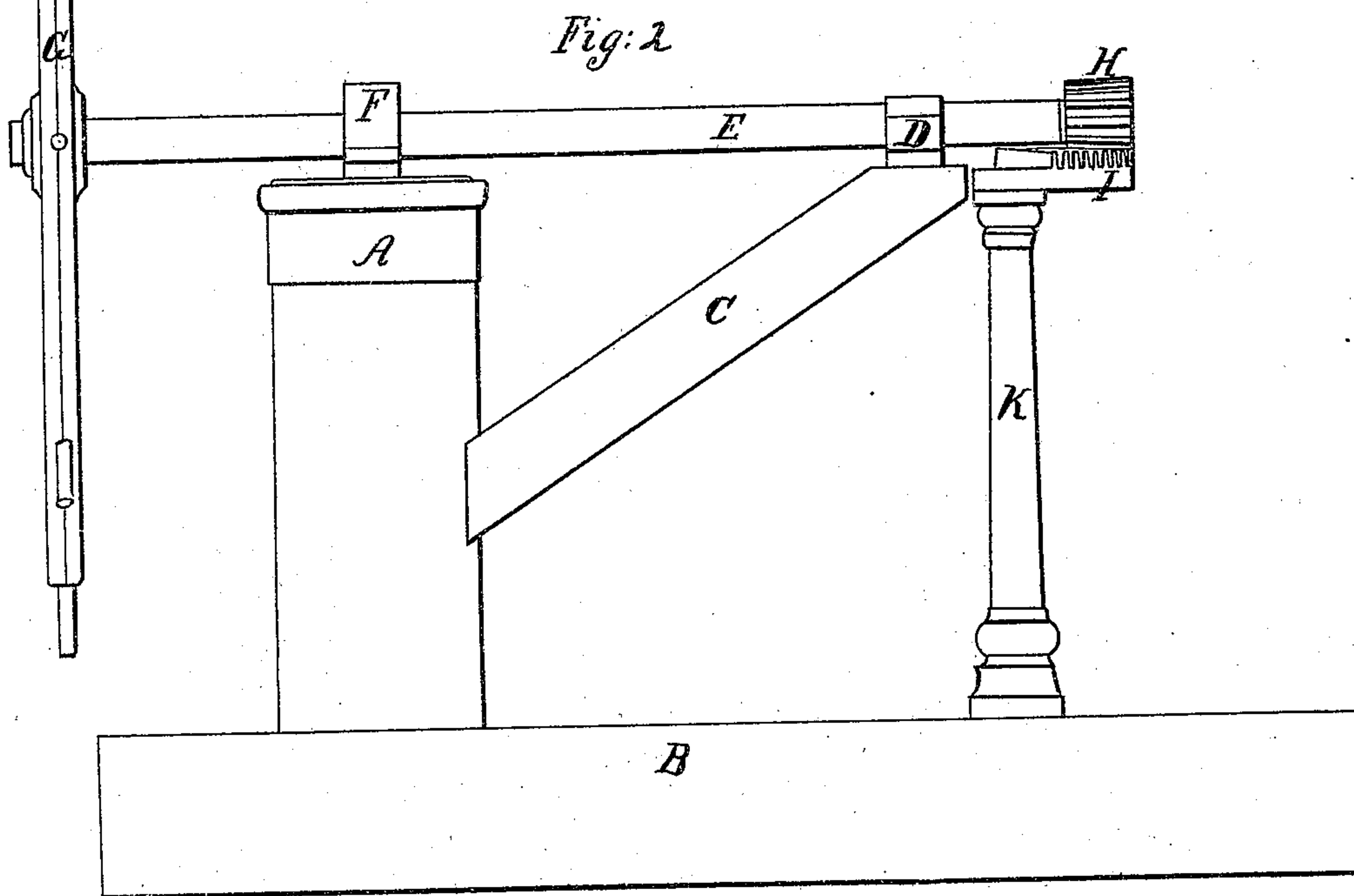
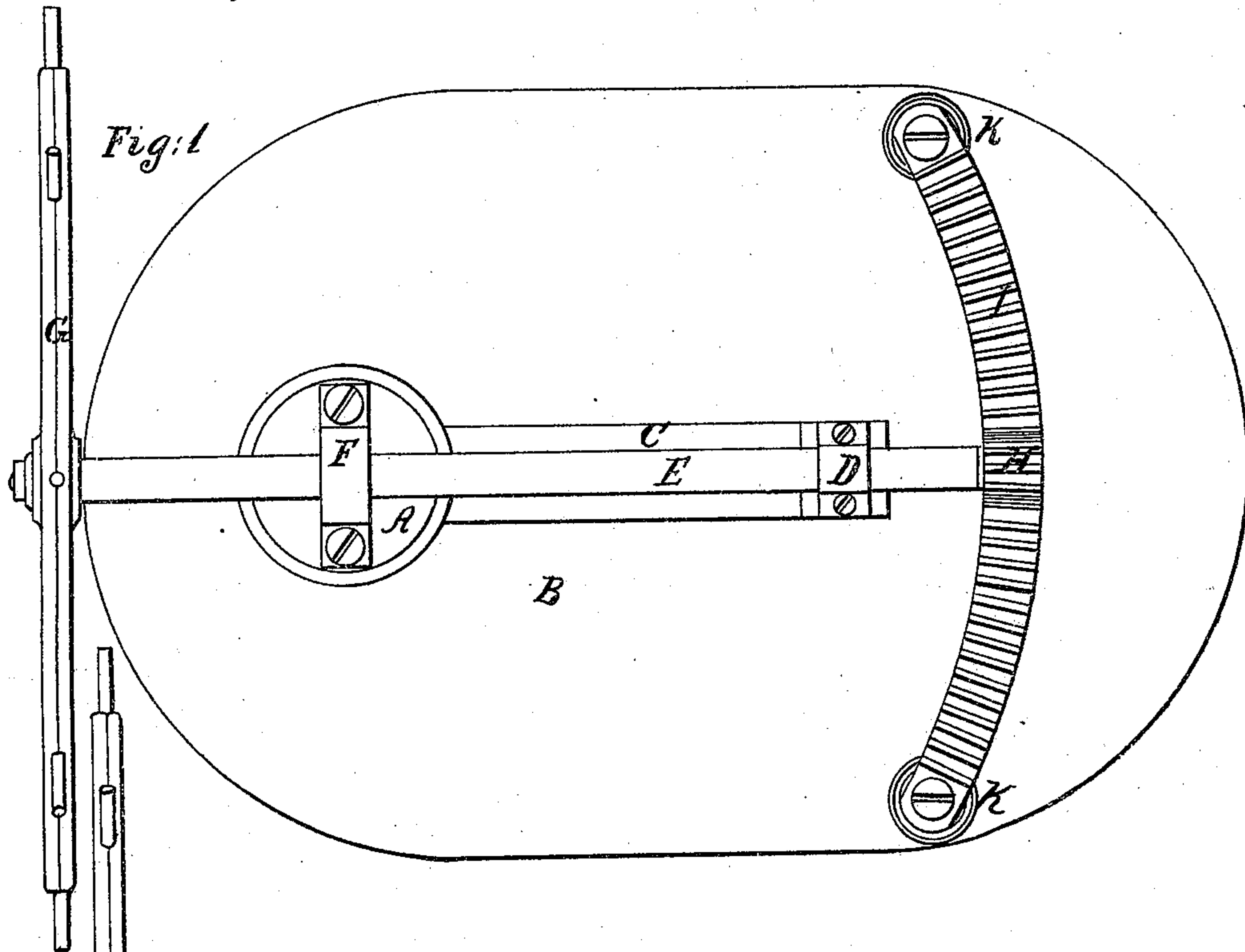


J. D. Crowell
Steering.

N^o 12,021.

Patented Dec. 5, 1854



UNITED STATES PATENT OFFICE.

JOSEPH D. CROWELL, OF BOSTON, MASSACHUSETTS.

STEERING APPARATUS.

Specification of Letters Patent No. 12,021, dated December 5, 1854.

To all whom it may concern:

Be it known that I, JOSEPH D. CROWELL, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and
5 useful or Improved Steering Apparatus for Navigable Vessels; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, letters, figures, and
10 references thereof.

Of the said drawings, Figure 1, denotes a top view of the said steering apparatus. Fig. 2, is a side elevation of the same.

15 In such drawings, a rudder head is shown at, A, as projecting above the deck, B, of a vessel and made to turn therein or be capable of being revolved in the usual way.

The tiller, C, is extended forward from the rudder head and upward, and is made to
20 support the foremost box or bearing, D, of the steering wheel shaft, E. The other or rearmost bearing, F, of said shaft is placed and fixed directly on the top of the rudder head. This shaft not only carries a steering
25 wheel, G, on its rear end, but a pinion gear H, on its forward or front end as seen in the drawings. Such pinion works in a curved toothed rack, I, which by means of a stand-
ard, K, is elevated above the deck, and up to
30 or about to the level of the top surface of the rudder head and the rear end of the tiller.

When the steering wheel is turned so as to put its shaft in revolution, a movement of

the rudder either to the larboard or starboard may be produced as will be obvious. 35

The simplicity of the above arrangement of the parts composing the said steering apparatus renders it very advantageous in use and not liable to get out of order during heavy weather at sea, as any rise or elevation
40 of the rudder will simply lift the pinion, H, above the rack, I, without serious liability of endangering either.

I claim—

The manner in which I have combined or
45 arranged the operative parts of the said steering apparatus, the rudder head and the tiller, the bearings of the steering wheel shaft being supported directly on the upper
end of the rudder and that of the tiller while
50 the curved rack is elevated above the deck and to or about to the level with the top of the rudder head and tiller—such not only enabling a single pinion and rack to be used
in connection with the steering wheel shaft
55 sustained as specified, but rendering the whole apparatus simple and efficient in operation and very cheap in point of construction and little liable to get out of repair.

In testimony whereof I have hereunto set
60 my signature this thirteenth day of October A. D. 1854.

JOS. D. CROWELL.

Witnesses:

R. H. EDDY,
F. P. HALE, Jr.