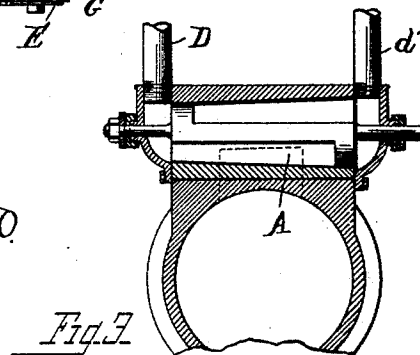
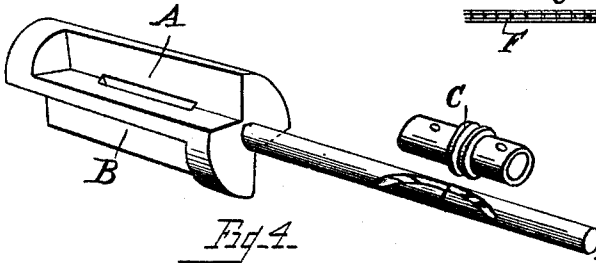
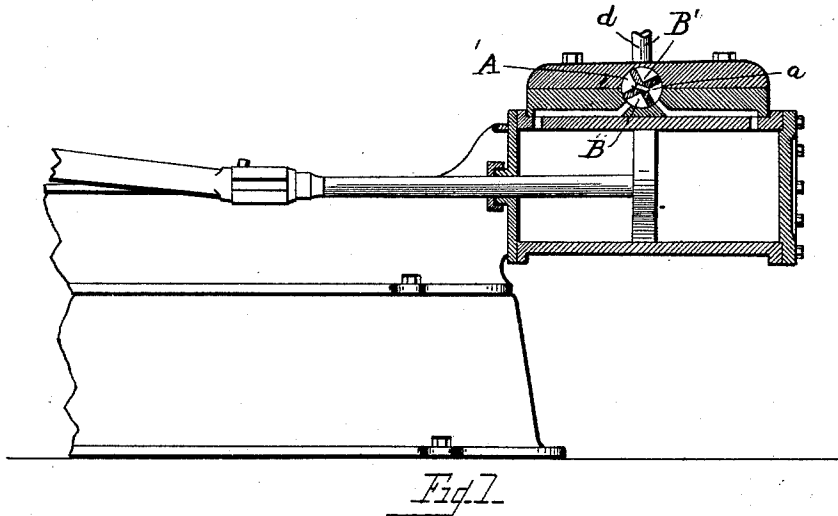


(No Model.)

S. & C. L. TORREY.
STEAM ENGINE.

No. 519,850.

Patented May 15, 1894.



WITNESSES.

Carl H. Beckham
Ed. J. J. J. J.

INVENTORS

Lucas Torrey
Charles L. Torrey
by F. M. Sturdivant
Attorney.

UNITED STATES PATENT OFFICE.

SILAS TORREY AND CHARLES L. TORREY, OF TOLEDO, OHIO, ASSIGNORS OF
ONE-FOURTH TO GEORGE K. DETWILER, OF SAME PLACE.

STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 519,850, dated May 15, 1894.

Application filed April 17, 1893. Serial No. 470,595. (No model.)

To all whom it may concern:

Be it known that we, SILAS TORREY and CHARLES L. TORREY, citizens of the United States, residing at Toledo, county of Lucas, and State of Ohio, have invented a certain new and useful Improvement in Reciprocating Steam-Engines, of which the following, in connection with the accompanying drawings, is a specification.

Our invention relates to steam engines, and has especial relation to the valve and valve gear in reciprocating engines.

The object of the invention is to provide an engine of few parts and consequently to reduce the friction to a minimum, whereby a maximum amount of power is secured.

A further object is to provide novel means for reversing the engine, which can be accomplished while the engine is at rest or in full motion.

The invention consists in the parts and combination of parts as shown, described and claimed.

In the drawings: Figure 1 is a sectional elevation of the cylinder of an engine showing the rotary valve in cross section. Fig. 2 is a plan view of the cylinder with the upper half of the valve casing removed to disclose the valve. Fig. 3 is a vertical sectional elevation of the valve and cylinder. Fig. 4 is a perspective view of the valve and stem and reversing collar. Fig. 5 is a sectional elevation of the reversing collar, the valve stem and ways being shown.

1 designates the cylinder of an ordinary engine and 2 designates the valve casing which is secured thereto in any manner, it being understood that the cylinder and valve casing may be of any of the well known forms now in use, as the valve and gear can be adapted to any form of reciprocating engine.

In the valve casing is formed a circular tapered valve seat 4 having ports 5 leading to the interior of the cylinder in the usual or any preferred manner, and journaled in the valve seat is the revoluble valve 6, which is formed with oppositely arranged feed and exhaust ports 7 and 8 respectively, the feed ports being at all times in communication with the feed pipe 9 leading from the boiler, by means of an annu-

lar recess 10 in the valve, the exhaust ports being in communication at all times with the exhaust pipe 11 leading from the chamber 12 secured upon the side of the valve casing, a projecting end upon one side of the valve passing through the chamber and receiving a nut by which means the wear of the valve is taken up.

12 designates the stem of the valve having a sprocket wheel 13 thereon over which runs a sprocket chain 14, the opposite end receiving motion from the crank shaft.

Stem 12 is of two parts independent one from the other, the abutting ends being slotted inversely as at 15, there being a collar 16 embracing the same, and having pins 17 passing through the slots 15, the collar being actuated by a hand lever 18 pivoted at 19, the outer end extending in convenient reach of the engineer, whereby when the collar is moved from side to side, the section of the valve stem secured to the valve is revolved to present a feed port 7 to the cylinder port desired to regulate the direction of movement of the engine.

In operation, steam being admitted to the feed pipe passes into the annular opening 10 of the valve into the feed ports 7 and into the port 5 in communication therewith; motion is communicated to the piston head, and consequently to the crank shaft by means of the sprocket chain 14, which revolves the valve and upon the end of the stroke of the piston, presents an exhaust port 8 with the port, and a feed port with the opposite port of the cylinder, reversing the movement of the piston head, this operation continuing until the steam is cut off. To reverse, throw over lever 18 which presents the feed ports to the opposite cylinder port and reverses the movement of the cylinder head, crank shaft, and valve, this movement continuing until the steam is cut off, or the engine again reversed. By means of the rotary valve as described, it will be seen that the feed and exhaust are in such relation to each other and to the cylinder head, that the feed and exhaust are just ahead of the full stroke of the crank, whereby the full power is applied as the crank is passing the centers, and the steam

exerts a pressure at all times when the crank is off the centers, thereby securing a maximum power.

By the simplicity and few parts, and consequently points of friction, the efficiency of the engine is brought to a maximum.

While we have shown and described the valve and valve seat as tapered, it will be understood that the valve and valve seat may be of a uniform size throughout, and that while the slots in the valve stem are both shown as inclined, either one or the other may be straight and the other inclined, the operation being the same.

What we claim is—

In a steam engine, a rotary valve receiving motion from the crank shaft, a feed and ex-

haust pipe, feed and exhaust ports in the valve for alternately communicating with ports leading to the steam cylinder, a stem upon the valve of two parts, inclined slots in the stem, and a collar having pins passing through said slot and a hand lever for moving the collar whereby the feed and exhaust are changed and the engine reversed.

In witness whereof we have hereto subscribed our names this 13th day of April, 1893.

SILAS TORREY.
CHARLES L. TORREY.

In presence of—

CARL H. BECKHAM,
E. H. SOUTHLAND.