No. 619,008. Patented Feb. 7, 1899.

J. BATTERSBY.

SPINDLE.

(Application filed Jan. 7, 1898.)

(No Model.)

Fig. 1.

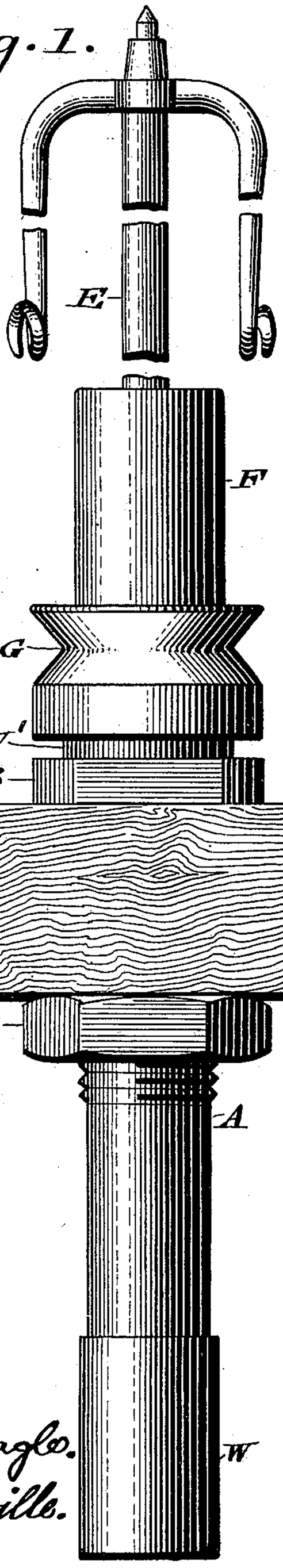


Fig. 2.

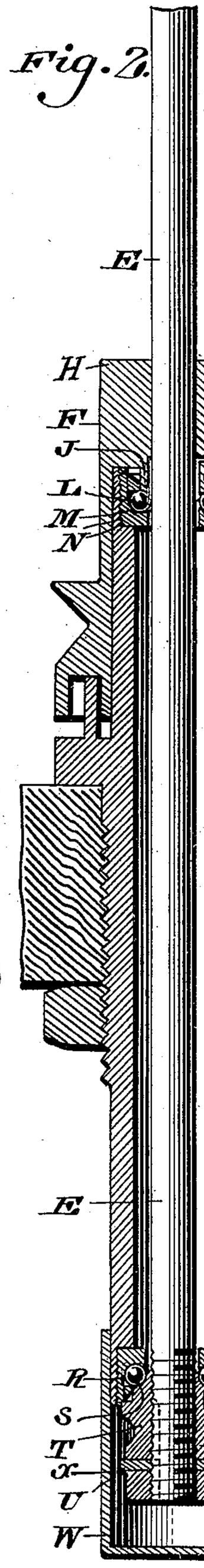


Fig. 4.

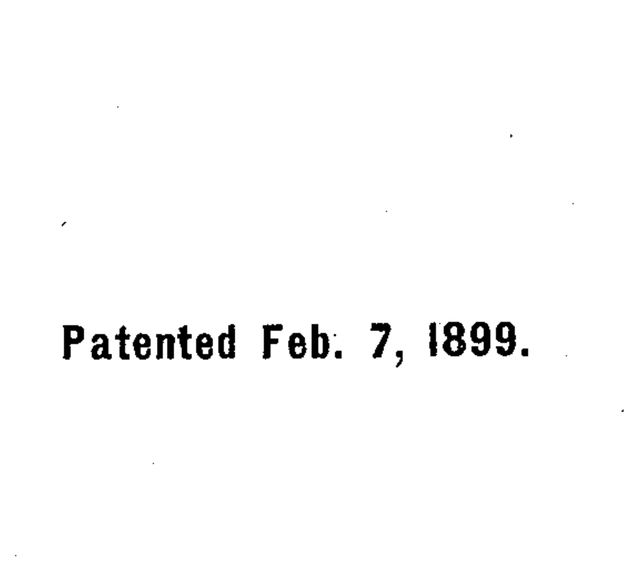
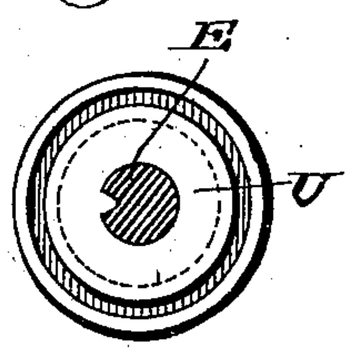


Fig. 3.



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SPINDLE.

SPECIFICATION forming part of Letters Patent No. 619,008, dated February 7, 1899.

Application filed January 7, 1898. Serial No. 665,936. (No model.)

To all whom it may concern:

Be it known that I, JAMES BATTERSBY, a subject of the Queen of Great Britain, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Spindles, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists in providing a bobbin or cop spindle with ball-bearings, whereby it is adapted to rotate with reduced friction and with greater freedom and rapidity.

Figure 1 represents a side elevation of a spindle embodying my invention. Fig. 2 represents a longitudinal vertical section thereof. Fig. 3 represents a transverse horizontal section on line *x x*, Fig. 2. Fig. 4 represents a vertical section of a portion on an enlarged scale.

Similar letters of reference indicate corresponding parts in the figures.

Referring to the drawings, A designates a sleeve or bolster which by means of the shoulder B and nut C or other suitable devices is stationarily secured to the portion or beam D of a supporting-frame. This bolster has a bore for the spindle, and its end is counterbored to form an interior horizontal shoulder and a recess, which recess is provided with interior screw-threads, as seen clearly in Fig. 2.

E designates a spindle which is firmly connected in a well-known manner with the upper part or section F of the whirl, to which the whirl G is secured, the lower portion of said spindle entering the sleeve A. Depending from the under side of the top H of said part F is the neck J, whose lower edge K is beveled or conical and contacts with the balls L, which are supported in a recess in the cup M, the latter being seated on the horizontal shoulder N in the interior of the upper end of the bolster A, said cup M having a vertical flange which is screwed or otherwise secured to the adjacent flange of the bolster, so as to remain stationary therewith.

To the interior of the lower end of the bolster is secured the collar P, which occupies the recess Q in said bolster, said collar having seated therein the balls R, which rest on the beveled or conical face S of the collar T, which is screwed to the lower end of the spindle E, so as to rotate therewith, said collar T being retained in position by means of the washer U and nut V on said spindle.

Depending from the lower end of the sleeve A and secured thereto is the inverted cap W, the same closing the bottom portions of the device and constituting an oil-chamber.

Rising from the shoulder B is the vertical flange W′, which enters the recess X in the under side of the whirl G for assisting to steady the latter and connected parts in their rotation.

It will be seen that when power is applied to the whirl rotary motion is communicated to the spindle and connected parts, so that the spindle rotates on ball-bearings at the upper and lower portions of the spindle, formed, respectively, by the neck J, balls L, and cup M and the collar T, balls R, and collar P, whereby it moves with less friction than heretofore, and consequently with great freedom and rapidity or swiftness.

In order to adapt the cup M to receive its balls L, said cup is formed in sections, the upper section or ring M′ being removable, so that the balls may be placed in the recess of said cup M, after which said section M′ is restored over the balls, whereby the latter are prevented from dropping out from said recess in assembling the parts. The neck J, the vertical flange of the collar, and adjacent portion of the part F of the whirl serve to retain the section M′ in position. The collar Q is also formed in sections similar to the cup M, excepting that the lower section or ring of said collar Q is made detachable or removable, but which when in position is retained thereon by a shoulder or flange on the adjacent portion of the collar T and the depending vertical flange of the collar P, it being noticed that said collar is screwed or secured to the flange at the lower end of the bolster and bears upwardly against the adjacent horizontal shoulder of said bolster.

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

1. A bolster having an exterior shoulder provided with a vertical flange, and a bore for the spindle with its end counterbored to form an interior horizontal shoulder and a recess,

said recess being provided with interior screw-threads, a cup resting on said shoulder and having a vertical annular portion exteriorly threaded to engage the threads of said recess, a whirl having a neck extending into the cup, balls retained between the said neck and the horizontal portion of the cup, and a retaining-ring disposed between the neck and the said flange of the cup with its inner end engaging the balls.

2. A bolster provided with an exterior shoulder with a vertical flange, and having its end counterbored to form an interior horizontal shoulder and a recess, a cup detachably and adjustably secured in said recess, a whirl provided with a neck extending into said cup with a portion of said whirl embracing the bolster, and balls retained between said neck and cup, a ball-retaining ring disposed between the oppositely-disposed annular portions of the neck and cup, and a spindle secured to the cap portion of the whirl to revolve therewith.

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