

S. P. HARBAUGH.

Improvement in Devices for Propelling Vessels.

No. 130,042.

Patented July 30, 1872.

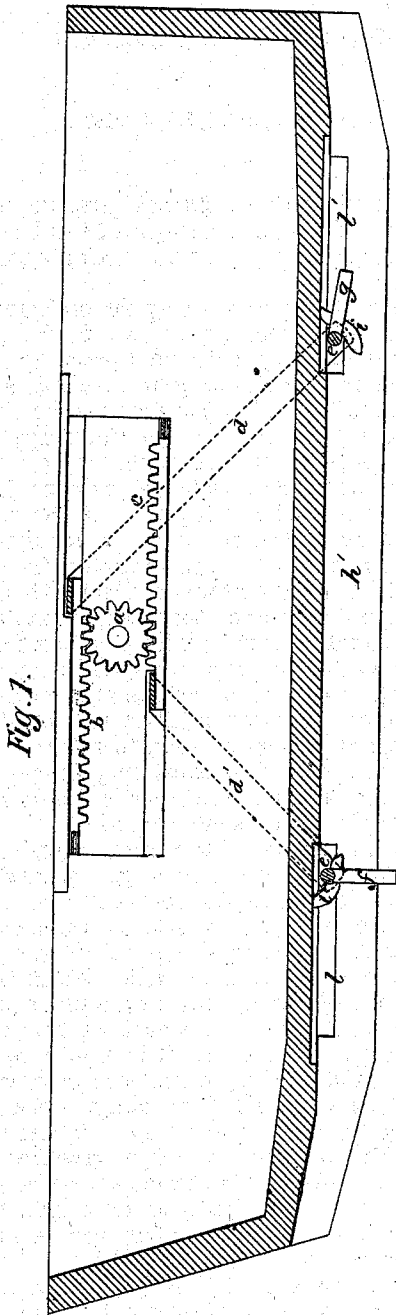


Fig. 1.

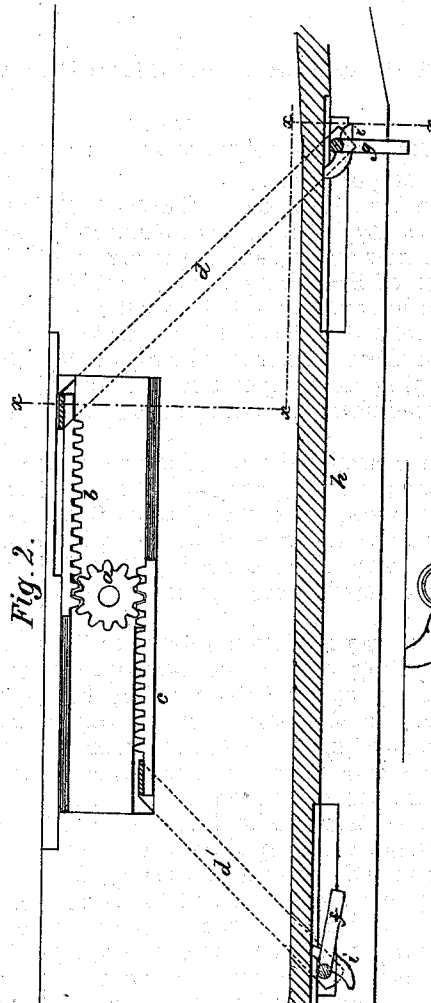


Fig. 2.

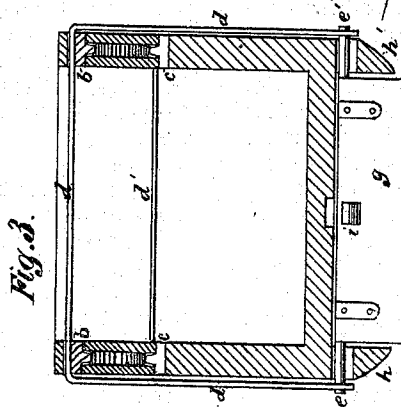


Fig. 3.

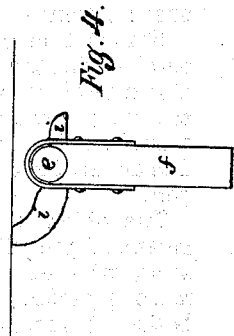


Fig. 4.

Witnesses:
Marion
J. E. Henderson

Inventor:

Simon P. Harbaugh
by his Attorney
J. E. Henderson

UNITED STATES PATENT OFFICE.

SIMON P. HARBAUGH, OF ALLEGHANY COUNTY, MARYLAND.

IMPROVEMENT IN DEVICES FOR PROPELLING VESSELS.

Specification forming part of Letters Patent No. 136,042, dated July 30, 1872.

Improved Propelling Apparatus.

To all whom it may concern:

Be it known that I, SIMON P. HARBAUGH, of Alleghany county, in the State of Maryland, have invented new and useful Improvements in the Manner of Propelling Boats, whether by steam or otherwise; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and the letters of reference marked thereon making part of this specification.

Figure 1 is a sectional view, showing the paddles *f* in the propelling position. Fig. 2 is also a sectional view, the paddle *f* being folded, and *g* in the propelling position. Fig. 3 is a cross-section on the line *x x x*, Fig. 2. Fig. 4 is an enlarged detail of the paddle and support.

The object of my invention relates to the means of propelling vessels and boats of any kind, whether by steam or otherwise; but more especially to the propulsion of canal-boats with increased speed, and in such a manner as to avoid causing a swell or waves to wash and injure the banks, while a constant action of the propelling-paddles is maintained; also, to so arrange the propelling machinery as to occupy but little space and preserve the capacity of the boat for freight and stowage.

I accomplish these objects by arranging the propelling-paddles on the bottom of the boat, as shown in Figs. 1 and 2, and moving them back and forth by means of arms on the outside of the boat, these arms being driven by a pinion, *a*, and rack-bars *b c*, arranged on the sides, at the center, and within the lining or bulwarks of the boat. The power may be applied to the toothed wheel *a* or to the arms *d d'*, or either of them. The pinion *a* revolves upon a stationary bearing within the lining or sides, and may be varied in size to suit the dimensions of the boat and the length of stroke desired for the paddles. The two rack-bars *b c* are arranged above and below the pinion *a*, and are each moved by it simultaneously in opposite directions. To the ends of the rack-bars the arms *d d'* are securely fastened, and pass obliquely down the outsides of the boat to the bottom, across which they are joined together by the bars *e e'*, upon which the paddles are hung. These paddles *f g* are hung

loosely upon these journal-bars, and are provided with stops or supports *i i* to keep them in a vertical position when acting against the water.

Power being applied by the ordinary methods to the wheel *a* or arms *d d'*, the forward or bow paddle *f* is drawn toward the center of the boat, propelling it forward, and the stern or after paddle *g* is simultaneously drawn forward. The action of the water against this stern paddle causes it to fold up against the bottom of the boat while being drawn forward, and thus pass smoothly through the water. A projection of the support *i* prevents the paddle from folding too closely against the bottom, and holds it at the proper inclination to promptly catch the water on the returning motion. A reverse action of the pinion converts this stern paddle into the propelling-paddle, and at the same time carries forward the bow-paddle *f* in the folded position until it reaches its first place, and is again ready to return. One of the paddles is thus constantly propelling the boat forward, and the other is simultaneously moving in the opposite direction.

On the bottom of the boat, extending from bow to stern, are placed guards *h h'*, to be made of equal depth on their inner sides as the outer ends of the paddles, and so wide as to assist in floating the boat. These guards or ways form a channel within which the paddles move back and forth on a plane, and act directly on the water beneath the boat without creating a wave or swell to injure the banks of the canal. The journal-bars or axles *e e'*, on which the paddles are hung, work within guides or slots in these ways. These slots *l l'* need be only large enough to give free play to the journal-bar. The arms *d d'* may be extended across within the boat from side to side, and the pitman or connecting-rod be attached to the center of either of them. For small boats these extended arms may be used by hand, and a more steady and rapid motion secured than can be obtained by the use of oars or sculls. When steam is used the engine may be placed in the bow or stern or on the deck, and the connecting-rod attached to the pinion or rack-bars. In this case each arm is securely fastened to the end of its own rack-bar, and the open space or slot, necessary when the arms are extended across the boat,

entirely closed on the inside, thus increasing the room for stowage of freight.

I do not confine myself to the use of a pinion and racks to propel the arms and paddles; a crank or other equivalent may be used instead. Nor do I confine myself to the use of only two paddles; more may be used, if found advantageous.

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

1. The pivoted paddles *f g* hung upon a journal-bar and working under the bottom of the boat, in combination with the arms *d d'*, substantially as shown and described, and for the purposes set forth.

2. The channel on the bottom formed by the guards or ways *h h'*, provided with the slots

or guides *l l'* for the journal-bar, in combination with the paddles and arms, substantially as set forth and shown, and for the purposes indicated.

3. The arrangement of the pinions *a* and racks *b c* within the sides or wall of the boat, in combination with the arms and paddles, substantially as shown and described, and for the purposes set forth.

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

SIMON P. HARBAUGH.

Witnesses:

ELIJAH FULLER,
THOS. G. GONDER.