

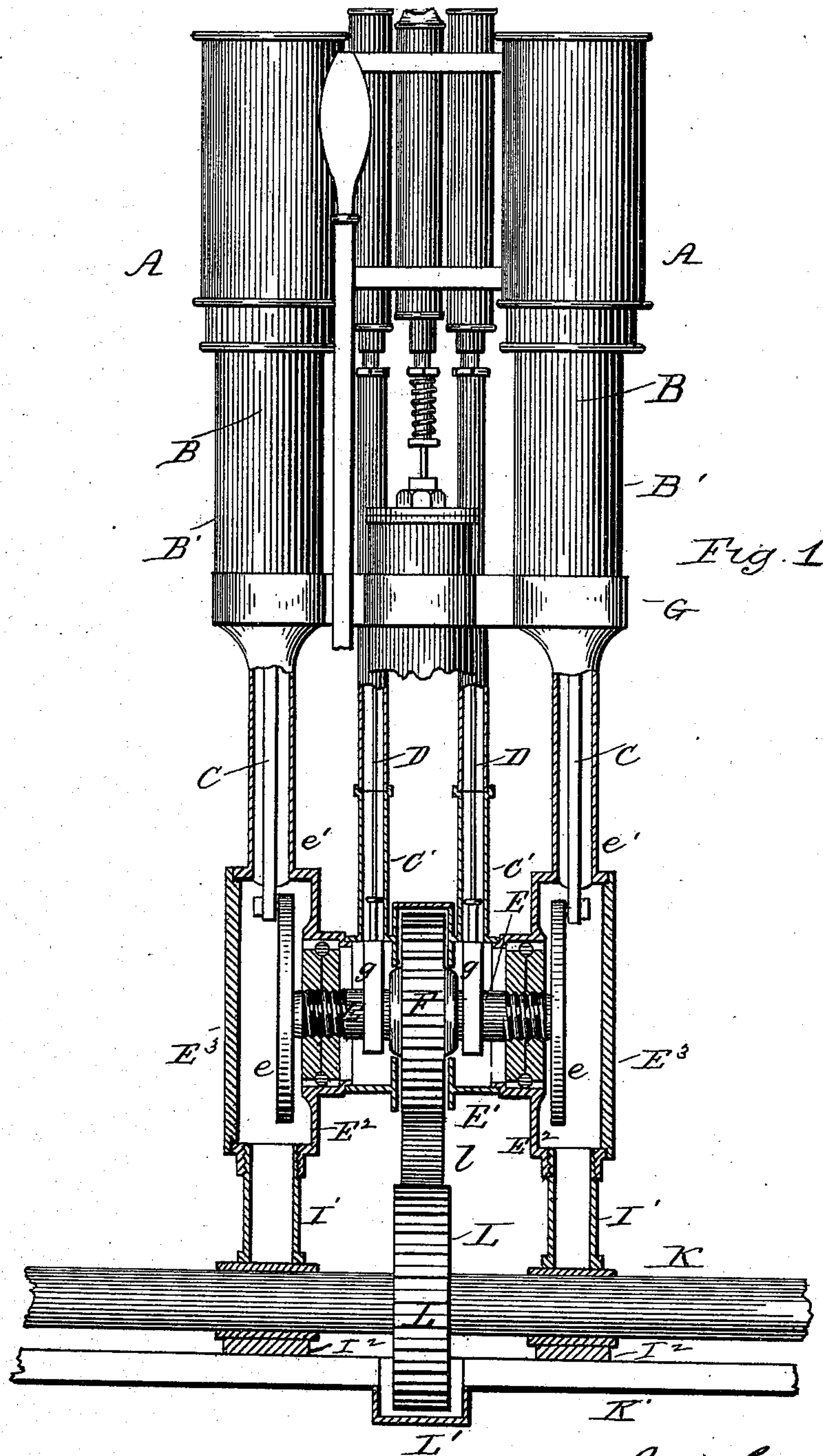
(No Model.)

2 Sheets—Sheet 1.

L. D. COPELAND.  
CASING FOR MARINE ENGINES.

No. 402,403.

Patented Apr. 30, 1889.



WITNESSES.

Albert B. Blackwood

L. Paul.

L. D. Copeland

INVENTOR.

by *Cunningham*  
attys.

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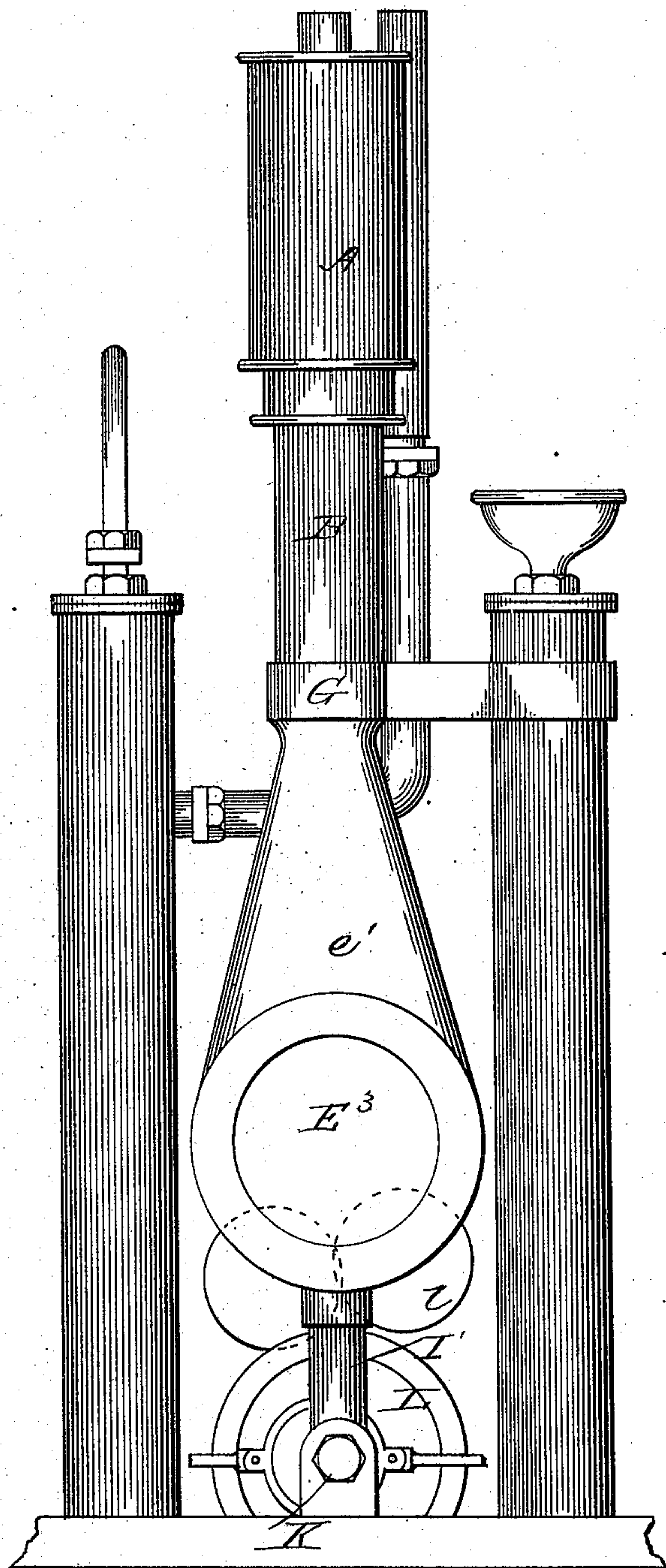


Fig. 2

WITNESSES—  
Albert B. Blackwood  
L. Paul.

INVENTOR—  
Lucius D. Copeland  
by Counselor, Atty



# UNITED STATES PATENT OFFICE.

LUCIUS D. COPELAND, OF CAMDEN, NEW JERSEY.

## CASING FOR MARINE ENGINES.

SPECIFICATION forming part of Letters Patent No. 402,403, dated April 30, 1889.

Application filed June 1, 1888. Serial No. 275,739. (No model.)

*To all whom it may concern:*

Be it known that I, LUCIUS D. COPELAND, a citizen of the United States, residing at Camden, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Casings for Marine Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form part of this specification.

This invention has relation to marine or other steam-engines, and especially to the peculiar type shown and described in Letters Patent of the United States No. 360,761, granted to me April 5, 1887.

The engines to which my present improvements are adapted and for which they are designed are of the double or twin cylinder class, there being two vertically-arranged cylinders, the pistons of which are connected by pitman-rods to cranks on a horizontal shaft, from which motion is communicated by suitable gearing to the propeller-shaft.

My invention has for its object the provision of a protective casing or shield for the working parts of the engine; and it consists in the novel construction, arrangement, and combination of casing-sections capable of being readily coupled together and taken apart without disorganizing the engines to which they are applied.

In the accompanying drawings, Figure 1 is front elevation, partly in section, of a double marine engine embodying my improvements; and Fig. 2 is a side elevation of the same.

A A designate the vertical twin cylinders; B B, the piston-rods; B' B', the cross-head casings; C C, the pitman-rods; D D, the valve-rods, and E a horizontal main shaft, upon which are fitted the cranks *e e*, to which the pitman-rods are connected, the valve-rod eccentrics *g g*, and the main working gear-wheel F.

The engine-cylinders are mounted on a suitable frame, G, and the arrangements are such as to constitute two separate and distinct engines coupled to a single driving-shaft, E. This driving-shaft carries the main gear-wheel F, and adjacent to and parallel to said driving-shaft is the propeller-shaft K, carry-

ing a gear-wheel, L, to which motion is communicated from main gear-wheel F by intermediate gear-wheels, *l l*. That portion of the casing which includes the main shaft E and the parts mounted thereon consists of a central tubular cast section, E', and circular boxes or heads E<sup>2</sup> E<sup>2</sup>, fitted thereto by threaded connections or otherwise. The boxes E<sup>2</sup> E<sup>2</sup> are formed or cast with extensions *e' e'*, which incase the pitman-rods and are connected or coupled to cylindrical casings B' B', in which the piston-rods play, and the said boxes are closed by circular caps E<sup>3</sup> E<sup>3</sup>, screwed or bolted in place. The valve-rods are incased in tubes C' C', the lower sections of which are cast with and upon the tubular section E'.

The boxes E<sup>2</sup> E<sup>2</sup> are mounted on pillars I' I', which are hollowed out vertically to within a short distance of the propeller-shaft K, and are horizontally bored to receive the said propeller-shaft and form bearings for the same, and are bolted to the bed-plate K'. The pillars I' I' have open communication with the interior of the casing, and form a reservoir for oil which drips down from above and lubricates the working parts contained within the casing. A well or cavity, L', is formed in the bed-plate K' below the gearing, and serves as a receptacle for oil and dirt escaping from the opening in the bottom of the casing, thus keeping the exterior of the engine clean and free from oil and other accumulations.

The casing above described forms a valuable adjunct to an engine, not only protecting the journals and moving parts of the engine from dust and dirt, but also protecting such parts from water or spray, and it also renders the engine less dangerous to persons accidentally coming in contact with the same and less liable to grease and soil the clothing of those in the vicinity, and these features are of special importance in such small and exposed engines as are used on yachts, launches, and the like.

Having described my invention, I claim—

1. The combination, with a pair of twin engines coupled to a single driving-shaft, of a casing or shield inclosing the working parts of said engines and made in separable sections, that portion of the casing inclosing the main shaft being formed of the tubular cast

section E' and circular boxes or heads E<sup>2</sup> E<sup>2</sup>, fitted thereto by threaded connections and provided with removable end caps, E<sup>3</sup>, substantially as described.

5 2. The combination, with a pair of twin engines coupled or connected to a single driving-shaft and with a horizontal propeller-shaft, of a hollow casing inclosing the working parts of said engine, the hollow pillars I'  
10 I', supporting said casing and communicating

with the interior thereof, and the arched plates or bearings I<sup>2</sup> I<sup>2</sup>, upon which said pillars rest, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 26th day of 15 May, 1888.

LUCIUS D. COPELAND.

Witnesses:

SANDFORD NORTHROP,

WILL H. POWELL.