

No. 652,052.

Patented June 19, 1900.

C. V. SUPPAN & B. SZENDI.

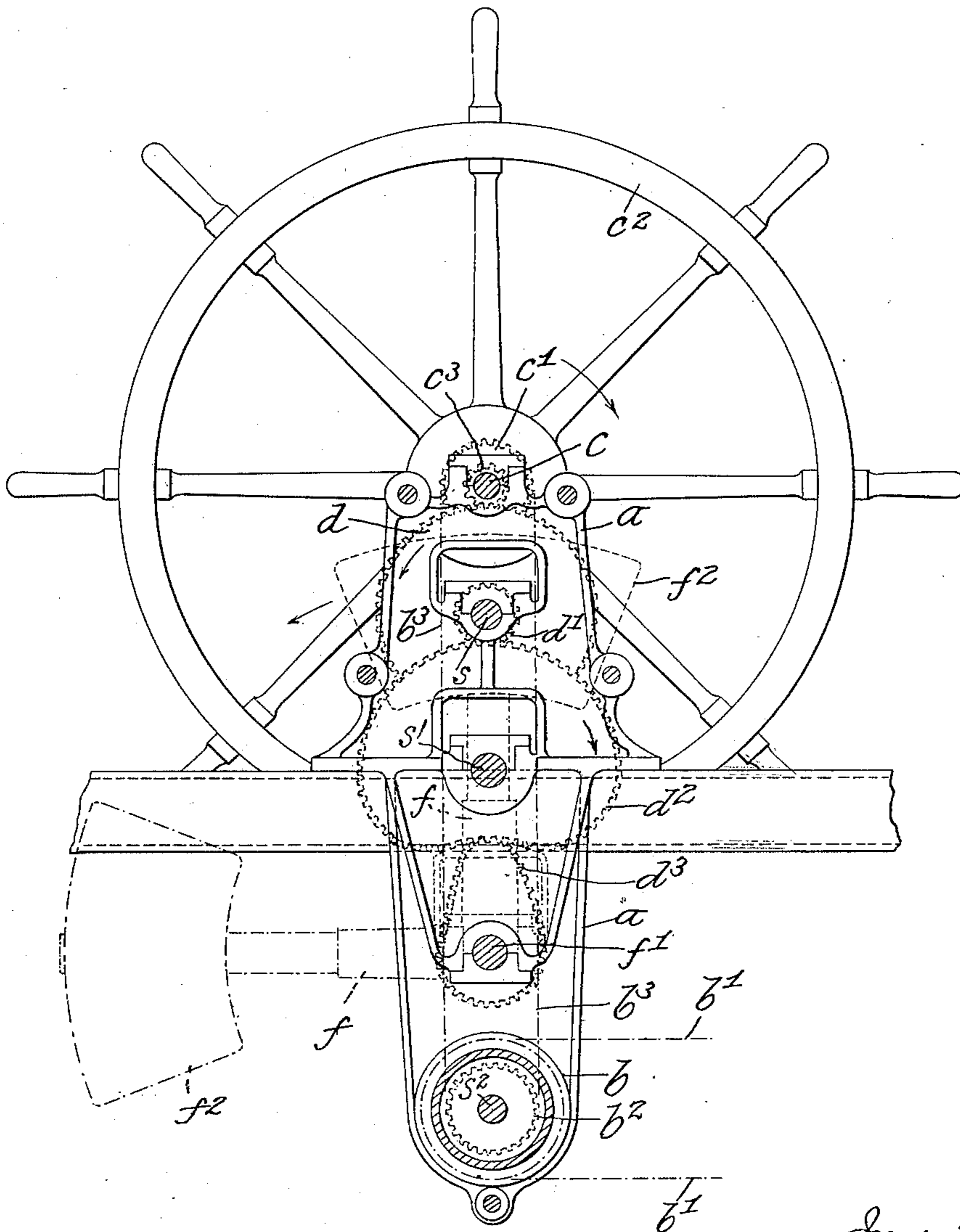
STEERING GEAR FOR SHIPS.

(Application filed Feb. 18, 1899.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1.



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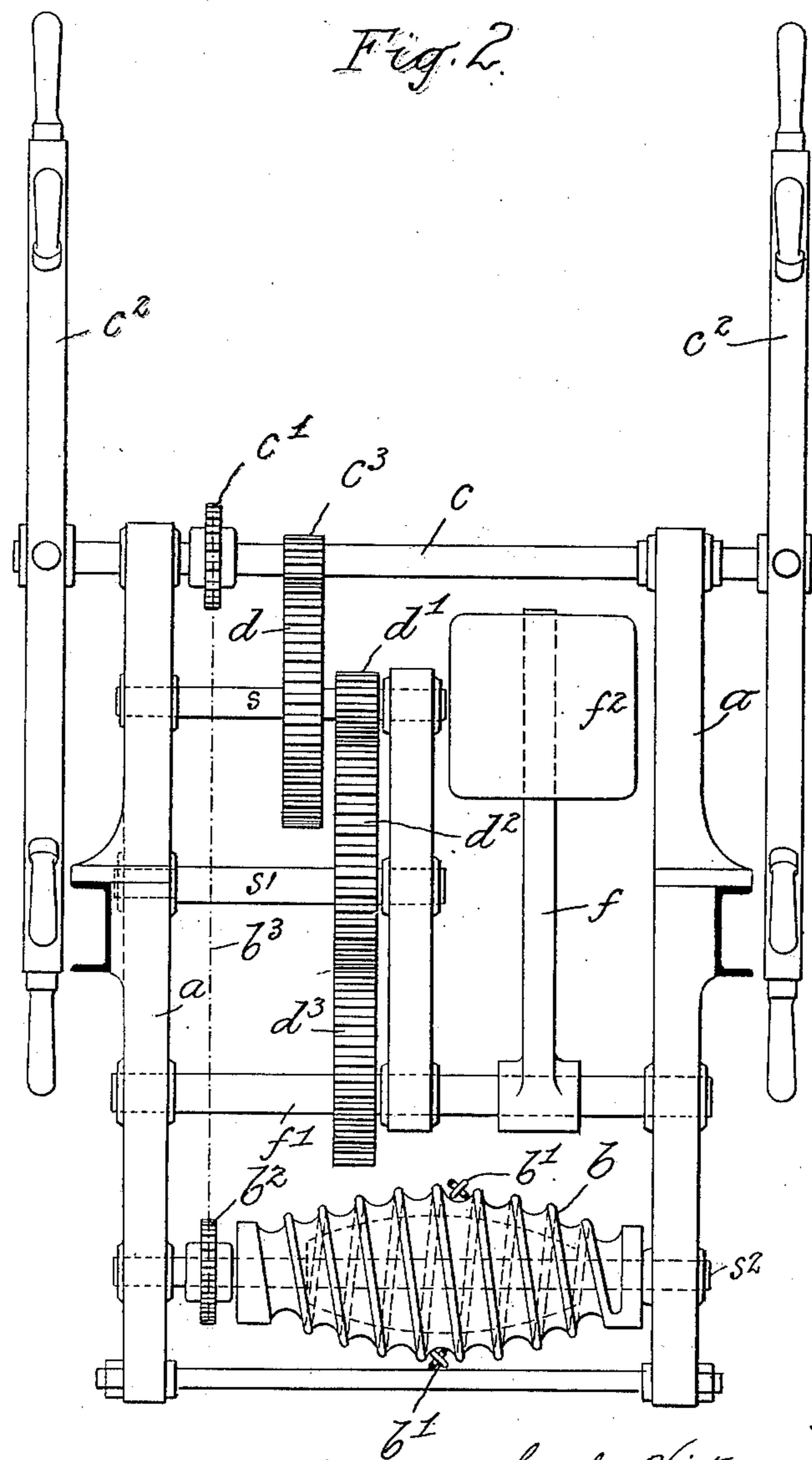
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4 Sheets—Sheet 2.



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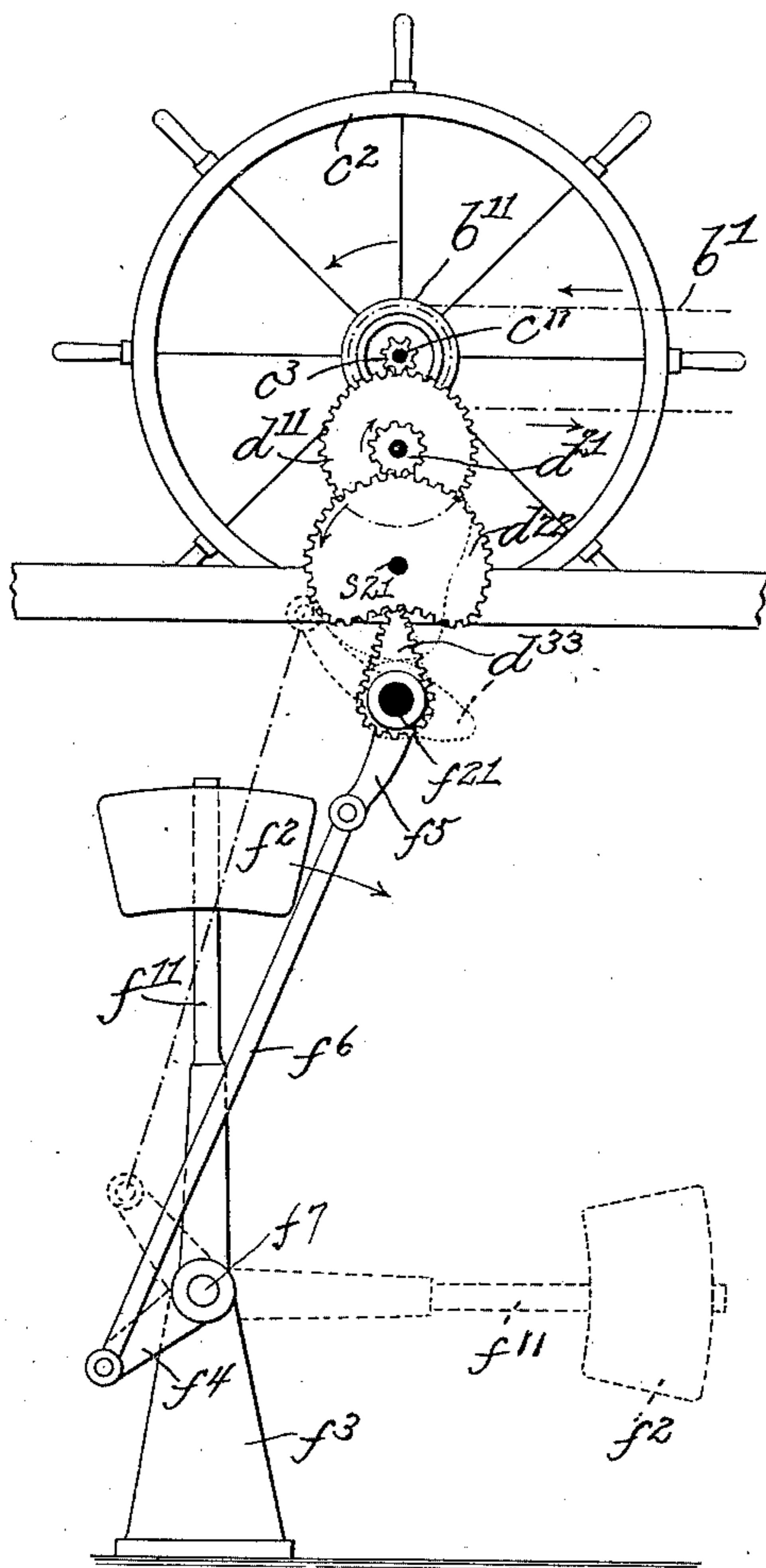
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Fig. 3.



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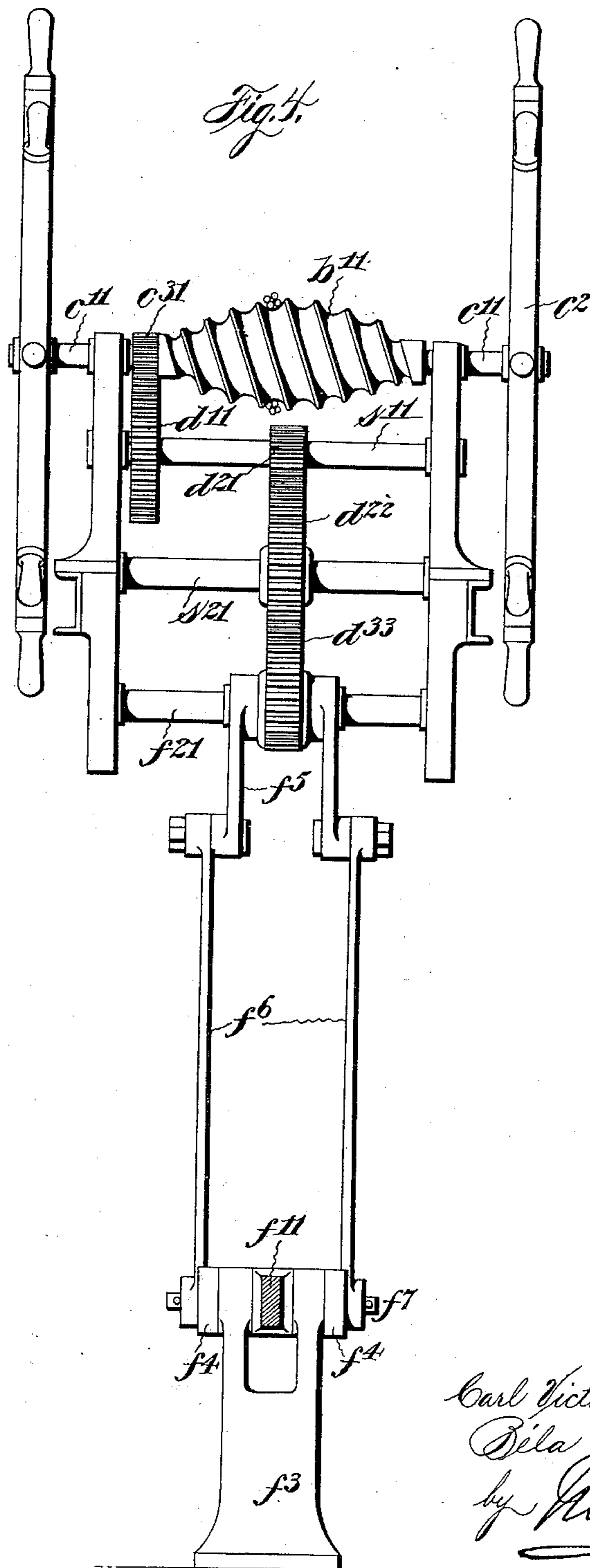
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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

CARL VICTOR SUPPÁN, OF VIENNA, AND BÉLA SZENDI, OF BUDA-PESTH,
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STEERING-GEAR FOR SHIPS.

SPECIFICATION forming part of Letters Patent No. 652,052, dated June 19, 1900.

Application filed February 18, 1899. Serial No. 706,006. (No model.)

To all whom it may concern:

Be it known that we, CARL VICTOR SUPPÁN, residing at Vienna, in the Province of Lower Austria, and BÉLA SZENDI, residing at Buda-Pesth, in the Kingdom of Hungary, Empire of Austria-Hungary, subjects of the Emperor of Austria-Hungary, have invented certain new and useful Improvements in Steering Devices for Ships; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention has relation to steering-gear for ships; and it has for its object the provision of means whereby the shifting and holding fast of the helm or steering-wheel can be effected with the least possible exertion or application of power. To this end the steering-wheel spindle from which power is transmitted to the barrel on which the rudder-chain is wound is connected, by means of suitable gearing, with a weighted lever, which when the steering-wheel is in the amidship position stands on its dead-point above its axis of rotation, and hence exerts no power on the steering-wheel spindle and therethrough on the rudder-chain barrel and rudder. When, however, the steering-wheel spindle is revolved in one or the other direction, the weighted lever is moved out of its dead-point through the connecting-gearing and at once exerts power upon said spindle and therethrough upon the rudder. The power exerted by the lever is in direct ratio to the increase of the deviation of the rudder, and consequently in direct ratio to the forces to be overcome—namely, the power exerted by the water on the rudder.

That our invention may be fully understood, we will describe the same, reference being had to the accompanying drawings, in which—

Figures 1 and 2 are side and end elevations, respectively, shown partly in section; and Figs. 3 and 4 are side and end elevations, respectively, also shown partly in section, of a slight modification in the arrangement of the

steering-gear, and more particularly in the location of the weighted lever and the rudder-chain barrel.

Referring to Figs. 1 and 2, a a indicate standards in which are formed bearings for the steering-wheel spindle c and for spindles s s' f' s^2 , on which are mounted the transmitting-gearing, the weighted lever above referred to, and the rudder-chain barrel. The spindle c carries two steering-wheels c^2 , a sprocket-wheel c' , and a pinion c^3 . The sprocket-wheel c' is connected by chain b^3 with a sprocket-wheel b^2 on the spindle that carries the barrel b for the rudder-chain b' . The pinion c^3 meshes with a gear-wheel d on spindle s , which also carries a pinion d' , in gear with an irregular or cam-shaped gear-wheel d^2 on spindle s' . Said cam-shaped gear d^2 meshes with an irregular or cam-shaped gear d^3 on spindle f' , that carries the weighted lever f .

As hereinbefore stated, when the rudder is in a normal position or amidship the weighted lever f is on its dead-point above its fulcrum-spindle f' , as shown, while the intermeshing parts of the cam-shaped gears d^2 d^3 are, as shown, of such configuration that when the steering-wheel spindle is rotated in one or the other direction, whereby the lever f is carried over its dead-point, said lever will exert a gradually-increasing power on said steering-wheel spindle and therethrough on the rudder-chain barrel and rudder, which power is in direct ratio to the deviation of the rudder from its amidship position, and hence in direct ratio to the power exerted by the water on said rudder, as hereinbefore stated, thus enabling the steersman to steer the ship with the least possible exertion on his part. In practice the weight f^2 on lever f is made adjustable lengthwise of the lever by any of the ordinary means used for this purpose, so that the power exerted by the lever can be regulated in accordance with the speed of the ship and the varying forces exerted by the water on the rudder resulting from speed variations.

The described steering-gear may of course be variously modified in so far as the relative arrangement of parts is concerned to suit the conditions of use. Thus, for instance, the rudder-chain barrel may in some cases re-

quire to be located above the after or steering deck. In this case we mount said chain-barrel b^{11} on the steering-wheel spindle c^{11} , as shown in Figs. 3 and 4, and we may locate
 5 the weighted lever f^{11} at some point distant from said apparatus—as, for instance, below the after or steering deck or wheel-house, as shown in said Figs. 3 and 4.

The arrangement of the gearing through
 10 which the power is exerted by the weighted lever f^{11} on the steering-wheel spindle c^{11} is substantially as shown in Figs. 1 and 2. The pinion c^{31} on steering-wheel spindle c^{11} meshes with a gear-wheel d^{11} on spindle s^{11} , which carries the pinion d^{21} , in gear with the cam-shaped
 15 gear d^{22} on spindle s^{21} , which cam-gear meshes with cam-gear d^{33} on spindle f^{21} . When the weighted lever f^{11} is located below the steering apparatus, then the spindle f^{21} , that carries
 20 the cam-shaped gear d^{33} , has secured on either side of said cam-gear a crank f^5 , connected by rods f^6 with cranks f^4 on the fulcrum-spindle f^7 , on which the weighted lever f^{11} is mounted, said fulcrum-spindle having its bearings in a
 25 suitable stand f^3 , as clearly shown.

The operation of the steering-gear when modified in its arrangement is the same as hereinbefore fully set forth.

We claim—

30 1. In a steering-gear for ships, the combination with the rudder and steering appliances, of means for balancing or substantially balancing the forces of resistance transmitted through the rudder to said steering appli-
 35 ances, for the purpose set forth.

2. In a steering-gear for ships, the combination with the rudder and steering appliances, of means, operating only when the rudder is shifted from its position amidship,
 40 to balance or substantially balance the forces of resistance transmitted through said rudder to the steering appliances, for the purpose set forth.

3. In a steering-gear for ships, the combi-

nation with the rudder and steering mechanism, of appliances for balancing the forces of resistance transmitted to said mechanism through said rudder, said appliances organized to vary the power of the steering mechanism in accordance with the variations of
 50 said forces of resistance, substantially as set forth.

4. In a steering-gear for ships, the combination with the rudder, the steering-wheel spindle and the rudder-chain-winding drum
 55 or wheel geared to said spindle; of a balancing-weight displaced by the rotation of the steering-wheel spindle and operating to balance or substantially balance the forces of resistance transmitted through the rudder to
 60 the steering-chain and winding-drum, for the purposes set forth.

5. In a steering-gear for ships, the combination with the steering mechanism, of the two intergeared cams d^2 d^3 , transmitting-gear-
 65 ing connecting cam d^2 with the steering-spindle, and a weighted lever, the fulcrum-spindle of which is connected with and revolved by cam d^3 , substantially as and for the purpose set forth.

6. In a steering-gear for ships, the combination with the steering-wheel spindle and the steering-chain-winding drum geared to
 70 said spindle, of the two intergeared cams d^2 d^3 , transmitting-gearing connecting cam d^2 with said steering-wheel spindle, and a weighted lever on the spindle of cam d^3 , substantially as and for the purpose set forth.

In testimony that we claim the foregoing as our invention we have signed our names in
 80 presence of the subscribing witnesses.

CARL VICTOR SUPPÁN.
 BÉLA SZENDI.

Witnesses:

ALVESTO S. HOGUE,
 AUGUST FUGGER,
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