

(No Model.)

A. W. BRYCE.

APPARATUS FOR CLEANING SHIPS' BOTTOMS.

No. 539,911.

Patented May 28, 1895.

Fig. 1.

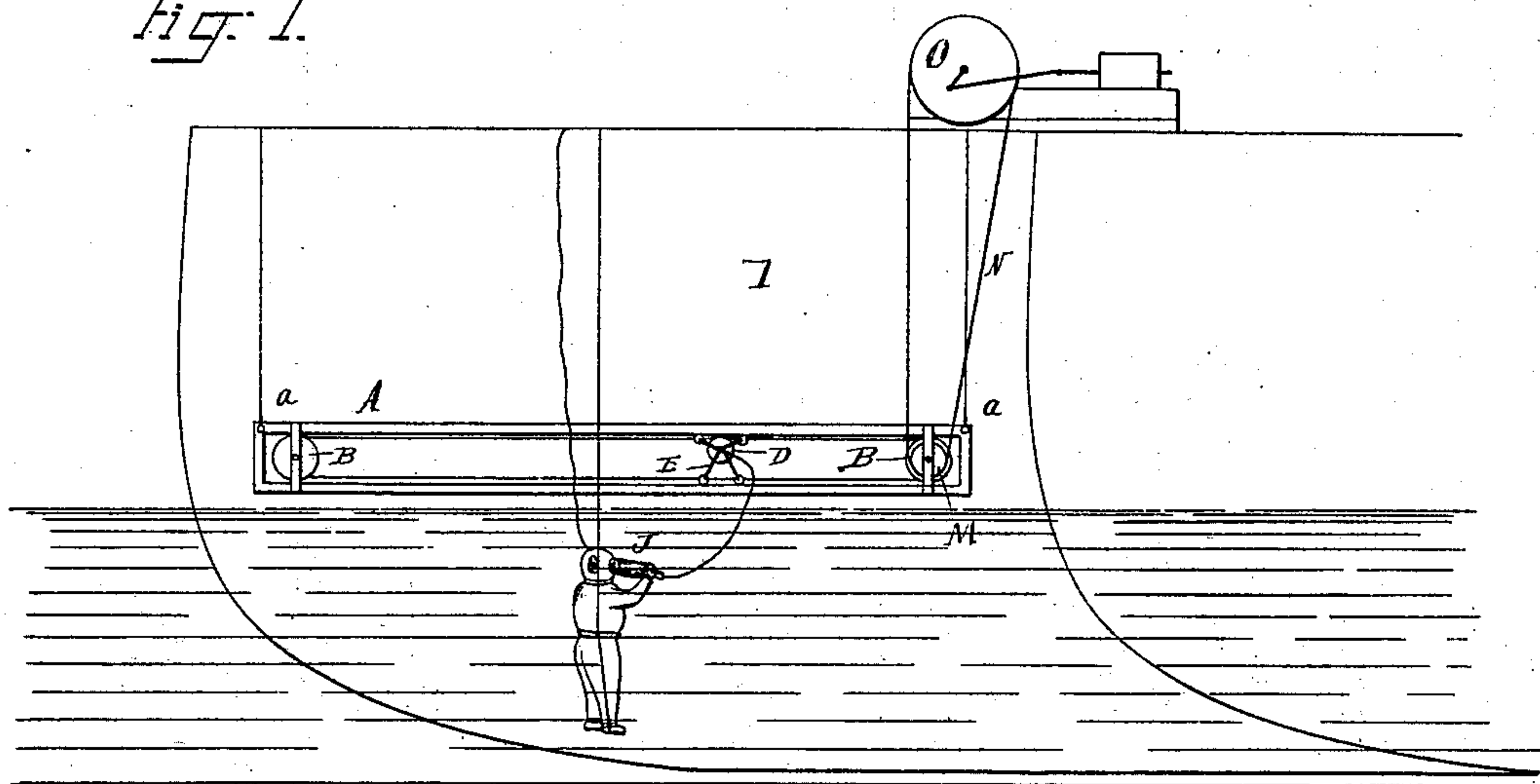


Fig. 2.

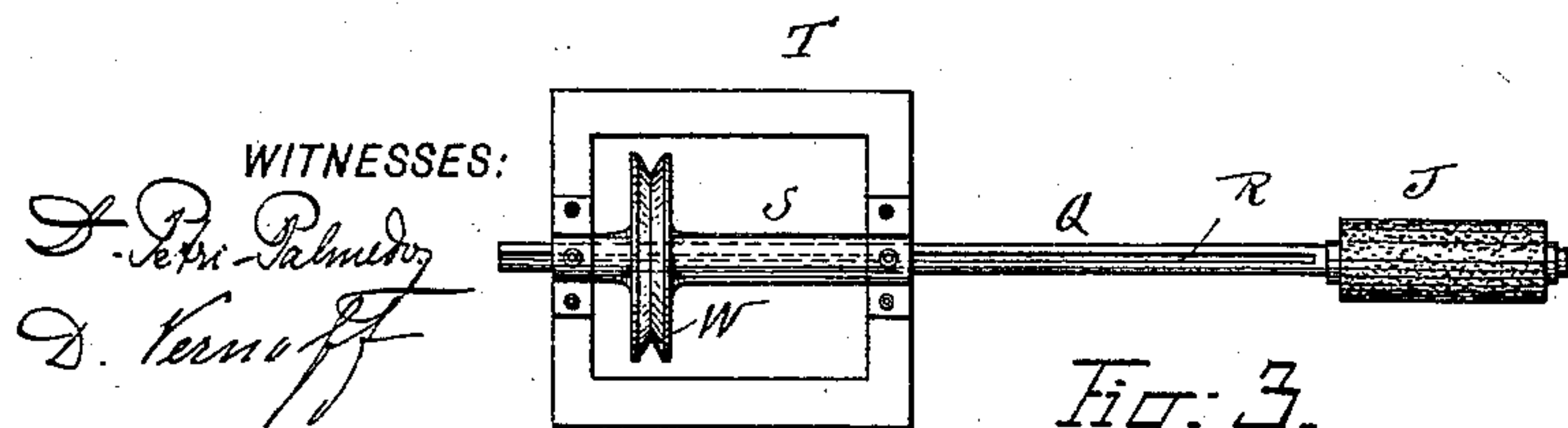
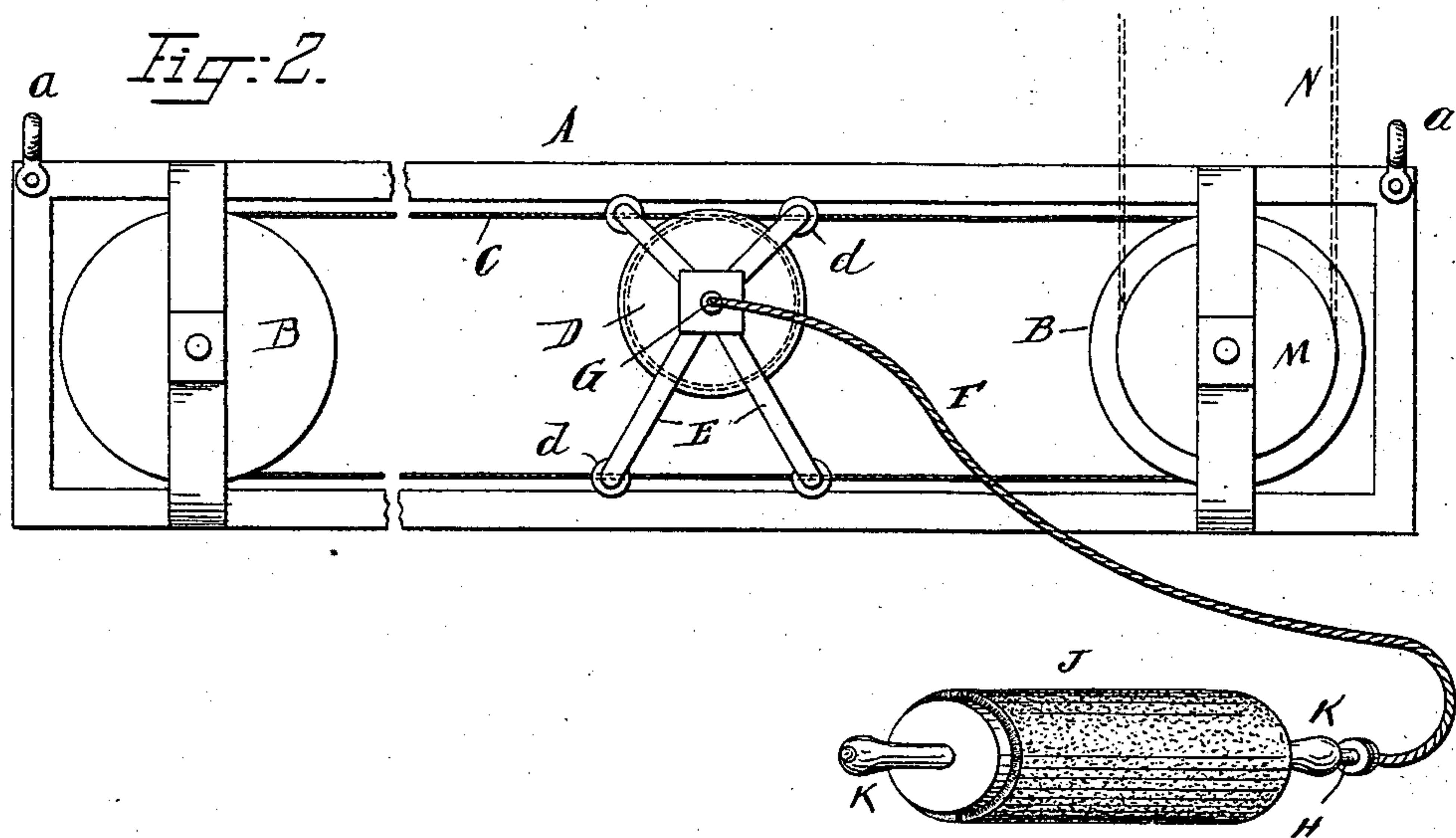


Fig. 3.

WITNESSES:

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## APPARATUS FOR CLEANING SHIPS' BOTTOMS.

SPECIFICATION forming part of Letters Patent No. 539,911, dated May 28, 1895.

Application filed July 17, 1894. Serial No. 517,791. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT W. BRYCE, a citizen of the United States, and a resident of the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Apparatus for Scraping and Cleaning Ships' Bottoms, of which the following is a specification.

The object of my invention is to provide a new and improved device for scraping and cleaning the bottoms of marine vessels, while the same are afloat so as to avoid the expense of docking them and the consequent loss of time, and which device permits of scraping and cleaning the vessels in such localities where no means are at hand for docking the vessels.

The invention consists in the combination with a frame held on the side on the vessel in such a manner that it can be raised and lowered, of power-transmitting devices on said frame, and a rotary brush or scraper driven from the power transmitting devices on said frame, which brush or scraper is applied by a diver on the immersed part of the hull to be cleaned.

The invention also consists in the construction and combination of parts and details, as will be fully described hereinafter, and finally pointed out in the claims.

In the accompanying drawings, forming a part of this specification, like letters of reference indicate like parts in all the figures.

Figure 1 is a side view of part of a marine vessel provided with my improved device for cleaning and scraping the hull. Fig. 2 is a side view of the power-transmitting frame, parts being broken out and the rotary brush being shown in perspective. Fig. 3 is a side view of a modified form of power-transmitting device.

The frame A which may be made of wood or metal, is from twenty to thirty feet long and is provided with eyes *a* at the ends, for attaching cables for suspending the frame at the side of a marine vessel I as shown in Fig. 1. This frame may be placed in either perpendicular, horizontal or oblique positions, as may be necessary. Within said frame, a grooved pulley, B, is mounted at each end, and over said pulleys an endless driving cable, C, passes; which also passes around a grooved

pulley, D, mounted to turn in a suitable frame, E, arranged between the top and bottom bars of the frame A, and provided with rollers, *d*, which run on the inner edges of the top and bottom bars of said frame A, and serve to guide the frame E and to reduce the friction. A flexible power transmitting shaft, F, of any well known construction, is fastened to one end of the shaft G, of the pulley D, so that when the pulley D is rotated the said flexible shaft F is also rotated.

The shaft H of a cylindrical brush J is connected with the free end of the flexible shaft F, so that said brush and its shaft can be rotated by means of the said flexible shaft F.

To permit of holding, applying and guiding the brush shaft while the same is being rotated a handle piece K is mounted loosely on each end of the brush shaft.

A belt pulley, M, is attached to one of the pulleys, B, and over the same, a driving belt or cable N passes, which also passes over a pulley, O, on the deck of the vessel; which pulley, O, can be driven direct from a motor, as shown in Fig. 1, or can be driven in any other suitable manner.

By means of the belt or cable N, the pulleys B and the cable C are driven, and said cable C rotates the pulley D, from which in turn, by means of the flexible shaft, the brush J, is rotated.

A diver holds the rotating brush J against the sides of the vessel I below the surface and thus scrapes off all weeds, barnacles, &c. As the diver moves in the direction of the length of the vessel he draws the frame E along, as the same is mounted to slide in the frame A. The pulley D is rotated in all positions of the frame E, as the driving cable C passes around the pulley D. The diver can thus clean the vessel for a distance greater than the length of the frame A before said frame A need be shifted in the direction of the length of the vessel.

The frame A is suspended directly above the surface of the water so as to permit the diver to operate upon the lowest parts of the hull without requiring a flexible shaft of undue length.

The brush may have bristles of copper or steel wire, cane, rattan or whale bone; and said bristles may have greater or less length



according to the nature of the material to be scraped from the hull.

In place of using the frame A, as described, and a flexible shaft for rotating the brush, the brush can be fixed on the end of a shaft Q, provided with a feather, R, and mounted to slide lengthwise in a sleeve, S, mounted in a frame T and carrying a belt pulley W over which a driving belt or pulley is passed from some source of power on the deck or other part of the vessel. The sleeve S has a longitudinal groove through which the feather on the shaft Q can slide.

The operator moves the brush and shaft in the direction of the length of the latter according to the desired position of the brush and can thus also reach all parts of the hull the frame T being supported higher or lower as circumstances may require on the side of the hull.

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

1. In a device for scraping and cleaning the

immersed parts of vessels' hulls, the combination with a frame, of power-transmitting devices, mounted to move lengthwise in said frame, a rotary brush or scraper, and means for operating said brush or scraper from said power-transmitting devices, in the frame, substantially as set forth.

2. The combination with a marine vessel of a frame to be held adjustably on the side of the same, power-transmitting devices in said frame, means for operating said power-transmitting devices in the frame from a source of power on the vessel, a rotary brush or scraper, and means for operating said brush or scraper from the power-transmitting devices on the frame, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 22d day of May, 1894.

ALBERT W. BRYCE.

Witnesses:

OSCAR F. GUNZ,  
D. PETIS-PALMED.