W. Ingalls.

Towing.

No. 45,720. Patented Jan. 3, 1865.

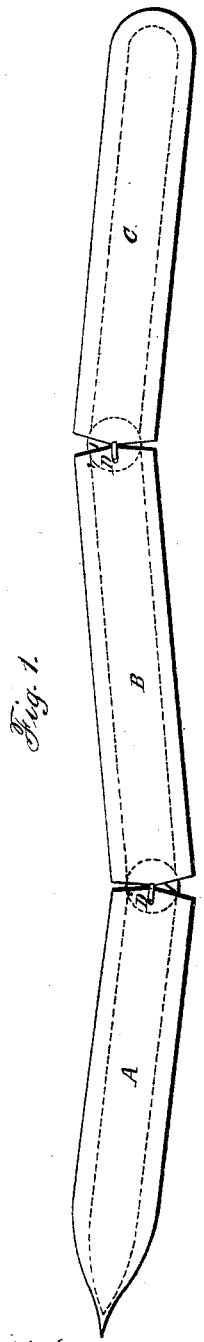

Fig. 1.

Fig. 2.

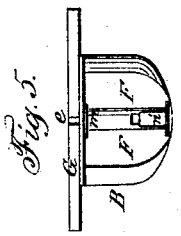

Fig. 5.

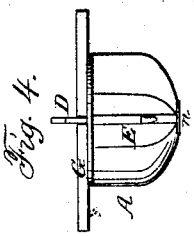

Fig. 4.

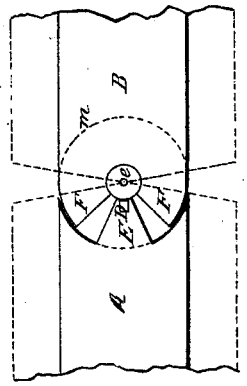

Fig. 3.

Witnesses.
Franklin Scott
Hamus P. Norton

Inventor
W. Ingalls.

UNITED STATES PATENT OFFICE.

WALTER INGALLS, OF SANBORNTON, NEW HAMPSHIRE.

IMPROVED ATTACHMENT OF TRAINS OF BOATS.

Specification forming part of Letters Patent No. **45,720**, dated January 3, 1865; antedated September 12, 1863.

To all whom it may concern:

Be it known that I, WALKER INGALLS, of Sanbornton, county of Belknap, and State of New Hampshire, have invented new and useful Improvements in Boats and their Navigation on Rivers and Canals; and I do hereby declare that the following is a full and exact description of the construction and operation thereof, reference being hereby had to the accompanying drawings, and to the letters of reference marked thereon, which drawings make a part of this specification.

Like letters represent and refer to like or corresponding parts.

Figure 1 is a top view of three boats, A, B, and C, connected together and forming one continuous line or train in the manner and by the means hereinafter described. Fig. 2 is a side view of the line or train of boats shown at Fig. 1. Fig. 3 shows the manner in which the coupling or connecting joint hereinafter described operates. Fig. 4 shows the stern of the boat and the construction of the coupling-joint therein, as hereinafter described. Fig. 5 shows the forward end of the boat and the construction of the coupling-joint therein made to correspond to that part of the said coupling shown at Fig. 4, and hereinafter more fully described.

The nature of my invention and improvements consists in connecting or coupling together two or more boats for navigation on rivers or canals, so that the same shall follow in the rear and line or track of each other, and in the channel made such by means of the forward boat displacing the water by means of the coupling herein described, or by any means substantially the same.

To enable others skilled in the art to make or use my improvements, I will here proceed to describe the construction and operation of the same, which is as follows, to wit:

I construct the respective ends of canal or river boats so that the same may be connected together in long or short lines or trains, as the case may be, by good and sufficient joints or couplings, which shall allow said boats to hinge or turn on center-bolts while passing curves of rivers or canals, and at the same time keep the track or channel made by the first or forward boat, which enables a greater amount of freight, &c., to be carried by the same power with less obstruction and with greater speed than by separate and disconnected boats as is the present case.

The stern end of each section or boat is constructed with a semicircular recess therein. From or near the center of the circumference thereof I construct the angling-bar or stem E, Figs. 3 and 4, which shall extend to the center point of the said circle, which said circle is in full diameter the same as the width of the boat aforesaid and as shown at *m*, Fig. 3. At this center point is the connecting bolt or bar D, which passes into the holes *e* in the strong iron plates *m* and *n*, Fig. 4, and through such holes in corresponding plates, *m'* and *n'*, Fig. 5, by means of which the said boats or sections of the said line or train are firmly connected and held together or detached, as the case may be or require. The respective boats or sections of the said line or train turn or move on this center sufficient to allow the entire line of boats to pass curves in the rivers or canals when in use and without hinderance.

F F, Figs. 3 and 5, show the construction of the bow or forward end of each boat or section of the said line next adjoining, which is so made for the purpose of keeping or preserving the form of the hull of the boat at the said joint or coupling, whereby the channel created by the displacement of the water by the first or forward boat is preserved throughout the entire line or train of boats, so that there is but one displacement of the water, and that by the said first boat, as aforesaid, making thereby a continuous hull for the entire line or train aforesaid, by means of which said boats are more easily moved and controlled in the water, and a larger amount of freight carried, as aforesaid, than in any other way by the same power.

G is the deck, and is so constructed at the ends thereof as to allow the joint or coupling aforesaid to operate when required to do so.

H is a guard-chain, and is placed one on each side of the boat with each end connected to the respective boats in the line or train aforesaid, and which pass said joint or coupling for the purpose of holding each boat from injuring to said joints or couplings when passing curves, as aforesaid.

Upon the said deck may be constructed rooms for freight, or saloons for passengers, or for any other purpose required. This line or

train of boats may be drawn or moved by one engine in the first or forward boat, and by a propeller in the rear or last boat, or a propeller may be used in the bow of the first or forward boat, or the whole line or train may be moved by a "steam-tug," so the middle boat may have side wheels to aid in the movement of the said line or train. Any number of boats desired may be used in one line or train, and the same may be connected and disconnected at any time or place required. This line or train of boats is directed in the river or canal by a rudder or rudders placed wherever desired on any of said boats.

Having thus described the construction and operation of my improvements, what I claim, and desire to secure by Letters Patent of the United States, is—

The connecting or coupling of boats for navigation on rivers or canals into continuous lines or trains by the means or mode substantially as herein described and set forth.

In testimony whereof I have on this 3d day of October, 1862, hereunto set my hand.

W. INGALLS.

Witnesses:

MARCUS P. NORTON,
FRANKLIN SCOTT.