

(No Model.)

J. C. & S. LAKE.
STEERING GEAR.

No. 464,304.

Patented Dec. 1, 1891.

Fig. 1.

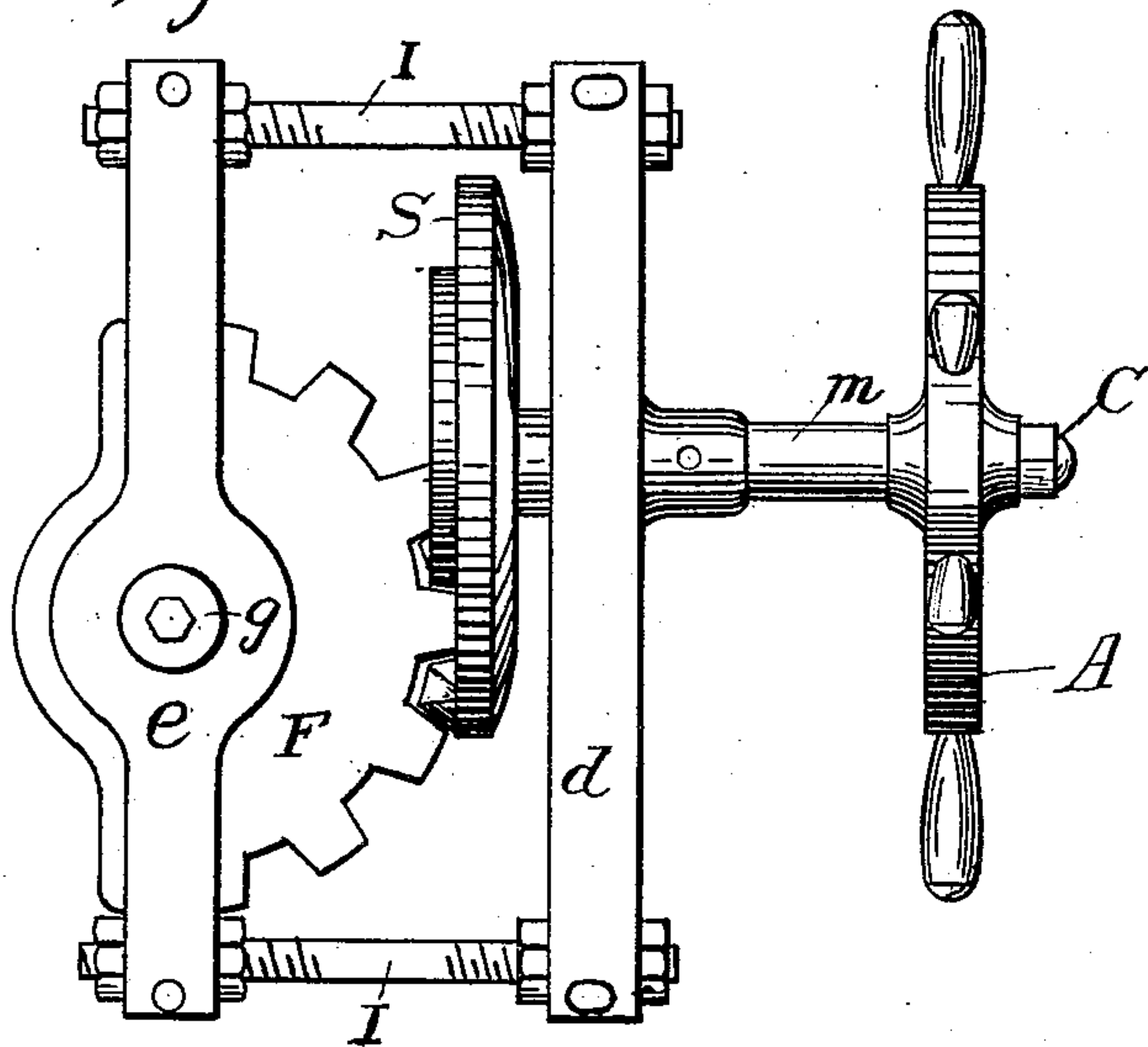


Fig. 2.

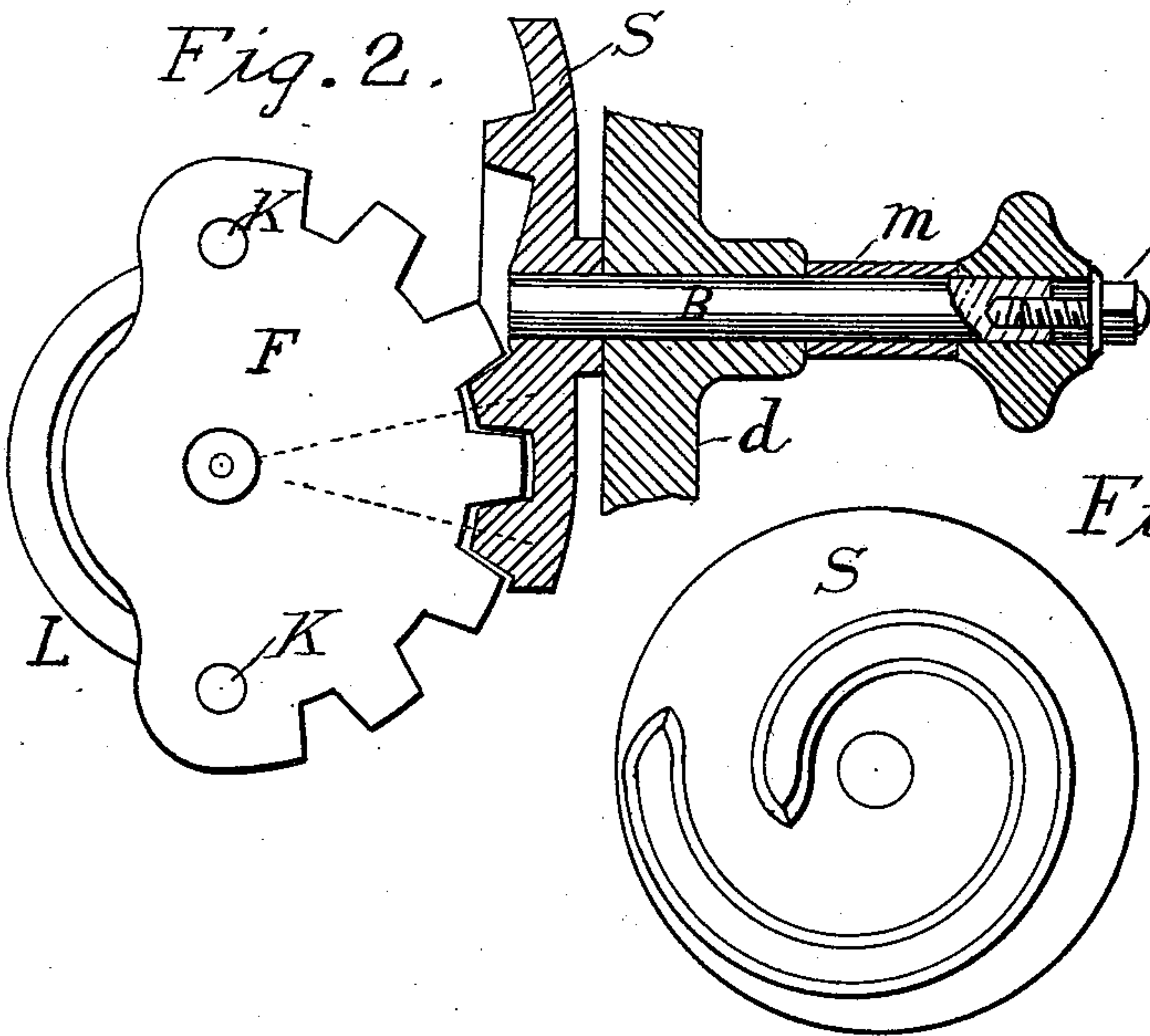


Fig. 4.

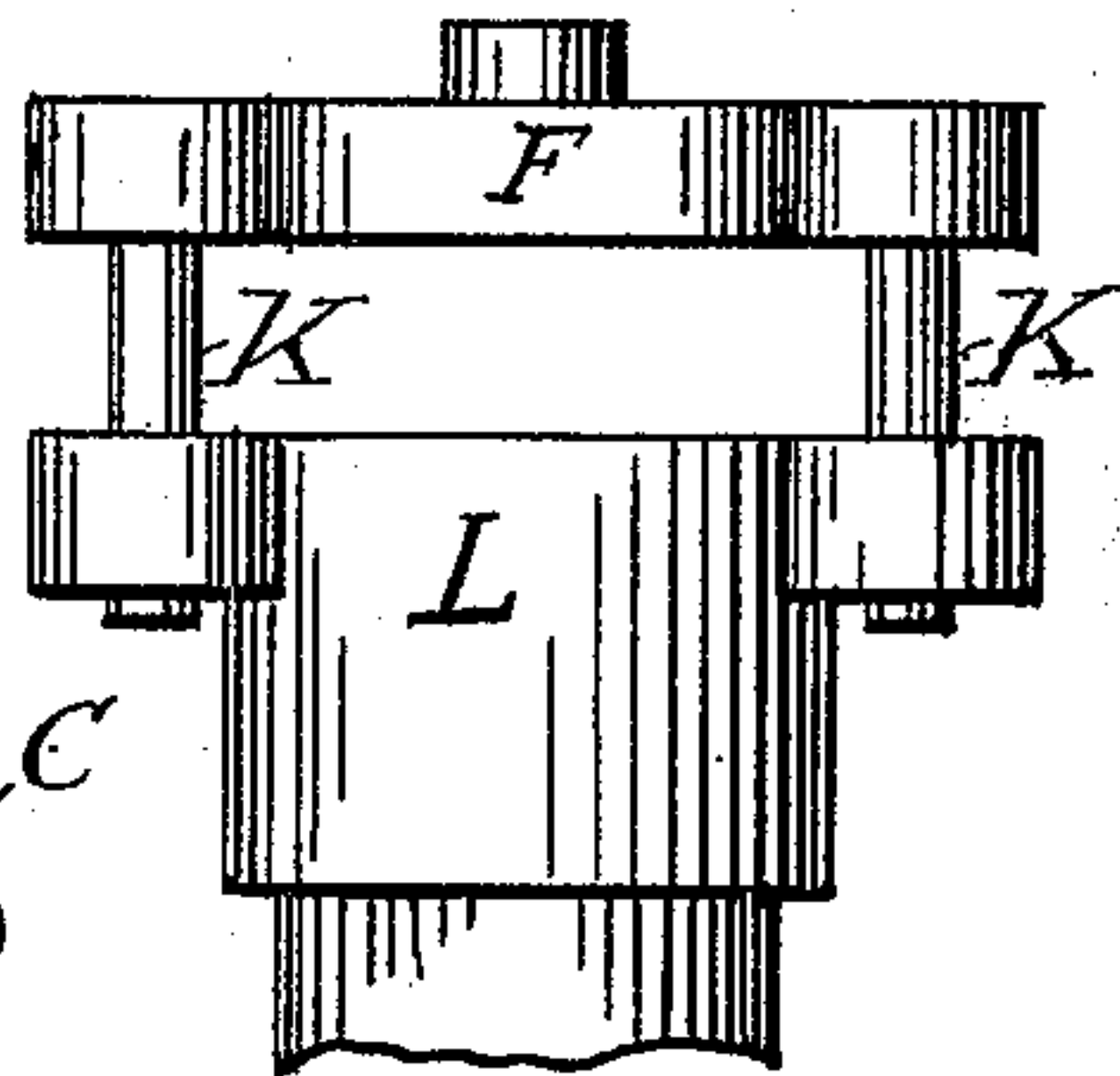
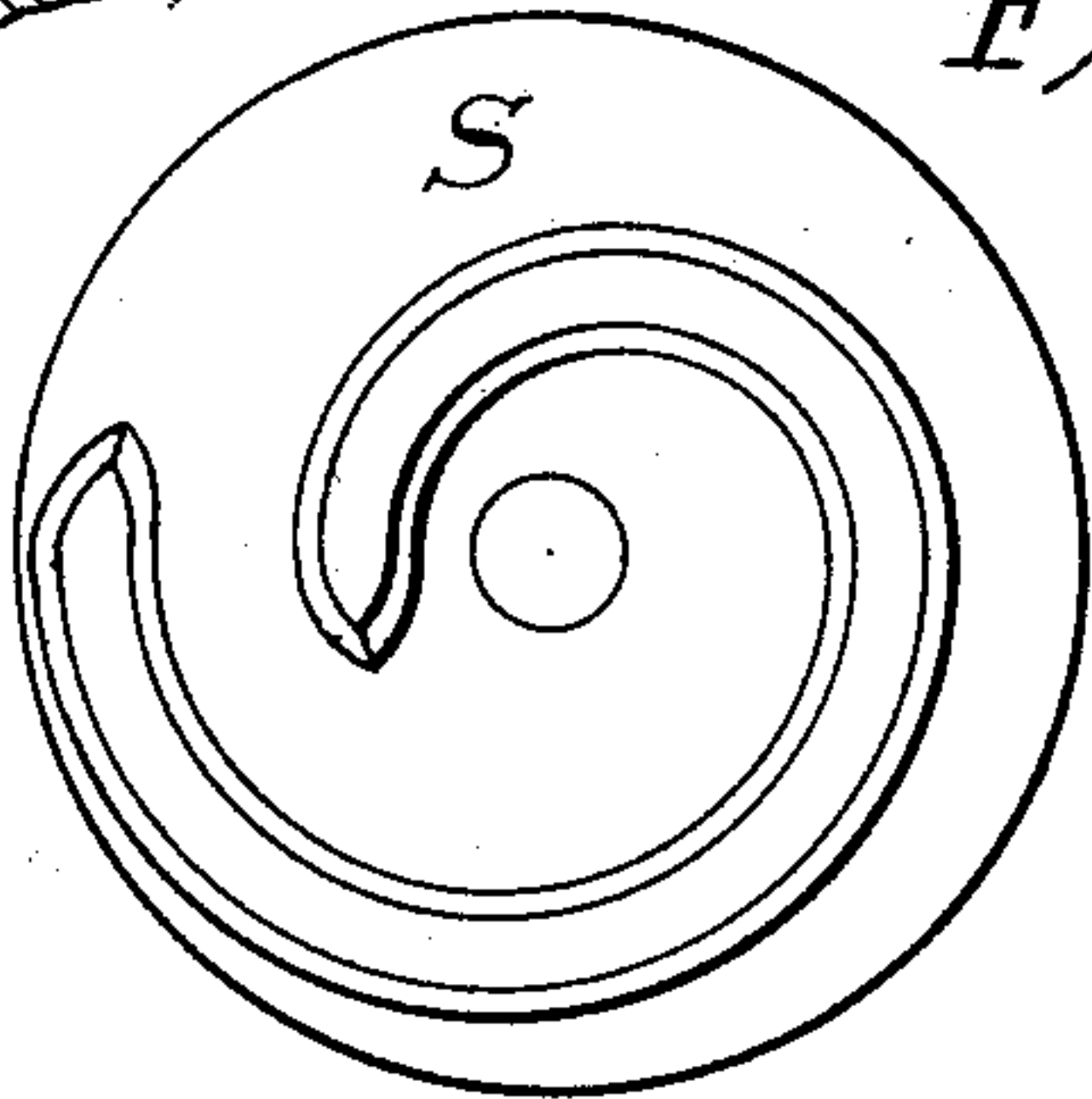


Fig. 3.



WITNESSES:

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JOHN CHRISTOPHER LAKE AND SIMON LAKE, OF BALTIMORE, MARYLAND.

STEERING-GEAR.

SPECIFICATION forming part of Letters Patent No. 464,304, dated December 1, 1891.

Application filed December 15, 1890. Serial No. 374,841. (No model.)

To all whom it may concern:

Be it known that we, JOHN CHRISTOPHER LAKE and SIMON LAKE, citizens of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Steering-Gear, of which the following is a specification.

Our invention relates to improvements in steering-gear, the novelty of which will be understood from the following description and claims, taken in connection with the accompanying drawings, in which—

Figure 1 is a plan view of our steering-gear. Fig. 2 is also a part plan view of the steerer, showing it partly in section. Fig. 3 is an end elevation of the disk, showing the spiral thread on same. Fig. 4 is an elevation of the rudder-cap and gear-wheel.

Similar letters refer to similar parts throughout the several views.

Reference being had to the drawings, A is the hand-wheel; B, the shaft on which the hand-wheel is secured on one end and the disk at the opposite end, the shaft being supported in the frame-piece *d* and capable of being revolved in a journal formed in the same.

e is the after frame-piece, which acts as a guide for the gear-wheel F through the medium of a lug or boss on the top and in the center of gear-wheel F, which is extended through a hole in the frame-piece *e*, the gear-wheel not being permitted to drop from position by the washer G, which is fastened to the gear-wheel by a cap-screw, bolt, or other suitable means.

In Fig. 2 it will be noticed that the center of the spiral thread on the disk S converges toward a given point, which in this instance is at the center of revolution of its gear-wheel F. The disk is also curved, the curvature in mid-section being scribed from the same point, the object of which is to overcome the rolling motion customary when the thread is placed on a flat disk, the thread on disk S constantly changing its lines, so that when the thread and teeth on the gear-wheel are in mesh their surfaces fit their full depth.

II are strut-bolts, which hold the frame-work in position, and also used to take up lost motion, which will result from the wear of parts. It will be noticed that the spiral thread

is made tapering and the teeth on gear-wheel F are also made tapering to correspond with it, and it is therefore obvious that by loosening either of the inner nuts on strut-bolts II and tightening the outer ones it will pull the frame-pieces *e* and *d* together and take up the lost motion.

k k are pins fastened to gear-wheel F, which extend through lugs on the rudder-cap L, the purpose of which is to allow for the wear of rudder-irons and knock up of the rudder.

m is a sleeve which fits over the shaft between the frame-piece *d* and hub of the hand-wheel H to prevent the end play of shaft, and the wear on sleeve *m* is taken up by a cap-screw C, screwed into the end of shaft, causing the hand-wheel to slide on shaft when it becomes necessary to compensate for the end wear. The wheel is kept from revolving on shaft by a straight key, which is the usual method.

What we claim, and desire to secure by Letters Patent, is—

1. In a steering-gear, a gear-wheel connected to the rudder-head, and a guide or frame piece, in combination with a converging spiral-threaded disk secured to the steering-wheel shaft and capable of being revolved in a journal formed in the forward frame-piece and strut-bolts connecting the forward and after frame-pieces, whereby the gear-wheel and spiral-threaded disk may be brought closer in contact to compensate for wear, substantially as described.

2. The combination of a steering-wheel shaft with a constantly-converging spiral-threaded disk secured thereon, a gear-wheel connected to the rudder-head by pins *k k*, and frame-pieces *e* and *d* for supporting same with bolts II for taking up the wear, together with sleeve *m*, over steering-wheel shaft and cap-screw *c* in end of same, substantially as described.

In testimony that we claim the foregoing we have hereunto set our hands this 11th day of December, 1890.

J. CHRISTOPHER LAKE.
SIMON LAKE.

Witnesses:

THOS. KELL BRADFORD,
H. K. BROWN.