

(No Model.)

J. LUNZ.  
LINK MOTION.

No. 463,523.

Patented Nov. 17, 1891.

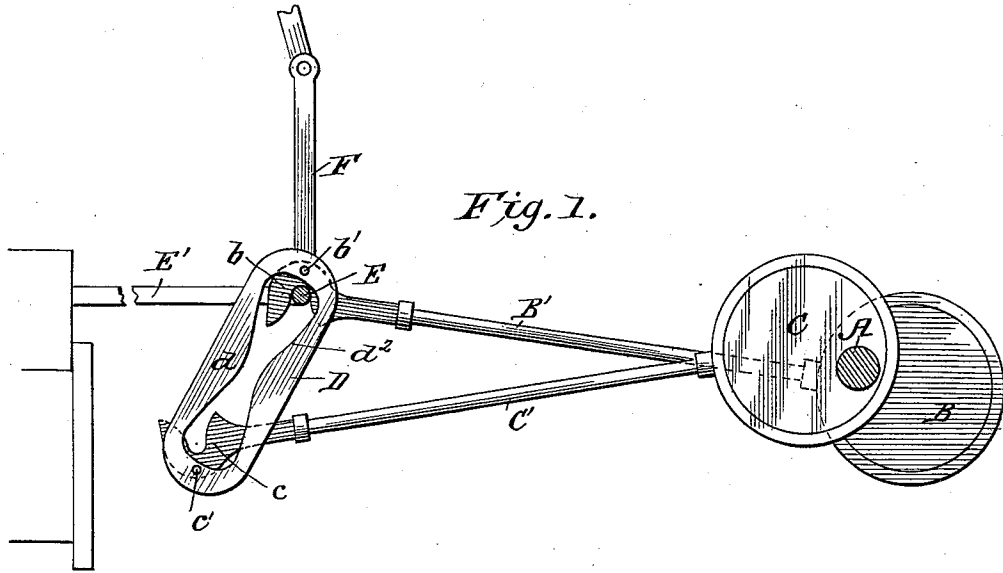


Fig. 1.

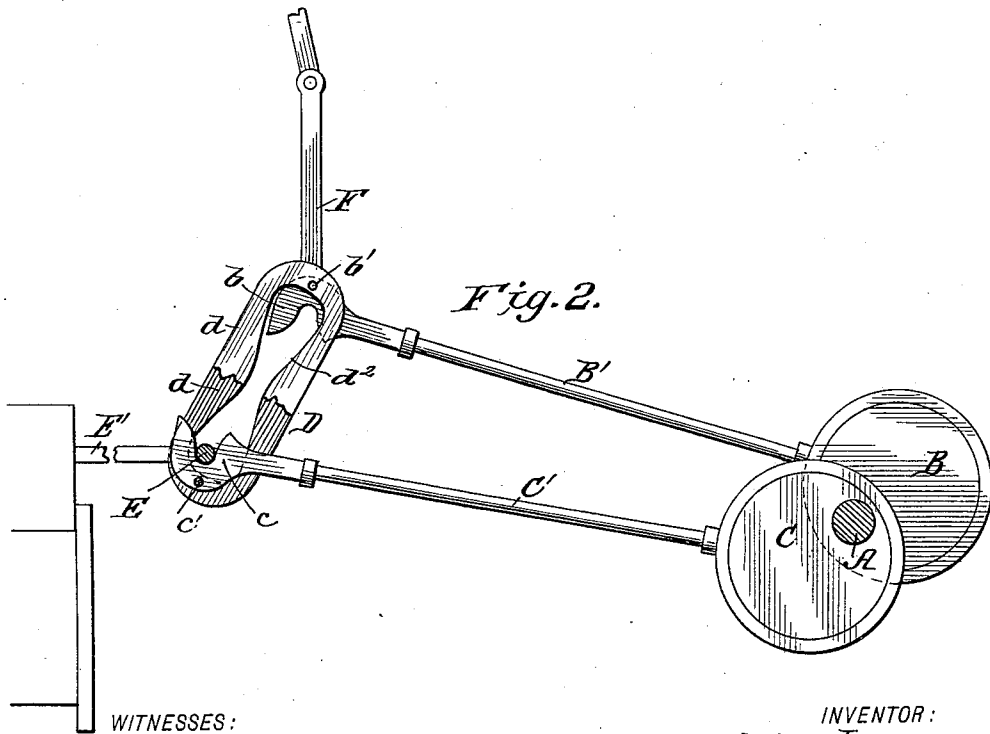


Fig. 2.

WITNESSES:

*Fred G. Dieterich*  
*W. D. Blondel*

INVENTOR:  
*John Lunz.*

BY *Manu Le*

ATTORNEYS

# UNITED STATES PATENT OFFICE.

JOHN LUNZ, OF CLAFLIN, KANSAS.

## LINK-MOTION.

SPECIFICATION forming part of Letters Patent No. 463,523, dated November 17, 1891.

Application filed July 29, 1891. Serial No. 401,094. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN LUNZ, residing at Claflin, in the county of Barton and State of Kansas, have invented certain new and useful Improvements in Link-Motions, of which

My invention relates to valve-gear mechanism for engines, and refers particularly to a valve-motion which has for its object to relieve the reverse-rod from all strain while the engine is at work and also to throw the entire motion direct on the valve-pin.

With these objects in view and other minor objects hereinafter apparent my invention consists in the peculiar combination and novel arrangement of parts, all of which will be hereinafter fully described in the annexed specification and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved link-motion; and Fig. 2 is a similar view of the same, the parts being in reverse position.

In the accompanying drawings, A indicates the drive-shaft, B and C the eccentrics, and B' and C' their rods, one for the forward and the other for the backward movement of the engine. The outer ends of the rods B' C' have hooked members *b c* of the shape shown, which are pivotally joined at *b'* and *c'* to the upper and lower end of a slotted reversing-frame D, which consists of two members *d d*, bolted together, and which are formed with the curved slots *d<sup>2</sup>*, as shown, which slots are of greater width at their upper ends than the valve-pin E, but are contracted at the middle to a width just large enough to accommodate said pin E. The said plates *d d* are arranged relatively to the valve-pin and the eccentrics, so that when at the full forward or backward throw it will be disposed diagonally to the said eccentrics. Thus should the same be adjusted for a forward movement of the engine it will be in the position shown in Fig. 1 when the valve-stem E' is in its outermost position. When it is desired to reverse the motion, the reverse-plates *d d* are moved up by means of the connecting bar or handle F until the lower hook *c'* is raised up into engagement with the valve-pin E.

To hold the valve inactive to keep the engine at rest, it is only necessary to adjust the reverse-plates D on the valve or slide pin until it seats in the contracted center of the slot of such plates, and both rods being then disconnected from the said pin causes the said plates D to oscillate on the slide-pin, as the action of the eccentrics at this time just balance each other.

By providing independent pivotal connections for the hook members with the plates D and slotting such plates, as stated, it will be observed that when either of the hooks is in engagement with the valve-pin the other hook will be entirely relieved of any strain, and the motion will be direct from the eccentric through the respective rods on the said valve-pin. It will also be observed that by making the slots in the plates *d* wide at their ends the said plates *d d* will have a free movement without frictional contact with the said valve-pin.

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

1. The combination, with the eccentric-rods B' and C', having the hook members *b* and *c*, and the valve-rod and pin E' and E, of the slotted reversing-plate D, pivotally connected at its ends to the members *b* and *c*, the slot in said plate being enlarged at the ends and contracted at the center, substantially as and for the purpose shown and described.

2. The combination, with the eccentrics B and C, the valve-rod and pin E' E, and the rods B' and C', formed with hook members *b' c'*, of the reversing-frame D, formed of the slotted plates *d d*, the slots in such plates enlarged at their ends and contracted in the center, said hook members *b' c'* pivotally journaled in the ends of said plates, and means for adjusting the slotted frame D on the valve-pin, whereby to alternately throw the hooked members in connection with said valve-pin, as and for the purpose described.

JOHN LUNZ.

Witnesses:

MATH. KLEIN,  
A. A. GERMAN.