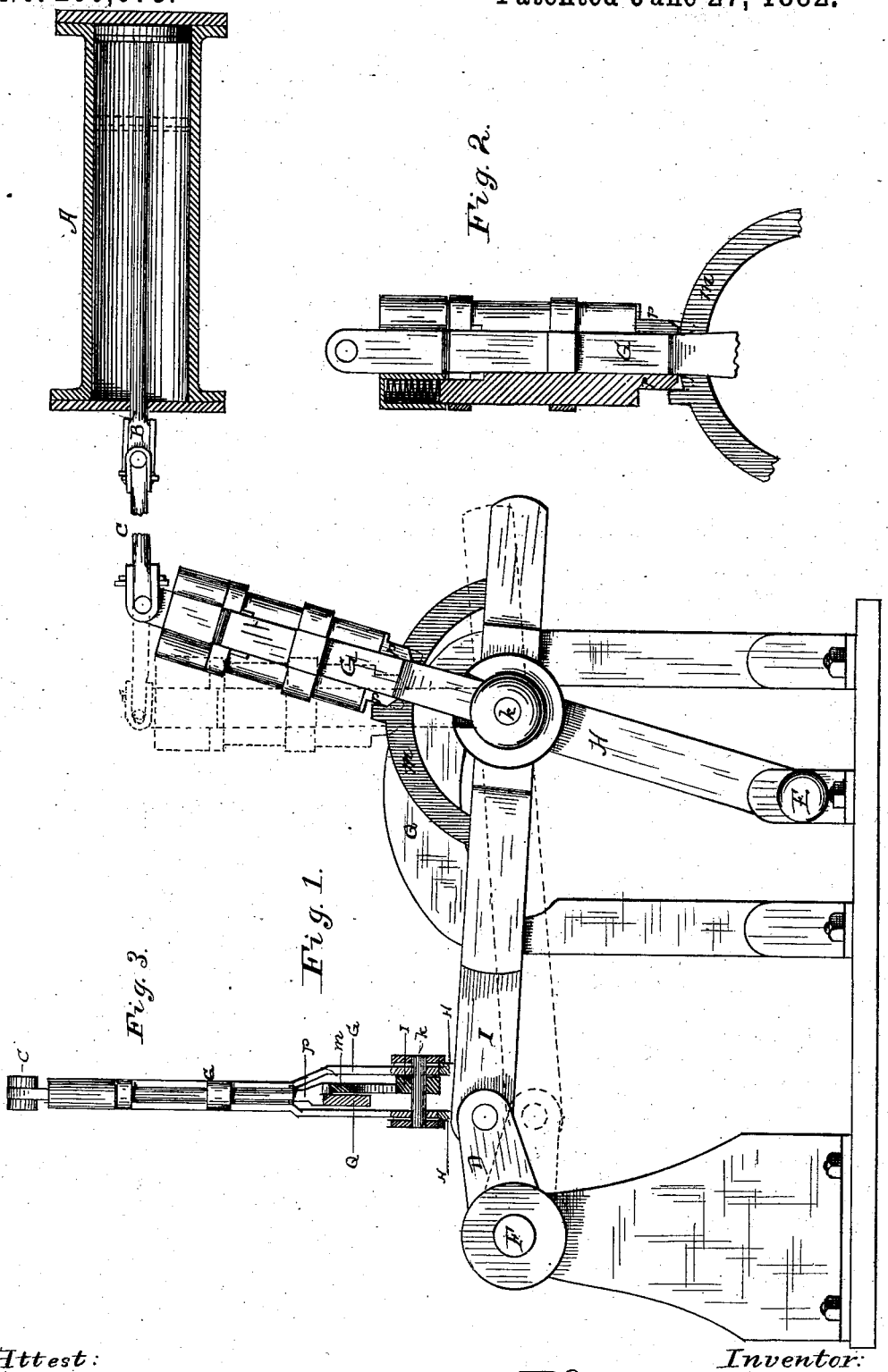
(No Model.)

N. ADAMS.

MECHANICAL MOVEMENT.

No. 260,075. Patented June 27, 1882.



Attest:
J. C. Turner
E. C. Ford

Inventor:
Nelson Adams
By his atty R. D. Smith

UNITED STATES PATENT OFFICE.

NELSON ADAMS, OF QUINCY, ILLINOIS.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 260,075, dated June 27, 1882.

Application filed May 9, 1882. (No model.)

To all whom it may concern:

Be it known that I, NELSON ADAMS, of Quincy, in the county of Adams and State of Illinois, have invented a new and useful Mechanical Movement, being a device to enable a single piston to carry the crank over the dead-centers by positive action, of which the following is a specification.

Heretofore, so far as I am aware, no positive movement has ever been applied to a single crank and piston whereby the crank could be forced over the dead-point by the direct action of the piston. My device accomplishes that object fully, and I therefore suppose myself to be the discoverer of a new mechanical movement, and my purpose is to claim the same broadly. I am aware that the crank has been forced over the dead-point by auxiliary or compound powers—as, for instance, when a shaft is provided with two quartering-cranks and driven by two independent pistons, or when a spring or other auxiliary power is applied to come into action when the piston ceases to act. These have no similarity to my invention further than that they have an object in common therewith. The crank is driven directly by a connecting-rod and remotely by a competent motor, whose force is transmitted to and through said rod to the crank. Ordinarily said connecting-rod reciprocates, one end moving in a rectilinear guide and the other end following the crank in its circular movement, and hence when the position of the rod is in line with the axis of the crank it is powerless.

My invention consists in imparting an independent movement to the crank end of the connecting-rod in a direction transverse to its line of reciprocation, so that a force is exerted upon the crank in said transverse direction during its passage over the dead-point, so that when the connecting-rod recommences its pull and thrust, as the case may be, its line of action shall not coincide with the axis of the crank-shaft.

Having now set forth the nature of my invention, that others may more fully understand it, I will more particularly describe a mechanism which embodies it, although, as will be apparent, the structure of the same may be greatly modified without affecting the principle of its mode of operation. I therefore do not propose to restrict myself to the details of structure shown.

Reference is made to the accompanying drawings, wherein Figure 1 is a side elevation of the mechanism alluded to. Fig. 2 is an elevation and section of the latch. Fig. 3 is a transverse section through the lever, joint, &c.

A is a typical cylinder and piston, representing a prime motor.

B is a piston-rod, and C is a connecting-rod. The rod C is not directly connected to the crank D, but is connected to a jointed lever, G H, the main axis of motion whereof is on the frame, say, at E, at a distance below the horizontal plane of the axis of the crank-shaft F. The connecting-rod I, whereby power is directly transmitted to the crank D, is jointed to lever G H and thereby motion is transmitted from the motor to the crank. The two parts G H are jointed to each other with a joint, *k*, which permits only a little motion, and the joint *k* is coincident with the joint which connects said levers G H with the rod I. The rod I is provided with a lateral arm, *m*, lying by the side of the part G, which is provided with the latch *p*, to engage with said arm at the proper moment, and thereby cause said part G and the connecting-rod I to move together on the axis *k*. This engagement of the latch *p* and the coincident motion of G and I take place at the beginning of each reciprocation of the piston-rod B, and the effect is a movement of the crank-connection of rod I in a line transverse to the line of reciprocation—viz., a rotary movement on the axis, *k*. This movement carries the crank D past the dead-point by positive action of the motor.

The latch *p* is automatically released at the proper moment by riding on a stationary cam, Q.

In order to prevent lost motion it is preferred to have two latches, *p p*, as shown.

Having described my invention, what I claim as new is—

1. A reciprocating motor, a connecting-rod, and a crank driven thereby, combined with means whereby at the beginning of each reciprocation and by the action of the motor said connecting-rod shall have imparted to its crank end a movement transverse to its line

of reciprocation to force the crank over its dead-point.

2. A reciprocating motor, a connecting-rod capable of reciprocation and partial rotation on an axis parallel with the crank-shaft, and a crank driven thereby, combined with means whereby at the beginning of each reciprocation said connecting-rod may have imparted to it by the action of the motor a partial rotation on said transverse axis to force the crank over the dead-point.

3. A reciprocating motor, connecting-rods, C and I, attached to the piston rod and crank respectively, and an interposed two-part jointed lever, G H, pivoted at one end to the frame and at the other end to the connecting-rod C, and at its center joint, *k*, pivoted to the connecting-rod I, combined with an arm, *m*, on said connecting-rod I and a latch or latches on the part G, whereby at the beginning of each reciprocation the connecting-rod I has imparted to it a partial rotation on the joint *k* to force the crank past the dead-point.

4. The connecting-rod I, jointed at one end to the crank and at the other end to the jointed lever G H, combined with an arm, *m*, latches *p*, and the cam Q, substantially as set forth.

N. ADAMS.

Witnesses:
JOHN T. SMITH,
R. D. O. SMITH.