

No. 619,972.

Patented Feb. 21, 1899.

J. LYALL.
STEERING MECHANISM.

(Application filed Oct. 5, 1898.)

(No Model.)

FIG. 1.

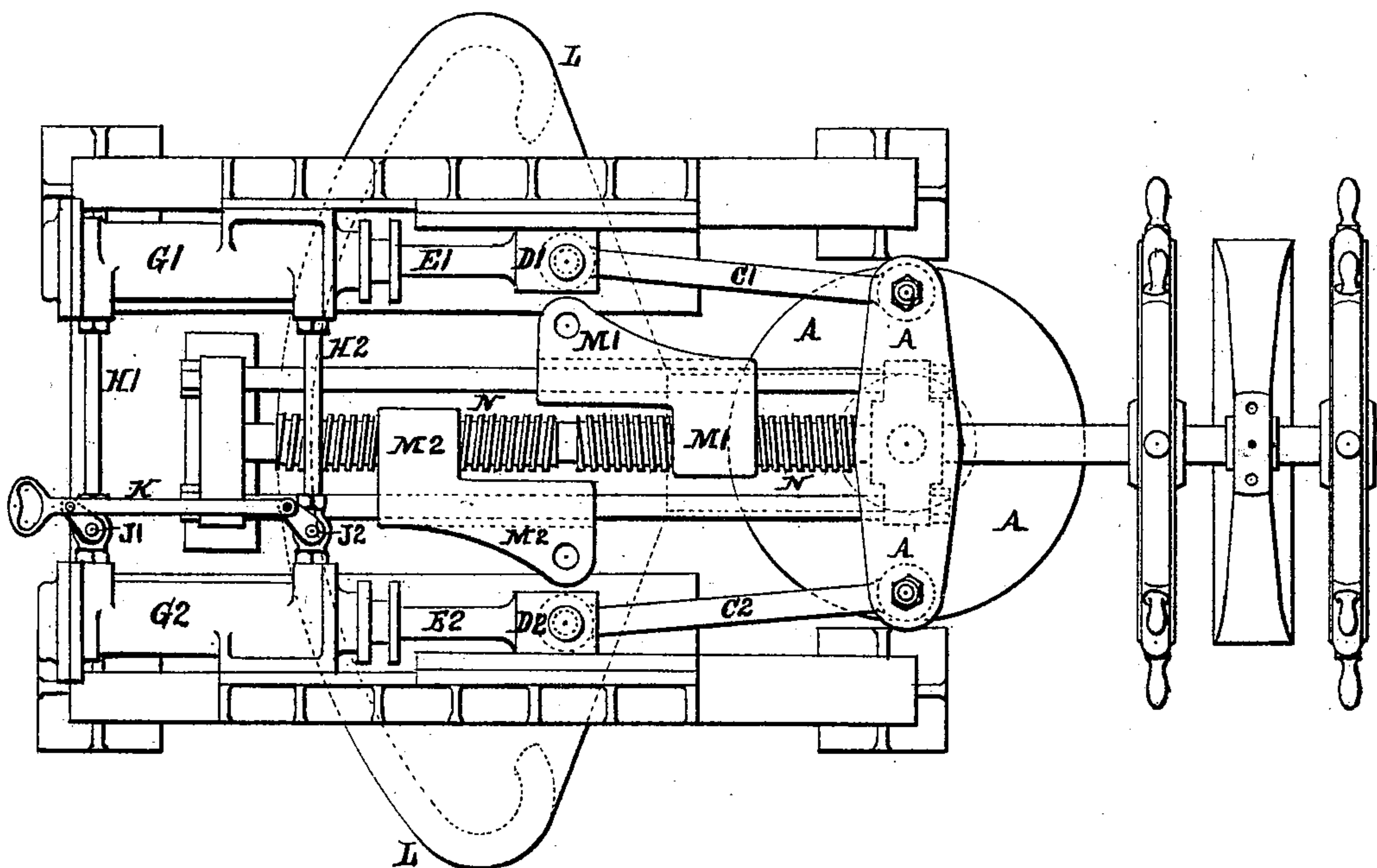
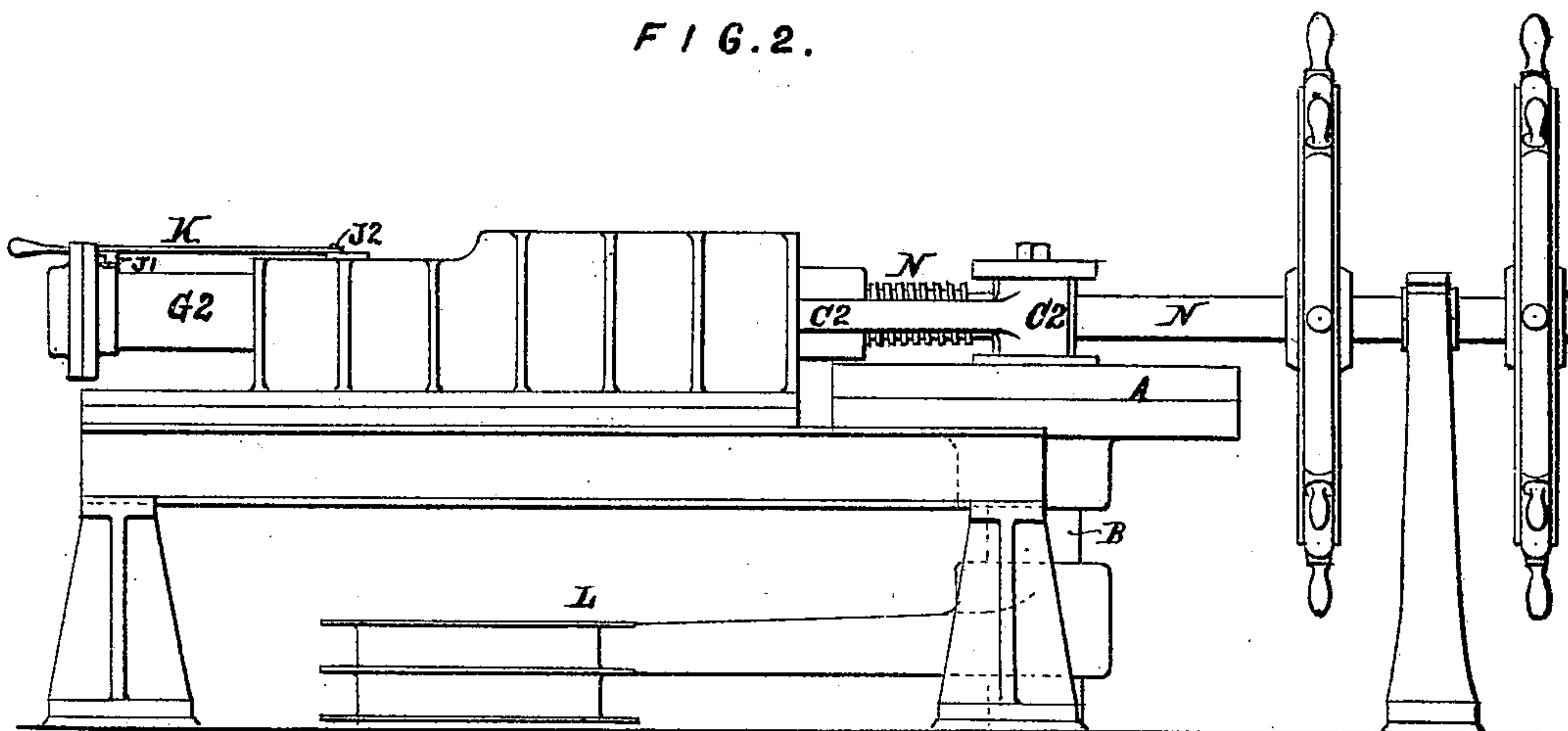


FIG. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN LYALL, OF GLASGOW, SCOTLAND.

STEERING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 619,972, dated February 21, 1899.

Application filed October 5, 1898. Serial No. 692,736. (No model.)

To all whom it may concern:

Be it known that I, JOHN LYALL, a subject of the Queen of Great Britain and Ireland, and a resident of Glasgow, Scotland, have invented certain Improvements in Steering Machinery, (for which I have applied for British Patent No. 6,643, dated March 19, 1898,) of which the following is a specification.

In steering machinery of the kind to which my invention relates the cross-head or quadrant on the rudder-stock has connected to each side of it one end of a rod, pins in the other end of which rods simply slide backward and forward in fixed guides when the steam steering machinery is in use; but in the event of the breaking of the chains or equivalent connecting the steering-gear to the quadrant on the rudder-stock or from other cause the hand steering machinery has to be brought into use, the pins on the outer ends of the connecting-rods are transferred from the grooves, and the rods are connected to the usual internally-screwed blocks on the right-hand and left-hand screw-shaft of the hand steering-gear, so as to bring this gear into use. The performance of this operation is often considerably difficult, and considerable damage may be done owing to the uncontrolled and usually violent movements of the rudder at the time.

My improvements insure that the rudder is under control in all circumstances and that the change from steam to hand steering can be speedily effected at any time.

In carrying out my invention the pins on the ends of the connecting rods or links are each connected to a piston-rod of a piston working in a cylinder filled with water, oil, or other suitable liquid. Pipes fitted with stop-cocks connect the ends of the cylinders, the arrangement constituting a simple and reliable brake or locking apparatus, whereby the rudder is entirely under control and the pins and connecting-rods can be transferred and connected separately one after the other to the hand steering-gear and that gear brought into operation when required with the utmost despatch and without the possibility of damage.

Figure 1 on the accompanying sheet of

drawings is a plan of steering machinery as made with my improvements, Fig. 2 being a side elevation of the same.

As shown in the drawings, the cross-head A on the rudder-stock B has connected to each side of it one end of a rod or link C' C², pins D' D² in the other end of which rods, instead of being allowed to slide in grooves when the hand-gear is disconnected and the steam-gear is in operation, as in machinery of this kind as hitherto constructed, are made capable of being connected to piston-rods E' E², formed with eyes to receive the pins and fixed to pistons working in cylinders G' G², filled with water, oil, or other suitable liquid. The two cylinders G' G² have their ends connected by external pipes H' H², fitted with stop-cocks J' J², which can be actuated by a handle K, the pipes being of such a diameter that the liquid can be forced by the to-and-fro movement of the pistons from either end of one cylinder to the corresponding end of the other cylinder at a slow rate suitable for the desired movement of the rudder by the steam steering-gear, (not shown,) but which acts through chains or equivalents on the quadrant L on the rudder-stock B. In the event of a breakdown of the steam steering-gear taking place the comparatively slow movement of the liquid from one cylinder to the other through the connecting-pipes H' H² acts as a buffer or brake and prevents the rudder being violently moved from side to side and doing damage. The stop-cocks J' J² on the external connecting-pipes H' H² between each cylinder G' G² are then shut as soon as possible, so as to entirely stop the flow of the liquid between the cylinders, and this practically stops all movement of the rudder. The pins D' D² and connecting-rods C' C² can then be transferred separately one after the other from their connection with the piston-rods E' E² and connected to the usual internally-screwed blocks M' M² on the right-hand and left-hand screw-spindle N of the hand steering-gear, which, as shown, is of an ordinary type. This gear can thus be brought into operation when required with the utmost despatch and without the possibility of damage.

What I claim as my invention is—

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In combined hand and steam steering machinery, a rudder-stock cross-head and rods or links jointed thereto and having at their other end eyes in combination with the right-
5 hand and left-hand screw-shaft of the hand steering-gear, screwed blocks thereon to which the said rods or links can be connected, and two cylinders of the steam steering-gear having pistons to which said links can be connected when detached from the blocks of the

hand steering-gear, substantially as and for the purposes herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN LYALL.

Witnesses:

EDMUND HUNT,
DAVID FERGUSON.