

G. E. TAFT.
Spinning-Frame.

2 Sheets—Sheet 1.

No. 222,329.

Patented Dec. 2, 1879.

Fig. 1

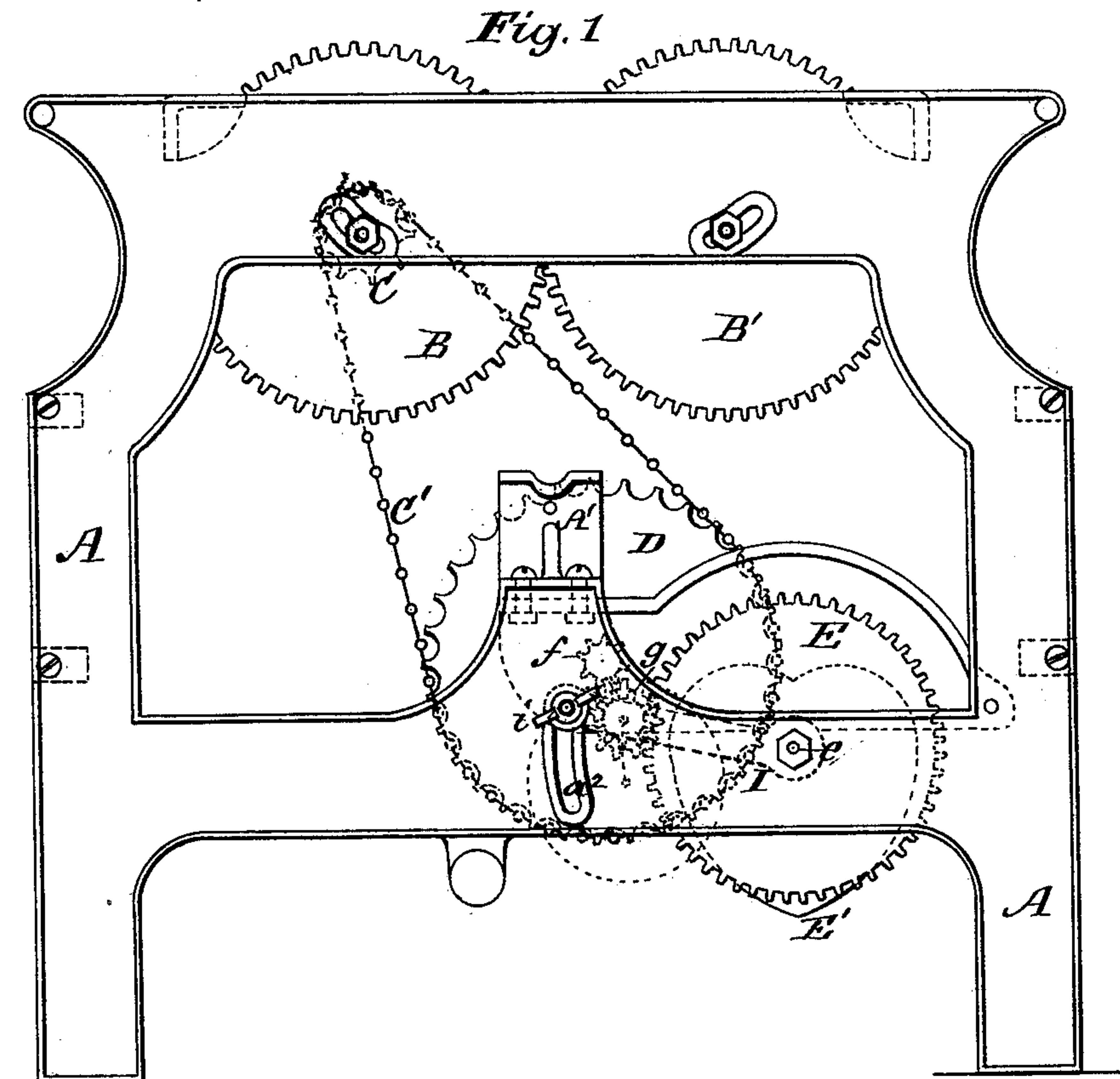
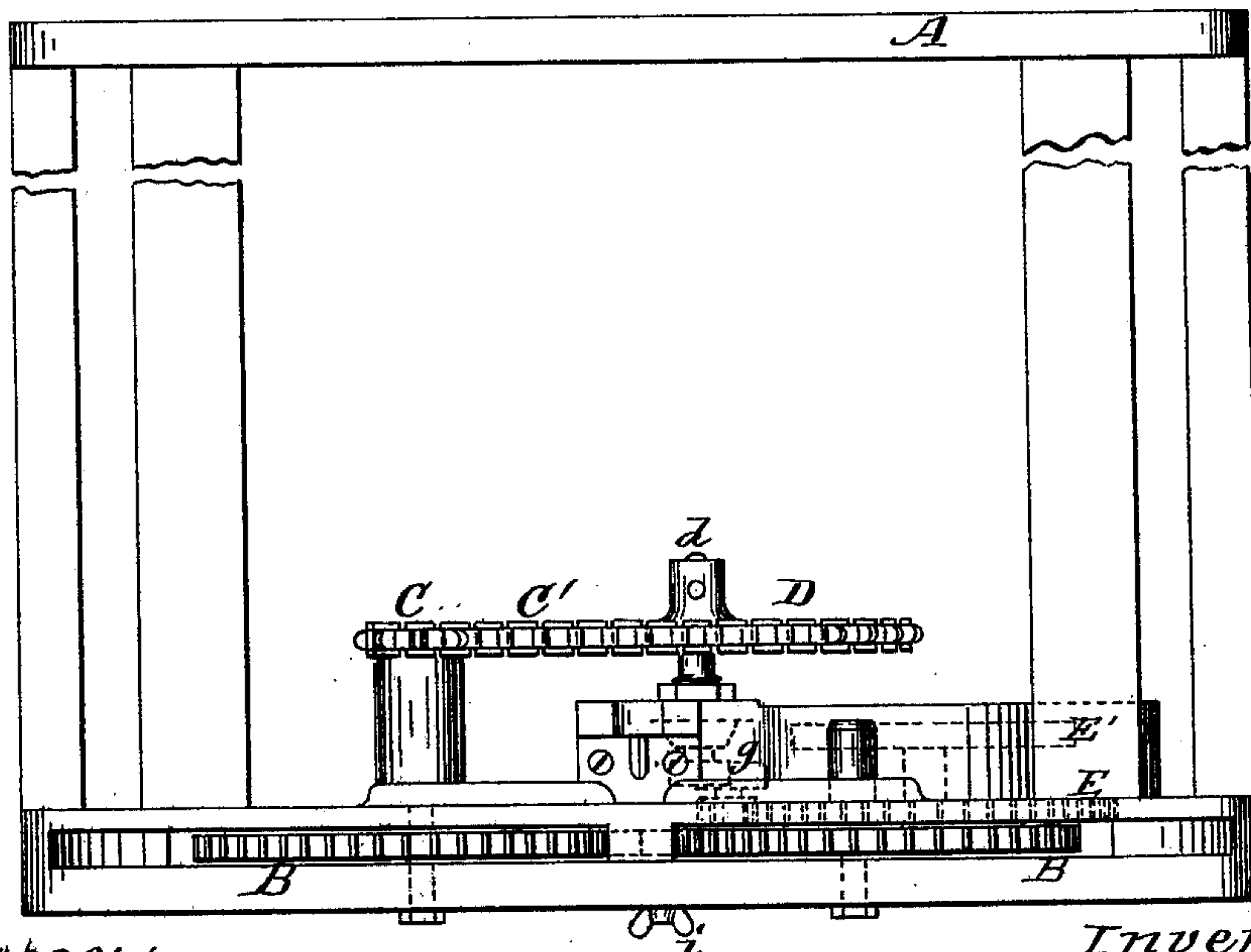


Fig. 2



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by E. E. Masson
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Fig. 3

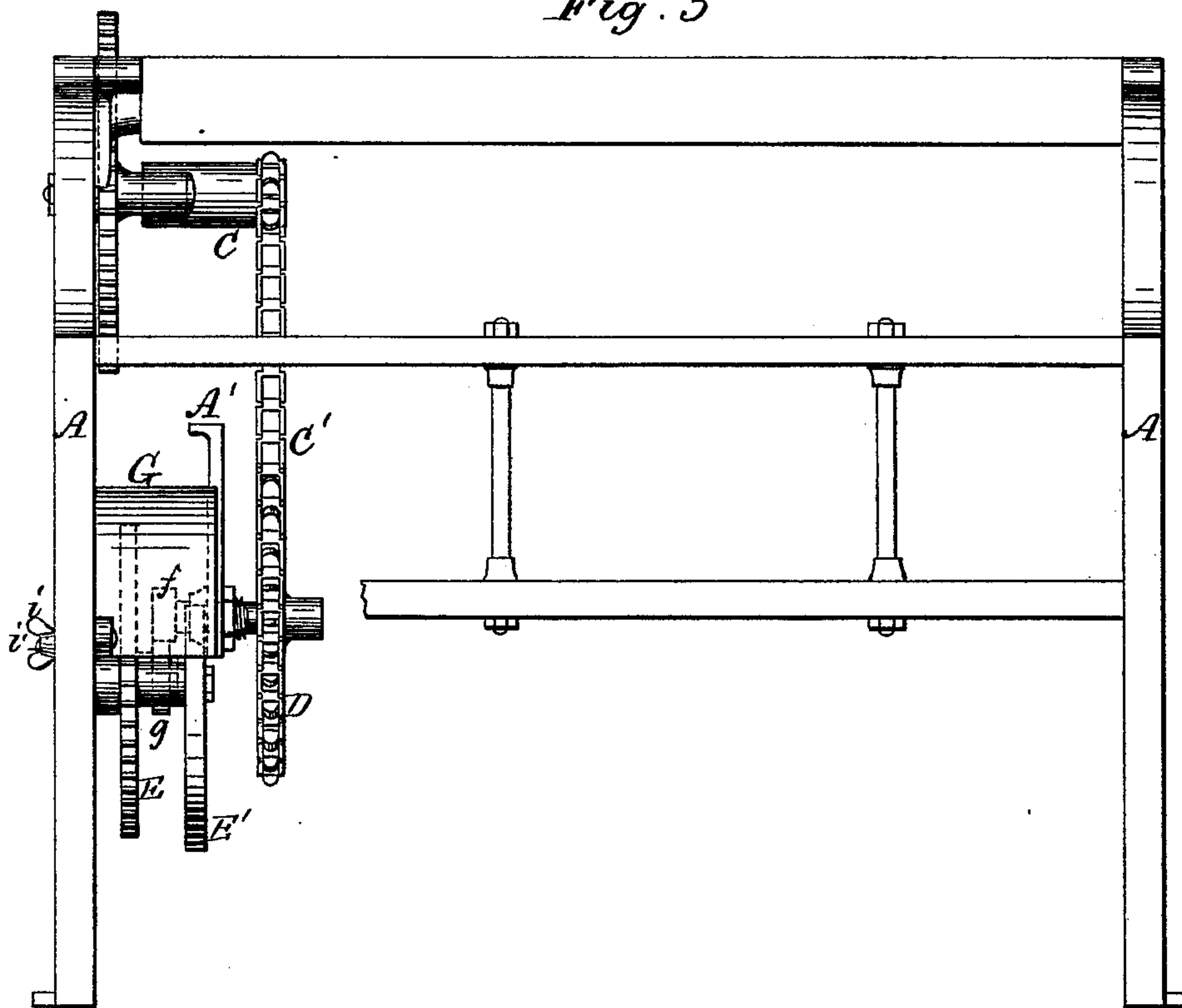


Fig. 4.

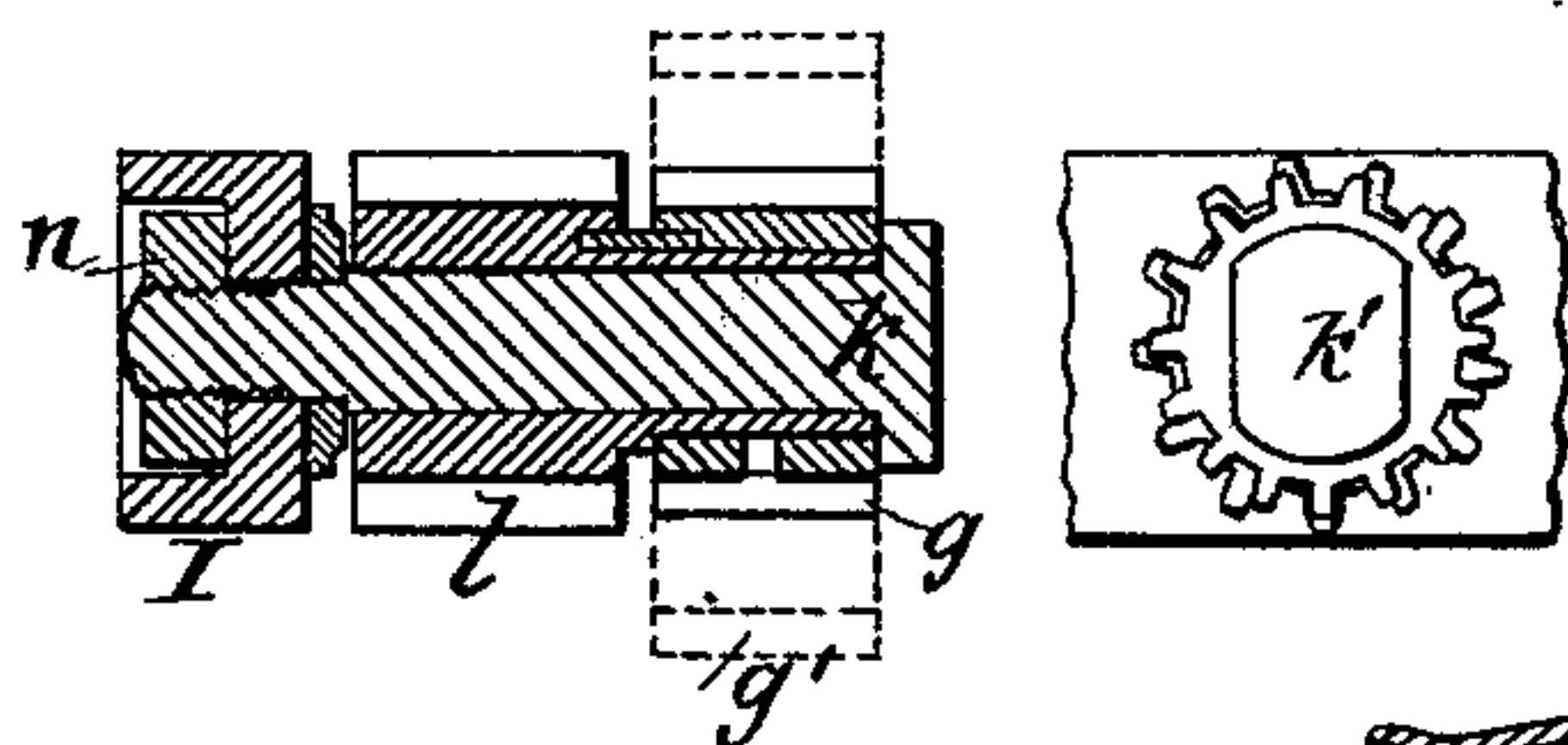
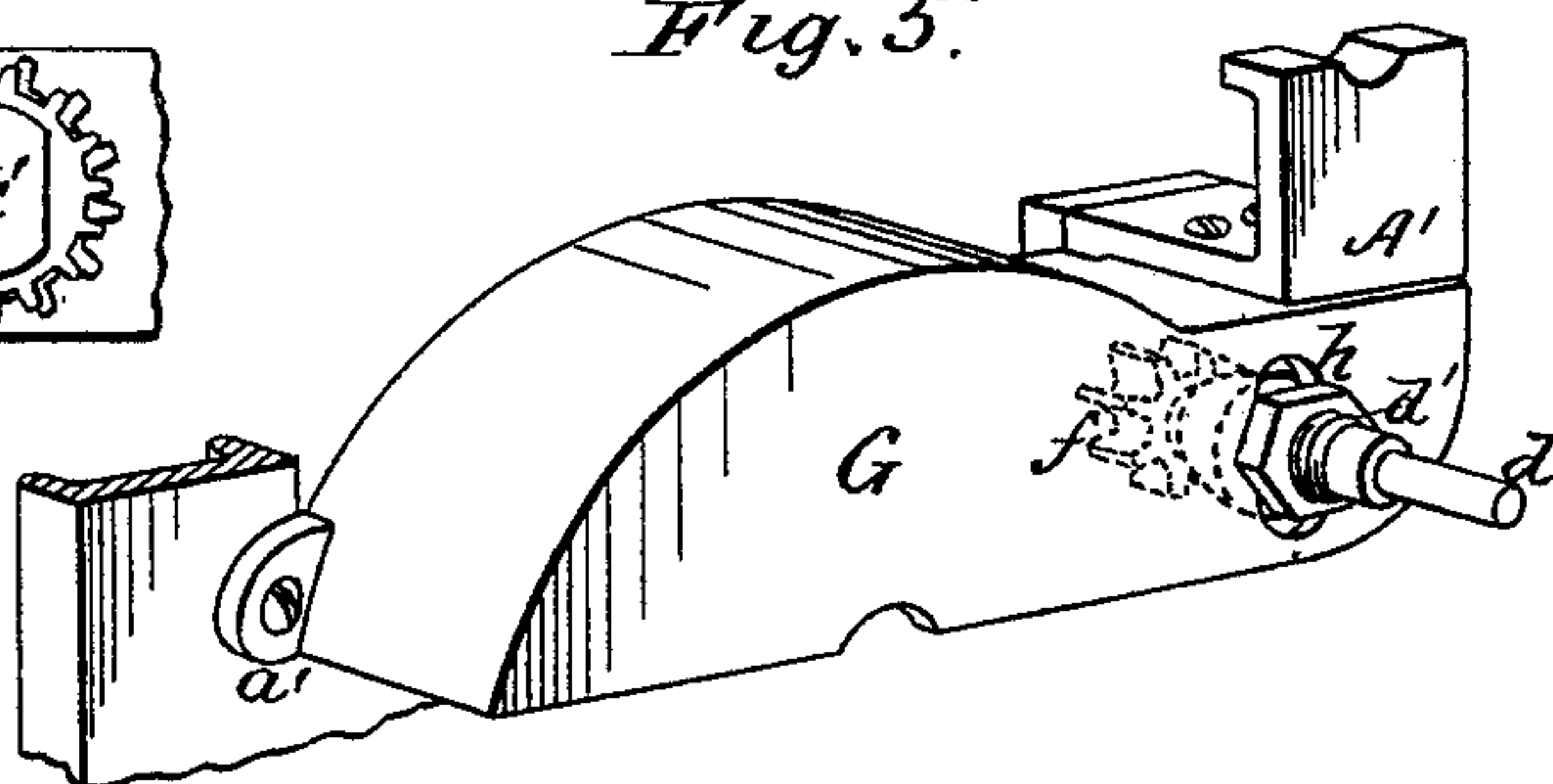


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE

GUSTAVUS E. TAFT, OF WHITINSVILLE, MASSACHUSETTS, ASSIGNOR TO
THE WHITIN MACHINE WORKS, OF SAME PLACE.

IMPROVEMENT IN SPINNING-FRAMES.

Specification forming part of Letters Patent No. 222,329, dated December 2, 1879; application filed August 28, 1879.

To all whom it may concern:

Be it known that I, GUSTAVUS E. TAFT, of Whitinsville, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Spinning-Frames; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification.

This invention relates to improvements in spinning frames—namely, for changing the speed of the ring-rail to effect the laying of yarn according to its size or number on the bobbins.

It is desirable to grade the speed of the ring-rail. For some coarse yarns one rise and fall of the ring-rail is wanted for thirty revolutions of the front roller, and for finer yarns one rise and fall of the ring-rail for two hundred and fifty revolutions of the front roller. The speed of the ring-rail will be varied between these two extremes to suit the number of the yarn and its lay upon the bobbin.

The most common way in use to give motion to the heart-shaft is to drive it from the front roll by means of a worm on the front roll of a spinning-frame operating a worm-wheel on a vertical or diagonal shaft, near the lower end of which is mounted a bevel-pinion, which drives a bevel-gear secured to the heart-shaft. The objections to this method are that worms and worm-wheels are liable to wear rapidly, and worm-wheels and bevel-gears are not so convenient for changing speeds as spur-gears, and the former especially requires more frequent oiling.

The object of my invention is to change the speed of the heart-shaft by means of interchangeable square-faced spur-gears, and to connect said spur-gear by a chain and sprocket or chain wheels with the front roll of a spinning-frame or some intermediate gearing, from which power is taken, and to vary the laying of the yarn on the bobbins; and this I accomplish by mounting the interchangeable spur-gears upon a stud of an arm pivoted to the heart-cam shaft, and covering the heart-cam and its gears with a bonnet, serving also as a support for the chain-wheel stud. Thus a

chain and chain-wheels and spur-wheels are used, and are well suited for that purpose, not only by means of the facility with which the change of speed is made in the gearing, but the motion given to the heart-cam, and through it to the ring-rail, is more even and steady, and avoids the jerking motion so common in worm and worm-wheels where the work to be done or the resistance offered is not steady or uniform.

My invention consists in combining, with a spinning-frame, its heart-cam shaft or stud, and heart-shaft spur-gear, an arm pivoted on said shaft, and carrying interchangeable square-faced spur-gears, chain-wheels, and a chain, through which motion is transmitted thereto, as will be hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 represents an end elevation of a spinning-frame having my improvements. Fig. 2 represents a top view or plan of the same. Fig. 3 represents a side elevation of the same. Fig. 4 represents an enlarged front view and vertical section of the changeable gear, its axle, and carrying-arm. Fig. 5 represents a perspective view of the gearing shield and support.

The construction and operation of my invention are as follows:

A represents the frame. B B' are intermediate gears, through which the front rolls are driven in common geared spinning-frames. To the hub of the gear B, or any other convenient gear, I attach a small sprocket or chain wheel, C, which is connected to and drives, by means of the chain C', a larger sprocket-wheel, D, mounted on a short shaft, *d*, near the spur-gear E on the heart-shaft *e*. Upon the shaft *d* of the lower sprocket-wheel is secured a pinion, *f*, that drives the change-gears, two of which are shown (of different sizes) in the drawings.

The small change-gear *g* may have only fifteen teeth, and another, *g'*, may have sixty teeth and upward.

Though two gears are shown, one in full and the other in dotted lines, Fig. 4, on the stud upon which they revolve, only one will be used at a time.

The shaft *d* (carrying the sprocket-wheel D

and pinion *f*) is supported by a screw-threaded sleeve, *d'*, secured to the semi-cylindrical cast-metal shield *G* by a nut, *h*. The sleeve passing through a slot in the side of the shield, its position is thus rendered adjustable.

The shield is secured at one end to the frame of the machine under the bracket-bearing *A'* of the spindle-driving cylinder, and at the other end, at *a'*, in such a position as to cover the heart-cam *E'*, its gear *E*, the change-gears, and their movable support, the arm *I*. This arm *I* is pivoted at one end to the heart-cam shaft or stud *e*, and controlled at the other end by a nut, *i*, upon a bolt, *i'*, projecting from one side of the arm and passing through a slot, *a²*, in the frame. From the opposite side of the arm *I*, and adjoining *i'*, projects a stud, *k*, carrying the change-gears *g* or *g'*, and also the pinion *l*, that meshes with the gear-wheel *E* on the cam-shaft. This pinion *l* has its hub projecting far enough to go through the hub of any of the change-gears, as shown in Fig. 4, and is keyed thereto.

To make the change and substitute one of the change-gears for the other, a wrench is placed upon the flattened head *k'* of the stud *k* and turned, the nut *n* being held from turning by the ribs forming the recess in the arm *I*. The gear *g*, or any other change-gear that may happen to be on, is removed, and the desired substitute is placed upon the hub of the pinion *l*, and the stud replaced in its position, the arm *I* being secured in a suitable position by the nut *i*, according to the size of change-gear.

Having now fully described my invention, I claim—

1. In combination with the frame of a spinning-machine, its heart-cam shaft, and heart-shaft spur-gear, a lever pivoted on said shaft or stud, and carrying a spur-gear adapted, as described, to be interchangeable with a gear of different size, substantially as and for the purpose described.

2. The combination, with the frame of a spinning-machine and its draw-rollers, of the shield *G*, attached to said frame, a sleeve and shaft carried by said shield, sprocket-wheels, and chain, as described, and intermediate gears between the draw-rollers and said sleeve and shaft to transmit motion through a pinion and interchangeable gear, as described, to gear-wheel *E* and heart-cam *E'*, substantially as and for the purpose described.

3. In combination with the heart-cam shaft and gear-wheel *E*, the arm *I*, pivoted at one end to heart-cam shaft, the stud *k*, projecting from the side of said arm, the pinion *l*, and the gear upon said stud, adapted to be interchangeable, substantially as and for the purpose described.

4. In combination with the frame of a spinning-machine, the heart-cam shaft, heart-cam, and its gearing *E*, the arm *I*, carrying a pinion and gear adapted to be interchanged, as described, and the shield *G*, attached to the frame, and carrying a stud for a sprocket-wheel, substantially as and for the purpose described.

GUSTAVUS E. TAFT.

Witnesses:

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