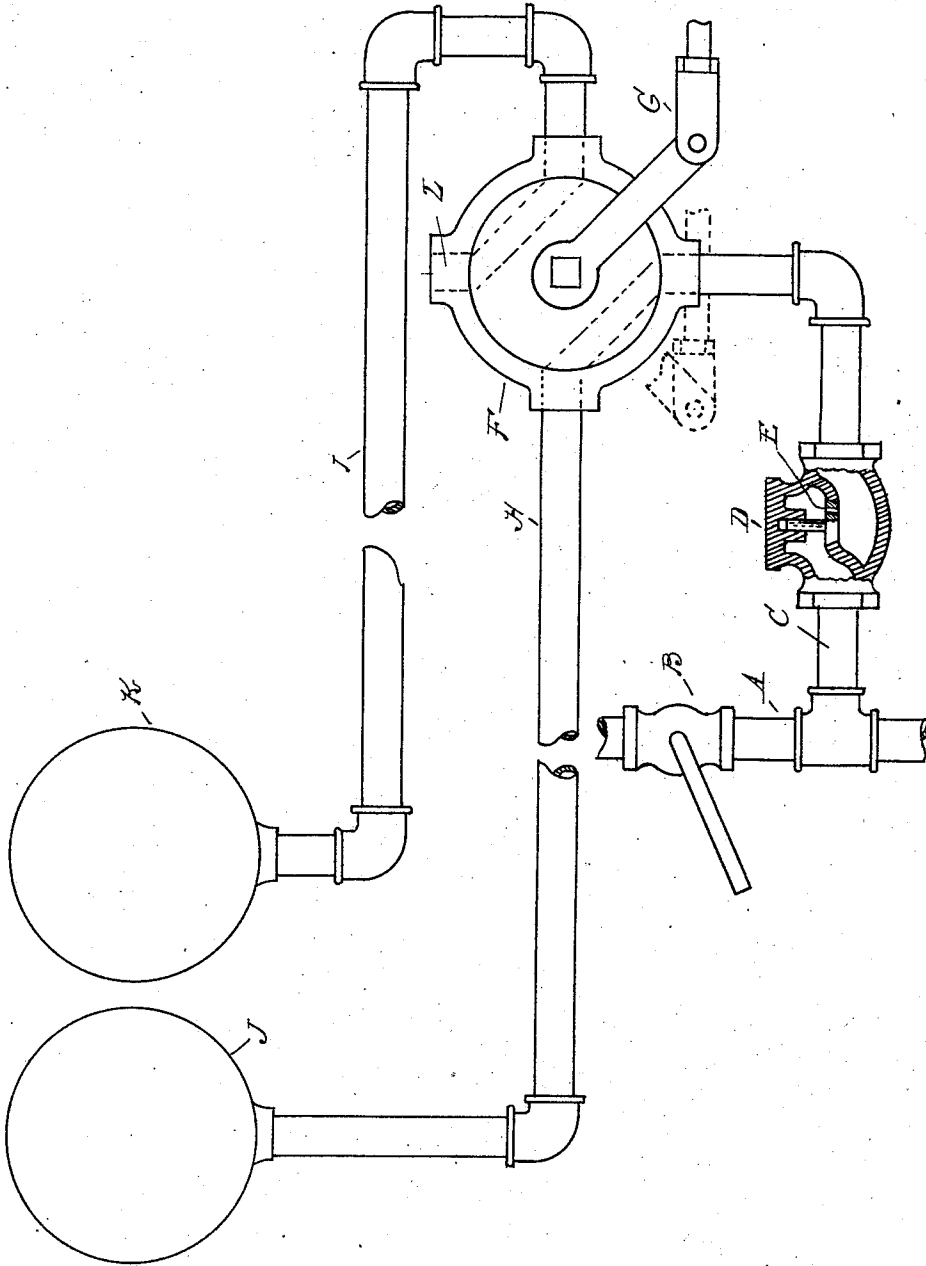


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INDICATOR.

APPLICATION FILED OCT. 20, 1910.

1,048,032.

Patented Dec. 24, 1912.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE BROWN, OF SARNIA, ONTARIO, CANADA, ASSIGNOR TO BROWN AUTOMATIC INDICATOR COMPANY, OF PORT HURON, MICHIGAN, A CORPORATION OF MICHIGAN.

INDICATOR.

1,048,032.

Specification of Letters Patent.

Patented Dec. 24, 1912.

Application filed October 20, 1910. Serial No. 588,104.

To all whom it may concern:

Be it known that I, GEORGE BROWN, a subject of the King of Great Britain and Ireland, residing at Sarnia, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Indicators, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to indicators more particularly designed for use in connection with marine engines.

It is the object of the invention to indicate the position of the control lever or levers for the engine and also the pressure of steam under which the engine is operating.

To this end the invention consists in the construction as hereinafter set forth.

The drawing represents my improved apparatus diagrammatically in sectional elevation.

A is a steam conduit leading to the engine and controlled by the throttle valve B.

C is a branch conduit leading from a point between the throttle and the engine valve.

D is an inwardly opening check valve in the conduit C which has a restricted port E therethrough.

F is a valve in the conduit C beyond the check valve D which is controlled by a link connection G to the reversing lever of the engine (not shown). This valve F is preferably of the four-way type and controls branch conduits H and I respectively leading to steam gages J and K which are located in a position for observation by the pilot.

The arrangement is such that when the reversing lever is in one position connection is made between the conduit C and the branch H leading to the gage J, while in the opposite position of adjustment the said lever connection is made with the conduit I leading to the gage K.

In operation whenever the throttle valve B is opened the steam will be admitted to the engine and through the conduit C will find access to one or the other of the steam gages J and K. Thus if the reverse lever is in the forward position the steam will be admitted to the conduit I and to the gage K, and steam will be exhausted from the conduit H through the exhaust port L while the reversal of the engine will cause the steam to pass through the conduit H to the

gage J and exhaust the steam from the conduit I. By means of this construction the pilot is made aware not only of the direction in which the engine is running, but also the pressure of steam under which it is operated. This pressure will fluctuate according to the position of the engine valve, rising whenever said valve closes its ports and falling upon the opening of said ports. To limit the oscillation of the gage index, the check valve D is introduced in the conduit C the restricted port E of which retards the admission of steam to the gages when the pressure is rising, but upon the dropping of the pressure the valve D will open, equalizing the pressure on the gage with that in the conduit A. Thus a correct indication of the average pressure on the valve is given and the oscillations of the gage indexes are limited.

What I claim as my invention is:

1. The combination with a steam engine control mechanism, of a plurality of steam gages, and means controlled by said control mechanism for admitting the steam for the engine to one of said gages, and connecting the other gage to exhaust, and vice versa.

2. The combination with a steam engine control mechanism, of a plurality of steam gages, and means controlled by said control mechanism for connecting one of said gages into continuous communication with the steam supply for the engine, and for connecting the gage which is not in communication with the steam supply into communication with an exhaust, and vice versa.

3. The combination with a steam engine control mechanism, of a plurality of steam gages, and means controlled by said control mechanism for connecting one of said gages into continuous restricted communication with the steam supply for the engine, and for connecting the gage not in communication with the steam supply into communication with an exhaust, and vice versa.

4. The combination with a conduit for the steam supply of an engine, of a plurality of gage conduits, a valve for alternatively connecting said gage conduits to said steam supply conduit, constructed to constantly admit steam into the gage conduit connected with the steam supply conduit and to permit constant exhaust communication from the gage conduit from which the steam supply is shut off, and a connection from the reverse lever of the engine controlling said valve.

5. The combination with a steam engine control mechanism, a conduit for the steam supply of an engine, and a throttle valve for said conduit, of a plurality of steam gages, and means controlled by said control mechanism for admitting the steam for the engine from a point in the conduit between the throttle valve and the engine to one of said

gages and connecting the other gage to exhaust, and vice versa.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE BROWN.

Witnesses:

P. H. PHILLIPS,
LISSETTA FIRMAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."