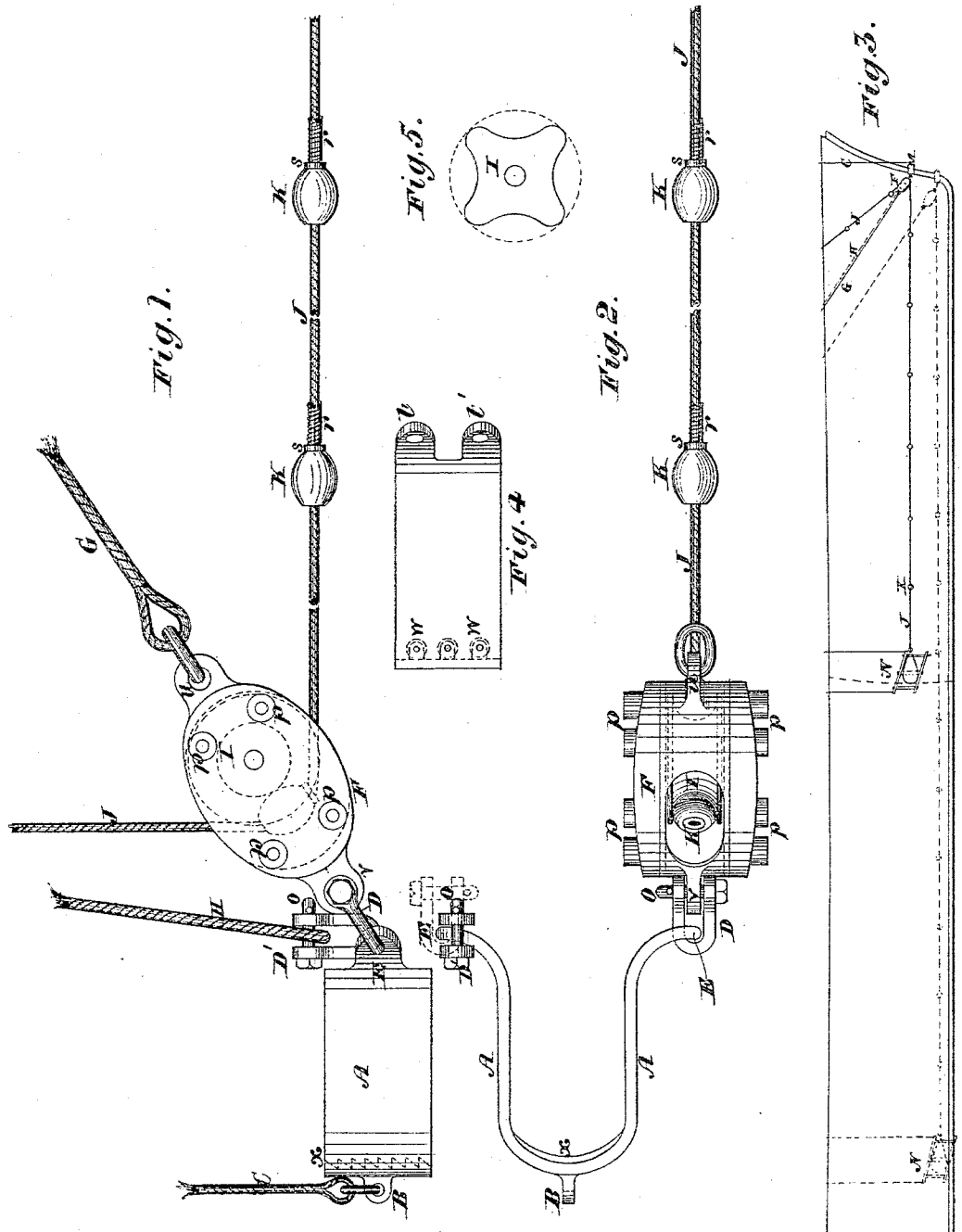
(No Model.)

# A. D. SPIER.

## TACKLE FOR WORKING SHIPS' CLEANING APPARATUS.

No. 318,814. Patented May 26, 1885.




Witnesses;
Edmund Stuart

Inventor
Alex^r Donaldson Spier
By Knight Bros Attys

N. PETERS, Photo-Lithographer, Washington, D. C.

# UNITED STATES PATENT OFFICE.

ALEXANDER D. SPIER, OF GLASGOW, COUNTY OF LANARK, SCOTLAND, ASSIGNOR OF TWO-TENTHS TO ARCHIBALD SCOTT BROWN, OF SAME PLACE, AND DAVID HUNTER, OF TROON, SCOTLAND.

## TACKLE FOR WORKING SHIPS' CLEANING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 318,814, dated May 26, 1885.

Application filed July 1, 1884. (No model.) Patented in England March 31, 1884, No. 5,717; in France August 9, 1884, No. 163,705; in Germany August 9, 1884, No. 31,491; in Belgium December 30, 1884, No. 67,376, and in Spain January 2, 1885, No. 4,724.

*To all whom it may concern:*

Be it known that I, ALEXANDER DONALDSON SPIER, a citizen of the United Kingdom of Great Britain and Ireland, residing at Glasgow, in the county of Lanark, Scotland, have invented new and useful improvements in tackle for working apparatus for cleaning, scrubbing, painting, and coating the submerged parts of ships or vessels afloat, (for which I have obtained Letters Patent of Great Britain bearing date March 31, 1884, and numbered 5,717;) and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the manufacture or art to which it relates to make and use the same.

This invention has for its object improvements in tackle employed in working apparatus for cleaning or scrubbing, painting, and coating the sides and bottoms of ships or vessels afloat, and of the class which is moved over the skin of the ship in an approximately vertical direction from the keel toward the deck, and vice versa.

The apparatus constituting the invention consists of a shoe, hook, or clamp removably placed on the cut-water of the ship or vessel and capable of being raised and lowered in position. To the rearward part of each side of the said shoe, hook, or clamp a shackle or ring or shackles or rings is or are connected, and to one of these shackles or rings, or to both of them, a block is secured by its forward end. To a shackle or ring in the rear end of the said block a line is attached, the opposite end of the line being made fast at any desired position on the deck or other part of the ship. A corresponding line is connected direct to the shackle or ring at the other side of the shoe, hook, or clamp, the said line being carried up the other side of the ship and similarly made fast on the deck or other part of the ship. By these two lines the shoe, hook, or clamp is held in position on the cut-water.

The cleaning or scrubbing or the painting or coating apparatus is connected to one end of a line or rope—preferably a wire rope—and the said rope is rove through the block above mentioned and carried to the deck or other part of the ship, where it is so secured as to be capable of being hauled in and paid out, as desired. At intervals apart on the said rope a series of bobbins, rollers, or knobs are placed loosely, but retained at proper distances apart by collars, disks, or washers, and enlargements on the rope. These bobbins, rollers, or knobs bear on the ship's side, and while tending to reduce friction they also keep the rope from chafing on and scraping the paint from or otherwise damaging the skin of the ship.

On the accompanying drawings, Figure 1 is a side elevation of the improved tackle. Fig. 2 is a plan thereof. Fig. 3 shows the application of the tackle to a cleaning or scrubbing or painting or coating apparatus operating on the side of a ship or vessel. Figs. 4 and 5 are details, hereinafter more particularly referred to.

The shoe, hook, or clamp, which embraces the cut-water, is marked A, and as seen more particularly at Fig. 2 the sides of it are, at their rearward parts, preferably curved outward to facilitate adjustment and to keep the other parts of the tackle out from the junction of the cut-water with the bow of the ship. At its front end the shoe, hook, or clamp has or may have an eye, B, formed on it and a line, C, connected thereto for the purpose of guiding the shoe in raising and lowering it to the desired position, and the interior front part of the shoe bearing on the front of the cut-water is or may be serrated, as indicated at *x*, Fig. 1, or it may be formed flat or plain or have one or a series of rollers, as indicated at *w*, Fig. 4.

At each of the curved rearward ends of the shoe, hook, or clamp A, an eye, E, is formed, and through the said eyes shackles D D′ are passed, as shown.

To the shackle D a sheaf or pulley-block, F, is connected by an eye, *v*, and to another eye, *u*, at the rearward end of the block a line, G, is secured. This line, as seen more particularly on Fig. 3, passes to the deck or other part of the ship, where it may be made fast in any desired manner and position.

To the shackle D′ (which on Fig. 1 is turned up slightly out of position for greater clearness in the reference) another line, H, is attached, the said line passing, as indicated by the dotted line H, Fig. 3, up the other side of the ship to the deck or other point, where it is also made fast in any desired manner and position. By these two lines G H the shoe, hook, or clamp A is held on the cut-water, and by paying them out or hauling them in its position on the cut-water is adjusted. Instead of connecting the said lines G H to an eye at the middle of the rear end at each side of the shoe, as shown, the shoe may be constructed with two eyes at each side, as illustrated at Fig. 4, in which case the line G is connected to the upper eye, *t*, at one side of the shoe and the line H to the corresponding eye at the opposite side, the block F being in that case connected to the lower eye, *t′*. It is, however, preferred to make the connections, as indicated at Fig. 1, in order to obviate any possibility of fouling the lines G H with the rope to which the cleaning, painting, or coating apparatus is secured.

In the block F a sheaf or pulley, I, is carried, on which runs the rope J of the cleaning or painting apparatus. This rope, which, as before explained, is preferably an iron or steel wire rope, has at intervals throughout its length a series of bobbins, rollers, or knobs, K, these being loose on the rope and held at the proper distances apart by disks or collars *s*, which are also loose, but maintained in position by winding a strand, *r*, of wire, cord, or equivalent materials behind them on the rope, or they may be so maintained by other suitable means. The bobbins, rollers, or knobs K in working with the tackle bear on the skin of the ship, so lessening friction, while at the same time they keep the rope J from chafing, thereby also preserving the rope and the paint or composition on the ship.

To allow the bobbins to pass through the block F without unduly increasing its size, the sheaf I is centered toward the rear end of the block, as shown. This sheaf may either be a simple flanged pulley, or it may be made as indicated at Fig. 5, or in other desired manner.

To keep the block itself from chafing on the side of the ship, it is furnished with leather, india-rubber, canvas, or other soft pads *p*, which can be removed as they become worn.

In working with the tackle one block F only may be used, in which case one cleaning or painting apparatus only can be operated, and therefore to render the position of the block easily interchangeable from one side of the ship to the other, the shackles D D′ are each made with a removable pin, *o*. It is, however, obvious that with a tackle constructed as described, a block F may be connected to each side of the shoe A in order to enable two cleaning or painting apparatuses to be worked at the same time—one on each side of the ship.

The operation of the tackle is as follows: The shoe, hook, or clamp A having been adjusted to the desired position on the cut-water, the lines G H are made fast, and the cleaning or painting apparatus N, Fig. 3, is then worked through a vertical arc over a breadth of the skin of the ship from the shoe as a center with a radius equal to the length of rope between the shoe and the apparatus N. When that breadth has been sufficiently operated on, a length of the rope J equal to the length of the actual cleaning or painting part of the apparatus N is paid out or hauled in, and the said apparatus again actuated as before.

It is found in practice that with a tackle constructed as described, the difficulty heretofore experienced in working with cleaning or painting apparatus of the class mentioned—namely, the difficulty of efficiently operating on the turn of the bilge, the flat of the bottom, the part near the keel, and also in the run at the stern of the ship—is overcome.

Having now fully described the invention, what I desire to claim and secure by Letters Patent is—

1. In a tackle for the purposes set forth, a shoe, hook, or clamp placed on the cut-water and having lines for raising and lowering it to position, in combination with a padded pulley or sheaf block or blocks and a rope or ropes having bobbins, rollers, or knobs, substantially as described.

2. In tackle for the purposes set forth, a shoe (to fit on the cut-water) formed with an eye or eyes in its outwardly-curved rear ends and with a guide-line eye in its forward bearing end, which is serrated, plain, or furnished with rollers, substantially as described.

3. In a tackle for the purpose set forth, a shoe, hook, or clamp placed upon and embracing the cut-water, as described, lines for raising and lowering it, and a pulley-block secured thereto, in combination with the implement to be manipulated, and a cable connected to said implement, passed through the block, and thence to the deck, substantially in the manner and for the purpose set forth.

4. In a tackle for the purpose set forth, the combination, with a shoe or clamp secured to the cut-water, the implement for cleaning the

sides of the ship, and means for raising and lowering it, of a cable connected to said implement and extending to the shoe or clamp on the cut-water and thence to the deck having loose bobbins or rollers journaled directly on said cable, (which forms their axis,) substantially in the manner and for the purpose set forth.

In witness whereof I have hereunto set my hand and seal this 17th day of June, 1884.

ALEXR. D. SPIER. [L. S.]

Witnesses:

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