E. Locke,

Rotary Steam Engine.

No. 3,736. Patented Sep. 11, 1844.

Fig. 1.

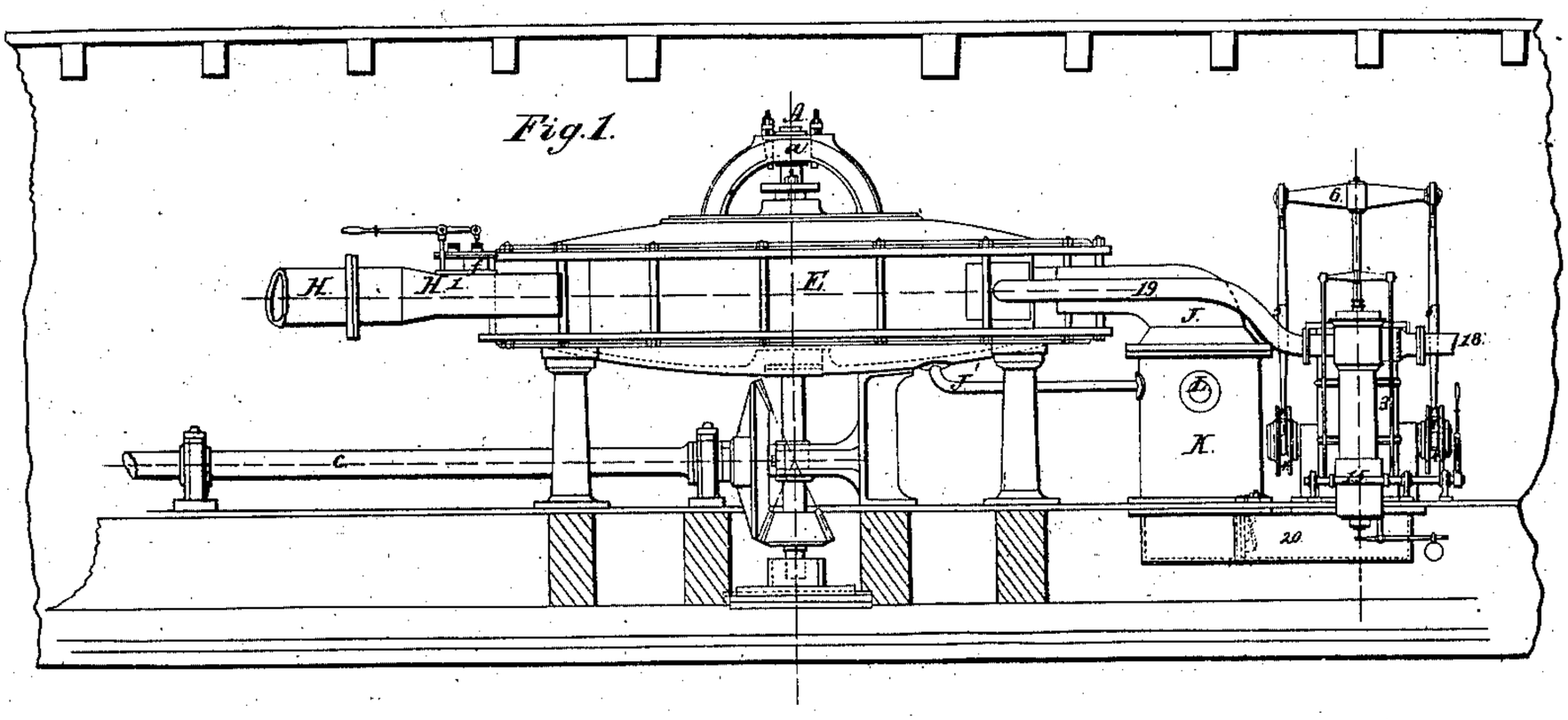


Fig. 2.

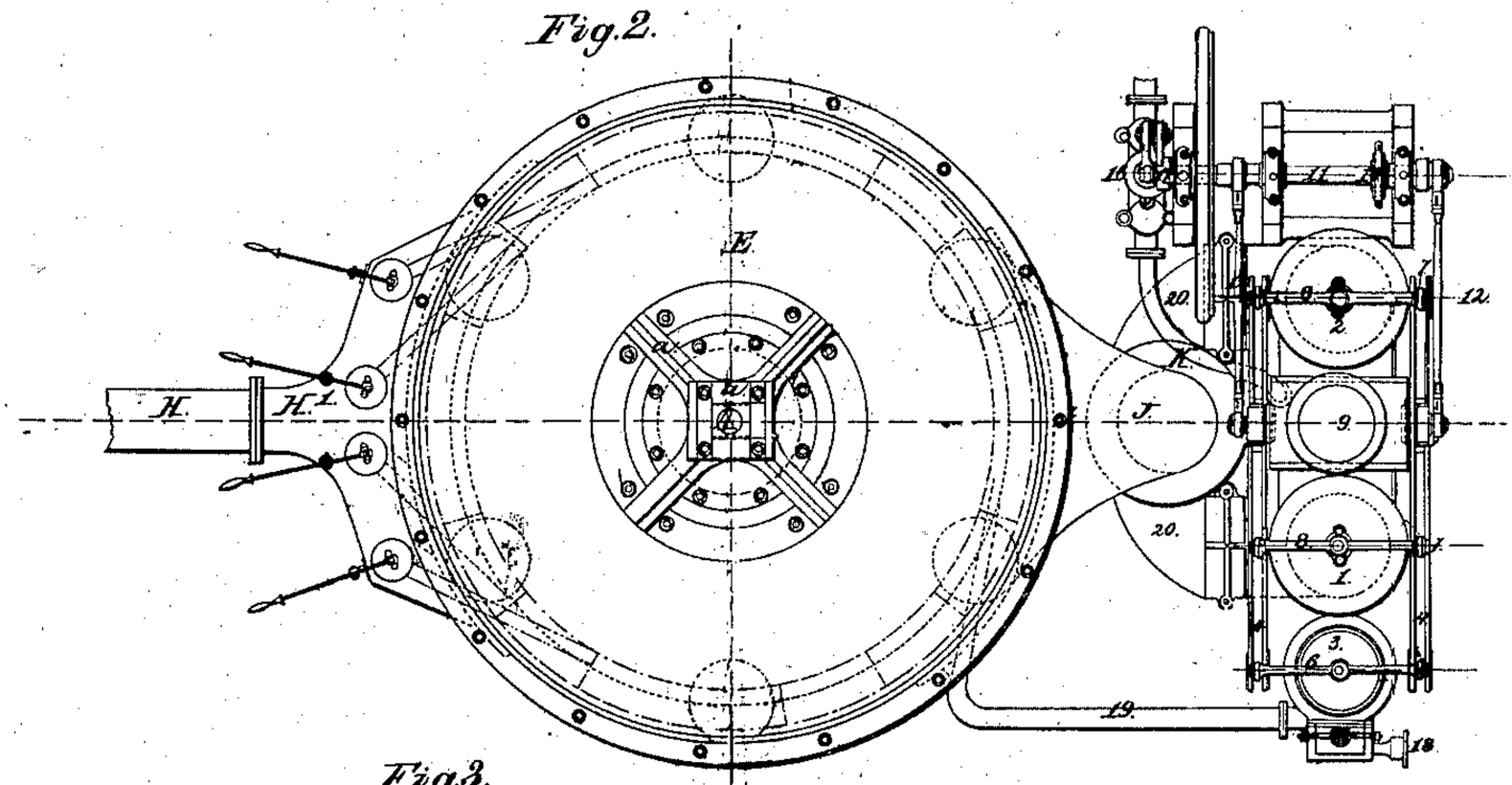
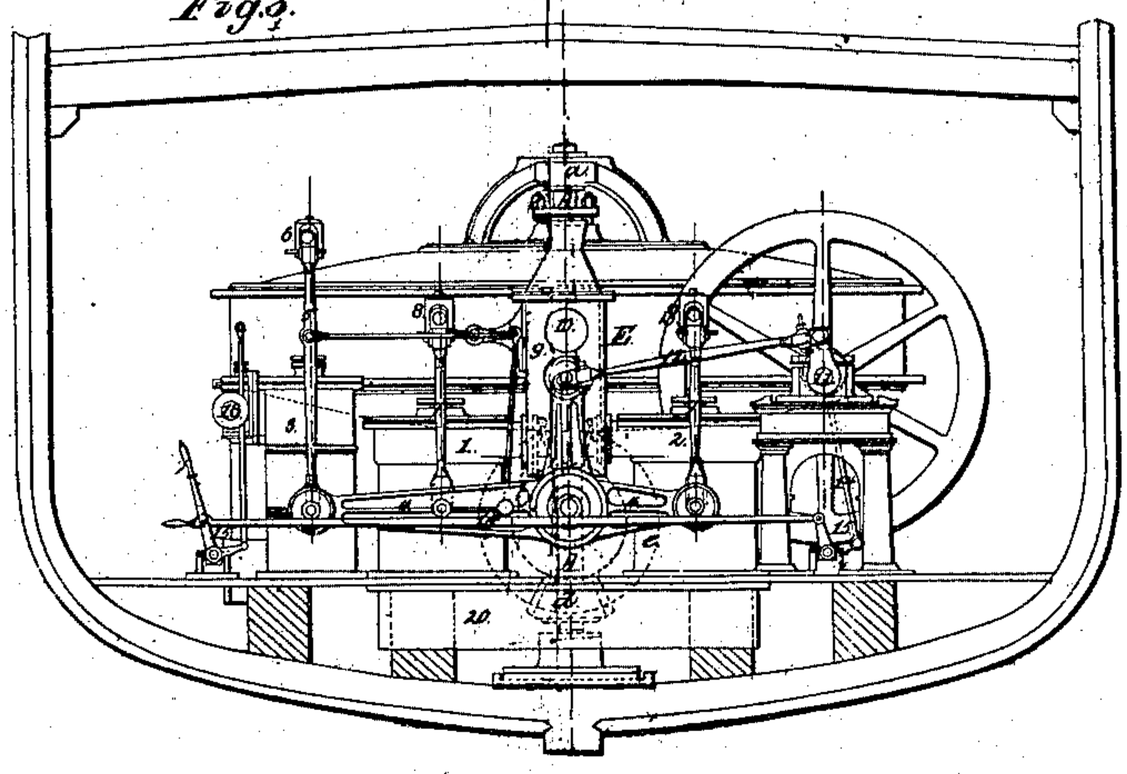


Fig. 3.



Witnesses.

Hazlehurst

W. H. Ritchie

Inventor.

Edward Locke

UNITED STATES PATENT OFFICE.

EDWARD LOCKE, OF NEWPORT, ENGLAND.

MODE OF EXHAUSTING CASES OF ROTARY STEAM-ENGINES.

Specification of Letters Patent No. 3,736, dated September 11, 1844.

To all whom it may concern:

Be it known that I, EDWARD LOCKE, of Newport, in the county of Monmouth, England, have invented or discovered an improvement in a new rotary engine formerly discovered by James Jamieson Cordes and Edward Locke and for which Letters Patent were granted to them on March 29, 1841, for fourteen years from July 18, 1840; and I, the said EDWARD LOCKE, do hereby declare the nature of my said invention to consist in the addition of a separate engine steam-cylinder or exhausting apparatus to the said new rotary engine for perfecting the vacuum in the case of the main wheel revolving therein instead of depending on the revolution of the main wheel itself to produce the vacuum required for it to revolve in; and I do hereby further declare that the manner in which my said invention is to be performed is particularly described and ascertained by the following statement thereof, reference being had to the drawing annexed, which I will now proceed to describe—that is to say:

Description of the drawing.—Figure 1 is a side view of "Cordes and Locke's" new rotary engine with the air tight case placed horizontally and showing an end view of the new exhausting apparatus; Fig. 2, a plan of Fig. 1, and Fig. 3, a front elevation of Fig. 1.

All the figures of the drawing represent one of my said separate engines or steam cylinders for working the exhausting apparatus applied to a marine engine arranged horizontally for propelling a boat by means of a screw or other suitable revolving propeller, and it may be as well here to state that letters are used to point out such parts of "Cordes and Locke's" engine as may be found necessary to explain the advantage to be derived from the new mode of working the exhausting apparatus in connection with that engine, while figures alone are employed to represent the different parts of the said separate engine or steam cylinder for working the exhausting apparatus and similar letters and figures of reference are used to denote similar parts of the engine and the said apparatus wherever they appear in all the different figures of the drawings.

Fig. 1 is a side view of "Cordes and Locke's" new rotary engine; E, the air tight case containing the main revolving wheel and supported horizontally on columns, the whole securely bolted down to a bed or sole plate and resting upon substantial frame work. A is the main shaft passing through the center of the case E upon which shaft the main revolving wheel is fastened and which shaft is supported by the external bearings *a* and *b*. By the revolution of this shaft motion is communicated to the horizontal propeller shaft C by means of the bevel wheels *d* and *e*. H is the steam pipe from the boiler provided with a branching nozzle H′, into which valves (one of which is shown at *f*) are inserted for admitting at pleasure one or more jets of steam on the one or the other side of the main revolving wheel within the case E as required either for a forward or a reversing motion; *j*, a pipe from the bottom of the case E to the condenser K for conveying off the condensed steam from the case E. J is the exhausting pipe; K the condenser and L the injection cock.

And now begins the description of those parts which constitute my said improvement and which as I before stated are marked with numbers instead of letters.

1 and 2, are two air pumps with buckets and valves of the usual construction; 3, a small steam cylinder; 4, side levers connected to the piston rod of the small cylinder 3, by means of the side rods 5, and cross heads 6, thereby conveying motion to the air pumps 1 and 2 by means of the rods 7, and the cross heads 8, similarly constructed.

9, is the hot water cistern into which the valves of the air pumps 1 and 2 deliver the condensed water.

10, is the orifice with the pipe for discharging waste water; 11, the fly wheel shaft with the fly wheel upon it.

12 is the connecting rods worked by bell cranked arms of the levers 4, for giving motion to the shaft 11; 13, an eccentric on the shaft 11 for working the slide valve of the small cylinder 3 by means of the rods 14, and the rocking shafts and levers 15.

16, is the force pump for supplying the boiler with water and is worked by the crank 17, on the shaft 11, drawing its supply water as may be found most convenient either from the hot water cistern as here shown or from the foot pipe at the bottom of the condenser.

18, is the steam pipe leading from the boiler to the nozzle of the small cylinder 3.

19, is the pipe conveying waste steam from

the steam cylinder to the vessel E causing the steam in its passage to the condenser to impinge against the vanes of the revolving wheel within the case.

20 is the foot pipe connecting the bottom of the condenser K with the bottom of the air pumps 1 and 2.

I have comprised these three figures in one description with reference to my said improvement because similar numbers being used to denote similar parts in all the figures and all the parts not being shown in each figure, it appeared to me the most explanatory course to pursue, and

Whereas I claim as my invention—

The application of a separate steam cylinder or engine distinct from the principal rotary engine but which may be worked by steam from the same boiler for working the exhausting apparatus by which the vacuum is kept sufficiently perfect in the case of the main revolving wheel instead of depending on the revolution of the main revolving wheel itself to work the exhausting apparatus for producing the required vacuum for it to revolve in, and whereby I obtain the following advantages not attainable by the said original patented invention, namely: first, I am enabled to direct more of the power of the main engine upon the main shaft of the propeller or work to be performed by the said main shaft; secondly, I am enabled to keep the case E constantly exhausted even when the main revolving wheel is at rest, so that it may start with full power at any time; thirdly, I am enabled to obtain the necessary vacuum without disturbing the propelling arrangements of the main engine or robbing it for that purpose of any of its power; fourthly, I am enabled by increasing the action of the exhausting apparatus to admit a greater quantity of steam into the case E and thus in all cases of emergency to increase the power of the engine, and, fifthly, I am enabled to use the waste steam from the steam cylinder of the exhausting apparatus by afterwards directing it upon the fanes of the main revolving wheel in the case E, and I hereby declare this to be the specification of my said improvement and invention.

In witness whereof I have hereunto set my hand this twenty-second day of November one thousand eight hundred and forty-two.

EDWARD LOCKE.

Witnesses:

S. CARPMAEL,

W. A. RITCHIE.