April 9, 1929. J. PROKSA 1,708,520

DRIVING MECHANISM

Filed March 21, 1925 4 Sheets-Sheet 1

Fig. 1.

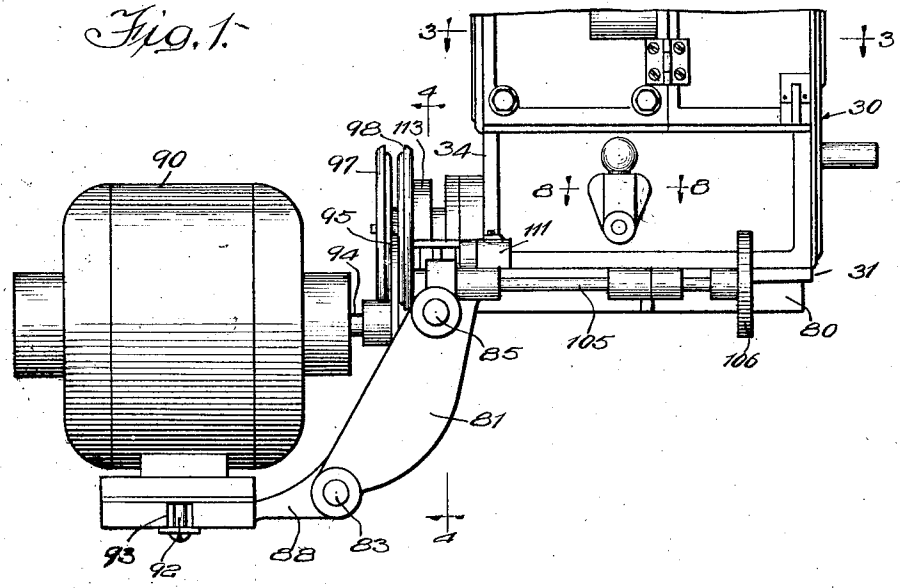
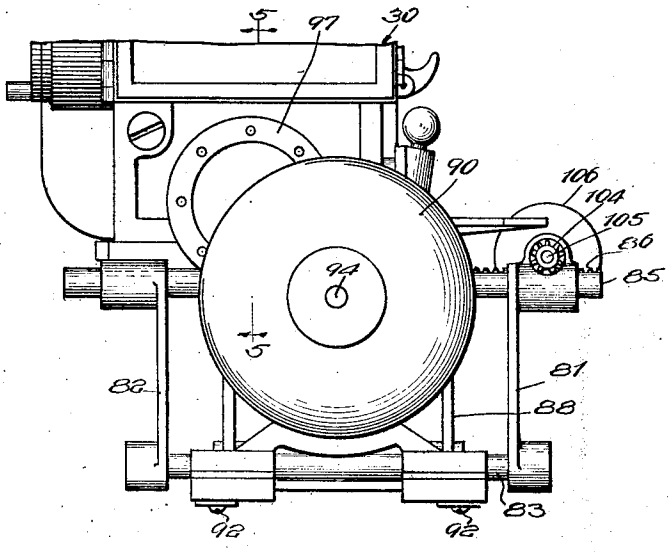


Fig. 2.



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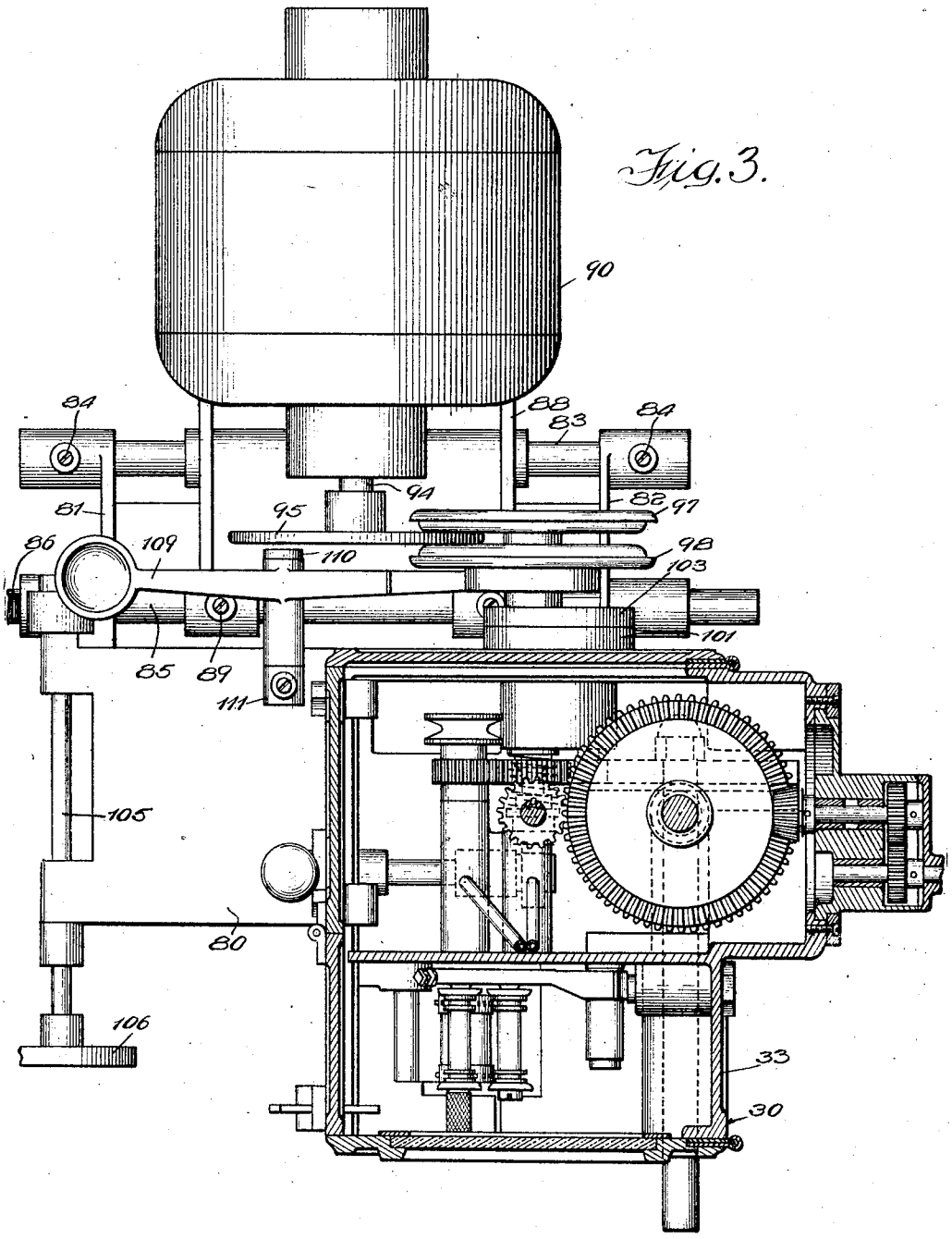
By Wise & Wise
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April 9, 1929. J. PROKSA 1,708,520

DRIVING MECHANISM

Filed March 21, 1925 4 Sheets-Sheet 2

Fig. 3.



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April 9, 1929. J. PROKSA 1,708,520

DRIVING MECHANISM

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Fig. 4.

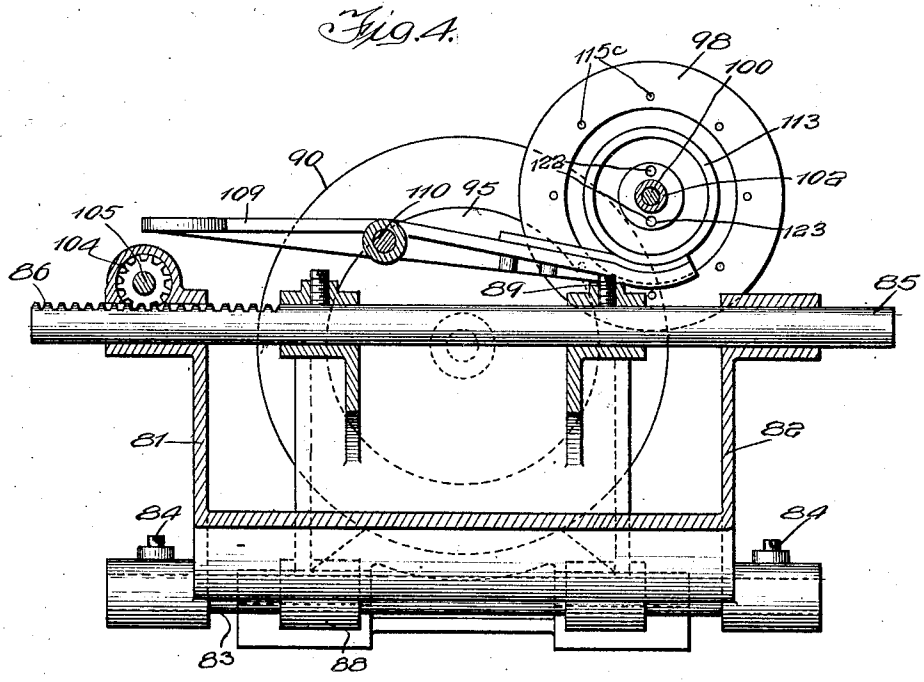
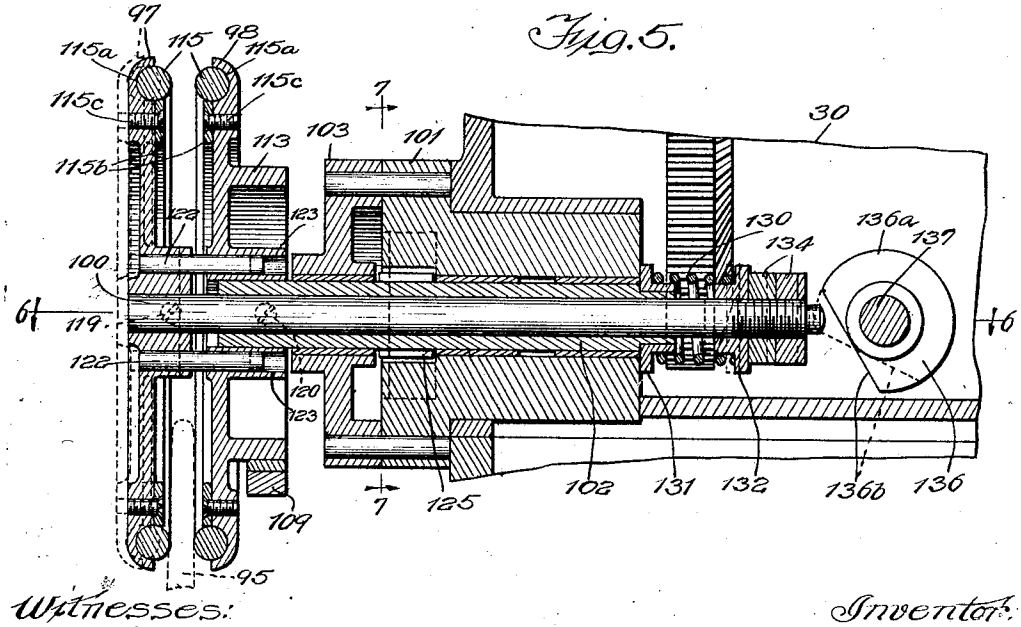


Fig. 5.



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April 9, 1929. J. PROKSA 1,708,520

DRIVING MECHANISM

Filed March 21, 1925 4 Sheets-Sheet 4

Fig. 6.

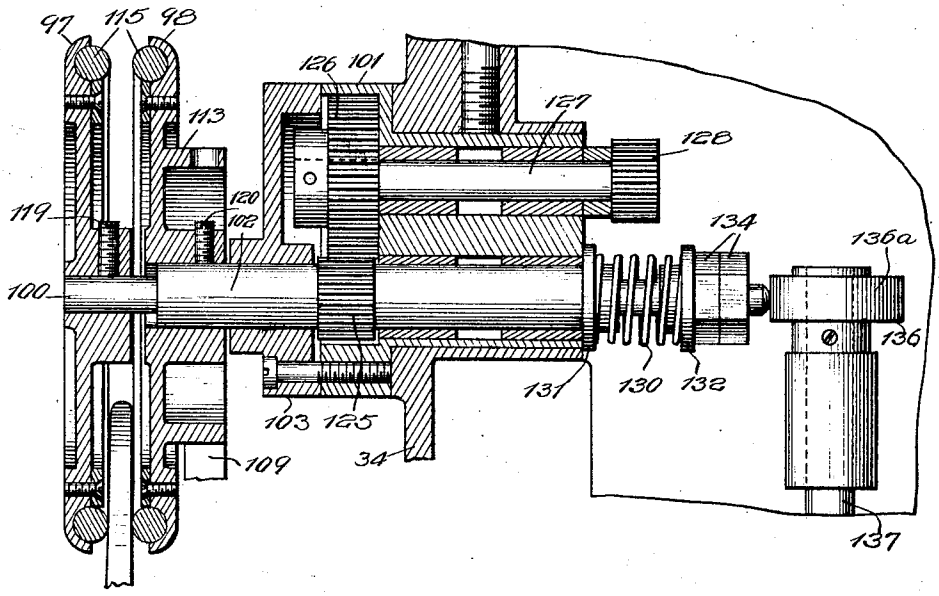


Fig. 7.

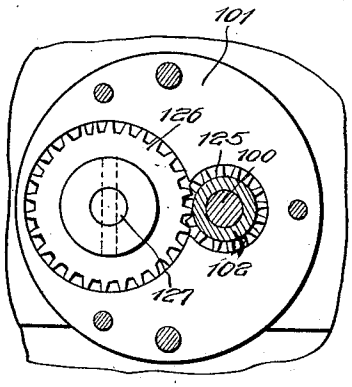


Fig. 9.

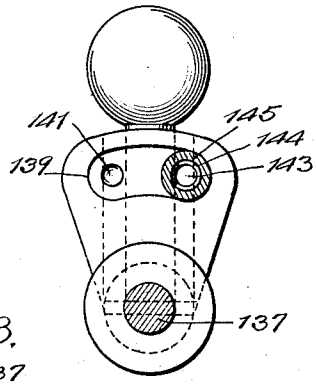
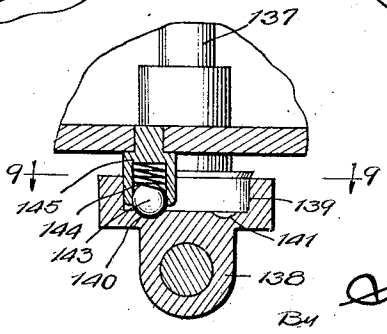


Fig. 8.



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Patented Apr. 9, 1929. 1,708,520

UNITED STATES PATENT OFFICE.

JOHN PROKSA, OF CHICAGO, ILLINOIS, ASSIGNOR TO HELIOS CORPORATION, OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE.

DRIVING MECHANISM.

Application filed March 21, 1925. Serial No. 17,338.

My invention relates to improvements in driving mechanism and has among its other objects the production of an apparatus of the kind described which is simple, convenient, compact, durable, reliable, efficient and satisfactory for use wherever found applicable.

A preferred embodiment of the invention is particularly adapted to be used in connection with motion picture projecting apparatus. This embodiment of the invention permits a continuously driven electric motor to be quickly and easily connected to and disconnected from the motion picture projecting apparatus, and permits the apparatus to be driven at various speeds, it being possible to change the speed of the motion picture projecting apparatus while the apparatus is operatively connected to the continuously driven motor. Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosures herein given. To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts:

Fig. 1 is a rear elevation of the apparatus embodying the invention;

Fig. 2 is a fragmentary side elevation of the apparatus shown in Fig. 1;

Figs. 3 and 4 are sections taken on lines 3—3 and 4—4, respectively, of Fig. 1;

Fig. 5 is a section taken on line 5—5 of Fig. 2;

Figs. 6 and 7 are sections taken on lines 6—6 and 7—7, respectively of Fig. 5;

Fig. 8 is a section taken on line 8—8 of Fig. 1; and

Fig. 9 is a section taken on line 9—9 of Fig. 8.

In the drawings, a preferred embodiment of this invention is shown in connection with motion picture projecting apparatus, which is more clearly shown and described in my co-pending application Serial No. 17,336, filed March 21, 1925. The motion picture projecting apparatus shown in the co-pending application includes improved film feeding mechanism which is mounted in a housing 30. The housing 30 comprises a bottom plate 31, a front wall 33 and a side wall 34.

The housing 30 is preferably mounted upon and secured to a motor support 80, which is in turn mounted upon a suitable base (not shown). The motor support 80 may comprise integral bracket arms 81 and 82, in the lower ends of which is mounted a guide rod 83, the guide rod 83 being secured in the bracket arms by set screws 84. Slidably mounted in the upper ends of the bracket arms 81 and 82 is a guide rod 85 having a rack 86 cut in one end thereof. Slidably journaled upon the guide rod 83 is a bracket 88 which is rigidly secured to the guide-rod 85 by set screws 89. The bracket 88 is adapted to support an electrical motor 90 which is adjustably secured to the bracket by means of bolts 92 passing through slots 93 formed in the bracket. The motor 90 is provided with a shaft 94 to which is rigidly secured a friction disk 95 adapted to be brought into and out of driving engagement with friction disks 97 and 98 mounted upon a shaft 100 and a tubular shaft 102, respectively. The shaft 100 is slidably journaled in the tubular shaft 102, which is rotatably journaled in a bearing bracket 101 secured to the side wall 34 and in a cap member 103 secured to the bracket 101.

A preferred means for bringing the friction disk 95 into and out of driving engagement with the friction disks 97 and 98 comprises a pinion 104, which meshes with the rack 86 and is secured to a shaft 105 rotatably journaled in the motor support 80. A hand wheel 106 or the equivalent secured to the shaft 105 may be employed to rotate the shaft 105, which, in turn, will rotate the pinion 104 and cause the shaft 85 to move along its longitudinal axis. Such movement of the shaft 85 will be accompanied by a corresponding movement of the motor 90 and the friction disk 95, the motor 90 being secured to the bracket 88, which, in turn, is secured to the shaft 85 by set screws 89. It is obvious that the speed at which the shaft 100 is rotated may be increased or decreased by moving the friction disk 95 away from or toward the axis of rotation of the shaft 100. The speed at which the shaft 100 rotates may also be controlled by a brake lever 109 pivotally mounted intermediate its ends upon a pin 110, which projects from a boss 111 formed upon the motor support 80. One end of the lever 109 is adapted to frictionally engage a brake drum 113 formed upon the friction disk 98. This construction is advantageous in that the operator may manipulate the brake lever 109 to con-

trol the speed of the shaft 100 and hence the speed of the film feeding mechanism when a title or the like is being flashed upon the screen.

As shown in Fig. 5, the friction disks 97 and 98 may be provided with friction inserts or rings 115 to insure an effective driving engagement between the friction disks 97 and 98 and the friction disk 95 when the friction disk 95 is properly positioned between the friction disks 97 and 98. The friction rings 115 are secured in recesses 115[a] formed in the friction disks 97 and 98 by clamping rings 115[b] secured to the friction disks by screws 115[c]. The friction disk 97 is rigidly secured to the shaft 100 by a set screw 119 and the friction disk 98 is rigidly secured to the tubular shaft 102 by a set screw 120. The friction disk 98 is constrained to rotate with the friction disk 97 by any suitable means, such as, for instance, pins 122 rigidly secured in the friction disk 97 and slidably engaging bores 123 formed in the friction disk 98. Formed integral with the tubular shaft 102 is a gear 125, which meshes with a gear 126 rigidly secured to a shaft 127 journaled in the bearing bracket 101, the shaft 127 being provided with a pinion 128.

The pinion 128 is geared to the improved film feeding mechanism to drive the same. As the improved film feeding mechanism and the means whereby the gear 128 is operatively connected thereto are clearly shown and described in my aforementioned co-pending application, and as this invention is limited to this type of apparatus only in so far as defined in the appended claims, it will be unnecessary to give a detailed description thereof in this disclosure.

In the illustrated embodiment of the invention, the friction disk 97 is yieldingly urged toward the friction disk 98 by a compression spring 130 which is interposed between a collar 131 fixed upon the tubular shaft 102 and a collar 132 slidably mounted upon the shaft 100. The force with which the spring 130 urges the friction disk 97 toward the friction disk 98 may be varied by manipulating nuts 134 which are threaded upon the shaft 100 and against one of which the collar 132 bears. The inner end of the shaft 100 rides upon a cam 136, which is rigidly secured to a shaft 137 rotatably journaled in the housing 30. The cam 136 is provided with a cylindrical surface 136[a] and a flat surface 136[b]. The cam is so designed that, when the shaft 100 bears against the cylindrical surface 136[a], the friction disk 97 is held out of engagement with the friction disk 95. When the flattened surface 136[b] is presented to the shaft 100, the spring 130 may urge the friction disk 97 against the friction disk 95.

Secured to the outer end of the shaft 137 is a lever 138 having an arcuate recess 139 formed in the inner face thereof. A pair of shallow depressions 140 and 141 formed in the bottom of the arcuate recess 139 are engageable by a ball 143 which is yieldingly urged toward the lever 138 by a compression spring 144. The ball 143 is slidably mounted in a plug 145 projecting from the rear wall 35. When the ball 143 is resting in the depression 140 the shaft 137 will be held in a position wherein the cam 136 will permit the friction disk 97 to be held in frictional engagement with the friction disk 95 by the spring 130. When the lever 138 is moved into a position wherein the ball 143 will rest in the depression 141, the cam 136 will be brought into a position wherein it will prevent the friction disk 97 from engaging the friction disk 95.

From the foregoing description, it will be readily understood that the film feeding mechanism included in the motion picture projecting apparatus may be brought to a full stop without first bringing the motor 90 to a stop. This may be accomplished by manipulating the hand wheel 106 to bring the motor 90 into a position wherein the friction disk 95 will be withdrawn from between the friction disks 97 and 98; or it may be accomplished by throwing the lever 138 into the position wherein the cylindrical surface 136[a] of the cam 136 will engage the shaft 100 and bring the friction disk 97 out of driving engagement with the friction disk 95. It will also be understood that my improved apparatus is advantageous in that the speed at which the film feeding mechanism is driven may be varied at will by adjusting the friction disk 95 with respect to the axis of rotation of the shaft 100. This is, of course, accomplished by manipulating the hand wheel 106. Another advantage of my improved structure is that, if any movable part of the driven apparatus should be accidentally held or prevented from operating properly, the driving friction disks may slip relative to the driven friction disks so that the driven apparatus will not be damaged.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:

1. In driving mechanism of the kind described, a driven shaft having a friction disk, an electric motor having a shaft with a friction disk mounted thereon, means for mounting said motor providing lateral displacement thereof comprising parallel guides, means for mounting said motor on said guides providing lateral adjustment thereof

relative to said guides, rack and pinion means for causing lateral displacement of said motor on said guides to bring the friction disk of said motor shaft into driving contact with the friction disk of said driven shaft, cam means for moving said disk on said driven shaft longitudinally of its axis, and means for fixing said cam in a plurality of positions.

2. In driving mechanism of the kind described, a driven shaft having a friction disk, a second friction disk carried coaxially with said first disk for rotation therewith, an electric motor having a shaft with a friction disk mounted thereon, means for mounting said motor providing lateral displacement thereof comprising parallel guides, means for mounting said motor on said guides providing lateral adjustment thereof relative to said guides, rack and pinion means for causing lateral displacement of said motor on said guides to bring the friction disk of said motor shaft into driving contact with at least one of said disks on said driven shaft, cam means for moving one of said disks on said driven shaft longitudinally of its axis, means for fixing said cam in a plurality of positions, resilient means for maintaining said disks on said driven shaft in fixed relation and means for adjusting the tension of said resilient means.

In testimony whereof, I have hereunto signed my name.

JOHN PROKSA.