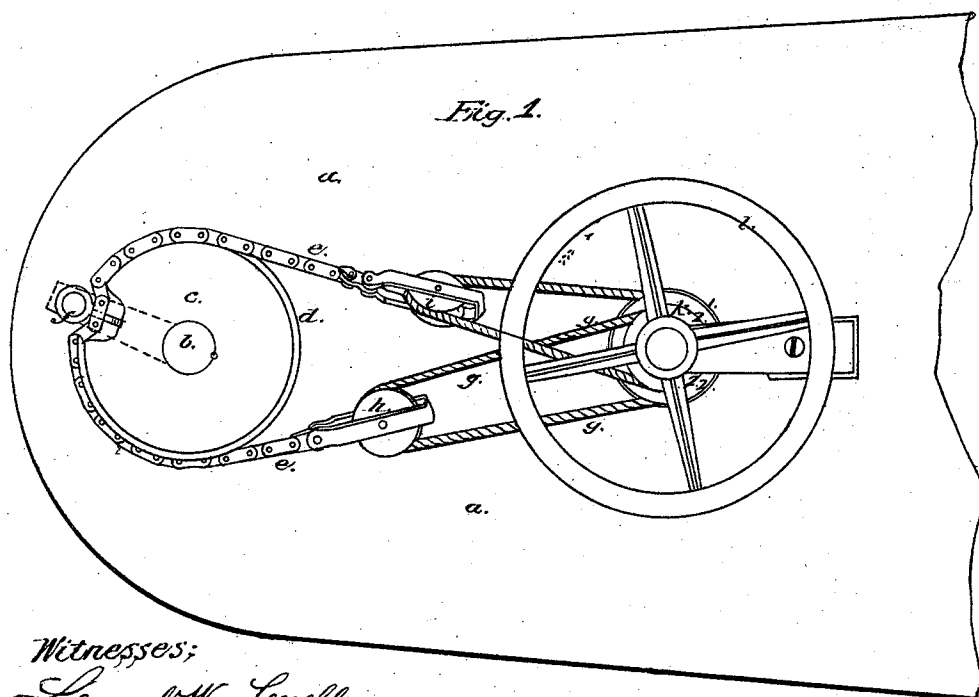
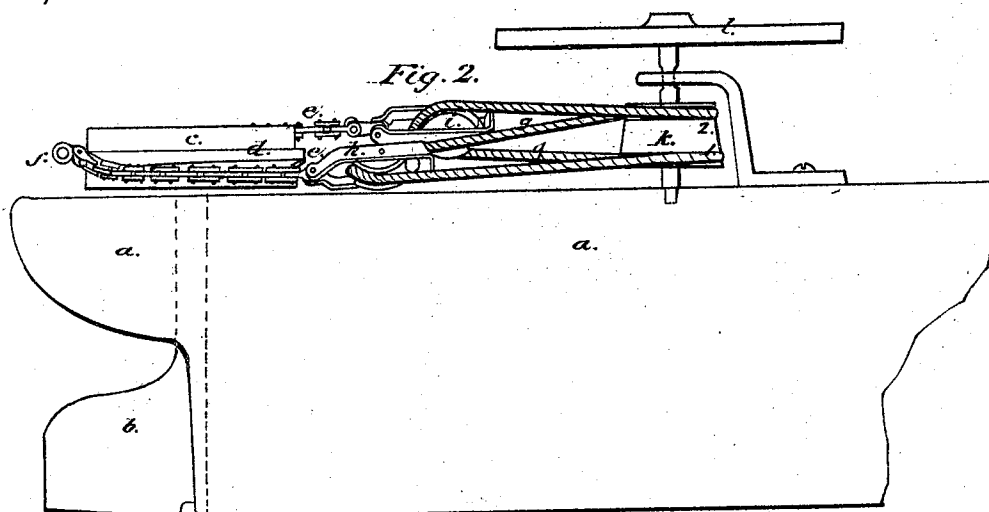


A. Beckers.

Steering.

N^o 36,445.

Patented Sept. 16, 1862.



Witnesses;
Samuel W. Sewell

Thos. Geo. Harold

Inventor
A. Beckers

UNITED STATES PATENT OFFICE,

ALEXANDER BECKERS, OF HOBOKEN, NEW JERSEY.

IMPROVED STEERING APPARATUS.

Specification forming part of Letters Patent No. 36,445, dated September 16, 1862.

To all whom it may concern:

Be it known that I, ALEXANDER BECKERS, of Hoboken, in the county of Hudson and State of New Jersey, have invented, made, and applied to use a certain new and useful Improvement in Steering Apparatus; and I do hereby declare the following to be a full, clear, and exact description of my said invention, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a plan of my said apparatus, and Fig. 2 is an elevation of the same.

Similar marks of reference denote the same parts.

My invention consists in a conical grooved drum from which an endless rope or chain passes to two sheaves that connect to the rudder-head in such a manner that the rotation of the conical grooved drum as it draws upon the said endless rope or chain causes the rudder to be moved in proportion to the difference in the periphery of the respective grooves of the said conical drum, and the said endless chain or rope passes in such a direction around the conical drum that but little power is required to hold the steering-wheel even when the rudder is struck by a wave.

In the drawings, *a a* illustrate part of a vessel.

b is the rudder, of any usual character.

c is a wheel upon the rudder-head having a central flange, *d*, and receiving the chain *e* or its equivalent. This chain *e* is attached to the wheel *c* by the screw *f*, that takes through one of the links near the middle. The wheel *c* at this part is removed, as seen in Fig. 1, so that said screw *f* will tighten the chain and endless band, hereinafter specified, by pressing one or more of the links down into the recess in the said wheel *c*. The chain on one side of this screw *f* lies above the flange *d* and on the other side below it, in order that the convolutions of the endless rope or chain may more readily pass each other. At the respective ends of this chain *e* are the sheaves *h* and *i*.

g is my endless rope or chain, and *k* is the conical grooved drum, and *l* is the steering-wheel. The endless rope or chain *g* is passed in the manner shown through the sheaves *h* and *i*, the lower bight of the same passing

around the drum *k* in the groove 1, and the upper bight being crossed and passed around the upper groove, 2, in said drum *k*.

It will now be apparent that if the drum *k* at the grooves 1 and 2 were the same diameter the rope or chain *g* would be drawn through the sheaves *h* and *i* without altering their position or moving the rudder, and that said rudder could not be moved without causing the ropes to slip in the grooves, because if either sheave *h* or *i* were pulled upon, one rope therefrom passing around the drum in one direction and the other in the other direction would be powerless to rotate the drum, because each would have the same leverage, and the other sheave could only be moved in consequence of the endless rope slipping in its grooves. By the drum being conical one part of the endless rope is pulled upon faster than the other, and the rudder is acted upon accordingly. For instance, if the steering-wheel *l* is rotated in the direction of the arrow, the bight of the rope passing to the sheave *i* would not receive rope from the groove 2 as fast as it would be taken in by the groove 1, thus shortening the rope to the pulley *i* and moving the rudder accordingly, and rotating the steering-wheel *l* in the opposite direction produces a reverse movement.

My apparatus is easily constructed and applied, and the rudder will remain in any position where it may be placed under ordinary circumstances, because the leverage of one part of the endless rope against another on the conical drum is so small.

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

1. The conical grooved drum and endless rope or chain, in combination with the sheaves *h* and *i*, connected to the rudder-head, as and for the purposes specified.

2. The screw *f* and recess in the wheel *c* to tighten the chain *e* in the manner specified.

In witness whereof I have hereunto set my signature this 23d day of August, 1862.

ALEX. BECKERS.

Witnesses:

LEMUEL W. SERRELL,
THOS. GEO. HAROLD.