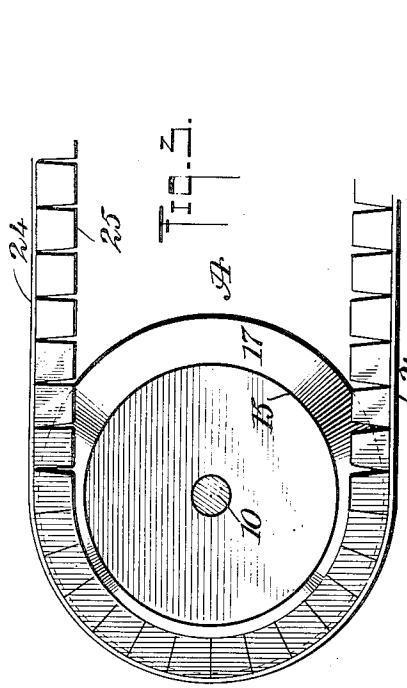
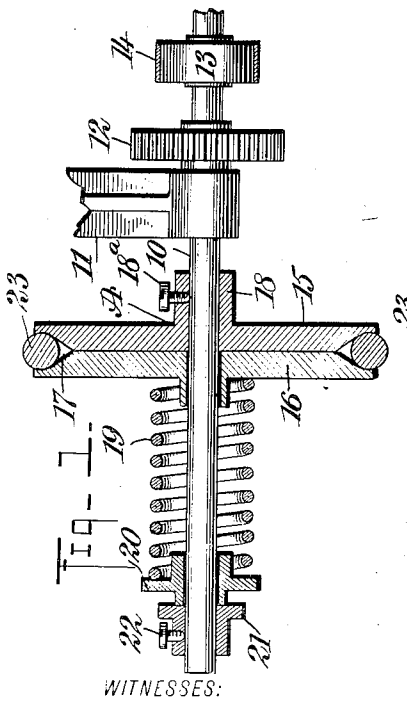
No. 818,047. PATENTED APR. 17, 1906.

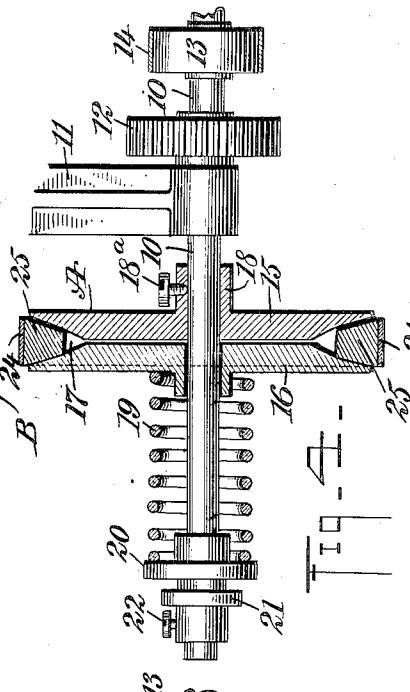
N. POWER.

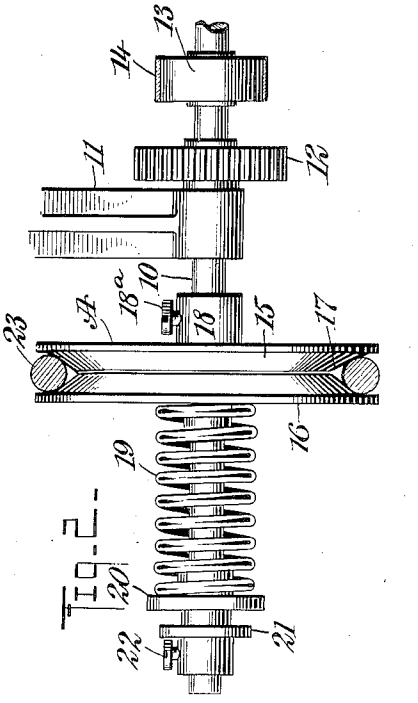
TAKE-UP MECHANISM.

APPLICATION FILED MAY 12, 1904.









WITNESSES:

INVENTOR

Nicholas Power

BY

ATTORNEYS

UNITED STATES PATENT OFFICE.

NICHOLAS POWER, OF NEW YORK, N. Y.

TAKE-UP MECHANISM.

No. 818,047. Specification of Letters Patent. Patented April 17, 1906.

Application filed May 12, 1904. Serial No. 207,564.

To all whom it may concern:

Be it known that I, NICHOLAS POWER, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Take-Up Mechanism, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a take-up or compensating device adapted for use in connection with a spool or any article on which material is to be wound up or unrolled, said device being a driving device for the article to which it is applied.

A further purpose of the invention is to so construct the device that it will automatically vary its speed in proportion to the increased diameter of the reeled or wound material, the speed of the article to which the device is applied being greatest at the initial operation of winding, automatically decreasing as the bulk increases and in such a proportionate manner that the tensional strain on the material to be wound or reeled will be uniform throughout the winding or reeling operation from start to finish.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical section through the improved device, a side elevation of the shaft on which it is mounted, and an elevation of a hanger and gear. Fig. 2 is a side elevation of the device constructed as shown in Fig. 1, the driving-belt being shown in section. Fig. 3 is a vertical section through the improved take-up device, illustrating the application thereto of a block-belt; and Fig. 4 is a vertical transverse section through the block-belt and the complete tension device, the supporting-shaft being in side elevation, the tension-spring in section, and the support for the shaft being shown in elevation.

The compensating or take-up device is of very simple construction and is entirely automatic in its action. In the application of the improvement I have shown a spindle or shaft 10, adapted to be mounted in one or more hangers 11, and the said shaft or spindle is shown as provided with a power-conducting gear 12 and a driven pulley 13, operated by an engaging belt 14, driven from any convenient source of power.

The take-up device in detail consists of a pulley A in two parts, or, in other words, it is split at its center and divided into two sections 15 and 16. The pulley as a whole is provided with a peripheral V-groove 17. The section 15 of the pulley is provided with a hub 18, secured to the shaft or spindle 10 by a set-screw or thumb-screw 18^a or equivalent means, while the other section 16 is free to turn on the said shaft or spindle 10, but is normally held in engagement with the fixed section by means of a spring 19, which presses against section 15 by means of a spring 19, coiled around the shaft or spindle 10, having bearing against the loose section 16 and against a washer 20, which is loosely mounted on the shaft or spindle 10 and has bearing against a collar 21, secured to the said shaft or spindle by a set-screw 22.

In Figs. 1 and 2 I have illustrated the pulley A as adapted particularly for use in connection with a belt 23, circular in cross-section; but other forms of belts may be employed—as, for example, a belt B may be used, as is shown in Figs. 3 and 4, in which the belt B consists of an endless strap 24, having series of practically wedge-shaped blocks 25 secured to its inner face, and these wedge-shaped blocks are adapted to enter the groove 17 in the pulley A.

I denominate the pulley A a "compensating-pulley," because when the material is to be initially wound on a spool or the like with which the belt B or 23 is connected the speed of the material carrying the said spool will be greatest, as the belt will at that time only engage with both sections 15 and 16 of the said pulley, and the two sections 15 and 16 of the said pulley will at such time act as one; but as the bulk of material increases on the spool in proportion to the increase of the bulk will be the strain on the belt, and the belt will gradually work inward, carrying the loose section 16 from the fixed section 15 against the tension of the spring 19, and as this separation is made even to a slight extent the speed of the pulley, and consequently the speed of the spindle or the device with which it may be in belt connection, will be proportionately decreased, as the smaller surface of the belt will engage with the fixed portion of the pulley, and the fixed portion of the pulley, in a driving sense, will not have the assistance

of the loosely-mounted portion 16. Accordingly the driving effect of the belt upon the spindle will be exerted through the fixed portion only of the pulley, the loosely-mounted portion being out of frictional contact with the fixed portion and free to turn on the spindle. As soon as the loose portion of the pulley is forced out of contact with the fixed portion the tendency of the belt to slip immediately becomes such that excessive strain upon the material to be wound is rendered impossible, and while the speed of the belt remains constant the spindle will be rotated at a gradually-decreasing speed, dependent upon the tension of the material to be wound.

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

1. The combination in mechanism of the character specified of a rotatable spindle, a compensating-pulley mounted on said spindle and comprising two disks or sections, one of which sections is fixed upon the spindle, and the other free to slide and turn on the spindle, means for yieldably holding the latter disk or section in contact with the former, and a belt engaging both of said disks or sections.

2. A take-up device comprising a rotatable spindle, a pulley-section fixed upon said spindle, a pulley-section loosely mounted on said spindle and free to slide and turn thereon, said pulley-sections presenting a substantially V-shaped groove between their peripheral portions, means for holding said sections in yielding contact, and a belt running in the groove between the belt-sections.

3. A take-up device comprising a rotatable spindle, a pulley-section fixed upon said spindle, a second pulley-section rotatably and slidably mounted on said spindle, said pulley-sections presenting a substantially V-shaped groove between their peripheral portions, a spring engaging said second pulley-section and holding it in yielding contact with the other pulley-section, and a belt running in the groove between said pulley-sections.

4. A take-up device comprising a rotatable spindle, a pulley-section fixed on said spindle, a second pulley-section mounted on said spindle and free to slide and turn thereon, a tension device for holding said loosely-mounted pulley-section in yielding contact with the fixed pulley-section, means for varying the tension of said tension device, and a belt engaging both of said pulley-sections.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NICHOLAS POWER.

Witnesses:
FRED. ACKER,
JNO. M. RITTER.