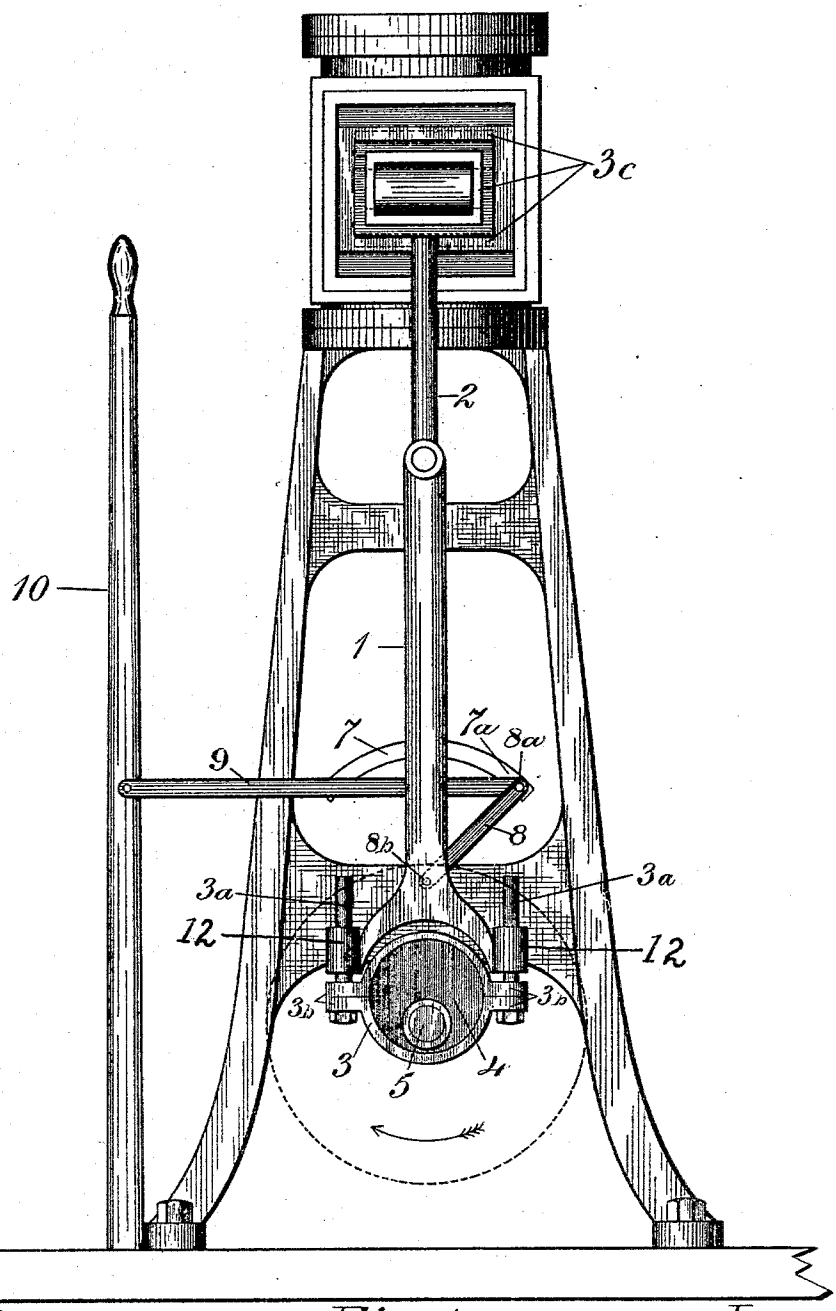
(No Model.) 2 Sheets—Sheet 1

A. R. LAMB.

REVERSING GEAR FOR STEAM ENGINES.

No. 514,479. Patented Feb. 13, 1894.



Witnesses.
C. L. Lawrie
L. Foulds.

Fig. 1.

Inventor,
A. R. Lamb.
by C. A. Richardson
his attorney

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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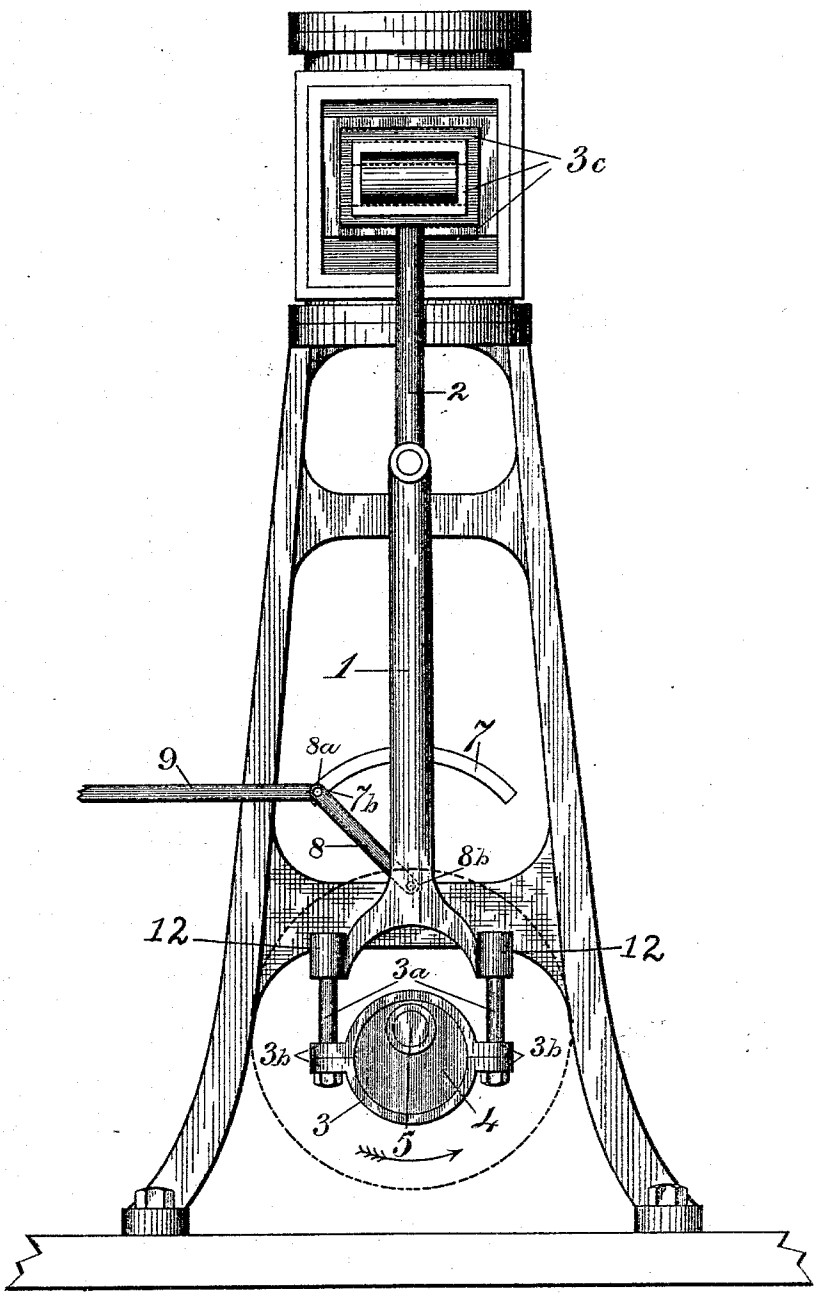

Witnesses,
C. L. Lawrie.
L. Foulds.

Fig. 2.

Inventor,
A. R. Lamb
by C. A. Peles
his attorney

THE NATIONAL LITHOGRAPHING COMPANY.
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ALEXANDER R. LAMB, OF FENELON FALLS, CANADA.

REVERSING-GEAR FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 514,479, dated February 13, 1894.

Application filed June 23, 1893. Serial No. 478,631. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER R. LAMB, of Fenelon Falls, in the county of Victoria, Province of Ontario, Canada, have invented certain new and useful Improvements in Reversing-Gear for Steam-Engines; and I hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to a reversing gear for steam engines, and more particularly to a reversing gear for that style of steam engine employed in the smaller class of steam boats, and the object of the invention is to construct the reversing gear in such a manner that the backward and forward movements of the engine are entirely under the control of a single eccentric rod, and the invention consists essentially of the device hereinafter more fully set forth.

In the drawings:—Figure 1 is a front elevation of the device, showing the engine about to commence its forward stroke. Fig. 2 is a view of the same, showing it about to commence the backward stroke.

Like numerals of reference refer to like parts throughout the specification and drawings.

The reversing gear consists of an eccentric rod 1 jointed at its upper end to the lower end of the valve rod 2 which operates the valves 3^c. The lower end of the eccentric rod 1 is provided with the opposite collars 12, loosely engaging a pair of upwardly projecting pins 3^a which are made fast in the lugs 3^b of the eccentric straps 3, in which works the eccentric 4, mounted on the shaft 5, and made fast to the frame work of the engine is a horizontally-arranged curved link 7, and working in the link 7 is the link-block end 8^a of the link arm 8 the other end 8^b of which is pivotally connected to the eccentric rod 7 near its lower end. Connected to the block end 8^a of the link arm 8, is one end of a rod 9, while the other end of the rod is connected to the reach rod 10. When the end 8^a of the link arm 8 is at the end 7^a of the link 7, or in the position shown in Fig. 1 of the drawings the engine will run in a forward direction. When however, the end 8^a of the link arm 8 is moved to the end 7^b of the link 7, as shown in Fig. 2 of the drawings, the engine will commence its backward stroke.

If the engine be moved off its center in the direction of the arrow in Fig. 1, the eccentric rod will descend and open the upper steam port from the steam chest into the cylinder. After the engine has passed the middle of its stroke, the valve will close the upper steam port and open the lower one. If the engine be moved off its center in the direction of the arrow in Fig. 2, the eccentric rod will move the valve rod to open the lower steam port from the steam chest into the cylinder, and when the engine has passed the middle of its stroke it will move the valve rod to close the lower valve, and open the upper one, this action being continued while the engine is in motion.

By means of a device of this description the cost of the engine can be greatly reduced and the construction and operations of the engine greatly simplified.

By reason of the pivotal connection of the link-arm 8, with the eccentric rod, it will be apparent that one end of this arm will swing in the arc of a circle up and down as the lower end of the eccentric rod is swung laterally to either side of the shaft 5 by the movement of the eccentric 4, and such arm will therefore permit a sufficient reciprocatory movement of the eccentric rod to insure the proper opening and closing of the ports in the steam chest.

Assuming the gearing to be in the position shown in Fig. 1, with the eccentric turning in the direction of the arrow, it will be understood that the pivotal connection of the eccentric rod with the valve rod permits the lower end of said eccentric rod to swing out to the right of the shaft 5, and this movement causes the end 8^b of the link-arm 8, to describe an arc in a downward direction, thereby causing the valve rod to lower a distance equal to the swing of the lower end of the eccentric rod and its link-arm. This causes the upper steam port to be uncovered, as stated, and in the mean time the eccentric strap is lowering away from the rod end, and carries the pins 3^a some distance out of the collars 12, which loosely embrace the same, until the position of the eccentric, shown in Fig. 2, is reached. From this position the pins 3^a commence to slide back in the collars, but the continued upward movement of the eccentric will swing the lower end of the eccentric rod out laterally

and cause a resultant throw of the valve in the same manner as just described for the downward swing of the eccentric.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a reversing gear for engines, the combination with the valve rod; of the main shaft carrying an eccentric, an eccentric strap encircling the shaft eccentric and having opposite upwardly projecting pins, the swinging eccentric rod pivotally connected at its upper end to said valve rod and provided at its lower end with opposite collars loosely engaging said strap-pins, a horizontally arranged stationary link, a link-block mounted to slide in said link, means for adjusting the position of the link-block in said link, and a link-arm pivotally connected at one end to the link-block and at its other end to the eccentric rod near its lower end, substantially as set forth.

Fenelon Falls, May 16, 1893.

ALEXANDER R. LAMB.

In presence of—

THOS. STEWART,

E. E. REILY.