

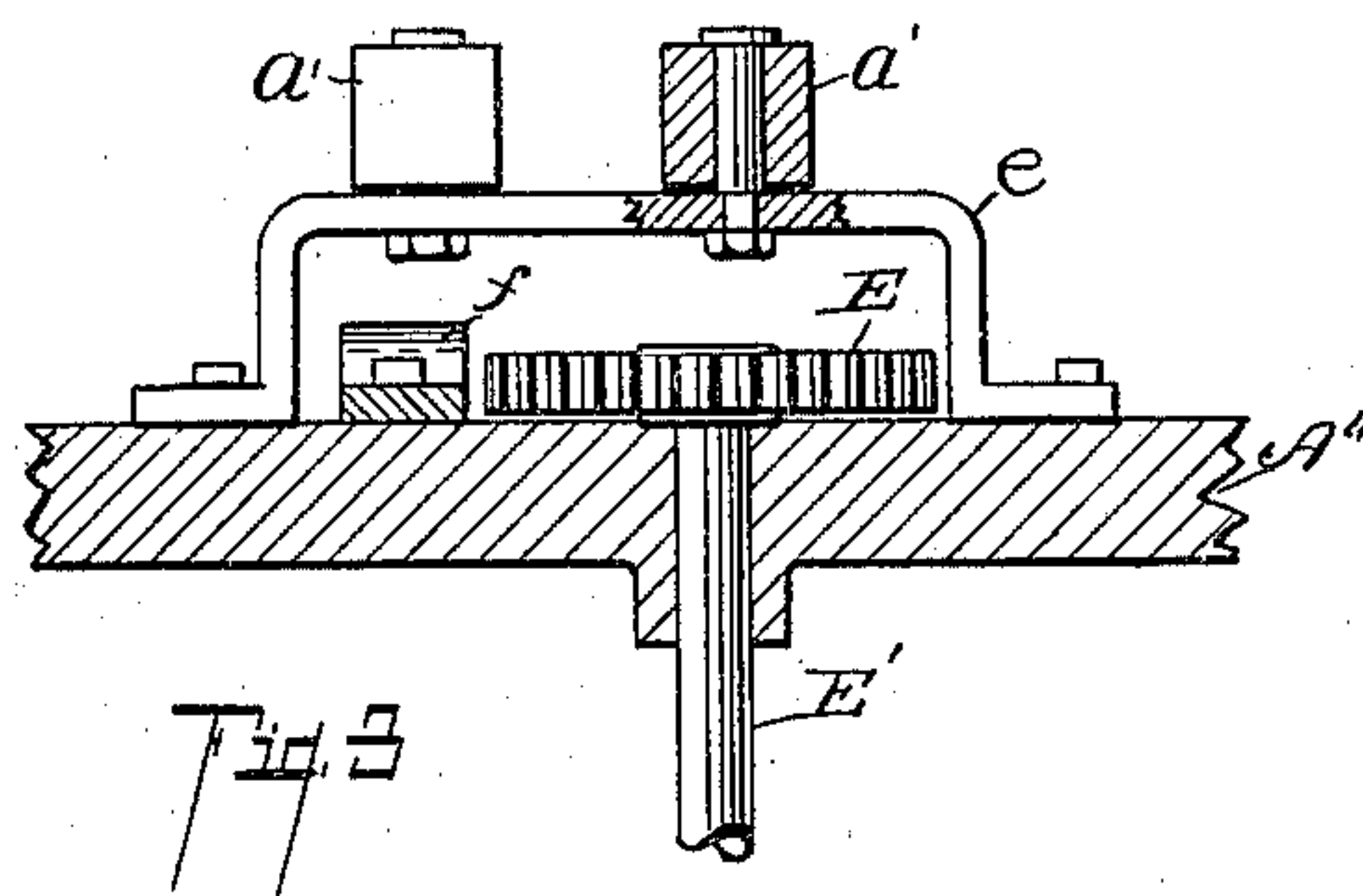
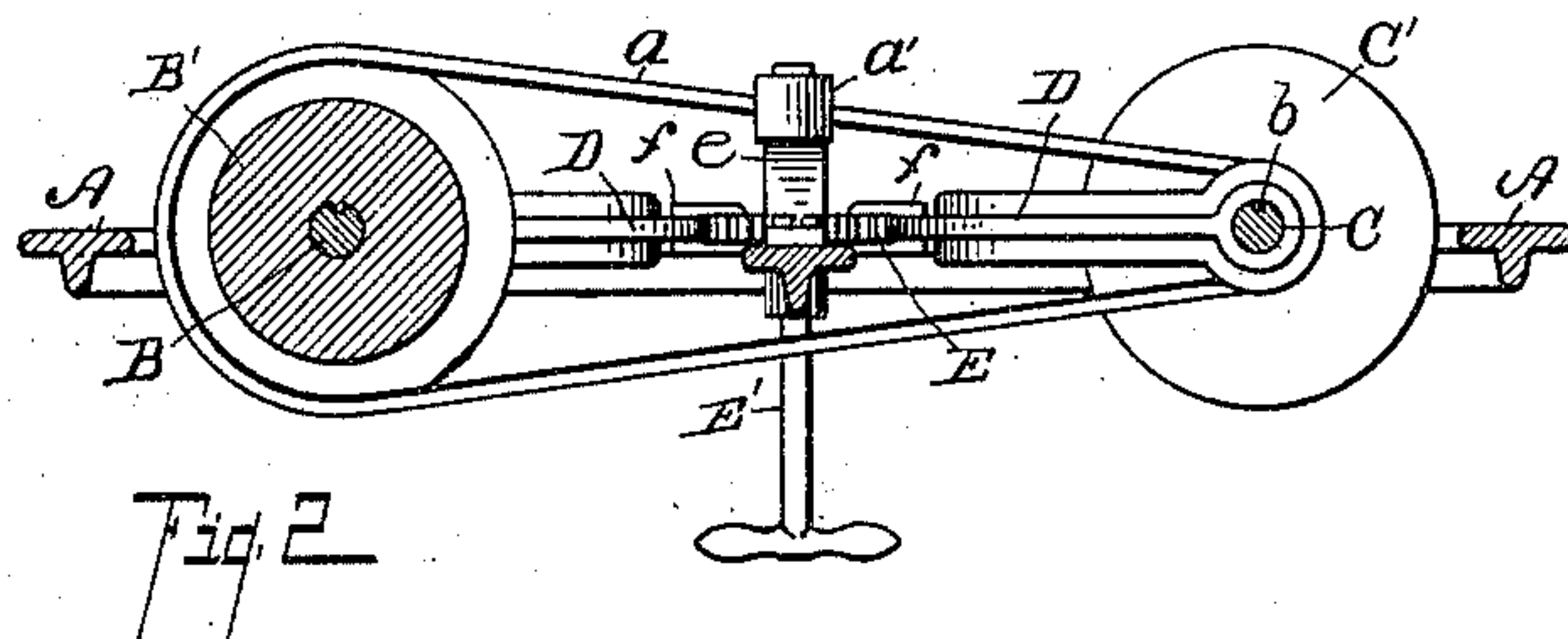
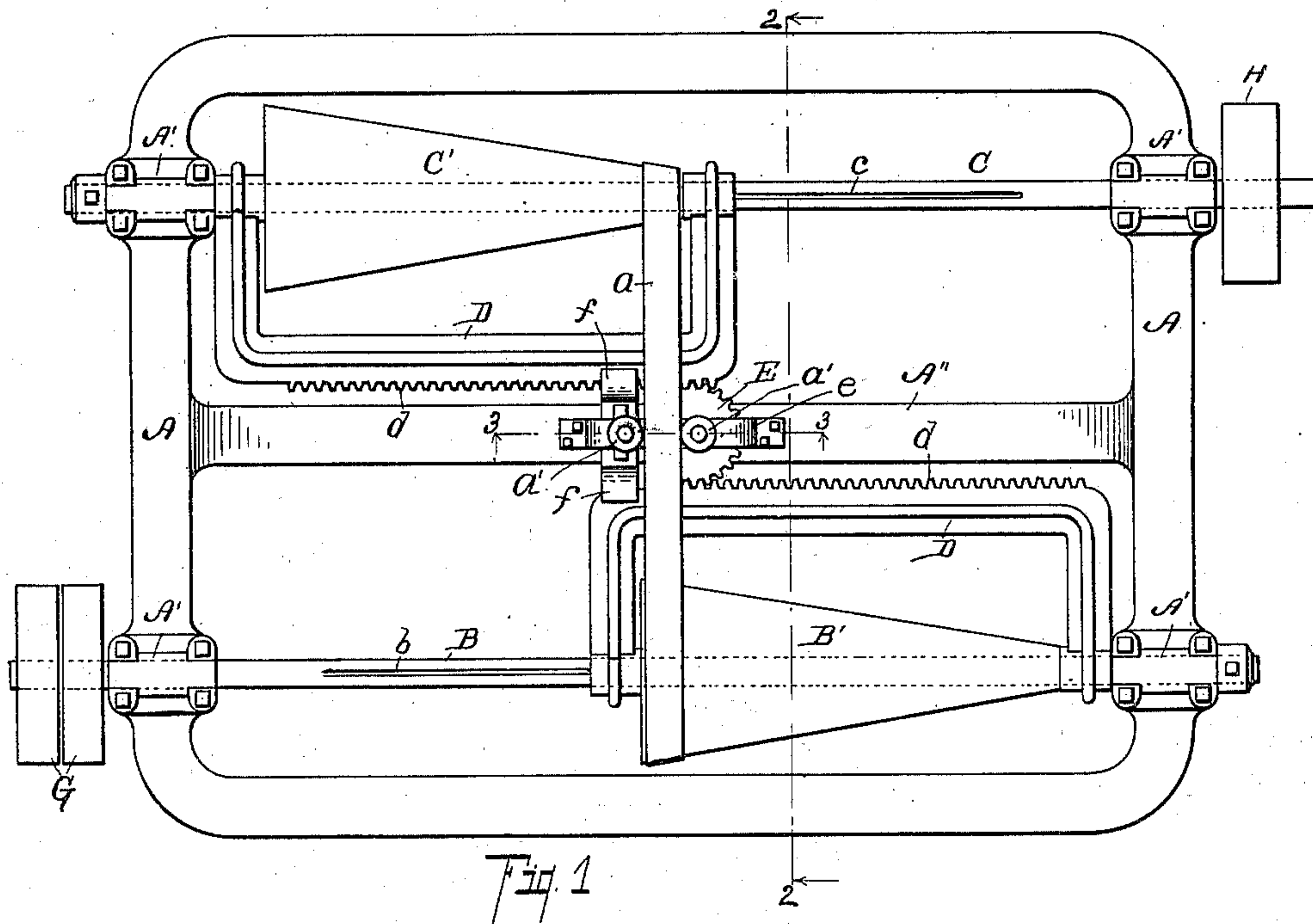
No. 708,439.

Patented Sept. 2, 1902.

H. P. WHITE.
SPEED REGULATOR.

(Application filed June 9, 1902.)

(No Model.)



Witnesses:

M. S. Wood
Otto Q. Earl

Inventor,

Henry P. White
By *Fred L. Chappell*
Att'y.

UNITED STATES PATENT OFFICE.

HENRY P. WHITE, OF KALAMAZOO, MICHIGAN.

SPEED-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 708,439, dated September 2, 1902.

Application filed June 9, 1902. Serial No. 110,845. (No model.)

To all whom it may concern:

Be it known that I, HENRY P. WHITE, a citizen of the United States, residing at the city of Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Speed-Regulators, of which the following is a specification.

This invention relates to improvements in speed-regulators of the cone-pulley type in which tapered cones as distinguished from step-cones are employed. It is in some respects an improvement on the speed-regulator of this type described in my application for Letters Patent filed January 6, 1902, Serial No. 88,618, allowed May 26, 1902, it being a somewhat-different embodiment of the principle there disclosed and particularly adapted for use in certain relations.

The objects of the invention are, first, to provide an improved mechanical speed-regulator of the tapered cone-pulley type having parallel cones with simple and compact means for securing variations in the speed of machines which in practice require such variation; second, to provide an improved belt-driven cone speed-regulator having parallel cones in which divisions of speed are not taken at fixed points, but may be taken at any point between the two extremes at which the machine is designed to run without in any manner affecting the tension or friction of the belt; third, to provide a belt-driven cone speed-regulator having parallel cones in which all portions of the contact-surface of the belt travels at the same rate of speed upon the surface of each cone, thereby dispensing with the compensating slip of the belt of the usual construction; fourth, to provide a belt-driven cone speed-regulator having parallel cones, with improved mechanical means for manipulating the adjustment of the cones, whereby the whole will be simple and compact and easy of operation.

Further objects will definitely appear in the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined, and pointed out in the claims.

A structure embodying the features of my invention is fully illustrated in the accompa-

nying drawings, forming a part of this specification, in which—

Figure 1 is a plan view of a structure embodying the features of my invention. Fig. 2 is a detail cross-sectional view taken on line 2 2 of Fig. 1. Fig. 3 is a detail sectional view taken on line 3 3 of Fig. 1.

In the drawings the sectional views are taken looking in the direction of the little arrows at the ends of the section-lines, and similar letters of reference refer to similar parts throughout the several views.

Referring to the lettered parts of the drawings, A represents the main frame which supports the other parts of the machine.

A' represents bearings in the frame, in which are placed shafts B and C. Tight and loose pulleys G are mounted on the shaft B, while the shaft C is provided with a pulley H, through which power may be applied to or delivered from the machine. Mounted upon the shaft B is a driven cone B', while mounted upon the shaft C is a driving-cone C'. The cones B' and C' are embraced by yokes or brackets D, which are adapted to reciprocate upon the shafts and carry the cones with them. The cones are provided with suitable keys or feathers adapted to engage seats b and c in the shafts, so that the cones may freely slide upon the shaft, but are always rotated therewith. The cones B' and C' are arranged upon the shafts with their like ends pointed in the same direction, and the shafts are arranged parallel to each other. The yokes D are provided with racks d.

The supporting-frame is preferably provided with a cross-bar A'', centrally arranged between the shafts B and C. Supported upon this cross-bar on a suitable bearing is a gear E, adapted to mesh with the racks d d on the yokes D D, so that as the gear is rotated the yokes D D will be shifted in opposite directions. A suitable hand-wheel E' is provided for controlling the gear E. A guide f on the cross-piece A'' is adapted to engage the yokes D to retain them in proper position.

The cones B' and C' are connected by a suitable belt a. Mounted upon a bracket E, supported upon the cross-piece A'' of the frame of the machine are guide-pulleys a' a', between which the belt a is arranged to pass and by means of which the belt is held against

lateral movement as the cones are shifted, the entire arrangement of the parts clearly appearing in Fig. 1.

In operation, with the parts arranged as illustrated and described, the driven cone B' will receive power through the pulley G and will transmit that power to the driving-cone C', from which it is delivered under various speeds, as may be desired. The desired variations of speed are secured by changing the relative positions of the cones to the belt. This is accomplished by means of the gear E, which engages with the racks d on the yokes and causes the cones to move a like distance in opposite directions, so that the tension on the connecting-belt a is not varied by the shifting.

It is apparent that the speed of the driving-cone is under perfect control within the limits of the machine—as, for example, the driving-cone C' in the position illustrated in the drawings is now driven at the highest rate of speed, while if the position of the cones were reversed it would be driven at the lowest rate of speed. By shifting the position of the cones any relative speed may be obtained as desired. This shifting can be accomplished at any time while the machine is in operation and without the necessity of the operator's touching the belt simply through the medium of the hand-wheel E'.

It will be observed that my improved speed-regulating device can be made very compact and that it is simple and economical to construct.

I have illustrated and described my improved speed-regulating device in the form preferred by me on account of its simplicity to manufacture and convenience in use. I desire to state in this connection, however, that I am aware that it is capable of being greatly varied in its structural details without departing from my invention.

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

1. In a mechanical speed-regulator, the com-

bination of a frame A; shafts B and C supported in suitable bearings in said frame; a driven tapered cone; a driving tapered cone, the like ends of which point in the same direction, slidably mounted upon said shafts; yokes D, D, having racks d thereon engaging said cones; a gear E adapted to engage said racks; a belt a connecting said cones; guides a' , a' , to retain said belt in position; and means for controlling said gear, whereby the relative positions of said cones may be shifted to vary the relations of their speed, as specified.

2. In a mechanical speed-regulator, the combination of a supporting-frame; a driven tapered cone adapted to be connected to a source of power; a driving tapered cone adapted to be connected to the machine it is designed to operate, said cones being arranged parallel and with their like ends pointing in the same direction; a belt connecting said cones; connecting means for said cones whereby they may be adjusted an equal distance in opposite directions to vary the relation of their speed, as specified.

3. In a mechanical speed-regulator, the combination of cones adapted to revolve upon their axes, arranged parallel so that their like ends point in the same direction; a belt connecting said cones; means for retaining said belt in proper position; and means for changing the relative lateral position of said cones to vary the relation of their speeds.

4. In a mechanical speed-regulator, the combination of cones adapted to revolve upon their axes, arranged parallel so that their like ends point in the same direction; a belt connecting said cones; and means for changing the relative lateral position of said cones to vary the relation of their speeds.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

HENRY P. WHITE. [L. S.]

Witnesses:

D. E. WOOD,
OTIS A. EARL.