

(No Model.)

B. DOSCHER.

SWINGING PADDLE FOR VESSELS.

No. 354,506.

Patented Dec. 14, 1886.

Fig. 1.

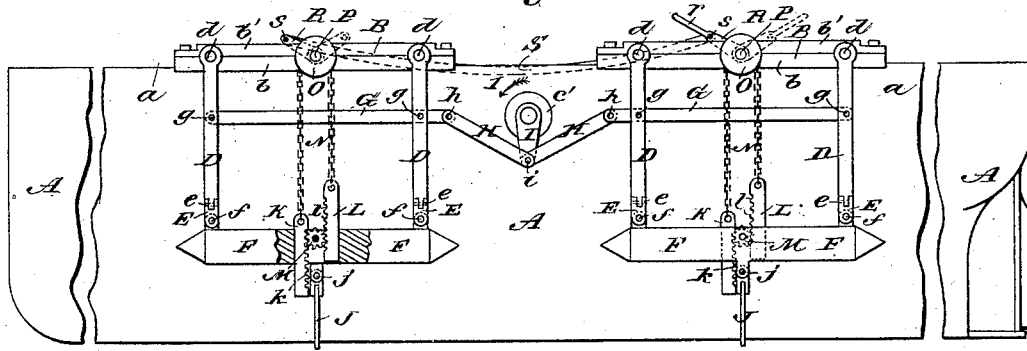


Fig. 2.

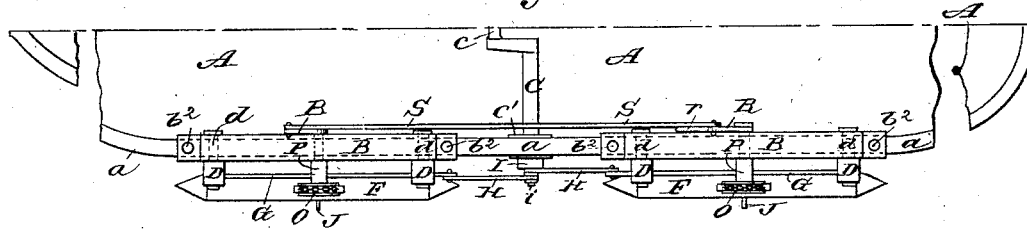


Fig. 3.

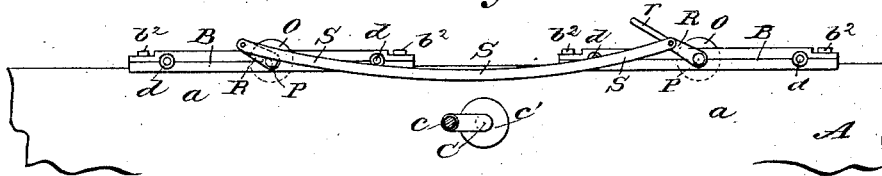
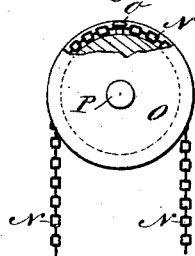


Fig. 5.



WITNESSES:

Wm. H. Wood
Wm. Sedgwick

Fig. 4.

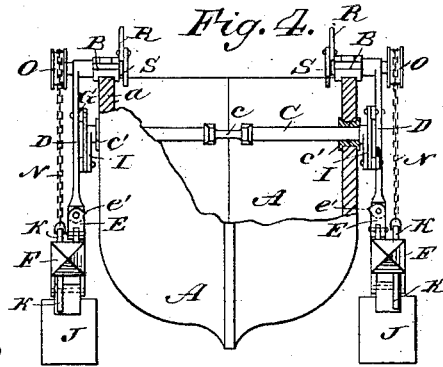
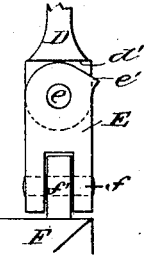


Fig. 6.



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SWINGING PADDLE FOR VESSELS.

SPECIFICATION forming part of Letters Patent No. 354,506, dated December 14, 1886.

Application filed May 6, 1886. Serial No. 201,306. (No model.)

To all whom it may concern:

Be it known that I, BEREND DOSCHER, of Charleston, in the county of Charleston and State of South Carolina, have invented new and useful Improvements in Swinging Paddles for Vessels, of which the following is a full, clear, and exact description.

My invention relates to a system of propulsion for vessels, and has for its object to provide a simple, effective, and easily-controlled arrangement of swinging paddles at the sides of a vessel, whereby the vessel may be propelled forward or backward or turned short around to either side without reversing the engine driving the main crank or power shaft, and with little noise, jar, or friction, and economy of the driving-power.

The invention consists in certain novel features of construction and combinations of parts of the swinging paddles and their connections, all as hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation, partly broken away, of a vessel fitted with my improved swinging paddles, one of the paddle-beams also being broken away and in section. Fig. 2 is a plan view of one-half of the vessel and the paddles and their operating mechanism at that side. Fig. 3 is a detail view of the paddle-adjusting mechanism at one side of the vessel as viewed from within the vessel. Fig. 4 is a cross-sectional elevation of the vessel, showing the paddles at each side; and Figs. 5 and 6 are detail views, to be hereinafter referred to.

To the top of the bulwarks or rails *a a* of the vessel *A* there are bolted long boxes *B B*, two at each side, and fore and aft of the transverse center of the vessel, or at about like distances fore and aft of the main power-shaft *C*, which has a crank, *c*, to which the engine-rod will be connected to give motion to the paddles, as presently explained.

Each of the boxes *B* consists, preferably, of a bed-plate, *b*, and a cap-plate, *b'*, which are held together by the same bolts, *b²*, which fasten the boxes to the vessel, and in each of the

boxes *B* there are journaled, by their wrist-pins *d d*, the pendent swinging arms *D D*, to the lower ends of which are hinged, on fore-and-aft-ranging pivots *e e*, the foot-blocks *E E*, and to these blocks are hinged, by laterally-ranging pivots *f f*, the lugs *f' f'*, which are fixed to the upper side or edge of the paddle-beam *F*. The paddle-beams *F* are pointed at the ends, and will be rounded over as much as may be to offer minimum resistance to their passage through the water.

Each pair of the paddle arms *D D* are connected pivotally at *g g* with a fore-and-aft-ranging bar, *G*, and the bars *G G* of the paddle-arms at the same side of the vessel are connected pivotally at *h h* with the pitmen or rods *H H*, the other ends of which are connected to the wrist *i* of a crank-arm, *I*, which is fixed to the outboard end of the main driving-shaft *C*, which shaft is journaled in boxes *c' c'*, fixed in the sides of the vessel.

Each of the beams *F* has pivoted to it at *j* a paddle, *J*, which is free to swing fore and aft on the beam, except as it may be prevented by one of two stop-pins, *K L*, which are fitted to slide vertically in the beam *F*, and so that the pin *K* may be lowered in front of the head of the paddle and the pin *L* may be lowered behind the head of the paddle. The opposing edges of the pins *K L* are provided with teeth *k l*, respectively, which mesh into opposite teeth of a pinion, *M*, journaled in the beam *F*, directly above the paddle *J*, and whereby as either one of the pins *K L* is raised the other will be lowered, and vice versa.

The tops of the pins *K L* are connected to the opposite ends of a chain, *N*, which passes over a pulley, *O*, fixed to a shaft, *P*, journaled in the box *B*. The loop of the chain is fastened to the periphery of the pulley *O* by a pin, *o*, as clearly shown in Fig. 5 of the drawings.

To the inner end of each of the shafts *P* there is fixed a lever, *R*, and the levers *R R* of the shafts *P P* at the same side of the vessel are connected pivotally, as *s s*, to the opposite ends of a bar, *S*, and one of the levers *R* is extended to form a handle, *r*, by operating which both levers *R R* at one side of the vessel may be swung at once to turn the pulleys *O O* for drawing on the chains *N N*, and simultaneously ad-

justing either the port or the starboard paddle-pins K L, for controlling the movements of the vessel, as presently described.

The pivotal connection of the blocks E with the ends of the paddle-beam arms D allows the paddle-beams to swing toward and from the sides of the vessel, and to prevent the inner edges of the paddles J striking the ship, shoulders *e'* on the blocks E will act on shoulders *d'* on the arms, as will be understood more clearly by comparing Figs. 4 and 6 of the drawings.

The operation is as follows: As the crank-shaft C is rotated forward or in direction of the arrow 1 in Fig. 1, and when the levers R *r* at the starboard and port sides of the vessel are thrown forward to turn the connected wheels O and operate the chains N to lift the pins L, and at the same time cause the pins K to be lowered in front of the paddles J at both sides of the vessel, and as the paddle-beams F are swung fore and aft simultaneously by the rods G H and crank I, the paddles J will be braced by the lowered pins K as the beams move aft, whereby the vessel will be driven forward, and on the reverse or forward stroke of the paddles they will swing upward and "feather" to the water and offer practically little or no resistance to the forward movement of the paddle-beams or the vessel. Should it be desired to back the vessel, the starboard and port levers R *r* will be raised or swung over backward to the positions indicated in dotted lines in Fig. 1, whereby all the paddle-pins K will be raised and the pins L will be lowered behind the paddles J, so that the paddles will be effective on the forward stroke of the beams to move the vessel backward, and the paddles will feather on the back stroke of the beams, as will readily be understood. It is obvious that by lowering the paddle-pins K at one side of the vessel and the pins L at the other side of the vessel, she may be turned sharply around to either side and almost within her own length. For instance, when the starboard-pins K and port-pins L are down, the vessel will turn to "port," and when the starboard-pins L and port-pins K are down, the vessel will turn to "starboard."

All the above-described movements of the vessel may be accomplished simply by adjusting the paddle-pins K L, and without reversing the engine driving the main shaft C; hence the vessel's movements may be easily controlled from the deck. Any suitable latches may be used to lock the levers R in their two extreme positions.

The pivot-pins *h h*, connecting the bars G with the forward links, H, may be removed to allow the forward arms, D D, their connecting-bar G, and the attached paddle-beams F to be hauled up clear of the water by swinging them forward on the pivots *d d* of the arms D D, and the aft paddle-beams and connections may also be raised clear of the water when their pivots *h h* are removed by swinging them

aft on the pivots *d d* of their arms D D, and the entire paddle system may be lashed fast to the vessel in these raised positions to allow the vessel to proceed under sail alone when it may be desired to do so.

In case of accident to either the starboard or port forward paddles or their connections, the entire forward system of paddles may be disconnected from the driving-shaft and be hauled up at the side of the vessel, as above described, to allow the vessel to proceed under the power of the aft paddles alone, and if the aft paddles be damaged they may be disconnected and raised and the vessel may proceed under the power of the forward paddles alone.

Any suitable fender or guard may be let down at the sides of the vessel when docking her to prevent damage to the paddles and their connections.

This system of paddles may be applied to large vessels for ocean trade or to river and canal boats, and when used to propel canal-boats the banks of the canal will not be washed away, as there is very little splashing of water by the paddles.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In swinging paddles for vessels, two pairs of arms, D D, one pair pivoted to bearings at each side of the vessel, a horizontal beam, F, provided with a paddle and connected to each pair of arms D D, a bar, G, connected pivotally to each pair of arms, a driving-shaft, C, opposite cranks I I thereon, and rods H, connecting the bars G G with the cranks I, substantially as described, for the purposes set forth.

2. In swinging paddles for vessels, two pairs of arms, D D, pivoted to bearings at each side of the vessel, and one pair fore and one aft of a driving-shaft, beams F, provided with paddles and connected to each pair of arms D D, a bar, G, connected pivotally to each pair of arms, the driving-shaft C, cranks I I at opposite ends of the shaft, and a pair of rods, H H, connecting the bars G G of the fore and aft pairs of arms D D' at each side of the vessel with the cranks I I, substantially as described, for the purposes set forth.

3. In swinging paddles for vessels, the combination, with the paddle-beam F, hung from arms pivoted to the vessel, of a paddle, J, pivoted to beam F, pins K L, fitted in the beam and adapted to be lowered at opposite faces of the paddle, and provided with teeth *k l*, respectively, a pinion, M, journaled in beam F and meshing with the pin-teeth *k l*, and connections from the pins to the vessel's deck, substantially as specified, whereby when one pin is raised the other will be lowered, as and for the purposes herein set forth.

4. In swinging paddles for vessels, the combination, with the paddle-beam F, a paddle, J, pins K L, provided with teeth *k l*, and a pinion, M, meshing with said teeth, of a chain,

N, connected at opposite ends to the pins K L, a wheel, O, journaled to the vessel and to which the chain N is connected at *o*, and means for turning said wheel, substantially as herein set forth.

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5. In swinging paddles for vessels, the combination, with fore and aft paddle-beams F F at the same side of a vessel and hung from arms, as at D D, and a paddle, J, pivoted to each beam, of pins K L, fitted in the beam at opposite faces of each paddle, and provided with teeth *k l*, a pinion, M, meshing with the teeth of each pair of pins K L, wheels O O, chains N N, connected to said wheels at *o o* and at their ends to the paddle-pins, levers R R, fixed on the shafts of the fore and aft

wheels O O, and a bar, S, connecting the levers R R, substantially as described, for the purposes set forth.

6. In swinging paddles for vessels, the combination, with arms D D, hung from the vessel, of blocks E, pivoted to the arms or pins *e*, and a paddle-beam, F, pivoted to the blocks on pins *f*, and said blocks E having shoulders *e'*, which strike shoulders *d'* on the arms, to limit the inward swing of the paddles, substantially as herein set forth.

BEREND DOSCHER.

Witnesses:

I. MCP. WHEATON,
F. M. HEISSEN BUTTEL.