

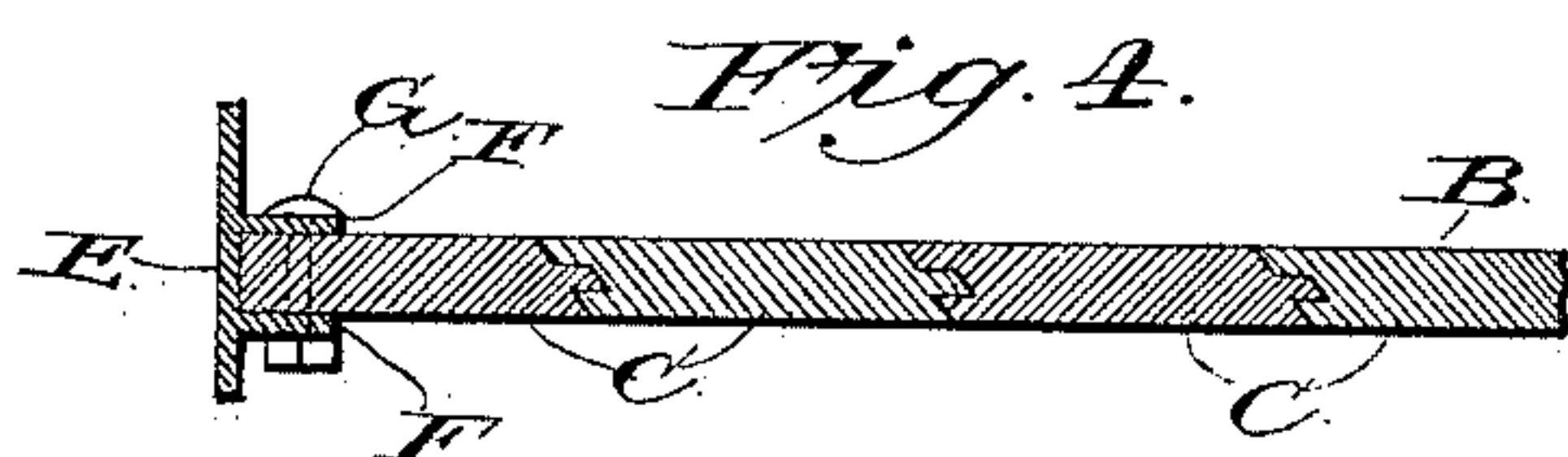
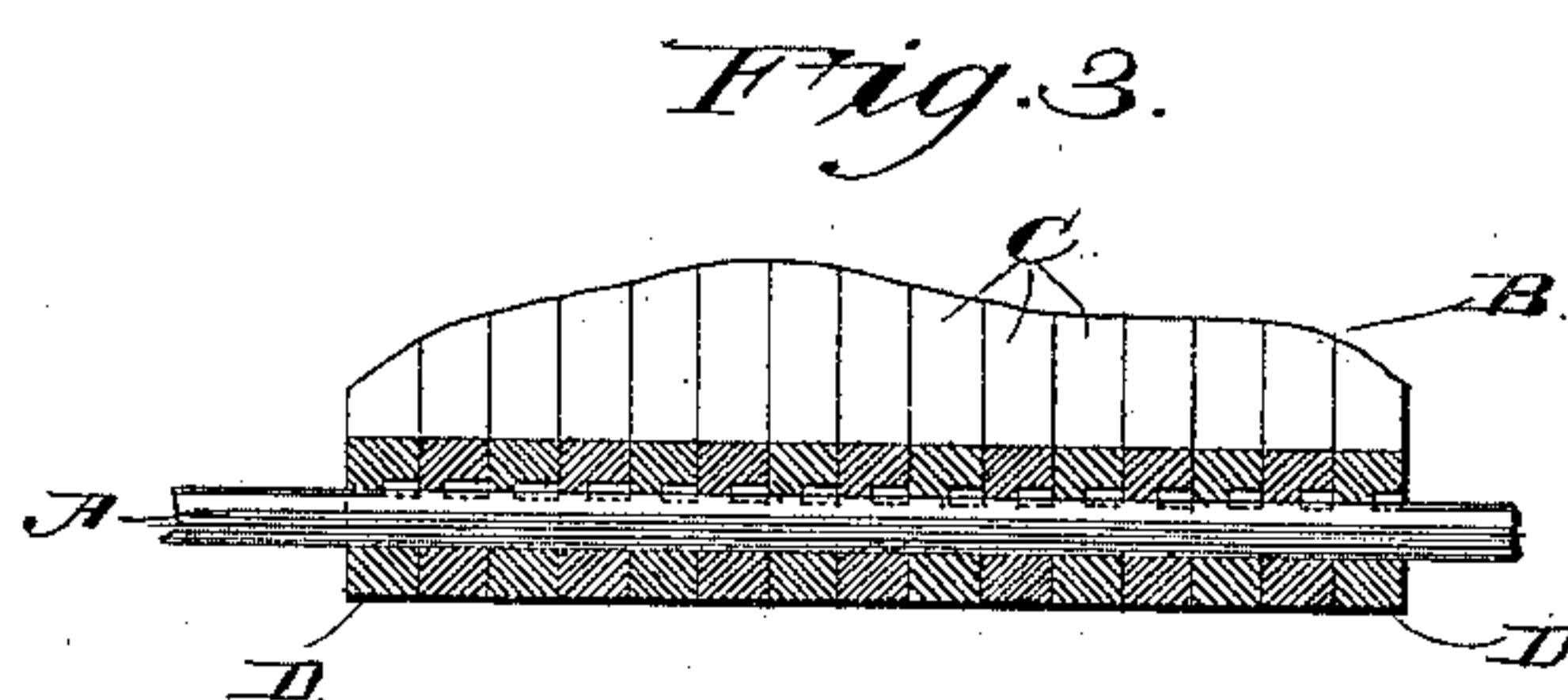
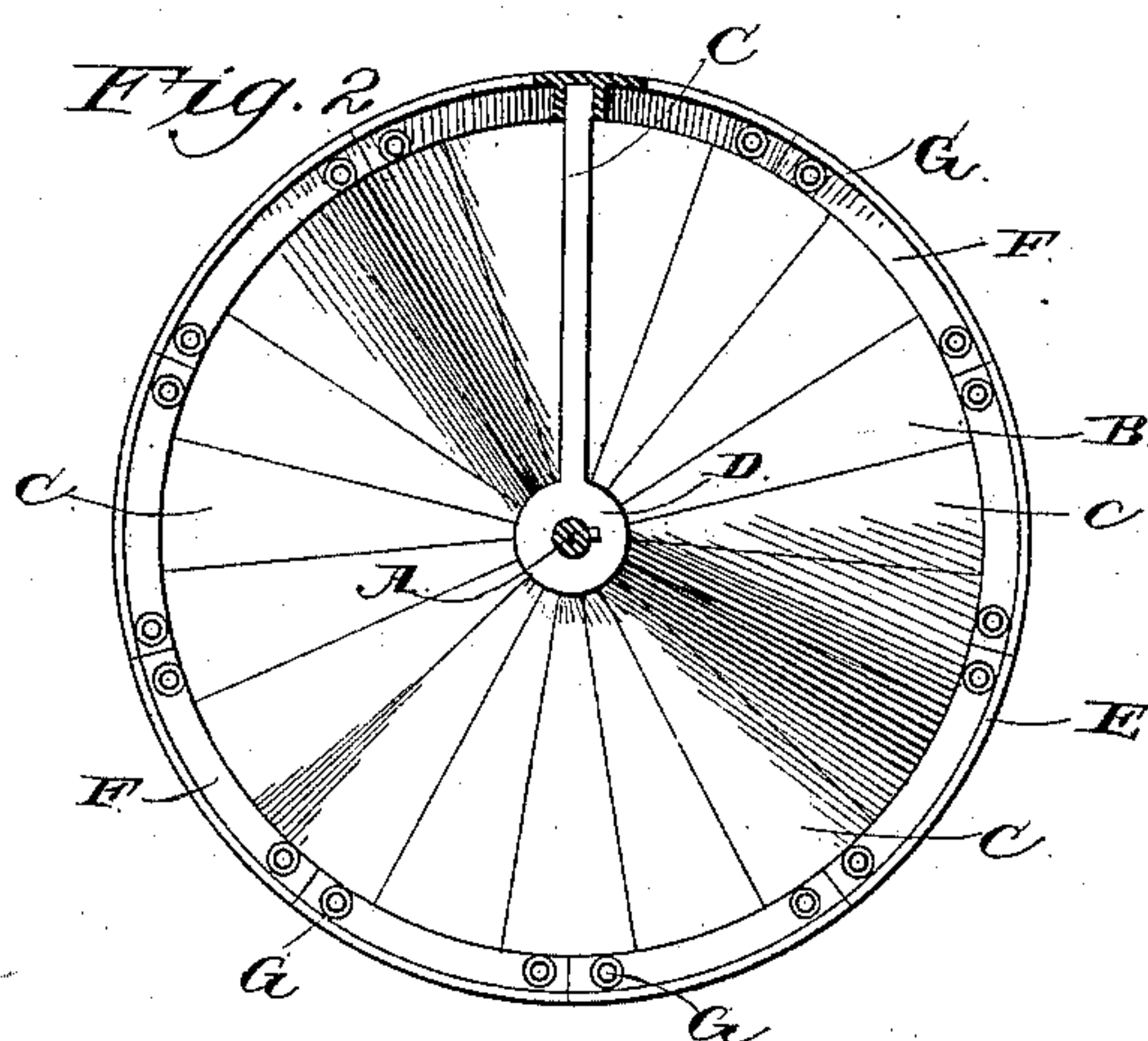
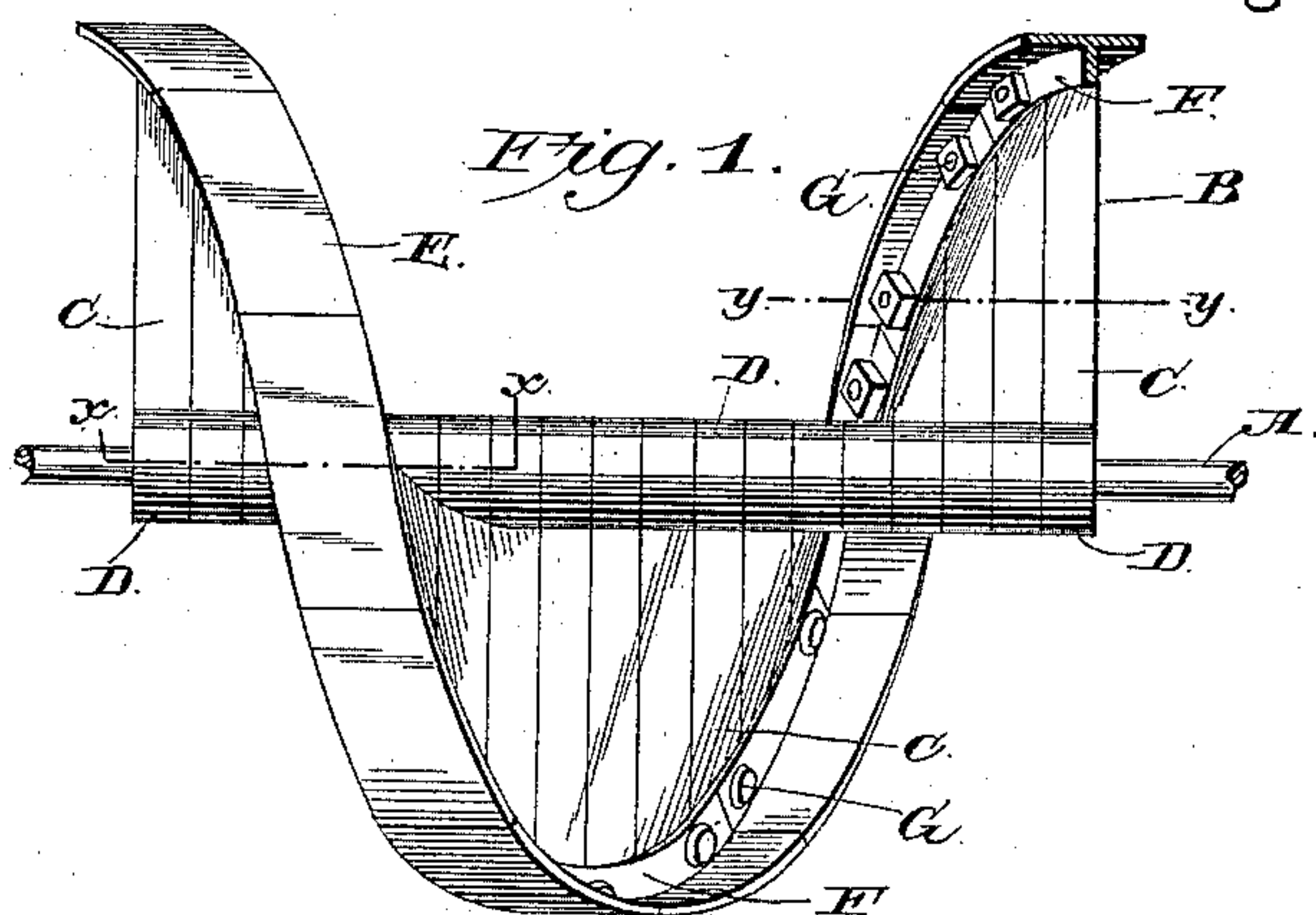
(No Model.)

A. D. HALL & G. B. SLOAN.

SCREW PROPELLER.

No. 387,229.

Patented Aug. 7, 1888.



WITNESSES.

WITNESSES:
M. C. Fowler.
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UNITED STATES PATENT OFFICE.

ALEXANDER D. HALL AND GEORGE B. SLOAN, OF SAN FRANCISCO,
CALIFORNIA.

SCREW-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 387,229, dated August 7, 1888.

Application filed April 3, 1888. Serial No. 269,640. (No model.)

To all whom it may concern:

Be it known that we, ALEXANDER D. HALL and GEORGE B. SLOAN, citizens of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Screw-Propellers, of which the following is a specification.

Our invention relates to an improvement in screw-propellers for vessels; and it consists in the peculiar construction and combination of devices that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a screw-propeller embodying our improvements. Fig. 2 is an end elevation of the same. Fig. 3 is a detailed sectional view taken on the line *x x* of Fig. 1. Fig. 4 is a similar view taken on the line *y y* of Fig. 1.

A represents the propeller-shaft, which projects rearward from the dead-wood of the stern of the vessel for a suitable distance, and has its bearings in the stern-post and in the rudder-post, in the usual manner.

B represents the blade of the propeller, which is spiral in form and makes one complete revolution on the propeller-shaft, so that the propeller is perfectly balanced at all points and is caused to act upon a column of water which is equal to the diameter of the propeller. The pitch of the screw-blade may be varied to suit the requirements of the case; but we have found by experiment that probably the best results are obtained when the length of the blade is somewhat in excess of the diameter of the propeller. The said blade is formed of a number of sectors, C, each of which is cast or wrought separately, and the said sectors are provided at their inner ends with hubs D, which are keyed separately to the shaft. The opposing edges of the sectors are provided with tongues and grooves, and thereby perfectly tight joints are formed between the sectors, thereby making the surfaces of the propeller-blade perfectly flush and entire throughout the entire length and breadth of the blade, as will be readily understood.

E represents a spiral flange, which is arranged on the outer edge of the propeller-blade and at right angles thereto, the said flange being disposed in a plane which is parallel with the axis of the propeller. The said flange extends forward and rearward beyond the sides of the propeller-blade, and in practice the rearward-projecting portion of the flange is equal to about twice the width of the forward-projecting portion thereof. When the propeller is in operation, this flange prevents the water from being thrown laterally and radially from the propeller, and causes a column of water which is equal to the diameter of the propeller to be forced directly aft in the wake of the vessel, thereby very materially increasing the power of the propeller and rendering the same much more serviceable.

We have found in experimental test that with a propeller thus constructed we were enabled to obtain twenty-five per cent. more power and effect an economy of ten per cent. in the fuel over propellers of the ordinary construction.

The flange E is made in sections of suitable length and is adapted to break joints with the blade-sections on the outer edges of the spiral blade, and said flange is provided on its inner side with a pair of inwardly-extending radial flanges, F, thereby forming a groove between the said flanges in which the outer ends of the blade-sections are fitted. Bolts G are passed through transverse aligned openings made in flanges F and in the outer ends of the blade-sections, and serve to secure the flange E firmly to the spiral blade. By reason of the said flange E being arranged in a plane parallel with the axis of the propeller said flange is enabled to slip through the water without exerting radial or centrifugal action thereon, and without in any manner retarding the motion of the vessel. The front projecting portion of the flange E is of less width than the rear projecting portion thereof, so as to offer as little unnecessary resistance as possible to the rotation of the propeller when the vessel is advancing and at the same time enable the said projecting portion of the flange to prevent the water from being dispersed radially from the

propeller when the latter is reversed; consequently enabling the vessel to be stopped or backed in a very short space.

Inasmuch as propellers thus constructed do
5 not disperse the water radially and force the same rearward in a solid column equal to the diameter of the propeller, the same are well adapted to be used as twins, so as to cause no friction, as will be readily understood.

10 Having thus described our invention, we claim—

1. A screw-propeller having a spiral continuous blade with no openings therein, making one complete revolution, and provided at its
15 outer edge with the spiral laterally-extending flange, for the purpose set forth, the said flange being disposed in a plane parallel with the axis of the propeller, the length of the said blade being in excess of the diameter of the propeller,
20 substantially as described.

2. The propeller having the continuous spiral blade formed of separable sectors, the said sectors being separately keyed to the propeller-shaft, and having their opposing edges secured
25 together, substantially as described.

3. The propeller having the continuous spiral blade forming one complete revolution, the said blade being made of separable sectors, the

said sectors having their opposing edges tongued and grooved, and thereby adapted to
30 effect tight joints, substantially as described.

4. The combination, in a propeller, of the spiral blade and the flange E at the outer edge of said blade, said flange having the flanges F embracing the opposite sides of the spiral
35 blade and bolted thereto, substantially as described.

5. The propeller having the continuous spiral blade, forming one complete revolution, and the flange E on the outer edge of the blade,
40 the said flange being disposed in a plane parallel with the axis of the propeller and having its rear edge or projecting portion broader than its forward projecting portion, for the purpose set forth, substantially as described.
45

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

ALEXANDER D. HALL.

GEORGE B. SLOAN.

Witnesses to the signature of A. D. Hall:

LEE D. CRAIG,

F. F. WARD.

Witnesses to the signature of Geo. B. Sloan:

E. G. SIGGERS,

J. H. SIGGERS.