

W. F. GOODWIN.
TOWING CANAL BOATS.

No. 171,793.

Patented Jan. 4, 1876.

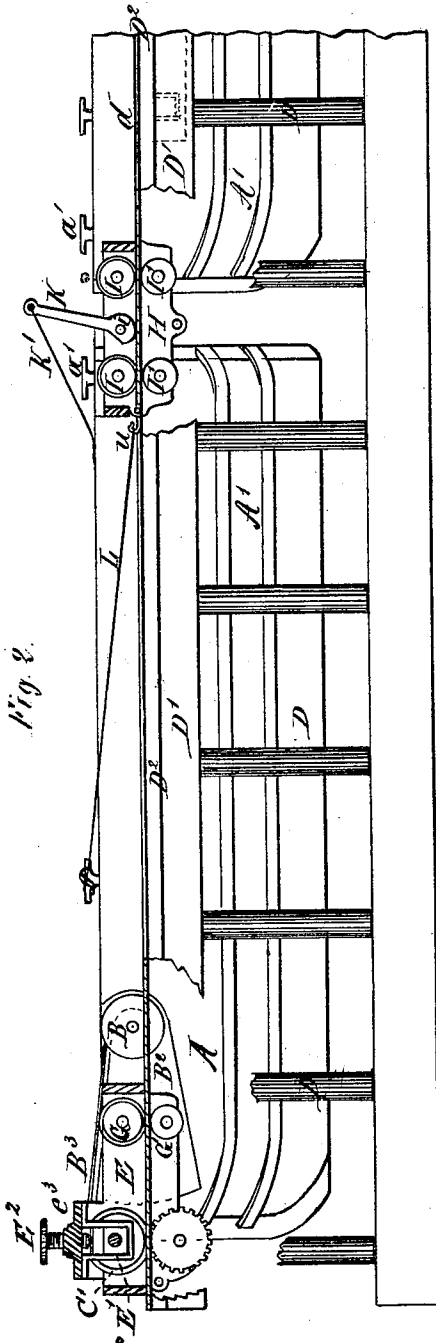


Fig. 2.

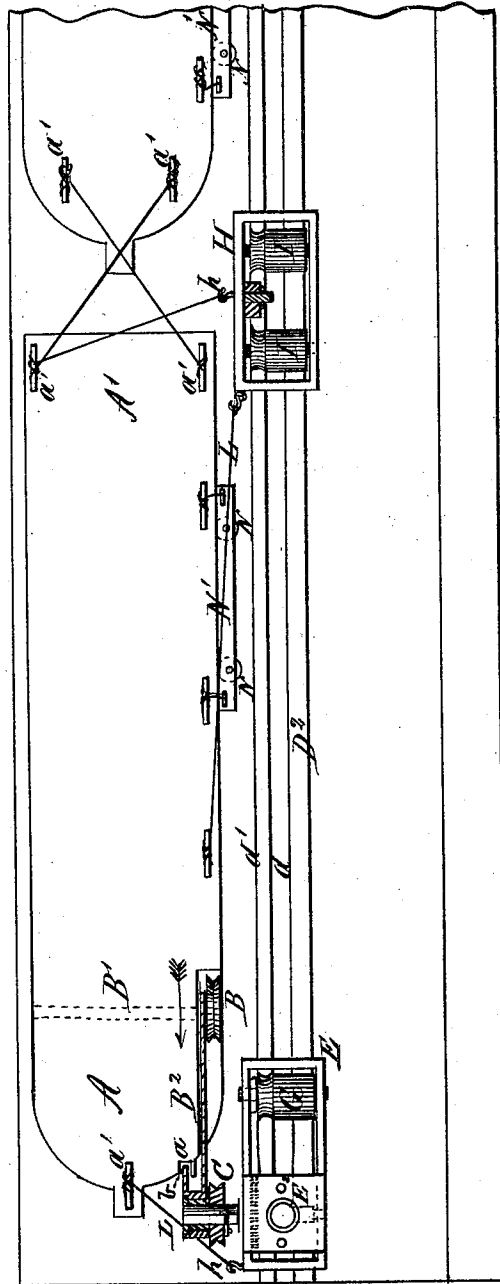


Fig. 1.

Witnesses.

Henry Cort
Henri Guillaume

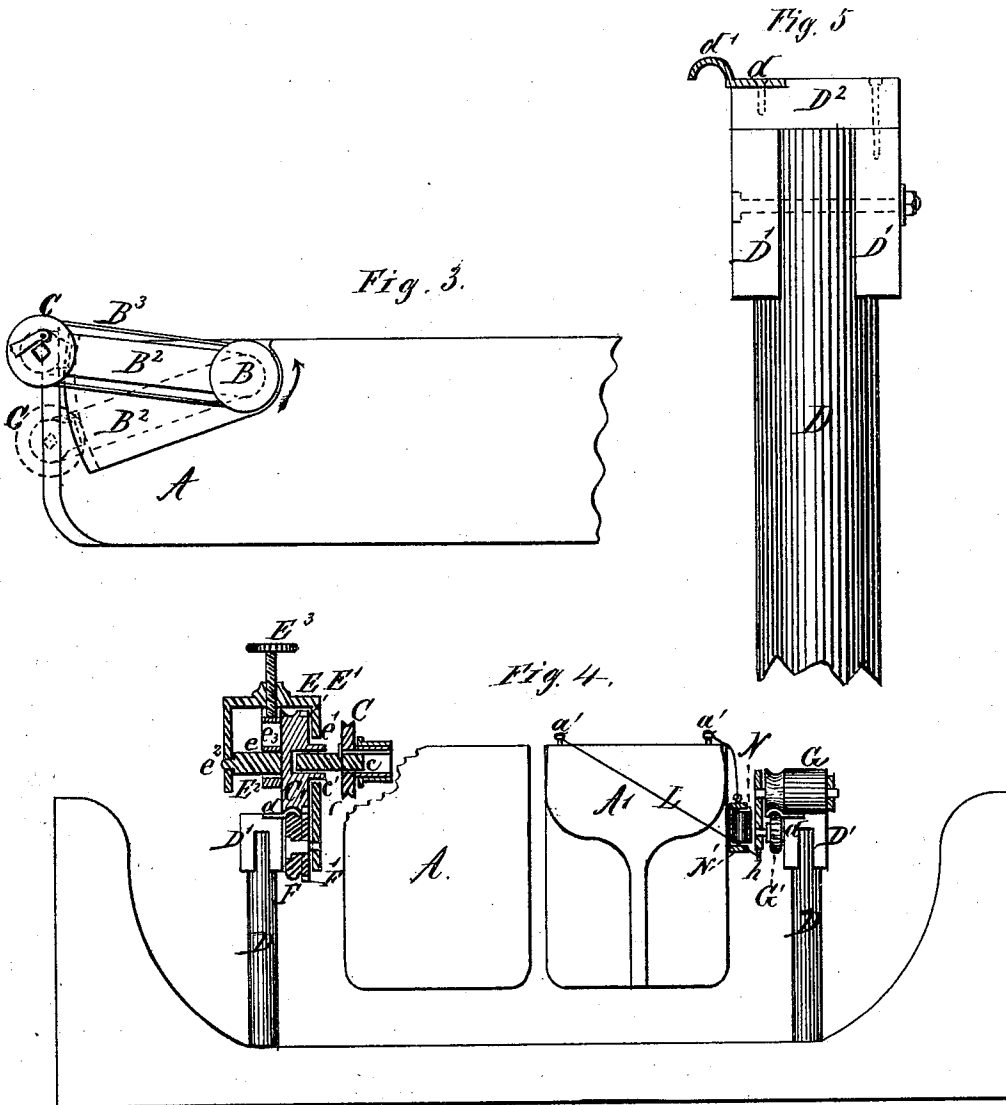
Inventor.

William Farr Goodwin
by A. A. Doubleday atty.

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Henry Critt
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William Farr Goodwin
by *W. H. Doubleday atty.*

UNITED STATES PATENT OFFICE.

WILLIAM F. GOODWIN, OF STELTON, NEW JERSEY.

IMPROVEMENT IN TOWING CANAL-BOATS.

Specification forming part of Letters Patent No. **171,793**, dated January 4, 1876; application filed December 14, 1875.

To all whom it may concern:

Be it known that I, WILLIAM FARR GOODWIN, of Stelton, in the county of Middlesex and State of New Jersey, have invented certain new and useful Improvements in Towing Canal-Boats; and I do hereby declare that the following is a full, clear, and exact description thereof, which 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 of reference marked thereon, which form a part of this specification.

Figure 1 is a plan or top view of so much of a canal and canal-boats as is required to illustrate my invention. Fig. 2 is a side elevation of the same, portions being broken away, and other portions in section. Fig. 3 is a detached view of the front end of the boat with the vibrating arm attached. Fig. 4 is an end view, partly in section, and Fig. 5 is an enlarged transverse section, of the traction-rail.

Similar letters of reference indicate corresponding parts in all the figures.

A is the bow, and A' the stern, of a boat. B is a sheave or sprocket-wheel mounted upon a shaft, B¹, near the bow of the boat. B² is a carrying-arm, pivoted upon and vibrating about the shaft B¹. This arm is provided at its free end with a flange, b, which fits and slides vertically in a grooved seat, a, secured to the bow of the boat. (See Fig. 2.) C is a grooved pulley or sheave keyed to a short shaft, c, and revolving in a bearing formed for its support in the free end of arm B². B³ is a driving chain or belt, connecting sheaves or pulleys B and C. The side of the boat is cut away or recessed to receive the arm B² and wheel B, as shown in Fig. 2. The projecting end of shaft c is squared. D D D are a series of piles or posts firmly embedded in the canal at the bottom of the sloping wall or banks. D¹ D¹ are stringers secured to the upper ends of piles D. D² is a cap-stringer. d d' is a rail, bolted or otherwise firmly attached to the cap-stringer D². That portion, d', of the rail which projects beyond the cap-stringer is semi-circular in cross-section, as plainly shown in Fig. 5. E is the rectangular frame of a traction-truck. C' is a traction-wheel, mounted in the truck as follows: e is a shaft or axle project-

ing from one side of wheel C', and having its end seated in a bearing at e². The opposite side of the wheel is provided with a tubular bearing or sleeve, c', Fig. 4, which enters a vertically-elongated opening, e¹, in the frame of the truck, the socket in sleeve c' being squared to correspond with the squared end of the shaft c of sheave C. As a further support for traction-wheel C', a hanger, E², is secured to the under side of the upper portion of the traction-truck, (see Figs. 2 and 4,) and provided with a journal-box, which incloses shaft e. One face of wheel C' is cogged, as indicated at E¹, Figs. 2 and 4. The bearing-edge of this wheel, which engages with the rail d d', is grooved to correspond with the upper face of the rail. F is another traction-wheel, journaled in the lower part of the truck, and cogged, as at F', to mesh with the cogs of wheel C'. Wheel F is rounded upon its edge, to correspond with the lower face of the rail. E³ is a screw, working in the frame of the truck, its lower end engaging with the journal-box in the hanger E², or, preferably, with a block of rubber or other elastic material placed above the journal-box. G G' are guiding wheels or rollers mounted in the rear end of the frame of the traction-truck, one above the rail and the other below it. These guiding-wheels fit closely the semi-circular part or tread of the rail, and thus insure that the truck shall maintain a proper working relation to said rail. H is the rectangular frame of a guiding-truck or steering-truck. I I' are wheels or rollers mounted in frame H, such parts of these wheels or rollers as impinge upon the rail d d' conforming substantially thereto, this construction preventing the truck from leaving the track. K is a snubbing-lever or brake-lever. The lower end of this lever is round or cam-shaped, and is pivoted eccentrically to the frame H at i, Fig. 2. The lower end of this lever, by preference, conforms substantially to the upper side of the rail, upon which it bears when the upper end is drawn forward by means of cord or line K'. h h represent hooks on frames H and E. a' a' are snubbing-pins. L L represent lines, which are made fast to snubbing-pins a' a' and hooks h, as will be hereinafter explained. N N are vertical friction-rollers mounted in frames N', and suspended from the boat or

boats at suitable intervals. These rollers run against the inner stringer D^1 , to prevent the friction which would otherwise be produced between the side of the boat and these stringers.

In operating my devices I insert the squared end of the shaft c into the squared socket or recess c' in wheel C' , and then lash the boat closely to the traction-truck and the steering-truck by means of lines L , as indicated in Fig. 1. The friction-rollers N and frames N' being suspended in proper position, substantially as shown, screw E^2 should be turned down until the traction-wheels C' and F impinge upon and gripe the rail d d' firmly. Power is then applied to shaft B^1 from any convenient source, to turn wheel B in the direction indicated by the arrows in Figs. 1 and 3. The belt, chain, or rope B^3 communicates this motion to the wheel C , which drives the traction-wheels C' F through shaft c and gears E^1 F' , thus propelling the boat, as will be readily understood without further explanation.

As arm B^2 is pivoted upon the center of rotation of wheel B , it is evident that the boat may rise and fall without disturbing a proper working relation between the various parts of the driving mechanism, and the arrangement of lines L is such as to readily permit the required vertical movements of the boat.

Two objects are attained by making the part d' of the rail semicircular in form—first, the wheels or rollers which traverse it cannot be drawn from it laterally; and, secondly, in case the boat tips or inclines sidewise, the traction-wheels C' F can tilt or rock upon the curved surface of the rail without materially cramping the parts.

It will be seen that my invention obviates the necessity of using a tiller or rudder to steer the boats, and that their movements will not be seriously impeded by winds blowing

transversely of the canal. The power required to draw the light steering-trucks will be much less than that used in overcoming the resistance of the water to the rudder-blade, which is sometimes held at almost a right angle to the path of the boat.

Another advantage growing out of the use of my device is the convenience of running in dark nights, as boats are not liable to collide with each other when moving in opposite directions, nor to run into the bank of the canal, nor to be grounded upon the bank by the swell of other passing boats.

When a boat or a train of boats wishes to pass a boat or a train of boats moving in the same direction all of the boats may cast off from their trucks, the rear boat or boats moving up and attaching to the trucks left by the forward ones, which fall back and take the remaining trucks.

What I claim is—

1. The boat A A' , provided at the bow with a recess, in combination with the vibrating arm B^2 and sheaves B C , arranged in the recess, substantially as set forth.

2. The vibrating arm B^2 , provided with the flange b , in combination with the corresponding guiding-seat a , formed in the bow of the boat, substantially as set forth.

3. The combination of traction-wheel F , traction-wheel C' , having the square socket c' in its hub or sleeve, the sheave or grooved pulley C , provided with the squared shaft c , the vibrating arm B^2 , pulley or sheave B , and belt B^3 , and rail d d' , substantially as set forth.

4. The brake-lever K and line K' , in combination with its supporting-truck and rail d d' , substantially as and for the purpose set forth.

WILLIAM FARR GOODWIN.

Witnesses:

PETER C. SCHENCK, Jr.,
OLIVER A. KIBBE.