H. S. COMBS & W. RHODES.

Mechanical Movement.

No. 164,076. Patented June 8, 1875.

Fig. 2.

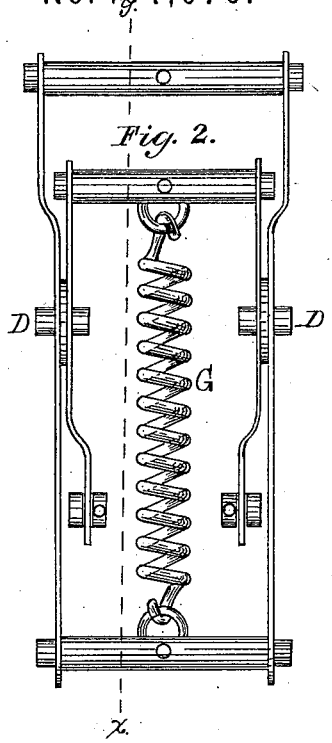


Fig. 1.

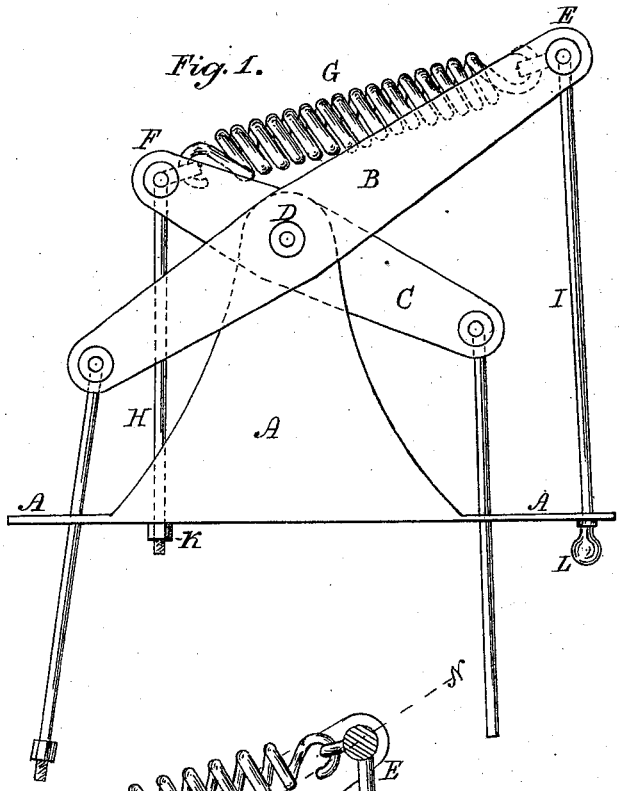
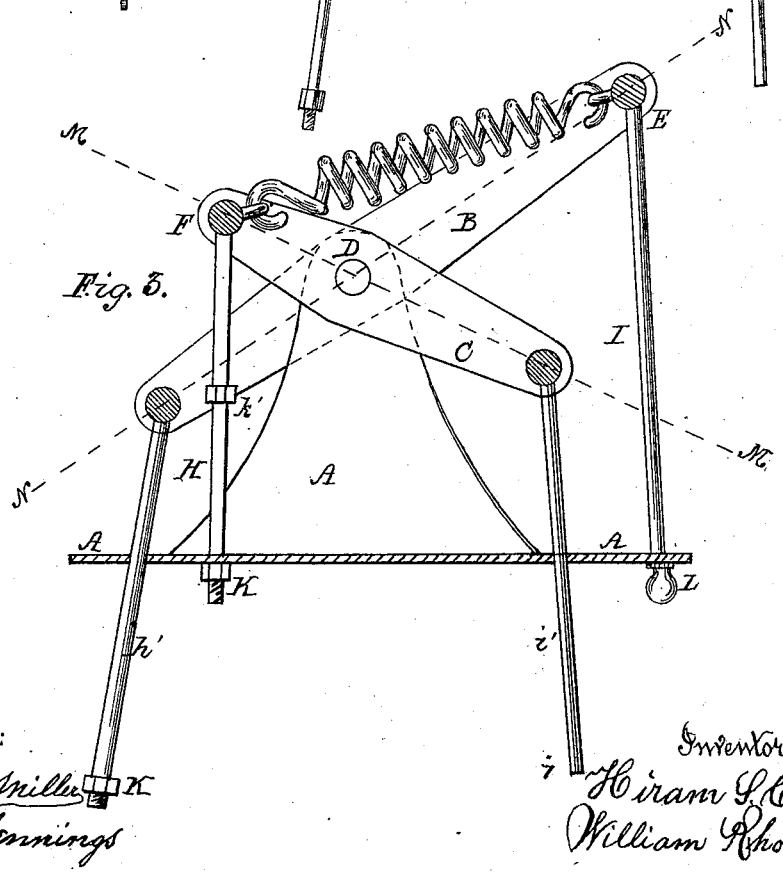


Fig. 3.



Witnesses:
David H. Miller
Chas. F. Jennings

Inventors:
Hiram S. Combs
William Rhodes

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

HIRAM S. COMBS, OF GEORGETOWN, CONNECTICUT, AND WILLIAM RHODES, OF NEW YORK, N. Y.

IMPROVEMENT IN MECHANICAL MOVEMENTS.

Specification forming part of Letters Patent No. **164,076**, dated June 8, 1875; application filed May 14, 1875.

To all whom it may concern:

Be it known that we, HIRAM S. COMBS, of Georgetown, Fairfield county, Connecticut, and WILLIAM RHODES, of New York, N. Y., have invented a Mechanical Movement, of which the following is a specification:

The object of our invention is to form a combination of rods, levers, and spring, which, by moving one lever past the dead-point, will carry the opposite lever and rods to any point required. It is useful for carrying the valve on a direct-acting steam-pump. Also, for an automatic closing tunnel, by closing the valve when the vessel is filled. Also, on a water-meter, by shippling the valve. Also, on a planing-machine, for reversing the motion of the planer-bed. Also, as a cut-off on a steam-engine. Also, on a picker-stick loom, by throwing the shuttle. Also, for a steam-damper, for opening and closing the draft.

The machine is illustrated more fully in the accompanying drawings, to show the driving mechanism.

Figure 1 represents side elevation. Fig. 2 represents top view. Fig. 3 represents sectional view on the line *x y* in Fig. 2.

In Fig. 3, A A A is the body of the frame. B C are levers of equal or unequal lengths. D is a pin or stud for the levers B C to oscillate on. E F are studs or cross-bars on the levers B C, to attach the spring G to. H I are rods attached to the studs or cross-bars on the levers B C. *h' i'* are rods attached to the opposite ends of levers B C, to obtain a reverse motion when required. G is a spring attached to the levers B C. K K *k'* L are nuts to regulate the throw of the rods. In oscillating the lever B on the pin D from the line *n n* toward the line *m m*, the spring G receives tension by elongating it, and when the lever B is carried past the line *m m*—the dead-point—the spring G carries the lever C from *m m* to *n n*, where the motion is arrested by the nut K on the rod H. Again, by returning the lever B, oscillating on D from *m m*, to and past the dead-point *n n*, the spring G, again made tense by elongation, returns lever C to *n n*, where the motion is arrested by the nut *k'* on the rod H.

We claim as our invention—

The combination of rods with stops and levers with the spring, to secure a direct and reverse motion, in the manner substantially as described.

HIRAM S. COMBS.
WILLIAM RHODES.

Signed in presence of—
DAVID H. MILLER,
CHAS. A. JENNINGS.