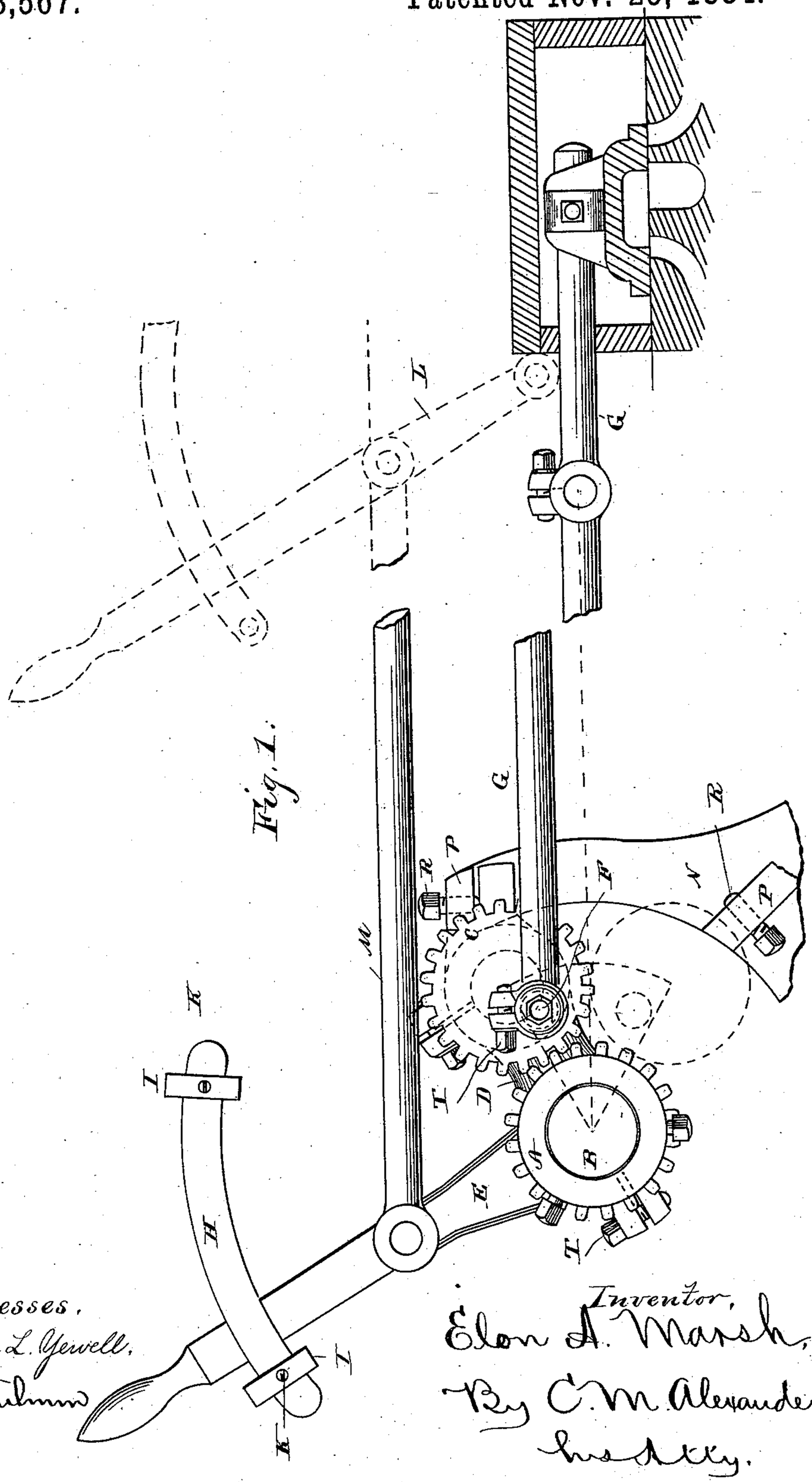
(No Model.) 2 Sheets—Sheet 1.

E. A. MARSH.

REVERSING GEAR FOR STEAM ENGINES.

No. 308,567. Patented Nov. 25, 1884.



Witnesses.
Edwin L. Yewell.
H. A. Toulmin

Inventor,
Elon A. Marsh,
By C. M. Alexander,
his Atty.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

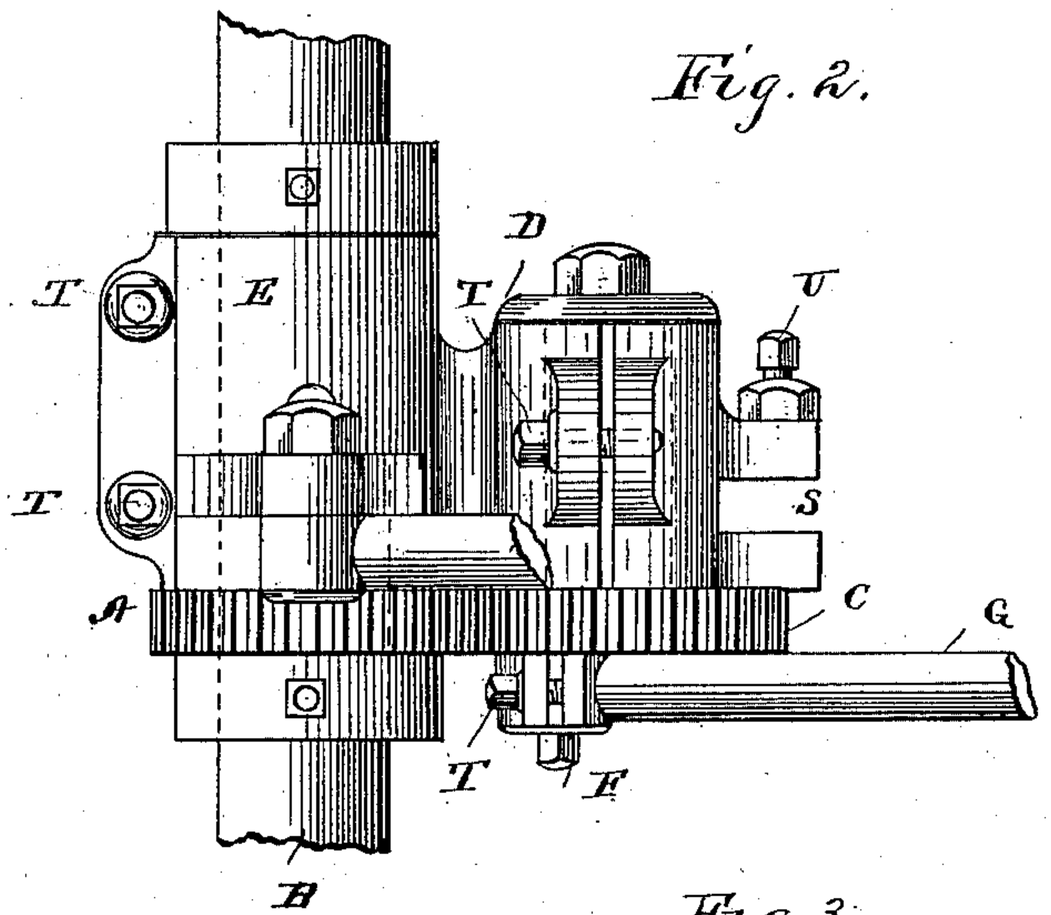
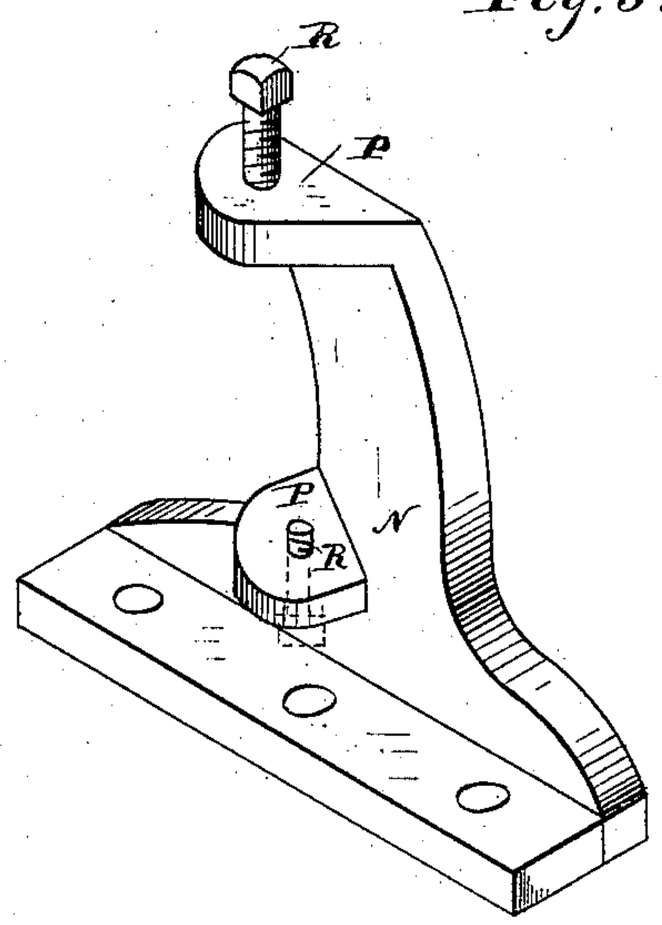


Fig. 3.



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UNITED STATES PATENT OFFICE.

ELON A. MARSH, OF BATTLE CREEK, MICHIGAN.

REVERSING-GEAR FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 308,567, dated November 25, 1884.

Application filed September 28, 1881. (No model.)

To all whom it may concern:

Be it known that I, ELON A. MARSH, of Battle Creek, in the county of Calhoun, and in the State of Michigan, have invented certain new and useful Improvements in Reversing-Gear for Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

This invention relates to certain improvements upon reversing-gear for steam-engines for which Letters Patent were granted to me December 28, 1880, No. 236,052; and it has for its objects to provide certain means for limiting the movement of the actuating-lever by means of adjustable stops, whereby the throw of the reversing-lever and the amount of lead to be given to the valve may be regulated with precision, as more fully hereinafter specified. These objects I attain by the apparatus and mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation of my improved reversing-gear; Fig. 2, a top view of the gear with the valve and valve-chest omitted, and Fig. 3 a perspective view of a standard provided with the adjustable stops for limiting the movement of the reversing-lever.

The letter A indicates a cog-wheel mounted on the main shaft or driving-wheel shaft B of the engine, and C indicates a similar cog-wheel of equal diameter with the wheel A, mounted on a suitable journal on the arm D of the angle-lever E, by means of which the reversing-gear is shifted. The two wheels intermesh, and the lever E is mounted on the driving-shaft, the said shaft forming a fulcrum, so that the lever may be partially turned thereon, so as to shift the wheel C. The said wheel C is provided with a wrist-pin, F, to which the valve-rod G is secured at one end.

The letter H indicates a segmental guide for the handle of the lever, which is provided with adjustable stops I, which are secured to it by means of set-screws K in any desired position to limit the movement of the lever as may be required.

In some instances it is found inconvenient to operate the lever directly, as above described, and in such cases an auxiliary lever, L, may be employed, as indicated by the dotted lines in Fig. 1, which is connected to the lever E by means of a rod, M. In the last-mentioned case it is found preferable to arrange the adjustable stops on an independent standard, N, rigidly secured to the engine-bed, boiler, or other rigid support. The said stops in this instance are preferably formed by means of the stationary lugs P, having adjustable set-screws R, and the arm D of the lever E is slotted, as indicated by the letter S, so as to embrace the sides of the standard N and prevent lateral play of the lever. It will thus be perceived that the movement of the lever is limited laterally as well as in the direction of its oscillation, thus securing the utmost precision in the operation of the reversing-gear.

To compensate for the effects of wear, the bearings of the lever and the journal of the wheel C are divided on one side, and are held together by means of clamping-screws T, by means of which they may be tightened whenever they become loose.

One of the jaws of the slotted arm of the lever E is provided with a set-screw, U, by means of which the said arm may be adjusted to closely embrace the standard N and take up wear.

The operation of the reversing-gear in the present instance is substantially the same as that described in my former patent above mentioned; therefore it is not deemed necessary to more fully describe it in the present case.

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

1. In a reversing-gear for steam-engines, the combination of a pivoted arm for carrying the reversing-wheel, a valve-rod, a reach-rod operatively connected with the pivoted arm, a lever for actuating the pivoted arm through the reach-rod, and suitable stops, against one or the other of which the pivoted arm abuts when thrown from one position to the other, substantially as and for the purposes set forth.

2. In combination with the lever, the gear-

wheels, and the valve-rod, the segmental guide and adjustable stops, substantially as and for the purposes specified.

3. In combination with the lever carrying the reversing-wheel and slotted at its extremity, the standard, and adjustable stops, the whole arranged to operate together substantially as specified.

4. In a reversing-gear for steam-engines, the two gears of equal diameters, mounted one on the main engine-shaft and the other upon a lever adjustable around said shaft as a center, and carrying crank-wrist, to which the valve-rod is connected, in combination with stops limiting the throw of said lever.

In testimony whereof I affix my signature, in presence of two witnesses, this 6th day of September, 1881.

E. A. MARSH.

Witnesses:
A. H. BRIGGS,
D. C. SIMONS.