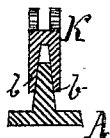
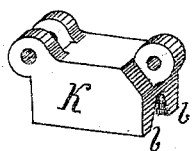
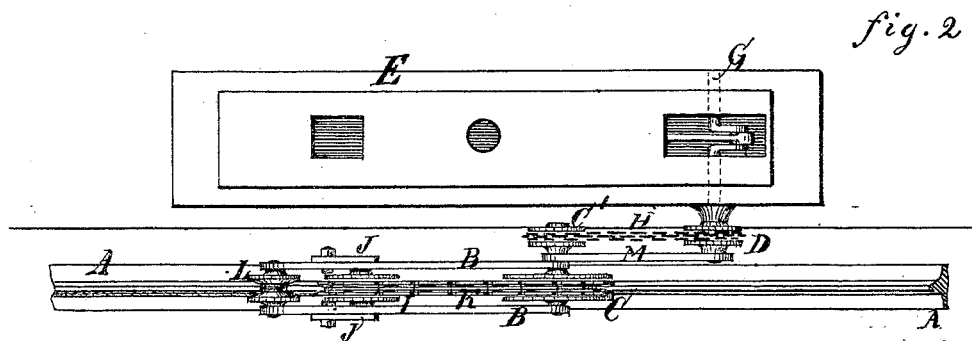
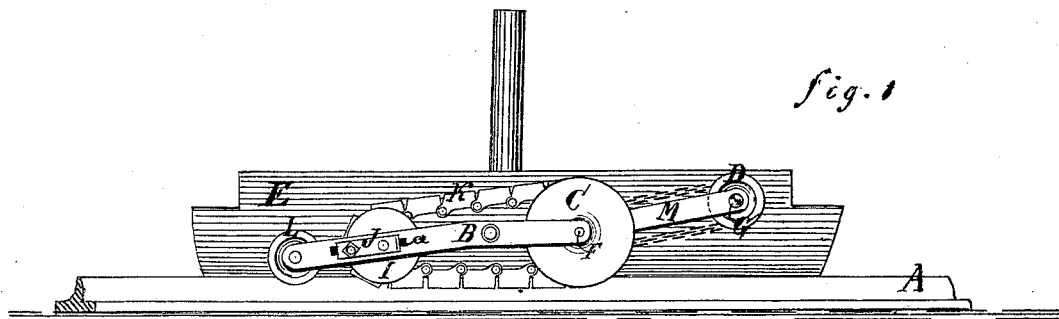


### Improvement in Propulsion of Canal-Boats.

Patented May 9, 1871.



Witnesses:

Harry S. Sprague  
Wm S. Rogers

Inventor:

Julius L. Hornig  
per Atty  
Phil S. Sprague

# United States Patent Office.

JULIUS L. HORNIG, OF CHICAGO, ILLINOIS.

Letters Patent No. 114,561, dated May 9, 1871.

## IMPROVEMENT IN PROPULSION OF CANAL-BOATS.

The Schedule referred to in these Letters Patent and making part of the same.

### *To whom it may concern:*

Be it known that I, JULIUS L. HORNIG, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in the Propulsion of Canal-Boats; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon and being a part of this specification, in which—

Figure 1 is an elevation of a canal-boat with my propelling mechanism attached, the boat itself being provided with a suitable motor to operate said mechanism.

Figure 2 is a plan view of the same.

Figure 3 is a perspective of a section of my endless chain.

Figure 4 is a cross-section of one of the links of said chain on the line *z z*, fig. 3.

Like letters indicate like parts in each figure.

The nature of this invention relates to the propulsion of vessels in canals in such a manner that no "swell" or "wash" is created in the water to injure the banks; and is more especially designed to be an improvement upon a device for a like purpose for which Letters Patent were issued to me on the 27th day of December, 1870.

The invention consists—

First, in the new and ingenious construction of an endless chain, so arranged as to take the place of the traction-grooved wheels described in said Letters Patent.

Second, in the combination of said endless chain with a carriage of novel construction, supported on and clamping the rail by means of its drums and grooved pulleys.

Third, in the combination of said carriage and its appurtenances with a vessel which carries the motor for driving the propelling mechanism, as more fully hereinafter described.

The design is to provide a single-track railway and suitable mechanism for operating upon said railway, by means of which vessels may be propelled, as set forth.

In the drawing—

A represents a rail, which may be secured permanently to the bank of the canal, or surmounting a series of piles driven in the canal, or secured in any desirable or convenient way.

B is a carriage or truck-frame, constructed of two parallel bars or webs properly stayed by lateral or cross-braces.

C and C' are metallic drums or sheaves, whose axle F is properly journaled in the carriage-frame, the former receiving motion from the pulley D secured to a shaft, G, on board the boat E, and, being journaled upon the

same shaft or axle F, communicate said motion to the wheel or drum C. Any suitable motor may be employed on the boat to rotate the shaft G and its pulley D, and said motion is thence communicated to the drum C' by means of the chains H or by other well-known devices.

I is another drum or sheave similar in construction to the drum C, is journaled in the bearings J, which are so made as to have a lateral motion in the slots *a* in the two bars which form the sides of the truck-frame, for the purposes hereinafter set forth.

K is an endless chain running over the drums or sheaves C I, and it is constructed in sections, hinged or pivoted together, and each section is provided with externally-projecting rigid flanges *b*, beveled upon their inner sides, so that as the chain is carried forward or backward by the rotation of the drums it will grasp the rail and propel the vessel to which the device is attached.

The bearings J, in which the drum I is journaled, are adjustable in the slots *a*, for the purpose of tightening or loosening the endless chain, as may be desired.

L is a guide-wheel, properly journaled in the forward part of the frame, and, straddling the rail A, acts as a guide to retain the frame in place over the rail.

M is an arm, one end of which is sleeved on the shaft G, and the other end upon the axle F and connects the two together.

The carriage or truck-frame may be provided with a suitable connection to a crane on board the canal-boat to lift the carriage and its appurtenances from the rail on board if desired, or so constructed as to press the carriage down on the rail to increase the traction.

In order to do this the overhanging part of the shaft G may be so sleeved or jointed as to admit of their sliding or swinging inward when the connections are to be lifted on board of the boat, so that no part of the propelling apparatus may obstruct the side of the boat.

The carriage may be provided with pilot and rail-scraper to clear the track.

The end of the carriage, showing guide-wheels L, may be linked to the boat to answer for steering or parallel guide—this link, on both ends, to be toggle-jointed.

The endless chain, constructed as above described, may be employed, in connection with a proper rail, in any other position where traction is required.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The endless chain K, constructed with outwardly-projecting flanges *b*, substantially as set forth.
2. The combination of said endless chain K with

any proper drums or pulleys and the track A, when operating substantially as and for the purpose set forth.

3. The carriage B, constructed as described, in connection with drums C C', axle F, and endless chain K, when operating as and for the purpose specified.

4. The combination of the shaft G, rotated by any suitable motor upon a canal-boat, pulley D, chain H,

and arm M, carriage B, drums C C', axle F, endless chain K, and guide-wheel L with the rail A, substantially as described, and for the purposes set forth.

JULIUS L. HORNIG.

Witnesses:

HARRY S. SPRAGUE,  
WILL S. ROGERS.