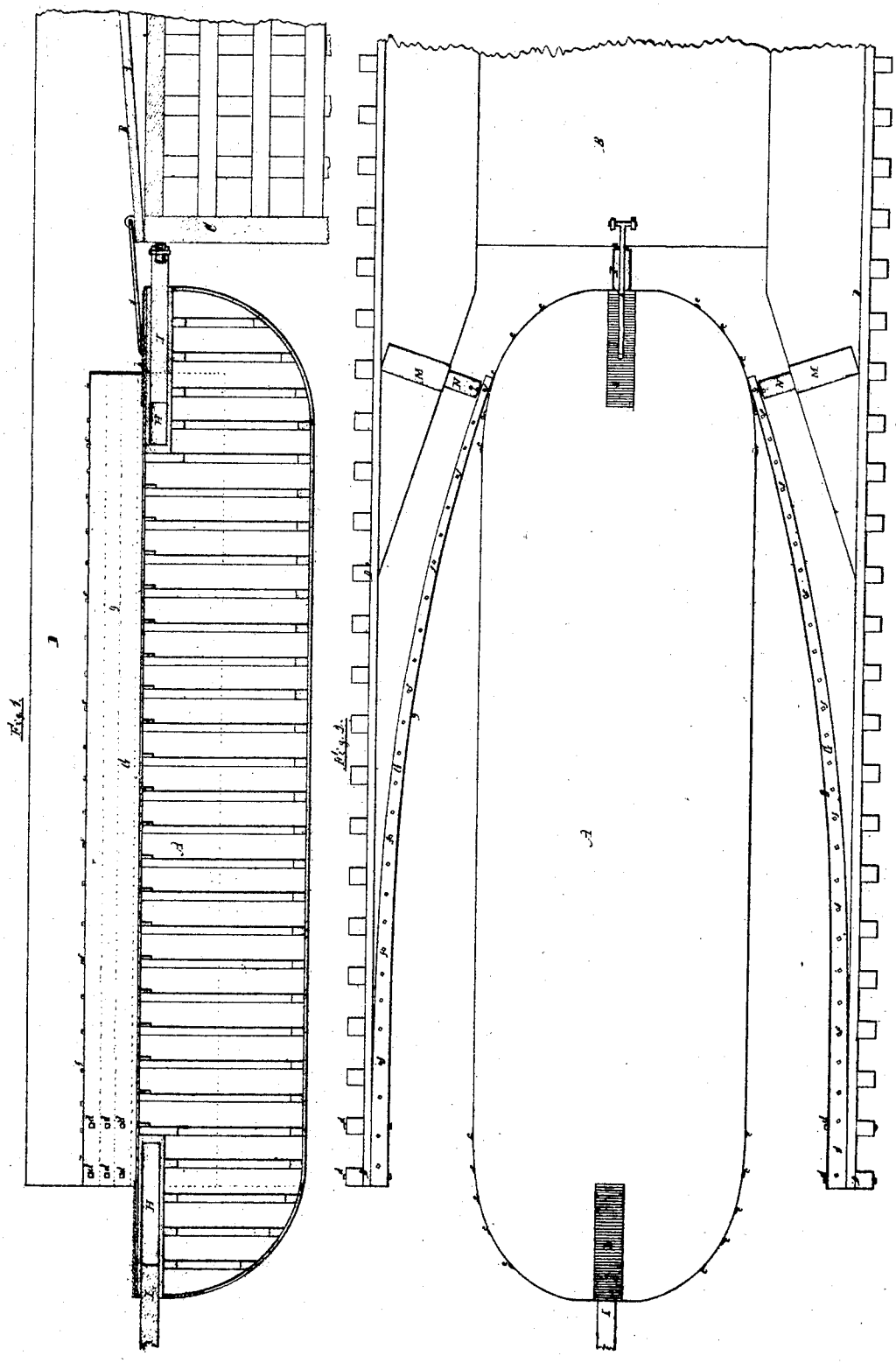
J. C. Day,

Pier.

No. 18,683. Patented Nov. 24, 1857



UNITED STATES PATENT OFFICE.

JOSEPH C. DAY, OF JERSEY CITY, NEW JERSEY.

MEANS FOR STOPPING AND STARTING FERRY-BOATS.

Specification of Letters Patent No. 18,683, dated November 24, 1857.

To all whom it may concern:

Be it known that I, J. C. DAY, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain Improvements in Means for Stopping and Starting Ferry-Boats; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification, Figure 1 representing a longitudinal, vertical section of the hull of a ferry-boat together with a portion of a slip, into which it runs, the whole showing the main features of my invention; Fig. 2, a plan of the parts shown in Fig. 1.

Like letters designate corresponding parts in both figures.

In crossing ferries, especially narrow ones, much of the time required is consumed in stopping the ferry-boat, steering it to the slip or wharf, and in starting it out again. There is also very considerable waste of steam in backing water, and in setting the boat in motion. Besides, much difficulty is often experienced in steering the boat into the slips, when there is a side-wind or current, on account of the slowness with which the stopping boat moves as it approaches the slips.

The object of my invention is to obviate these inconveniences.

Under the deck of the boat, A, in the center of each end, is located, lengthwise of the boat, a cylinder H, of suitable size, say 8 or 10 feet in length, and one foot in interior diameter, and of sufficient strength to resist any pressure which it may be required to sustain. The outer end of each cylinder is open, and extends about to the end of the boat. The inner end has a strong head. The cylinders are firmly secured by strong timbers to the boat, so that they will not be displaced, nor the boat suffer any strain or injury, from the force to which the cylinder may be subjected. Into each cylinder is fitted a piston I, of such a length as to project beyond the boat when driven into the cylinder as far as it will ever be required. It may be packed in the cylinder in any convenient manner, such as that commonly employed for the pistons of hydrostatic presses. In the outer end of each piston may be a friction-roller *a*, situated horizontally, in order to allow the boat to move laterally without producing much friction against the float of the slip. The pistons, when no pressure is against them, should project out of the cylinders, as far as they may be allowed and be retained properly in said cylinders. With this arrangement, when the boat approaches the wharf, the forward piston first strikes the bridge float C, which is made very strong and firm for resisting the force of the moving boat. The piston is therefore driven into the cylinder, thereby compressing the air therein till its elastic force becomes sufficient to entirely overcome the momentum of the boat and thus stops its motion. This, of course, will always take place when the air is compressed within a certain space; but the size of the cylinder should have a certain relation to the size of the boat, in order not to produce so great a pressure on a given surface as to render it difficult to secure the required strength of construction. In order to supply any loss of pressure by leakage, or to work, if desired, with more than one atmosphere in the cylinders, they may communicate with an air pump to be worked by the engine of the boat; and this should be under the control of the steersman; there being induction and discharge valves at his stand, to enable him to regulate the pressure in the cylinders.

A self-acting grapple should be attached to the bridge B, and act upon a notched rack on the deck of the boat. The grapple is indicated at *i*, in the drawings, and the catch rack, at *h*, to show the manner in which they are to act. But the construction and location may be such as may be found most effective and convenient. When properly arranged, they will hold the boat as close to the bridge as the momentum thereof, will move it; and as soon as again disengaged the pressure of air in the cylinder will immediately start the boat on its next trip. In this manner the force of the stopping boat is saved for starting it again. The engine may be worked till the boat reaches the slip, since the air in the cylinder will resist any pressure, and thus prevent a collision of the boat with the bridge; and the greater the momentum of the stopping boat, the more rapidly it will start again on its return. No difficulty can ever be experienced in steering the boat into the slip, because it is always under the control of the pilot, when in rapid motion.

In order to guide the boat into the center of the slip, and prevent injurious collision

against its sides, I prepare and arrange elastic guide-shields in the following manner:—A set of timbers, G, G, of any strong, elastic wood, is prepared; the length of each piece of timber being sufficient to reach from the outer end of the slip, back two thirds or more of its depth to the bridge; the width, say a foot, more or less; and the thickness, at one end, a foot, or thereabout, and at the other end, six inches, or thereabout. These dimensions are not positive, serving only to show the ordinary dimensions which may be suitable, but will vary according to the size of the slip and boat, and other circumstances. Enough of these timbers should be strongly united together edgewise, with bolts, *f*, *f*, *f*, to give sufficient vertical breadth for receiving the gunwale of the boat in all the variations of the tide.

The inner side of each shield is then covered with thick plates of iron or steel, *g*, to give additional firmness and strength, and to prevent abrasion. The thick end of each shield is respectively secured to a side D, of the slip, at the outer end thereof, by means of bolts *d*, *d*, as represented, or in any other convenient manner. They may be hinged to the slip; but I prefer a rigid connection, so that the elasticity of the wood and metal may be made use of. The position should be such as not be reached by the tide, ice, or obstructions.

In order to complete the elasticity and power of resistance to any shock, air cylinders, M, M, similar to those described for the boat, are located behind the free inner ends of the shields, substantially as shown in Fig. 2. These are firmly secured to the sides of the slip; and their pistons, N, N, may be provided with friction rollers, *b*, *b*, like those described in the pistons, I, I, of the boat. In order to supply any waste or deficiency of air to these cylinders, pumps worked by the sides of the boat when it strikes the shields, may be employed. To prevent abrasion of the gunwale, it may be furnished with friction-rollers, *c*, *c*, *c*, situated sufficiently near each other not to allow the gunwale to come in contact with the shields.

Instead of locating the cylinders H, H, in the ends of the boat, they may be placed in the wharf, or bridge-float, C; but I prefer to have them in the boat, for various reasons.

I do not claim the use of a buffer for lessening the concussion produced by the collision of a boat with a wharf or other object, as I am aware of the previous employment of such a device; but

What I claim as my invention is:

1. The elastic shields G, G, constructed and applied to the slip, substantially in the manner and for the purpose described.

2. I also claim the arrangement of the pistons, or buffers, I, I, grapple *i*, and shields G, G, operating together substantially as herein specified.

JOSEPH C. DAY.

Witnesses:

H. M. DALRIMPLE,

ABRAHAM R. DAY.