J. H. HETZLER.

PROPELLING CANAL-BOATS.

No. 193,511. Patented July 24, 1877.

Fig 1

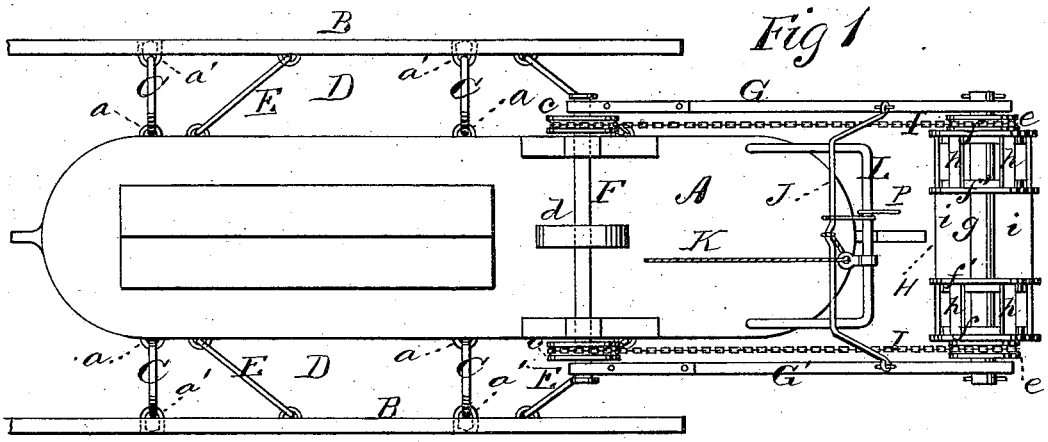


Fig 2

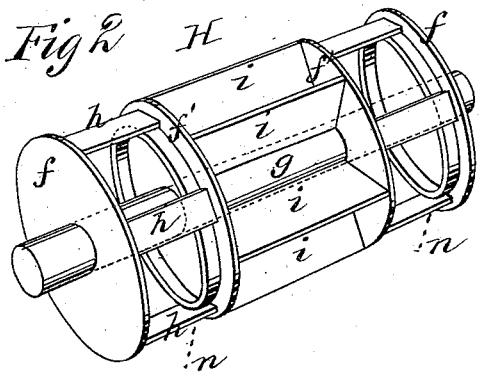
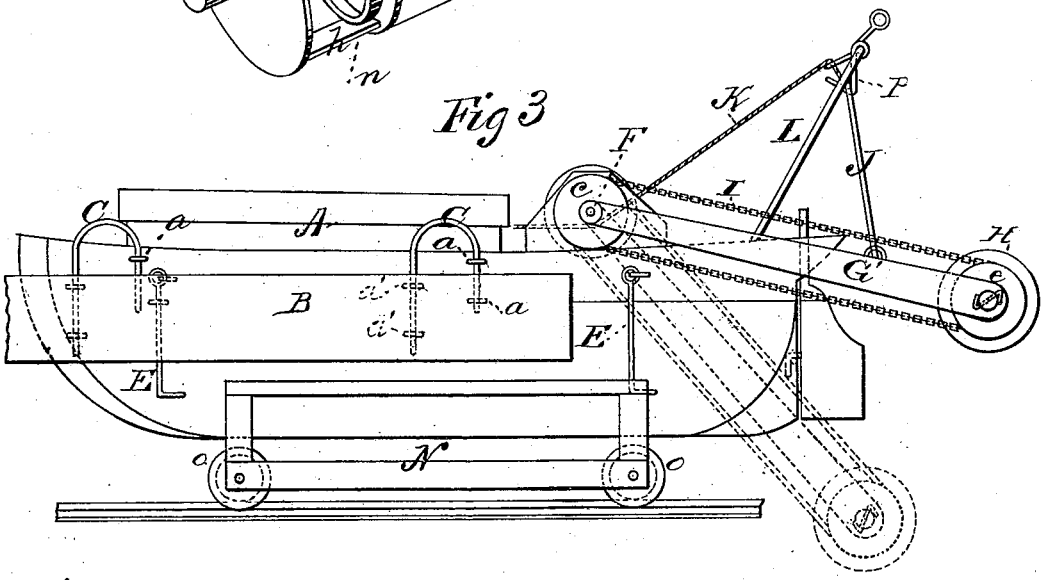


Fig 3



WITNESSES

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JOHN H. HETZLER, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN PROPELLING CANAL-BOATS.

Specification forming part of Letters Patent No. **193,511**, dated July 24, 1877; application filed June 16, 1877.

To all whom it may concern:

Be it known that I, JOHN H. HETZLER, of Baltimore, in the county of Baltimore and State of Maryland, have invented a new and valuable Improvement in Canal-Boats; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a top view of my invention. Fig. 2 is a perspective view of the propelling-wheel, and Fig. 3 is a side view of the invention.

This invention has relation to improvements in steam canal-boats.

The object of my invention is to devise an effective and economical means to prevent the "wash" or swell from the bows and sides of a vessel from driving against and undermining the bank, and to produce a paddle which will be equally effective whether it be used in the water or on the bottom of the water-course.

To this end the nature of the invention consists in combining with a canal-boat lateral plates arranged at each of its sides at a suitable distance therefrom, and buried in the water a sufficient distance, which will catch the swell, divert its course, and cause the same to be conducted along the sides of the vessel to its stern.

It also consists in combining with a canal-boat a vertically-adjustable paddle-wheel suspended by means of vibrating arms over the stern of the said boat, and a derrick or crane for raising or lowering the same, whereby said wheel is adapted to propel the boat either by working in the water or against the bottom.

It also consists in the novel construction and arrangement, in connection with the guard-plates aforesaid, of davits, whereby they are secured to, and suspended from, the sides of the vessel, so as to be capable of swinging in or out from the same.

It moreover consists in combining with a vessel and lateral guard-plates suspended therefrom by davits, of stay-hooks, by means of which the said guard-plates are held in proper position for diverting the swell from its course outward to one lengthwise of the vessel.

It finally consists in the arrangement and novel construction of the various operative parts, as will be hereinafter more fully set forth.

In the annexed drawings, the letter A designates an ordinary canal-boat, and B the side plates suspended therefrom by means of the davits C. These latter are journaled in suitable bearings *a* upon the sides of the vessel, and also in similar bearings *a'* upon the guard-plates B. When the said plates are in position their lower portions are immersed to a considerable depth in the water. Their front ends extend beyond the stem of the vessel, and a space, D, is formed between them and the sides of the ship. As the latter forces its way through the water a considerable wave or swell is formed by the sheer of the bow, and is forced off therefrom at each side of the stem. This wave strikes against the guard-plates B, and, instead of striking against the banks of the canal to their manifest injury, is deflected along the sides of the vessel out at its stern in the length of the water-course. The guard-plates are made of any suitable material or combination of materials, and are maintained at their proper distance from the vessel by means of stay-hooks E rigidly secured to the side of the said vessel, and detachably secured to said plates. In going alongside a wharf or the bank, the guard-plates may be swung in upon the sides of the vessel by detaching the stay-hooks therefrom.

F represents a transverse shaft, arranged in suitable bearings near the stern of the vessel, and provided at each end with a chain-pulley, *c*, and at its center with the pulley *d*, or other equivalent device, through which rotation is imparted to said shaft from a suitable motor.

G G' represent two spaced metallic or wood beams, that are journaled upon the ends of shaft F, and afford bearings at their lower ends for a transverse paddle-wheel, H. This latter has at each end a chain-pulley, *e*, connected by an endless chain-belt, I, with the pulleys *c* upon shaft F. When the latter is rotated rotary motion will be imparted to wheel H through the pulleys *c e* and endless belts I. The frame G G' of the propelling-wheel is provided with a metallic bail, J, in rear of the stern of the boat, to which is se-

cured a strong rope, K, extending through a suitable sheave or block at the upper end of a derrick, L, that is erected at the stern of the said boat. By means of this rope the propeller may be lowered in shoal-water until it bears against the bottom, when its rotation will propel the boat, or raised in entering a lock, so that as the water is let out of it the propeller may not get under the vessel and get broken; or, in deep still water it may be raised until it is only half buried in the water, when its rotation will propel or back the vessel, as may be required. This wheel is composed of two spaced end disks, *f f'*, at each end of a shaft, *g*, which may be partially or wholly boarded in, as shown at *h*, Fig. 2.

The paddle-boxes *i* are arranged radially around the shaft *g*, between the inside disks *f'*. The outer edges of the boxes *i* may project outward beyond the disks, so as to obtain a better hold upon the bottom of the canal, the end rollers *n* at the ends of said buckets formed, as above set forth, by the disks *f f'*, and their boarding being designed to prevent the wheel from sinking too far into the bottom.

In making portages, the boat is run upon and cradled in a carriage, N, that is run up an inclined way by the propulsion of the wheel H. This carriage is provided with a flanged wheel, *o*, the flange of which has a broad periphery or tread, so that it is adapted to run upon a track as an ordinary car or upon a road, as may be required.

As the wheel-frame G G' is vibrated upward its bail J comes in contact with a hooked catch, P, which will then yield until the said bail passes upward beyond it. Being thus released it will swing back and become engaged with the said bail, thus holding the propelling-wheel in the position indicated in full lines, Fig. 3.

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

1. The combination, with a canal-boat having horizontally-vibrating raised and curved davits C upon its sides, of the guard-plates B and hooks E, substantially as specified.

2. The combination, with a vertically-adjustable frame, G G', carrying the propelling-wheel H, and having a bail, J, of a derrick, L, a tackle, K, and a catch, P, substantially as specified.

3. The combination, with a canal-boat, of a propelling-wheel having end tread-disks *n*, and intermediate longitudinal ribs adapted to bite upon the ground when said wheel is rotated, substantially as specified.

4. The propelling-wheel H, consisting of the shaft *g*, the spaced disks *f f'*, connected by tread-boards *h*, and the radial paddle-boxes *i*, arranged between said disks *f' f'*, adapted for use substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN H. HETZLER.

Witnesses:

CHAS. W. MCMAKIN,

ROBT. H. HOOPER.