No. 673,102. Patented Apr. 30, 1901.

W. O. VIVARTTAS.

POWER DRIVING MECHANISM.

(Application filed Nov. 23, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

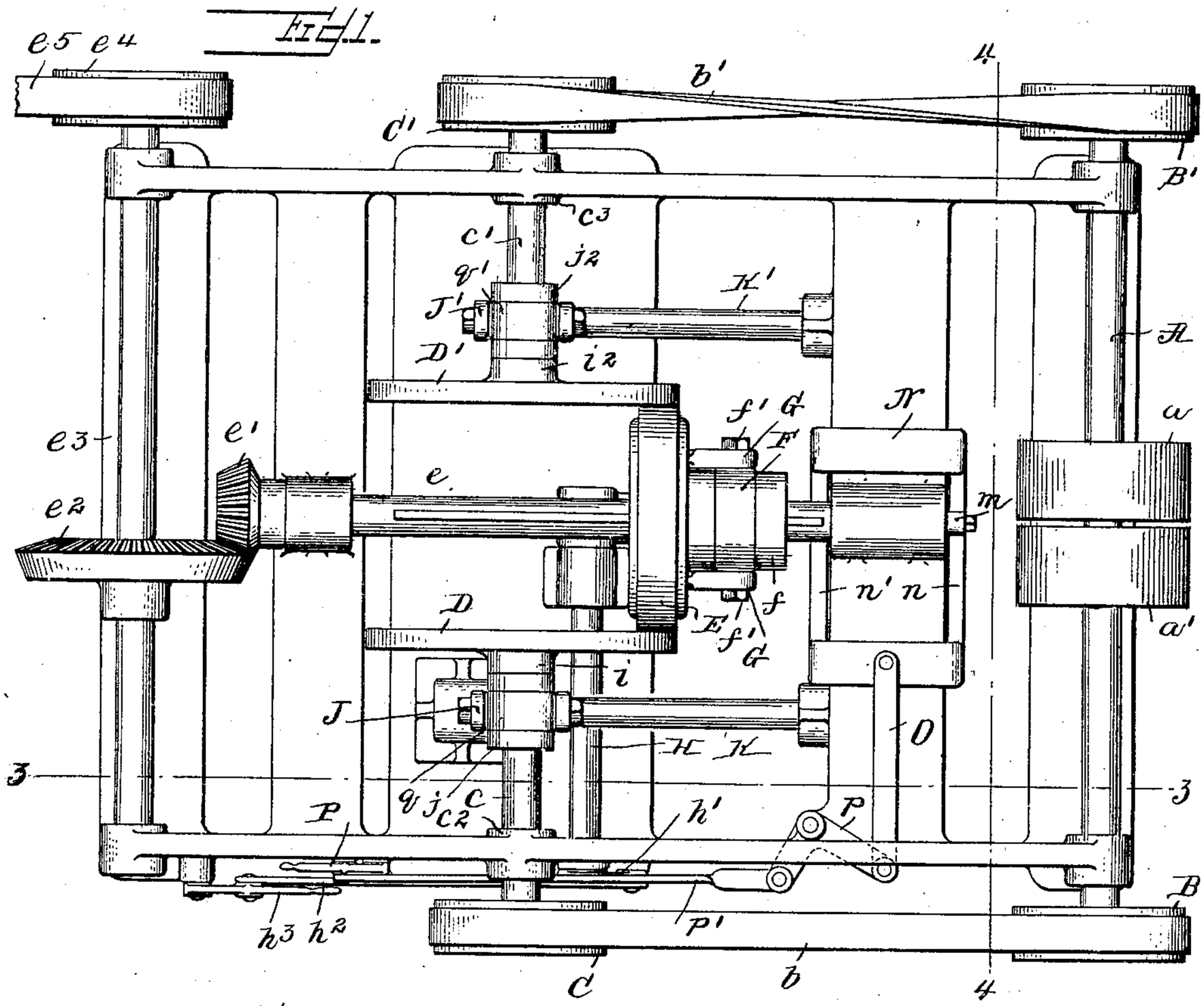

Fig. 2.

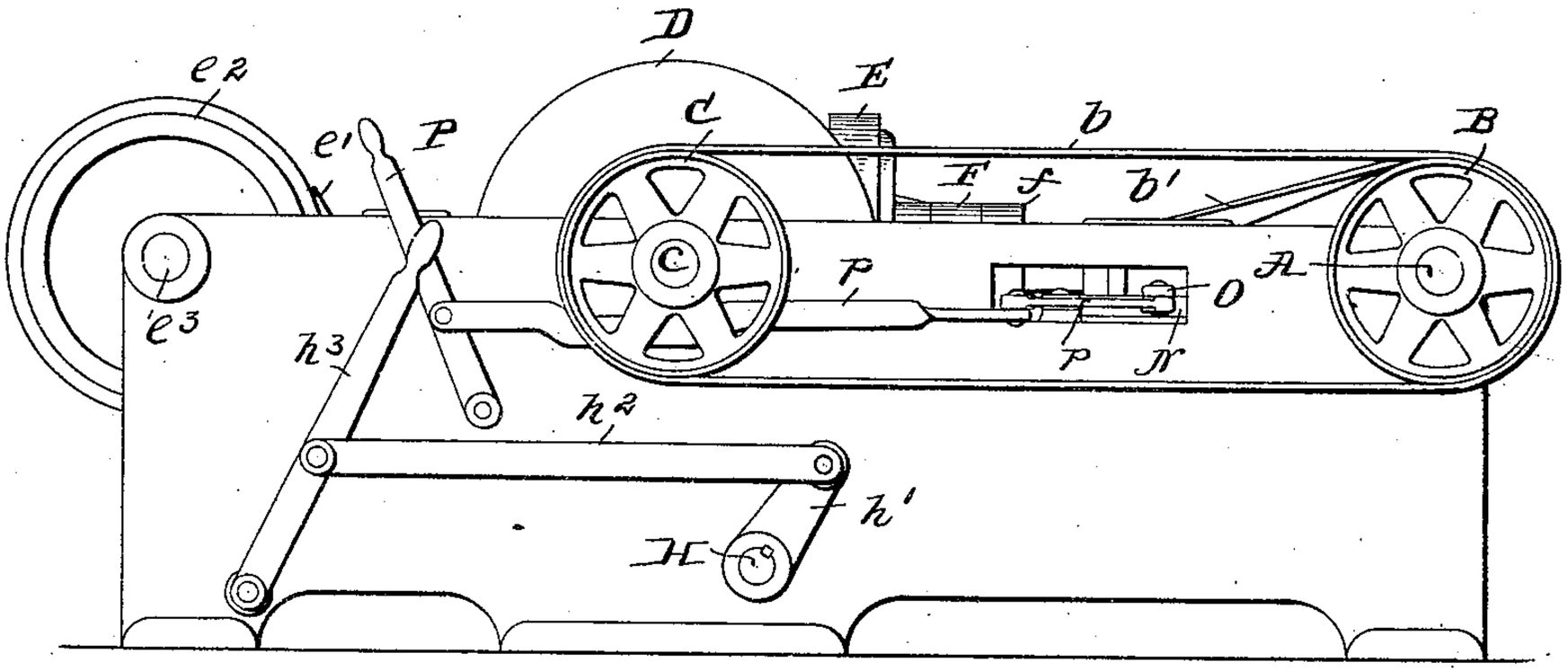

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FIG. 3.

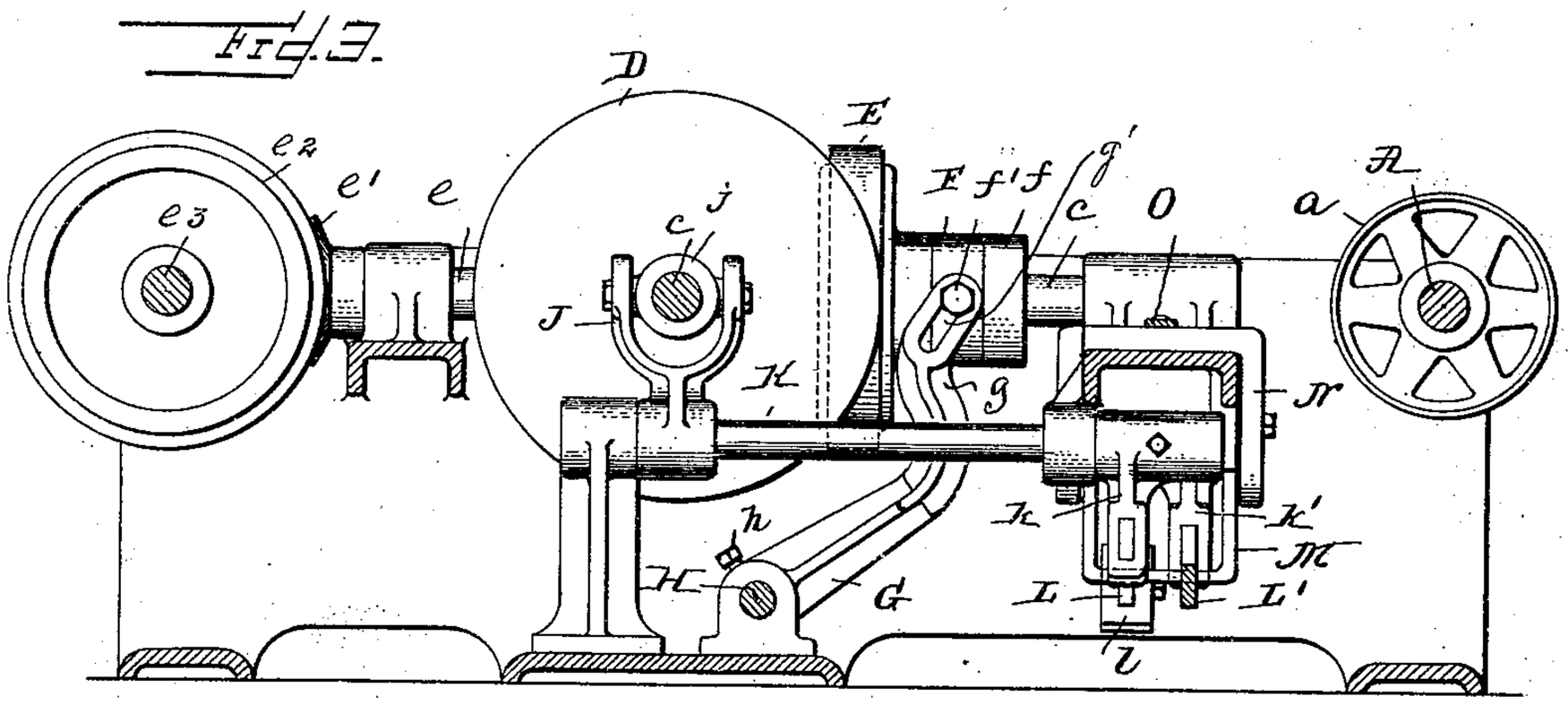


FIG. 4.

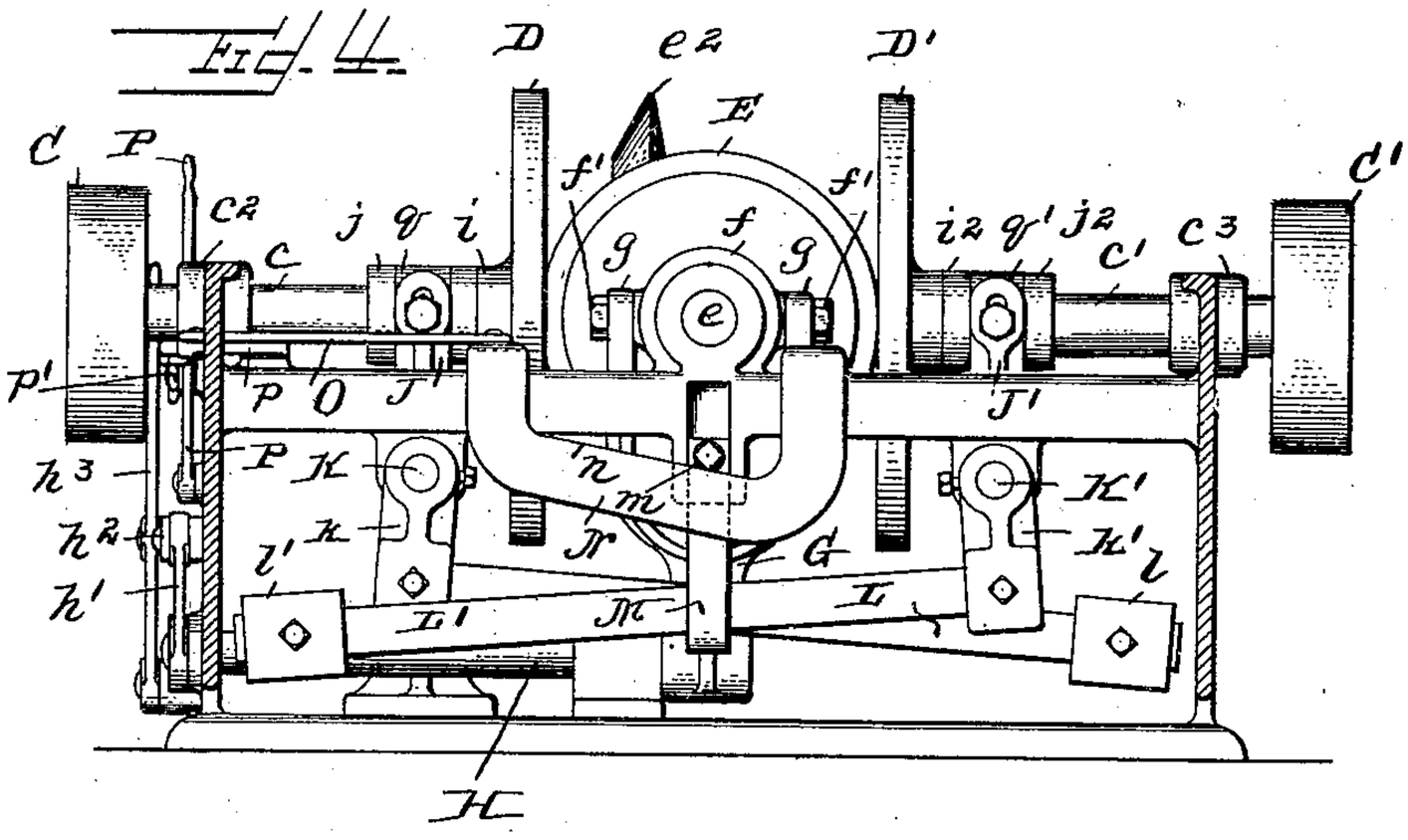
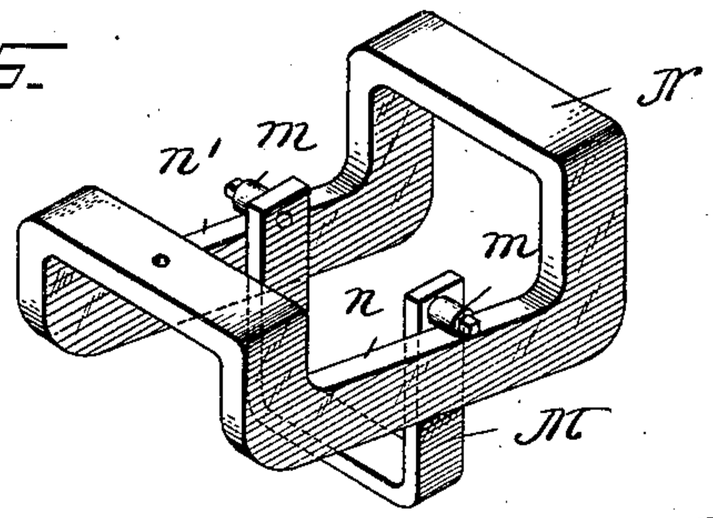


FIG. 5.



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POWER DRIVING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 673,102, dated April 30, 1901.

Application filed November 23, 1900. Serial No. 37,422. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM O. VIVARTTAS, a citizen of the United States, residing at Weehawken, county of Hudson, and State of New Jersey, have invented a new and useful Improvement in Power Driving Mechanism, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to certain improvements in that class of power-driven mechanism where friction-disks are used as the driving and driven means, and comprises certain improvements whereby the operation of this class of driving mechanism is made more certain and may be readily regulated.

My invention is particularly applicable to that class of such mechanism in which there are two driving-disks and a driven disk between said driving-disks and in which the driving-disks are approached and withdrawn from the driven disk.

It consists, essentially, in providing tension devices which act to force said driving-disks against the driven disk and maintain operative contact and withdrawing said disks by positive action against these tension devices—that is, there are tension devices which are rendered active or inactive to approach or withdraw the driving-disks from the driven disk.

My invention further consists in the details hereinafter fully described.

I will now describe the embodiment of my invention illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of mechanism embodying my invention. Fig. 2 is a side elevation of same. Fig. 3 is a section on line 3 3, Fig. 1. Fig. 4 is a section on line 4 4, Fig. 1. Fig. 5 is a detail of cam-frame and yoke.

A is the main driving-shaft, upon which is the loose pulley a and the fixed pulley a'. The shaft is driven from any appropriate source of power. Upon one end of this shaft A is the pulley B and upon the other end the pulley B′. The pulley B by means of the straight belt b is connected with the pulley C upon the shaft c. Upon this shaft c is the friction-disk D. The pulley B′ by means of the crossed belt b' is connected with the pulley C′ upon the shaft c'. Upon this shaft c' is the friction-disk D′. Between the disks D and D′ is the friction-disk E upon the shaft e. Upon the outer end of the shaft e is the bevel-gear e', gearing with the bevel-gear e^2 on the shaft e^3. Upon the outer end of the shaft e^3 is the pulley e^4, from which a belt e^5 leads to the point of application of power.

As may be seen from the description up to this point, the friction-disks D and D′ are each separately driven from a common source of power, and both together drive the driven disk E always in the same direction. The belts form an independent and flexible connection from the common source of power, so that the driving of each disk is not affected by the driving of the other.

The means and mechanism by which the disk E is moved across the faces of the disks D and D′ are as follows: The disk E is provided with a collar f, splined or feathered upon the shaft e. Inset in and surrounding this collar f is the ring F, having on opposite sides the pins f'. A lever G has bifurcated arms g, the ends of which have slots g'. The slots g' surround the pins f'. This lever G is connected to shaft H by the set-screw h. Connected to shaft H is the crank h', which crank is connected by the link h^2 with the operating-lever h^3. By moving this lever h^3 the shaft H is rocked, and through the medium of lever G, arms g, and ring F the disk E may be moved along the shaft e, and thus across the faces of the disks D and D′. So long as the disk E is on the side of the centers of disks D and D′ shown in Fig. 1 the movement of the disk E will maintain the direction of rotation constant, but vary the speed of rotation. By moving the disk to the opposite side of said centers the direction of rotation will be changed and its movement on that side will vary the speed of rotation in that direction of rotation.

In order to move the disks D and D′ away from the disk E and also to cause yielding contact between the disks D and D′ and E, I employ the following means and mechanism: The shafts c and c' are supported in their respective bearings c^2 and c^3 so as to be capable of a longitudinal movement. Each disk

D and D′ has a hub or collar ii^2, respectively, fixedly attached to the shafts c and c', respectively. On the shaft c, beyond the collar or hub i, is a collar or ring j, and on the shaft c', beyond the collar c^2, is a corresponding ring or collar j^2, the collars or rings being fixedly attached to the shafts c and c', respectively. Surrounding the shafts c and c', between the hubs or collars i and i^2 and rings j and j^2, are rings q and q', respectively. To these rings q and q' are connected yokes J and J′, respectively. The yoke J is secured to shaft K and the yoke J′ to shaft K′. From a crank k, secured to shaft K, extends the lever L, having the adjustable weight l. From a crank k', secured to the shaft K′, extends the lever L′, having the adjustable weight l'. A yoke M surrounds both levers L and L′. On each upper end of said yoke M is a roller m. N is a cam-frame having the inclined sides n and n'. One roller m rests on the side n and the other roller m on the side n'. Connected to the cam-frame N is the link O, connected to one end of a bell-crank p. The other end of the bell-crank is connected to a link p', which is connected to the operating-lever P.

When the operating-lever P is moved so as to cause the rollers m to move up on the sides n and n', the yoke M is lifted, lifting the levers L and L′, and withdraws the disks D and D′ from disk E. When the lever P is moved in the opposite direction, the rollers m will slide down the sides n and n', allowing the yoke M to descend, allowing the levers L and L′ under the action of the weights l and l' to drop, bringing the disks D and D′ into contact with the disk E. As may be seen, the disks D and D′ are brought into contact and maintained in contact with the disk E by means of the weights l and l', while the withdrawal of these disks D and D′ is positive. Thus the contact of disks D and D′ with disk E is a yielding contact. Also each disk D and D′ is independently held in contact, and the contact of each can independently yield to compensate for irregularities or other troubles, it being only necessary that the yoke M should fall sufficiently to allow free movement of these weighted levers L and L′. The weights acting to move these levers in the manner thus described and to produce the yielding independent contact between the disks D D′ and disk E is only one means of accomplishing this, and I do not intend to limit myself to the use of weights as the means of accomplishing this.

The driving-surface of disks D and D′ may be of metal and the driven surfaces of disk E of fiber, paper, or other suitable material, or the driving-surface of disks D and D′ may be such last-mentioned materials and the driving-surface of disk E of metal.

Having now fully described my invention, what I claim, and desire to protect by Letters Patent, is—

1. The combination with two driving friction-disks and means for driving them in opposite directions, of an intermediate driven disk, an independent tension device for each driving-disk tending to move and hold its corresponding disk in driving contact with the driven disk, and shifting means for withdrawing the driving-disks from contact with the driven disk against the action of said tension devices.

2. The combination, with two driving friction-disks, and means for driving them in opposite directions, of an intermediate driven disk, an independent tension device acting upon each driving-disk and tending to move and hold its corresponding disk with the required pressure in driving contact with the driven disk, and shifting devices for simultaneously rendering both tension devices operative and inoperative.

3. The combination, with two driving friction-disks, and means for driving them in opposite directions, of an intermediate driven disk, an independent weighted lever connected with and acting upon each driving-disk and tending to move and hold it with the required pressure in driving contact with the driven disk, and shifting devices for simultaneously lifting both weighted levers, thereby withdrawing the driving-disks from contact with the driven disk.

4. The combination, with two driving friction-disks and means for driving them in opposite directions, of an intermediate driven disk, a weighted lever connected with and acting upon each driving-disk and tending to move and hold it with the required pressure in driving contact with the driven disk, a cam, rollers engaging the same, a yoke connected with the rollers and engaging the weighted levers, and means for moving said cam, thereby lifting the weighted levers and withdrawing the driving-disks out of contact with the driven disk.

5. The combination with two driving-disks and means for driving them in opposite directions, of an intermediate driven disk, devices for moving respectively the two driving-disks into and out of driving contact with the driven disk, a separate rock-shaft for each driving device, each device being secured to its corresponding rock-shaft, a weighted lever secured to each rock-shaft and tending to move and hold the corresponding driving-disk with the required pressure in driving contact with the driven disk and means for simultaneously lifting both weighted levers, thereby withdrawing the driving-disks out of contact with the driven disk.

6. The combination, with two driving-disks and means for driving them in opposite directions, of an intermediate driven disk, devices for moving respectively the two driving-disks into and out of driving contact with the driven disk, each device being secured to a separate rock-shaft, a weighted lever secured to each rock-shaft and tending to move and hold the corresponding driving-disk with the

required pressure in driving contact with the driven disk, a cam, rollers engaging the same, a yoke connected with the rollers and engaging the weighted levers, and means for moving said cam, thereby lifting the weighted levers and withdrawing the driving-disks out of contact with the driven disk.

7. In a friction driving mechanism, the combination with the driving and driven members, of an independent tension device for each of the drivers and means whereby both tension devices can be simultaneously withdrawn, thereby breaking contact between the driving and the driven disks.

In testimony of which invention I have hereunto set my hand.

WM. O. VIVARTTAS.

Witnesses:

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