No. 662,568. Patented Nov. 27, 1900.

W. K. LORD.

SPEED REGULATOR.

(Application filed Feb. 1, 1900.)

(No Model.) 2 Sheets—Sheet 1

Fig. 1.

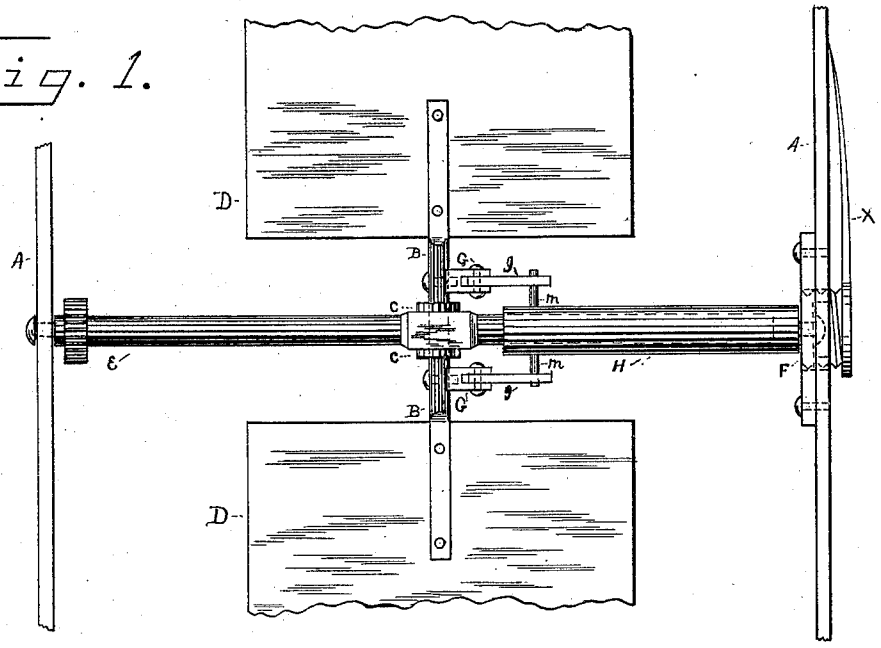
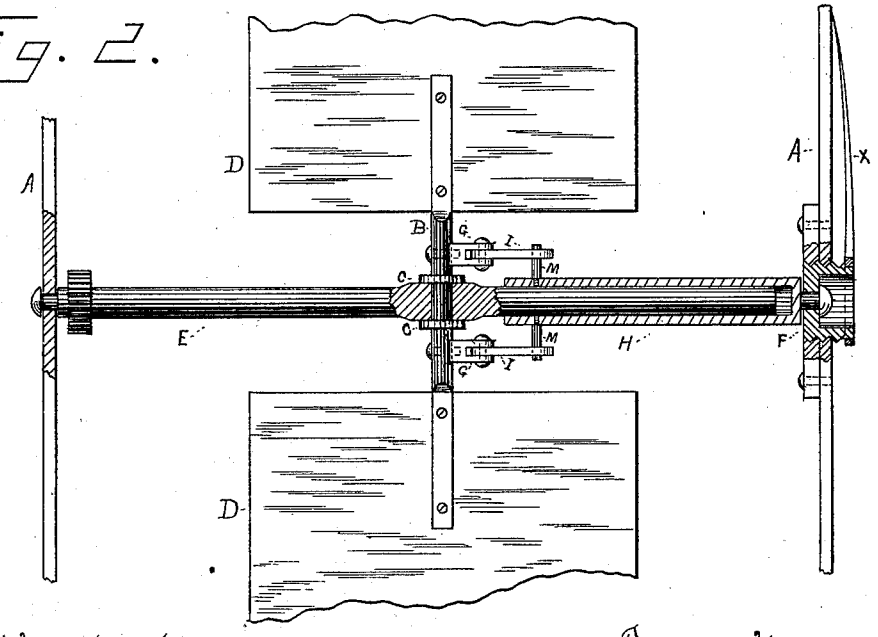


Fig. 2.



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Inventor:
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. 3.

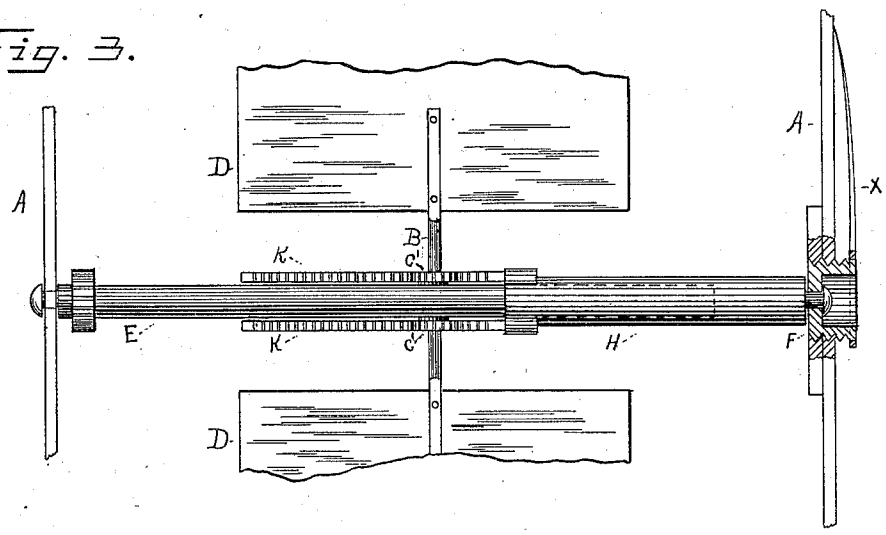


Fig. 4.

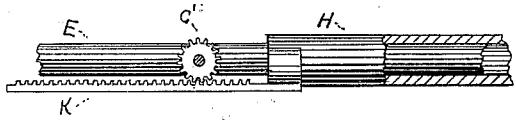
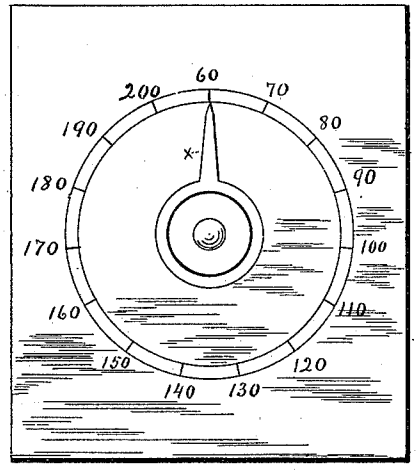


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM K. LORD, OF MOUNT CARMEL, PENNSYLVANIA.

SPEED-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 662,568, dated November 27, 1900.

Application filed February 1, 1900. Serial No. 3,652. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM K. LORD, of the borough of Mount Carmel, county of Northumberland, and State of Pennsylvania, have invented a new and Improved Speed-Regulator, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved speed-regulator adapted especially for use on metronomes, phonographs, and like instruments, which is simple and durable in construction and serves to change and regulate the speed and also to show the exact time or speed by means of the position of the hand on the numbered face of the regulator.

The invention consists in certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

I have also accompanied this description with two sheets of drawings, which are also made part of the same.

Figure 1 represents an elevation of the speed-regulator. Fig. 2 is a sectional view of the same. Figs. 3 and 4 are sectional views of a modified form, and Fig. 5 is a view of the face on the frame.

The improved speed-regulator consists of a fan-wheel with a divided shaft adapted to be connected by pinion or pulley with any train of mechanism. One part of the shaft consists of a sleeve which permits of a longitudinal movement upon the other part of the shaft. Through a hole bored through this second part of the shaft the rod holding the fan-blades is passed, held in position by collars and capable of being rotated within the shaft. By any suitable mechanism the movement of the sleeve rotates the fan-blades and changes their resistance to the air. The divided shaft is pivoted and capped at both ends, one end rotating in the frame and the other end rotating in a threaded cup which rotates in a threaded part of the opposite side of the frame. Attached to this cup is an arm or hand which serves to point out the speed on the face.

As shown in the drawings in Figs. 1 and 2, E is a fan-shaft rotating freely in frame A, pivoted and capped on that end, the other end being movable freely longitudinally in a sleeve H. Sleeve H is pivoted and capped and rotates freely in cup F. Cup F is threaded on the outside and rotates in threaded part of frame A. The hand X is attached to and forms part of cup F. On sleeve H are two pins M, connected by rods I to cranks G, which are parts of rod B, holding fan-blades D. This rod, with cranks G, is arranged to rotate in fan-shaft E, but kept from moving longitudinally by collars C on each side of fan-shaft. Now when hand X is moved the cup F, by means of its screw-thread in frame A, moves the sleeve H longitudinally on the fan-shaft E, and by means of pins M, connecting-rods I, and cranks G rotates the fan blades or vanes D, thus making more or less resistance to the air and determining the speed of the fan.

Fig. 3 is a modified form of the device.

The sleeve H has racks K brazed to same, and these racks K engage into pinions C′ on rod B, holding fan-blades. The pinions C′ act as the collars in other device and prevent any longitudinal movement of rod B. The longitudinal movement of sleeve H through racks K and pinions C′ rotates rod B and changes position of fan-blades D.

Fig. 5 represents the face, which, however, in a metronome would, at proper spaces, be also lettered "Adante," "Allegro, &c."

Where the term "divided shaft" is used, it refers to the combination of a shaft and a sleeve receiving one end of said shaft.

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

1. The combination of a shaft with a capped pivot rotatable in a frame, a rod passing through and rotatable in said shaft, fan-blades mounted on said rod, an exteriorly-threaded cup-shaped element, a sleeve receiving one end of said shaft and having its capped pivot rotatable in said cup-shaped element, means for rotating said rod by the longitudinal movement of said sleeve, the frame having an interiorly-threaded portion adapted to receive the cup-shaped element and allow its rotation therein; substantially as shown and described.

2. The combination of a shaft, a rod passing through and rotatable in said shaft, fan-blades and pinions mounted on said rod, a sleeve receiving one end of said shaft, and

racks attached to said sleeve and engaging said pinions; substantially as shown and described.

3. The combination of a shaft, a rod passing through and rotatable in said shaft, fan-blades and pinions mounted on said rod, a sleeve receiving one end of said shaft, racks attached to said sleeve and engaging said pinions, and means for longitudinally moving said sleeve; substantially as shown and described.

4. The combination of a shaft, a rod passing through and rotatable in said shaft, fan-blades and pinions mounted on said rod, a sleeve receiving one end of said shaft, racks attached to said sleeve and engaging said pinions, a cup-shaped element rotatable in the frame and adapted to longitudinally move said sleeve, and a hand attached to said cup-shaped element to denote the speed; substantially as shown and described.

WM. K. LORD.

Witnesses:
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