

C. C. NEWTON.
KEY SEATING MACHINE.
APPLICATION FILED MAY 9, 1905.

903,757.

Patented Nov. 10, 1908.

4 SHEETS—SHEET 1.

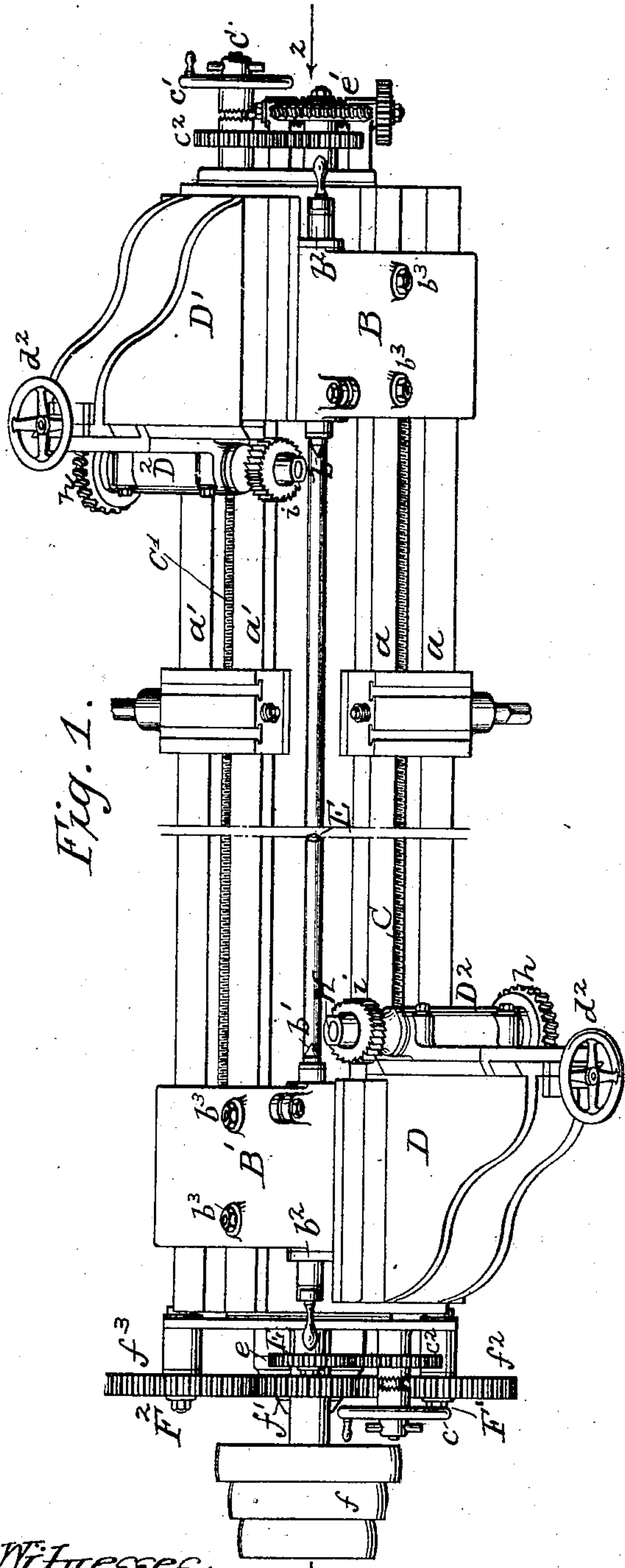


Fig. 1.

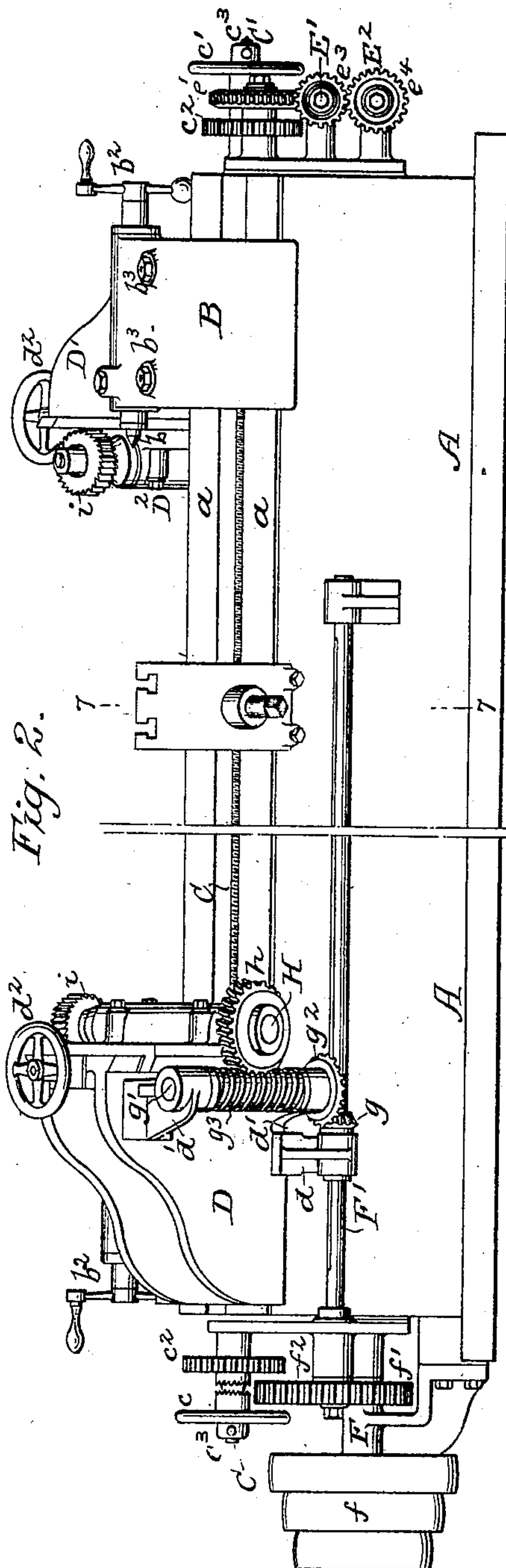


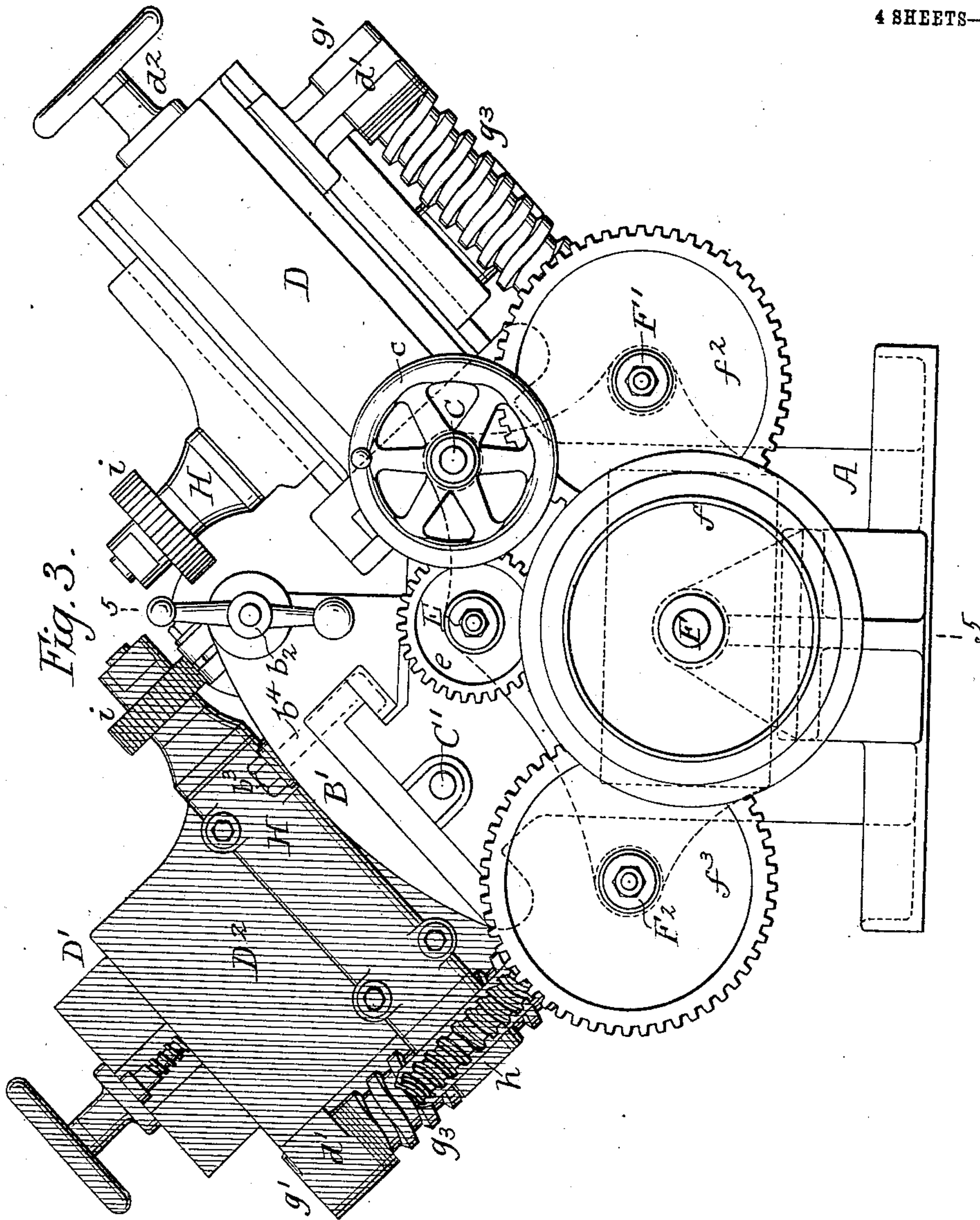
Fig. 2.

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Titus V. Cross.

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Charles C. Newton
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

Fig. 7.

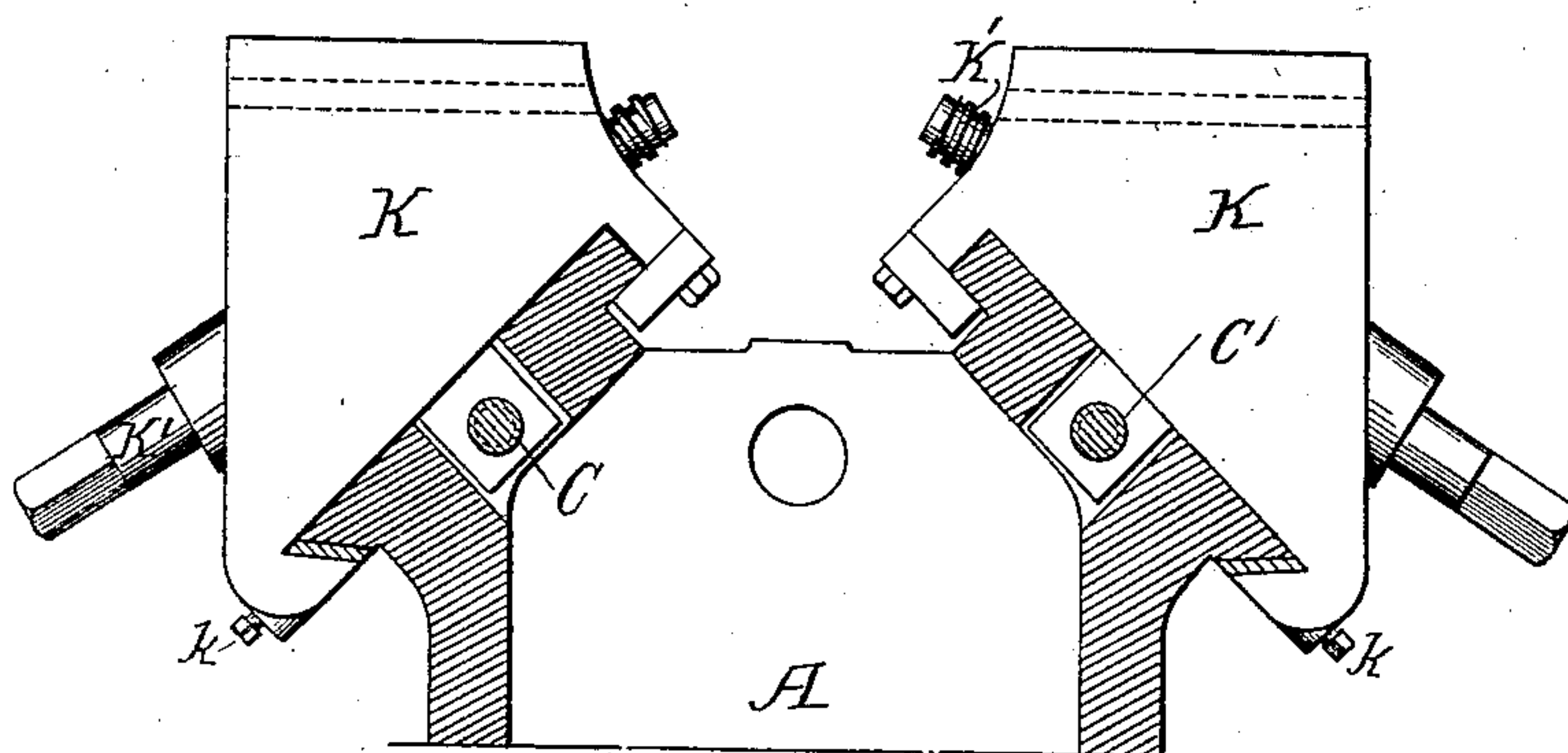
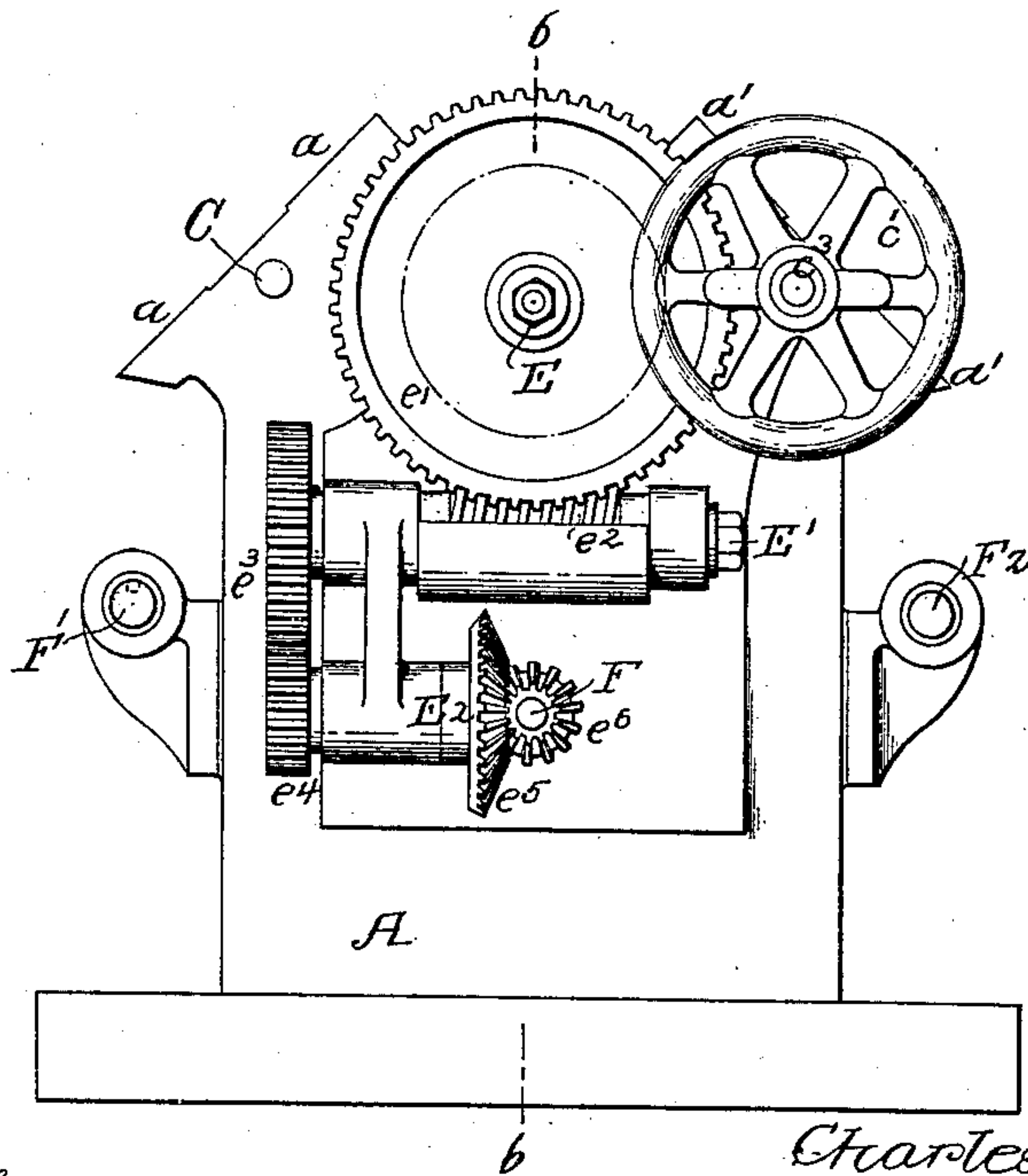


Fig. 4.



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4 SHEETS—SHEET 4.

Fig. 6.

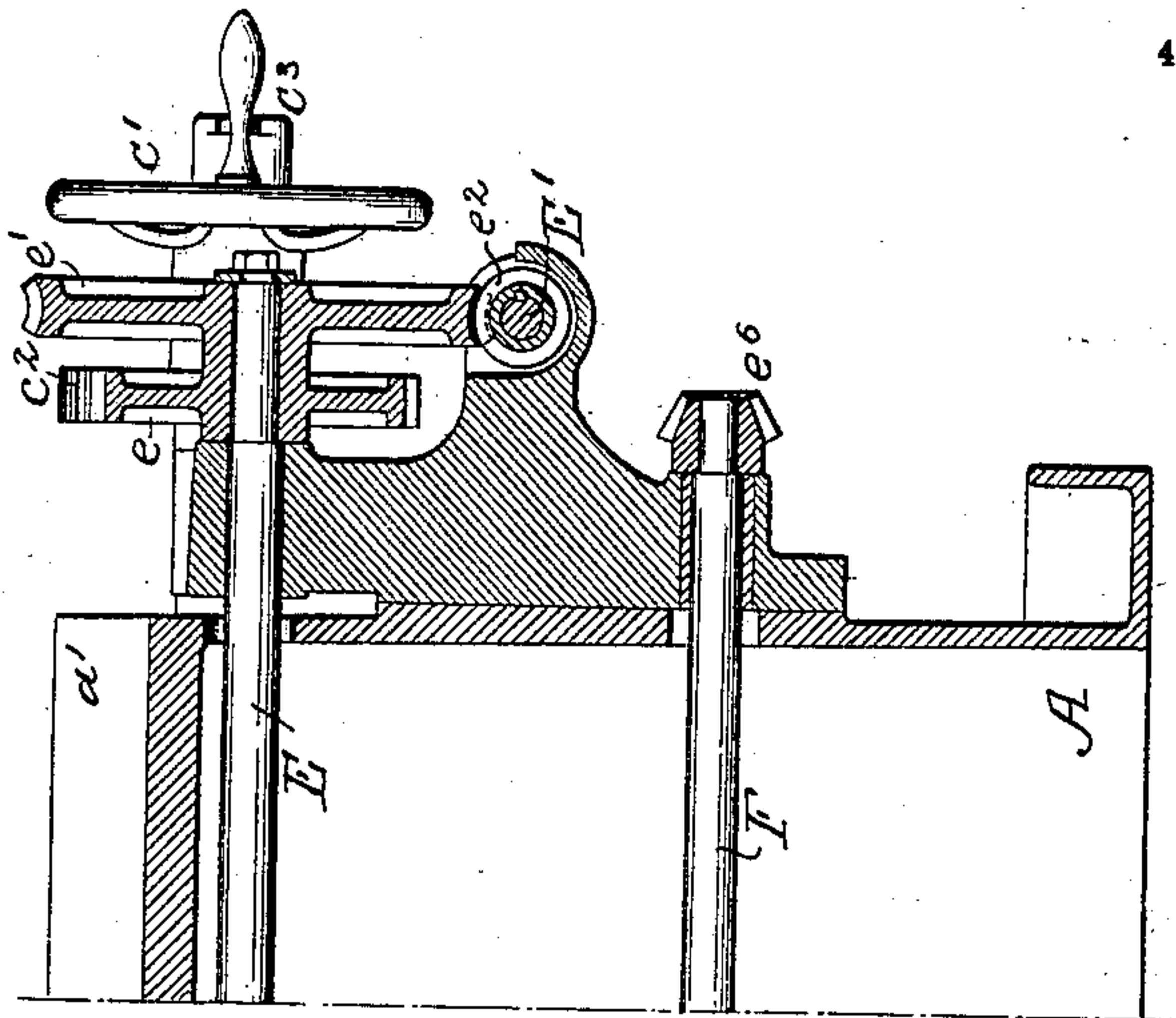
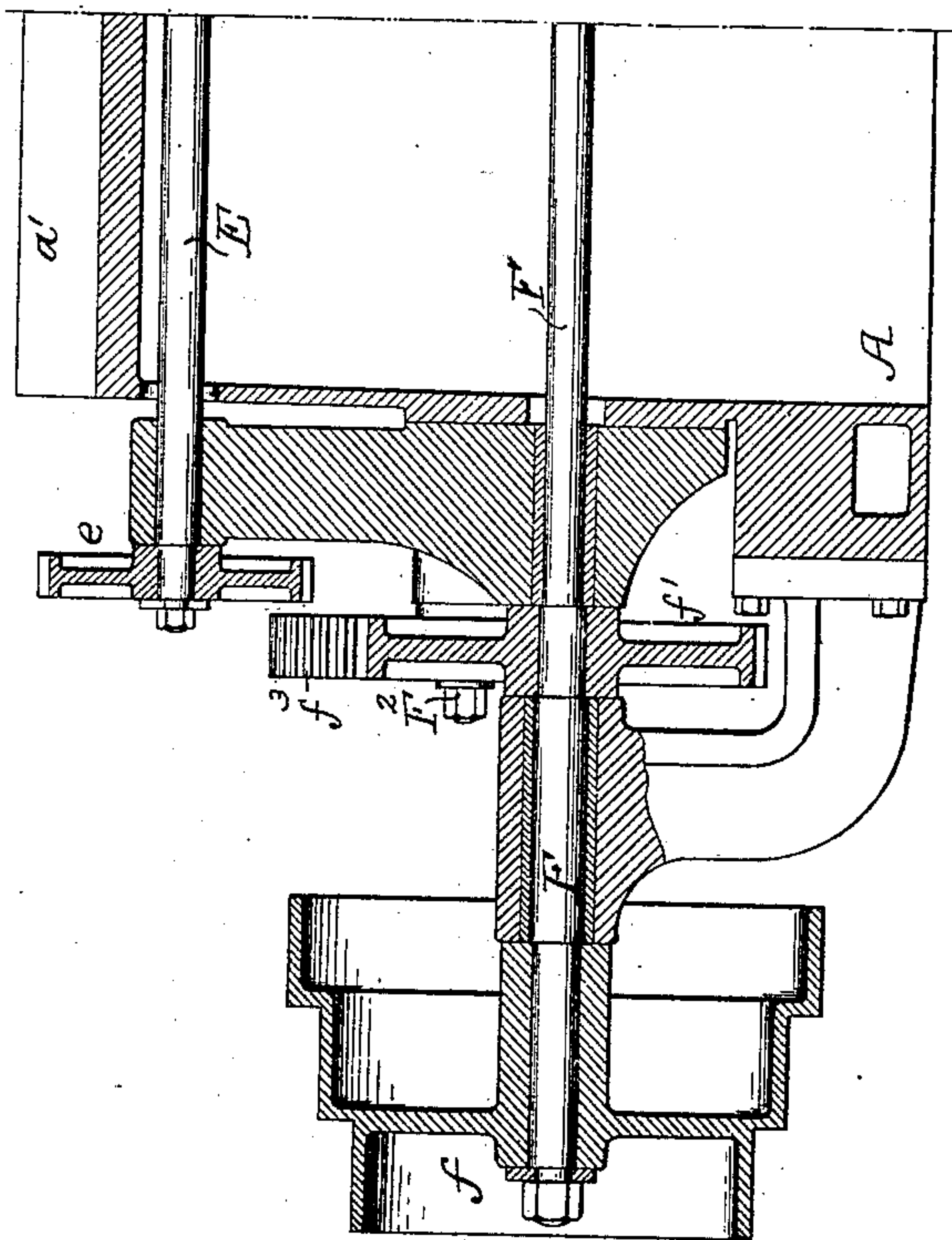


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES C. NEWTON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO NEWTON MACHINE TOOL WORKS, INCORPORATED, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

KEY-SEATING MACHINE.

No. 903,757.

Specification of Letters Patent.

Patented Nov. 10, 1908.

Application filed May 9, 1905. Serial No. 259,615.

To all whom it may concern:

Be it known that I, CHARLES C. NEWTON, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Key-Seating Machines, of which the following is a specification.

My invention relates to machines for cutting key seats in axles or other driving shafts.

The invention is particularly adapted to cutting key seats in the driving axles of locomotives, the machine cutting the seats in each end of the axle, one seat being cut at a quarter turn from the other so that when the driving wheels of the locomotive are secured to the axle they are in proper position.

The main object of the invention is to provide a machine in which the head stocks are mounted independently of the two carriages carrying the cutters.

The invention relates further to details fully described hereafter, reference being had to the accompanying drawings, in which:—

Figure 1, is a plan view illustrating my improved axle key seating machine; Fig. 2, is a side view; Fig. 3, is an enlarged end view looking in the direction of the arrow 1, Fig. 1; Fig. 4, is an enlarged end view of the machine looking in the direction of the arrow 2, Fig. 1; with the head stocks and carriages removed; Fig. 5, is a vertical sectional view on the line 5—5, Fig. 3; Fig. 6, is a vertical sectional view on the line 6—6, Fig. 4; Fig. 7, is an enlarged sectional view on the line 7—7, Fig. 2.

A is the base plate of the machine having two ways a and a' , one arranged at right angles to the other, each way is shaped somewhat similar to the ordinary lathe bed.

At one end of the machine is a head stock B which is mounted on the ways a , so that it can be adjusted thereon, while at the same end of the machine is a carriage D' which is arranged to slide on the ways a' . On the opposite end of the machine is a carriage D which is arranged to slide on the ways a , and a head stock B' which is mounted on the ways a' and arranged so that it can be adjusted thereon. Thus there is a head stock and a carriage on each way, the head stocks and carriages being independently adjustable, and the advantage of the arrangement being due to the fact that the stresses on the

machine under operating conditions tend to balance each other. Moreover, since it was found desirable to make the head stocks adjustable and because the machine was particularly designed for cutting keyways 90° distant from each other on the shaft, the various parts were so arranged that the two carriages could pass each other on the ways.

The axle to be cut is mounted on the two centers b , b' which can be adjusted in the manner common to lathes by a handle screw b^2 projecting from the rear of each head stock B, B' and said head stocks can be locked in their adjusted positions by nuts b^3 mounted on hooked bolts b^4 which underlap the flanges of the bed as illustrated in Fig. 3.

The carriage D is traversed by a screw shaft C while the carriage D' is traversed by a screw shaft C', each shaft being mounted between the ways a , a' respectively, and each shaft is driven by a train of gears, as fully described hereafter, or can be operated by hand.

The shaft C has a hand wheel c and the shaft C' has a hand wheel c' , each hand wheel can slide on its respective shaft but must turn with it. The hand wheels have clutch teeth which mesh with teeth on driving pinions c^2 loose on the shafts.

By turning the adjusting nut c^3 back of the handle which is mounted on the screw threaded extension of the screw shaft the teeth of the handle can be brought into engagement with the teeth of the pinion c^2 so that the shaft can be turned by power, but as soon as the nut is backed off the screw shaft is disconnected from the power shaft.

Each pinion c^2 meshes with a gear wheel e on a longitudinal shaft E, in the present instance extending from end to end of the machine, and on one end of this shaft is a worm wheel e' which meshes with a worm e^2 on a worm shaft E' having its bearings in the frame of the machine and this worm shaft is geared to a shaft E² by gear wheels e^3 , e^4 and on the opposite end of this short shaft E² is a bevel wheel e^5 which meshes with a bevel wheel e^6 on a driving shaft F also extending the full length of the machine, the driving shaft being mounted in suitable bearings, as clearly illustrated in the drawings. On the opposite end of the shaft F is a three step pulley f .

It will be seen by this construction that either one or both of the carriages D can be

traversed by power, or can be disconnected from the power shaft and moved by hand.

The movement of either carriage D, D' is not limited to the position of the head stock at its end of the machine, as the two are entirely independent.

On the power shaft F is a gear wheel f' which meshes with gear wheels f^2 , f^3 on shafts F' , F^2 respectively. These shafts extend along each side of the machine and are supported by suitable bearings, they are the power shafts by which the cutters on their respective carriages are driven.

Each shaft F' , F^2 is splined so that a bevel pinion g carried by a bracket d projecting from the carriage D can slide on the shaft but must turn with it, a feather in the hub of the bevel pinion entering the spline in the shaft.

The carriage D' is a duplicate of the carriage D so I will simply explain the details of one carriage. Mounted in bearings d' on the carriage D is a worm shaft g' having a bevel wheel g^2 , which meshes with the pinion g . On the shaft g' is a worm g^3 which meshes with a worm wheel h on one end of the cutter shaft H, on the opposite end of this shaft is an ordinary cutter i of such a width and teeth so formed as to cut a channel or a key-way in the axle which is mounted between the head stocks B and B'. The cutter can be removed from the shaft and a cutter of any shape can be readily applied thereto.

The shaft H is mounted in the bearing carried by a slide D^2 on the carriage and this slide can be adjusted by an ordinary handle adjusting screw d^2 . The worm g^3 with which the wheel h engages is of such a length that the carriage can be adjusted towards and from the center without throwing the worm wheel out of gear with the worm.

Mounted on each way intermediate of the head stock and the carriage is a slide K which can be clamped by screws k , after adjustment, to any position on the ways. Carried by each slide is a screw K' which can be adjusted so as to bear against the axle. The

object of this slide is to provide means for resisting the pressure of the cutting tool against the axle so as to relieve the centers on the head stocks from this side pressure. There may be one or more of these slides on each slide-way as desired.

I claim as my invention:—

1. The combination in an axle key seating machine, of a bed plate having two ways, one arranged at an angle to the other, a head stock mounted at one end of each way, and a carriage mounted at the opposite end of each way, a carriage and a head stock being at each end of the machine, with cutting mechanism carried by each carriage, substantially as described.

2. The combination in an axle key seating machine, of a bed plate having two longitudinal slideways, one arranged at an angle to the other, a head stock mounted on each slideway, one at one end of the machine and the other at the opposite end thereof, a carriage mounted on each slideway, two longitudinal screw shafts, one arranged to shift one carriage and the other arranged to shift the other carriage, power mechanism for driving said screw shafts, a clutch mounted between the power mechanism and each screw shaft, with a cutter on each carriage, and means for driving the cutter, substantially as described.

3. The combination in an axle key seating machine of a bed frame having two longitudinal ways, a carriage and a head stock at each end of the machine mounted on the ways, a cutting tool on each carriage, a slide on each way, means for locking the slides in position, and a screw carried by each slide so arranged as to rest against the axle to resist the thrust of the cutting tool, said screws extending in lines at an angle to each other, substantially as described.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

CHARLES C. NEWTON.

Witnesses:

WM. BROWN, Jr.,

WILL. A. BARR.