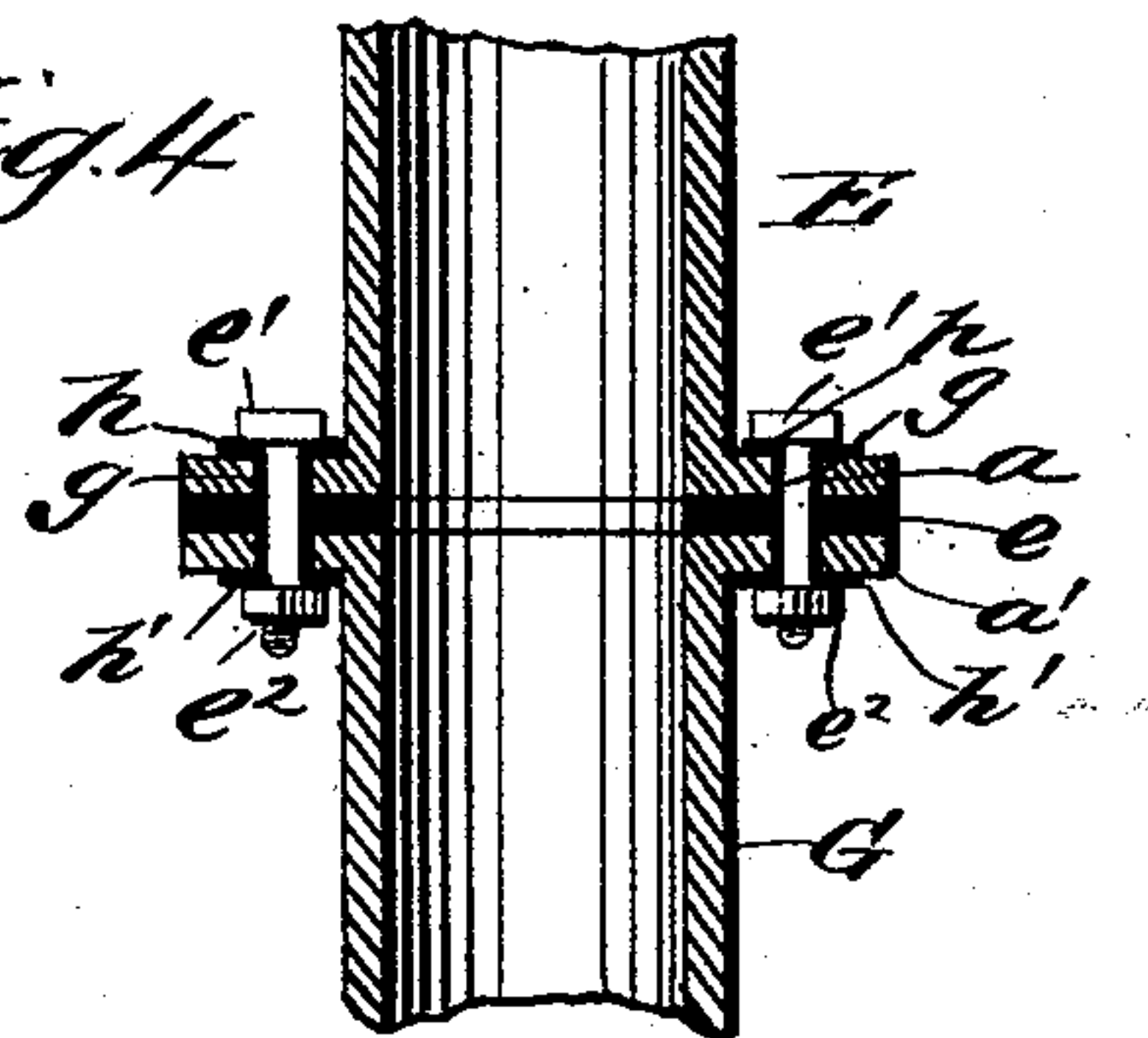
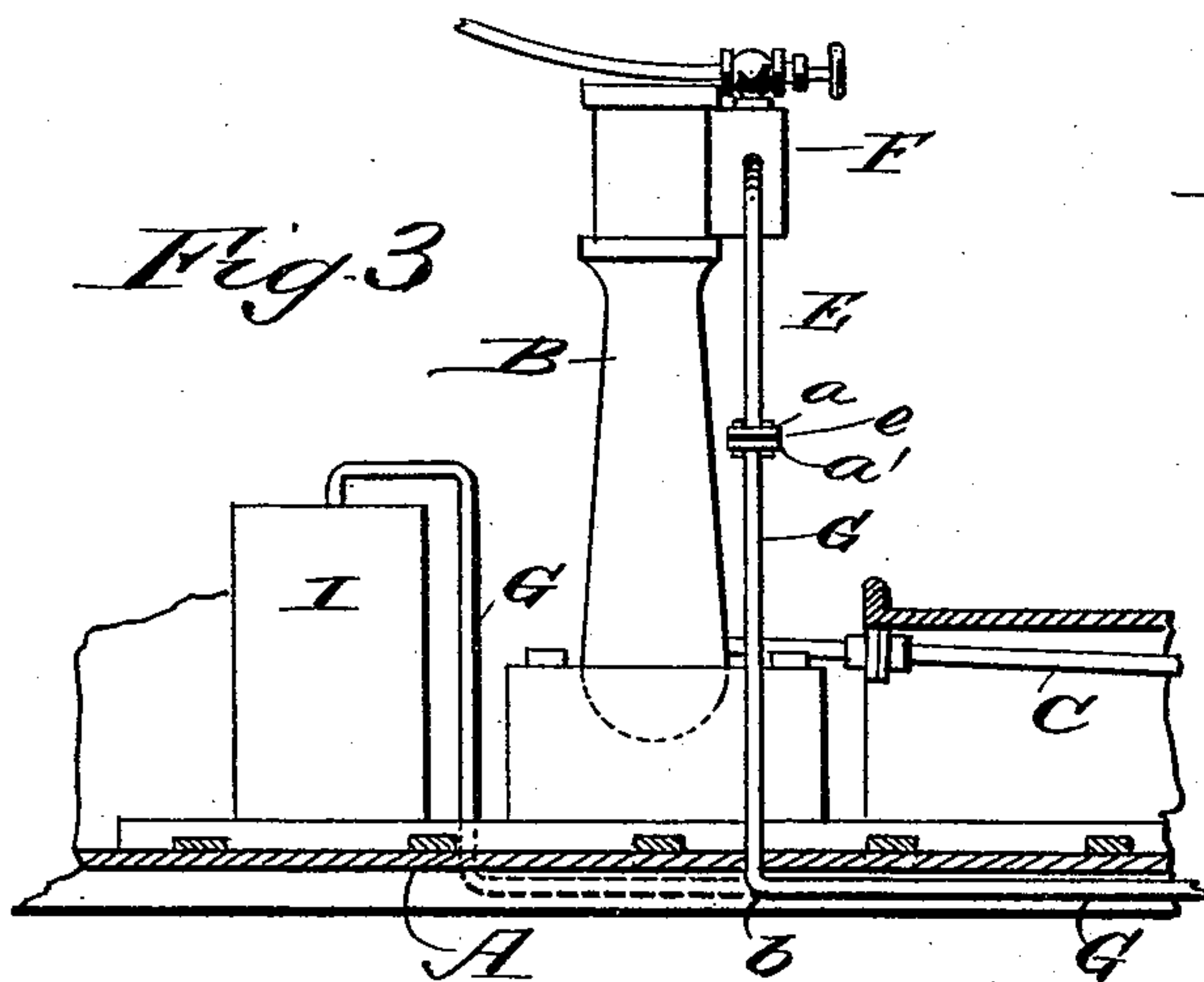
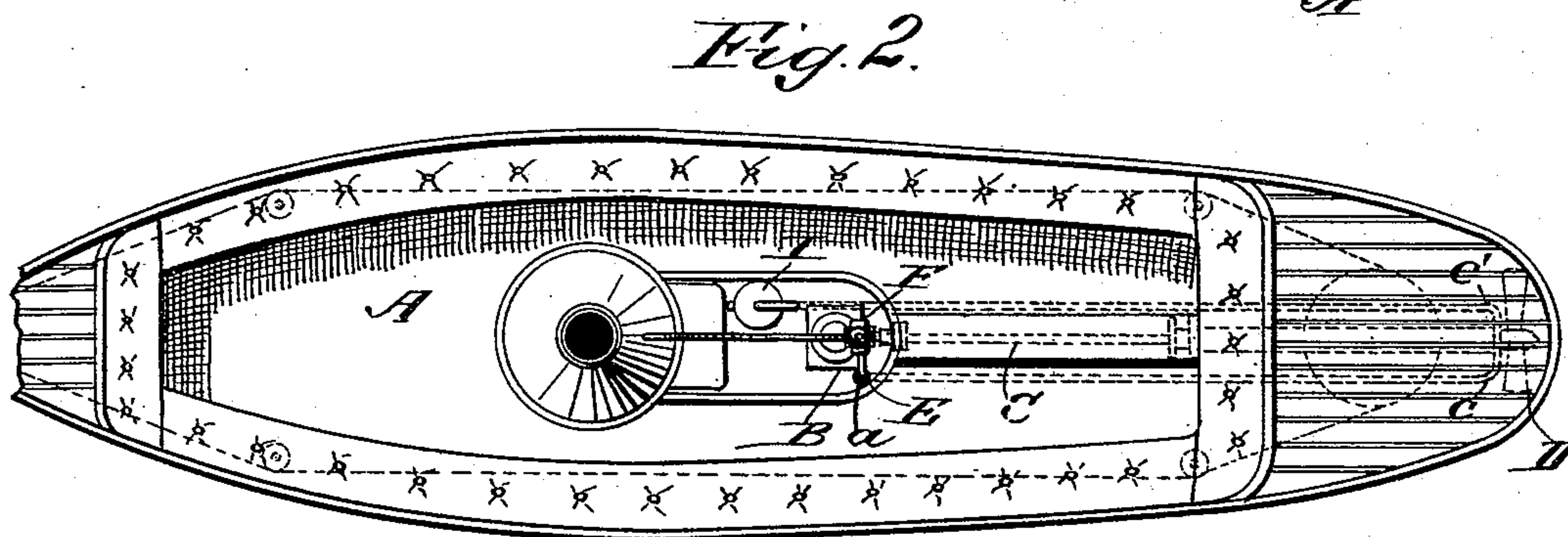
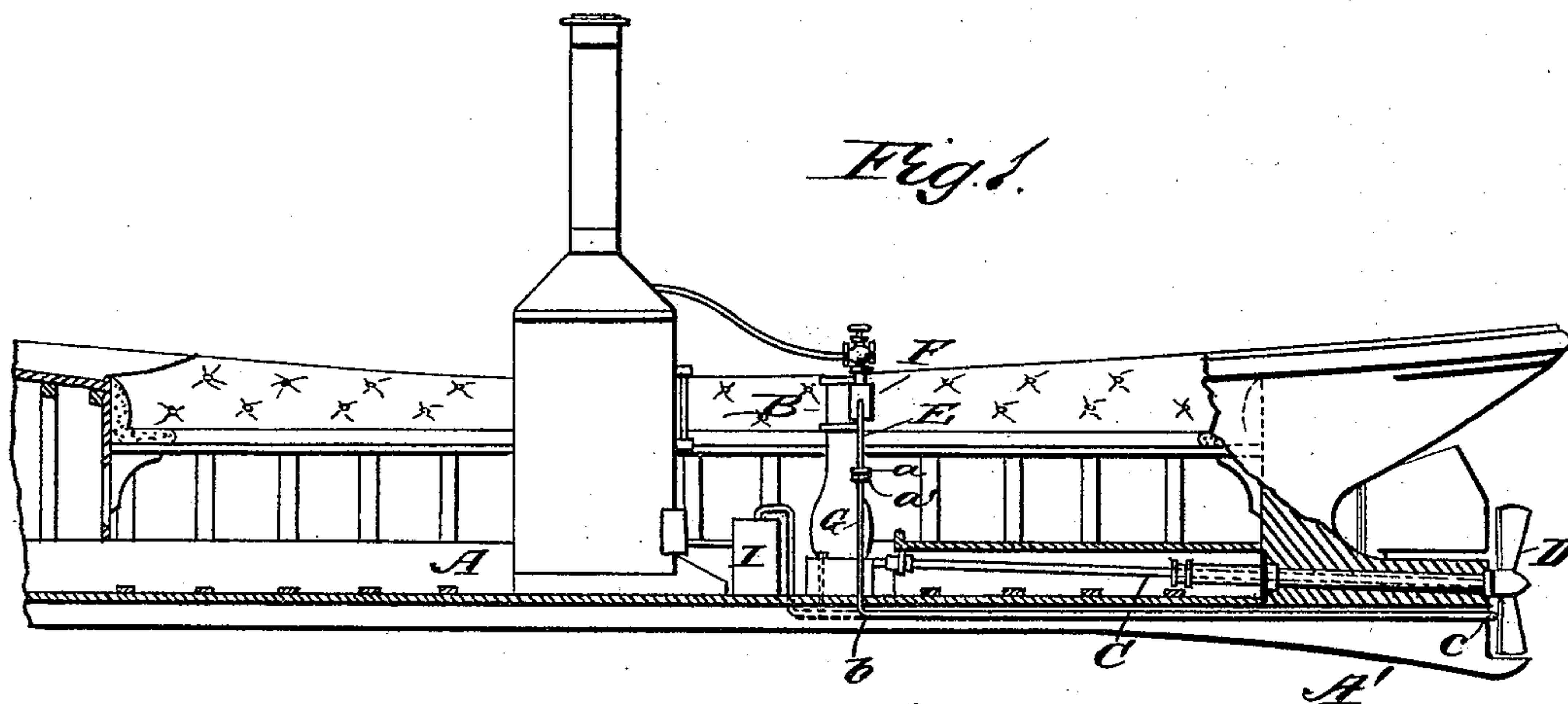


(No Model.)

P. DECKER.
INSULATOR FOR MARINE CONDENSERS.

No. 454,717.

Patented June 23, 1891.



WITNESSES:

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PETER DECKER, OF NORWALK, CONNECTICUT.

INSULATOR FOR MARINE CONDENSERS.

SPECIFICATION forming part of Letters Patent No. 454,717, dated June 23, 1891.

Application filed February 5, 1891. Serial No. 380,267. (No model.)

To all whom it may concern:

Be it known that I, PETER DECKER, of Norwalk, in the county of Fairfield and State of Connecticut, have invented a new and useful
5 Electrical Insulator for Marine Condensers, of which the following is a full, clear, and exact description.

In sea-going vessels driven by steam-power condensers are employed to convert exhaust-
10 steam from the engines into water, and thus save it for repeated use.

One of the most simple, compact, and inexpensive condensing apparatus for marine vessels driven by a steam-propeller consists of a
15 tubular conduit for exhaust-steam, which extends from the steam-chest of the engine downwardly through the hull, thence rearwardly along the keel, returning from the rear forwardly on the opposite side of the keel,
20 and after entering the vessel, terminating in a connection with a hot well, from which the condensed water is pumped or otherwise forced into the boiler.

The simplicity of this device and its efficient
25 action as a condenser of the exhaust-steam are meritorious features; but it has been found in service that a rapid decomposition of the iron portions of the shaft, propeller-wheel, and supports for these parts that are exposed
30 to the sea-water takes place.

The object of this invention is to obviate the rapid oxidation of the exposed iron portions of the propeller shaft, wheel, and fittings, which has been proved by experiment to be
35 due largely to galvanic action resulting from the exposure to salt-water of the copper tube forming the condenser and the iron parts, which rust, the shaft, wheel, and fittings as ordinarily placed being in direct electrical
40 circuit with the condenser-tube.

To this end my invention consists in the interposition of a complete non-conductor of electricity between the adjacent portions of the exhaust-steam pipe and the copper con-
45 densing-tube; and, further, it consists in the construction and combination of parts to carry into effect my invention, as is hereinafter described and claimed.

Reference is to be made to the accompanying
50 drawings, forming a part of this specification,

in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal section of a vessel having a steam-engine, a propeller connected therewith by its shaft, and an elongated tube-condenser connected to the engine
55 by improved means to effect insulation. Fig. 2 is a plan view of the vessel and machinery shown in Fig. 1. Fig. 3 is an enlarged detached longitudinal section of a portion of the
60 vessel amidships, showing the improvement in connection with the exhaust-steam pipe of the engine and an attached condenser-tube shown broken, the return end of the condenser-tube and inboard end of the shaft be-
65 ing also shown; and Fig. 4 is an enlarged detached broken section of the attached ends of the steam-exhaust pipe of the engine and the tube-condenser with the improvement in position between these parts.
70

The insulating appliance may be used in connection with any type of engine or vessel having an elongated tube-condenser for exhaust-steam.

To illustrate the application of the improve-
75 ment a steam-yacht and its propeller are shown, in which A represents the vessel's hull; B, the steam-engine; C, the propeller-shaft, whereon the propeller-wheel D is secured in the usual manner at the stern of the vessel.
80

The exhaust-steam pipe E, that depends from the steam-chest F of the engine, is connected at *a* to one end of the copper tube G, that forms the condenser. The tube G extends from its point of connection with the ex-
85 haust-steam pipe E downwardly and through the hull A, as at *b* in Figs. 1 and 3, and thence rearwardly to a point *c* or terminal of the keel A', around which it is bent, and returns at *c'* forwardly to a point near the engine B, where
90 the terminal end of the pipe is preferably inserted within a tank or hot well I, or the end of the pipe G may be engaged with a pumping appliance direct. (Not shown.) As ordinarily secured, the copper tube G is in elec-
95 trical connection with the iron work of the engine and also with the shaft C and parts connected with it, these together forming a powerful galvanic pile, of which the tube G is the negative element and the iron shaft and
100

wheel the positive element, for which the salt-water provides an exciting solution. Consequently the portion of the iron work that is in direct connection with the saline water is rapidly decomposed by galvanic action.

In order to neutralize the action which has been described and preserve the iron work of the vessel which is affected thereby, a flange *a* is formed on the depending portion of the exhaust-steam pipe *E*, which pipe may be of any length, and upon the adjacent end of the copper tube *G* a similar flange *a'* is formed or secured.

Between the flanges *a a'* a joint-washer *e*, of any suitable material that will provide a steam-tight junction, and a non-electric connection are introduced, such as gum-cloth, leather, vegetable compressed fiber, or hard wood, the gum-cloth being preferably employed.

The flanges *a a'* are compressed together upon the joint-washer *e* by the bolts *e'* and their nuts *e²*, any suitable number being provided, and as a means to insulate these bolts and prevent their electrical contact with the flanges *a a'* there is an enveloping sleeve *g* placed upon each bolt, which intervenes between its body and the metallic surface of the flanges. Insulating-washers *h* are also inserted between the heads of the bolts and the flange they bear upon, and similar washers *h'* may also be located between the nuts *e²* and the flange they are adjacent to. The last-named washers are not absolutely necessary to insure the insulation of the connected pipes from each other, and may be omitted or used, as preferred.

As the introduction of an insulating-joint

between the copper condenser-pipe and the exhaust-discharge pipe of the steam-engine is the essential feature of my invention, I do not desire to limit the manner of connecting these pipes to the exact forms shown, nor do I wish to restrict said point of connection to that indicated in the drawings, as different steam-engines may require a disposition of the exhaust-pipe in another plane.

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

1. The combination, with an exhaust-pipe of a steam-engine in a sea-going vessel and a tube-condenser therefor which is exposed to sea-water, of a non-electric joint placed between these parts, substantially as described.

2. The combination, with a tubular steam-condenser for a vessel which is exposed to sea-water, an engine within said vessel, and an exhaust-pipe therefor, of an insulating and steam joint placed between the exhaust-pipe and tubular condenser and insulating material between the connecting-bolts and flanges they connect, substantially as described.

3. In an electric insulator for condensers of sea-going vessels, the combination, with a flanged iron exhaust-pipe and a flanged copper condensing-pipe, of an interposed non-conducting joint-washer between the flanges, non-conducting sleeves around the bolts that connect the flanges, and non-conducting washers under the heads or nuts of said bolts, substantially as set forth.

PETER DECKER.

Witnesses:

WM. P. PATTON,
E. M. CLARK.