

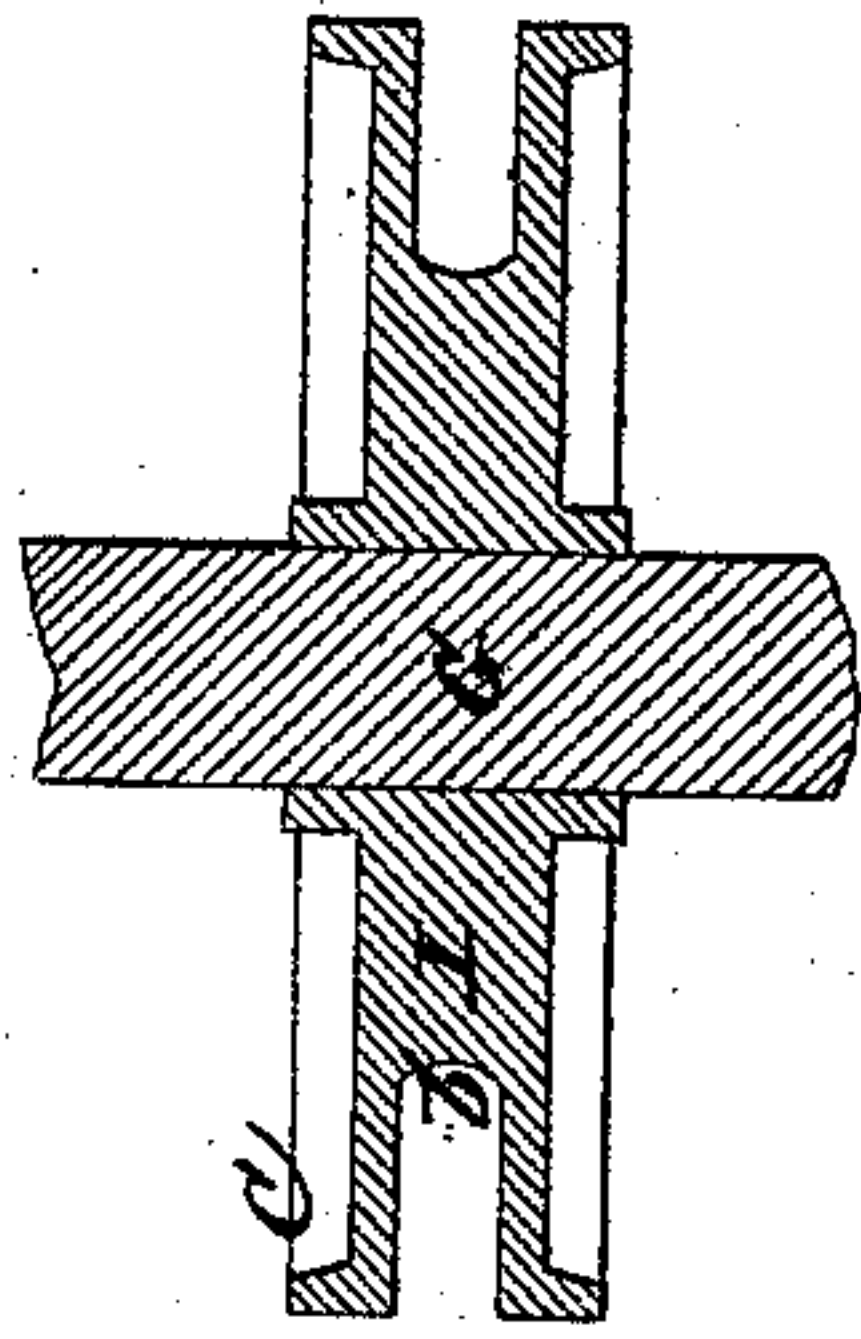
Simpson & Gardner,

Converting Motion.

No. 97,240.

Patented Nov. 23, 1869.

Fig. 3.



*Wm Simpson
& Gardner*

Fig. 1.

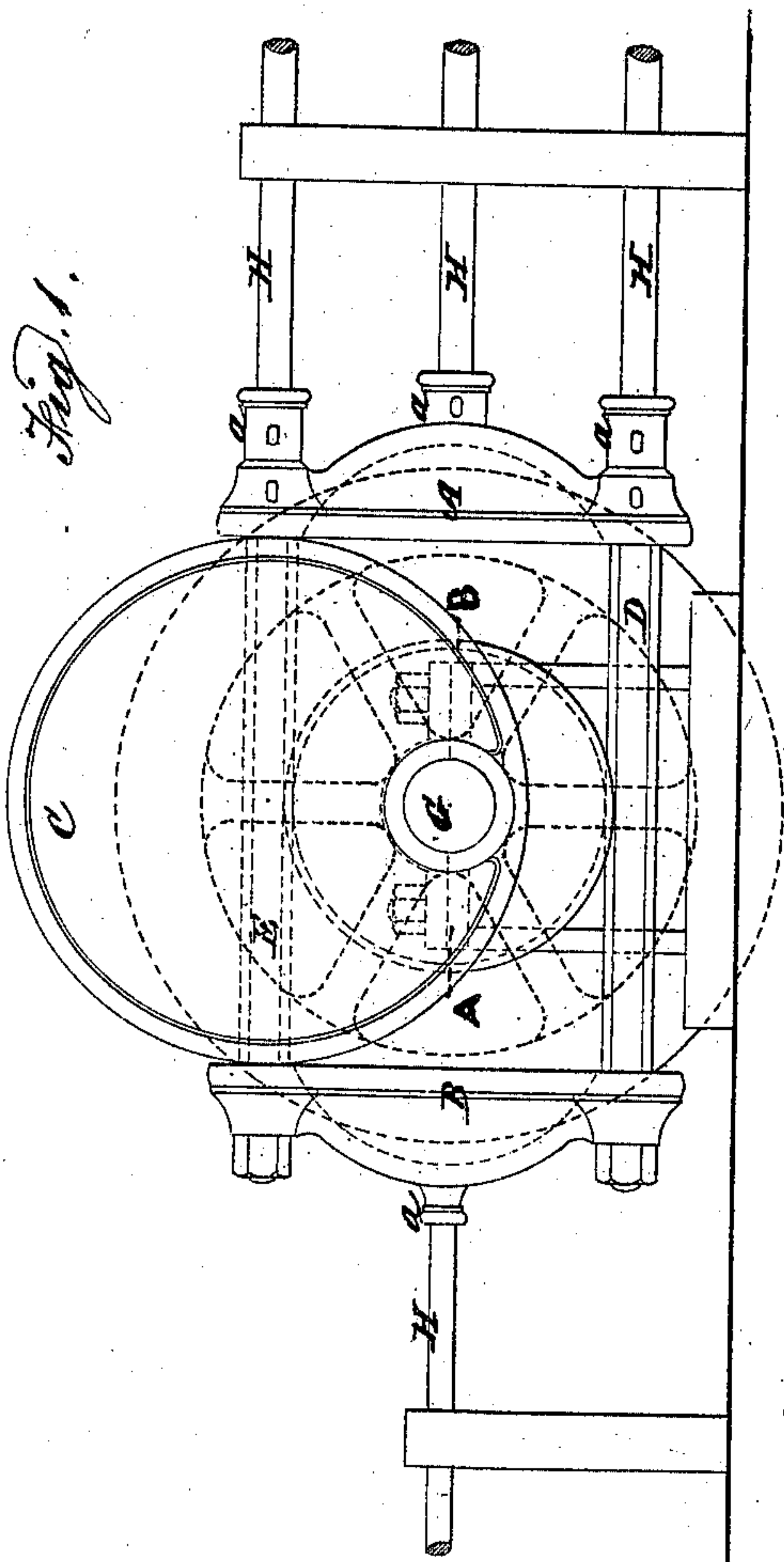
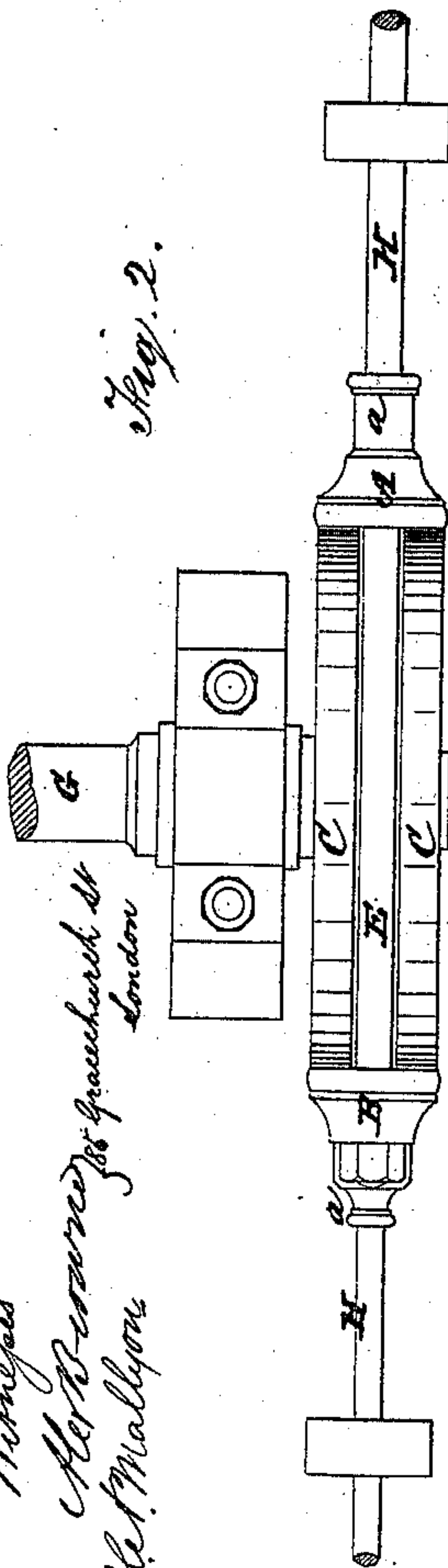


Fig. 2.



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United States Patent Office.

WILLIAM SIMPSON AND ALFRED GARDNER, OF ILFORD, ENGLAND.

Letters Patent No. 97,240, dated November 23, 1869.

IMPROVED MECHANISM FOR CONVERTING RECIPROCATING MOTION INTO ROTARY MOTION.

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

To all to whom it may concern:

Be it known that we, WILLIAM SIMPSON and ALFRED GARDNER, both of Ilford, in the county of Essex, England, have invented "Improvements in the Construction of Engines Worked by Steam or other Motive-Power;" and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation

This invention has for its object a new mode of converting the reciprocating motion of the piston-rod into rotary motion of the main driving-shaft, without the use of a crank, as heretofore.

Description of the Drawing.

Figure 1 represents an elevation, drawn to a scale of one inch to a foot, of our arrangement, adapted for a twenty-horse-power engine, constructed either with three piston-rods, working in a compound cylinder, or one piston-rod in one cylinder.

Figure 2 is an edge view of fig. 1.

Figure 3 is a section through the line A B of fig. 1.

At each of the figures of the drawing, we employ similar letters of reference to denote corresponding parts, in so far as such parts appear or can be seen at each of such said figures, respectively.

A B mark two cross-heads, embracing the eccentric plate C, at opposite points of its periphery, throughout its rotation.

D and E are tie and guide-rods, for securing the cross-heads A B at a parallel distance from each other, so as to allow the plate C to rotate freely between them, without play or shake.

G is the driving-shaft of the engine, on which the plate C is keyed or otherwise fixed.

H are the piston-rods, keyed to the bosses *a* of the cross-head A.

The drawing shows three piston-rods connected to one cross-head, and one piston-rod to the other cross-head, to show that either plan may be employed, or both.

The plate C is formed with a boss, I, in which is turned a groove, *b*, which fits in between the rods D E, as shown at fig. 1, to preserve the vertical or direct movement of the piston-rod.

Modus Operandi.

The piston, on its outward stroke, pushes the cross-head A against the plate C, and, in like manner, the cross-head B pushes against the plate C, on the inward stroke of the piston. In both cases, the boss *a* and guides D and E preserve the direct action of the piston-rod.

We claim, as our invention—

The double parallel tie and guide-rods D and E, embracing the circular grooved boss I, upon the axis of the eccentric plate C, or the shaft G, as its equivalent, in combination with the parallel cross-heads A B, arranged to bear against the periphery of said eccentric C, throughout its revolution, at diametrically opposite points thereof, and with suitable piston-rods or pitmen, H, connected to said cross-heads, all substantially as herein set forth.

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