

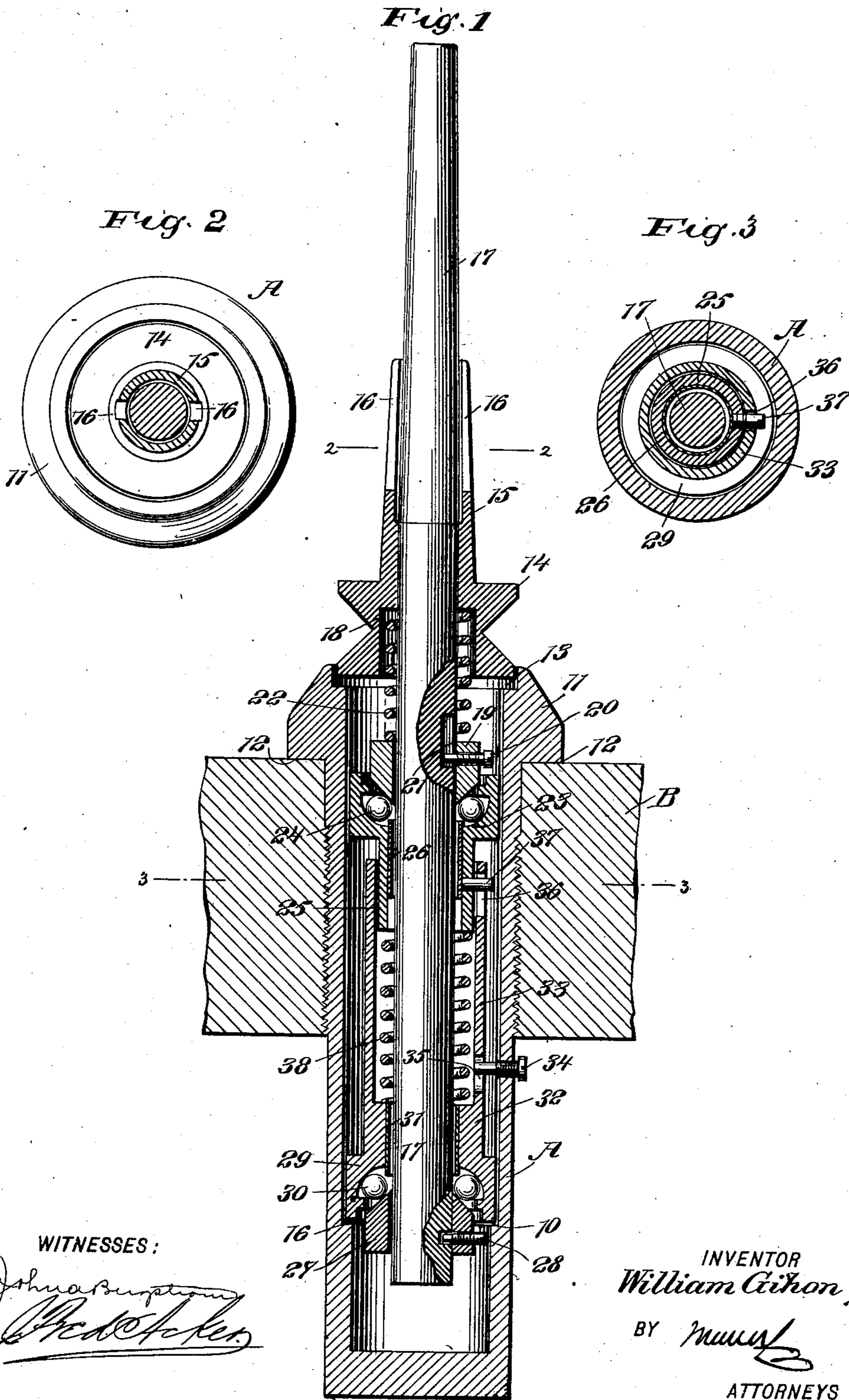
No. 701,808.

Patented June 3, 1902.

W. GIHON.  
SPINNING SPINDLE.

(Application filed Apr. 4, 1901.)

(No Model.)



# UNITED STATES PATENT OFFICE.

WILLIAM GIHON, OF CHICOPEE, MASSACHUSETTS.

## SPINNING-SPINDLE.

SPECIFICATION forming part of Letters Patent No. 701,808, dated June 3, 1902.

Application filed April 4, 1901. Serial No. 54,295. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM GIHON, a citizen of the United States, and a resident of Chicopee, in the county of Hampden and State of Massachusetts, have invented a new and Improved Spinning-Spindle, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide an improved speed-spindle for spinning, spooling, warping, and twisting threads or yarn and to provide self-adjusting ball-bearings for the spindle.

A further purpose of the invention is to so construct the spindle that the spool or bobbin will be securely retained in position thereon irrespective of whether the spool or bobbin would otherwise fit loosely and, furthermore, to provide a means whereby the spool or bobbin may be removed from the whirl without disconnecting any parts of the device or interfering with any of its mechanism.

Another purpose of the invention is to so construct the improved spindle that it will be self-oiling, it being unnecessary to renew the supply of oil except at long intervals of time.

Another purpose of the invention is to provide a simple durable easy-running spindle which will not tend to heat up or break the yarn or thread.

The invention consists in the novel construction and combination of these 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 longitudinal vertical section through the improved spindle and a support therefor. Fig. 2 is a horizontal section taken substantially on the line 2 2 of Fig. 1; and Fig. 3 is a horizontal section through the spindle, taken substantially on the line 3 3 of Fig. 1.

The body of the spindle consists of a casing A, which casing is open at the top and closed at the bottom and is of cylindrical shape. This casing is provided with an interior annular shoulder 10 near its bottom, whereby the upper portion of the casing A is of greater diameter than its lower portion, as is illus-

trated in Fig. 1. The casing A is provided at the top with an exterior collar 11, the bottom of which collar forms a bearing 12, adapted to rest upon a support B, to which the casing A may be secured, and the casing A is usually attached to said support through the medium of an exterior thread, as is also shown in Fig. 1.

At the upper end of the casing A an annular depression or recess 13 is made in the collar 11, adapted to receive the lower end or portion of a whirl 14, whereby the whirl may have vertical and guided movement in the upper portion of the casing. This whirl 14 is of the usual construction, but is provided with an upper sleeve extension 15, exteriorly conical and provided at its upper end with longitudinal slots 16, so that any spool or bobbin capable of being carried by the whirl may be placed upon the sleeve extension 15 and securely held in position thereon, since the upper end of the sleeve extension of the whirl 14 is in the nature of a spring, and this spring portion of the sleeve extension of the whirl 14 is contracted when the bobbin or spool is placed in position.

The spindle 17 is passed through the sleeve extension 15 of the whirl 14, through the said whirl, and into the casing A, extending into said casing to a point near its bottom. The whirl 14 is attached to the spindle 17 in any suitable or approved manner.

A recess or chamber 18 is made in the bottom portion of the whirl 14, and within the casing A at a point below the whirl 14 a cone 19 is connected with the spindle 17 in a slidable manner; but the cone is adapted to turn with the said spindle, and this adjustable connection between the spindle 17 and cone 19 is formed by passing a screw 20 or like device through the cone 19 and into a longitudinal slot or recess 21, made in the spindle, as is also shown in Fig. 1, so that the cone 19 may have limited longitudinal movement on the said spindle. A spring 22 is coiled around the spindle 17, and this spring bears against the upper portion of the cone 19 and enters the chamber 18 in the whirl 14 and has bearing against the upper wall of said chamber. This spring 22 serves as a cushion for the upper cone 19.

In connection with the upper cone 19 a ball-

race 23 is provided, which ball-race is provided with suitable pockets for balls 24, which engage with the lower tapering end of the cone 19, as shown in Fig. 1. This ball-race  
 5 23 is provided with a downwardly-extending sleeve 25, through which the spindle 17 is loosely passed, and an inner sleeve 26, connected to the main sleeve 25, serves to keep the balls 24 in position. A second cone 27 is  
 10 attached to the lower end of the spindle 17, and this cone has also sliding longitudinal movement on the spindle, but less movement than the upper cone 19. The tapering surface of the lower cone 27 faces upward, and  
 15 the cone is connected with the spindle 17 by a screw or pin 28 or its equivalent, which is loosely passed into a suitable recess or aperture made in the spindle 17, as shown in Fig. 1. A ball-race 29 is provided for the lower  
 20 cone 27, and in this ball-race a pocket is formed which receives the balls 30, the balls being held in position by an inner sleeve 31, fitting loosely around the spindle 17 and secured to the outer sleeve 32, which forms a  
 25 portion of the lower ball-race 29. The lower portion of the lower ball-race 29 rests upon the shoulder 10 at the bottom portion of the casing A.  
 The main sleeve 32 of the lower ball-race 29  
 30 is provided with an extension-sleeve 33 of greater diameter of bore than that of the bore of the main sleeve 32, and this extension-sleeve 33 of the lower ball-race 29 passes loosely around the downwardly-extending  
 35 sleeve 25 of the upper ball-race 23, as is also shown in Fig. 1. A slot 35 is made in the extension-sleeve 33 of the lower ball-race near the bottom portion of said sleeve, and a  
 40 screw 34 or its equivalent is passed through the casing and into the said slot 35, thus holding the spindle and its ball-races and cones in position within the casing A. A second pin or screw 37 is passed through a longitudinal slot 36, made in the upper portion  
 45 of the extension-sleeve 33, and this pin or screw 37, which is located entirely within the casing A, is secured to the downwardly-extending sleeve 25 of the upper ball-race 23. A spring 38 is coiled around the spindle 17  
 50 between the two ball-bearings, and this spring rests upon the upper end of the main sleeve 32 of the lower ball-race and against the bottom of the sleeve 25, which extends downward from the upper ball-race 23. The spring 38  
 55 serves as a cushion for both of the ball-races, so that the spindle can operate with but little friction and but little wear, and by means of the two cushions 22 and 38 the spindle 17 and the whirl 14 may be lifted upward a required  
 60 distance should a bobbin or spool cling to the extension of the whirl without detriment to the various parts of the device and without causing the parts within the casing A to leave the same.

It will be observed that the casing A constitutes a well in which a lubricant may be placed and that therefore the spindle is rendered self-lubricating. It is evident that oil placed in the casing will last for a great length of time.

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

1. The combination with a spindle, and a whirl, of a ball-bearing operatively engaging said spindle and having the cone member of said bearing slidably connected to the spindle to rotate therewith, and a cushion-spring engaging with said whirl and said cone member of the bearing.

2. The combination with a spindle, and a casing, of independent ball-bearings spaced relatively to one another on the spindle and each bearing having a cone member connected by a loose joint to said spindle for rotation therewith, and a cushion-spring interposed between said bearings, whereby the spindle may be partly forced outward by the compression of said spring.

3. In a spinning-spindle, the combination, with a casing, a spindle extending within the casing, and a whirl attached to the said spindle, of spring-controlled ball-bearings for the spindle, the cones of which bearings are attached to the spindle and have limited movement longitudinally of the spindle, and means, substantially as described, whereby one spring-cushion is located between opposing ball-bearings and a second spring-cushion is located between the whirl and adjacent ball-bearing, as set forth.

4. The combination with a casing, and a spindle, of separate bearing-cups arranged to have limited movement relative to one another, bearing-cones revoluble with the spindle and disposed in coöperative relation to said bearing-cups, suitable bearing-balls, and a cushion-spring disposed between and in operative relation to said bearing-cups.

5. The combination with a casing, and a spindle, of bearing-cups loosely held within said casing and slidably connected together for movement relative to one another, bearing-cones coöperating with said bearing-cups and connected to said spindle so as to rotate therewith and to have a limited slidable play thereon, a cushion-spring tending to normally separate the bearing-cups and retain them in operative relation to the cones, and suitable bearing-balls.

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

WILLIAM GIHON.

Witnesses:

WM. P. CARTER,  
 JAMES H. CLARK.