(No Model.)

T. FEITH.

PROPELLER SHAFT.

No. 306,472. Patented Oct. 14, 1884.

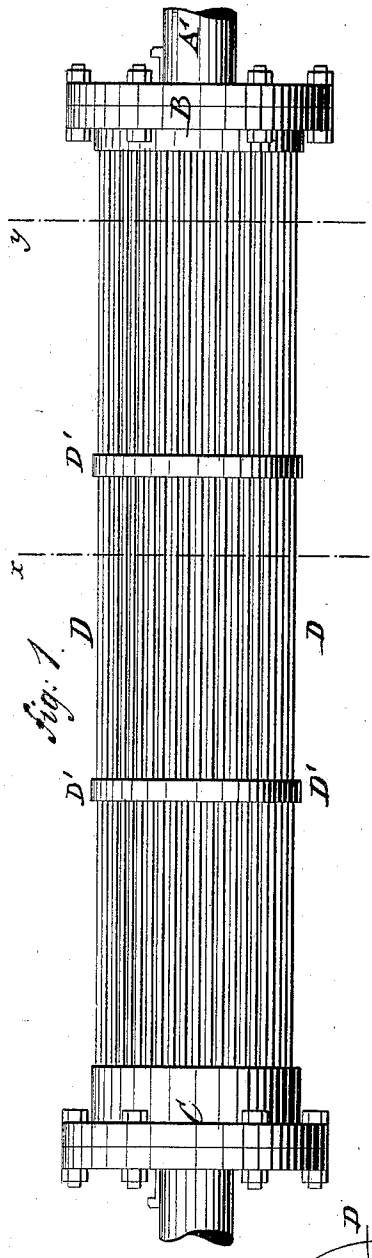

Fig. 1.

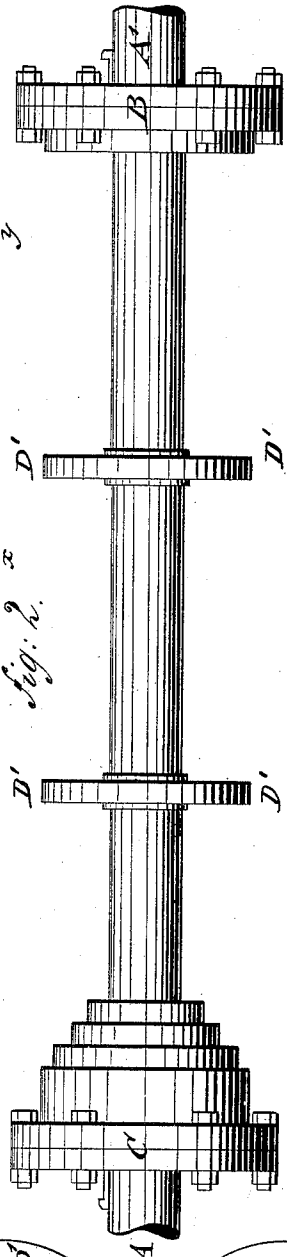

Fig. 2.

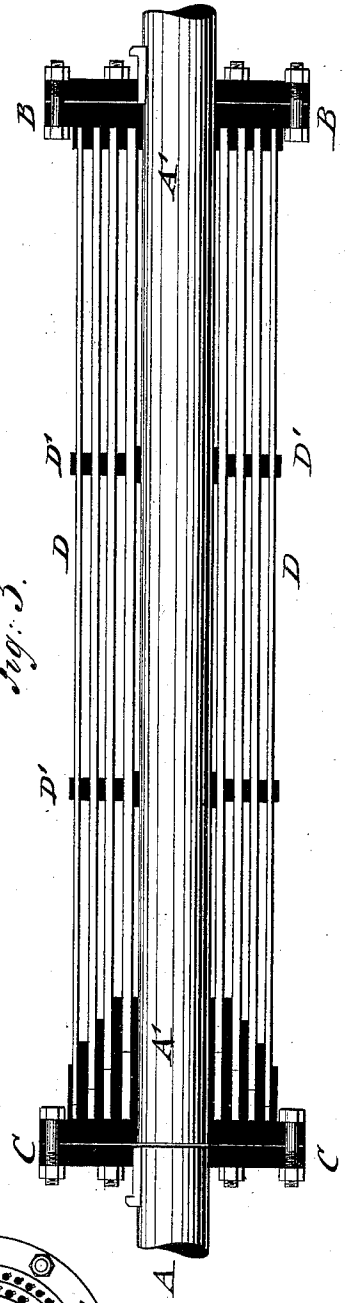

Fig. 3.

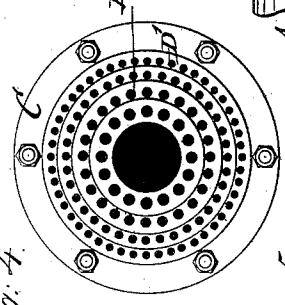

Fig. 4.

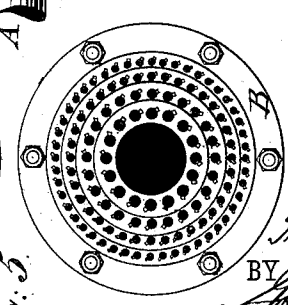

Fig. 5.

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UNITED STATES PATENT OFFICE.

THEODORE FEITH, OF CANARSIE, NEW YORK.

PROPELLER-SHAFT.

SPECIFICATION forming part of Letters Patent No. 306,472, dated October 14, 1884.

Application filed March 13, 1884. (No model.)

To all whom it may concern:

Be it known that I, THEODORE FEITH, of Canarsie, Kings county, State of New York, have invented certain new and useful Improvements in Propeller-Shafts, of which the following is a specification.

This invention has reference to an improved torsional coupling for propeller-shafts of steamships, by which the injurious strains exerted by the propeller upon the engine when the former is raised above the water or submerged are avoided, and thereby the danger of breaking the propeller-shaft diminished and a more regular running of the engine obtained.

The invention consists of a coupling for propeller-shafts, composed of a series of longitudinal rods that are arranged in concentric circles around the shaft, said rods being splined at one end into a fixed disk secured to one shaft-section and loosely guided at their opposite ends in sockets attached to a fixed disk of the other shaft-section. The longitudinal rods are guided at intermediate points by loose perforated disks. The torsional rods diminish in thickness from the inner toward the outer circle of rods, and serve to neutralize the torsional strains of the screw on the shaft and engine.

In the accompanying drawings, Figure 1 represents a side elevation of my improved coupling for propeller-shafts. Fig. 2 is a side view of the shaft with the torsion-rods removed; Fig. 3, a vertical longitudinal section of the coupling, and Figs. 4 and 5 are vertical transverse sections on lines *x x* and *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

A A′ represent the sections of a propeller-shaft for steamships.

B is a socket-disk that is rigidly keyed to the shaft-section A′, and provided with a series of socket-holes that are arranged in concentric circles around the shaft-section A′.

To the shaft-section A is applied a similar socket-disk, C, the concentric socket-holes of which are respectively arranged in step-shaped offsets of increasing length, as shown in Figs. 2 and 3. The socket-disks B and C are constructed of two disks—a plain disk and a disk with socket-holes—said disks being rigidly bolted to each other. The socket-disks B and C are connected by a series of torsional-rods, D, which are arranged in circles around the shaft-sections, said torsional rods diminishing gradually from the inner circle toward the outer circle, as shown clearly in cross-section in Figs. 4 and 5. Both ends of the torsional rods D are splined into the socket-holes of the disks B and C, so as to be rigidly secured thereto and prevented from turning axially in their sockets, as shown in Fig. 5. The sockets of the disk C are made of such length that the rods D have sufficient play to slide longitudinally therein. The torsional rods D are supported at intermediate points between the disks B and C by perforated disks D′, the same being placed loosely on the shaft-section A′, as shown in Figs. 2 and 3, so that they can follow the torsional shifting motion of the rods D, caused by the propeller. When the propeller is in motion, it exerts a torsional strain upon the system of rods D, whereby the ends of the same that are splined to the socket-holes of the disk C are moved longitudinally in their sockets in proportion to the degree of torsion and the distance of the rods from the center of the shaft. As soon as a part or the whole of the propeller rises above the water the torsional strain of the rods D acts upon the shaft-section A, and returns the same and the propeller into normal position. At the moment when the screw is resubmerged the torsional strain upon the system of rods D is re-established by the resistance of the water to the propeller, and thus by the alternating strain on the torsional rods and the relaxation of the same the propeller-shaft protected against the torsional strain and vibrations by which the breaking of the shaft may occur. The engine is thereby kept at regular speed, as it is not affected by the variable degrees of resistance exerted on the screw.

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

1. The combination, with the sections of a propeller-shaft having socket-disks keyed thereto, of torsional rods which are splined at both ends to said socket-disks, but adapted to slide in longitudinal direction in the sockets of one disk, substantially as set forth.

2. The combination of the shaft-sections of a propeller-shaft, each having a fixed socket-disk, with a system of torsional rods splined to said disks, said rods being arranged in con-

centric circles around the shaft and diminishing in thickness from the inner to the outer circle, substantially as set forth.

3. The combination of the sections A A′ of a propeller-shaft, having fixed socket-disks C and B, torsional rods D, splined at both ends to said socket-disks, and intermediate perforated guide-disks, D′, applied loosely to the shaft-sections, substantially as set forth.

4. The combination of the sections A A′ of a propeller-shaft, socket-disks C and B, the socket-disk C having longer sockets, torsional rods D, splined to said socket-disks, and arranged in concentrical circles around the shaft-sections, said rods diminishing in thickness from the inner toward the outer circle, and loose intermediate guide-disks, D′, substantially as specified.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

THEODORE FEITH.

Witnesses:
PAUL GOEPEL,
SIDNEY MANN.