.

9. A cushioning device secured to a toggle lever and adapted to bear against an arm secured to the gate post for the purpose of freeing the gates from jar, substantially as described.

10. A device for freeing the gates from jar on opening them consisting of a spring coiled around a rod secured at one end to a toggle lever and passing through a hole in the head of a bolt connecting said toggle lever with an arm on the gate post, said spring being adapted to bear against the head of said bolt, for the purpose set forth.

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

HENRY W. YERRINGTON.

Witnesses:

J. F. CLARK,

D. H. APPLGATE.