

UNITED STATES PATENT OFFICE.

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VARIABLE-SPEED MECHANISM.

SPECIFICATION forming part of Letters Patent No. 698,866, dated April 29, 1902.

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To all whom it may concern:

Be it known that I, JOHN A. SMITH, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain
5 new and useful Improvements in Variable-Speed Mechanism, of which the following is a specification.

This invention relates to improvements in variable-speed mechanism, and is especially
10 adapted for use in connection with mechanical piano-players as a tempo mechanism to vary the speed of the take-up roller. I do not wish, however, to limit my invention to this particular use, as it may be used in connection
15 with any other machine or mechanism for transmitting power from a primary shaft to a secondary shaft and for varying the speed of the latter at will without changing the speed of the former.

20 The invention consists of the new and novel parts and combination of parts, hereinafter more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is
25 a side elevation of my invention, showing the convexed disk in contact with a beveled disk on the end of the primary shaft. Fig. 2 is an end view of same. Fig. 3 is a plan view of same with the belt and secondary shaft removed. Fig. 4 is a detailed modification showing
30 the convexed disk in contact with the cylindrical surface of the primary shaft, and Fig. 5, is another detailed modification showing the convexed disk in contact with a con-
35 vexed disk on the end of the primary shaft.

Similar numerals refer to like parts throughout the several views.

Referring to the accompanying drawings, 1
40 designates the primary shaft, which is mounted in suitable bearings and is driven at a uniform speed from any suitable source of power. The shaft 1 is provided on one end with a beveled disk 2 for a purpose which will presently appear. A convexed disk 3 impinges
45 against the beveled disk 2, as shown in Figs. 1, 2, and 3, and is revolvably mounted upon a shaft 4. To the flat surface of the disk 3 is rigidly secured a pulley 5, also revolvable upon the shaft 4. The said shaft 4 is provided at
50 one end with a vertically-adjustable sleeve 6

and a set-screw 7 to hold the said sleeve 6 and shaft 4 at any desired position on the rock-arm 8. The rock-arm 8 is mounted in the bearings 9 and 10, the latter being pivoted at 11 and held to its normal position by the
55 spring 12. The upper end of the rock-arm 8 is provided with a lever 13, by means of which the said arm is moved to change the point of contact of the beveled disk 2 and the convexed disk 3 to vary the speed of the latter. 60
The disk 3 is held in contact with the disk 2 by the spring 12, exerting its tension against the pivoted bearing 10. When it is desired to remove the disk 3 from contact with the
65 disk 2 to temporarily stop the secondary shaft 14, this may be accomplished by pressing the front end of the bearing 10 back against the tension of the spring 12. The secondary shaft 14 is mounted in suitable bearings 15 and is
70 provided with a pulley 16, keyed or otherwise secured thereto. Power is transmitted from the pulley 5 to the pulley 16 through the medium of the belt 17.

The operation of the device is as follows:
75 The shaft 1, carrying the beveled disk 2, is driven by any suitable power at a uniform speed. The disk 3 is held in contact with the revolving disk 2 by the tension of the spring 12 against the bearing 10. As the shaft 1
80 revolves power is transmitted to the secondary shaft 14 through the disk 3, pulley 5, belt 17, and pulley 16, the speed of the shaft 14 being governed by the point of contact of the disk 3 with the disk 2—that is to say, when
85 the rock-arm 8 is moved to its extreme limit in one direction by the lever 13 the point of contact will be near the periphery of the disk 2 and near the axis of the disk 3, thereby imparting a very fast movement to the disk 3,
90 and when the rock-arm 8 is moved to its extreme limit in the opposite direction the point of contact will be nearer the axis of the disk 2 and near the periphery of the disk 3, thereby imparting a slow movement to the disk,
95 and consequently the shaft 14. The speed of the disk 3, and consequently the shaft 14, diminishes as the point of contact is changed from near the axis to near the periphery of the disk 3 and increases as the point of contact is changed from near the periphery to
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near the axis of the said disk 3. It will thus be seen that the speed of the shaft 14 can be varied at will without changing the speed of the shaft 1 by simply moving the lever 13 on the rock-arm 8 either to the right or left to change the point of contact of the disk 3 with the disk 2. If it is desired to temporarily stop the shaft 14, the disk 3 is thrown out of contact with the disk 2 by forcing the free end of the pivoted bearing 10 back against the tension of the spring 12.

In Fig. 4 of the drawings I have shown the disk 3 in contact and driven by the cylindrical surface of the shaft 1. The speed of the disk 3 in this instance is varied by changing the point of contact of the said disk with the shaft 1, as heretofore described.

In Fig. 5 I have shown the shaft 1 provided on one end with a convexed disk 18, which may be used in lieu of the beveled disk 2.

It will be seen that my invention may be used in connection with any revolving body for the purpose of transmitting motion therefrom to a secondary shaft or mechanism and for varying the speed of the said secondary shaft or mechanism without changing the speed of the revolving body.

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

1. In a variable-speed mechanism, the com-

bination with a revoluble body, of a rock-arm; a convexed disk carried by said rock-arm and impinging against the revoluble body; a secondary shaft; means connecting the said disk and secondary shaft; and a lever to rock the said rock-arm to change the point of contact between the revoluble body and convexed disk to vary the speed of the secondary shaft, substantially as and for the purpose set forth.

2. In a variable-speed mechanism, the combination with a revoluble body, of a rock-arm; a shaft vertically adjustable on said arm; a convexed disk mounted on said shaft and impinging against the revoluble body; means to keep the said disk in contact with the revoluble body; a pulley carried by said disk; a secondary shaft; means connecting the said pulley and secondary shaft; and a lever to rock the said rock-arm to change the point of contact of the said disk with the revoluble body to vary the speed of the secondary shaft, substantially as and for the purpose described.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN A. SMITH.

Witnesses:

CHAPIN A. FERGUSON,
GEORGE H. READ.