L. E. UNDERWOOD.

MOTOR DRIVING MECHANISM.

APPLICATION FILED JUNE 22, 1906.

957,277.

Patented May 10, 1910.

2 SHEETS—SHEET 1.

Fig. 3.

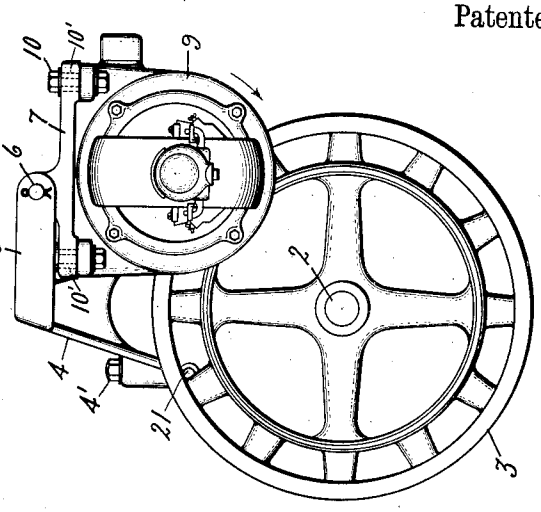


Fig. 2.

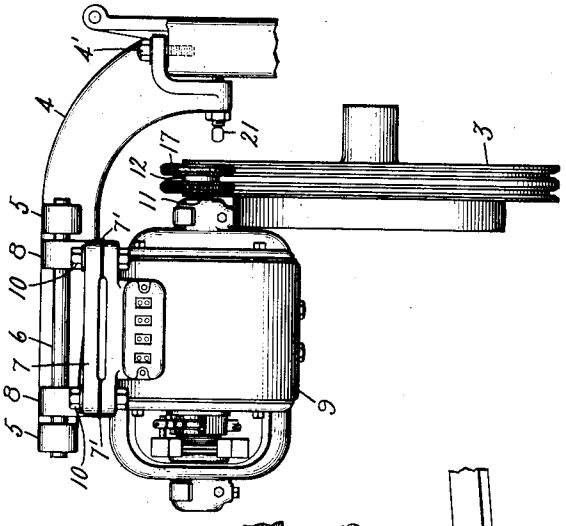
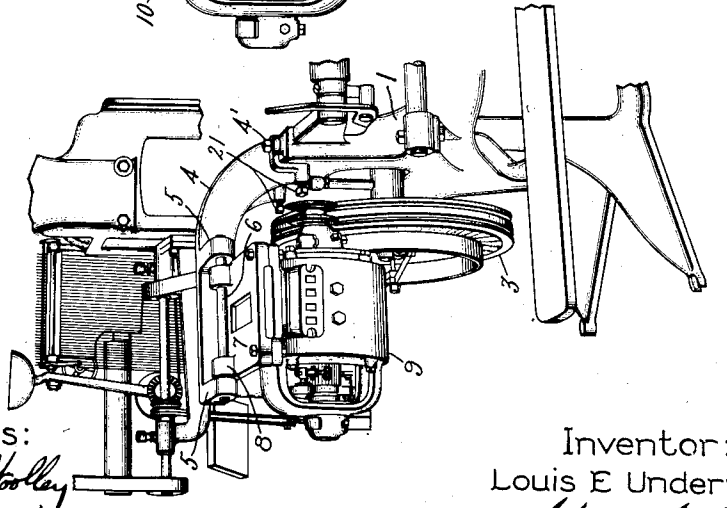


Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 4.

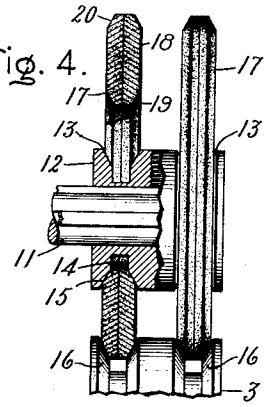


Fig. 5.

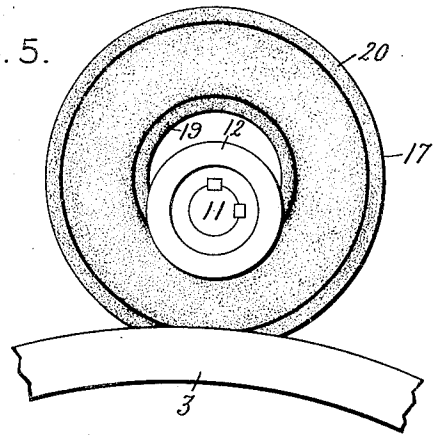
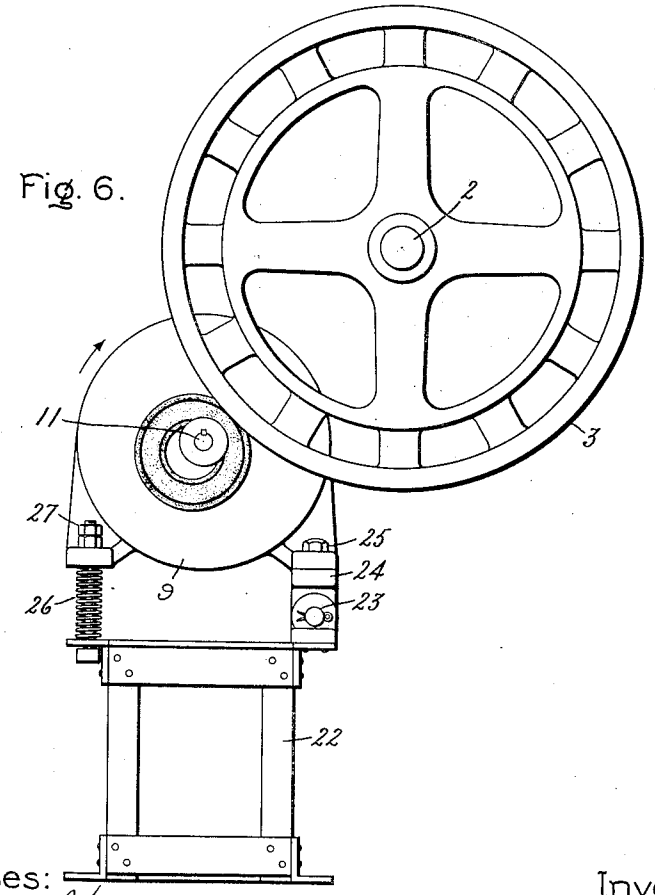


Fig. 6.



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UNITED STATES PATENT OFFICE.

LOUIS E. UNDERWOOD, OF LYNN, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

MOTOR-DRIVING MECHANISM.

957,277. Specification of Letters Patent. Patented May 10, 1910.

Application filed June 22, 1906. Serial No. 322,807.

To all whom it may concern:

Be it known that I, LOUIS E. UNDERWOOD, a citizen of the United States, residing at Lynn, in the county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Motor-Driving Mechanisms, of which the following is a specification.

My present invention relates to motor driven machinery and particularly to an electric motor driven linotype or similar machine, and comprises certain novel features of construction and arrangement whereby an efficient and satisfactory flexible or yielding connection is established between the armature shaft of the electric driving motor and the member to be driven.

My invention also comprises features of construction and arrangement whereby a motor of standard design may be employed and in such manner that a minimum of floor space is taken. The advantages of employing a standard rather than a special motor and of economizing space in connection with certain types of machinery, as notably linotype machines, are well known to those skilled in the art.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of my invention, however, and the advantages possessed by it, reference may be had to the accompanying drawings and descriptive matter in which I have illustrated and described forms in which my invention may be employed.

Of the drawings, Figure 1 is a perspective view of a portion of a linotype machine equipped with one form of my electric motor drive; Fig. 2 is an elevation on a larger scale than Fig. 1 of a portion of the apparatus shown in Fig. 1; Fig. 3 is an elevation at right angles to Fig. 2; Fig. 4 is an elevation partly in section, illustrating the gearing between the driving and driven members; Fig. 5 is an elevation at right angles to Fig. 4; and Fig. 6 is an elevation illustrating a modified construction.

Referring to the drawings, 1 represents the regular frame work of a machine to be operated, which in the embodiment disclosed is a linotype machine. To the frame work 1 is secured the shaft 2 which carries the driven wheel 3. A bracket or supporting arm 4 is secured to the frame work 1 by bolts 4′ passing through the bracket and extending vertically into a portion of the frame work. The arm 4 is provided with ears 5, in which is supported a horizontal shaft 6. The supporting member 7 is provided with ears 8 in which the shaft 6 is pivotally received.

The feet extending from the frame of an electric motor 9 of any suitable style and size are secured to the member 7 by bolts 10. The armature shaft 11 of the motor 9 has secured upon it a driving wheel 12. One or more circumferentially extending grooves are formed in the driving wheel 12. As shown, the grooves 13 comprise an inner portion 14 having parallel sides and an outer portion 15 having inclined sides. Grooves 16, which may be substantially identical in form with the grooves 13, extend circumferentially around the driven wheel 3. Corresponding grooves 13 and 16 in the wheels 12 and 3, respectively, are in the same plane.

The wheel 12 is surrounded by annular members 17, one for each groove 13. The apertures in the members 17 are preferably equal to or greater than the external diameter of the wheel 12, so that the annular members may be readily moved axially into place over the body of the wheel 12. In the form of my invention disclosed, each annular member 17 consists of two apertured disks of suitable material, such as sole leather, or the like, which are cemented or otherwise secured together in some suitable manner. The inner edges of the disks 18 are tapered at 19 to enter the tapered portions of the grooves 13 and their outer edges are similarly tapered at 20 to enter the grooves 16. These features of my construction I prefer to arrange as disclosed in Patent No. 451,987, granted May 12, 1891, to Frank H. Underwood.

It will be observed by reference to Figs. 1 and 3 that the shaft 6 is at one side of the armature shaft of the motor. As a result, the armature shaft tends to move bodily under the action of gravity in the direction indicated by the arrow in Fig. 3. Consequently, the members 17 are held between the wheels 3 and 12 with a pressure depending on the size of the motor and the dimensions and arrangement of the parts. When the various parts are suitably proportioned and arranged, the force with which the mem-

bers 17 are pressed into the grooves 13 and 16 is sufficient to insure the transmission of the ordinary load. In case of accident, however, in which the driven machine is stopped or has an unusual load put upon it, the driving connection between the wheels 12 and 3 readily yields and injury is thereby avoided. Should the annular members 17 give way, the turning movement of the motor about the shaft 6 is limited by the engagement of the wheels 12 and 3. The pressure with which the members 17 are gripped between the wheels 12 and 3 can be varied by varying the difference between the internal and external diameters of the members, and also by adjusting the motor frame with respect to the motor support 7, as by putting washers 7′ of varying sizes between the motor feet and the support 7, as shown in Fig. 2, or by making the passage in the member 7 through which the bolts 10 pass in the form of elongated slots 10′, as shown in Fig. 3, and varying the relative position of the motor frame and support. The slight difference in the interior and exterior diameters of the members 17, which in time may occur with usage, is ordinarily too small to materially affect the power transmitted by them. The alinement or parallelism of the armature shaft 11 may be adjusted by manipulation of the bolts 21, which are at right angles to the bolts 4′ and are carried in threaded passages formed in a portion of the bracket 4 and bear against the side of the frame work 1.

In the form of my invention shown in Fig. 6, the armature shaft 11 may be geared to the wheel 3 in substantially the same manner as in the construction just described. The motor 9 is supported, however, on a frame work 22 which may rest upon the same floor which supports the machine to be driven. The frame work 22 supports a shaft 23, on which is pivotally mounted a member 24. The member 24 is secured to the feet of the motor frame at one side of the armature shaft by bolts 25. The opposite feet of the motor rest upon helical springs 26 which are positioned by bolts 27 extending through bolt holes formed in the motor feet and holes formed in the frame 22. In this form of my invention, the springs 26 tend to turn the motor frame about the shaft 11 in the direction indicated by the arrow in Fig. 6. The connection between the driving and driven wheels in this form of my invention also is such that in case of accident the connection between the driving and driven members will readily yield without endangering the parts.

The gearing connections in the driving and driven wheels in both of the forms of my invention disclosed have been found by actual experience to be efficient, reliable, lasting and economical. The motor-supporting mechanism disclosed has also been found to be highly satisfactory in practice. It will be obvious to those skilled in the art, however, that certain features of my invention may be employed without a corresponding use of other features, and that changes may be made in the form of my invention without departing from its spirit, and I do not wish the claims hereinafter made to be limited to the particular embodiment disclosed, more than is made necessary by the state of the art.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. In combination, a machine comprising a wheel to be driven, an electric motor including a frame and a driving wheel, an annular member surrounding one of said wheels and engaged by both wheels, a support for the motor frame, and means tending to turn said frame to move the driving wheel toward the driven wheel.

2. In combination with the frame work of a machine to be driven, a bracket, parallel bolts for securing said bracket to the frame work, other bolts at an angle to the first-mentioned bolts for adjusting the relation between the bracket and the frame work, a wheel to be driven journaled in said frame work, a motor support pivoted to the said bracket, a motor having a frame secured to said support and a driving shaft, and frictional gearing between said driving shaft and wheel.

3. In combination with the frame work of a machine, a bracket detachably secured thereto, a supporting member hinged to the bracket, an electric motor comprising a frame having feet bolted to said supporting member and a rotating shaft, a wheel to be driven journaled in said frame work, frictional gearing between said rotating shaft and wheel, and means for adjusting said bracket to insure parallelism between said shaft and the axis of rotation of said wheel.

In witness whereof, I have hereunto set my hand this twentieth day of June, 1906.

LOUIS E. UNDERWOOD.

Witnesses:
JOHN A. McMANUS, Jr.,
HENRY O. WESTENDARP.