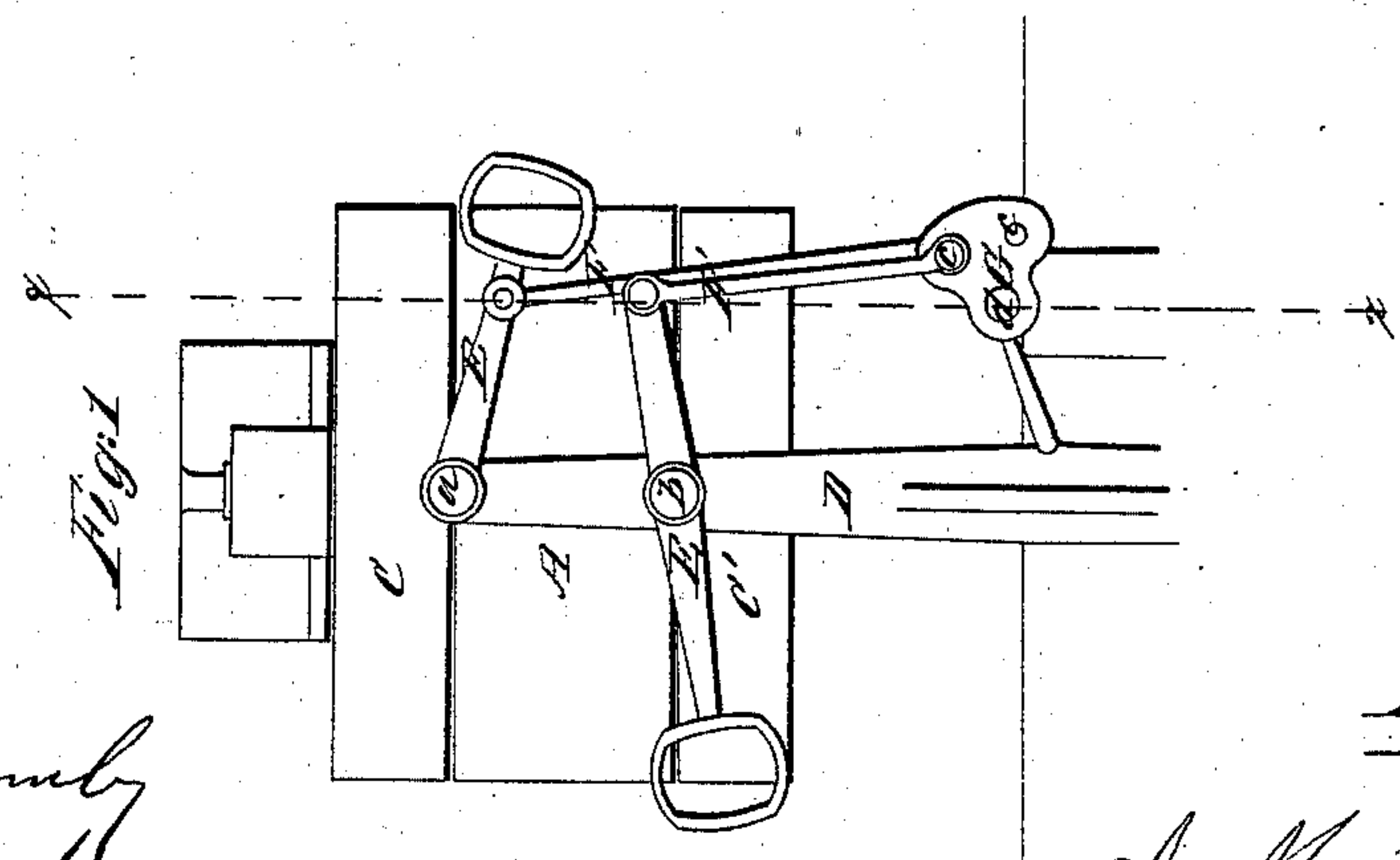
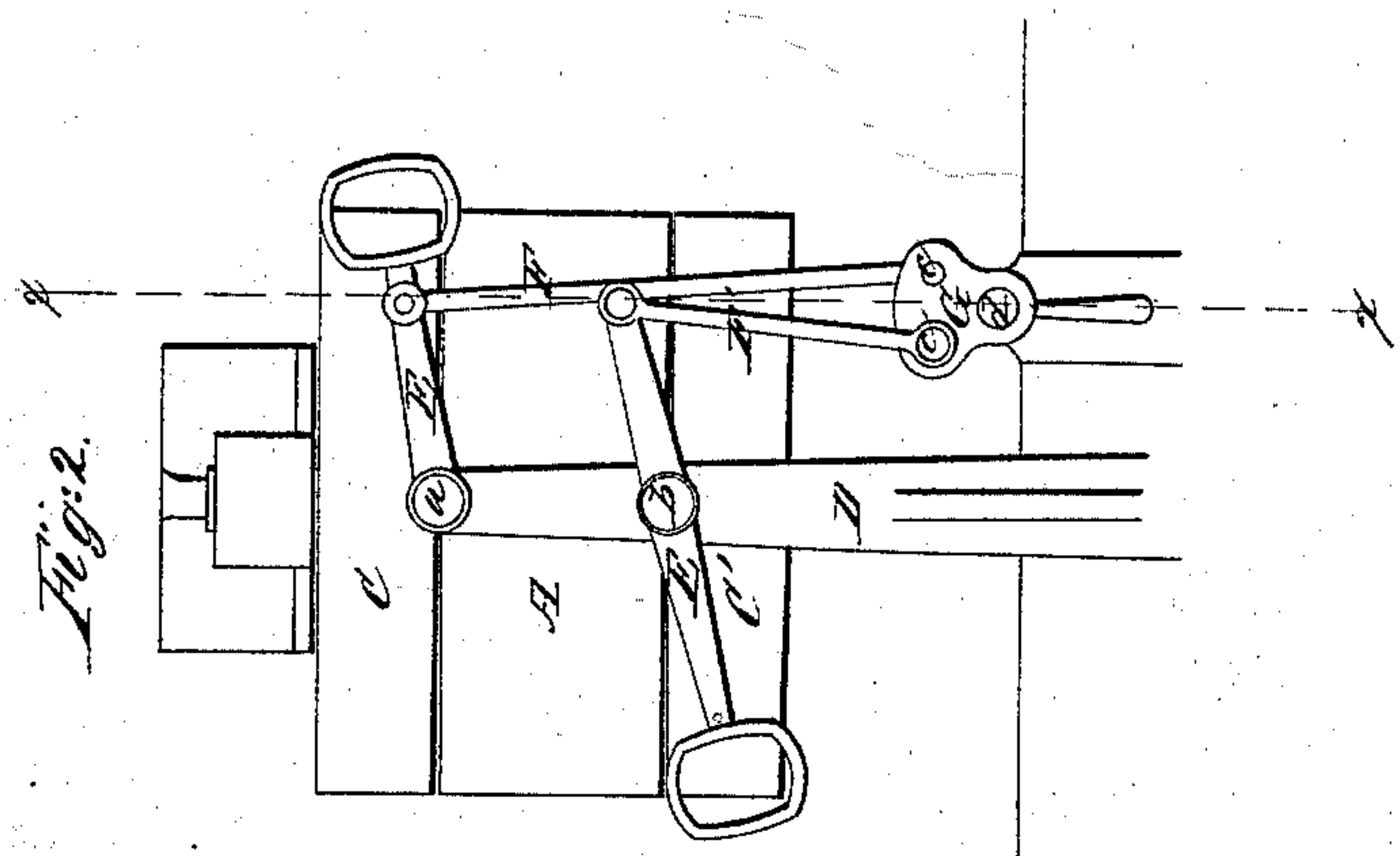
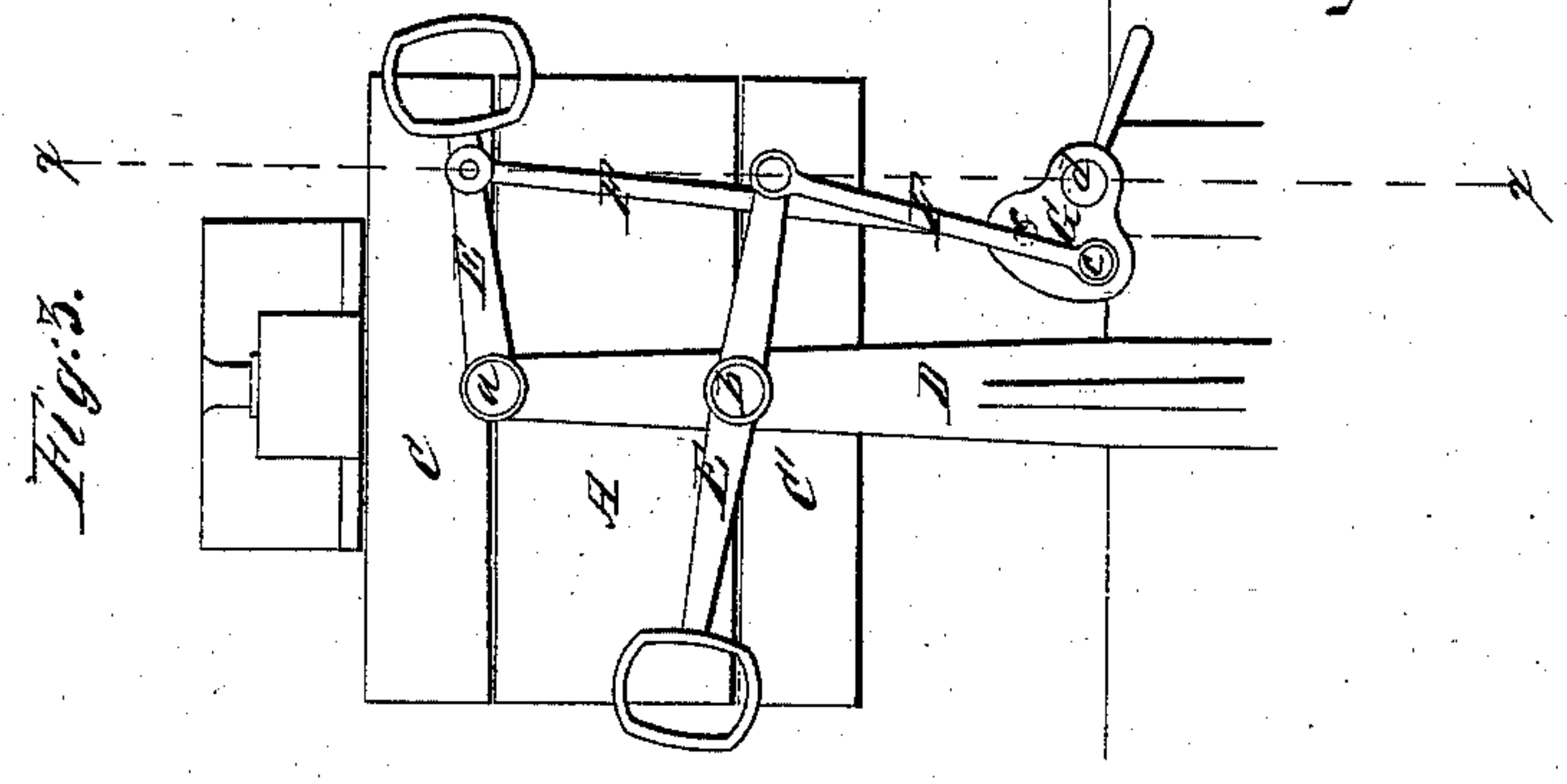


A. M. Freeland,
Belt Shifter,
No 68,061,
Patented Aug. 27, 1867.



Witnesses.
J. W. Coomb
G. W. Reed

Inventor.
A. M. Freeland

United States Patent Office.

AARON M. FREELAND, OF NEW YORK, N. Y.

Letters Patent No. 68,061, dated August 27, 1867.

IMPROVEMENT IN BELT-SHIFTING DEVICE.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, AARON M. FREELAND, of the city, county, and State of New York, have invented a certain new and useful Improvement on Belt-Shifting Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 is an edge view of fast and loose pulleys with my improved belt-shifter applied thereto, and Figures 2 and 3 similar views, showing said belt-shifter in different positions.

Like letters indicate like parts throughout the several figures.

In planing and other machines in which the work or tool requires to be driven in opposite directions it is usual to employ independent belts, the one being crossed and the other straight, or so driven as that accordingly as either belt is shifted on to the fast or driving-pulley of the machine the latter will be operated in opposite directions. Various belt-shifters have been employed for this purpose, and so constructed as that a single motion will serve either to throw both belts on to their loose pulleys, when it is required to stop the machine, or either one belt on to the fast and the other on to its loose pulley; but such belt-shifters have ordinarily involved an extensive movement of the belts in effecting such changes, thus retarding the reversal of the motion and contributing to the wear of the belts. Segments of an internal and external wheel working about a common centre also have been employed, the same operating, by means of teeth, belt-shifters at separate intervals to act first upon the one belt and then upon the other, according to the change required to give the driver. My improvement, however, essentially differs from all such arrangements, and the nature of my invention consists of a novel combination of belt-shifting forks, arms, or levers, connected in a jointed manner by rods or bars with a rocking arm or sector on opposite sides of the centre of motion of the latter, or so that while either one fork, according to the direction in which the rocking or operating arm is swung, is having its maximum motion to shift its belt the other is having a minimum movement, so as not to remove its belt from the pulley on which it is running, thus securing a smoothly operating belt-shifting motion, with a small amount of slide or play to the belts in effecting their changes from the fast to their loose pulleys.

Referring to the accompanying drawing, A represents a fast pulley, or it may be two fast pulleys on a machine or other shaft that also carries loose pulleys, C C'. Pivoted to a frame or brace, D, are belt-shifting forks, arms, or levers E E', or they may be slides. These forks, the one of which may work on an end pivot, as at *a*, while the other swings on an intermediate pivot, *b*, are represented as both pivoted on one side of the brace D, by rods F F', to an arm lever or sector G, (made single or divided,) at points *c c* on opposite sides of a shaft or axis, *d*, forming the centre of motion of the sector, and so that said points or pivots *c c* lie at equal distances, or thereabouts, from a radial line, *x x*, drawn through the sector, while the latter is situated as in fig. 2. By this construction it will be evident that in swinging the sector G to the right, or left, that is to say, from the position shown in fig. 2 to the positions represented in figs. 1 or 3, the one point or pivot *c* travelling away from the radial line *x x* in fig. 2, will draw on the belt-shifting fork, to which it is attached by rod so as to move the one belt off from its loose to the fast pulley, while the other point or pivot *c*, working toward and passing the line *x x* in said figure, in crossing the centre of motion, as it were, exerts but a minimum action through its connecting-rod on the other fork so as to but slightly move the belt controlled by it and keeping it on the loose pulley over which said fork lies. In this way the one fork has a maximum and the other a minimum motion at the same time, whereby the belt required to be shifted need only move its own width in effecting the change; and the other belt, though moving in common with the joint action, has such a slight motion as not to remove it from the pulley on which it is running, the motion, too, being a smooth one, free from jerks or broken action, such as produced by cogs or alternate gear with the shifting-forks. To throw both belts on to their loose pulleys, it is only necessary to adjust the arm or sector G to the position shown for it in fig. 2, and in order to shift either belt on to the fast pulley, to move said sector to the right or left, according to which belt it is required to put into driving action, as represented by the position of the forks in figs. 1 and 3.

What I claim as my invention, and desire to secure by Letters Patent, is—

The two belt-shifting forks connected and pivoted to a swinging arm or sector for simultaneous joint operation, substantially as described, whereby, while the one belt is being moved on or off the fast pulley, the belt controlled by the other fork has but a slight motion, and is retained to its run on the loose pulley, essentially as herein set forth.

A. M. FREELAND.

Witnesses:

A. LE CLERC,
J. W. COOMBS.