

*A. Doig,
Journal.*

N^o 32823,

Patented July 16, 1861.

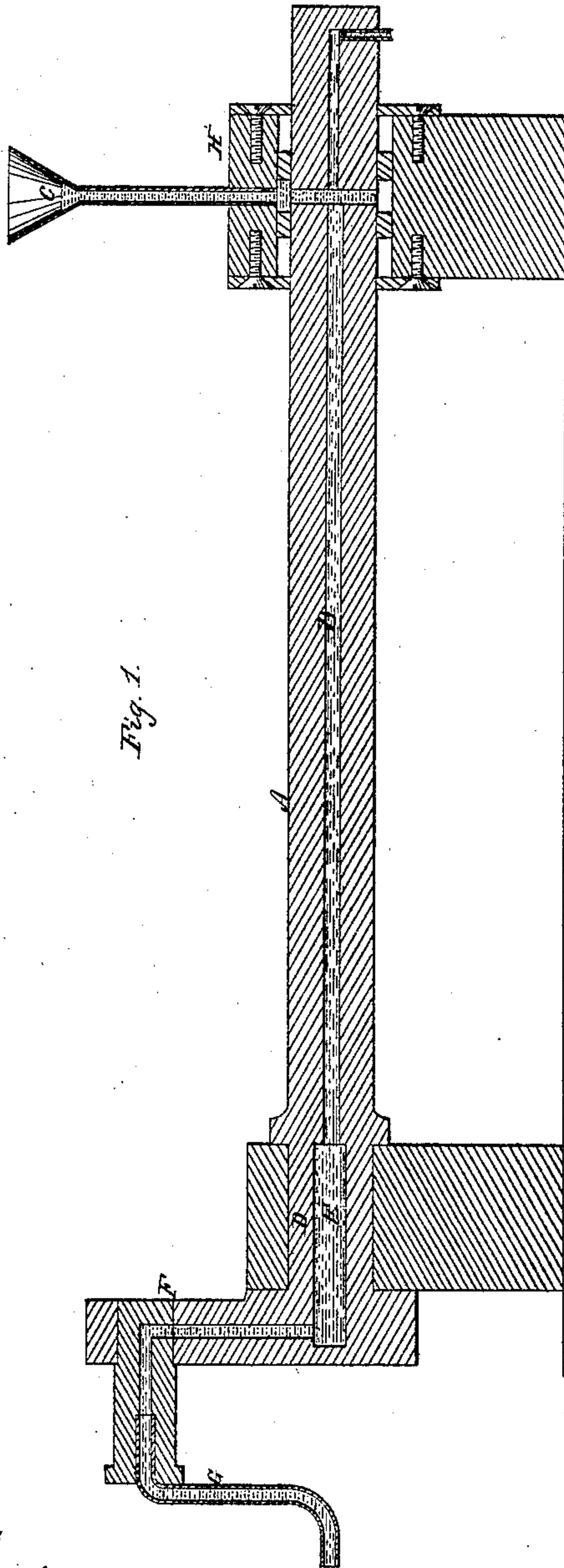


Fig. 1.

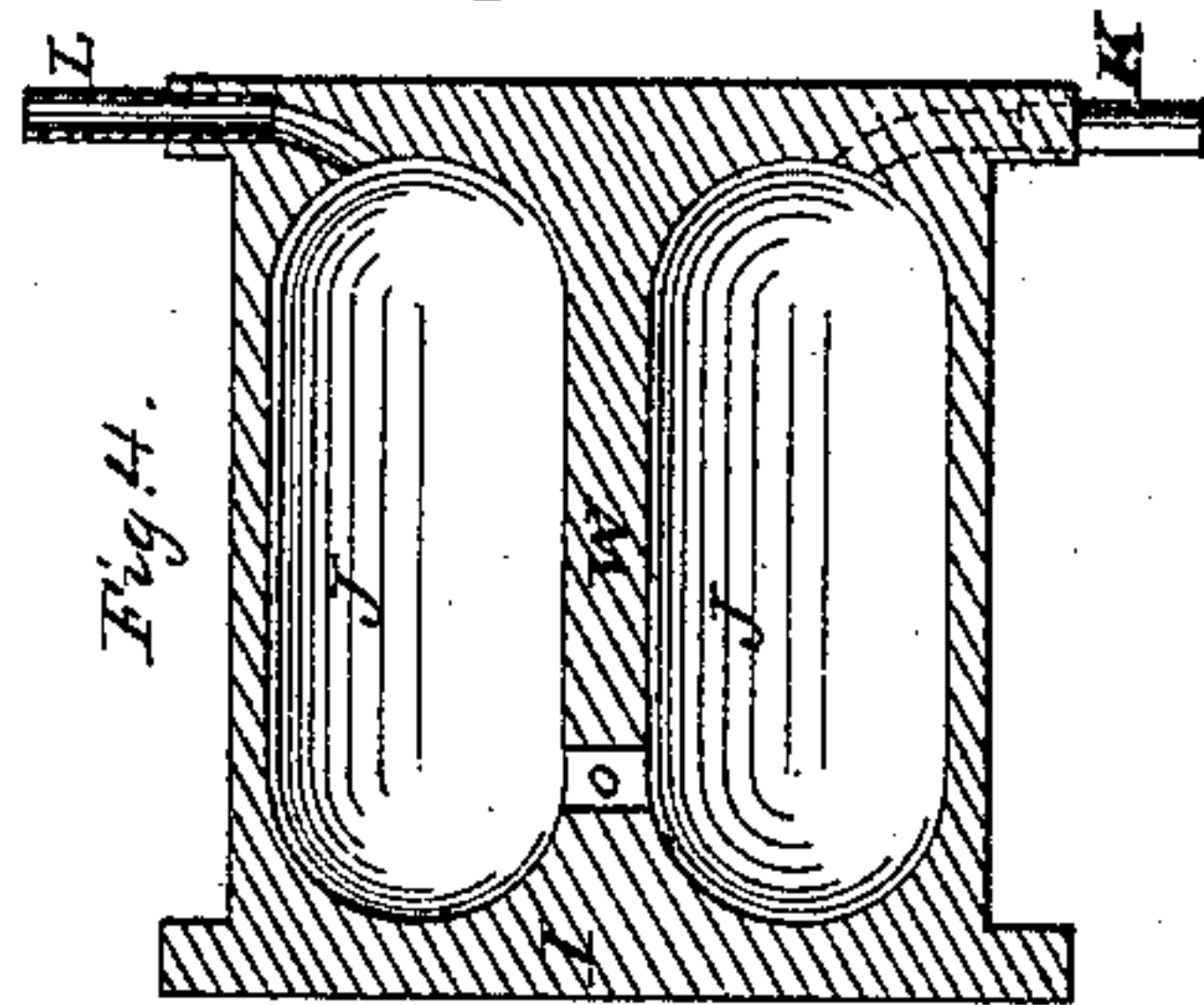


Fig. 4.

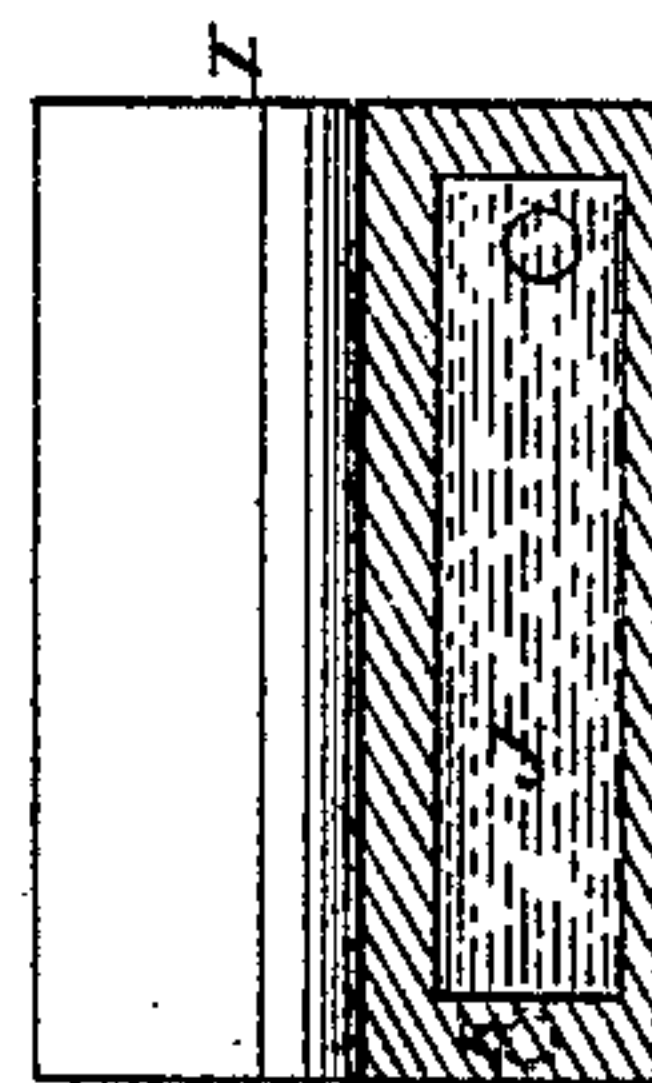


Fig. 3.

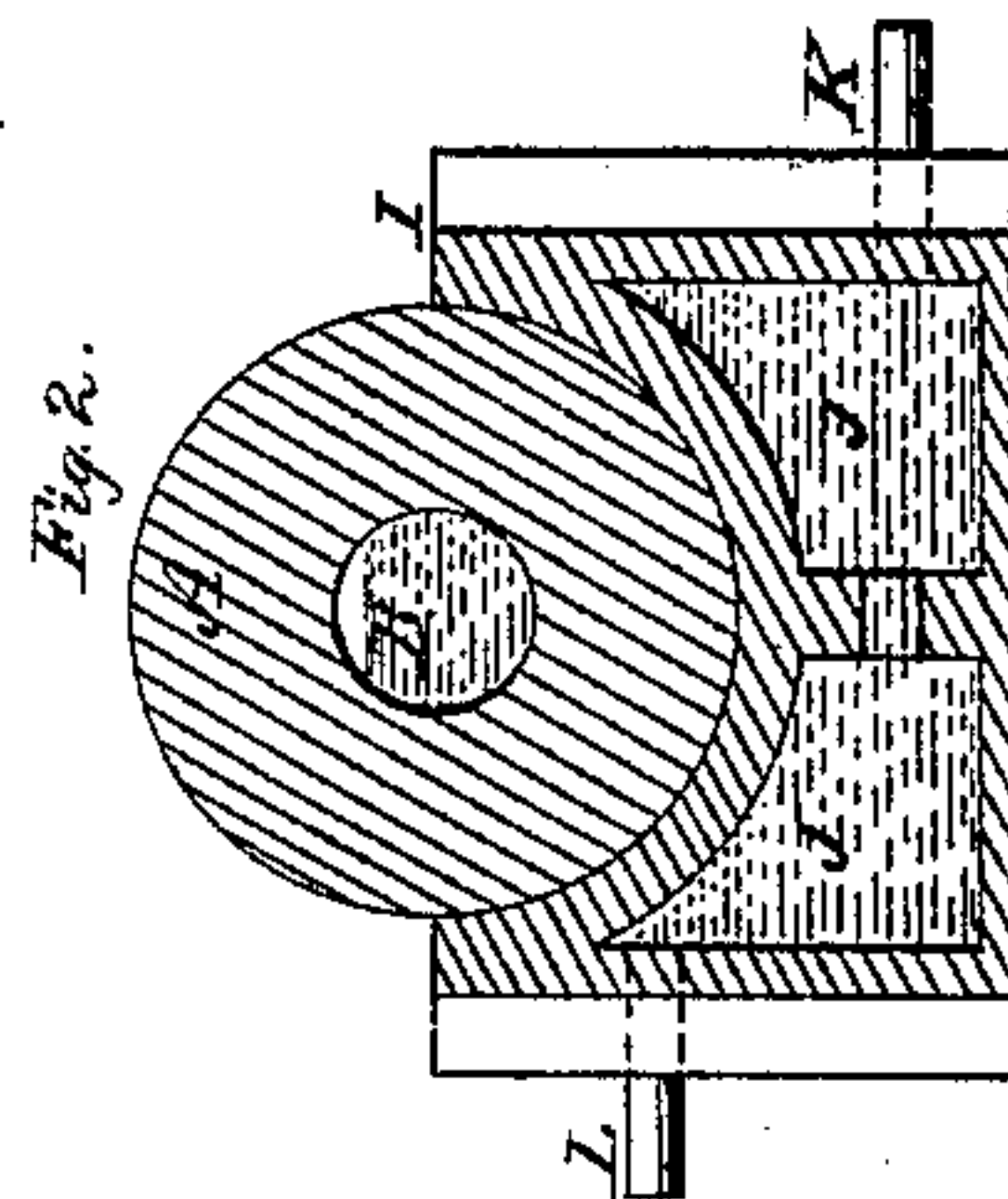


Fig. 2.

*Witnesses
James W. Taylor
John W. Little*

*Inventor.
A. Doig.*

UNITED STATES PATENT OFFICE.

A. DOIG, OF BROOKLYN, NEW YORK.

COOLING FRICTIONAL SURFACES.

Specification of Letters Patent No. 32,823, dated July 16, 1861.

To all whom it may concern:

Be it known that I, A. Doig, of the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful
5 Improvement in Cooling the Frictional Surfaces of Machinery to Prevent Them from Becoming Unequally Heated and from Injurious Wearing; and I hereby declare that the following is a full, clear, and exact de-
10 scription of the same, reference being had to the annexed drawings, forming a part of this specification, in which—

Figure 1 is a vertical longitudinal section of a shaft and water reservoir showing the
15 improvement; Fig. 2 is a transverse end section of a journal box showing the improvement, and Figs. 3 and 4 are sections of the journal box, the latter figure being a top view.

20 Similar letters refer to like parts on the figures.

The nature of my invention consists of a cellular journal box for the shafting of engines, especially those of steam boats and
25 ships, constructed with a web (or webs) forming chambers communicating with one another, and through which a current of water is made to flow, for the purpose of keeping the frictional surfaces cool without
30 bringing the water into contact with them; and also securing sufficient strength in the boxes to sustain the heaviest shafting without crushing.

To enable others skilled in the art to make
35 and use my invention I will describe it as clearly and succinctly as possible, and to do this intelligently I will first describe the common mode of cooling frictional surfaces with water and point out its defects.

40 The frictional surfaces of shafts and journal boxes, especially those of steam ships are liable to become overheated. To obviate this evil, a stream of water is usually applied to them directly on the outside of the
45 journal-box and shaft. This is a defective method, as, either from unequal heating and cooling, or the action of the water upon these surfaces chemically, while heated, they (the surfaces) usually become honey-combed
50 after the shafting has run for some time, thus completely injuring the journals, which are required to be smooth and even.

In the drawings; A,—Fig. 1,—represents

a shaft formed with an interior water pas-
55 sage B, which communicates with a reservoir C, containing water.

D, is the journal of the shaft, in which the water passage is enlarged into a chamber E, for the purpose of obtaining a
60 greater amount of cooling surface near where the heat is generated. The water passage extends from the reservoir down into the center of the shaft, and through the crank F, into the bent tube or siphon G, at the outer end of which the water is dis-
65 charged. The passage from the reservoir to the journal box may be made quite short. A stuffing box H, is placed where the water is admitted from the reservoir to the water
70 passage in the shaft. A continual stream of water is made to flow from the reservoir through the journal of the shaft, when the latter is revolving, and the heat generated by the friction is thus absorbed from all the
75 frictional surfaces equally and carried off without bringing the cooling agent into direct contact with the frictional surfaces.

In Figs. 2, 3 and 4 I represents a journal-
80 box formed with enlarged interior water passages or chambers J J which communicate with one another as shown.

W is a web or rib of metal cast with the
85 box, having an opening o through it, said web dividing the box into chambers, and tending to make it very strong to sustain the weight of the shaft.

K is a pipe by which water is admitted
90 from any suitable source and L is the one by which it is discharged. The water is admitted at a point lower than where it is discharged so that a current is thus maintained throughout the entire chambers of the box. An extensive cooling surface is thus also
95 secured and an equal refrigerating action obtained on all the frictional surfaces.

Journal boxes of a different form from
100 that represented in the drawings may be employed to suit different cases. As these boxes are usually divided into two sections, which are usually bolted together to secure the shaft, the upper section, as well as the lower one, may be constructed as shown and described. The construction and arrange-
105 ment of the shafting journal and the journal boxes according to my invention, as shown and described, also the whole oper-

ation and its attendant results, will be understood by engineers and machinists without further enlarging on the subject.

Having thus described my invention I
5 claim—

The combination and arrangement of a journal-box for the heavy shafting of steam engines, formed with an interior webbing

and hollow spaces, constituting a cellular journal-box with water chambers to cool the 10 frictional surfaces, substantially as and for the purpose set forth.

A. DOIG.

Witnesses:

JAMES W. TAYLOR,
JOHN W. LITTLE.