

G. H. Knight,

Converting Motion.

N^o 68,754.

Patented Sep. 10, 1867.

Fig. 1.

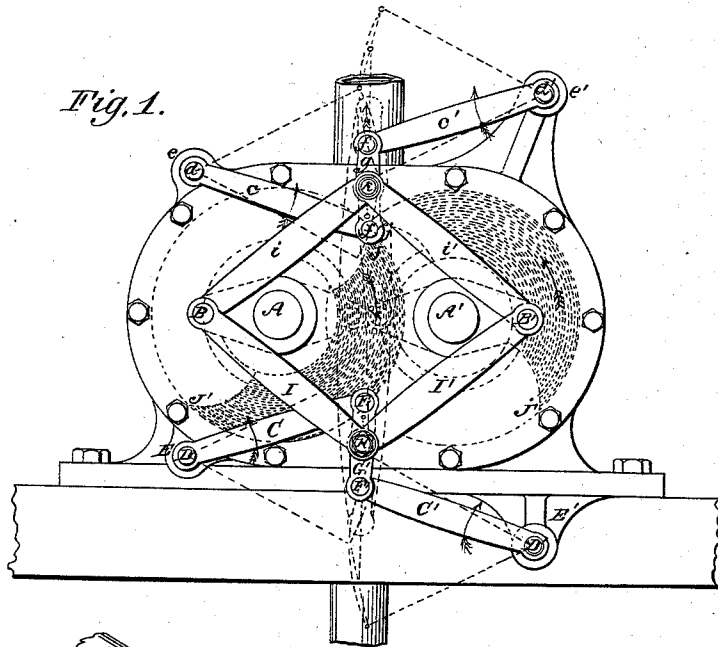
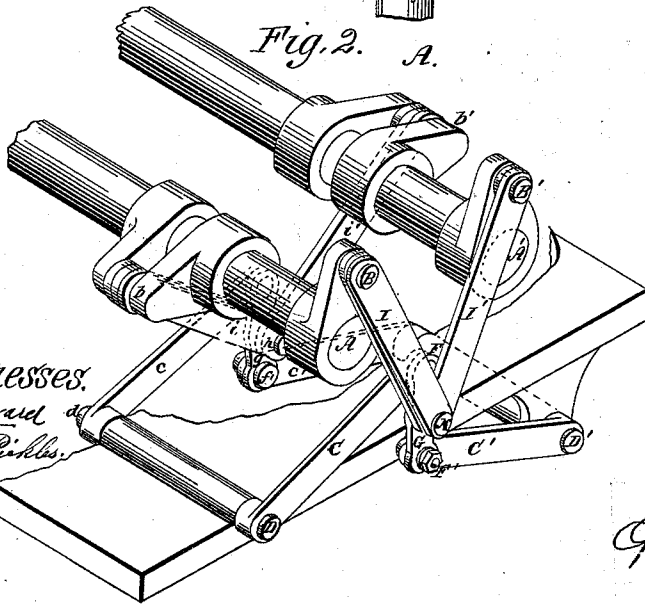


Fig. 2. A.



Witnesses:
W. Hillward
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Inventor:

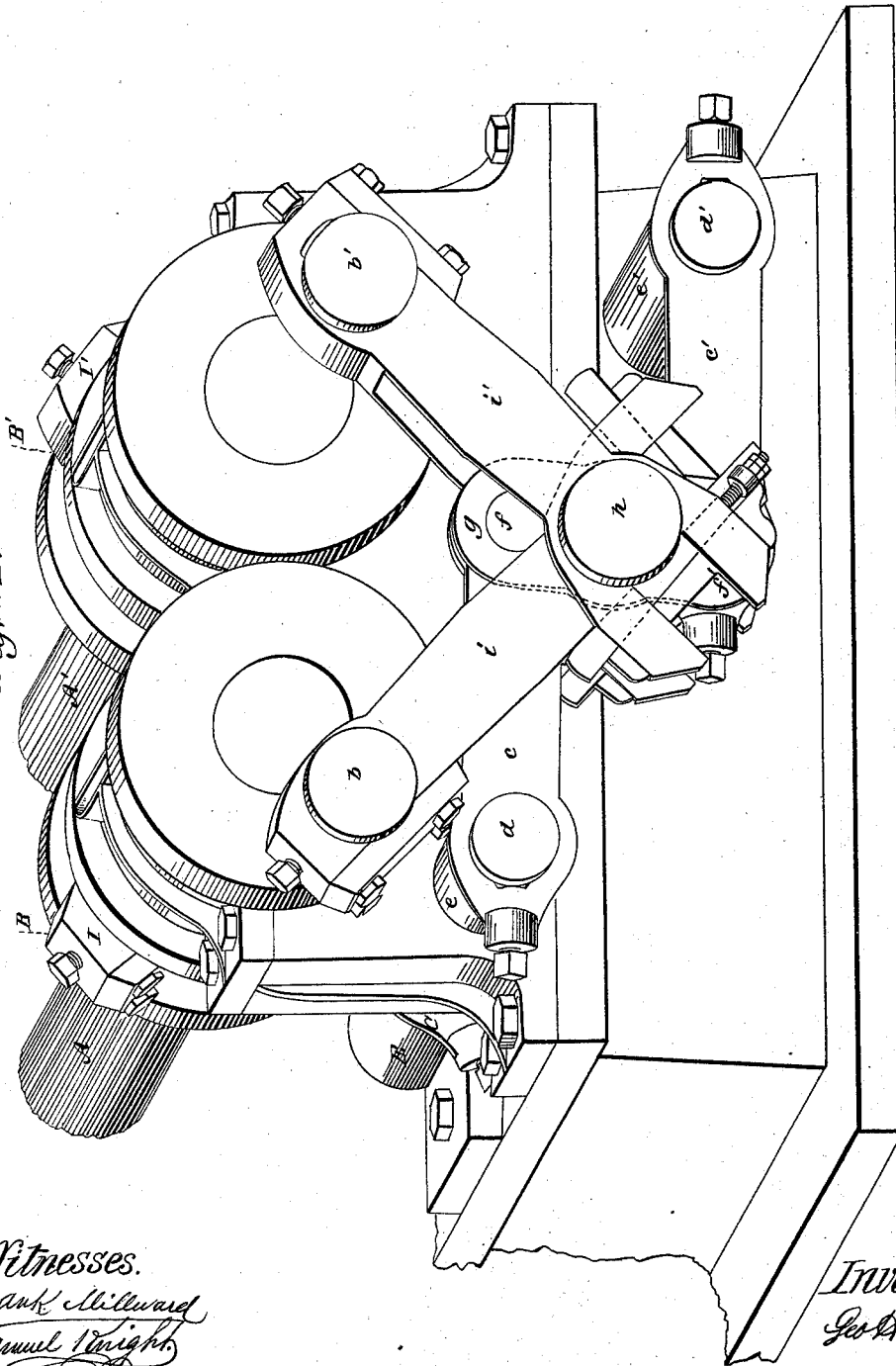
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Fig. 2. B.



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Frank Millward
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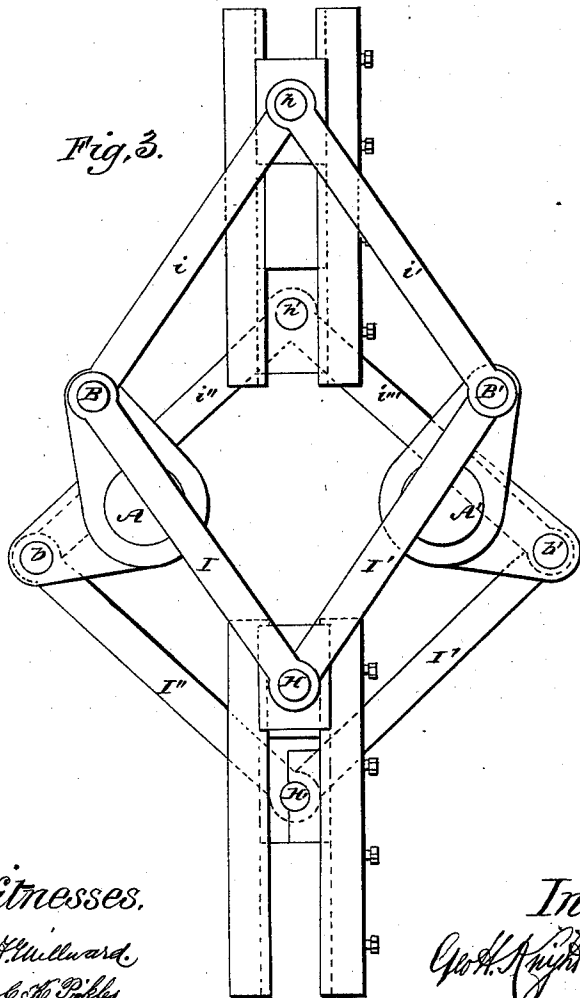
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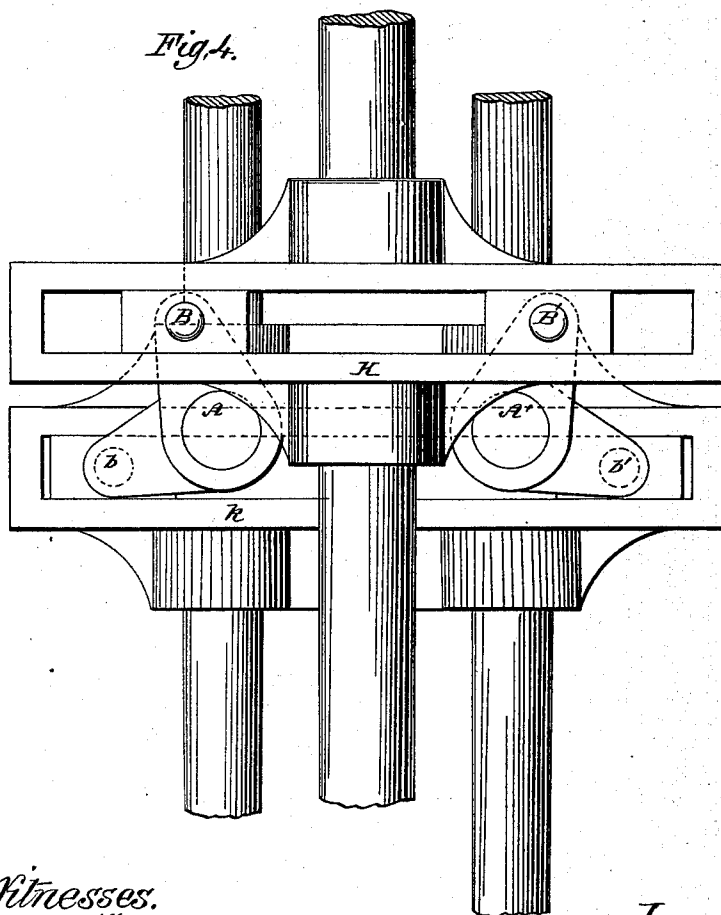
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United States Patent Office.

GEORGE H. KNIGHT, OF CINCINNATI, OHIO.

Letters Patent No. 68,754, dated September 10, 1867.

IMPROVEMENT IN MECHANICAL MOVEMENTS, OR SUBSTITUTE FOR COG-WHEELS.

The Schedule referred to in these Letters Patent and making part of the same.

TO WHOM IT MAY CONCERN:

Be it known that I, GEORGE H. KNIGHT, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Mechanical Movement, or Substitute for Cog-Wheels; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, making part of this specification.

My invention relates to a device for enabling one shaft or other rotary object to be driven by another one with a simultaneous and equal but opposite rotation, without the use of cog-wheels.

Figure 1 is a side elevation of a double-cylinder rotary engine provided with my movement.

Figures 2 (A) and (B) are perspective views of the preferred form or type of my invention.

Figures 3 and 4 show modifications of my movement.

A A' represent the two shafts of a pair of pistons of a double-cylinder rotary engine, the same being armed at their extremities with equally eccentric wrists, B B'. C C' are two equal arms having hinge connections, D D', to brackets E E', or other fixed objects, and having their free extremities united by pivots F F' to ends of a link, G, armed with a central stud, H, which stud is connected by two equal pitmen I I' with the wrists B B'. On the other side the cranks are connected to a similarly-paired arrangement of arms c c', hinges d d', brackets e e', pivots f f', and link g. For absolute accuracy at every part of the circuit, the shafts may, as in fig. 2, extend by return bend beyond the wrists B B', and be provided with additional wrists, b b', outside of and one-fourth part of a circle removed from the wrists B B', and be pitmaned to additional links, G' g'. Each one of the above-described joints should have a screw, or its equivalent (see fig. 2, B,) for preserving the proper freedom from slack motion. The wrists H h being restricted to a rectilinear movement midway between the axes of the shafts A A', and perpendicular to their common plane, and the pitmen I i and wrist B, on one side, being the precise duplication of the pitmen I' i' and wrist B' on the other side, any rotation, in whole or part, of one shaft, must be accompanied by a precisely corresponding but opposite movement of the other shaft. There are of course, two opposite periods or points of the revolution, in which the wrists and shafts are all in one plane (see strong and dotted lines, fig. 1,) and it is at these points that the precise coaction of the shafts A A' is least affected by any slackness of the joints. Now in such an engine as that here selected for illustration there are also just two diametrically opposite points (namely, where the horns J j and J' j' pass each other,) in which accurate correspondence is essential, and these points have, in fig. 1, been so arranged with respect to the wrists as for the passage of the horns to occur at the above-stated favorable positions of said wrists. This attachment enables the corresponding rotation of all sorts of paired rollers, fans, and other mechanical appliances of that kind, such as embossing, crushing, or laminating rolls, double-cylinder blowers, pumps, engines, and so forth, for whose co-rotation the noisy and wasteful expedient of gear-wheels is now employed. This device may be made available for converting a rotary into a reciprocating motion, by connecting the machinery to be driven directly to one of the studs H or h.

While selecting for illustration the preferred form of my invention, I reserve the right to use any of the modifications of the device called parallel motion of which this invention is an adaptation. An inferior modification is shown in fig. 3, the studs H h H' h' being restrained to rectilinear paths by fixed guides or ways. In a still inferior form (see fig. 4) the wrists B b B' b' occupy horizontal yokes K k, having vertical guide-rods.

I claim herein as new, and of my invention—

1. The mode of producing corresponding opposite rotations of two shafts, pistons, or rollers, by equal connection to a stud or link restricted to a rectilinear path, substantially as set forth.

2. Securing corresponding opposite rotation of two shafts or other objects, by eccentric wrists B B', connected by pitmen I I' i i' to studs H h, guided to vertical paths by links G g and arms C C' c c', substantially as set forth.

In testimony of which invention I hereunto set my hand.

GEO. H. KNIGHT.

Witnesses:

FRANK MILLWARD,
SAMUEL KNIGHT.