

No. 684,061.

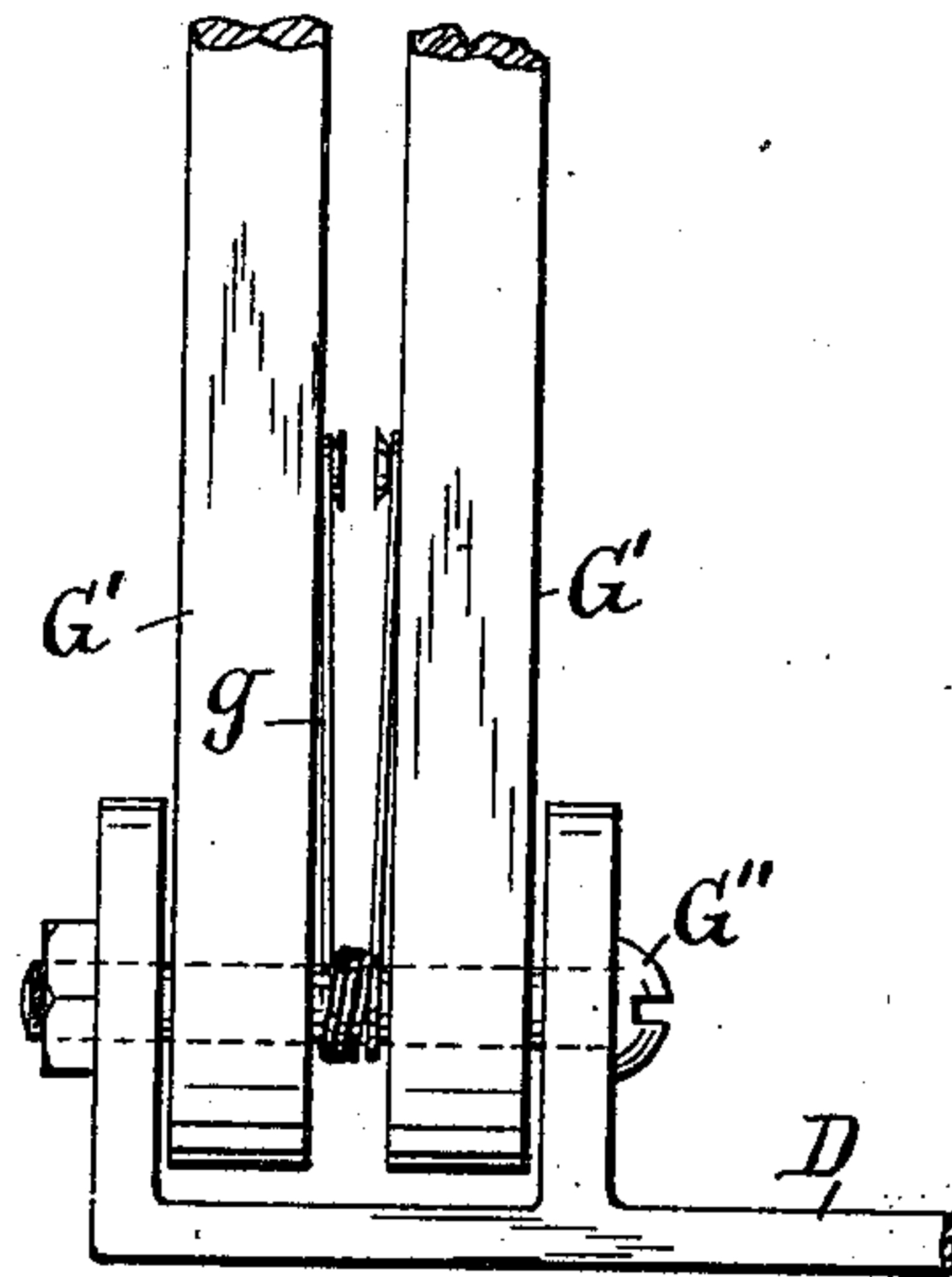
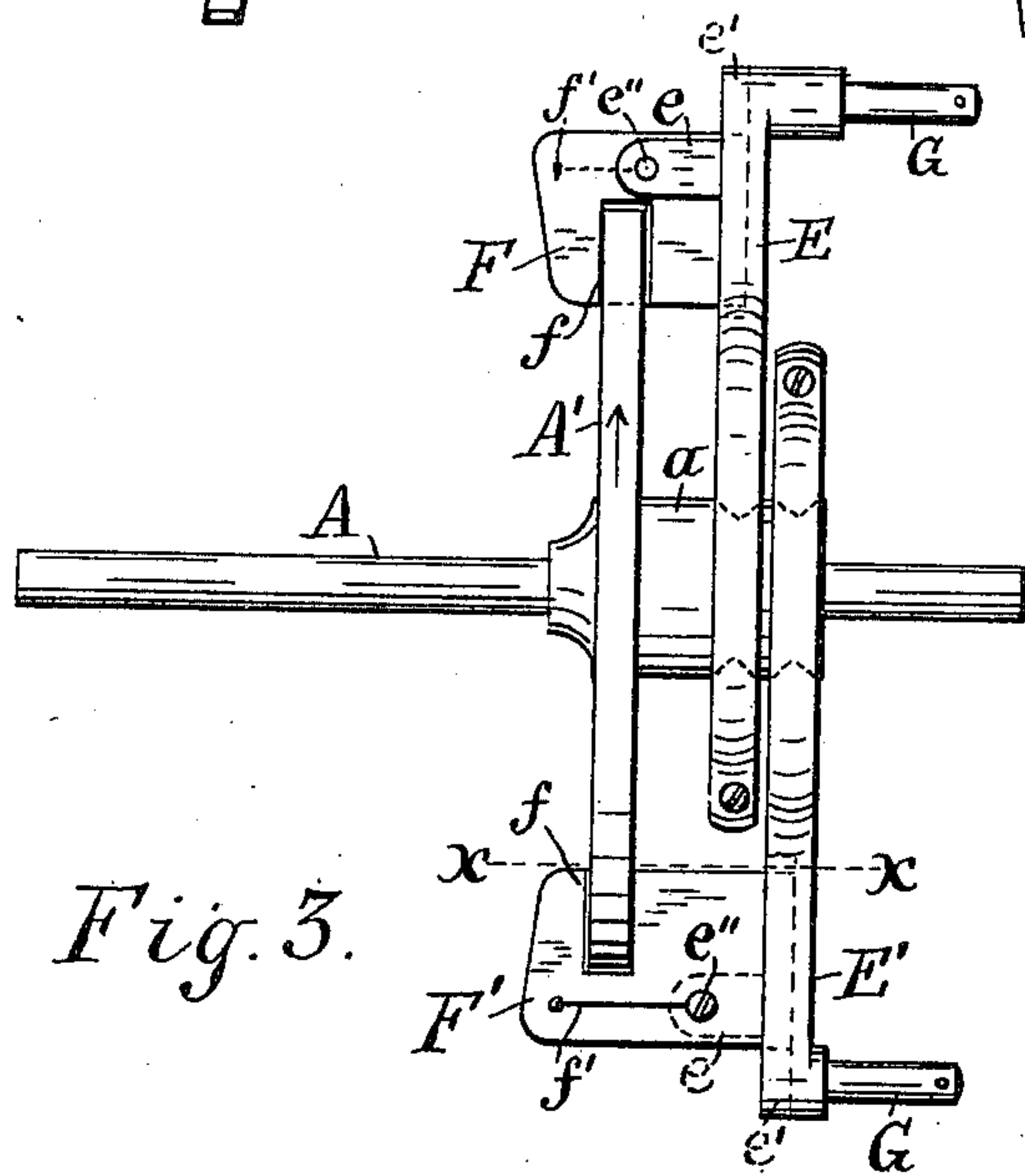
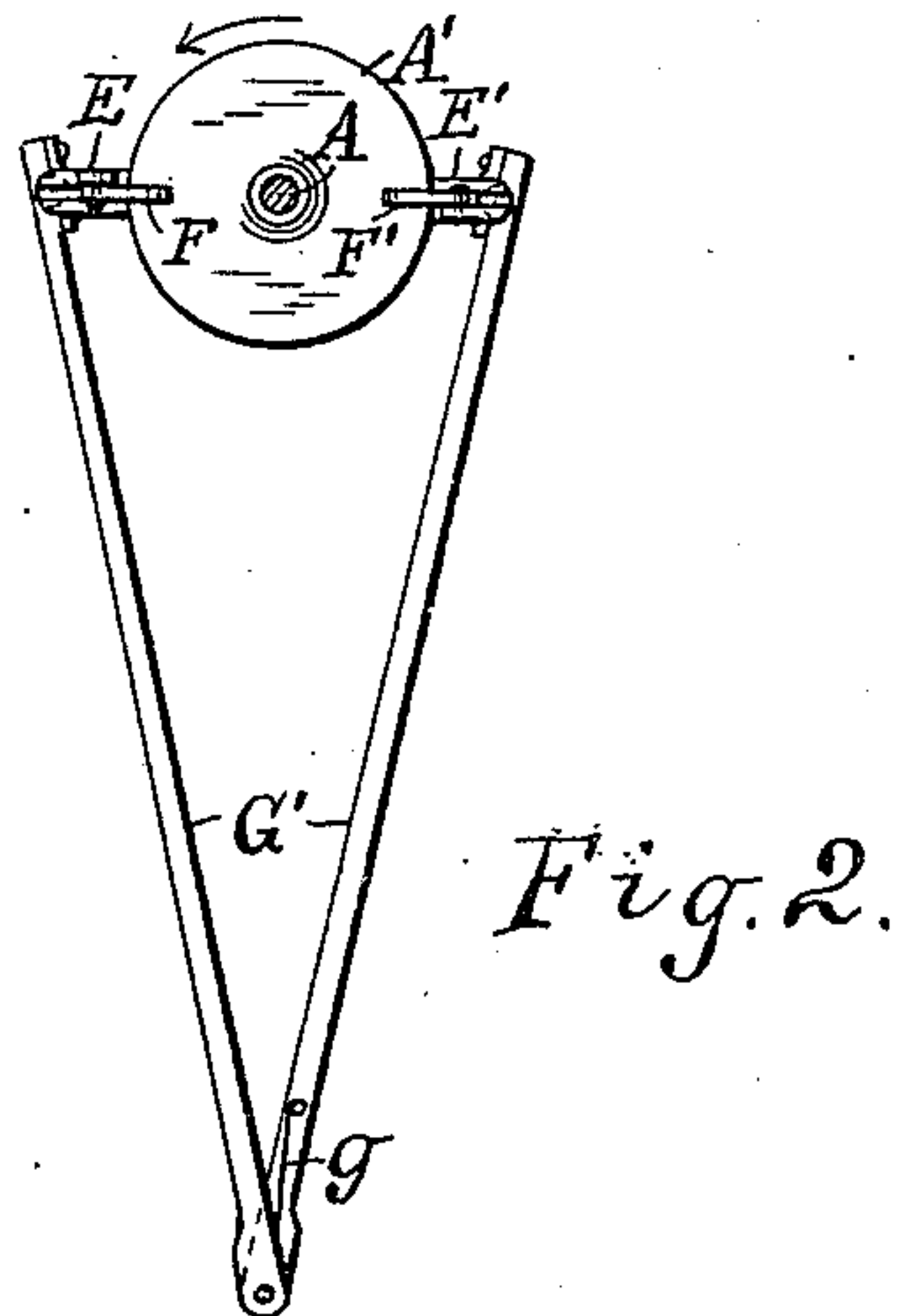
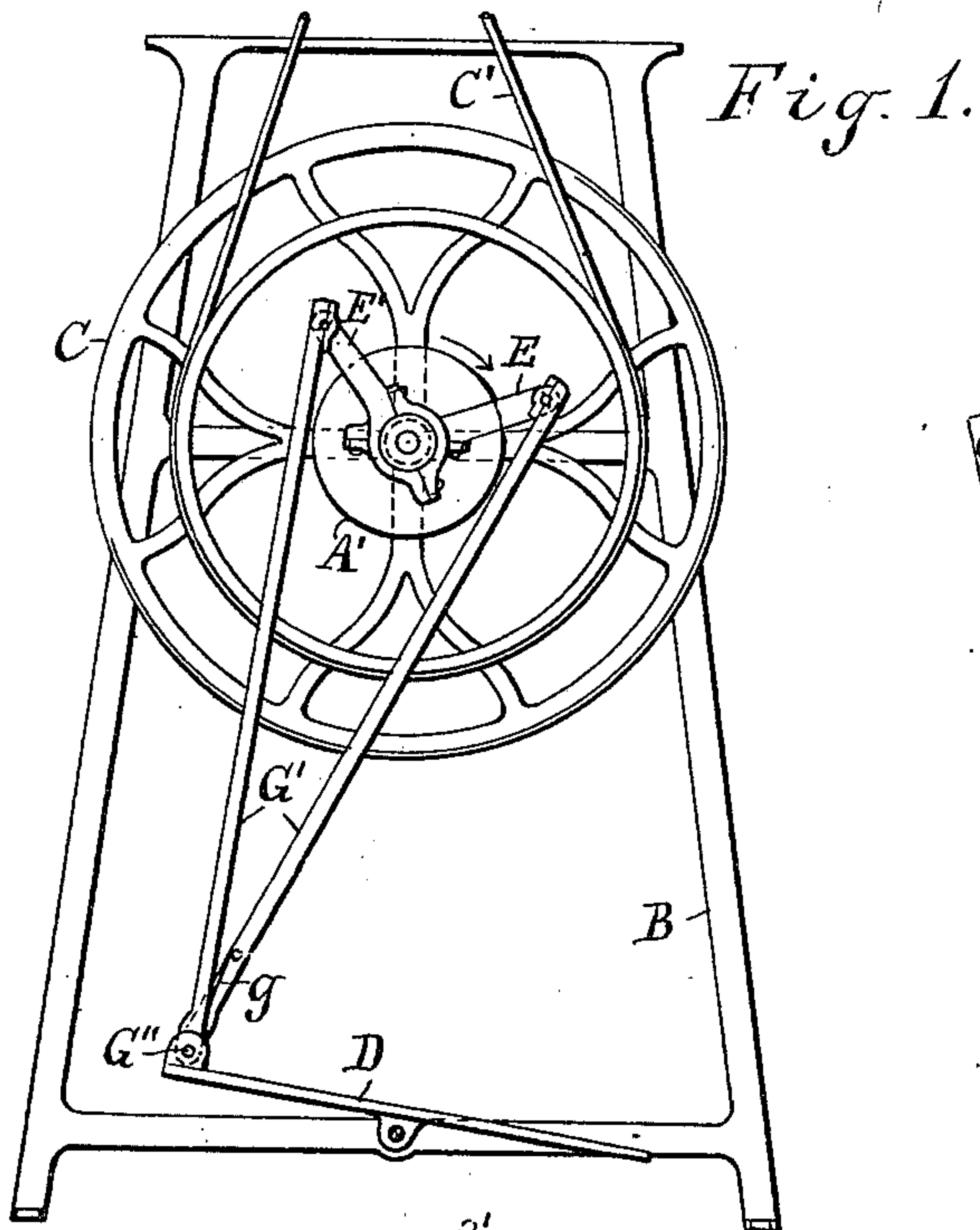
Patented Oct. 8, 1901.

A. HARROUN.  
DEVICE FOR OVERCOMING DEAD CENTERS.

(Application filed Mar. 27, 1901.)

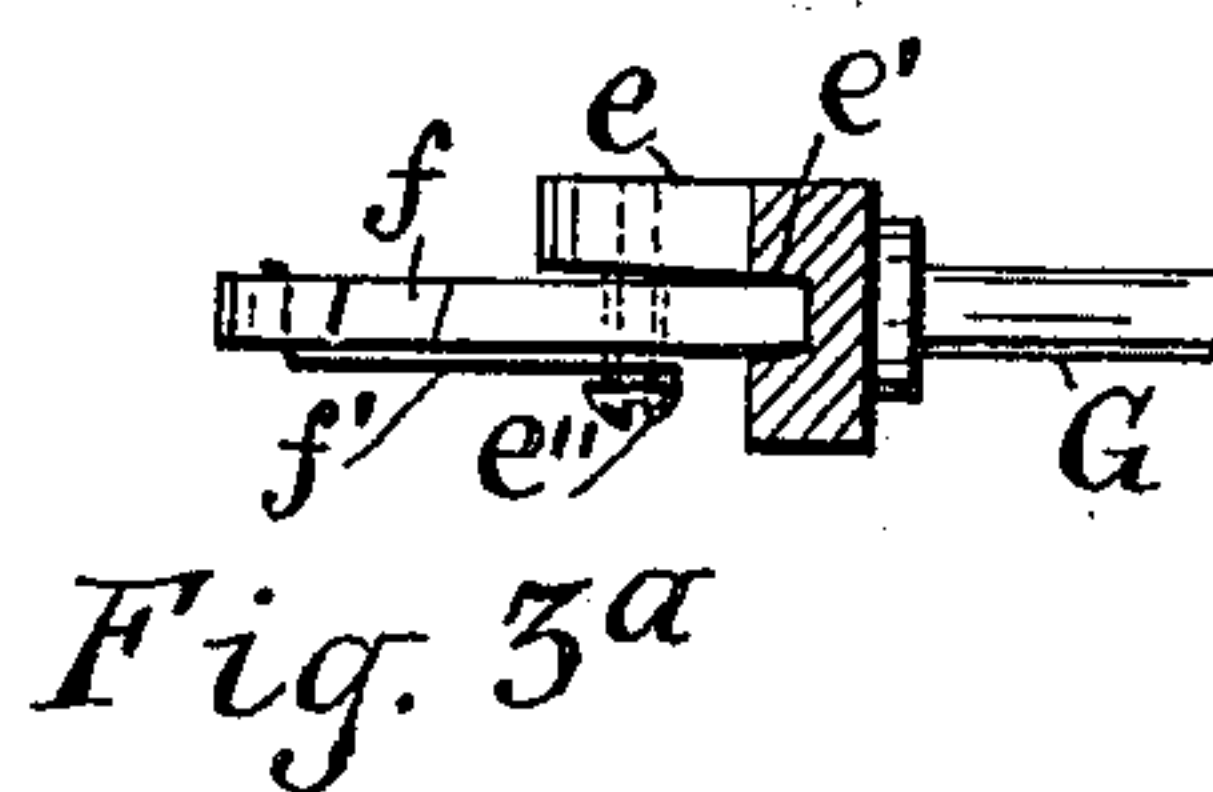
(No Model.)

2 Sheets—Sheet 1.



Witnesses.

A. E. Hopkins.  
L. P. Pearson.



Inventor.

Alexander Harroun

By

Mark W. Dewey

his Attorney.

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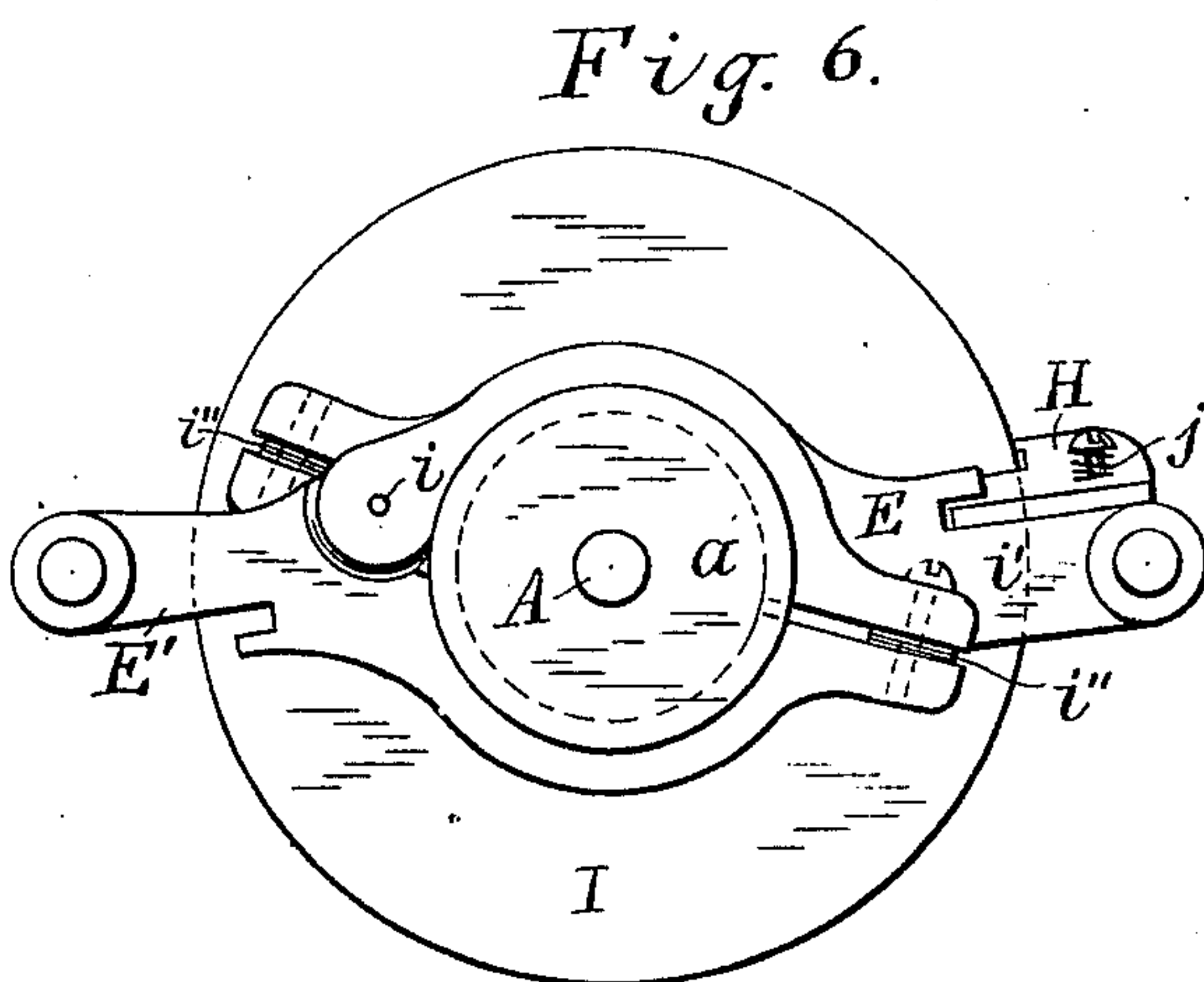
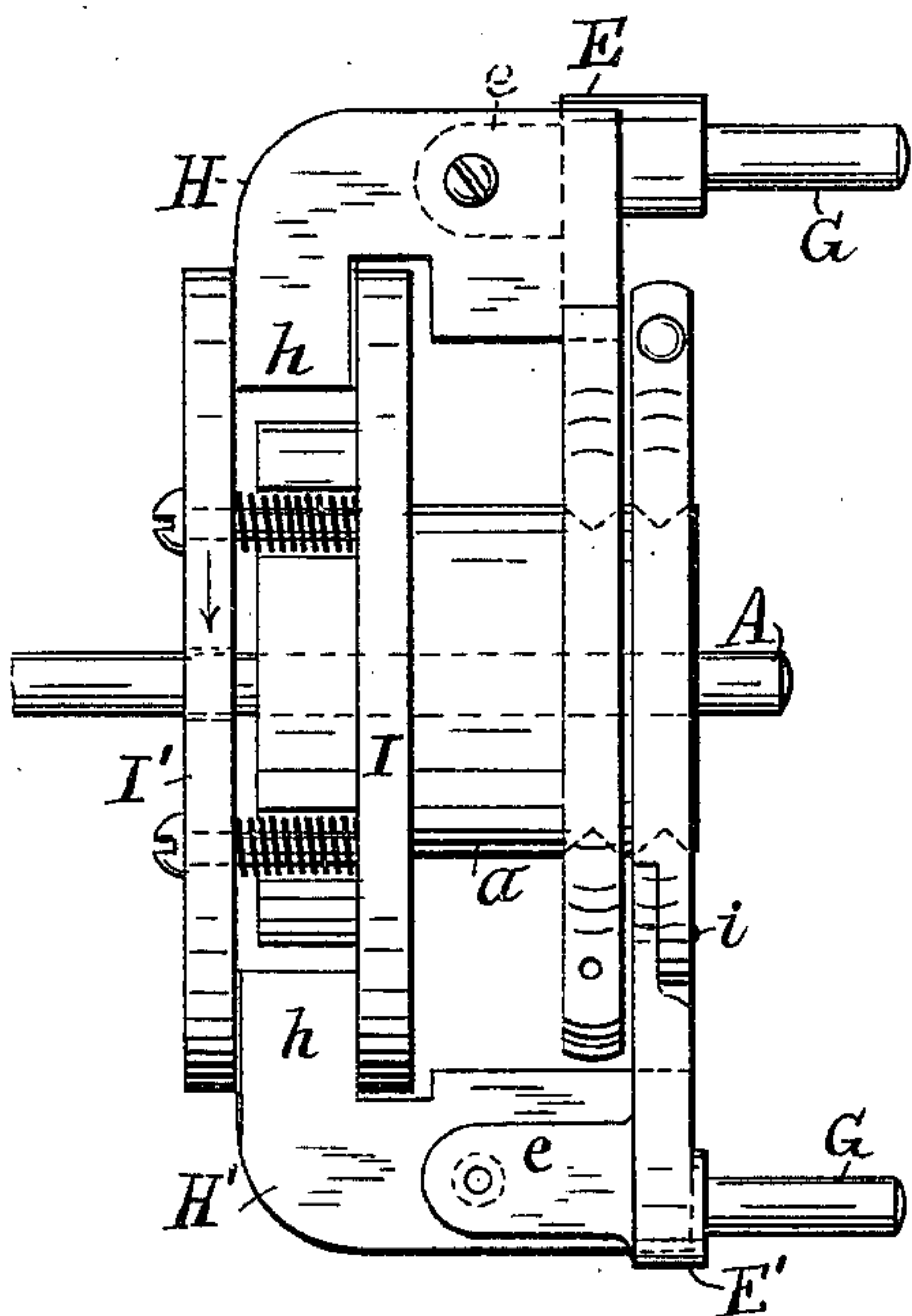
**A. HARROUN.**

**DEVICE FOR OVERCOMING DEAD CENTERS.**

(Application filed Mar. 27, 1901.)

(No Model.)

**2 Sheets—Sheet 2.**



Witnesses

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# UNITED STATES PATENT OFFICE.

ALEXANDER HARROUN, OF SYRACUSE, NEW YORK, ASSIGNOR OF TWO-THIRDS TO THOMAS J. MULGREW AND EMERSON M. HARROUN, OF DUBUQUE, IOWA.

## DEVICE FOR OVERCOMING DEAD-CENTERS.

SPECIFICATION forming part of Letters Patent No. 684,061, dated October 8, 1901.

Application filed March 27, 1901. Serial No. 53,019. (No model.)

*To all whom it may concern:*

Be it known that I, ALEXANDER HARROUN, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Devices for Overcoming Dead-Centers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to devices for overcoming dead-centers; and the object is to provide a simple, effective, and durable device of this class that may be easily applied to sewing and other machines operated by treadles. The device may, however, be applied to any shaft or wheel for the purpose of revolving it in one direction by a reciprocating movement.

To this end my invention consists in the combination with a shaft and a disk to be rotated in one direction, a pair of arms mounted on the shaft to oscillate thereon and radiating therefrom, devices carried on the ends of the arms and engaging the disk to grip the latter and rotate it in one direction, and pitmen connected to said arms and converging toward each other and connected to the treadle or other operating part; and my invention consists in certain other combinations of parts hereinafter described, and specifically set forth in the claims.

In the drawings hereto annexed and forming a part of this specification, Figure 1 is an inner side elevation of the end frame of a machine having mounted thereon a wheel or pulley to be revolved by means of a treadle and my invention. Fig. 2 is a sectional view showing the opposite side of the invention and when disconnected from the treadle. Fig. 3 is an enlarged top plan view of my invention with the pitmen removed. Fig. 3<sup>a</sup> is a section on line *xx* of Fig. 3. Fig. 4 shows the lower ends of the pitmen connected to a fragment of the treadle. Fig. 5 is a top plan view of a modification wherein two disks are employed, and Fig. 6 is a side elevation of the same.

Referring specifically to the drawings, and particularly to Figs. 1 to 5, inclusive, A is the shaft, and A' the disk thereon to be rotated by my invention. When it is desired to drive the shaft A with the disk A', the lat-

ter is keyed or otherwise secured to the shaft; but if the wheel to be driven is connected directly to the disk both wheel and disk may be loose upon the shaft and the latter held stationary, as will be obvious. In the figures of the drawings the disk is secured to the shaft and the latter turns with it.

B is the frame of the machine.

C is a pulley-wheel keyed to the shaft A.

C' is a belt to transmit motion to mechanism above, (not shown,) and D is the treadle.

Mounted to oscillate in circumferential grooves *a' a'* of the hub *a* of the disk are a pair of arms E E'. These arms extend outward beyond the edge of the disk, and their ends are pivoted to the upper ends of pitmen which have their lower ends converging and pivoted together and pivoted to the treadle. The said arms have projections *ee* extending from the sides toward the periphery of the disk, and to these projections are yieldingly secured the gripping devices F F', which are held at their bases in grooves *e' e'* in the arms and are provided with recesses *ff* in their inner edges to receive the edge of the disk. The gripping devices are formed of thin flat pieces of metal or fiber and work or oscillate loosely in their grooves *e' e'* and on the screws *e'' e''* to allow their free ends to move slightly laterally to grip the disk on its opposite sides to move it in one direction and release it when the arms are moved in the opposite direction to that of the disk. To accomplish this action, the recesses *ff* are formed with beveled parallel walls, as clearly shown in Fig. 3<sup>a</sup>, and small springs *f' f'*, connected to the parts and to the screws *e'' e''*, press them toward their projecting supports.

G G are the pivots on the ends of the arms to pass through the pitmen.

G' G' are the pitmen, extending downward from the pivots G G and converging so that a single bolt G'' passes through them and pivots them to the treadle D. To facilitate the proper action of the pitmen and the oscillating arms, a wire spring *g* is preferably coiled around the bolt between the pitmen and has its ends connected to the inner sides of the pitmen a distance from the pivot. The spring acts to open or spread the upper ends of the pitmen apart.



The operation of the gripping devices F F' upon the disk A' during the operation of the treadle D is as follows: When the pitmen are raised with their oscillating arms, gripping device F' binds upon the sides of the disk, and the latter is turned in the direction of the unfeathered arrow. During this upward movement of gripping device F the latter assumes a position which allows the disk to pass smoothly in the recess of the said device without binding upon the walls, the walls lying substantially parallel with the sides or faces of the disk. When the pitmen are lowered or depressed with their arms, gripping device F binds upon the sides of the disk, thus revolving it in the same direction or that indicated by the arrow, while the gripping device F' assumes a position which permits the disk to pass smoothly in its recess *f*.

By the above it will be understood that the disk is continuously revolved in one direction and the pitmen held always diverging from the treadle. At no point will there be a dead-center.

In the modification shown in Figs. 5 and 6 the parts act in substantially the same manner as above described; but in this construction two disks I and I' are mounted and held separated upon the shaft, and the gripping devices H and H' instead of being recessed to receive a disk have projections *h h* entering between the disks and bearing upon their inner sides or faces. The edge walls of the projections are beveled the same as the inner walls of the recesses *f f*, hereinbefore described, to properly engage the disks. The disk I' is adjustable longitudinally on the shaft toward the other disk for the purpose of taking up wear by several screws passing through disk I' and entering disk I. Coil-springs are on the screws between the disks to hold them apart. Only one of the oscillating arms in Fig. 6 is shown provided with a gripping device, the other being omitted.

In order to easily take up wear upon the bearings between the arms and the hub of the disk, the opposite sides of each arm are pivoted together at *i* and the ends are secured together by a screw *i'*, a small piece of rubber *i''* being preferably held between the ends to form a cushion.

*j* is a small coil-spring on the screw or pin to press the gripping device downward.

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

1. The combination with a treadle and a shaft or wheel to be driven, of a disk secured upon the said shaft, a pair of arms mounted to oscillate on the shaft, gripping devices yieldingly mounted on the arms and provided with beveled edges to engage the disk, and pitmen connecting the arms with the treadle toward which they converge, substantially as and for the purpose described.

2. The combination with a treadle and a shaft or wheel to be driven, of a disk secured

upon said shaft and having a circumferentially-grooved hub, a pair of arms mounted to oscillate upon said hub and in the grooves, gripping devices yieldingly mounted on the arms and provided with beveled edges to engage the disk and turn it in one direction only, and pitmen connecting the arms with the treadle toward which they converge, as set forth.

3. The combination with a treadle and a shaft or wheel to be driven, of a disk keyed upon said shaft and having a circumferentially-grooved hub, a pair of arms mounted to oscillate in the grooves upon the hub, gripping devices mounted loosely in the ends of the arms to vibrate laterally, said devices extending parallel with the shaft and having each a recess with beveled walls to engage opposite sides of the disk, and pitmen pivoted to the arms and extending therefrom and converging toward their lower ends where they are pivoted to the treadle, substantially as described and shown.

4. The combination with a treadle and a shaft or wheel to be driven, of a disk keyed upon said shaft and having a hub containing a pair of circumferential grooves therein, a pair of arms mounted to oscillate in said grooves, gripping devices mounted on the ends of the said arms parallel with the shaft and adapted to vibrate slightly laterally, and provided with recesses having beveled walls to engage opposite faces of the disk, springs connected to the gripping devices to press them to one side, said gripping devices being held loosely in grooves in the said arms, studs projecting from the ends of the arms, and pitmen pivoted on the studs and having their lower ends connected to the treadle, as set forth.

5. The combination with the treadle and the shaft to be driven, of a disk keyed upon said shaft and having a hub containing a pair of circumferential grooves therein, a pair of arms having adjustable bearings to oscillate in said grooves, gripping devices consisting of thin flat plates secured loosely in grooves in the arms and to projections extending from the arms, said gripping devices having recesses with beveled walls to receive the edge of the said disk and engage its opposite faces, springs to move the said devices to one side to grip the disk, studs projecting from the opposite sides of the ends of the arms, pitmen connecting the studs with the treadle toward which they converge, the lower ends of the pitmen being both on the same pivot, and a spring on the pivot between the pitmen and having their ends connected to the latter to press them apart, as and for the purpose described.

In testimony whereof I have hereunto signed my name.

ALEXANDER HARROUN. [L. S.]

Witnesses:

A. E. HOPKINS,

FRED B. WILBUR.