

J.W. Strange's Improv'd Ship Steering Apparatus

[98.]

No. 119,425.

Patented Sep. 26, 1871.

Fig. 1

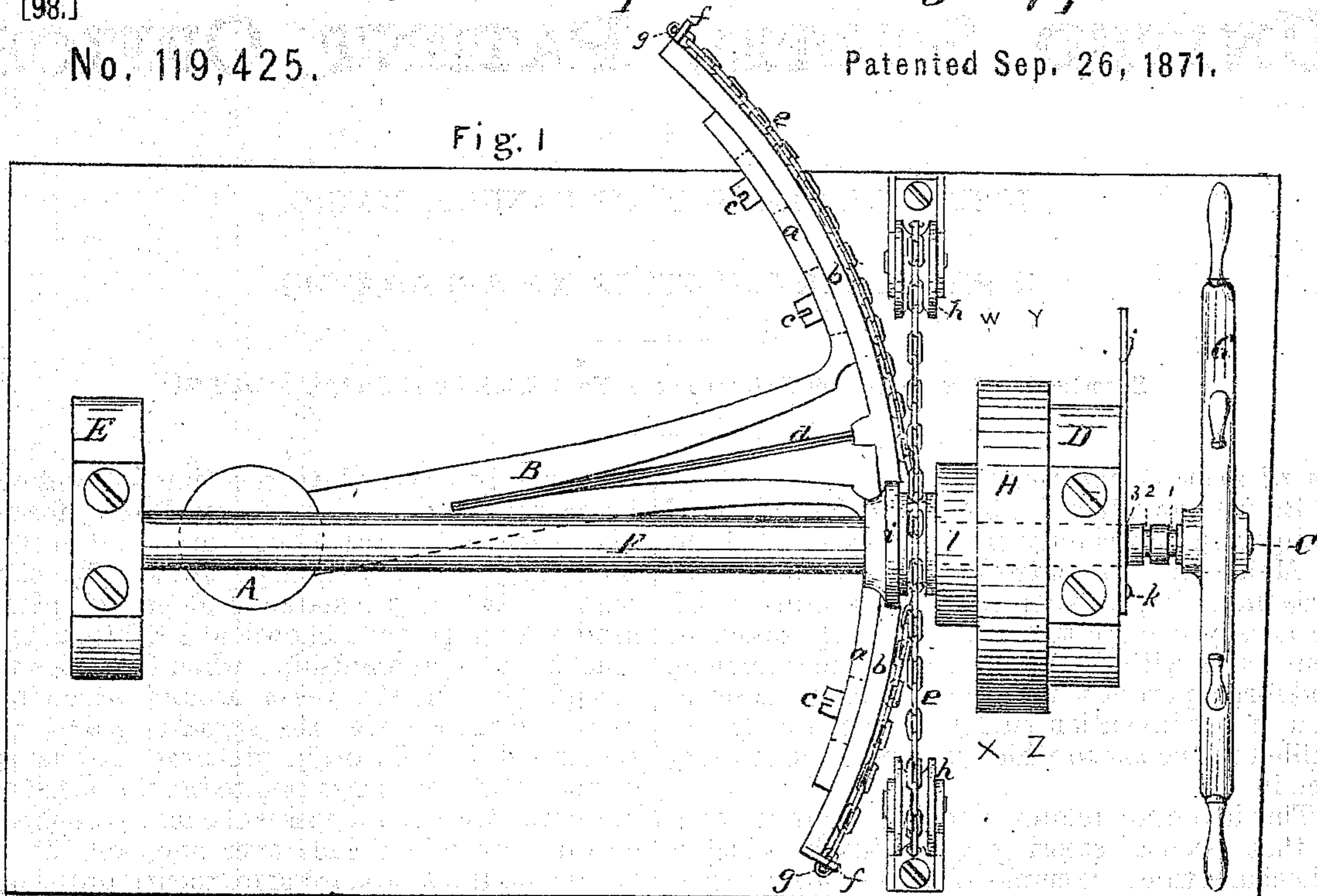


Fig. 3

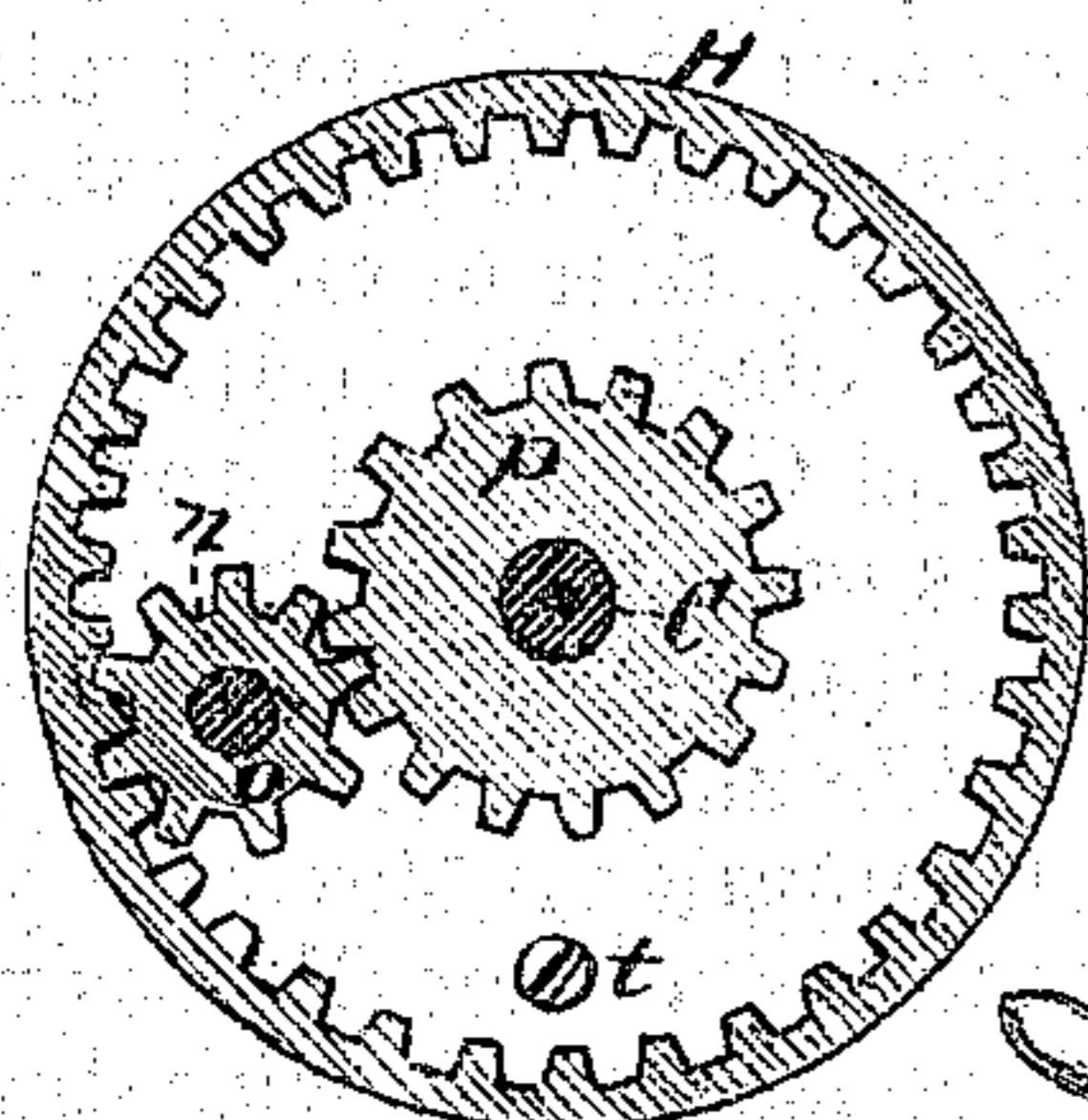


Fig. 2

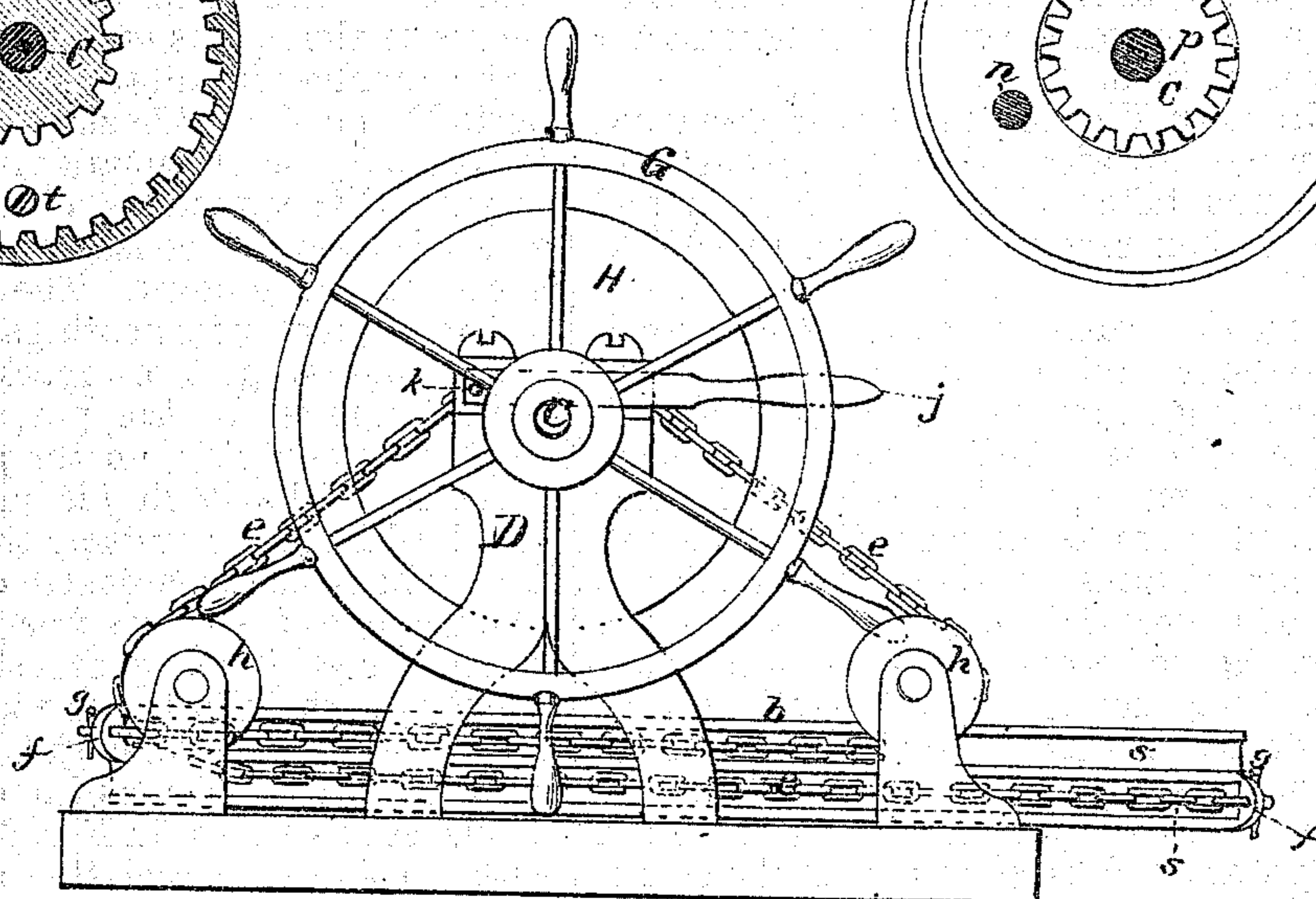
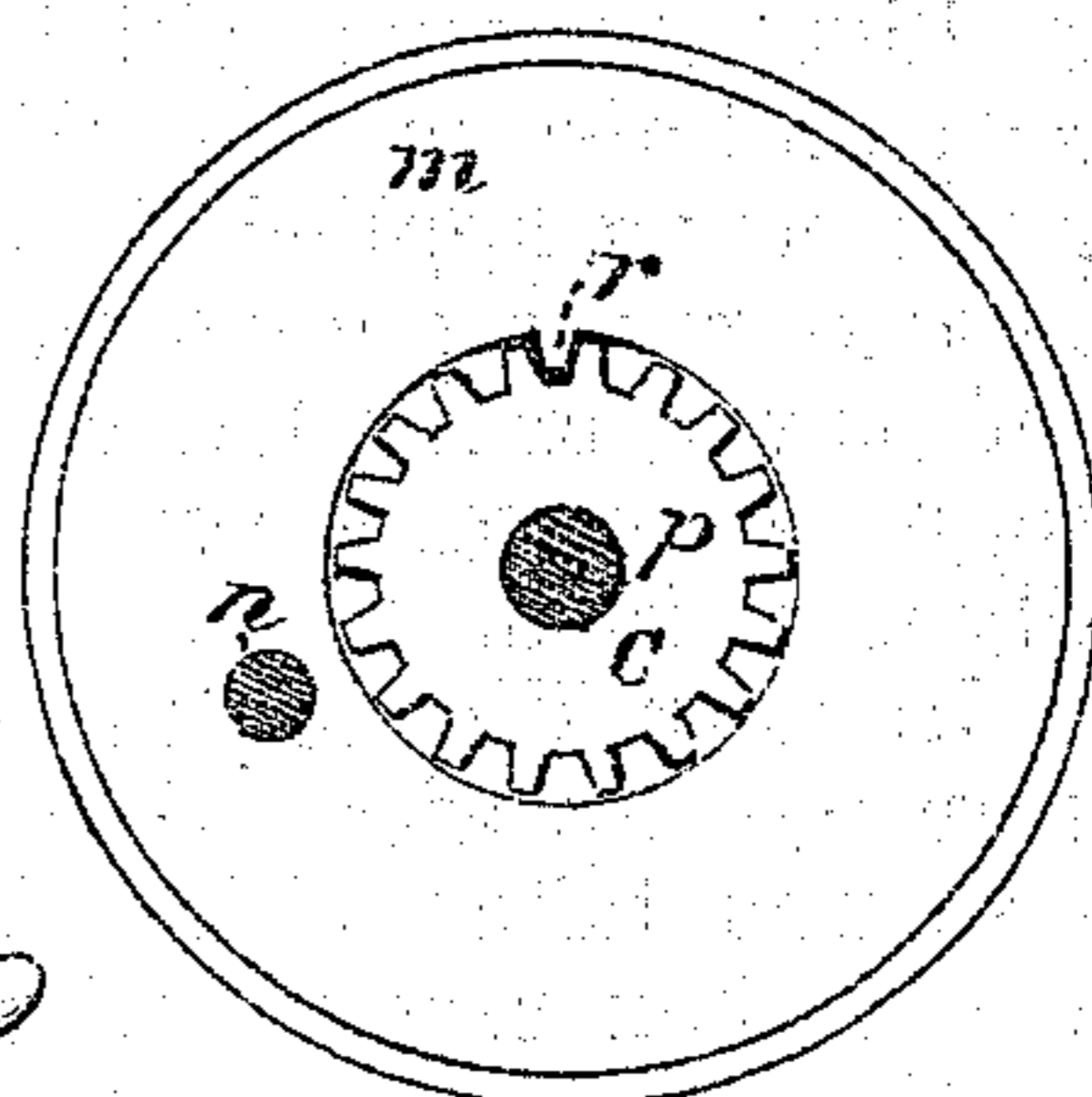


Fig. 4



Witnesses.

Herbert J. Whitman.
John H. Hadleigh.

Inventor.

Joseph W. Strange
By T. W. Porter Atty

UNITED STATES PATENT OFFICE.

JOSEPH W. STRANGE, OF BANGOR, MAINE.

IMPROVEMENT IN STEERING APPARATUS.

Specification forming part of Letters Patent No. 119,425, dated September 26, 1871.

To all whom it may concern:

Be it known that I, JOSEPH W. STRANGE, of Bangor, in the county of Penobscot and State of Maine, have invented a new and useful Improvement in Ships' Steering Apparatus; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to which it appertains to practice it.

This invention relates to certain improvements in that class of steering apparatus in which a wheel and tiller are employed; and the invention consists in a peculiarly-arranged spring, which relieves shocks in heavy weather; also in the combination of the section of a grooved wheel with the tiller, and upon which the tiller-chain is secured; and also in a peculiar means of multiplying the power applied at the tiller, when desired; as also in the device employed for such change of power, or for locking the tiller when laying to, or whenever desired, as is hereinafter more fully explained.

In the drawing, Figure 1 is a top or plan view. Fig. 2 is an end elevation. Fig. 3 is a transverse vertical section taken on line Y Z, Fig. 1; and Fig. 4 is a similar section taken on line W X, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

In the drawing, A represents the rudder-head, and B is the tiller, attached to the rudder-head in any desired manner. The tiller forks near the rudder, which forks, at their front ends, terminate in curved arms, as shown at *a a*, Fig. 1. A section of a grooved ring, *b b*, is secured to the convex face of sections *a a* by screws *c c*, which pass freely through slots in sections *a*, as shown by dotted lines, and are rigidly secured in section *b*. A strong spring, shown at *d*, is secured at one end between the forks of the tiller, while its forward end is socketed in the center of section *b*. Thus any violent or sudden motion of the water acting upon the rudder direct, or any force acting through the steering apparatus, as hereinafter set forth, would be modified by the action of spring *d*, which would be bent to the extent of its scope between the arms of the tiller before the shock could act direct upon the apparatus. The ends of tiller-chain *e e* are,

respectively, secured to the ends of section *b* by passing through an ear marked *f*, formed upon each end of the section, and held in place by a pin, *g*, inserted through a link. The chain passes from these fastenings along the face of section *b* in grooves, shown at *s s*, Fig. 2, until reaching a point amidships, when they pass in a straight line to sheaves *h*, around which they pass, and thence over the sprocket-gear *i* upon the wheel-shaft C; or, in other words, one end of the chain being fastened to the starboard end of section *b*, the chain passes thence to the sheave on the port side, thence over sprocket *i* to the sheave on the starboard side, thence to the port end of section *b*, where the end is secured, as before described. The brackets in which sheaves *h* are held are arranged, in any desirable manner, to admit of adjustment so as to maintain the desired degree of tension upon the chain, and, if necessary, a shield or other device may be employed to hold the chain in contact with the sprocket. The wheel G, secured upon shaft C, serves as the means of rotating the shaft, which latter revolves in suitable bearings upon the supports D and E, as shown. The devices employed for the purpose of imparting the rotary motion of shaft C to sprocket *i*, either direct or with increased power, and consequently with diminished speed, are as follows: The shaft C has a free end movement in its bearings, and is formed with three annular grooves, marked 1 2 3, in which the latch *j* fits, for the purpose of locking the shaft from end play, for the purpose hereinafter specified. The latch *j* is pivoted at *k* to the standard D, and by raising the free end the shaft C may be instantly adjusted endwise, as desired. The sprocket *i* revolves freely on the shaft, and is held in position by the sleeve F, which fits loosely on the shaft. A toothed pinion, P, is rigidly secured to the shaft C and revolves therewith, within the drums *l* and H. The drum H is formed, as shown in Fig. 3, as an inside gear, with one end open and the other closed. This drum is secured to standard D by a screw marked *t*, Fig. 3, which passes through the end of the drum into the standard. The drum *l* is secured to sprocket *i*, or formed as a part thereof. The interior of this drum is provided with one or more teeth, as shown at *r*, Fig. 4, while a flange, *m*, formed upon it, serves to close the open end of drum H. A stud, *n*, secured in this flange, is

the axis of pinion *o*. When it is desired to operate the wheel direct, the shaft is slid aft so that the latch *j* is in groove 1, when the fixed pinion *P* will be in drum *l*, and, as it will be locked to the sprocket by tooth *r*, before described, the sprocket will be rotated directly by the rotation of gear *P* as the wheel is rotated. If greater power is required to work the tiller, the shaft *C* will be moved forward and the latch inserted in groove 3, as shown, when gear *P* will be engaged with pinion *o*; and as the rotation of gear *P* will rotate pinion *o* upon stud *n*, which latter is secured in the flange of drum *l*, as before stated, therefore the sprocket will be revolved only as often as pinion *o* shall have traversed the entire circuit of the internal gear of drum *H*, and the increase of power will be in the ratio of diameters of gears *P* and *H*. If at any time it be de-

sired to "lash the wheel," as it is termed, then the shaft is locked by placing the latch in groove 2, thereby leaving the teeth of pinion *P* engaged with tooth *r* in drum *l* and pinion *o*, so that the wheel will be thereby locked, and the tiller will remain in such position as it occupied when the locking was thus effected.

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

The combination of the steering-wheel, tiller, and mechanism by which to produce a geared or direct movement, or to lock the wheel, substantially as described and shown.

JOSEPH W. STRANGE.

Witnesses:

H. L. MITCHELL,

H. B. FARNHAM.