

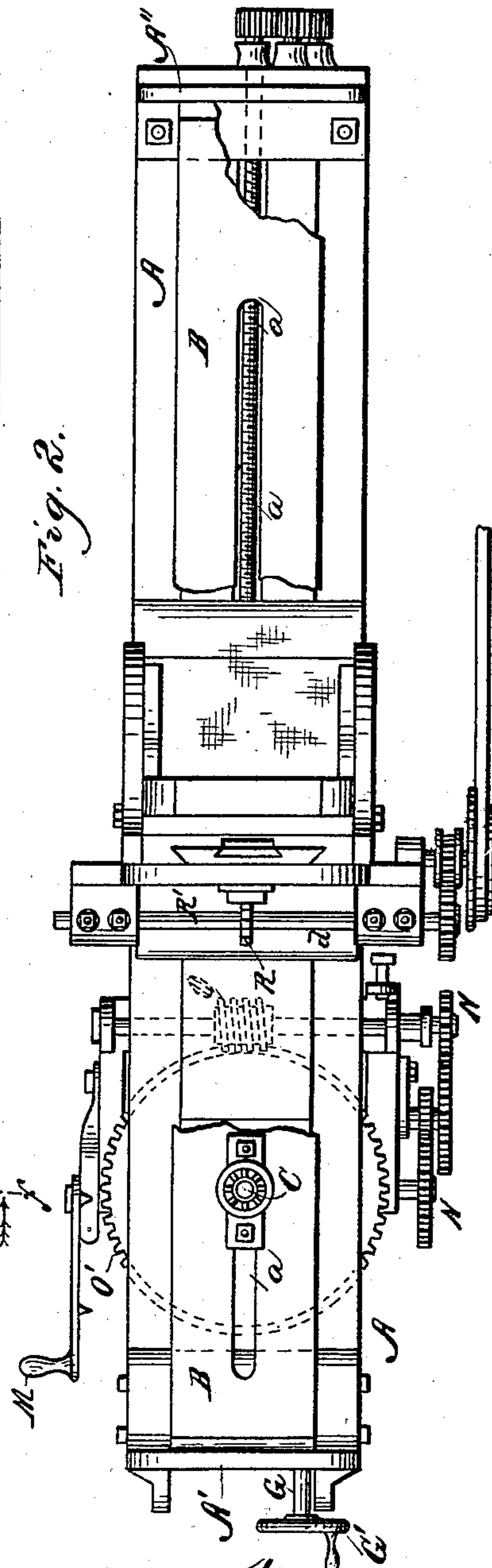
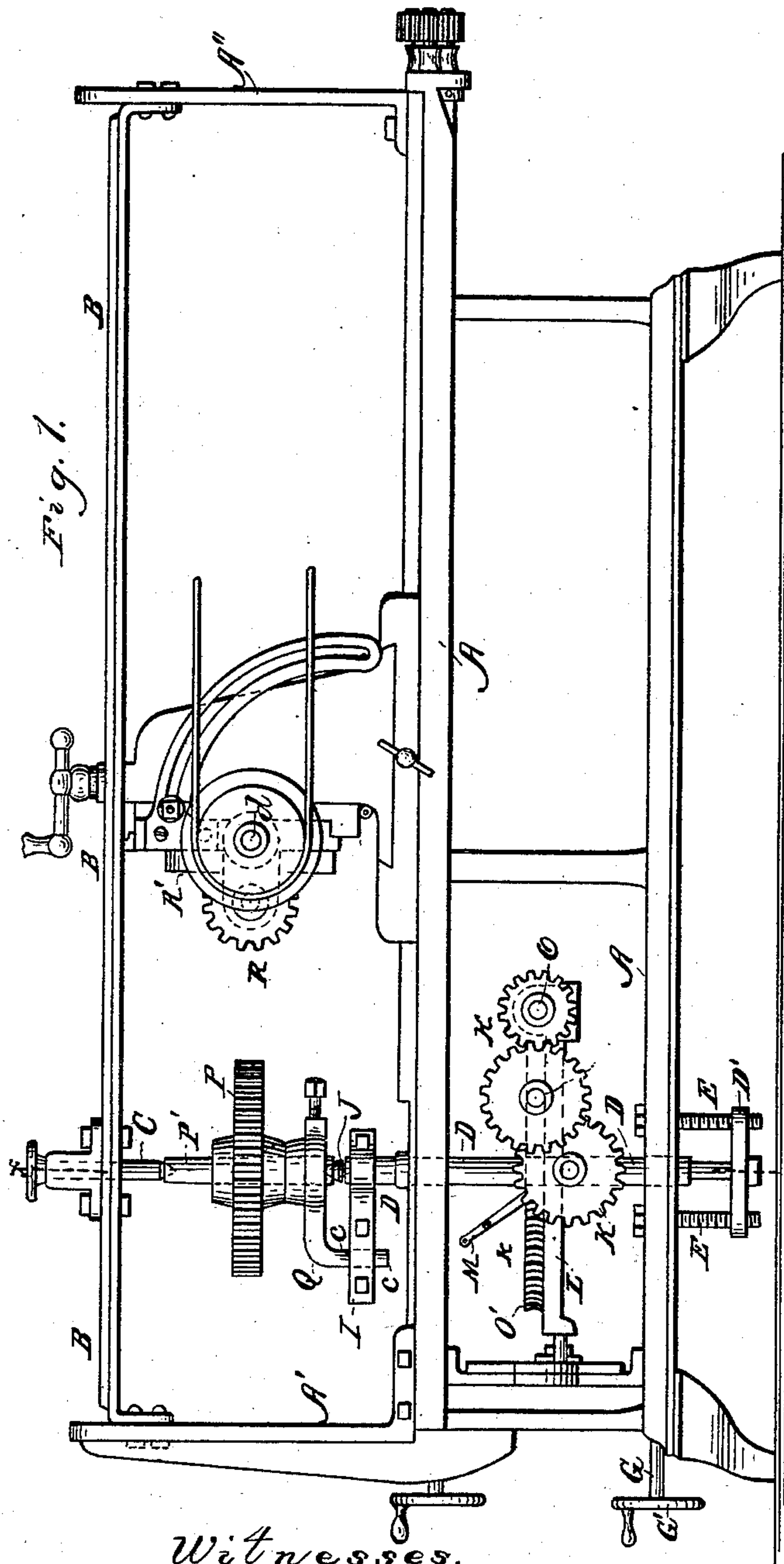
(No Model.)

2 Sheets—Sheet 1.

C. W. CRARY.
GEAR CUTTER.

No. 282,059.

Patented July 31, 1883.



Witnesses.
Henry Frankfurter,
J. B. Halpern.

Inventor.
Cushman W. Crary.
per. F. F. Warner
his Attorney.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

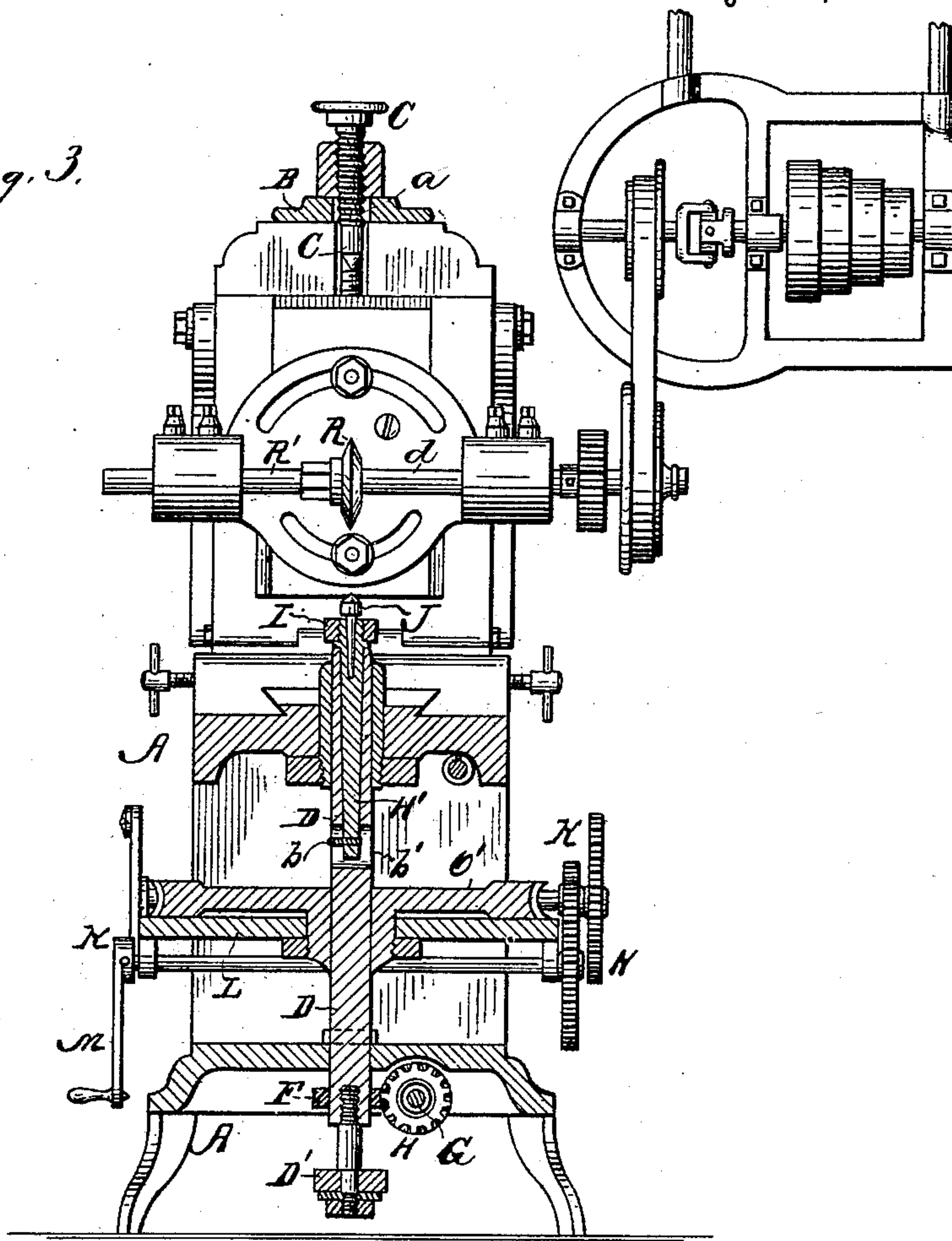


Fig. 4.

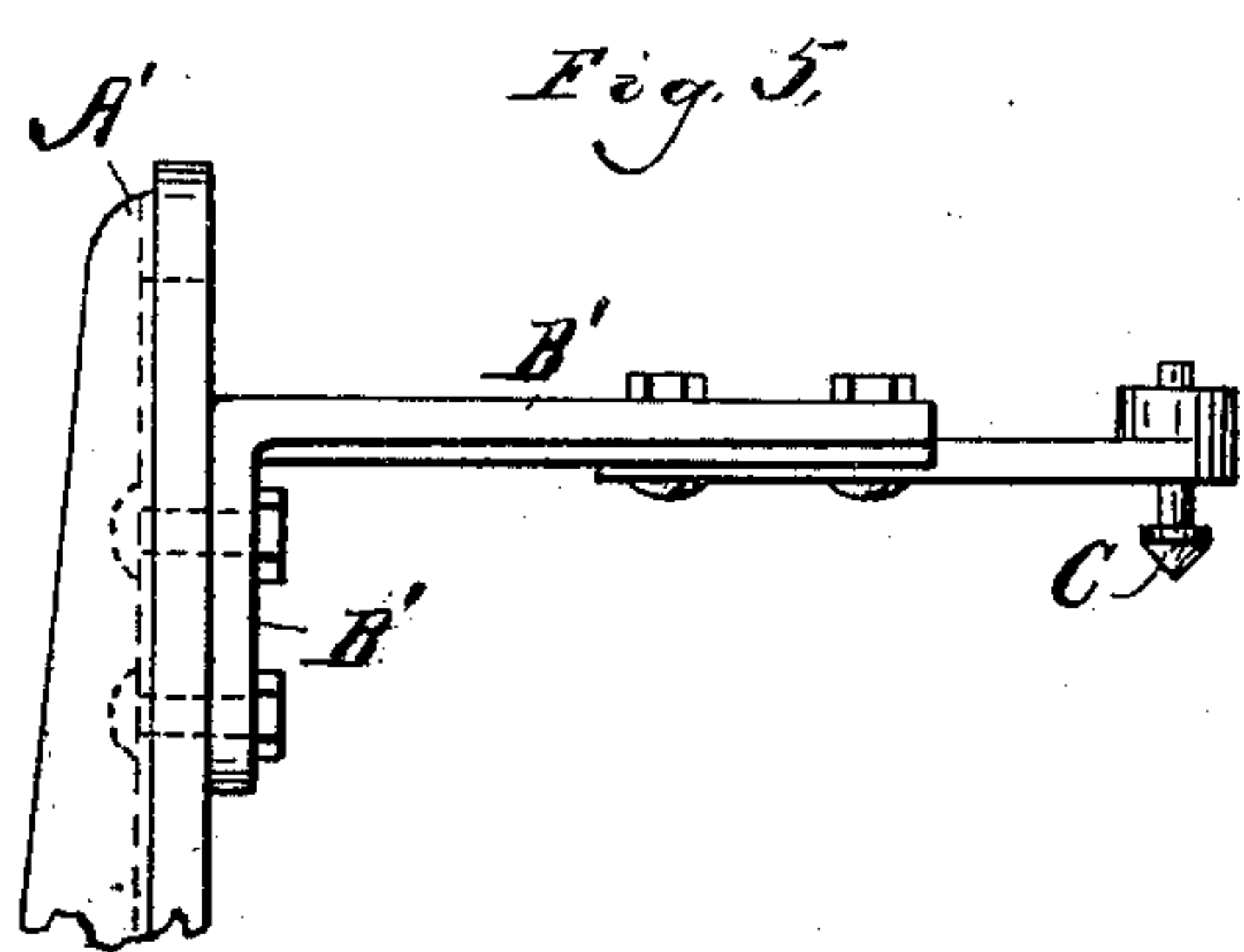


Fig. 5.

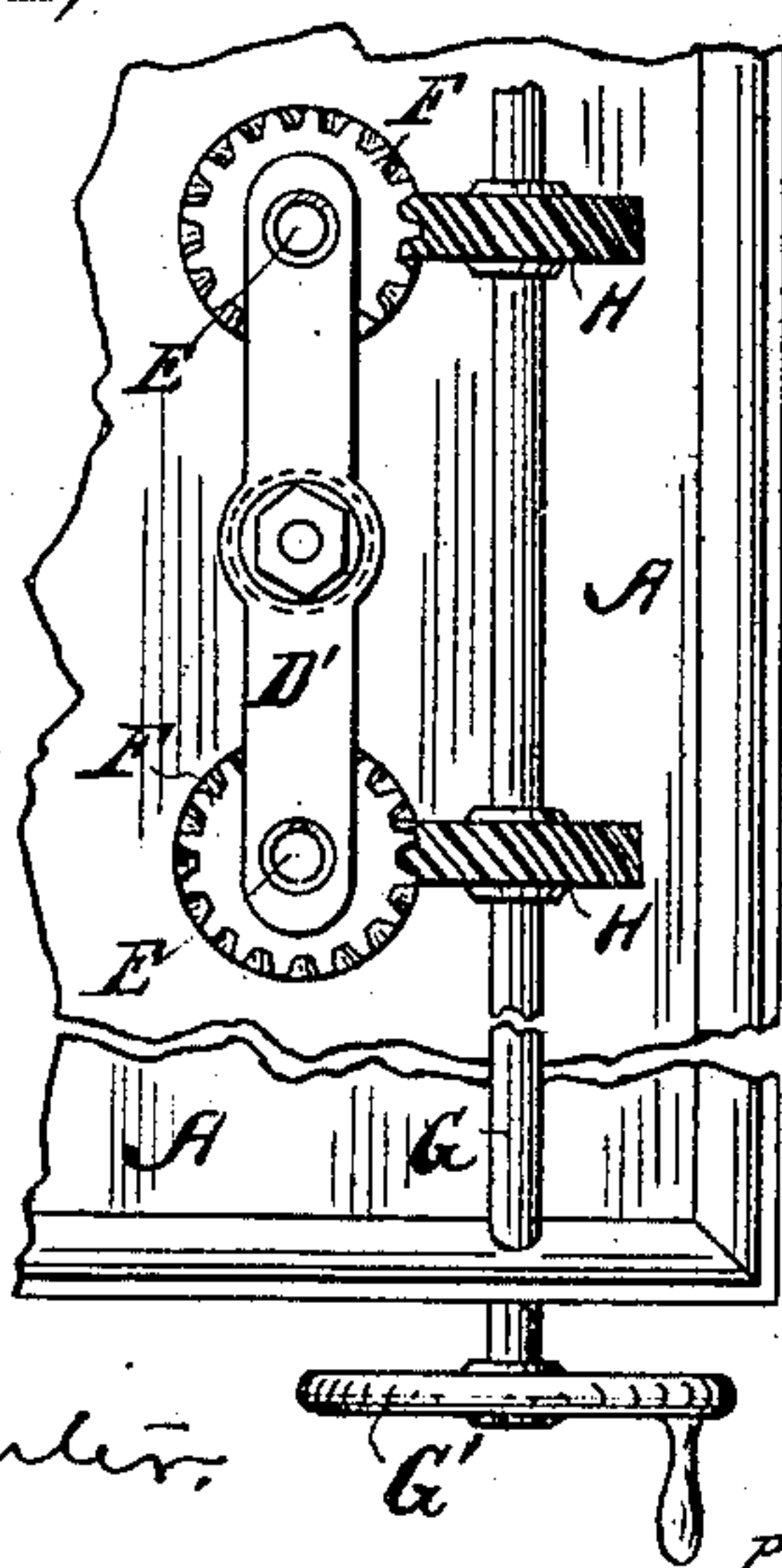
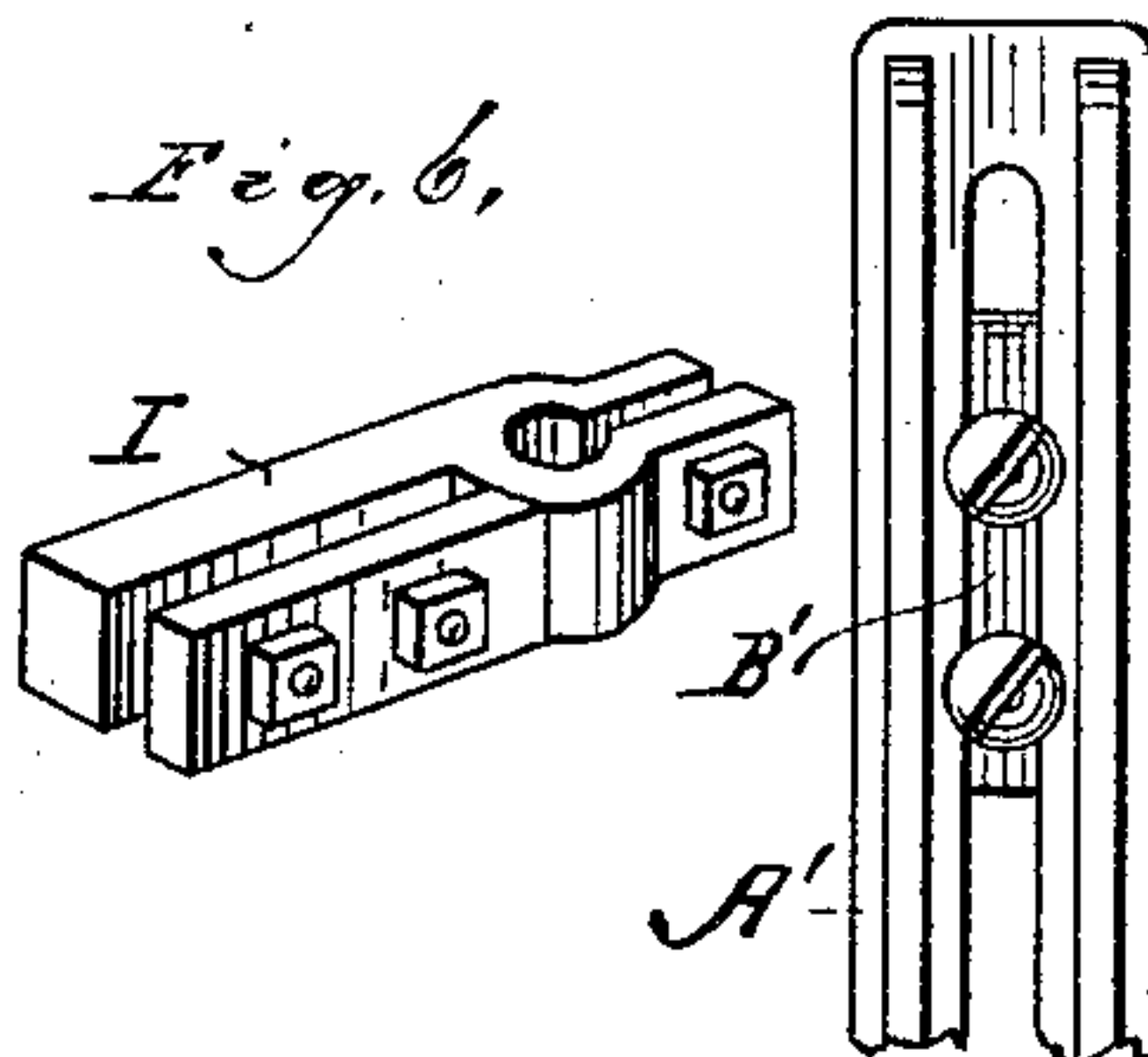


Fig. 6.

Fig. 7.



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UNITED STATES PATENT OFFICE.

CUSHMAN W. CRARY, OF CHICAGO, ILLINOIS.

GEAR-CUTTER.

SPECIFICATION forming part of Letters Patent No. 282,059, dated July 31, 1883.

Application filed April 4, 1883. (No model.)

To all whom it may concern:

Be it known that I, CUSHMAN W. CRARY, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful
5 Improvements in Gear-Cutters, of which the following, in connection with the accompanying drawings, is a specification.

In the drawings, Figure 1, Sheet 1, is a side elevation of a gear-cutter embodying my im-
10 provements. Fig. 2, Sheet 1, is a top or plan view thereof. Fig. 3, Sheet 2, is a vertical cross-section in the plane of the line $x x$ of Fig. 1, the wheel-blank and the parts immediately connected thereto being removed. Fig.
15 4, Sheet 2, is a detail, showing the spiral miter-wheels for adjusting the spindle vertically, viewed from below. Fig. 5, Sheet 2, is a detail, the same being a side view of the top center and top center bracket. Fig. 6, Sheet 2, is
20 a detail in perspective of a part of the carrier, and Fig. 7 is a detail of a part of the frame.

Like letters of reference indicate like parts.

My principal object is to provide means whereby the gear may be cut between two cen-
25 ters and on the same mandrel on which they were turned. I also aim to provide means for adjusting the spindle vertically with facility.

In the drawings I have represented a gear-cutter adapted to cut various kinds of gear,
30 and therefore having many adjustable parts, all of which it will be unnecessary for me here to explain with particularity, as they are not all necessarily related to my improvements, as will hereinafter more fully appear.

35 A is the frame of the machine, on the front part of which is a vertical standard or upright, A' , and at the rear end of which is an upright, A'' .

B is a vertically-adjustable bar or support
40 applied to the uprights A' and A'' , and arranged horizontally, as shown. The bar B is slotted, as shown at a , Fig. 2.

C is a top center, which is applied adjust-
45 ably to the bar B, being clamped thereto by means of bolts and nuts, the bolts passing through the slot a , thereby permitting the top center to be set a greater or less distance from the upright A' . It may seldom be necessary, in practice, to use the long bar B, and there-
50 fore I have shown a top center bracket, B' , in Fig. 5 applied only to the upright A' , and vertically adjustable with relation thereto, and

also having in it a longitudinal slot, so that the top center may be adjusted or moved back and forth on the bracket. The bracket B' per-
55 forms the same functions as the bar B—that is, both support the top center, so that it can be adjusted vertically and horizontally. The bracket B' is, in other words, the equivalent of the bar B, but shorter, and supported only
60 at one end.

D is the spindle, and D' is a horizontal bar attached to its lower end and moving there-
with. E E are screws depending freely from a part of the frame A and passing through
65 female screws in the bar D' .

F F are spiral miter-gears rigidly attached to the screws E E.

G is a horizontal shaft, on the outer end of which is a hand-wheel, G' .

70 H H are spiral miter-gears rigidly attached to the shaft G and engaging the gears F F. By turning the wheel G' the spindle D will be either raised or lowered, as may be desired.

H' is a taper mandrel or socket dropped into
75 the upper end of the spindle D, and b is a removable pin extending laterally from the lower part of the mandrel H' into a slot, b' , in the spindle, so that the said spindle and mandrel will be rotated together with certainty, and
80 be prevented from being removed until the said pin is withdrawn.

I is a carrier applied to the upper end of the mandrel H', and J is a center or lower regis-
85 tering piece dropped into the upper end of the mandrel H'. It is to be understood that the carrier I turns with the spindle D. The spindle D may be turned by means of any well-known or suitable means for the purpose of
90 carrying the wheel or wheel-blank around, so that it will be presented to the cutter in such a manner that the cogs will be cut in succession.

K represents mechanism which I employ for that purpose; but as I do not here make special claim thereto, I will only state that this
95 mechanism is mounted on a vertically-movable support, L, traveling vertically with the spindle D, and actuated by means of a hand-crank, M, which, in turn, rotates gearing N, whereby a worm or spiral, O, is made to turn
100 a gear, O' , rigidly attached to the spindle D.

P is the wheel or wheel-blank, and P' is the mandrel on which it was turned up, ready for the gear-cutter.

Q is a dog or carrier clamped to the lower part of the mandrel P'. The carrier Q has a depending arm, c, entering the carrier I and clamped thereto, as shown in Fig. 1. The upper and lower ends of the mandrel P' have flaring or tapering indentures or sockets to receive the upper and lower centering-points.

R is the cutter, and R' is an adjustable head which carries or supports the shaft d, on which it is mounted. This head is adjustable variously, so that the cutter may be set to do various kinds of work, and so that it may be carried to and from the wheel or blank to be cut.

To prepare this machine for work, I remove the mandrel P' with the wheel or blank P and the carrier Q thereon, from the lathe in which the wheel or blank was turned or prepared for cutting, arrange the said mandrel between the centering-points of the gear-cutter, clamp the dog Q to the carrier I and the latter to the spindle D, and set the cutter R. The cutter, as the work proceeds, is fed or moved forward in the manner usual in machines of this class, or in any well-known or suitable way.

It will be perceived from the foregoing description that the wheel or blank is centered

between two centers, and is cut on the same mandrel on which it was turned, and without being removed therefrom. It will also be perceived that the centering-points may be adjusted with facility.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a gear-cutter, of an adjustable top center, an adjustable lower center, a mandrel for holding the wheel or wheel-blank, a rotary spindle, and carriers for connecting the said mandrel and spindle, substantially as specified, for the purpose of thereby admitting of the wheel being cut between the said centers and on the mandrel on which it was turned.

2. The combination, in a gear-cutter, of the spindle D, bar D', screws E E, the spiral miter-gears F F, shaft G, and the spiral miter-gear H H, substantially as and for the purposes specified.

CUSHMAN W. CRARY.

Witnesses:

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