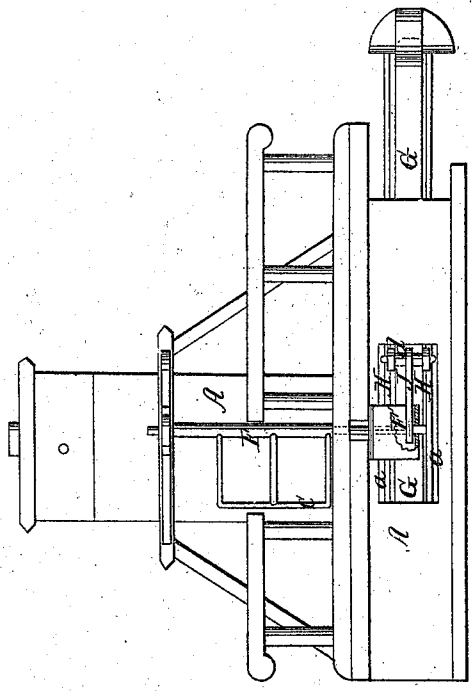
H. Lawrence.

Ferry Guard.

No. 12,523. Patented Mar. 13, 1855.

Fig. 3.



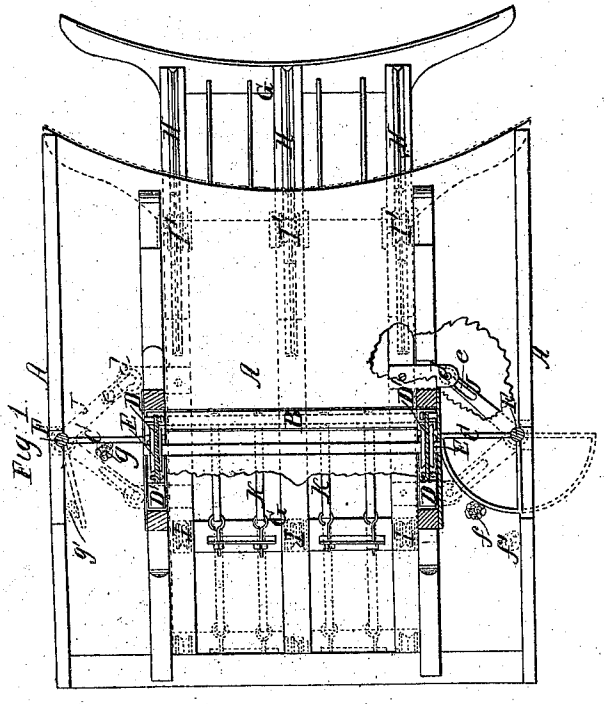


Fig. 1.

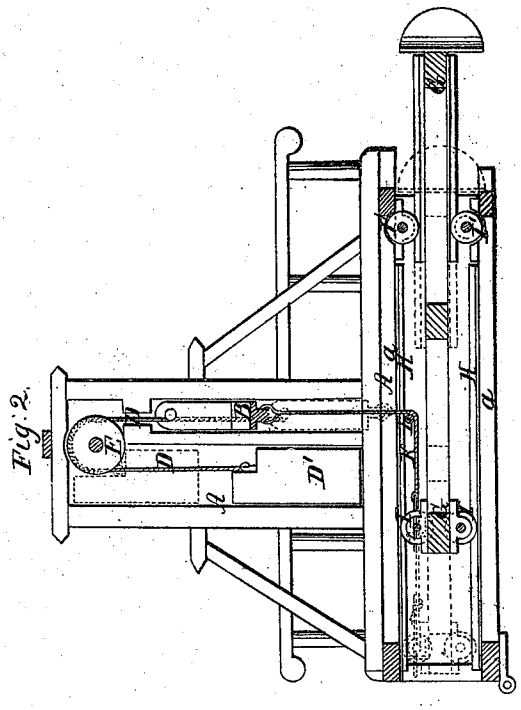


Fig. 2.

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UNITED STATES PATENT OFFICE.

HENRY LAWRENCE, OF NEW YORK, N. Y.

SAFETY FERRY-BRIDGE.

Specification of Letters Patent No. 12,523, dated March 13, 1855.

To all whom it may concern:

Be it known that I, HENRY LAWRENCE, of the city, county, and State of New York, have invented a new and useful Improvement in Ferry-Bridges; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a plan or top view of the float of a ferry bridge, constructed after my invention. Fig. 2, is a vertical longitudinal section of the same. Fig. 3, is a side elevation of the same.

Similar letters of reference in each of the several figures indicate corresponding parts.

My invention relates to the floats of ferry bridges and is designed to prevent all possibility of passengers or vehicles passing upon the boat after it has started and thereby avoid much of the loss of life by drowning, resulting from passengers endeavoring to jump upon the boat after it has started.

The nature of said invention consists, 1st, in providing on the float a central gate suspended at each side by a chain and heavy weight and also two swinging side gates and a movable or reciprocating carriage arranged to move between the timbers and flooring of the float; said gates and carriage being arranged and combined in such a manner that when the boat comes into the dock it shall necessarily strike against the end of the latter and force it inward and consequently cause the side gates to turn horizontally and open and the central gate to descend vertically till its upper edge stands even with the top surface of the float, and thus allow the passengers to and from the boat a free passage, and then the instant the boat starts shall be caused by the action of the weights on the central gate, to assume its original position and in doing so to close the gates and thereby prevent any person risking his life by trying to jump upon the boat after it has started.

It consists 2d, in making the side gates of circular shape instead of flat, so that in case drunken or thoughtless men lay hold of them, or get in a position to interfere with their being opened freely, they shall as they open have a tendency to throw them off instead of forcing them up against the railing and crushing them.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

A represents the float hinged to the bridge in the usual manner.

B is the central and C, C′ are the side gates.

D, D′, are the weights and chains by which the central gate is suspended.

E, E, are pulleys for the chains D′, D′, to pass around.

F, F, are the rods or axes upon which the gates C, C, turn.

G, is the reciprocating carriage.

H, H, H′, H′, are rails provided on the carriage, G and on the timbers *a*, *a*, of the float.

I, I, I′, I′, are grooved wheels for the carriage to run upon and be guided by, those I, I, being on the carriage G and those I′, I′ on the float.

J, J, are slotted arms for connecting the side gates to the carriage.

K, K, are bands or chains for connecting the central gate to the carriage G.

L is a transverse rod for said bands or chains to pass under as the gate descends.

The reciprocating carriage is made to correspond at its front end with the end of the boat and also is similar in shape to the end of the float. It extends a short distancee beyond the end of the float so as to have sufficient movement to open the gates. The rails H, H, which are formed on the carriage, are only made to extend a short distance beyond the wheels I′, I′, as it is not requisite to have them extend farther as other rails are provided on the timbers *a*, *a*, of the float. The wheels I, I, are arranged on the carriage instead of on the float, so that the carriage shall always be guided in its back and forward movements. The side gates are made of a curved shape so as to avoid crushing passengers to death. The lower ends of the axes or rods F, F, upon which the gates turn are made square and have the slotted arms J, J, secured on them, said arms being also attached to the carriage G by pins *d*, *d*, which work loosely in the slots *e*, *e*. By providing the slot *e*, in the arm J, provision is made for the decrease in the distance from the axis of the side gate to the pin *d* when the arm comes in line with the central gate or as the carriages traverse back and forth. By connecting the carriage to the side gates by the arms J, J, the latter will be opened and closed at every complete

movement of the former. The central gate or stop by being connected to the carriage by chains or bands K, K, and suspended by weights D, D, in the manner shown can be raised or lowered at every complete movement of the carriage. The chains or bands K pass down from the top of the gate to the rod L and pass under the same at right angles to the gate and are attached fast to the head of the carriage and owing to their being attached to the carriage and gate serve through the agency of the weights to return the carriage to its proper position for being operated upon by the boat they also serve for lowering the gate when the carriage is forced inward.

The operation is as follows:—The carriage by the action of the weights, occupies the position shown by black color in Figs. 1, 2 and 3, and the gates consequently are closed, when the boat is not in dock. Now suppose a boat enters the dock, and comes up close to the float, it must necessarily strike the end of the carriage and cause it to occupy the position shown in red in Figs. 1 and 2 in doing which it causes the arms J, J, to occupy the position shown in red in Fig. 1, and the side gates consequently to be opened. The central gate was also drawn by the same movement down out of sight by the bands K, K, as shown in red in Fig. 2, and the weights elevated. All the gates being opened passengers have a free passage to and from the boat while it is fastened to the bridge. The time having arrived for the boat to start it is let loose. As the boat moves out from the dock the carriage is forced outward, by the weights acting upon and raising the central gate, and caused to operate upon the slotted arms and through them close the side gates, and thus prevent any person coming near enough to the boat to risk his life in jumping upon it. In case a person should be thoughtless enough to catch hold of the circular gate C or occupy a position similar to that shown at *f*, at the moment the boat comes in and the gate should suddenly open he would be thrown backward or off as shown at *f'* in red, whereas if a person should lay hold of the flat gate C', or occupy the place shown at *g*, under similar circumstances, he would be forced against the railing and crushed as illustrated at *g* in red. In case the float should fall too low to admit of the carriage being operated by the end of the boat it is operated by rods provided on the bow of the boat extending down vertically the required distance.

This invention is very simple in its construction and operation and it is thought will be very utile for the purpose intended.

What I claim as new and desire to secure by Letters Patent, is,

1. The employment of the reciprocating carriage G with the suspended central gate B and side gates C, C', the whole being arranged essentially as herein shown and operated by the boat and weights; substantially as and for the purposes set forth.

2. I also claim making the side gates of a circular form instead of flat, so that in case drunken or thoughtless men lay hold of them, or get in a position to interfere with their being opened freely, they shall as they open have a tendency to throw them off instead of forcing them up against the railings and crushing them, substantially as set forth.

HENRY LAWRENCE.

Witnesses:
I. W. Coombs,
I. G. Mason.