B. CARLEY.

ECCENTRIC FOR OPERATING THE VALVES OF STEAM ENGINES.

No. 19,484. Patented Mar. 2, 1858.

Fig. 1.

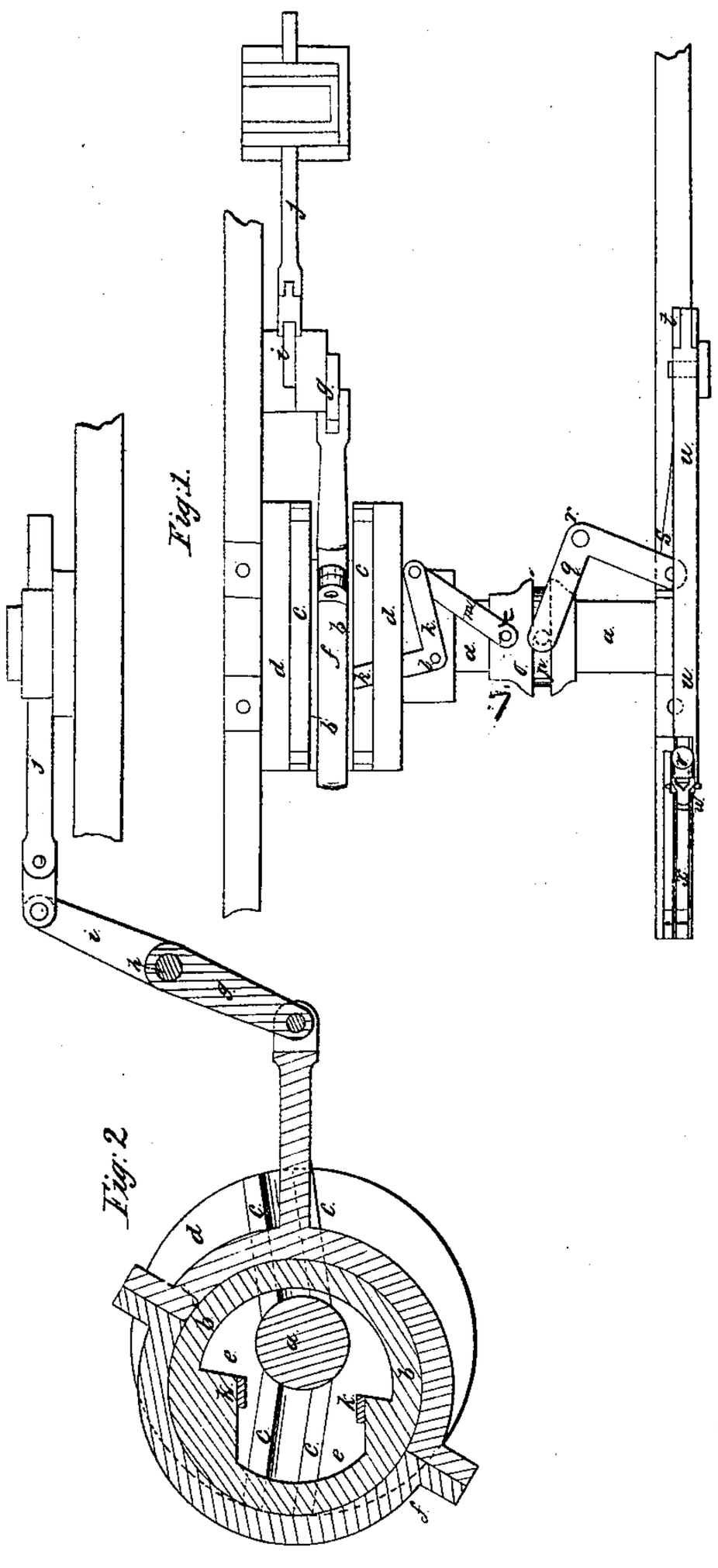


Fig. 2

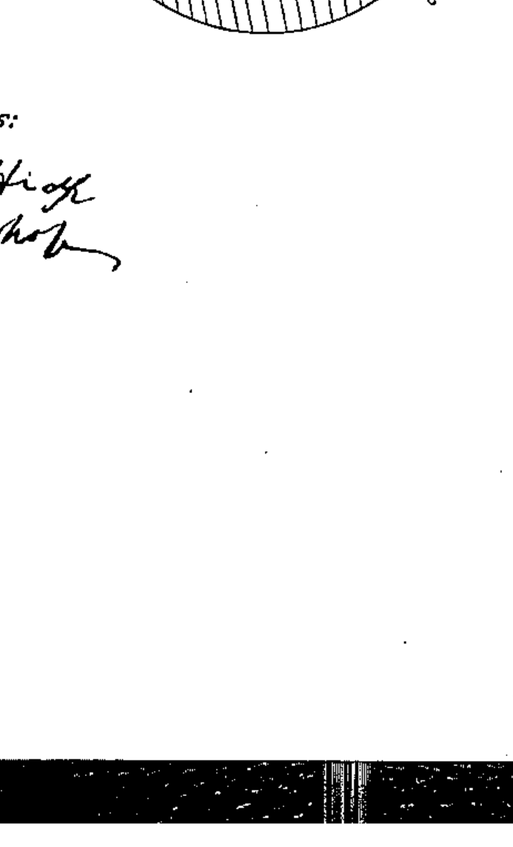
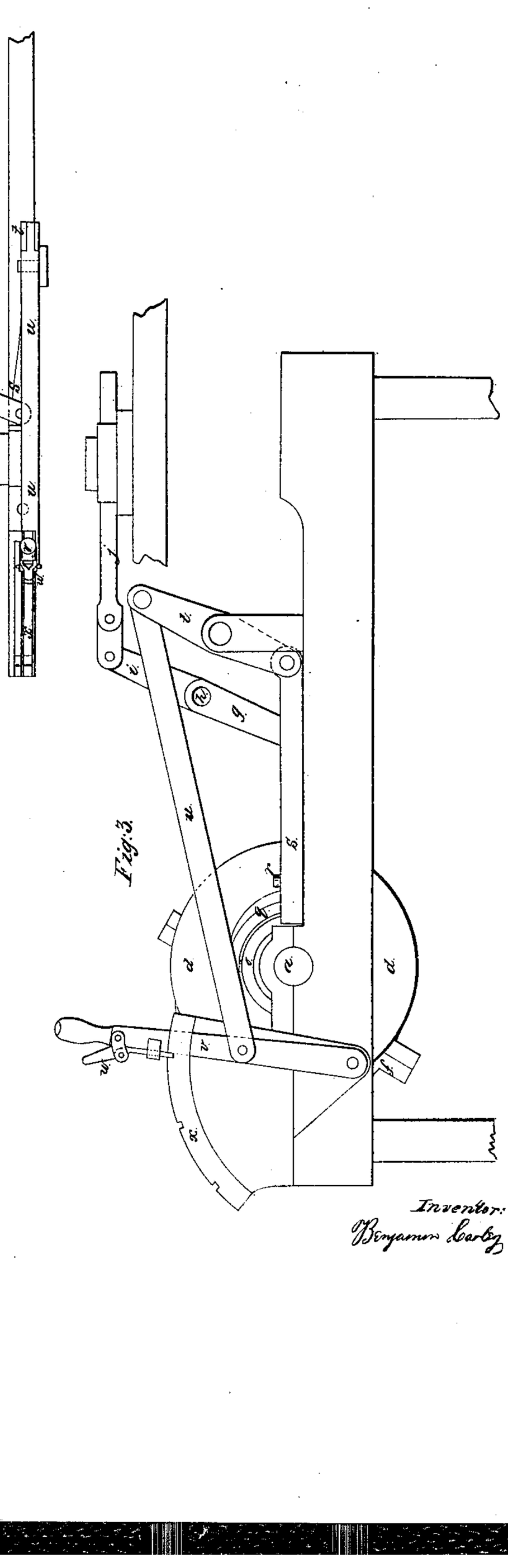


Fig. 3.



Witnesses:

H. O. Hicks

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Inventor:

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UNITED STATES PATENT OFFICE.

BENJAMIN CARLEY, OF PATERSON, NEW JERSEY.

ECCENTRIC FOR OPERATING STEAM-VALVES.

Specification of Letters Patent No. 19,484, dated March 2, 1858.

To all whom it may concern:

Be it known that I, BENJAMIN CARLEY, of Paterson, Passaic county, New Jersey, have invented a certain new and useful Improvement in the Eccentric for Operating the Valves of 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, making part of this specification, in which—

Figure 1 is a plan of a valve gear representing a mode of application of my said invention; Fig. 2 a longitudinal vertical section; and Fig. 3 a side elevation. The two last mentioned figures are on a larger scale.

The same letters indicate like parts in all the figures.

My said invention relates to a method of readily giving the proper lead in the act of reversing the motions of the engine and varying the point of cut off so that by one operation of a simple mechanism, substituted for the ordinary link motion, the valve motion will receive the required lead by the act of shifting or reversing. In my said invention the eccentric, (or its equivalent) for operating the valves is mounted in suitable slides on the main shaft so that it can be moved in a plane at right angles to the axis of the said shaft to increase or decrease the amount of eccentricity, or shifted from side to side, either to vary the period of cut off or to reverse the engine; and my said invention consists in making the ways in which, or on which the eccentric slides, in a bent or curved line, so that by the one motion for shifting the eccentric to vary the point of cut off, or to reverse the engine, it shall at the same time receive a lateral motion to maintain the required lead in whatever direction the engine may run, or at whatever period of the stroke the steam may be cut off.

In the accompanying drawings (*a*) represents the shaft which carries the eccentric in a locomotive engine, and (*b*) the eccentric which is connected with the shaft in a peculiar manner. Instead of being attached to the shaft it is mounted in ways (*c*, *c*, *c*, *c*) on the inner face of two disks (*d*, *d*) mounted on the shaft. The said ways radiate from the center of the shaft nearly in opposite directions, not in line, but at such an angle as may be determined necessary for giving the required lead to the valves. The central portion of the eccentric is cut out, as at (*e*), to such an extent as to admit of shifting it on the shaft from one side to the other when the engine is to be reversed, both faces near the periphery being so formed as to fit the ways (*c*, *c*, *c*, *c*) and slide therein accurately. The eccentric strap (*f*) is connected in the usual manner with one arm (*g*) of a rocker (*h*) the other arm (*i*) of which is linked with the valve stem (*j*), or this connection may be made in any other suitable manner. The eccentric is shifted, when desired, by two elbow levers (*k*) one on each side of the shaft, and hung on fulcrum pins (*l*) attached to the shaft. One arm of each of these levers is linked with the eccentric ring, and the other arm connected by a joint link (*m*) with a sleeve (*o*) adapted to slide on the shaft to which it is feathered. And this sleeve is grooved as at (*p*) to receive pins on the forked end of a lever (*q*) which turns on a fulcrum pin as at (*r*) the other arm of the said lever being connected by a joint link (*s*) with a lever (*t*) which is in turn connected by a link (*u*) with a hand lever (*v*) which is provided with a hand catch (*w*) which can be made to engage any one of a series of notches in a fixed sector (*x*) so as to hold the lever and through the connecting parts the eccentric in any desired position.

It will be obvious from the foregoing that the line of the ways instead of being straight in either direction from the center, so that the two parts shall form an angle with each other to maintain the lead, that essentially the same result will be obtained by making the two parts in the line of a curve. It will be seen that by the one operation and by the use of the one mechanism, but simply by reason of the direction of the slides or ways, the required lead is given to the valve motion in whatever position the eccentric may be placed, whether to vary the point of cut off or to reverse the engine.

I do not claim as my invention the mode above described of varying the point of cut-off or reversing the engine, but

What I do claim as my invention and desire to secure by Letters Patent is—

In combination with the method of shifting the eccentric, or its equivalent, to vary the point of cut off or reverse the engine, substantially as described, then so forming the ways or slides, substantially as described, that by the one motion and mechanism the required lead shall be given to the valve motion by the act of shifting the point of cut off or reversing the engine, as described.

BENJAMIN CARLEY.

Witnesses:

WM. H. BISHOP,

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