(No Model.)

F. B. TURNER.

STEAM STEERING GEAR.

No. 394,314. Patented Dec. 11, 1888.

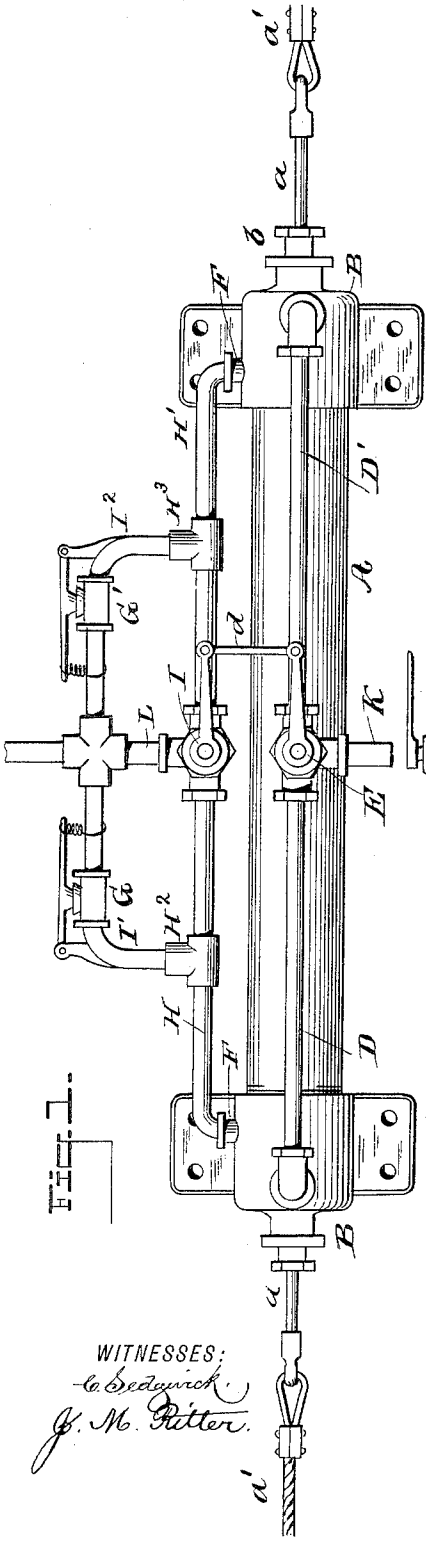


Fig. 1.

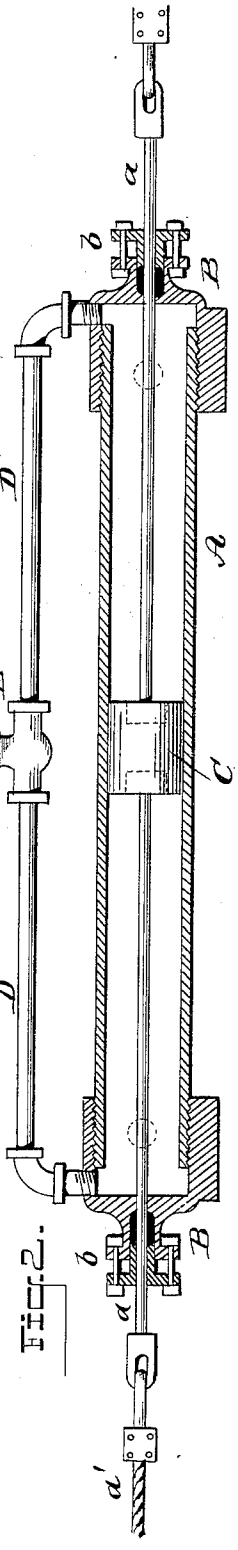


Fig. 2.

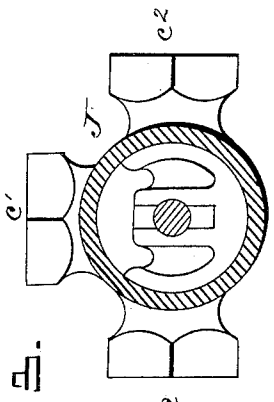


Fig. 4.

WITNESSES:
C. Sedgwick.
J. M. Ritter.

INVENTOR,
F. B. Turner,
BY Munn & Co
ATTORNEY.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

FRANK. B. TURNER, OF PORTLAND, OREGON.

STEAM STEERING-GEAR.

SPECIFICATION forming part of Letters Patent No. 394,314, dated December 11, 1888.

Application filed June 5, 1888. Serial No. 276,125. (No model.)

To all whom it may concern:

Be it known that I, FRANK. B. TURNER, of Portland, in the county of Multnomah and State of Oregon, have invented new and useful Improvements in Steam Steering-Gears, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a side elevation of my improved steam steering-gear. Fig. 2 is a longitudinal section, and Fig. 3 is a transverse section, of one of the valves.

Similar letters of reference indicate corresponding parts in all the views.

The object of my invention is to provide a simple and effective device for operating the rudders of ocean and river steamers by steam.

My invention consists in a long steam-cylinder provided with a piston having piston-rods reaching through opposite ends of the cylinder and connected with the tiller-ropes.

It also further consists in a novel arrangement of valves for supplying steam to opposite ends of the cylinder and exhausting it therefrom; also, in an arrangement of safety-valves to prevent overpressure in the cylinder, all as hereinafter more fully described.

The cylinder A is provided with heads B and with a piston, C, having piston-rods *a* extending through stuffing-boxes *b* in the heads B. The outer ends of the piston-rods *a* are connected with the tiller-ropes *a'*. Pipes D D' enter opposite ends of the cylinder A and communicate with a three-way valve, E. In a similar manner pipes F enter opposite ends of the cylinder A, and are connected by pipes H H' with a central three-way valve, I.

The internal construction of the valves E I is shown in sectional view, Fig. 3, J being the casing of the valve, provided with three openings, c c' c^2. The openings c c^2 communicate with opposite ends of the cylinder. The opening c' of the valve E receives the steam-supply pipe K, and the corresponding opening of the valve I receives the exhaust-pipe L.

In the pipes H H' are placed T's H^2 H^3, which receive pipes I' I^2, which are bent inwardly and communicate with the pipe L. In the I' I^2 are arranged safety-valves G G', of ordinary construction, which are loaded to resist the highest pressure the cylinder A is obliged to bear in the regular working of the apparatus, but which will yield to a higher pressure and allow the steam to escape to the pipe L, thereby avoiding the bursting of the cylinder A, and the straining of the pipe-connections or the rudder-connections.

Steam is admitted to the cylinder through the valve E into one end or the other, according to the direction in which it is desired to move the tiller-ropes, and by means of the valve I steam is exhausted from the end of the cylinder opposite that being supplied. The arms of the valves I E are connected by a link, *d*, so that the two valves will be moved simultaneously.

By admitting steam to both ends of the cylinder at the same time and closing it in the piston will be held in any desired position along the length of the cylinder. The safety-valves G G' prevent any undue strain upon the cylinder by the sudden lurching of the rudder. The exhaust-valve closes before the feed-valve. Thus when reversed the steam is confined in one or both ends. When the valves are shut off, the steam-valve is open just enough to give the required pressure on both ends.

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

1. In a steering apparatus, the combination, with a cylinder and a piston having a piston-rod at each end projecting through the ends of the cylinder, of the pipes D D' and H H', entering the ends of the cylinder, and the three-way valves E I, arranged in the pipes D D' and H H', respectively, and connected together, substantially as herein shown and described.

2. The combination of the cylinder A, the pipes D D', entering opposite ends of the same, the valve E, connected with the pipes D D', the exhaust-pipes H H', the safety-valves G G', and the valve E, substantially as specified.

FRANK. B. TURNER.

Witnesses:
B. S. GRIFFITHS,
C. F. MCDONALD.