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PATENTED MAR. 28, 1905.

R. DAWES.  
SPINNING, TWISTING, AND WINDING MACHINE.  
APPLICATION FILED JAN. 14, 1904.

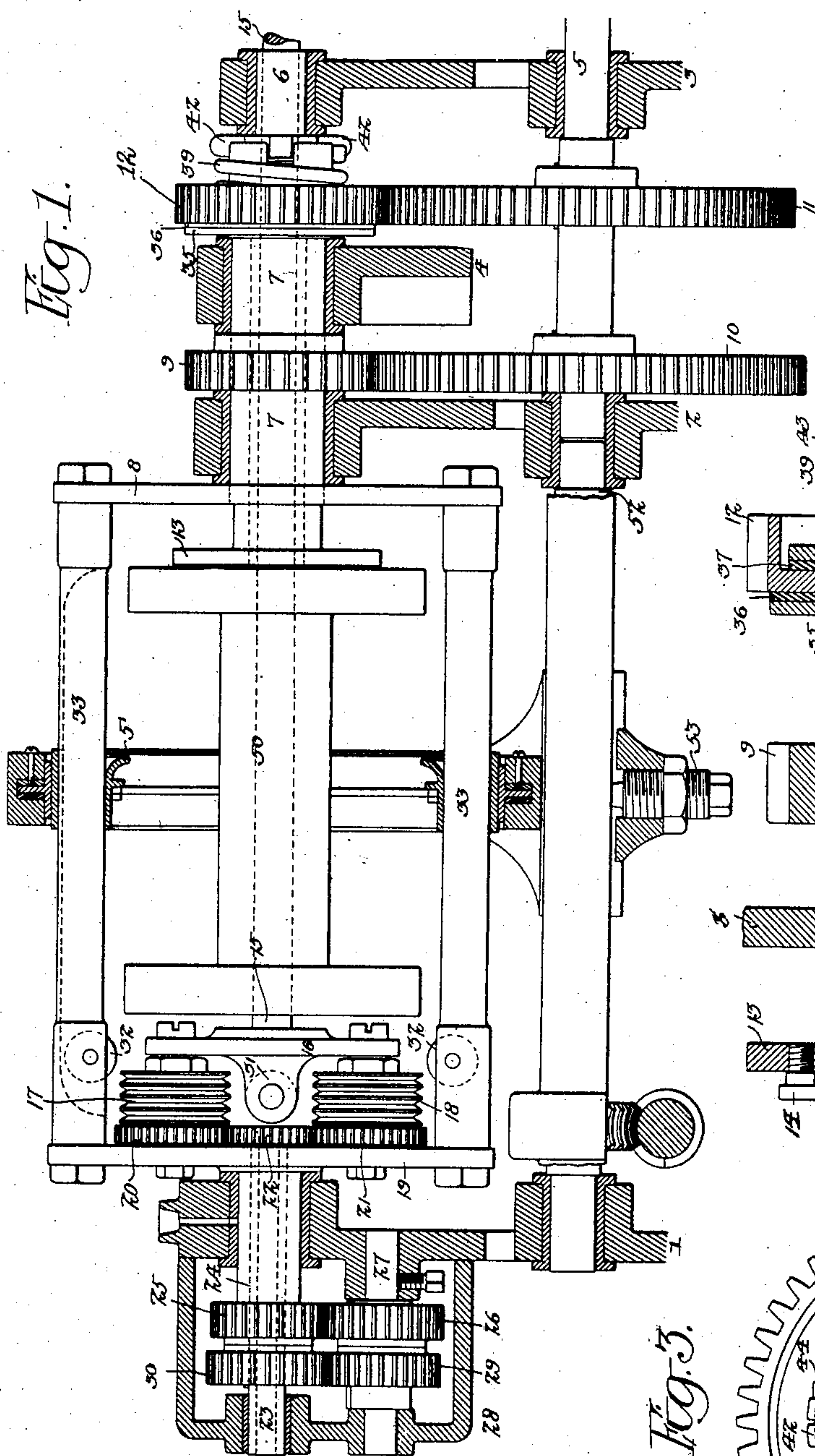


Fig. 1.

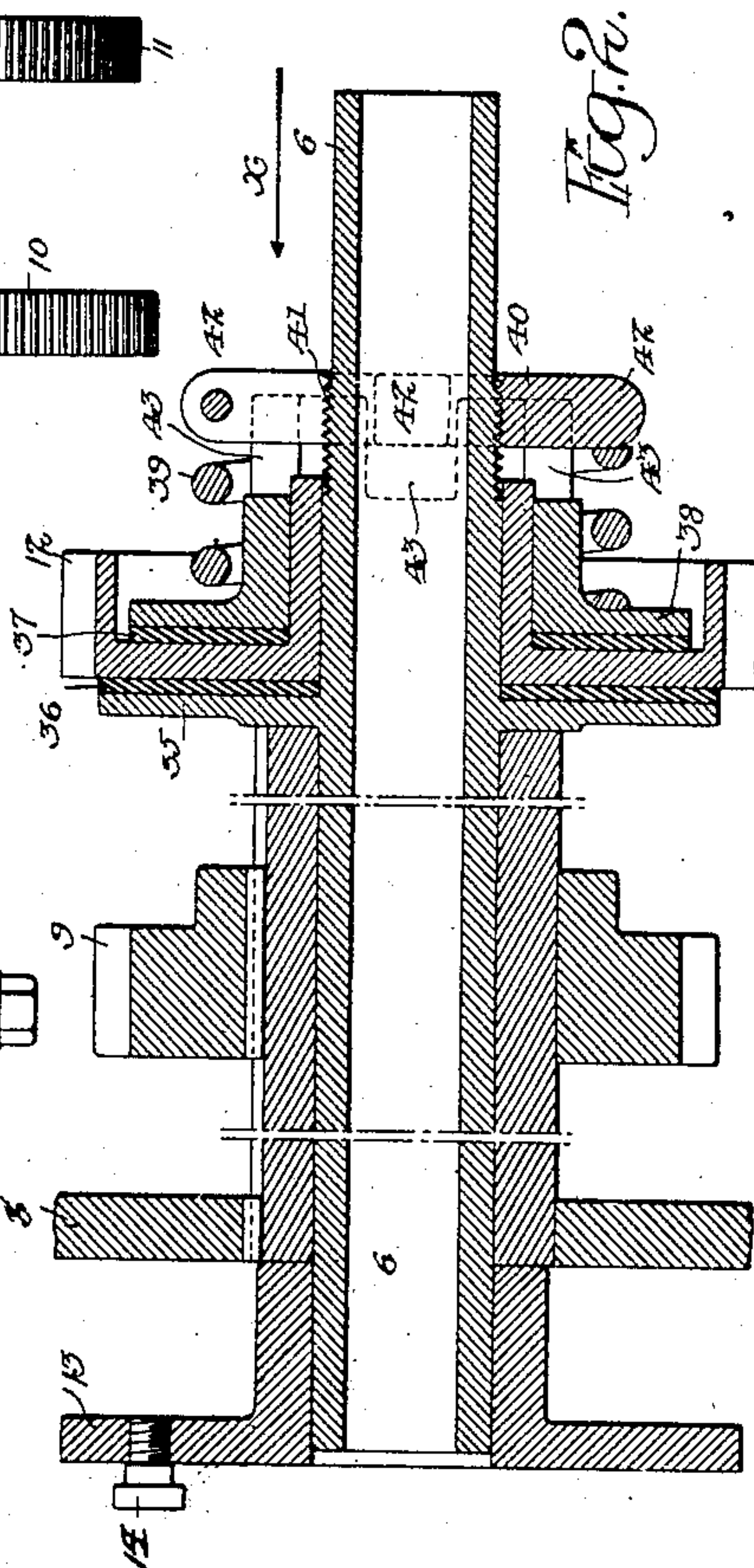
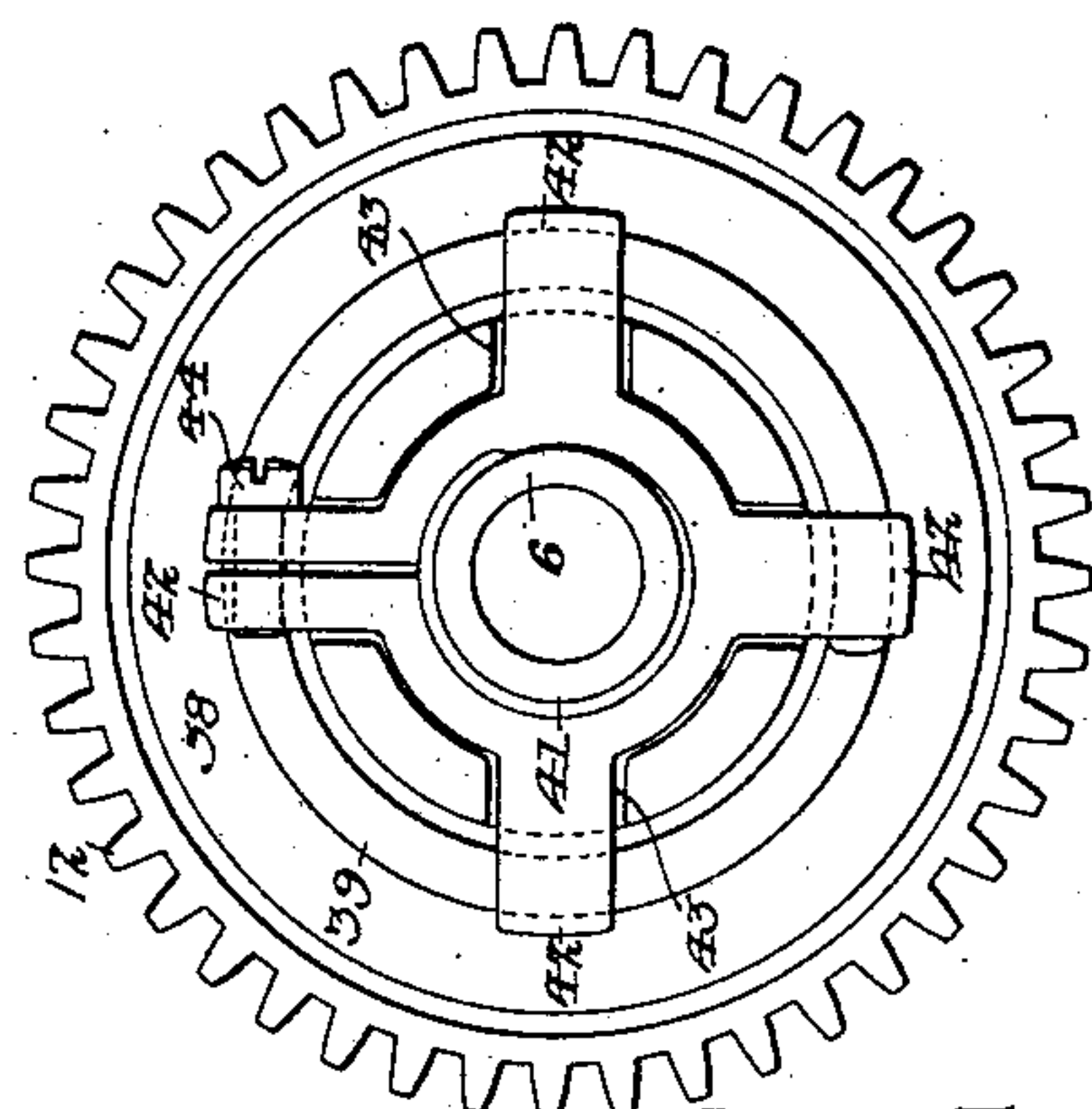


Fig. 2.

Fig. 3.



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# UNITED STATES PATENT OFFICE.

ROBERT DAWES, OF PHILADELPHIA, PENNSYLVANIA.

## SPINNING, TWISTING, AND WINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 786,198, dated March 28, 1905.

Application filed January 14, 1904. Serial No. 189,027.

*To all whom it may concern:*

Be it known that I, ROBERT DAWES, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Spinning, Twisting, and Winding Machines, of which the following is a specification.

My invention consists of certain improvements in the spinning, twisting, or winding machine forming the subject of my Letters Patent No. 650,708, dated May 29, 1900, the object of my present invention being to simplify and cheapen the construction of the frictional driving device which governs the rotation of the winding spool or bobbin as well as to increase the effectiveness of said driving device. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a view, partly in longitudinal section and partly in side elevation, of sufficient of a spinning, twisting, or winding machine to illustrate my present invention. Fig. 2 is an enlarged longitudinal section of that portion of the machine to which my present invention particularly relates; and Fig. 3 is an end view looking in the direction of the arrow *a*, Fig. 2.

In Fig. 1 of the drawings, 1, 2, 3, and 4 represent parts of the fixed frame of the machine, the frames 2 and 4 providing a bearing for a tubular shaft 7, which carries one of the end bars 8 of the flier of the machine and is provided with a spur-pinion 9, meshing with a spur-wheel 10 on the driving-shaft 5. The said shaft 5 also has another spur-wheel, 11, which meshes with a spur-pinion 12, free to rotate on the spool-driving shaft 8, but clutched thereto by means of the frictional driving device constituting the essential feature of my present invention.

The shaft 6 has its bearings in the tubular shaft 7 and in the frame 3 and is provided at its inner end with a disk 13, having a projecting stud or pin 14 for engaging one of the spool-heads, said spool being free to turn upon a spindle 15, which passes through the shaft 6 and is adapted to a bearing in the cross-bar 16 of the frame which carries the draft mechanism of the machine. The draft mechanism

comprises a pair of capstans 17 and 18 free to rotate upon studs projecting from the bar 19 of the flier-frame, these capstans having spur-wheels 20 and 21, respectively, which mesh with a spur-pinion 22, carried by a shaft 23, which has its bearing in a tubular shaft 24, connected to the end bar 19 of the flier and having its bearing in the upper portion of the frame 1 of the machine.

The shaft 23 is driven from the shaft 24 through the medium of a spur-wheel 25 on said shaft 24, which spur-wheel meshes with a similar spur-wheel 26 on a short shaft 27, secured to and projecting from the frame 1 of the machine, the outer end of said shaft 27 being supported in a cap or casing 28, which is secured to the frame 1 and also provides a bearing for the outer end of the shaft 23.

The spur-wheel 26 is connected to a spur-pinion 29, which meshes with a spur-wheel 30, secured to the shaft 23, the diameter of the pinion 29 being slightly less than that of the spur-wheel 30, so that the shaft 23 will be driven at a slightly less rate of speed than the flier-shaft 24, thereby providing for a slow rotation of the capstans 17 and 18 in order to effect the desired draft upon the cord or strand, which is fed through the shaft 23 and passes first around a guide-pulley 31, mounted in bearings on the bar 16, thence around the capstans 17 and 18, thence to and around a sheave 32 on one of the longitudinal bars 33 of the flier-frame, and thence to the traverse-guide 51, which is mounted on said flier-frame and moved back and forth throughout the length of the spool by a traverse-screw 52 engaging with the point of a screw 53 on the traverse-guide or by other equivalent device, as usual in this class of machines. The spool-driving shaft 6 has upon it a projecting flange 35, as shown in Fig. 2, and between this flange and the outer face of the spur-pinion 12 is interposed a ring or washer 36, of leather, cork, felt, or other desirable frictional material, a similar ring or washer 37 being interposed between the inner face of said spur-wheel 12 and a ring 38, which is mounted so as to be free to slide longitudinally on the hub of the pinion 12 and is acted upon by a coiled spring 39, interposed between said ring 38 and a nut



40, the latter being adapted to a threaded portion 41 of the shaft 6 and being provided with radially-projecting arms 42, which engage with slots 43 in the projecting hub of the ring 38, as shown in Figs. 2 and 3. The effect of this construction is that when the nut 40 is turned in one direction or the other, so as to increase or diminish the tension of the spring 39, the ring 38 will be likewise turned, and there will consequently be no scraping contact between the ends of the spring and the ring or nut, these three members of the device moving as a unit so far as concerns their rotation.

One of the arms 42 of the nut 40 is split, as shown in Fig. 3, this split arm carrying a clamp-screw 44, whereby the nut 40 can be securely clamped upon the threaded portion of the shaft 6 after it has been adjusted to longitudinal position thereon to impart the desired degree of tension to the spring 39.

It will be observed that the diameters of the spur-wheel 10 and pinion 9 bear such relation to the diameters of the spur-wheel 11 and pinion 12 that the latter will be driven at a lower speed than said pinion 9, this difference in practice being so gaged that the speed of the shaft 6 will be somewhat less than the speed of rotation of the spool or bobbin 50, due to the pull thereupon of the cord or strand which is being wound upon it by the flier, the difference between the speed of rotation of the spool and that of the pinion 12 representing the slip of the frictional clutching device between said pinion 12 and the shaft 6 and this frictional drag upon the shaft 6 being readily and accurately regulated by adjusting the tension of the spring 39, so as to provide for any desired degree of tension in the cord or strand which is being wound upon the spool or bobbin.

The improved frictional device is composed of but few parts, which are of simple construction, and the nut 40 is readily accessible for the purpose of adjusting the tension of the spring 39, the friction device being entirely removed from the draft mechanism, so that access to it is not obstructed by said draft mechanism.

Although I have shown spur-gears and pinions as a means of transmitting power to the shafts 6 and 7 from the main driving-shaft 5, it will be evident that belts and pulleys or other equivalent form of power-transmitting devices might be used, the spur-gears being

preferred, however, because of their positive action, and it is also evident that the friction device can be interposed between the spur-wheel 11 and shaft 5, instead of between the pinion 12 and shaft 6, without affecting its function.

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

1. The combination, in a spinning or like machine, of a spool-driving shaft, a rotated member thereon, a ring having frictional connection with said rotated member, a spring acting upon said ring, and a nut adjustable on the shaft and bearing upon said spring, said nut being also in engagement with the ring whereby joint and simultaneous rotation of the two is effected, substantially as specified.

2. The combination, in a spinning or like machine, of a spool-driving shaft, having a flange thereon, a rotated member on said shaft, having frictional connection with said flange, a ring also having frictional connection with said rotated member, a spring acting upon said ring, and a nut adjustable on the shaft, said nut bearing upon said spring and engaging said ring, substantially as specified.

3. The combination, in a spinning or like machine, of a spool-driving shaft, a rotated member thereon, a ring having frictional connection with said rotated member, and having a slotted hub, a nut engaging a threaded portion of the shaft, and having arms engaging said slotted portion of the hub of the ring, and a spring interposed between said ring and said arms of the nut, substantially as specified.

4. The combination, in a spinning or like machine, of a spool-driving shaft, having a rotated member thereon, a ring having frictional connection with said rotated member and having also a slotted hub, a nut adapted to a threaded portion of the shaft and having arms engaging said slotted portion of the hub, one of said arms being split and provided with a clamp-screw whereby the nut may be tightened upon the shaft, and a spring interposed between said ring and the arms of the nut, substantially as specified.

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

ROBERT DAWES.

Witnesses:

JAMES McMORRIS,  
JOS. H. KLEIN.