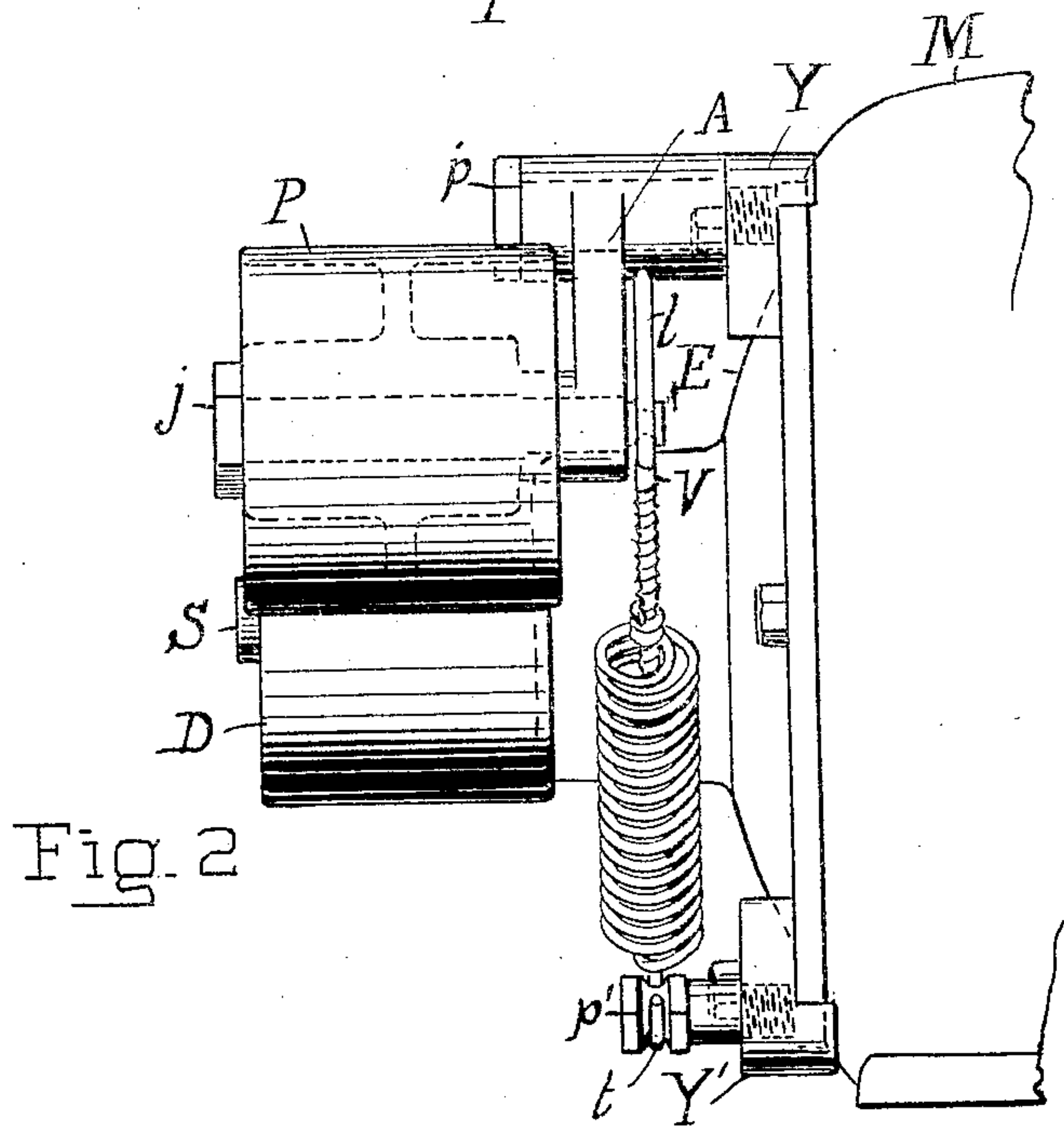
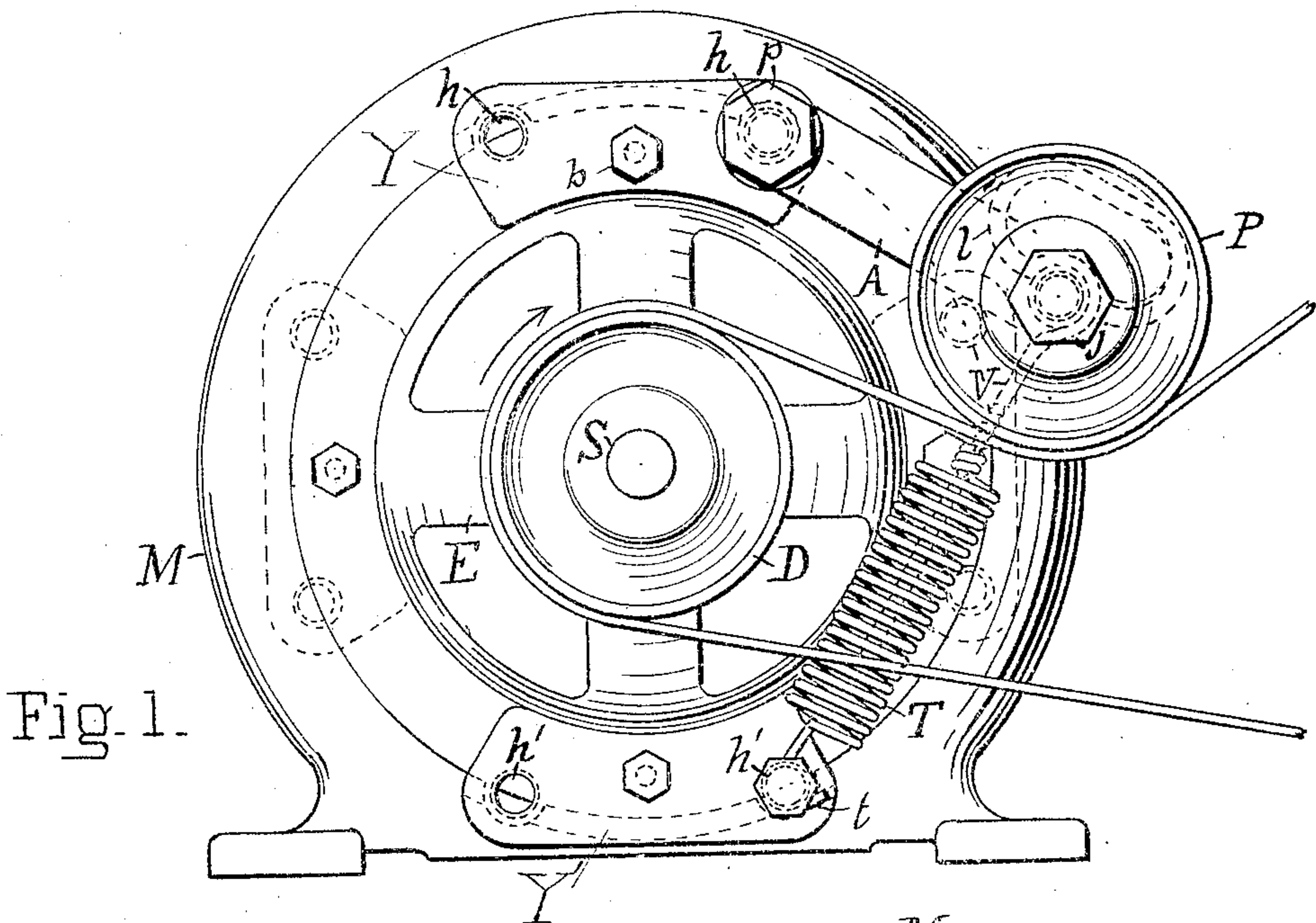


No. 855,237.

PATENTED MAY 28, 1907.

G. S. DUNN.
BELT TIGHTENING IDLER.
APPLICATION FILED SEPT. 19, 1906.



Witnesses:

Samuel W. Balch
J. W. Halsey

Inventor,
Gano S. Dunn
by *Thomas Ewing, Jr.*
Attorney

UNITED STATES PATENT OFFICE.

GANO S. DUNN, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO CROCKER-WHEELER COMPANY, OF AMPERE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

BELT-TIGHTENING IDLER.

No. 855,237.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed September 19, 1906. Serial No. 335,236.

To all whom it may concern:

Be it known that I, GANO S. DUNN, a citizen of the United States of America, and a resident of East Orange, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Belt-Tightening Idlers, of which the following is a specification.

The object of the invention is to provide a belt tightening idler which is particularly applicable in connection with electric motors wherever the limited center distances between pulleys require an increased belt contact on the pulley surfaces.

The device is constructed for convenient attachment to the frame surrounding the bearing of the motor shaft which adjoins the driving pulley of the motor. For application to a motor such as is illustrated, the construction is such that no modification need be introduced into the construction of the motor itself. Simplicity of construction and adaptability without substitution of parts to any direction of lead-off and lead-on of the belt, and to either direction of rotation, is a further object, and, to this end, the belt-tightening idler is constructed of a small number of light and inexpensive parts which may be assembled in different ways with respect to each other, and attached to the motor in various relations to each other and the motor, at the points where provision is regularly made for receiving belts which hold together the parts of the motor.

In the accompanying sheet of drawings, which form a part of this application, Figure 1 is an end view of a motor with a belt tightening idler embodying my invention attached thereto. Fig. 2 is a side view of the motor at the end with the driving pulley and showing the belt tightening idler.

The belt tightening idler, as illustrated, comprises preferably an idler pulley P, an arm or pivoted support A, and a stud-yoke or plate Y. The stud-yoke is drilled at about its middle point to receive a bolt b, by which it may be attached to the frame of a motor.

The stud-yoke may be attached at either one of a plurality of points equally spaced, there being usually four points on the motor which are equidistant from the axis of the motor and at ninety-degrees angular spacing

around the driving pulley D and supporting-shaft S of the motor, bolts being regularly provided at this number of points in the motor illustrated for securing together the magnet-frame M and the rear end-shield or end-head E which supports the armature shaft bearing next to the pulley. The stud-yoke bears at its ends against the side of the flange of the end-shield and also overhangs the edge of the end-shield which it fits closely. It is therefore seated firmly and securely held by a single bolt which also passes through the end-head into the frame. Tap-holes h h are provided in either of which a stud p may be set which serves as a hinge pin for the idler arm. These holes are located so as to be equidistant from the axis of the driving pulley and at an angular spacing which is preferably a subdivision of the angular spacing of the points of attachment for the stud-yoke on the motor frame. In the stud-yoke as illustrated, two such holes are provided at forty-five degrees spacing, which is half the spacing of the points of attachment of the yoke to the motor frame. As the yoke can be placed at either of the four points of attachment, in two of which places a yoke is illustrated in full line and in the other two of which the yoke is indicated in dotted lines, there is choice of as many connection points for the idler arm with equidistant spacing around the driving pulley as the product of the number of points of attachment for the stud-yoke by the number of connection points for the idler arm on the stud-yoke.

A tension spring T is provided for drawing the pulley against the slack side of the belt, connection being made between one end of a screw j on which the idler pulley is journaled and an anchorage point p' which is preferably a screw which may be set in either of two holes h' h' in an anchor-yoke Y' similar to the stud-yoke which supports the idler arm, whereby as many anchorage points for the spring spaced around the driving pulley are afforded as there are connection points for the idler arm. The tension of the spring is regulated and the normal distance between the anchorage point and the journal of the idler pulley is made adjustable by providing a hook screw V which is engaged by a few closely wound convolutions at one end of the

spring. A hook *t* is provided on the other end of the spring. A loop *l* at the end of the hook screw serves as a handle for the screw.

In setting up the belt-tightening idler for any required lead-on of the belt to the pulley, the idler is placed against the slack side in about the desired position; the idler arm is brought to the side of the pulley shown if the rotation of the driving pulley is to be clockwise, and if the rotation is to be counterclockwise the arm is brought to the opposite side. Then the stud-yoke is placed at the point of attachment to the motor which will bring a connection point of the yoke most nearly to the hinge end of the idler arm, and the stud which serves as the hinge pin is passed through the idler arm and screwed into the yoke. If after trial it appears that the most advantageous position for the idler pulley has not been found, the stud bolt may be unscrewed and put in the other hole in the block, and the block can be moved to the next position on the frame. The anchor-yoke is then placed either ninety degrees from or opposite to the other yoke so as to bring a hole for the anchor pin one hundred and thirty-five degrees forward from the stud for the idler arm if the direction of rotation is as indicated; for the opposite direction of rotation the anchor pin should be one hundred and thirty-five degrees on the other side of the stud for the idler arm. More or less spacing than this may sometimes be desirable, but with the parts proportioned as shown, this spacing will usually be what is required. The tension spring with its hook screw is then set in place, one hook engaging the anchor pin and the other hook engaging the end of the journal pin of the idler pulley. The hook formed on the hook screw is hooked upon whichever pin will bring the handle of the screw in the most convenient position for adjustment. Adjustment is afforded for the tension on the belt and taking up of slack by screwing the hook-screw in or out of the spring, the hook-screw being first unhooked from the journal pin or anchor pin.

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

1. The combination of a pulley, a supporting shaft, a frame surrounding the shaft with angularly spaced points of attachment, an idler pulley, an arm for the support of the idler pulley, a yoke with a plurality of con-

nection points for the arm, and a tension device applied to the arm, substantially as described.

2. The combination of a pulley, a supporting shaft, a frame surrounding the shaft with angularly spaced points of attachment, an idler pulley, an arm for the support of the idler pulley, and a yoke with a plurality of connection points for the arm with different angular spacing from the spacing of the points of attachment of the yoke to the frame, substantially as described.

3. The combination of a pulley, a supporting shaft, a frame surrounding the shaft with angularly spaced points of attachment, an idler pulley, an arm for the support of the idler pulley, a yoke with a plurality of connection points for the arm, a tension spring for the idler arm and an anchor pin adapted to be attached at the connection points provided for the arm, substantially as described.

4. The combination of a pulley, a supporting shaft, a frame surrounding the shaft with angularly spaced points of attachment, an idler pulley, an arm for the support of the idler pulley, a stud-yoke with a plurality of connection points for the arm, a tension spring for the idler arm, and an anchor-yoke with a plurality of anchor points for the tension spring, substantially as described.

5. In a belt tightening idler, the combination of a pulley, a shaft, a supporting frame, an idler pulley, an idler arm, and an adjustable tension device connected between the idler arm and the supporting frame, the tension device consisting of a tension spring and a hook-screw engaging convolutions at one end of the tension spring, substantially as described.

6. In combination, an electric motor having a frame and an end-head, a plurality of equally spaced bolts for attaching said end-head to said frame, a belt-tightener comprising an idler-pulley, a pivoted support for said pulley, and a plate on which said support is mounted, said plate being mounted on a bolt passing through the end-head into the frame, substantially as described.

Signed by me at Ampere, N. J., this 14 day of September, 1906.

GANO S. DUNN.

Witnesses:

H. C. HARRISON,
H. J. FULLER.