No. 805,748. PATENTED NOV. 28, 1905.

C. PFANSCHMIDT.

SPEED REGULATOR FOR POWER TRANSMISSION.

APPLICATION FILED MAY 3, 1905.

Fig. 1.

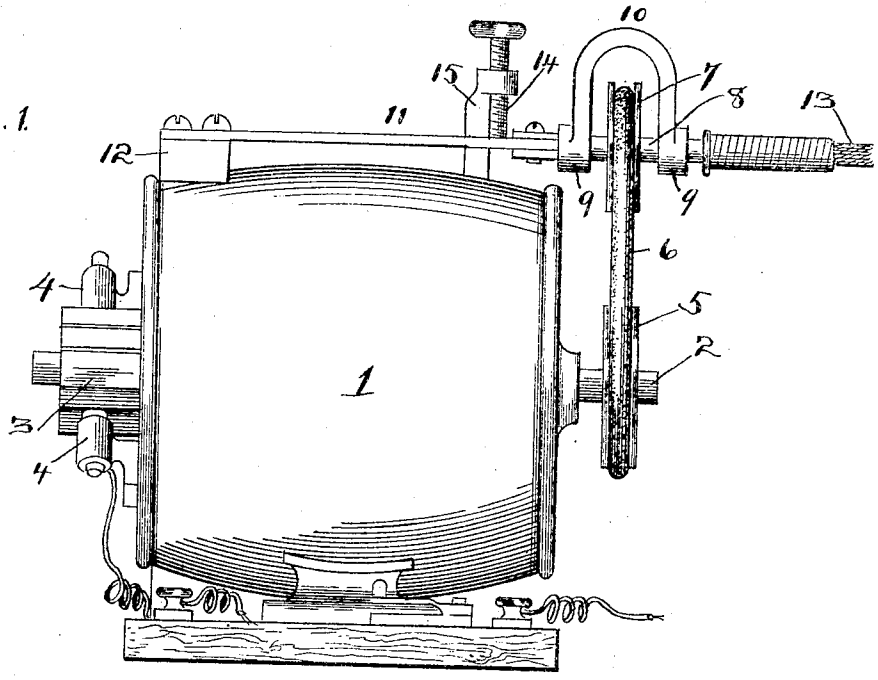
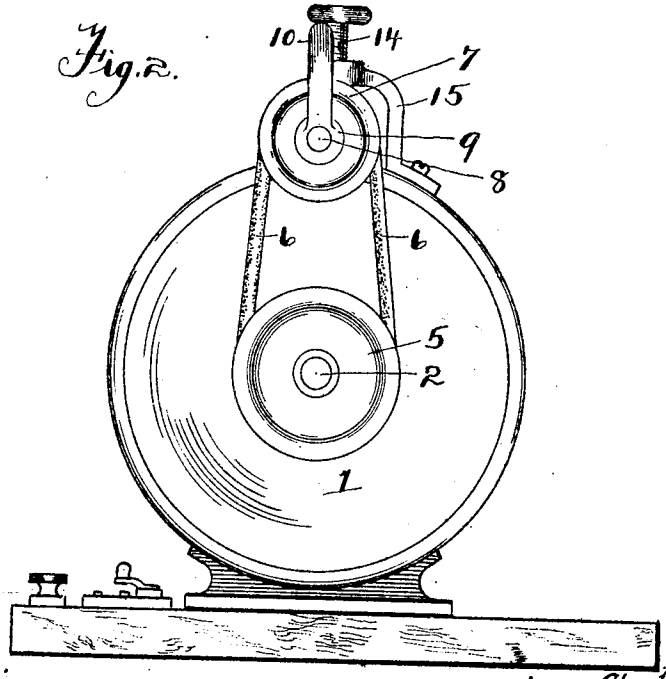


Fig. 2.



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UNITED STATES PATENT OFFICE.

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SPEED-REGULATOR FOR POWER TRANSMISSION.

No. 805,748. Specification of Letters Patent. Patented Nov. 28, 1905.

Application filed May 3, 1905. Serial No. 258,578.

To all whom it may concern:

Be it known that I, CHARLES PFANSCHMIDT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Speed-Regulators for Power Transmission, of which the following is a specification.

This invention is intended more especially for use with electric motors or other power-driven mechanism in which the motor maintains a constant speed; and the object of the invention is to provide a simple and easily-adjusted mechanism for regulating the speed imparted from the constantly-driven motor to a flexible shaft or other power-transmitting mechanism.

Another object of the invention is to so construct the parts that the mechanism may be applied to motors of any ordinary construction without changing or modifying the operating mechanism, and the invention is particularly adapted for use in connection with massage or dental implements in which a small electric motor is ordinarily employed and fitted to impart rotation to a flexible shaft connected with a dental or massage tool in the hands of the operator.

In devices of this general class it is highly desirable that a quick regulation of speed may be made without interfering with the operation of the motor, which remains substantially constant at all times.

Another object of the invention is to so regulate the adjusting mechanism that it will be impossible to overload the motor when started, which would tend to impair or burn out the motor and render it useless.

The invention consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, illustrating the invention, Figure 1 is a side elevation of an electric motor, showing the speed-regulator in position; and Fig. 2, a similar front view.

The motor comprises a casing 1, having passed therethrough a power-shaft 2, having thereon an armature 3, contacted by brushes 4 of any suitable character. Upon the power-shaft is mounted a grooved pulley 5, carrying a flexible belt 6, and immediately above the power-pulley 5 is a regulating-pulley 7, around which the belt passes for the purpose of imparting rotation thereto. The regulating-pulley is mounted upon a stud-shaft 8, mounted in journal-boxes 9, formed in the ends of a yoke 10, which embraces the regulating-pulley and is rigidly secured to the end of a spring-plate 11, fixed at its opposite end to a block 12, rigidly mounted on a suitable part of the motor-casing. The outer end of the stud-shaft 8 has secured thereto a flexible shaft 13, which is adapted to transmit rotation to a dental or massage tool or other similar implement. The spring-plate is formed to have a sufficient resiliency to hold the belt taut or distended under normal conditions, thereby imparting the entire rotation of the power-pulley to the regulating-pulley; but when it is desirable to reduce the speed imparted to the rotary shaft the spring-plate is depressed under tension by means of a thumb-screw 14, screw-threaded through a standard 15, rigidly mounted on the casing of the motor or other suitable part of the mechanism. By screwing down the thumb-screw the plate 11 is depressed, bringing the power-pulley and regulating-pulley closer together, thereby loosening up the tension exerted on the belt and allowing said belt to slip to a considerable degree as the motor is operated. The resiliency of the spring-plate should be sufficient to impart the maximum speed of revolution; but it is not advisable to have this resiliency such as to overload the motor and bring it to a stop by reason of the tension on the belt. By initially determining the maximum tension of the spring-plate it will be impossible for the operator to overload the motor, for the reason that after the spring-plate has reached its normal position any further retraction of the thumb-screw by the operation will have no effect whatever on the position of the plate. By screwing down the thumb-screw, however, the belt-pulley can be loosened to a very considerable degree and the speed of the flexible shaft regulated from nothing up to the maximum degree of revolution. This adjustment can be instantly made without interfering with the operation of the motor itself and without subjecting it to the wear and tear due to continued regulation of its mechanism.

What I regard as new, and desire to secure by Letters Patent, is—

1. In a speed-regulator, the combination of a power-shaft, a power-pulley secured thereto, a spring-plate, a regulating-pulley, journals on

the spring-plate in which the regulating-pulley is mounted, a belt passing around the pulleys and means for adjusting the position of the spring-plate to vary the distance between the pulleys and vary the tension exerted on the belt, substantially as described.

2. In a speed-regulator, the combination of a power-shaft, a pulley mounted thereon, a power-transmission shaft, a regulating-pulley mounted thereon, a yoke in which the power-transmission shaft is journaled, a spring-plate rigidly secured at one end, and having a yoke secured to its free end, and a set-screw adapted to bear against the spring-plate to regulate its position and vary the distance between the pulleys and the tension exerted on the belt, substantially as described.

3. In a speed-regulator, the combination of a power-shaft, a pulley mounted thereon, a power-transmission shaft, a regulating-pulley mounted thereon, a yoke in which the power-transmission shaft is journaled, a spring-plate rigidly secured at one end, and having a yoke secured to its free end, a set-screw adapted to bear against the spring-plate to regulate its position and vary the distance between the pulleys and the tension exerted on the belt, the spring-plate having a resiliency to hold the belt taut when normal but to prevent the stoppage of the power-shaft by an excessive tension on the belt, substantially as described.

4. In a speed-regulator, the combination of a motor having projecting therefrom a power-shaft, a grooved power-pulley rigidly mounted on the shaft, a spring-plate secured to the motor at one end and having at its free end a yoke, a grooved regulating-pulley mounted on a power-transmission shaft, a thumb-screw adapted to bear against the spring-plate and regulate the distance between the two pulleys, and a power-transmission belt passing around the pulleys, substantially as described.

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