

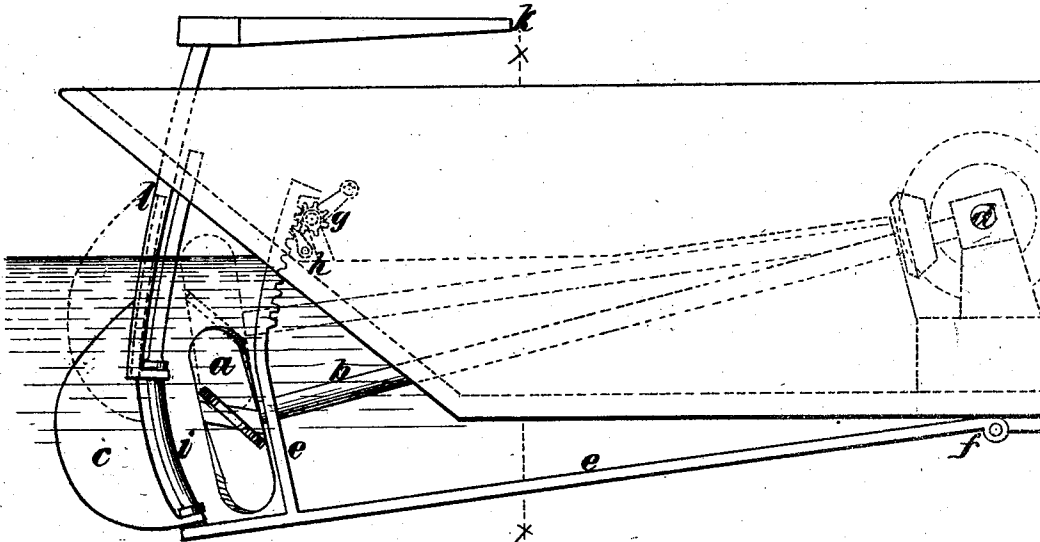
J. M. DODGE.

Improvement in Canal-Boats.

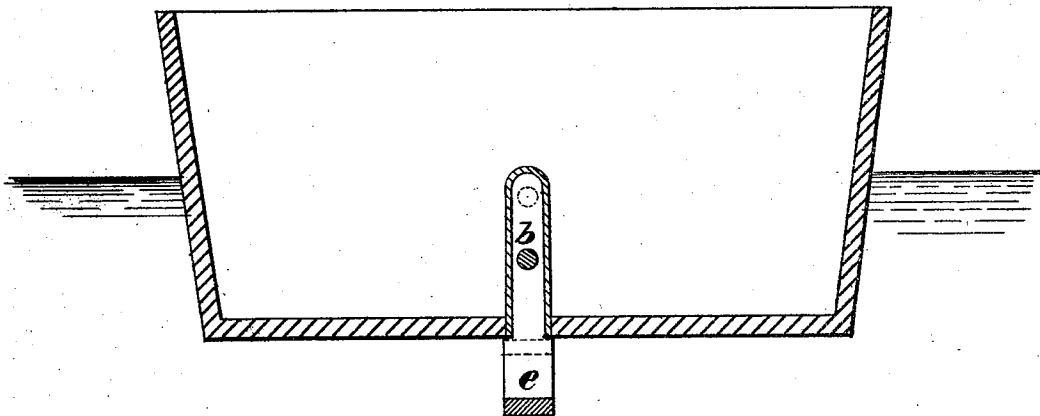
No. 130,110.

Patented Aug. 6, 1872.

*Fig. 1.*



*Fig. 2.*



Witnesses:

*Nathan Lewis*  
*Mr Kemble Hall.*

Inventor:

*James Maper Dodge.*

# UNITED STATES PATENT OFFICE.

JAMES MAPES DODGE, OF NEWARK, NEW JERSEY.

## IMPROVEMENT IN CANAL-BOATS.

Specification forming part of Letters Patent No. **130,110**, dated August 6, 1872; antedated August 3, 1872.

### SPECIFICATION.

I, JAMES MAPES DODGE, of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Screw-Propulsion, of which the following is a specification:

#### *Nature and Objects of the Invention.*

The said improvements relate to the propulsion of boats in canals or other shoal-water navigation; and they have for their object the increased immersion of the propelling-screw and the rudder, when permitted by the increased depth of the water, or when required by the light draft of an empty boat. To accomplish this object the invention consists in suspending the screw-shaft in a trunk opening to the stern of the vessel in an inclined position, and in hanging the outer end of the shaft and the rudder in a vibrating frame, which may be raised by appropriate gearing, and will be similarly raised by contact with the bottom. When required, by shallow water, in passing through locks or over shoals, the screw-shaft will be worked with the propeller and the rudder near or at the surface of the water; and in deeper water the outer end of the shaft may be lowered, so that the rotation of the screw and the directing movement of the rudder may be rendered more effective by the greater pressure due to the increased depth. The inclined position of the shaft directs the current of water from the propeller downward instead of permitting its force to be expended toward the surface, in the direction of least resistance, to the detriment of the borders of the canal, by which the wash may be received. The frame supporting the screw and rudder should be hung in such a way that it will easily rise on striking the bottom; and the trunk need only be large enough to permit the vibrations of the shaft, and should be high enough to rise above the load water-line of the vessel, that there may be no necessity for furnishing stuffing-boxes or other means for preventing the admission of the water.

#### *Description of the Drawing.*

To enable others skilled in the arts to which

it appertains to make and use my invention, I will proceed to describe its construction and operation with reference to the drawing.

Figure 1 is a sectional elevation, illustrating the stern of a flat-bottomed canal-boat with the screw and rudder at their greatest depth of immersion. Fig. 2 is a cross-section of the same at the line *x*.

The dotted lines indicate the position of the propeller *a*, shaft *b*, and the rudder *c* when the frame is raised until its lower part lies against the bottom of the boat. The shaft *b* is supported at its inner end by the bearing *d*, which may be hung on journals, or provided, if necessary, with other appropriate means for accommodating itself to the varied angularity of the shaft. When the center of vibration of the shaft lies in the center line of the bevel-gearing, as shown in the drawing, the angle of the shaft will have no influence upon the manner in which it is driven. The frame *e e*, which supports the outer end of the propeller-shaft, is hinged to the boat at *f*, and passes up through the stern, where it is furnished with a rack that gears into a pinion, *g*, by which it may be raised, and it is also fitted with a pawl, *h*, by which it may be held at any point. The joint *f* of the frame should be placed in such a position that the frame will be easily forced up when the boat strikes the bottom; and it is obvious that the more nearly it coincides with the center of vibration of the shaft the less will be the longitudinal movement of the shaft through the outer bearing, and the less room, therefore, need be provided for clearance. By hinging the vertical and horizontal portions of the frame they may be made to effect the same end, approximately, by working together after the manner of a parallel motion. The trunk or well for the shaft occupies but little more of the width of the vessel than the diameter of the shaft, and the opening need not weaken the vessel by passing through the bottom. The rudder *c* is carried up by the outer stern-post *i*, which forms a portion of the vibrating frame *e*, and, therefore, accompanies the vertical movement of the frame and screw. It is operated by the tiller *k* and the rudder-head *l*, which is fitted to the rudder by means of a

slot or rings, or in any other manner that will permit the rudder-blade to slide within or over the head and at the same time receive the necessary rotary motion from the tiller.

*Claims.*

I claim as my invention—

1. The combination of an automatically-adjustable frame, carrying a vibrating propeller-shaft, with a trunk in the stern of a vessel open-

ing above the water-line, substantially in the manner and for the purpose described.

2. The combination, with the said frame, of a rudder-blade and rudder-head, sliding the one within the other, in the manner described.

JAMES MAPES DODGE.

Witnesses:

NATHAN LEWIS,  
WM. KEMBLE HALL.